QUNO
Quaker United Nations Office

TRADE AND PLASTICS

ENABLING INCLUSIVE SOCIO-ECONOMIC GROWTH IN SOUTH EAST ASIA

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ACKNOWLEDGEMENTS

This report, commissioned by the Quakers United Nations Office (QUNO), presents an overview of the prospects and obstacles faced by Lao PDR, Myanmar and Vietnam in the creation and execution of circular economy policies aimed at reducing plastic pollution and promoting sustainable socio-economic development. The paper highlights the significance of trade as a tool for reducing environmental and social impacts while advancing sustainable growth through the integration of circular economy principles and practices.

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EXECUTIVE SUMMARY

The current unsustainable take-make-and-dispose linear economic model is placing a strain on finite resources with a significant impact on the environment and the economy. The amount of solid waste generated annually is projected to increase by 70% globally by 2050,[1] and a large component of that waste is expected to be plastics. Some 8-14 million tonnes of plastics enter the ocean every year, with 80% of that volume originating from Asian rivers.[2] The OECD estimates that only 9% of plastic waste is recycled globally, with 22% being mismanaged and the rest either incinerated or landfilled.

The global production of virgin plastics has doubled over the last two decades and is projected to triple by 2060, resulting in a significant increase in associated waste and pollution. This production accounts for approximately 3.4% of global greenhouse gas emissions. Under current growth and business-as-usual scenarios, and without significant changes, plastic production and incineration could consume up to 15% of the global carbon budget by 2050. The situation is especially concerning in Asia, where an average of 45% of waste is mismanaged, resulting in significant economic losses and posing a severe threat to public health and the environment.[3]

In response to these challenges, advocates argue that transitioning to a circular economy for plastics is vital to achieving climate goals and reducing GHG emissions. This economic model prioritises the reduction of waste and pollution while optimising the use of resources, keeping products and materials in use at their highest value for the longest time possible, and promoting the use of renewable energy inputs. However, achieving a circular economy is particularly challenging for plastics primarily because 99 % of plastics are made from fossil fuels.[4] Furthermore, a large portion of plastics are designed for single use, leading to a significant portion of waste ending up in landfills or incinerated. In this context, single-use plastics (SUPs) cannot be fully integrated into the circular economy model owing to their design characteristics. Critics have therefore accused producers of greenwashing for claiming that increasing recycling rates promotes the circularity of plastics. Closing the loop on single-use plastics is unlikely to occur as closed loops refer to materials and products that can be reused or recycled for the same use without being degraded in quality.[5]

In addition, plastics contain hazardous chemicals that harm the environment and human health. These chemicals, which include flame retardants, heavy metals, bisphenols, and fluorinated compounds, are present across the life cycle of plastics and can provoke serious illnesses, such as asthma, diabetes, cardiovascular disease, and some types of cancers.[6] During the shredding and melting process, plastic-recycling plants release toxins that can harm workers and nearby communities. These risks are notably higher among vulnerable groups and marginalised communities.

Redefining the circular economy for plastics is needed in order to reduce plastic's adverse effects on human health and environmental impacts. Targeted interventions that only address waste management at the end of life in isolation are not enough: the production and consumption of plastic need to be reduced as well. Maximising the benefits of a circular approach requires greater emphasis on upstream factors, including how products and materials are designed. Therefore, a holistic, coordinated approach and system change across the entire value chain, from resource extraction to disposal, is necessary to create a more efficient system to eliminate plastic pollution. By understanding the social and environmental impact of plastic, we can implement effective measures to reduce its harmful effects at every step.[7]

[1] What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050, The World Bank, 2018
[2] Our World in Data, Where does the plastic in our oceans come from, University of Oxford, 2021
[3] OECD. (2022). Global Plastics Outlook: Economic Drivers, Environmental Impacts and Policy Options. Policy Highlights.
[4] CIEL, 2019, Plastic & climate: The hidden costs of a plastic planet, Center for International Environmental Law, Washington, DC (https://www.ciel.org/wp-content/uploads/2019/05/Plastic-andClimate-FINAL-2019.pdf) accessed 10 May 2023..
[5] Bucknall, D. G. (2020). Plastics as a materials system in a circular economy. Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences, 378(2164), 20190268.
[6] Brosché, S., Strakova, J., Bell, L., & Karlsson, T. (2021). Widespread Chemical Contamination of Recycled Plastic Pellets Globally. International Pollutants Elimination Network (IPEN). https://ipen.org/documents/widespread-chemical-contamination-recycled-plastic-pellets-globally
[7] King, S., & Locock, K. E. S. (2022). A circular economy framework for plastics: A semi-systematic review. Journal of Cleaner Production, 364, 130946.

In 2022, a significant milestone was achieved as the UN Member States agreed to start discussions for a ground-breaking international legally binding instrument to end plastic pollution, including in the marine environment (hereon referred to as the Global Treaty on Plastics). The Global Treaty on Plastics aims to establish harmonised rules and regulations for addressing the life cycle of plastics across multiple jurisdictions while ensuring that the rights and livelihoods of all people involved in the value chain are protected. A circular economy for plastics will require the implementation of multilateral trade policies and interventions prioritising the principles of the waste management hierarchy. That means eliminating unnecessary plastics and hazardous chemicals and pollutants, limiting the use of SUPs, replacing them with alternative materials, and the use of more sustainable feedstock, as well as promoting reuse and refill systems. Successfully transitioning away from plastics requires a combination of innovation, technology development, economic investment, and changes in societal behaviour towards responsible consumption and waste-management practices. Additionally, the plastic industry must become more transparent about the risks associated with the production, use, and disposal of plastics, including the potential for toxic chemicals to contaminate the environment, harm marine life and humans, and its contribution to climate change.

A need for systemic change of plastics in Southeast Asia

The rapid economic growth in Southeast Asian countries, like Lao PDR, Myanmar, and Viet Nam over the past few decades, has led to a surge in the production and consumption of plastics, which in turn has significantly increased the volume of waste created. These three nations generate an estimated 4.7 million tonnes of plastic waste annually, two-thirds of which originate in Viet Nam,[8] where waste management infrastructure is inadequate and is mainly dominant by the informal sector, which is responsible for collection and recycling. Although the Association of South-East Asian Nations (ASEAN), together with the nations themselves, have implemented plans to promote a circular economy and better waste-management strategies, the region needs a more comprehensive and coordinated approach. This approach should include upstream and downstream solutions along the supply chain, such as financing infrastructure and technology upgrades. It should also involve legally binding strategies and action plans tailored to each country's specific context.

Trade policies should also be integrated into these efforts and promote systemic business practice changes. These policies should encourage the substitution of plastic materials with alternatives and promote re-use or refill systems to eliminate SUPs. However, it is essential to involve those from the informal recycling sector, who depend on plastic waste collection for their income, to ensure an equitable transition. Including them ensures a fair transition. These individuals are likely to suffer income losses if unmanaged waste flows decline. Thus, there is a need to invest in capacity building and offer support for transitioning to more sustainable, quality job opportunities.

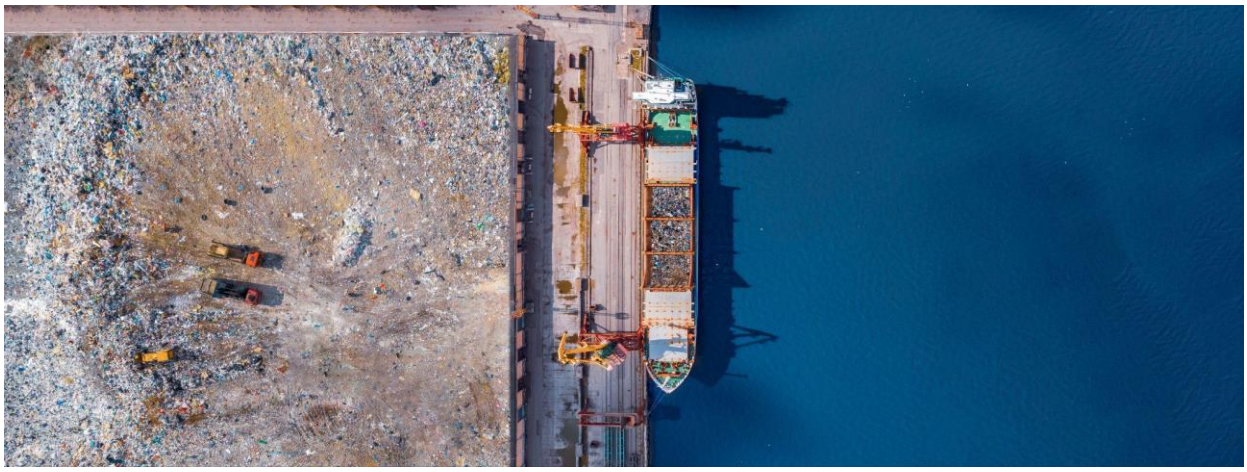
This study explores waste-management practices in three Southeast Asian countries: Lao PDR, Myanmar and Viet Nam (referred to collectively as LMV) and the role of trade as a lever for reducing environmental and societal impact while promoting sustainable growth through the integration of systematic changes in practices beyond recycling. The study evaluates the impact of a more efficient and inclusive system to promote economic prosperity and job creation and examines the potential of the circular economy of plastic in the LMV nations. The research aims to outline what a fair and just transition could deliver for a more resilient and inclusive economic system that supports prosperity. Additionally, it seeks to promote harmonised international trade in alignment with international standards and best practice. We propose a set of recommendations for LMV to facilitate a just circular transition, primarily under two main actions: ***trade policy-related actions and capacity-building***. We investigate these recommendations in detail and provide considerations tailored for policymakers in LMV.

[8] The World Bank (2022). Toward a National Single-use Plastics Roadmap in Vietnam: Strategic Options for Reducing Priority Single-use Plastics. *The World Bank Group*, page34.

TRADE POLICY ACTIONS

- **Develop circular standard classifications and definitions into free trade agreements to increase transparency between importing and exporting countries**. This includes establishing common definitions for secondary materials and product sustainability, such as recycling content, recyclability, and compostability.
- **Harmonize environmental standards across other frameworks and regions by aligning regulations and standards**. This involves implementing clear instructions and labelling for retailers and consumers regarding collection, disposal, and material sustainability, as well as promoting reuse and refill mechanisms.
- **Update the classification of Harmonized Systems (HS) codes to reflect circular trade in secondary goods and materials, particularly in regulating the trade of plastics**. This includes enabling better tracking of circular flows, enhancing transparency, and accountability, and combating illegal activities like dumping and illegal waste trade.
- **Develop digital trade infrastructure and paperless systems to facilitate cross-border circular flows.** This includes implementing real-time verification of documents, utilizing blockchain-based platforms for tracking and traceability of plastics, and streamlining customs procedures to reduce time and costs associated with cross-border goods movement.
- **Define data standards to capture and share information to understand waste flow.** This will enhance the accuracy and comparability of data across different countries and regions, enabling better monitoring and analysis of circularity in the plastics trade.
- **Foster global coordination, international dialogue, and information exchange on trade and customs** to promote consistency and coherence in circular trade policies for plastics. This will facilitate the identification of challenges and opportunities to reduce plastic waste.
- **Implement regulatory and fiscal measures to incentivize circular solutions**, such as applying the Polluter Pays Principle, and offering tax credits, subsidies, and grants for businesses investing in the development of new circular materials. Establish a timeline for phasing out plastic packaging and single-use plastics, while ensuring disclosures, including labelling, convey risks and harms associated with plastics production and emissions.

Figure 1: Trade Policy Actions



CAPACITY BUILDING ACTIONS

- **Infrastructure investment** to support national and regional circular economy capabilities
- **Utilise public procurement to create demand for circular alternatives**, promoting substitute materials for plastics and incentivizing the adoption of reusable business models to encourage the scaling up of sustainable solutions.
- **Establish a circular procurement framework and standards**, including policies, procedures, and guidelines for implementing circular procurement practices. This involves prioritizing products with higher recycled content, promoting better design for reusability, and, as a last resort, recycling. Additionally, increase demand and create new markets for refill and reuse business models and upcycled plastics.
- **Encourage innovation by providing funding for research and development (R&D)** and technical development of innovative materials and plastic substitutes. Offer incentives and funding specifically targeted at small and medium-sized enterprises (SMEs) and start-ups to support the development of new technologies.
- **Promote investment opportunities** to attract private-sector funding and encourage collaboration for technical development in the circular economy sector.
- **Create a level playing field** by removing barriers and providing incentives for micro, small, and medium-sized enterprises (MSMEs), ensuring ease of entry into the circular economy market.
- **Inform and educate citizens** through comprehensive education campaigns on plastic pollution's environmental and economic impact. Highlight the benefits of adopting circular practices and provide accessible and affordable options for consumers.
    - Implement capacity-building initiatives, including training programs for the informal sector, focusing on the safe and effective collection, sorting, and handling of plastic waste.
    - Emphasize circular business models such as refilling, reusing, and upcycling.
- **Establish business support schemes** that offer technical and financial assistance. Implement microcredit and loan programs to facilitate investment in circular business models for plastics, such as reusable coffee cups, household refillable products, or recycling equipment and storage facilities to prevent plastics from ending up in landfills.

Figure 2: Capacity Building Actions

1. INTRODUCTION

1.1 What is the circular economy?

Western economies have long relied on the linear model of 'take-make-dispose', leading to significant resource depletion, ecosystem damage, and biodiversity loss. Moreover, it has created a significant disparity between the Global North and the Global South, perpetuating social injustices. While less developed countries bear only partial responsibility for waste generation and greenhouse gas emissions (GHG), these nations disproportionately experience severe environmental impacts and heightened vulnerability to climate-related disasters, thereby endangering human well-being and livelihoods.[9] In addition, developed economies frequently export significant quantities of plastic waste to less developed nations to fulfil their recycling targets. Unfortunately, this practice often culminates in the waste being mishandled in illegal processing centers or deposited in landfills.

In order to address these challenges and achieve our climate goals, it is imperative that we embrace a new circular economy model that effectively decouples economic growth from unsustainable production and consumption. The Ellen MacArthur Foundation defines the circular economy as a systems solution framework. It aims to eliminate waste and pollution, maximize the value and utilisation of products and materials, and regenerate nature while decoupling economic growth from resource extraction.[10] While achieving a complete global decoupling of economic growth from resource extraction may present significant challenges due to population growth, it is crucial to acknowledge the potential and benefits of embracing a circular economy model. These principles facilitate the transition to innovative business models, drive technological advancements, and encourage the development of better product and packaging designs that enable circularity, emissions, and waste reduction. By adopting a circular economy approach, we can strive towards a more sustainable and resilient economy while acknowledging the obstacles that may arise in applying these principles to plastic products and materials.

2.2 The challenges and opportunities of implementing a circular economy for plastics in emerging economies.

According to the Ellen MacArthur Foundation, the annual loss of value of plastic packaging amounts to $80-120 billion,[11] which is 95% of its total value. This means that only a small fraction of the plastic packaging produced is recovered or recycled, while the majority is discarded and lost as waste, polluting the terrestrial and marine environments. Although there is an opportunity to recover the value loss, in this respect, the circular economy for plastic packaging faces significant challenges. For instance, the goal of closing the loop for SUPs so that they can be used and recycled indefinitely without losing their value is practically unattainable. This is due to limitations in material properties, manufacturing, consumer use, and the current state of reprocessing technologies.

Additionally, plastic production and consumption inherently generate waste and emissions. The production of virgin plastics involves extracting and processing non-renewable resources, such as crude oil or natural gas, which contributes to GHG emissions and other environmental impacts. At a minimum, transitioning to a circular economy for plastics would require a shift towards renewable energy sources to power the manufacturing and recycling processes.[12]

Another main concern is the presence of toxic chemicals in polymers. According to The Center for International Environmental Law (CIEL) report "Beyond Recycling,"[13] the current circular economy approach to plastics is deemed inefficient. The report highlights the complex nature of the recycling process, primarily attributed to the composition of these materials, mainly derived from non-renewable resources, and containing toxic additives, including bioplastics.[14]

[9] Barrie, J., Latif, L. A., Albaladejo, M., Baršauskaitė, I., & Schröder, D. P. (2022). Trade for an inclusive circular economy . Chatham House. Retrieved April 4, 2023 from https://www.chathamhouse.org/sites/default/files/2022-06/2022-06-15-inclusive-circular-trade-barrie-et-al.pdf.
[10] Ellen MacArthur Foundation, retrieved April 5th, 2023 from https://ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview
[11] The New Plastics Economy: Rethinking the Future of Plastics & Catalysing Action. The Ellen McArthur Foundation, 2017
[12] Corvellec, H., Stowell, A. F., & Johansson, N. (2022). Critiques of the circular economy. Journal of Industrial Ecology, 26(2), 421-432. https://doi.org/10.1111/jiec.13187
[13] Patton , J. et al. (2022) Beyond Recycling: Reckoning with Plastics in a Circular Economy. Center for International Environmental Law (CIEL).
[14] Zimmermann, L., Dombrowski, A., Völker, C., & Wagner, M. (2020). Are bioplastics and plant-based materials safer than conventional plastics? In vitro toxicity and chemical composition. Environment International, 145. https://doi.org/10.1016/j.envint.2020.106066.

The wide range of plastics available in the market, each with its distinct chemical composition and properties, adds to the complexity. Furthermore, the incorporation of various additives further complicates recycling efforts. Studies have identified over 13,000 chemicals associated with the composition and manufacturing of plastics, of which nearly a quarter are associated with severe human health impacts. These chemical substances include plasticisers, flame retardants, certain UV stabilisers and metals, and many other toxic additives.[15] Although some additives may remain bound within the polymer matrix, studies indicate that a portion of them can gradually migrate out of the plastics over time, particularly when exposed to environmental conditions such as heat, sunlight, or moisture. Consequently, certain additives may not be entirely removed during the recycling process or undergo transformations, ultimately releasing potentially harmful substances into the environment. The release of these additives occurs at various stages of the plastic life cycle, spanning production, usage, disposal, and recycling, contributing to ecosystem degradation. Research also suggests that certain exposure levels to these chemicals play a role in the development of neurodevelopmental problems, and illnesses such as heart disease, and certain types of cancer in humans.

To address these concerns, the report emphasises the necessity for a circular plastics economy that prioritises human rights and safeguards vulnerable communities from harm. Producers must enhance transparency and disclosure regarding the risks and potential harms associated with plastics production and related emissions, for example through global environmental disclosure systems[16]. Additionally, the report advocates for the establishment of a global mechanism to ensure liability and compensation for any harm caused to affected communities. By implementing these recommendations, we can strive towards a more sustainable and responsible approach to plastics, mitigating the adverse effects on the environment and human health.

In addition, achieving circular and sustainable economic systems requires a review of current consumption patterns and behaviours. Ensuring that circular economy strategies address current unsustainable development practices is imperative. However, underlying drivers hinder the proliferation of measures such as reuse and refill systems, as well as eliminating unnecessary packaging while fostering unsustainable behaviour. For instance, the plastic industry is counting on continued growth in demand for plastics and is likely to resist efforts to reduce, much less eliminate SUPs.

[15] United Nations Environment Programme and Secretariat of the Basel, Rotterdam and Stockholm Conventions (2023). Chemicals in plastics: a technical report. Geneva.
[16] CDP, Plastic Disclosure Platform, https://www.cdp.net/en/plastics

Furthermore, advertising and marketing campaigns that promote SUPs perpetuate unsustainable consumer habits and foster a wasteful culture. Governments and regulatory bodies are often reluctant to enact legislation that promotes measures aimed at reducing SUPs, owing to pressure from the industries that produce and use those plastics. Therefore, the main tool left to activists is to raise consumer awareness of SUPs' environmental impacts and encourage reuse and refillable systems.

While the circular economy for plastics presents numerous challenges, these critiques should not discourage us from promoting its adoption, particularly in emerging economies where plastic waste poses a significant threat to public health and ecosystems. Instead, we need to consider these challenges and address them comprehensively, not as an adaptation of the current system but as a systemic transformation. The circular economy can also present opportunities for upgrading systems. For example, transitioning to a circular economy for plastics would require a shift to renewable energy, which can facilitate a pathway to invest in clean energy infrastructure and reduce dependence on fossil fuels. Furthermore, understanding the impact across the entire life cycle of plastics and acknowledging the complexity of waste can help better design circular systems, including substitute products such as bioplastics.

Building on this foundation, studies cited by the Ellen MacArthur Foundation have shown that implementing circular economy strategies can result in a net gain in employment and serve as a means to promote economic development and an opportunity for nations to reduce virgin resource consumption and emissions.[17] Additionally, innovative business models can generate economic benefits and stimulate the growth of industries that promote reuse, refill, and upcycling systems, creating new economic sectors and quality jobs while preserving valuable natural resources. By adopting a circular approach, emerging economies can align environmental stewardship, and broader goals of societal progress and well-being. This involves integrating waste reduction tactics that target the phasing out of SUPs, endorsing alternative materials, and promote reuse and refill systems. Furthermore, The World Bank estimates that reducing marine plastic litter can generate benefits worth $12 billion through savings in waste removal and reduced consumer spending on SUPs.[18] The reduction of plastic packaging, therefore, represents an opportunity for economic, social, and environmental progress, especially in emerging economies.

Yet this transformation is not without its intricate facets. The practical difficulties of connecting waste streams to production and the unpredictability of recycling markets can be addressed through improved infrastructure and coordination between stakeholders, including waste pickers and formal waste management systems. Furthermore, a circular economy approach can promote responsible consumption and shift societal behaviours towards sustainable practices. This approach can incentivise the development of new and innovative sustainable materials that do not contain toxins or chemicals harmful to the environment or human health. By designing out toxins and chemicals from the production process, it is possible to create a better system where materials are reused, reducing the need for virgin feedstock extraction and production. Addressing these underlying drivers can help achieve a circular and sustainable economy that promotes the responsible use of natural resources and mitigates the impact of plastic waste on the environment.

[17] Ellen MacArthur Foundation. (2022). https://ellenmacarthurfoundation.org/a-toolkit-for-policymakers

[18] The World Bank (2022). Toward a National Single-use Plastics Roadmap in Vietnam: Strategic Options for Reducing Priority Single-use Plastics. The World Bank Group, page 34.

1.1 Overcoming Trade obstacles for a more sustainable value chain

Plastic production and consumption continue to rise at alarming levels, with an estimated 390.7 million metric tons produced globally in 2021[19] a 4% increase from the previous year. In 2021, fossil fuels made up 90.2% of global plastic production, with recycled plastics at 8.3% and bio-based plastics at 1.5%.[20] The surge in plastic production has led to significant quantities of plastic waste, which poses a challenge to developing countries that need more adequate infrastructure and resources to manage it effectively. International collaboration is crucial in addressing the plastic crisis, which has become a significant environmental and health concern. Uncontrolled dumping and disposal of plastic waste can lead to adverse health effects for local communities and wildlife and ecosystem degradation. Although upstream solutions such as reduce and reuse systems are essential, it is equally crucial to address the downstream challenges of waste management. One primary challenge to address is mobilising investment from the private sector to develop waste management infrastructure for improved collection and recycling systems. In addition to moving towards formalised systems, avoiding open dumping and waste incinerating. It is also crucial to bridge this knowledge and capacity gap for more efficient waste management systems.

Additionally, efficient data collection systems are needed to understand better the flow of plastics across the value chain from cradle to grave and identify opportunities for efficiency and sustainability, product design, and material substitutes to mitigate the associated risks through the life cycle of plastics. Efficient data collection systems can support economic, environmental, trade, and technology policy development. Therefore, international cooperation is essential in designing these systems and leveraging trade to drive a more sustainable value chain. Regulating the global trade of plastic waste is also crucial to reduce environmental harm, as it often results in environmental degradation, particularly in developing countries. While outright bans on waste imports from developed economies have been enacted by some nations, illicit waste trafficking remains a disconcerting reality. This shadow trade leads in heightened pollution from hazardous waste and non-compliant materials with international standards, exposing the informal waste management sector to harmful chemicals.[21]

The circular trade has grown significantly in recent years. Global trade in secondary materials, waste recovery, and second-hand goods grew to $313 billion in 2019.[22] While it is important to prioritise environmental protection, it is also essential to acknowledge the economic benefits of secondary materials and find ways to promote sustainable economic growth in emerging economies without negative impacts. Regulating the Trade of plastic waste can ensure that it is traded responsibly and sustainably, allowing for economic growth while minimising environmental harm.

A sustainable and inclusive future can be achieved by prioritising data-driven and transparent circular trade and implementing policies that support the reduction of virgin plastic extraction and production. However, to unlock the potential of circular trade and drive sustainable and equitable development, these countries must overcome critical challenges such as access to digital trade, re-skilling the workforce, financing, and upgraded trade infrastructure. It is also crucial to acknowledge the role of the informal waste management sector and address the impact of illegal waste, all while safeguarding the welfare of marginalised communities.

[19] Statista (n.d.). Annual production of plastics worldwide from 1950 to 2021. Retrieved April 4, 2023, from https://www.statista.com/statistics/282732/global-production-of-plastics-since-1950/#:~:text=Global%20plastic%20production%201950%2D2021&text=Global%20plastics%20production%20was%20estimated,in%20production%20year%20after%20year.
[20] Plastics Europe. (2022). *PLASTICS - THE FACTS 2022*. Plastics Europe
[21] Schröder, D. P. (2020). Promoting a Just Transition to an Inclusive Circular Economy Retrieved April 4, 2023 from Chatham House: https://www.chathamhouse.org/2020/04/promoting-just-transition-inclusive-circular-economy-0/4-towards-just-circular-economy.
[22] Chatham House (2022), Trade for an inclusive circular economy. Retrieved April 4, 2023 from https://www.chathamhouse.org/2022/06/trade-inclusive-circular-economy

1.2 Trade and policy as essential drivers for development, inclusion, and equality for social justice

The trade of plastic waste globally can lead to leakage into the environment, primarily due to inadequate waste management in the receiving country, transportation, and processing, as well as false labelling of shipments and the trade of unrecyclable plastics. This is particularly problematic in developing nations with insufficient waste management infrastructure to handle the influx of waste imports and capabilities to process low-value plastic packaging.[23] Although implementing measures to reduce plastic waste is crucial for environmental sustainability, it is vital to consider the potential negative economic impacts on the industry. For example, industries and jobs dependent on the plastic waste trade can suffer due to decreased economic activity. In developing nations, the informal waste management sector relies heavily on this trade to sustain their livelihoods. Such as, individuals may collect plastic waste, sell it to recycling centres, or use it to create products they can sell locally or export. Reducing the global trade of plastic waste could lead to job losses or reduced income for these individuals. Therefore, balancing environmental protection and supporting communities that depend on the plastic waste trade is crucial. One intervention to reduce plastic leakage would be the restriction of the low-value plastic packaging trade. Such restrictions could have a lower impact on the informal sector due to the low value of these materials that often are left uncollected.

In addition, as technology development emerges and systems are upgraded, it is crucial to protect job security. Informal waste pickers play an essential role in collecting and sorting waste but often work in dangerous conditions for low pay. To safeguard their jobs, governments need to integrate them into new business models and provide support to transform informal jobs into safe and decent work through training, re-skilling, incentives, and formal recognition.[24] When designing strategies toward a circular economy transition, policy plays an essential driver in considering three types of justice.[25]

1. **Distributive justice** – is concerned with the rights to resources, including waste, secondary materials, and by-products. It is essential to ask how a just transition to a circular economy would impact jobs, where jobs will be created, and where jobs might be lost.

2. **Procedural justice** – concerns the inclusion of all stakeholders, particularly the vulnerable communities that might be affected by a transition towards a circular economy. It is imperative to ask if everyone has a voice, are those most affected included in the decision-making process, and whether they are equipped with the right skills and capabilities to participate in the circular economy.

3. **Recognition of rights** – refers to a set of legal and social rights that need to be considered, such as ownership of land and natural resources, consumer rights, rights to repair products and rights over secondary material or even waste. Policymakers must consider integrating circular economy narratives into dominant narratives, how competing interests can be resolved, and the responsible stakeholder that guarantees the recognition of rights during the transition.

While initiatives like banning SUPs are a step in the right direction to minimise plastic waste and pollution, they must be implemented in a phased manner and in coordination with all relevant parties. A recent study on the implementation of sustainability and circular economy policies in Rwanda highlights the challenges and unintended consequences of plastic ban policies, including socio-economic impacts.

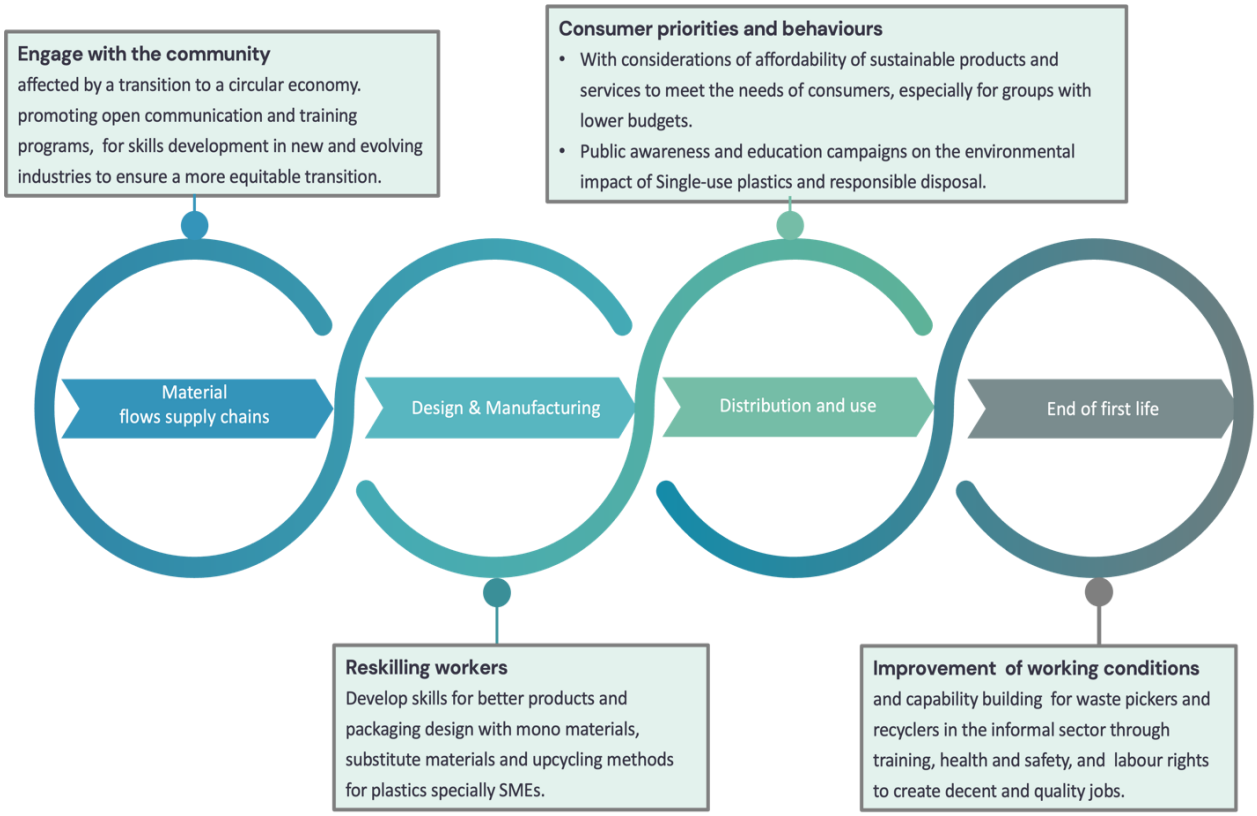
The study emphasises the need for support systems for manufacturers and small and medium-sized enterprises (SMEs), the involvement of all stakeholders in policy design, access to funding, and capacity building for the adoption of new business models.[26] This is critical in ensuring that policies are effective in their implementation and

[23] Retamal , M., Dominish, E., Wander , A., & Whelan , J. (2020). Environmentally responsible trade in waste plastics in the Asia Pacific region. Institute for Sustainability Futures. https://www.dcceew.gov.au/sites/default/files/documents/ert-waste-plastics-executive-summary.pdf
[24] Schröder, D. P. (2020). Promoting a Just Transition to an Inclusive Circular Economy Retrieved April 4, 2023 from Chatham House: https://www.chathamhouse.org/2020/04/promoting-just-transition-inclusive-circular-economy-0/4-towards-just-circular-economy
[25] Williams, S., & Doyon, A. (2019). Justice in energy transitions. Environmental Innovation and Societal Transitions, 31, pp. 144–153.
[26] Ogutu MO, Akor J, Mulindwa MS, Heshima O and Nsengimana C (2023) Implementing circular economy and sustainability policies in Rwanda: Experiences of Rwandan manufacturers with the plastic ban policy. Front. Sustain. 4:1092107. doi: 10.3389/frsus.2023.109210

protect the livelihoods and economic development of all stakeholders. Therefore, it is essential to consider a balanced approach to regulating the trade of plastic waste, considering both the environmental and economic impacts. This approach could include supporting local recycling infrastructure and industries in developing nations and promoting the use of alternative materials to plastic.

The transition to a circular economy must consider the environmental and economic impacts and social and human aspects, particularly the importance of fairness and inclusiveness in creating a just transition. The circular economy is often represented by diagrams that show how it aims to close material loops and reduce the use of primary resources. However, these diagrams do not always show the social and human aspects of the transition, specifically the importance of fairness and inclusiveness in creating a just circular economy. In emerging economies, integrating the informal sector into this transition is vital. Policymakers should devise national and regional strategies to facilitate this inclusion. The subsequent diagram provides a visual representation of a balanced and just transition to a circular economy.

Figure 3: Circular Economy environmental and social integration



Adapted from Schröder (2020)[27]

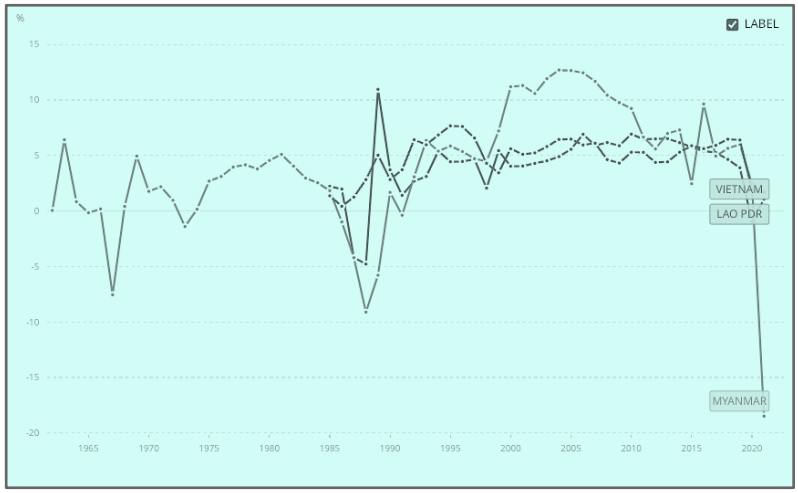
[27] Schröder, D. P. (2020). Promoting a Just Transition to an Inclusive Circular Economy. Retrieved April 4, 2023 from Chatham House: https://www.chathamhouse.org/2020/04/promoting-just-transition-inclusive-circular-economy-0/4-towards-just-circular-economy

1. LEAVE NO ONE BEHIND: THE CIRCULAR ECONOMY FOR INCLUSIVE GROWTH

Integrated international trade systems are vital for reducing inequalities and promoting sustainable growth in emerging economies. Despite the fast economic growth in the ASEAN region, these countries still face major barriers concerning waste management systems and infrastructure, technology development, and adequate trade policies. The following section focuses on the obstacles and prospects to strengthen international trade and reduce poverty and inequalities for a just and inclusive circular economy. We examine global cooperation efforts, as well as circular prioritisation of business models as intervention measures, and how the informal sector, especially women and MSMEs, can contribute to socioeconomic development and circular societies in the region.

2.1 The social environmental, and economic impacts of waste

Recent decades have seen impressive progress in boosting international trade and economic growth across LMV. In 2019, their GDP grew by of 5.5%, 6.2%, and 7.2%, respectively. This growth was driven by factors such as free trade agreements, FDI, digital transformation, market reforms, and the influence of multinational corporations, which bolstered SMEs with support and revenue. However, the COVID-19 pandemic led to a sharp economic slowdown, with a decline of over 50% in Vietnam and Lao PDR. This downturn brought about increased inflation, widespread business shutdowns, and rising unemployment.[28] Myanmar faced additional challenges when the February 2021 military coup further destabilised its economy, plunging its GDP to a staggering -18% and leading to the loss of over a million jobs.[29]



GDP growth (1991-2021 annual %) – Myanmar, Lao PDR, Vietnam Data source: The World Bank[30]

Rapid urbanization and industrialization, coupled with changes in consumption patterns, have significantly increased waste generation. The lack of public knowledge regarding the negative consequences of improper waste disposal contributes to unregulated waste dumping. Inadequate and uncontrolled waste disposal in unsanitary, overflowing landfills causes severe harm to the environment and public health. Soil and water pollution, the release of toxic gases into the atmosphere, and the spread of disease are among the adverse impacts of improper waste management. Studies have found high levels of harmful pollutants in soils close to dumping sites in Vietnam with severe consequences for environmental degradation and the health of the community.[31]

The generation of waste on a global scale is a matter of increasing concern, with estimates indicating that the total amount produced is approximately 2.01 billion tonnes per year.[32] In 2016, plastic waste comprised 12% of the total

[28] Jalais, A. (2022). ASEAN Development Outlook inclusive and Sustainable Development 2021 Jakarta ASEAN secretariat. ASEAN Development Outlook: Inclusive and Sustainable Development. Retrieved August 29, 2023, from https://www.academia.edu/80880721/Asean_Development_Outlook_Inclusive_and_Sustainable_Development_2021_Jakarta_Asean_Secretariat

[29] World Bank. (n.d.). GDP growth (annual %) - Myanmar, Lao PDR, Vietnam. Retrieved September 15, 2023, from https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?contextual=default&end=2021&locations=MM-LA-VN&start=1991

[30] I World Bank. (n.d.). GDP growth (annual %) - Myanmar, Lao PDR, Vietnam. Retrieved September 15, 2023, from https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?contextual=default&end=2021&locations=MM-LA-VN&start=1991

[31] Ferronato, N., & Torretta, V. (2019). Waste Mismanagement in Developing Countries: A Review of Global Issues. International Journal of Environmental Research and Public Health, 16(6), 1060. https://doi.org/10.3390/ijerph16061060

[32] "Kaza, Silpa; Yao, Lisa C.; Bhada-Tata, Perinaz; Van Woerden, Frank. 2018. What a Waste 2.0; What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050 : A Global Snapshot of Solid Waste Management to 2050. Urban Development.: World Bank. https://openknowledge.worldbank.org/entities/publication/d3f9d45e-115f-559b-b14f-28552410e90a License: CC BY 3.0 IGO."

waste generated, amounting to 242 million tonnes,[33] with packaging accounting for 40% of this amount.[34] The damaging effects of plastic waste on marine ecosystems are well-documented, with 11 million metric tons of plastic waste discharged into the ocean in the same year. This influx boosts levels of microplastics and marine debris, severely harming marine habitats. The World Bank estimates that Asia is responsible for 80% of marine plastic leakage.[35] Consequently, this poses a significant threat to marine life, fishing industries, and coastal communities. The COVID-19 pandemic intensified this crisis. The extensive usage and subsequent disposal of personal protective equipment, especially face masks (with 1.56 million entering oceans in 2020 alone), and other products such as single-use food containers, amplified the problem.[36] Furthermore, China's 2018 ban on plastic imports resulted in a substantial rise in the export of plastic waste to Southeast Asia. Before the ban, China was among the world's top importers of plastic waste, receiving 55% of the world's total imports. As a result, plastic waste exports to Southeast Asian countries, such as Vietnam, Thailand, and Malaysia, increased substantially, becoming the new destination for much of the world's plastic waste.[37]

2.2 Global cooperation to end plastic pollution

Addressing the issue of plastic pollution demands a collective global effort. The past few years have witnessed a surge in international collaboration towards tackling this crisis. The Basel Convention, which governs international waste trade, was amended in 2021 to include the regulation of mixed, unrecyclable, and contaminated plastics. This change marks a positive step in curbing illegal plastic waste trade and promoting responsible waste management practices. Additionally, it could reduce single-use plastic consumption and the demand for substitute materials and business models that support refilling and reusing. However, it is important to note that the effective implementation of the new standards rests on the signatories of the convention and their ability to enforce them.

All three countries have signed the Basel Convention and are committed to controlling the transboundary movement of hazardous waste. The Prior Informed Consent (IPC) procedure requires electronic notifications for the transboundary movement of waste, which may pose a challenge in countries without access to electronic services.[38] To fully implement these regulations, the improvement of digital systems, development of technical and technological capacity, infrastructure development, and integration of regulatory policy and fiscal mechanisms are crucial. These measures will help prevent the illegal importation of waste and monitor waste treatment and processes to ensure that plastic imports are safely handled and managed.

2.2.1 The Global Plastic Treaty

In a pivotal move in 2022, the global community acknowledged the urgency of combating plastic pollution, leading to the landmark Resolution 5/14 during the 5th UN Environment Assembly in Nairobi. This global treaty, poised to become legally binding by 2024, underscores an international commitment to safeguard social and environmental well-being by curbing plastic pollution.[39] The treaty, represents a global effort to promote social and environmental protection by preventing plastic pollution. One of the central objectives of the treaty is to establish a circular economy for plastics, which would entail decreasing the production of virgin feedstock and promoting business models aligned with the waste hierarchy principles, which emphasise the importance of reducing, reusing, and as a last resort, the recycling and recovery of waste to eliminate plastic pollution. The treaty recognises that achieving this objective requires global cooperation and comprehensive measures that address the entire life cycle of plastics, from production to consumption, disposal, and recovery.

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[33] Statista (2023, February 6). Distribution of Municipal Solid Waste Generated Worldwide in 2016, by Material Type. Retrieved August 3, 2023, from https://www.statista.com/statistics/916666/global-generation-of-municipal-solid-waste-share-by-material/

[34] OECD (2022, February 22). Plastic pollution is growing relentlessly as waste management and recycling fall short, says OECD. Retrieved August 2, 2023, from https://www.oecd.org/environment/plastic-pollution-is-growing-relentlessly-as-waste-management-and-recycling-fall-short.htm

[35] "World Bank Group. 2021. Market Study for Vietnam : Plastics Circularity Opportunities and Barriers. Marine Plastics Serie. https://openknowledge.worldbank.org/entities/publication/f94e9a28-d95e-5c6b-b060-ef25e0fef974 License: CC BY 3.0 IGO."

[36] Bondaroff, T. P., & Cooke, S. (2020). Masks on the beach: the impact of COVID-19 on marine plastic pollution. *OceansAsia*.

[37] Earth.org (2022) What are the consequences of China's import ban on global plastic waste. Retrieved August 3, 2023, from https://earth.org/chinas-import-ban/

[38] The Basel Convention. (n.d.). Controlling transboundary movements: E-approaches for notification and movement. Overview. Retrieved August 15, 2023, from http://www.basel.int/Implementation/Controllingtransboundarymovements/eapproachesfornotificationandmovement/Overview/tabid/7375/Default.aspx

[39] United Nations Environment Assembly. (2022). Resolution adopted by the United Nations Environment Assembly on 2 March 2022: 5/14. End plastic pollution: Towards an international legally binding instrument.

The treaty acknowledges that developing nations face unique challenges in implementing measures to reduce plastic waste, particularly given the important role played by the informal sector in collecting plastics for recycling. Thus, the treaty seeks to support and assist these nations, while also recognising the importance of promoting a just and equitable transition to a circular economy for plastics. Developing nations such as LMV stand to benefit from the treaty's provisions. It endeavours to improve governance over plastic trade and movement, bolster capabilities to combat plastic pollution nationally through dedicated funds, extended producer responsibility (EPR), and strategic fiscal mechanisms.

Between 2022 and 2023, three pivotal meetings shaped the international treaty on plastic pollution. In May 2022, a draft for procedural rules was proposed in Dakar. The first official treaty discussion was in Uruguay in November 2022, followed by a second in Paris in May 2023, where a preliminary treaty draft was commissioned. The third session is set for Nairobi in November 2023, with preliminary meetings and consultations. The International Negotiating Committee (INC) also sought feedback on certain elements and potential inter-sessional work. The Friends World Committee for Consultantion (FWCC) provided recommendations on the information criteria for applications of design for circularity and reuse considering a fair transition for developing nations. The environmental and socio-economic objectives as recommendations for the instrument are noted as follows.

- **Reduce consumption of single-use plastics**: By promoting and encouraging reuse and refill business models, there is potential to contribute to a 30% reduction in overall plastic consumption by 2040.[40] This approach not only minimises waste but also provides an incentive for industries to reduce plastic production, aligning economic interests with environmental goals.
- **Reduce waste**: A broader commitment to reduce and substitute plastics by 47% is essential to achieving an 80% reduction by 2040.[41] This target requires enhancing waste management practices and investing in infrastructure and technology to minimise waste.
- **Elimination of plastic leakage**: Decrease plastic leakage to the environment to near-zero levels by 2060. This includes reducing the annual leakage of plastics into aquatic environments by 98% compared to the baseline and improving recycling rates by 60% by 2060. Interventions across the entire lifecycle of plastics, from production to disposal, will be necessary to achieve these goals.[42]]
- **Economic Opportunities:** The transition to reusable packaging business models presents a unique opportunity for first movers in the supply chain. By converting 20% of plastic packaging to reuse models, manufacturers and distributors can reduce production costs, minimise waste disposal expenses, and enhance their brand image as environmentally responsible entities. This strategic shift fosters job creation across the value chain and promotes economic growth, particularly in emerging economies. By aligning environmental sustainability with economic incentives, the transition to reusable packaging can drive positive change on multiple levels.[43]

As nations rally behind the Global Plastic Treaty, recognising the need for collective action against plastic pollution, the intricate relationship between the plastic crisis and global trade cannot be overlooked. This intersection of trade and sustainability provides a backdrop for the World Trade Organization's initiatives, setting the stage for exploration into the trade dynamics of the plastic industry.

[40] The Pew Charitable Trusts and Systemiq. (2020). Breaking the Plastic Wave
[41] Eunomia (2022): Is Net Zero Enough for the Materials Production Sector?
[42] OECD Policy Highlights. Cost and financing for a future free from plastic leakage. Available from https://www.oecd.org/environment/plastics/Policy-Highlights-Cost-and-financing-for-a-future-free-from-plastic-leakage.pdf
[43] Ellen MacArthur Foundation, Reuse – rethinking packaging (2019). https://www.ellenmacarthurfoundation.org/reuse-rethinking-packaging

2.2.2 WTO Dialogue on Plastic Pollution and Environmentally Sustainable Plastics Trade

The global plastic trade industry was valued at 1.2 trillion USD in 2021, with a total volume of 369 million tons of primary materials, manufactured products, and waste.[44] To address plastic pollution related to trade, the World Trade Organization (WTO) initiated the Informal Dialogue on Plastic Pollution and Environmentally Sustainable Plastics Trade (IDP), co-sponsored by 72 WTO members. The Trade and Environmental Sustainability Structured Discussions (TESSD) is also working towards promoting a circular economy for plastics and environmental goods and services. The discussions also emphasise the importance of conducting a life-cycle assessment (LCA) of plastics to determine their necessity and evaluate their environmental and economic impacts.

The WTO and TESSD have proposed several trade-support mechanisms to reduce plastic pollution and promote the circularity of plastics in emerging economies. These mechanisms focus on reducing the use and production of virgin plastics, promoting substitutes and alternative materials, and supporting new business models for re-use and refill. Some of these interventions and policy actions focus on upstream and downstream solutions, as noted in Table 1. Global support and international coordination provide a solid platform to support the challenges of plastic waste and the development of reinforced and more efficient systems in the region.

[44] Eugui, D. V., & Pacini, H. (2022). Plastic pollution: The pressing case of natural and environmentally friendly substitutes to plastics. United Nations Conference on Trade and Development (UNCTAD).

Table 1: Intervention policies for sustainable plastic trade

Intervention	Outcome measures	Trade enablers
Reduce	• Virgin plastic production • Hard to recycle and mixed plastics • Rethink whether plastic use is needed	• End trade in plastic waste that cannot be recycled to avoid ending up in countries such as VLM that lack the facilities or infrastructure to recycle • Impose bans on the trade of SUP, considering the local context of VLM and whether there are alternative low-cost solutions
Substitute	• **Plastic alternatives, toxic free, with a competitive price that does not increase trade tariffs.** Non-plastic non-polymer, non-hazardous materials, made of natural materials from mineral, marine plant or animal origin, biodegradable, compostable or edible • Sustainable for reuse, recycling in particular single-use plastics • **Reuse/ Refill** New economic business models, that allows the packaging to be reused and refilled to reduce SUPs.	• Stimulate and incentivise the use of alternative substitute materials and products in developing economies • Considerations of cost to the consumer when introducing substitute products, especially for low-income groups • Coordination and training, capacity building and agreement on policies to promote substitutes with a minimum set of environmental LCA indicators to evaluate performance vs environmental impact promoting circular and non-toxic alternatives.
Recycle	• **Better-designed products** • Reusable products that can be easily recycled • Improvement of recycling technology and facilities to divert waste from landfill.	• Aid for trade mechanisms to help develop capabilities, and technology development to promote higher recyclability rates • EPR mechanisms • A rationale for trade policies that are aligned with national regulation and capabilities. • Multilateral cooperation with NGOs to help promote the inclusion and reskilling of the informal sector to promote and create local jobs and livelihoods. generating employment for women
Dispose	• **Facilitate markets** with better recycling infrastructure to allow for the recycling of waste.	• Promote trade on products that allow for collection, and recyclability • Promote trade of upcycled and reusable products • Improve and upgrade landfill sites.

2.3 Rethinking plastic waste: moving beyond recycling

Recycling plastic is preferable to burying it in open landfills or incineration, which results in the release of GHG emissions and the contamination of water and soil with harmful chemicals. However, it is important to consider the scale of waste generation in LMV and the projected rapid urbanisation and economic growth, which is expected to increase plastic production and consumption significantly. Considering the inadequate infrastructure in this region, simply increasing recycling rates is unlikely to address the issue of plastic pollution sufficiently.

While recycling represents a valuable waste-reduction strategy, more than recycling alone is needed to address the root of the problem. As Professor Josh Lepawsky of the Memorial University of Newfoundland notes, when facing an overflowing bathtub, the initial course of action would be to turn off the tap rather than attempt to address the issue with a bucket and mop. In this metaphor, recycling can be considered the bucket and mop, while reducing the production and consumption of plastic goods is equivalent to turning off the tap.[45] Therefore, to effectively address the issue of plastic pollution, it is essential to shift focus and prioritise the reduction of plastic production and consumption while improving waste-management systems.

Technological development and alternative solutions have emerged over the years to reduce the impact of plastic waste on the environment, such as substitutes for polymers with bioplastics made from natural renewable sources that can be compostable or otherwise biodegradable. However, bioplastics do not biodegrade quickly in all environments.

[45] The Verge. (2021). Recycling alone won't solve tech's waste problem. Retrieved August 5, 2023, from https://www.theverge.com/2021/7/9/22568558/recycling-tech-waste-ewaste-sustainability

Studies have found that bioplastics in landfills can increase GHG emissions, as some need high temperatures to decompose, and others cannot be recycled.[46] There are also concerns about the labelling of products as biodegradable, which might induce increased littering if individuals come to assume that those products do not need to be adequately disposed of.[47]

Chemical recycling has also been presented as an opportunity for the end-of-life management of plastics, especially for hard-to-recycle plastics or mixed polymers through pyrolysis or gasification. This process is viewed as more sustainable than incineration or landfill. However, some considerations need to be made regarding the energy required for chemical recycling. The toxins released in the process can lead to a net increase in GHG emissions.[48] Also, according to available data, chemical technologies are still in their early stages. It could take an estimated 17 years for technology providers to achieve growth scale from the concept stage of implementation.[49] Chemical recycling has also raised concerns among environmentalist groups about being portrayed as a marketing solution to show progress in tackling the negative impacts of plastic pollution which might lead to the perpetuation of SUPs.

In the context of LMV, there are significant technological and economic barriers. Measures should be taken that embrace a system change to promote plastic reuse, collection, and processing, and include initiatives that encourage refill and support a circular economy. The existing infrastructure for plastic waste management requires improvement, which highlights the need to develop innovative solutions and business models that can reduce plastic production and consumption while creating economic opportunities for all stakeholders involved in the plastic value chain.[50]

Producers, however, must take responsibility and implement strategies that tackle waste generation across the entire lifecycle. Measures should be taken that embrace a system change to replace materials that contain toxic chemicals, promote product reuse, and include initiatives that encourage reuse and refilling systems to support a circular economy. They must avoid greenwashing and adopt transformational circular business models that prioritise reusable packaging designed for recyclability or composability and shift away from disposable products.[51] Bioplastic should prioritise waste feedstocks for production and display clear labelling with information on how long it might take to biodegrade and under which conditions and environment.[52] Overall, to follow the waste hierarchy waste management principles outlined in Table 2, it is important to use materials that are environmentally safe and easy to reuse. Measures should be taken that embrace a system change to promote the reuse, collection, and processing of plastic, and include initiatives that encourage refill and support a circular economy.

[46] Purkiss, D., Allison, A. L., Lorencatto, F., Michie, S., & Miodownik, M. (2022, October 3). The Big Compost Experiment: Using citizen science to assess the impact and effectiveness of biodegradable and compostable plastics in UK home composting. Frontiers. Retrieved July 13, 2023, from https://www.frontiersin.org/articles/10.3389/frsus.2022.942724/full

[47] UNEP. (2015). Biodegradable Plastics and Marine Litter: Misconceptions, Concerns and Impacts on Marine Environments. United Nations Environment Programme.

[48] Cefic, & Quantis. (2020). Chemical Recycling: Greenhouse Gas Emission Reduction Potential of an Emerging Waste Management Route.

[49] SYSTEMIQ. (2022). ReShaping Plastics: Pathways to a Circular, Climate Neutral Plastics System in Europe.

[50] OceanCare. (2022). Plastic Matters. A state of affairs, facts, legislation & recommended actions in Switzerland. An OceanCare report.

[51] Ellen MacArthur Foundation. (n.d.). Plastic Pact Network. Retrieved March 5, 2023, from https://ellenmacarthurfoundation.org/the-plastics-pact-network

[52] European Union. (2022) European Green Deal: Putting an end to wasteful packaging, boosting reuse and recycling. Retrieved July 13, 2023, from https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7155

Table 2: Waste Hierarchy principles adapted from Kirchherr, et al. (2017 [53]

Strategies		Measures
Best option through optimized product design	Refuse	• Eliminate the need for plastic products, specially SUPs, and unnecessary packaging • Choose reusable alternatives or replace them with substitute materials
	Rethink	• Design products with circularity principles • Identify opportunities to reduce or eliminate SUPs • New business models such as refill to intensify the use of products.
	Reduce	• Reduce the amount of packaging • Substitute plastic packaging with sustainable materials cloth, bioplastics or wood base, fully recyclable, compostable and biodegradable
Extend the life of products and parts	Reuse	• Promote reusable products: containers, bags, cups, and cutlery, instead of disposable plastic products
	Repair	• Promote repair of damaged plastic products, i.e., broken toys, or containers instead of replacing with new products
	Repurpose	• Upcycle products, e.g., for arts and crafts. Turning old plastic containers into planters, or storage bins, repurposing a plastic bag as a bin liner, use of plastic bottles to grow plants
Last consideration to avoid waste to landfill	Recycle	• When products cannot be reused or repurposed, process the recovered materials to create products of the same grade or lower grade
	Recover	• Waste to energy technology to generate electricity, heat or fuel. This should be the last considered option in order to divert waste from landfills

[53] Kirchherr, Julian & Reike, Denise & Hekkert, M.P. (2017). Conceptualizing the Circular Economy: An Analysis of 114 Definitions. SSRN Electronic Journal. 127. 10.2139/ssrn.3037579.

2.4 Overview of Waste Management systems in the three regions

2.4.1 Viet Nam

Viet Nam generates approximately 25.5 million tonnes of waste annually, with 75% going into landfills without treatment. Out of the 904 landfills in the country, only 20% are hygienic.[54] Viet Nam is a major contributor to plastic pollution, with an estimated 3.1 million metric tonnes of waste attributed to plastic[55] and 10% of that leaking into the ocean each year. Since 1990, plastic consumption per capita has increased dramatically, reaching 81 kg in 2019.[56] The primary sources of plastic pollution in rivers and coastal sites in Viet Nam are plastic bags, fishing gear, soft plastic fragments, and food wrappers. Following China's ban on plastic imports in 2018, Viet Nam saw a significant increase in imports of plastic scrap, becoming the world's third-leading importer by volume, importing 443,600 tonnes of plastic waste in over nine months that year.[57] However, the government has since placed restrictions at major ports and has announced a full ban on the import of plastic scrap by 2025.[58]

[54] VD-Office. (n.d.). National State of Environment Report 2019 on Solid Waste released. Retrieved September 15, 2023, from https://www.vd-office.org/en/national-state-of-environment-report-2019-on-solid-waste-released/

[55] World Bank Group. (2021, September 29). Market Study for Vietnam: Plastics Circularity Opportunities and Barriers. World Bank. Retrieved September 15, 2023, from https://www.worldbank.org/en/country/vietnam/publication/market-study-for-vietnam-plastics-circularity-opportunities-and-barriers

[56] World Bank Group. (2022b, July 29). Towards a national single use plastics roadmap in Vietnam: strategies and options for reducing priority single-use plastics. World Bank. Retrieved September 15, 2023, from https://www.worldbank.org/en/country/vietnam/publication/towards-a-national-single-use-plastics-roadmap-in-vietnam-strategies-and-options-for-reducing-priority-single-use-plastic

[57] Vietnam Environment Administration (VEA), Ministry of Natural Resources and Environment (MONRE). (n.d.). Current status of waste and plastic scrap management in Vietnam. Retrieved September 15, 2023, from https://www.env.go.jp/en/recycle/asian_net/Annual_Workshops/2021_PDF/Presentations/2_Country%20update%20and%20response%20to%20plastic%20amendment/Vietnam.pdf

[58] OECD. (2022). Marine Plastic Pollution Viet-Nam. https://www.oecd.org/ocean/topics/ocean-pollution/marine-plastics-pollution-Viet-Nam.pdf

Waste-management systems

Both informal and formal actors engage in waste collection in Viet Nam. Waste management infrastructure in the country, particularly for plastics, is still in development and needs additional investment to strengthen its capacity for processing and recycling. Household waste is not separated at source, contaminating plastic materials with organic waste and other chemical pollutants. It is difficult to accurately estimate the percentage of recycled waste due to a lack of data and difficulty in accounting for plastics placed in the market, collected, and processed after use.

Governmental priorities

Improved and more efficient waste-management systems are a top priority for the Vietnamese government, which has recently issued a National Action Plan on Sustainable Consumption and Production, for transitioning to a more circular economy.[59] The plan aligns with the reiteration of the country's NDC commitment at COP27 to achieve Net Zero emissions of greenhouse gases by 2050 and with the Sustainable Development Goals (SDGs).

Under this action plan, Viet Nam aims to improve waste management, recover materials, increase recycling rates, and reduce marine plastic litter 50% by 2025. The plan proposes a set of legal policies and objectives on sustainable consumption and production across the product life cycle, linking the value chain and proposing technical regulations and standards, ecolabelling, and replacing single-use plastics with sustainable alternatives.[60] In addition, Viet Nam developed the National Action Plan for Management of Marine Plastic Litter, launched in 2020.[61] The plan is designed to reduce plastic litter by 50% by 2025 while promoting circular economy business models and building community awareness to facilitate the collection, recycling, and reuse of plastic products.

Viet Nam and international trade

Viet Nam joined the World Trade Organisation (WTO) in 2007 and has since generated free trade agreements with strategic partners to strengthen international cooperation and connectivity, including the EU-Vietnam Free Trade Agreement (EVFTA) in 2020. Viet Nam's Ministry of Planning and Investment forecasts that this agreement could boost Viet Nam's GDP 15% by 2035. During COP27 in 2022, Viet Nam signed a memorandum of understanding with France to strengthen bilateral cooperation to reduce emissions and transition to a green economy.

The extent of international cooperation and trade agreements provide an excellent opportunity for Viet Nam to benefit from creating partnerships with foreign firms that can provide knowledge transfer and technology, helping the nation enhance its industrial capabilities. This is critical for Viet Nam to effectively integrate circular economy systems for plastics through the supply chain, which requires trade aid, technical assistance, technology, and knowledge transfer.[62] The acceleration of innovative solutions for plastic upcycling and recycling can benefit plastic producers, processors, and exporters of secondary plastic materials. This is due to the increasing demand for recycled content in international trade, which the UNEA-5.2 resolution to negotiate an international binding instrument on plastic pollution is expected to drive.[63]

Furthermore, this agreement will require Viet Nam to align its policies and standards, including employee rights laws and production quality standards, with those of the International Labour Organisation (ILO). By doing so, Viet Nam will be better positioned to take advantage of the benefits of international cooperation and trade agreements, strengthening its industrial capabilities, and supporting its efforts to adopt circular economy systems for plastics.

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[59] Vu, M., 2020. VIETNAM - National Action Plan on Sustainable Consumption and Production (2021-2030), Institute for Global Environmental Strategies. Japan. Retrieved September 4, 2023from https://policycommons.net/artifacts/1558196/vietnam/2248003/ on 14 Apr 2023. CID: 20.500.12592/q2vjp3.

[60] Switch-Asia. (n.d.). Vietnam National Action Plan on SCP (2021-2030). Resource Library. Retrieved September 15, 2023, from https://www.switch-asia.eu/resource/vietnam-national-action-plan-on-scp-2021-2030/

[61] United Nations Development Programme. (n.d.). NATIONAL ACTION PLAN FOR MANAGEMENT OF MARINE PLASTIC LITTER BY 2030. UNDP. Retrieved September 15, 2022, from https://www.undp.org/vietnam/publications/national-action-plan-management-marine-plastic-litter-2030

[62] Circular Economy – a Perspective from Viet Nam. (2021, June 10). Aid-for-Trade Workshop - Circular Economy, Economic Diversification and Aid for Trade. WTO.

[63] A New Global Treaty on Plastic Pollution. (2022, February 7). A New Global Treaty on Plastic Pollution -. Retrieved September 15, 2023, from https://www.plasticstreaty.org/resources/

2.4.2 Lao PDR

Lao PDR generated an estimated 910,000 tonnes of waste in 2021, of which an estimated 15-25% was plastics. Most plastic pollution is caused by ten main products, 45% of which are SUPs, such as bottles, cups, and lids, with an estimated 24% originating from cities. According to a 2021 study published by the World Bank, 10,000 deaths in Laos annually are caused by environmental factors, with air pollution accounting for nearly half of these fatalities. These environmental risks also result in over 100 million days of illness, causing significant harm to the country's economy.[64]

Waste management systems

In Lao PDR, inadequate waste-management services and infrastructure has led to ineffective waste sorting and processing. The country lacks a national regulatory system for household waste collection, and even in urban areas only around half of the solid waste generated is collected; the rest is either burned or dumped.[65] Subscription to waste-collection services is voluntary, and nationwide only 25-30% of households have a contract for municipal waste collection. Most high-value waste, including recyclable plastics, is collected by people working in the informal sectors via door-to-door collection or from dumpsites. China's 2018 ban on plastic imports increased the volume of waste plastic into Lao PDR to over 98,000 tonnes in 2019, from 7,800 tonnes in the previous year, which worsened the plastic waste management problem in a country with limited recycling services. Furthermore, regulatory bodies in the country appear fragmented, leading to uncoordinated efforts. For example, entities not affiliated with the Basel Convention engage with various ministries other than the Lao Ministry for Natural Resources and Environment (MONROE) — the primary entity responsible for managing the country's natural resources and environmental challenges. This results in inconsistent initiatives to regulate and control waste imports.

[64] The World Bank. (2021). Get CLEAN and GREEN—Solid and Plastic Waste Management in Lao PDR: Findings and Actions for Change. Retrieved September 15, 2023, https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099100002182296296/p17101101230c40bc096bf0a757bd16eb65

[65] The World Bank. (2021). Get CLEAN and GREEN—Solid and Plastic Waste Management in Lao PDR: Findings and Actions for Change. Retrieved September 15, 2023, https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099100002182296296/p17101101230c40bc096bf0a757bd16eb65

Governmental priorities

However, reducing plastic pollution is one of the government's main priorities. The government is developing a National Plastic Action Plan (NPAP) with support from the World Bank and the EU Switch Asia Facility and has also signed the ASEAN Bangkok Declaration on Marine Plastics and ratified the amended Basel Convention . As part of the NPAP, the Lao government is introducing simple and low-cost measures to encourage higher rates of collection, recovery, and recycling of the top 10 plastic items that represent most of the plastic waste generated in the country, and concentrating on the sectors most responsible for the generation of plastic waste, such as hospitality and tourism.[66] More generally, the government is engaging the private sector and retail businesses to increase collection and recycling, for example thought the placement of bins in front of minimarkets.[67] Still, these policies lack specific targets and clear definitions for municipal waste and for this to become widespread, regulations mandating the placement of these bins could be beneficial, especially considering their cost-effectiveness.

Despite these efforts, challenges remain. One such challenge is monitoring the level of waste collected, especially given the lack of stringent regulations. Waste is mostly collected by the informal sector, who lack incentives for plastic collection due to the low price paid for plastics in comparison to other materials such as aluminium. As highlighted in an interview conducted with Green Vientiane, *"The life of waste-pickers is truly miserable*."[68] This emphasises the human element in Lao PDR's waste crisis. It underscores the importance of finding holistic solutions that benefit not only the environment but also the vulnerable communities entangled in this crisis.

Education can be an integrated intervention, but its efficacy is debated. While Green Vientiane believes that general environmental messages might not resonate with the local population due to various socio-economic factors, they stress that targeting policymakers might yield more impactful results. After all, they possess the power to bring more robust and impactful legislative changes.

It was also noted that corporations with global footprints, have the potential to lead significant change. For instance, through interventions opting for plastic bottles that hold a greater amount of liquid per unit of packaging weight. However, the lack of governmental enforcement makes it less attractive for these corporations to enforce such strategies. "*These companies can stop producing these bottles that are small and more polluting, but they will not do it as they lose money and even if they stop doing it, then other companies will replace them.*" The lack of governmental enforcement in Lao PDR makes it less attractive for these corporations to enforce such strategies.

Lao PDR and International Trade

Lao PDR has been a member of the WTO since February 2013. The biggest market for LAO PDR is Thailand, accounting for more than a third of its merchandise exports, with just four products — electricity, gold, uncoated paper, and copper ore — accounting for half of its exports.[69]

It is considered a least-developed country (LDC) but is scheduled to graduate to “developing country” status in 2026. Graduation is considered a significant milestone in a country's progress. However, it also implies that the country will no longer receive exceptional support from the international community, especially relating to trade and development assistance. Eliminating special privileges may also lead to difficulties for Lao PDR in exporting its products, as they may encounter increased import duties. However, LAO PDR is implementing measures and policies for environmental and social protection that will help strengthen its readiness for graduation. According to the latest World Bank Country Economic Memorandum, titled "Linking Laos, Unlocking Policies,"[70] Despite exhibiting a reduced rate of depletion since 2015, the unsustainable growth trajectory of Lao PDR persists in both its macroeconomic and environmental aspects. Natural resources, such as forests and water resources, continue diminishing. This emphasises the critical urgency of adopting sustainable development practices to mitigate the adverse environmental impact.

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[66] The World Bank, (2022) Linking Laos, Unlocking Policies Lao PDR Country Economic Memorandum, The World Bank, Retrieved September 4, 202315, 2023 https://thedocs.worldbank.org/en/doc/8a7600f2559437be138bf15ea6b5263b-0360012022/related/LaosCEMSummaryENG.pdf

[67] The World Bank. (2021). Get CLEAN and GREEN—Solid and Plastic Waste Management in Lao PDR: Findings and Actions for Change. Retrieved September 15, 2023, from https://documents.worldbank.org/en/publication/documents-reports/documentdetail/099100002182296296/p17101101230c40bc096bf0a757bd16eb65

[68] S. Doussantousse, personal communication, interview with Green Vientiane, July 17,2023.

[69]OECD (n.d.). LAOS. Retrieved September 7, 2023, from https://oec.world/en/profile/country/lao?latestTrendsFlowSelectorNonSubnat=flow0

[70] The World Bank, (2022) Linking Laos, Unlocking Policies Lao PDR Country Economic Memorandum, The World Bank, Retrieved September ds15, 2023 https://thedocs.worldbank.org/en/doc/8a7600f2559437be138bf15ea6b5263b-0360012022/related/LaosCEMSummaryENG.pdf

Additionally, the report recognises the limited progress in implementing policy reforms, which hampers Lao PDR's competitiveness in non-resource sectors. More comprehensive policy and institutional reforms are imperative to overcome this challenge to enhance the business and investment environment. The report puts forward a range of key policy recommendations to strengthen domestic markets and foster job creation.

- **Simplify market entry** and remove operational barriers in the logistics sector and deepen and accelerate trade facilitation reforms by focusing on establishing an effective transit-management regime with a focus on non-tariff measures.
- **Improve the business enabling environment** to attract investment and generate jobs.
- **Improve access to and modernise business services,** which substantially affect productivity and competitiveness, and improve labour, environmental, and governance standards to comply with overseas markets regulations. This includes providing access to training and technical assistance for businesses to adopt eco-friendly manufacturing processes and sustainable packaging designs.

The Covid-19 pandemic significantly reduced business and household income in Lao PDR, resulting in a rise in the country's rate of unemployment. Infrastructure investments such as the Laos-China railway project will generate significant benefits by linking Lao PDR to one of its strategic trade partners, China. The project will improve connectivity by replacing air and maritime freight, helping reduce costs, and facilitating export and trade with greater connectivity to global supply chains. However, it will be essential to consider the impact on SMEs that might be disadvantaged in competing with larger companies from neighbouring countries exporting to China. Building the capacity of small-size companies to access global markets will be essential for a just and inclusive trade system.

2.4.3 Myanmar

Waste management systems

Waste management in Myanmar is poorly organised, particularly in its rural areas, where plastics are often dumped, burned, or disposed of directly to water sources. National waste generation is around 21,000 tonnes per day with a plastic component of 13% (2,700 tonnes per day). [71] From the generated plastic waste only 12% is recycled (mainly rigid PET, PE, and PP) while the remaining 88% is stored in open dumpsites (45%) or is directly entering the environment either by air (open burning) water (disposal to waterways) or soil (littering and informal dumps).[72] Litter audits on beaches, waterways and soil show that around 80% of litter consists of only 10 SUP items with plastic bags and wrappers/sachets as the main contributors.[73]

Poor monitoring and enforcement of waste-management laws and inadequate collection systems lead to industrial and household waste being discharged, contaminating land, the environment, and waterways. Myanmar is the 17th largest contributor to ocean plastic pollution, with an estimated 2% littering rate.[74] Some 64% of PET bottles are collected for recycling in Myanmar, compared with an average of 26% for Southeast Asia as a whole, and 27% for Viet Nam and only 16% for Malaysia.[75]

International sanctions and the effects of the pandemic have taken a toll on Myanmar's economy. The World Bank's *Myanmar Economic Monitor* report indicates that, during the second half of 2021, Myanmar's trade exports shrunk by 16%, representing a 45% decline compared with the same period the previous year and before the *coup d'état*. Poverty rates have also doubled since the beginning of the pandemic, with an estimated 1 million unemployed.[76]

[71] Friedor Jeske, Waste Generation and Compositions data 2022. Prevent Plastics, Switch Asia, 2022 https://www.thantmyanmar.com/sites/thantmyanmar.com/files/documents-file/2022_waste_audits_brief.pdf
[72] Fodor, Martin; Ling, Stephen. Myanmar - Country Environmental Analysis : A Road towards Sustainability, Peace, and Prosperity : Synthesis Report (English). Washington, D.C. : World Bank Group. http://documents.worldbank.org/curated/en/464661560176989512/Synthesis-Report
[73] Fodor, Martin; Ling, Stephen. Myanmar - Country Environmental Analysis: A Road towards Sustainability, Peace, and Prosperity : Synthesis Report (English). Washington, D.C. : World Bank Group. http://documents.worldbank.org/curated/en/464661560176989512/Synthesis-Report
[74] Jambeck, J. R., Geyer, R., Wilcox, C., Siegler, T. R., Perryman, M., Andrady, A., Narayan, R., & Law, K. L. (2015). Plastic waste inputs from land into the ocean. Science, 347(6223), 768–771. https://doi.org/10.1126/science.1260352
[75] GA report, (2019) Accelerating the circular economy for post-consumer PET bottle in Southeast Asia
[76] World Bank. (2022). The Myanmar Economic Monitor: January 2022. https://thedocs.worldbank.org/en/doc/c3299fac4f879379513b05eaf0e2b084-0070012022/original/World-Bank-Myanmar-Economic-Monitor-Jan-22.pdf

Government priorities

With the help of the World Bank, Myanmar has developed a Waste Management Strategy and Master Plan (2018-2030) to promote sustainable waste management, Myanmar aims to achieve six strategic goals through the implementation of the 3Rs (reduce, reuse, and recycle). The plan includes options and a roadmap for reducing the use of plastic, focusing on the top 10 priority plastic items. The plan will be implemented with the assistance of a project funded by the Japan-ASEAN Integration Fund. The project also aims to reduce the production of single-use plastics. Myanmar has also participated in a capacity-building project focused on this issue in the Asia-Pacific region.

The Myanmar government, prior to the recent coup, was developing its capacity for sustainable waste management. A Solid Waste Management (SWM) action plan was developed by the Institute for Global Environmental Strategies (IGES) in 2019, officially signed off by the government.
Moreover, there was an initiative underway to formulate a Plastic Action Plan, primarily focusing on the 10 most leaking single-use plastics. This effort was backed by the World Bank but got disrupted due to the unfortunate political upheaval. However, the Japanese consultant group, IDEA, is now supporting the further development of the Plastic Action Plan, albeit at a nascent stage.[77]

However, given the political context an improvement in waste management cannot be expected as funding limitations result in a continuous lack of infrastructure. From the perspective of recycling and to a certain degree also repair and reuse a significant shift can be observed during this time as resource scarcity met low purchasing power. These factors drive society into a more circular economy built around the rational that everything which can be used has value. Strengthening SMEs in these sectors as well as those working in the sectors of local production and consumption can create a synergetic effect between environmental obligations and the need for work opportunities by the community. The development sector can play an important role to strengthen circular and green business independently from the challenging political environment. Multiple local actors work in this field for many years gathering experience and methodologies to support circular development in the country.[78]

Intervention	Waste Management Strategy and Master Plan (2018-2030)
Strategic goals	1. Extend waste collection services and eliminate uncontrolled disposal practices, including open burning, to ensure proper waste management and minimize environmental impacts. 2. Promote sustainable and environmentally sound management of industrial and other hazardous waste, extending beyond regular waste streams. 3. Prioritise waste prevention through the principles of the 3Rs: reduce, reuse, and recycle. Establish sustainable finance mechanisms to support waste management initiatives 4. Raise awareness, engage in advocacy efforts, and conduct capacity-building programs to promote responsible waste management practices. 5. Strengthen compliance measures, monitoring systems, and enforcement of waste management regulations.

Myanmar and international trade

Myanmar initiated its journey as a member of the World Trade Organization (WTO) in 1997, gaining entry as a least-developed country (LDC). Over the years, it has strived to meet the necessary criteria for upgrading to a developing-country status as per the United Nations triennial reviews, with the graduation decision anticipated for 2024. Although ascending from LDC status symbolizes a notable stride towards Myanmar's development, it simultaneously implies the forfeiture of certain benefits and privileges granted by the international community, especially in the domains of trade and developmental cooperation, potentially leading to escalated export tariffs. [79] Given that Myanmar's export portfolio is primarily concentrated on primary commodities like fuels and minerals, the graduation could trigger an average tariff hike of 4.2%. While the majority of Myanmar's export activities are

[77] Department of Trade, Ministry of Commerce, Myanmar, (n.d) Asean-Japan online Forums on harnessing trade to promote circular economy and address the problem of marine plastic debris.
[78] Myanmar, Towards Osaka Blue Ocean Vision. (n.d.). Retrieved September 15, 2023, from https://g20mpl.org/partners/myanmar
[79] World Trade Organisation. Trade Policy Review, https://www.wto.org/english/tratop_e/tpr_e/tp505_e.htm

channelized towards regional allies, notably China and Thailand, the broader implications of graduation on market accessibility and competitiveness are predicted to be relatively contained, albeit significant. [80]

Considering the recent political disruptions and the ensuing coup, the originally proposed strategies for bolstering trade and sustaining economic growth appear to be increasingly untenable. The prevailing political instability has severely dented the prospects of foreign direct investment (FDI), with numerous western corporations retracting their operations due to not only the political discord but also infrastructural inadequacies. Moreover, the vision of transitioning towards value-added production is beleaguered by the requisite investment influx and the establishment of stable trade conduits, both of which are currently compromised by the frequent hostilities and blockades at the borders. Additionally, the incorporation of environmental, social, and governance (ESG) practices seems to be an elusive goal in the face of rampant governance corruption that has pervaded the administrative echelons.

Therefore, while the roadmap to LDC graduation and the envisaged alignment with Sustainable Development Goals (SDGs) framework underpinned the initial strategies, the altered political and socio-economic landscape necessitates a thorough reassessment of these recommendations. The exigencies of the current scenario demand a recalibration of the envisioned action plans to realistically address the post-graduation challenges and harness the opportunities for fostering sustained trade and economic growth in a more pragmatic and contextually attuned manner.

2.5 Addressing socio-economic and environmental challenges through innovative systems and policies

Considering the three countries' socio-economic and environmental challenges to properly managing their plastic waste, one of the measures that should be prioritised is a ban on SUPs, however, this is not always feasible as these polymers are used in a long list of products, from insulation to furniture and electronic goods. Therefore, the following measures and standards should be considered as policy priorities and interventions:

- **Ban SUPs in Fast-Moving Consumer Goods (FMCG) and packaging:** Encouraging substitutes with more sustainable alternatives and market-based solutions.
- **Encourage reusable alternatives**: Promote reusable products such as shopping bags, water bottles, coffee cups, and food containers. Encouraging individuals and businesses to choose reusable options over SUPs can significantly reduce plastic waste. Enforce ISO 18603 to establish clear criteria for packaging to be considered reusable. This standard should outline durability standards and guidelines fostering reusable delivery systems.[81]
- **Increase circularity and reuse**: invest and promote the second-hand economy reusing items available at low cost in OECD countries (automotive, bicycles, electronics, clothing). Implement guided principles of circular economy as outlined in BS 8001.[82]
- **Increase circularity and repair:** Encouraging global standards on quality and repairability can foster a culture of repair, extending the life of products.
- **Recycling:** encourage global EPR in the Plastic treaty process to avoid the challenges of local often non-functional mechanisms.
- **Improving waste separation and recycling infrastructure:** Enhancing the separation of plastic waste at the source and investing in recycling facilities are crucial steps towards the effective management of SUPs. A bottom-up approach, involving collaboration with informal waste pickers, can significantly contribute to this initiative. Extracting organic waste from the waste stream and treating it locally emerges as a priority, as it can substantially alleviate the pressure on other Solid Waste Management (SWM) infrastructure components.
- **Improved Data collection:** Enhancing the infrastructure for robust data gathering systems in Myanmar is pivotal for facilitating trade and monitoring illegal waste imports in the region. While internet infrastructure may still require attention in Lao PDR to reach a comparable level of digital service access as

[80] World Trade Organisation, 2020, Trade impacts of LDC graduation, Retrieved 5 February 5, 2023, from https://www.wto.org/english/res_e/publications_e/ldc_graduation_e.htm

[81] British Standards Institute (BSI) (2013, January 15). *ISO 18603:2013 Packaging and the environment. Reuse*. Bsi.Knowledge. Retrieved September 15, 2023, from https://knowledge.bsigroup.com/products/packaging-and-the-environment-reuse?version=standard

[82] British Standards Institute (BSI) (2017, May 31). *BS 8001:2017: Framework for implementing the principles of the circular economy in organizations. Guide*. Bsi.Knowledge. Retrieved September 15, 2023, from https://knowledge.bsigroup.com/products/framework-for-implementing-the-principles-of-the-circular-economy-in-organizations-guide?version=standard

in Viet Nam, the focus in Myanmar should shift towards developing comprehensive data management systems.

- **Capacity building:** On the aspect of capacity building and knowledge transfer to implement sound policies and assess regulations supporting MSMEs, the current geopolitical scenario in Myanmar has led to a cessation of collaborations with developmental agencies, making government capacity building unfeasible at the moment. However, improving and regulating municipal waste collection services in Lao PDR remains a viable strategy to curb uncontrolled waste dumping, thereby generating additional revenue to enhance waste management systems. These adaptations underscore the necessity of a nuanced approach, considering the distinct challenges and opportunities present in each country to effectively address the regional waste management and trade facilitation objectives.

- **Improve and regulate municipal waste collection services**: Enhancing municipal waste collection services can effectively reduce uncontrolled waste dumping. Key recommendations include:
    - Strengthen the institutional framework for waste management, including the establishment of clear regulations, standards, and guidelines for waste collection, sorting, and disposal.
    - Invest in waste collection infrastructure, such as waste collection vehicles, bins, and recycling centers, to improve the efficiency and coverage of municipal waste collection services.
    - Promote public awareness campaigns to educate communities about proper waste segregation and disposal practices, encouraging active participation in waste management initiatives.

2.5.1 Overview of the waste management value chain

Most of the plastic collection in the region is carried out by municipal waste services, with a significant but smaller portion attributed to informal waste-pickers. These waste-pickers collect valuable materials from households or landfills, serving an important role in the waste-management system, but it's crucial to understand that they only account for about 12% of the plastic collected. Municipal services are still responsible for most of the waste collection, particularly for less valuable materials, a reality that is likely even more pronounced in Lao PDR and Viet Nam, where the informal recycling sector is less well established.

Waste pickers play a crucial role in the waste-management system, serving as primary collectors, sorting, and selling recyclable materials to small junk shops and recyclers. Both informal waste-pickers and formal recycling companies collect items directly from markets, restaurants, and waste pickers. These businesses are involved in the crucial processes of sorting and cleaning recyclable materials to prepare them for recycling. Their primary objective is to ensure that the collected materials are of high quality and free from contaminants, making them suitable for further processing and recycling. By sorting the recyclables based on their type and quality, these businesses contribute to the efficiency and effectiveness of the recycling process. Smaller junk shops and recycling centres then sell the waste to larger junk shops or aggregators, selling the materials to more prominent buyers or pre-processors. Pre-processors are formally registered businesses that transform plastic waste into flakes for sale to recyclers, who can either export the recycled plastics or use them s secondary materials for domestic production.[83]

[83] An overview of Myanmar's Recycling Industry. (2019). Building Markets. Retrieved September 15, 2023, from https://buildingmarkets.org/wp-content/uploads/2021/08/buildingmarkets-myanmar_recycling_industry_overview_december_2019.pdf

Figure 3. Waste management value chain

2.5.2 The informal sector as an environmental and economic agent for sustainable growth

The informal sector holds a pivotal role in the circular economy, facilitating waste collection, sorting, and sales for recycling, and in some cases, upcycling. It's estimated that over 15 million people globally are engaged as informal waste pickers, significantly contributing to the recycling landscape. These waste pickers are responsible for collecting 50% of the recycled plastic worldwide. In regions such as Southeast Asia where most of the waste collection is carried out by informal waste pickers, they account for the collection of 97% of the PET bottles, with the overall collection rates in these regions ranging between 40 to 50%.[84] However, low-value materials, such as lightweight plastic bags, lids, or straws, are often left uncollected and leak out into the environment.

Unfortunately, many waste pickers face marginalisation, poverty, and lack of access to basic needs such as housing, health, and education.[85] They are also exposed to safety risks and hazardous chemicals, lacking adequate protective equipment. Challenges such as insufficient space to store collected materials mean that waste-pickers are forced to sell the materials they collect daily, which is less profitable than selling larger volumes less frequently. Moreover, market fluctuations impact their income significantly. It's notable that waste pickers typically refrain from collecting low-value waste due to the lack of profitability, a scenario more pronounced in rural areas where the cost of transporting plastic waste often eclipses its value, pushing the net value below zero. Equally, materials like refill glass and metals, which hold higher value, are almost universally collected by waste pickers across various regions. Considering these dynamics, interventions should be tailored to enhance the value and quality of materials collected. A significant avenue for intervention lies in improving material quality through segregation at the source, which can potentially increase the profitability and incentive for waste pickers, thereby contributing to a more efficient and sustainable waste management system.

Women comprise a large portion of the informal sector and face unique challenges, such as lower pay and exposure to hazardous conditions.[86] Providing women with equal rights and financial literacy is essential for inclusive and sustainable economic growth. The lack of recognition of the informal sector hampers economic growth and prosperity, making it important to prioritise their inclusion through acceptance so that they can build structures and enhance their negotiation capacities, particularly with municipal authorities.

[84]GA report, (2019) Accelerating the circular economy for post-consumer PET bottle in Southeast Asia
[85] Waste has Worth — and So Do the Women Working to Collect It | WIEGO. (2018, August 21). Retrieved September 15, 2023, from https://www.wiego.org/blog/waste-has-worth-%E2%80%94-and-so-do-women-working-collect-it
[86] Why gender is at the heart of transforming the plastics value chain. (2022, May 20). World Economic Forum. Retrieved September 15, 2023, from https://www.weforum.org/agenda/2021/05/gender-women-plastics-ghana/

Capacity building, financial and technical support, along with training on effective sorting and cleaning of waste, stand as pivotal interventions for advancing both environmental and socio-economic frameworks. The experiences of Brazil and India serve as illustrative examples of the positive outcomes emanating from official acknowledgment and support directed towards the informal sector, manifested in augmented waste collection, income generation, and poverty alleviation.

Any strategy aimed at elevating the status and operational efficacy of the informal sector should be meticulously tailored to align with the specific socio-economic and political milieu of the concerned region. While formalization may not resonate with the aspirations of those within the informal sector, fostering an environment of acceptance can significantly enhance their organizational structures and negotiation leverage. The overarching objective should encompass nurturing a conducive landscape wherein the informal sector can thrive and contribute meaningfully to the community's economic and environmental sustainability. Past studies have outlined recommended domains of intervention for capacity building and financial assistance in the informal sector, as noted below.[87]

[87] Exploring Solutions to Ocean Plastics, Supporting Southeast Asia's Informal Waste Sector, Ocean Conservancy.(2020) https://pacecircular.org/sites/default/files/2021-02/FINAL-Informal-Sector-Report_compressed.pdf

2.5.3 Policy Interventions, Incentives, and Technical Assistance

Fiscal mechanisms, incentives, and technical assistance to facilitate a just and inclusive transition can enable a favourable cooperative environment and transition to a circular economy of plastics, promoting circularity with local businesses. Effective policy interventions and regulations can drive behaviour change. However, assessing resource capabilities across the value chain will be necessary. For example, EPR initiatives' success depends on the recovery materials. Therefore, the informal sector and its role in collecting and handling materials should be considered.[88]

In addition, shifting responsibility to producers might result in competing with the informal sector and negatively affect the livelihoods of marginalised groups. Therefore, engaging with waste-pickers in the planning stage will be critical to avoid unintended consequences that can impact the livelihoods of informal waste collectors. Data collection to measure and track environmental impact and traceability of materials are essential elements of EPR mechanisms.

2.5.4 Digitalised Trade systems

A recent framework published by Chatham House recommends a set of standard definitions to support an inclusive transition to circular systems to enable a just transition to the circular economy. The framework includes interoperable standards, regulations, and procedures that prevent transboundary issues of illegal waste trade, promote transparency and traceability of materials, and remove technical and digital barriers to facilitate trade. Improved cross-border trade systems will enable more efficient and levelled supply chains, replacing paper trails with digitalised systems and ledgers to allow for verification of commercial documents and traceability and verification of recyclable and recycled plastics to improve transparency. However, a standard set of global protocols is required to adopt digital trade that can be implemented more widely. The Asian Development Bank, the Government of Singapore, and the International Chamber of Commerce have developed the Digital Standard Initiative to enhance capacity and promote more agile processes for trade.[89] This represents a challenge for some countries with limited access to digital services. Therefore, investment in improved digitalised systems and legal reforms for cross-border trade will enable more efficient, inclusive, and greener global supply chains.

2.5.5 Greening the supply chain for a circular transition: Supporting SMEs

Establishing greener supply chains is crucial for inclusive and sustainable development, but it poses a challenge to implement a closed-loop system with plastics. To achieve this goal, collaboration and engagement among various stakeholders are necessary. Green supply chains must prioritise reducing pollution at the source and follow the waste hierarchy principles of reducing, reusing, repurposing, and recycling materials.[90]

Unlike traditional linear supply chains, closed-loop value chains should consider the environmental impact and strive for resource efficiency by decoupling growth from material use. This involves changing behaviours and practices from design to recycling to achieve a green supply chain that benefits all stakeholders economically and generates a competitive advantage. National and regional governments play a vital role in incentivising and promoting green supply chains. They should implement strategies that engage the private sector through regulations and fiscal mechanisms and encourage the participation of micro, small, and medium enterprises (MSMEs) and the integration of the informal sector for effective and sustainable value chains.

In transitioning to a circular economy, it is essential to consider the implications and potential impacts on all economic agents, especially MSMEs, which form the backbone of the economy and promote innovation and investment. For instance, in Vietnam, SMEs constitute 97% of businesses, contribute 45% of GDP, 31% of budget revenue, and employ over 5 million people.[91] Similarly, MSMEs in Lao PDR and Myanmar constitute most registered firms and employment.

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[88] Scheinberg, A., J. Nesić, R. Savain, P. Luppi, P. Sinnott, F. Petean and F. Pop (2016), 'From Collision to Collaboration: Integrating Informal Recyclers and Re-Use Operators in Europe: A Review,' Waste Management and Research

[89] ICC. (n.d.). Digital Standards Initiative. Retrieved September 15, 2023, from https://www.dsi.iccwbo.org/about-icc-digital-standards-initiative

[90] Jiang, Y., & Zhou, L. (2012). Study on Green Supply Chain Management Based on Circular Economy. Physics Procedia, 25, 1977-1983. https://doi.org/10.1016/j.phpro.2012.03.295

[91] Ministry of Planning and Investment Vietnam. (n.d.). Retrieved September 15, 2023, from https://www.mpi.gov.vn/en/Pages/tinbai.aspx?idTin=49802&idcm=133

Many regional MSMEs need help to meet international trade standards and export requirements, hindering their growth and participation in the global market. The lack of access to capital and the inability to comply with international trading standards prevent these companies from scaling and expanding. In addition, the digitalisation gap and high cost of technology limit market access and FDI.

To promote inclusive economic growth and trade, policies and regulations should generally aim to reduce barriers to entry, streamline bureaucratic processes, and improve access to financial resources. However, given the unique and complex situation in Myanmar, such traditional measures may not currently be as effective. Amid instability, many MSMEs are resorting to more informal operations, increasingly relying on cash transactions to maintain their businesses and avoid control. It's crucial for any development strategy to acknowledge this shift and consider flexible approaches that can support these businesses in their current state. Nevertheless, long-term solutions should still work towards restoring financial stability, strengthening banking sector performance, and fostering a conducive environment for all stakeholders to participate in the global economy.

2.5.6 Circular Economy business models: Supply chain integration for effective material recovery

Take-back initiatives or reverse logistics are methods adopted by manufacturers and producers to recover materials and reintroduce them into production as secondary materials. Take-back schemes are central to the Circular Economy principles and require collaboration and logistics integration across the value chain. We can list numerous benefits through take-back schemes of plastics, such as reducing environmental impacts, lowering the cost of primary material supply and creating a more integrated and agile relationship across the value chain.

Although collaboration and coordination must be central to the programme's success, all stakeholders in the value chain, from consumers to waste pickers and producers, must cooperate closely.

Reverse logistics and supply chain integration in Vietnam

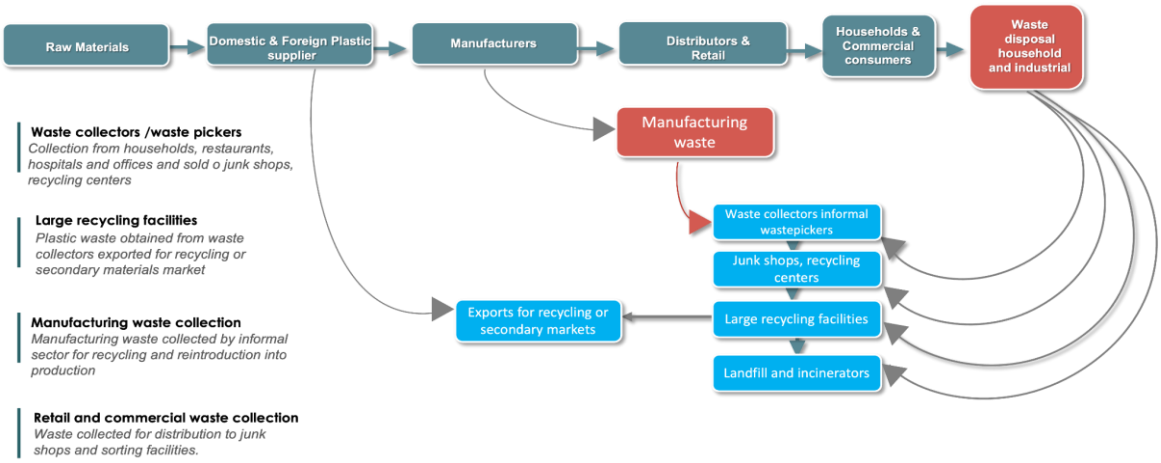
In the case of Vietnam plastic, raw materials are mainly imported from Saudi Arabia, Taiwan, China and South Korea[92]. Vietnam's plastic producers mainly manufacture packaging, cars, electronic parts, and construction materials. Implementation of reverse logistics involves all stakeholders in the supply chain, suppliers, producers, distributors, logistic service providers, waste collectors and recycling units. A recent study identified perceived barriers across the value chain to implementing reverse logistics to promote the circularity of plastics.

The lack of accurate data and return forecast hinders strategic and financial planning, as well as concerns over the quality and quantity of materials due to poor practices in sorting or cleaning materials. A lack of public awareness, infrastructure and resources hinders the circularity of plastics.[93] Legislations that provide incentives and stricter regulations to promote reverse logistics mechanisms for plastics. Investment in capacity building, technology development, and incentives to stakeholders in the supply chain will enable a more efficient circular system for plastics.

[92] Dezan Shira & Associates, (n.d.). How to Source Industrial Suppliers in Vietnam? Vietnam Briefing. https://www.vietnam-briefing.com/doing-business-guide/vietnam/sector-insights/how-to-source-industrial-suppliers-in-vietnam

[93] Tran, Thi & Luc, Huong. (2018). Reverse Logistics in Plastic Supply Chain: The Current Practice in Vietnam. 10.1007/978-3-658-21412-8_18.

Figure 4: Reverse logistics value chain Vietnam



Source: Adapted from Tran, Thi & Luc, Huong. (2018). Reverse Logistics in Plastic Supply Chain: The Current Practice in Vietnam.[94]

2.6 Partnerships for development: Exploring grass root initiatives and the role of NGOs in supporting MSMEs.

The challenges posed by plastic pollution and its contribution to climate change require a comprehensive approach involving government policies, private sector engagement, and local grass-root initiatives. Effective solutions require technical assistance, training, education, and adopting circular economy business models to reduce environmental harm while promoting socio-economic growth.

In ASEAN, a growing response to plastic pollution and marine litter is driven by grassroots initiatives that address the problem locally. Education and training programs, for example, support waste pickers and small recyclers to improve their recycling rates and revenue through better collection and segregation practices.

International, local NGOs and environmental organisations play a vital role in promoting a just transition to a circular economy of plastics. Thant Myanmar[95] is an entity dedicated to tackling plastic pollution through various campaigns and research in collaborations such as the SWITCH Asia project "Prevent Plastics". By engaging different sectors, they catalyse local actions against plastic waste, aligning with the broader efforts in ASEAN to combat plastic pollution and foster a circular economy. Their initiatives provide practical pathways, educational resources, and collaborative platforms, underscoring the essential role of grass-root movements and the supportive engagement of NGOs in advancing environmental sustainability and socio-economic growth. Through campaigns they advocate for the elimination of SUPs, like "*Yae Ku Tho,*" an initiative promoting water as a common good, urging the tourism and hospitality sectors to reduce SUP bottle usage. The "*Need that Bag?*" campaign encourages businesses to distribute plastic bags only upon request, educating stakeholders about waste management. Similarly, the "*No Straw*" campaign advises hospitality venues to offer plastic straws only on request or provide alternatives, aiming to mitigate plastic waste.

Transitioning into other level of the value chain, it is crucial to highlight the roles of collectors, junk shops, and small recyclers, who form a critical nexus in plastic waste management. As NGOs like Thant Myanmar anchor the initial steps towards plastic reduction, other organizations focus on building the capacity of MSMEs. Building Markets[96], a non-profit, promotes such efforts by delivering crucial training and education, thus fostering a conducive ecosystem for sustainable practices and economic growth. This support helps integrate SMEs into supply chains, attracts investment for sustainable development, and connects local firms to international markets.[97]

[94] Tran, Thi & Luc, Huong. (2018). Reverse Logistics in Plastic Supply Chain: The Current Practice in Vietnam. 10.1007/978-3-658-21412-8_18.
[95] Thant Myanmar (n.d.). Retrieved September 30, 2023, from https://www.thantmyanmar.com/en
[96] Building Markets. (2022) September 14). Home. Retrieved September 15, 2023, from https://buildingmarkets.org/
[97] Building Markets. (2022), The Circular Economy Toolkit, Empowering MSMEs toward sustainable development.

Building capacity for new markets through technical assistance to upcycle plastics that can be traded locally and globally. Encouraging entrepreneurship, supporting the waste picker community and integration into the supply chain through value creation for circular and inclusive systems.

Building capacity: Evergreen Labs

Evergreen Labs runs a zero-waste plastic programme focusing on innovative solutions to incentivize higher collection of low-value plastics such as LDPE and PS. Since most of the waste is collected by waste pickers, these materials are often left uncollected due to the low value obtained in the market. Evergreen Lab has launched the ReForm Plastic project, a decentralised social franchise model that tackles low-value plastics through durable product creation.

The ReFrom project aim is to reduce waste and generate value with upcycled and traceable new products while improving waste pickers' and recyclers' income. ReForm Plastics supports women waste pickers, encouraging the collection of low-value plastics that can be transformed into furniture products for the tourism sector in Myanmar and Vietnam. Operating with four factories across southeast Asia, their impact has seen more than 40 tons of waste processed and has initiated segregation programmes with cities, schools, and businesses. With an average collection of 10-15 kg per worker per day, with a capacity to process 200 metric tons of plastic waste per year per centre.[98]

Localized grassroot circular innovation projects, with partnerships to support innovation for waste management and plastic upcycling that promote circular economy principles to keep materials at their highest value.

Grassroots for innovation:

Thailand, like Vietnam, Myanmar, and Lao DPR, is affected by high levels of plastic pollution and inadequate waste management systems and infrastructure, as well as limited citizens' environmental awareness of the impacts of plastic on the ecosystems.

A research project led by - IfM's Centre for Industrial Sustainability of the University of Cambridge and funded by the GCRF (Global Research Fund) Global Impact Accelerator Account Impact Fund) is a testament to the success of driving innovation and promoting entrepreneurship that benefits the local community in Thailand.

The project focused on a bottom-up approach at a community level to collect plastic waste and find innovative solutions to upcycle and commercialise recycled plastic products. Through public education and workshops, the project researched a model to upcycle plastic waste and promote innovation to develop commercial projects by producing upcycled products, mixing glass composites and plastics (Glasstic) as substitutes for plywood products used in construction.

The project attracted large manufacturers, SMEs, entrepreneurs, and government participants. In collaboration with the industrial partner, MQDC, over seven upcycling community projects were chosen for development and commercialisation benefiting the local community. Some of the commercialisation innovations chosen through the project were the development of outdoor furniture and roofing. Other applications were stand-up paddle boards for waste collection in the sea and compost and recycling bins.[99]

[98] (n.d.). *ReForm*. Ever Green Labs. Retrieved March 5, 2023, from https://evergreenlabs.org/reform/

[99] University of Cambridge (n.d.). *Grass-root circular economy through creative waste innovation*. IfM Management Technology Policy. Retrieved March 5, 2023, from https://www.ifm.eng.cam.ac.uk/insights/sustainability/grass-root-circular-economy-through-creative-waste-innovation/

2.7. Key barriers to scaling up the circular economy in the region for inclusive growth and just transition

While social norms, resources, capabilities, political will, and policy action all play roles in shaping the potential for a circular economy for plastics, the primary barrier is arguably the inherent value, or lack thereof, of the plastics themselves. Roughly 12% of plastics, namely rigid, monolayer, single-color types, are typically valuable enough to be collected and recycled by the informal sector. In contrast, most of the plastic waste, primarily low-quality flexibles, holds minimal intrinsic value, making it unattractive for waste pickers and thus less likely to be collected for recycling. This situation is particularly problematic given that these low-value plastics, including SUPs, constitute most of the environmental plastic pollution. It is reported that the ten most common SUPs account for 78% of all waste found in natural settings. Notably, strings and cords are prevalent due to the inclusion of many beach audits. Dominantly, bags, food wrappers, and foam boxes constitute a significant share of pollution, and these materials are inherently unrecyclable through the informal picker mechanism. This reality accentuates the critical need to address the following challenge posed by low-value and non-recyclable plastics in our endeavour to mitigate environmental plastic pollution and move forward towards more sustainable and circular economy business models.

- **Resources and capabilities** – Lack of affordable financial capital impacts innovation and technology development and integration to improve recycling systems, collect data and provide an equal footing with the global north. SMEs and entrepreneurs have the agility to innovate. Still, incentives to support their efforts will be crucial to facilitate systems that promote the reuse, upcycle, and recycling of plastics so that material value is either increased or recovered—acknowledging the informal sector as a critical actor in the circular economy—investment in upgrading landfills as well as expanding collection points beyond urban areas.

- **Social norms and behaviours** – Changing consumer habits and lifestyles combined with e-commerce pose significant threats to using single-use plastics, mainly from food, beverages, and packaging. Education and awareness campaigns on the **environmental impact** of Single-use plastics, together with incentives and alternative consumer options, such as reuse and refill systems to promote sustainable consumption. In addition to responsible waste disposal to maximise recycling and reduce pollution leaking into the ecosystem.

- **Policy action** – A lack of robust and ambiguous regulation that supports enforcement of international standards to improve global trade. In addition to poorly standardised methodologies for data collection and information on the waste composition and recycling rates. Better labelling that provides transparency of information on risks and harms associated with plastic products including emissions across the value chain.


STOP
PLASTIC
POLLUTION

3. POLICY ACTIONS FOR INCLUSIVE AND SOCIAL ACTION

The Circular Economy presents unique opportunities for LMV to promote inclusive socioeconomic development and just transition. Capturing these opportunities requires policy action to address the dual challenges of **circular trade** and **capacity building**.

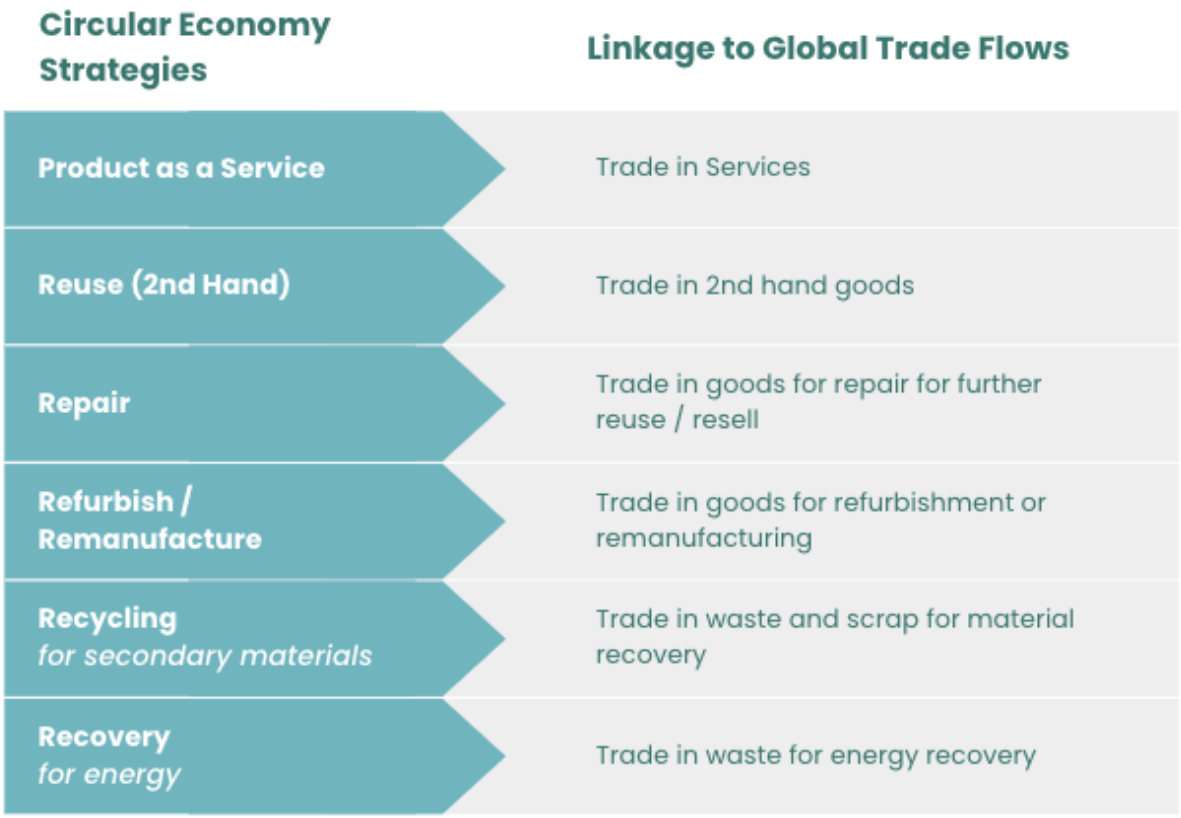
Free and open international trade can be a vital enabler for scaling up circular economy models to promote resource efficiency and decouple economic progress from material use.[100] Indeed, the global and cross-border nature of value chains and material and goods flows necessitates consideration of trade and relevant policies to ensure an effective and just transition. According to estimates by the United Nations Environment Programme (UNEP), one-third of materials extracted globally find their way into goods for trade.[101]

However, the growing interest in the circular economy also necessitates the review and updating of trade policies to be enablers rather than barriers to scaling circularity.[102] Furthermore, despite the opportunities posed by circular economy models for sustainable socioeconomic development, experts have called attention to the potential risks of non-equitable growth and adverse impact particularly to emerging and developing economies.[103] Thus, policy development with circularity in mind needs to be inclusive for a just transition and ensure communities in countries such as Vietnam, Laos and Myanmar can benefit and gain value from the transition.

Figure 5 illustrates how circular economy strategies connect to international trade, especially where such strategies and corresponding flows of goods and services transcend national borders.[104] This has implications for the design of supply chain and reverse logistics, as well as corresponding regulations and policy frameworks such as product eco-design, trade rules and cross-border categorization and handling of waste materials.

[100] Bellmann, C. (2021). The circular economy and international trade: Options for the World Trade Organization. International Chamber of Commerce. https://iccwbo.org/publication/the-circular-economy-and-international-trade-options-for-the-world-trade-organization/
[101] United Nations Environment Programme. (2020). Global Material Flows Database. UNEP International Resource Panel. Retrieved September 15, 2023, https://www.resourcepanel.org/global-material-flows-database
[102] Steinfat, K. (2020). Trade policies for a circular economy: What can we learn from WTO experience? World Trade Organization. https://www.wto.org/english/res_e/reser_e/ersd202010_e.htm3.1 Circular Economy and Trade
[103] Barrie, J., & Schröder, P. (2021). How to use global trade for a just circular transition. Circular Economy Earth. Chatham House. https://circulareconomy.earth/publications/how-to-use-global-trade-for-a-just-circular-transition
[104] Shunta Yamaguchi, 'International trade and circular economy - Policy alignment' (OECD, Feb 2021). OECD Trade and Environment Working Papers

Figure 5: Linkages between circular economy and global trade flows.[105]



Several studies have identified how the circular economy and global trade will overlap,[106] which can pose both *opportunities* and *risks* for emerging and developing economies:

1. Increasing enactment of circular product design and manufacturing standards and regulations will **cascade new requirements and pressures down value chains and impact suppliers and across geographies.** Examples include the EU Eco-design for Sustainable Products, ISO 323, Extended Producer Responsibility (EPRs) and product stewardship schemes, virgin material bans, and secondary material requirements and compositions will require consideration of the entire product value chain and lifecycles.
2. Expanded adoption of circularity will likely be followed by reduced demand for virgin raw materials. Some studies, for instance, have estimated that the CE transition may reduce minerals and metals use from 10-50%[107]. While the reduced dependence on virgin materials will have a positive impact on natural systems, consideration must be made for resource-dependent economies in the global south who may be socially and economically affected.
3. The circular transition will also be associated with increased flows of *secondary* goods and materials, second-hand products, and waste and scrap. In particular, the trade will likely flow to those countries that with sufficient technological capabilities and fewer technical and policy barriers to manage and process these materials most economically. However, flows of such secondary resources will be affected by existing standards and restrictions on trade in waste, such as the Basel Convention on the movement of hazardous waste. Unilateral trade restrictions will also be impactful, such as recent moves by China and several South-

[105] Adapted from Shunta Yamaguchi, 'International trade and circular economy - Policy alignment' (OECD, Feb 2021). OECD Trade and Environment Working Papers
[106] Barrie and Schröder; Shunta Yamaguchi, 'International Trade and Circular Economy - Policy Alignment' (Paris: OECD, 19 February 2021), https://doi.org/10.1787/ae4a2176-en.
[107] Rob Dellink, 'The Consequences of a More Resource Efficient and Circular Economy for International Trade Patterns: A Modelling Assessment' (Paris: OECD, 12 June 2020), https://doi.org/10.1787/fa01b672-en.

East Asian (e.g., Vietnam, Malaysia and Thailand)[108] to reduce or ban imports of waste and scrap in response to recent surges.

4. The growing trade in technological solutions and services for circular business models, such as remanufacturing, repair, refurbish and recycling. In addition, customer shift from products to service-based models will grow demand for service and software-based solutions.
5. Rising nationalism and moves towards protectionism for resources, especially critical raw materials such as metals or food security, may drive greater localization of closed-loop materials supply chains, thus reducing imports, which may further negatively impact resource-based economies in the developing world.
6. Increasing need for more comprehensive, transnational data on trade and material flows, in particular capturing further granularity from the perspective of circularity, such as distinguishing between primary materials, secondary materials destined for further reuse, and waste materials for disposal. Additionally, opacity inflows and the ultimate fate of secondary goods and materials exported across borders poses challenges to traceability and regulatory compliance. More comprehensive data will be vital in tracking progress towards circularity, the effectiveness of policies and regulations, illegal movements, and other factors.

3.1 How Trade Policies Impact Circularity

Experts have increasingly called attention to the potential mismatch between existing trade policies, standards, and frameworks with the circular model. Such instruments have, to date, been designed with the predominant linear economy model in mind, and consequently unless revisited, could inadvertently become barriers to circular economy activities.

Example: Trade of Metals

Approximately 80% of the value and over 50% of volumes of waste and scrap trade comprise of metals, and much of these materials are subject to export restrictions.[109] These restrictions were intended to generate at positive outcomes such as supporting domestic processing and restricting illegal exports. However, existing trade restrictions often do not distinguish between waste and scrap destined for disposal, and secondary materials for further circular reuse, repair, refurbishment, or remanufacturing. A potential side effect can be reducing the value of metal scrap in the local economy and thus disincentivizing collection and processing, while also reducing the availability of secondary materials at the global level.[110] This creates a missed opportunity to reap the socioeconomic and environmental benefits of the circular use of metals waste as secondary materials. For instance, the UNEP estimates energy savings of up to 97% with the reuse of steel, aluminium, and copper.[111] Growing demand for other metals such as lithium to fuel electrification and the renewable energy revolution may also face similar barriers.

Research by the International Chamber of Commerce (ICC) has identified a number of key trade policy obstacles that are limiting the potential for circular economy models:[112]

1. Existing frameworks **lack standardized and harmonized classifications that distinguish "waste" or "scrap" materials destined for disposal, against secondary materials for further circular reuse.** As a result, many "end-of-life" products and materials that may have circular reuse potential, such as for repair, refurbishment, or remanufacturing, face import and export barriers designated for waste products. In most

[108] Reuter. (2018, July 26). Vietnam to limit waste imports as shipments build up at ports. Environment. https://www.reuters.com/article/us-vietnam-waste-idUSKBN1KG0KL
[109] Korinek, J. (2019). Trade restrictions on minerals and metals. Mineral Economics, 32(2), 171–185. https://doi.org/10.1007/s13563-018-0161-z
[110] Steinfat, C. (2020). Trade policies for a circular economy: What can we learn from WTO experience? World Trade Review
[111] United Nations Environment Programme. (2013). Metal recycling: Opportunities, limits, infrastructure, a report of the working group on the global metal flows to the international resource panel. https://www.resourcepanel.org/reports/metal-recycling
[112] Bellmann, C. (2021). The circular economy and international trade. World Trade Review.

cases, standards have been based on a material's origins rather than quality or intended use, which is a key enabler for determining subsequent circular processing potential.[113]

2. Relatedly, the existing **Harmonized System (HS) does not clearly distinguish between waste and secondary materials destined for circular processing.**[114] The HS is an international standard of codes to classify traded goods and is the basis for customs authorities to identify materials, assess trade instruments such as duties, tariffs or restrictions, and data gathering on global trade flows, and thus has a significant impact on the circular transition. While some jurisdictions do utilize more granular systems domestically or regionally,[115] lack of harmonization across countries and with international standards introduces complexities.
3. More broadly, the **lack of international standards on "circular goods" leads to great complexity and less effectiveness in the application of trade instruments** to promote circularity while mitigating adverse consequences. For instance, the application of subsidies and punitive tariffs or bans could be leveraged to incentivize circular goods and disincentivize non-circular alternatives, which require clear and standardized definitions. In some cases, classifications can be nuanced, for instance, while electric vehicles may appear positive for emissions reduction, the social and environmental impact of minerals such as lithium and cobalt for batteries needs to be considered.
4. **Overall lack of granular data** on trade flows of goods and materials reduces the ability for evidence-based decision-making, such as policy and regulatory review and mitigating illegal trade flows. Lack of data granularity is associated with limitations in standards frameworks.
5. While digitalization can reduce barriers in cross-border trade, **lack of infrastructure in emerging economies** will inadvertently have an exclusionary effect, especially with MSME and information economy actors, for whom access to digital capabilities may be limited and cost-prohibitive. This consideration extends to include CE-specific digitalization capabilities such as product passports and data provenance, which need to be designed with the needs and circumstances of emerging economy actors.

Companies seeking to embed circularity into their value chains face complexities navigating non-standardized and non-harmonized national, regional, and international standards and legislation. Such complexities can exclude micro, small and medium enterprises, and informal communities from participating in the circular transition, as compliance to heterogeneous regimes can be cost-prohibitive. Without technical and financial assistance, coupled with fit-for-purpose policy actions, these communities can be inadvertently restricted from capturing a share of value from the new economy.

In recent times WTO members have called for revisiting restrictions and technical barriers, especially for the trade of secondary materials and goods, to enable circular processing to occur in the most economically and technologically suitable places. For instance, countries could develop a domestic economy for refurbishment or remanufacturing, importing secondary goods and processing them into reusable products for domestic or export consumption.

Consideration of circularity in trade policies has been growing in recent years; however, further expansion of these deliberations is warranted to encompass a wider range of circular-related activities. For instance, a recent examination of WTO notifications identified approximately 370 measures (e.g., technical regulations, support, trade bans and licensing procurement) related to the circular economy from 2009 to 2017. Yet over 60% of these measures related to recycling, while only 15% involved reuse and repair.[116] While recycling is an aspect of the circular economy, higher-value activities such as reuse, repair, refurbishment, and remanufacturing increase resource use efficiency and value retention while also offering opportunities for economic development for industry players to provide such offerings.

[113] Van der Ven, C. M. A. (2020). The circular economy, trade, and development: Addressing spillovers and leveraging opportunities. Rochester, NY. https://doi.org/10.2139/ssrn.3759786

[114] Yamaguchi, K. (2019). International trade and circular economy - Policy alignment. Journal of Material Cycles and Waste Management, 21(4), 724-730.

[115] European Commission. (n.d.). Combined nomenclature. Retrieved September 4, 2023 from https://ec.europa.eu/taxation_customs/business/calculation-customs-duties/what-is-common-customs-tariff/combined-nomenclature_en

[116] Steinfatt, C. (2021). Trade policies for a circular economy: What can we learn from WTO experience? World Trade Review, 20(1), 105-138.

3.2 Trade and Circular Economy: A double-edged sword for developing economies

While the circular economy has the potential to deliver environmental and socioeconomic benefits, the intersection of circularity and trade can generate both positive and adverse impacts on emerging and developing economies. For emerging and developing economies like Vietnam, Lao PDR, and Myanmar, this could enable businesses, including micro, small and medium enterprises, to access global markets for circular offerings, both in terms of sourcing for material supply and services to support domestic circular activities, as well as a route to market for their own offerings. However, consideration must be made for the specific challenges and limitations posed in such regions.

Opportunities	Risks
Opportunities for emerging and developing economies to: ○ **Connect to global markets** and offer circular products, materials, and services. ○ **Facilitate inclusion** of micro, small and medium enterprises, as well as informal economy actors involved in the management and processing of "waste" into secondary materials, repair, remanufacturing, and recycling.	Less value may flow to MSMEs and informal economy communities ○ Trade restrictions and barriers that do not take circularity in mind may limit participation in global markets. ○ Secondary materials classified as waste will demand a lower price/value. ○ Limited local capacity for circular business models restricts the ability to participate in global markets. Economies may only get the tail-end of the value chain – low-quality materials that are difficult to deal with, as higher-quality materials flow to other countries more technologically and economically capable. ○ Increase downcycling rather than higher-value upcycling and other circular processing. ○ Resource-based economies may face reduced demand for primary raw materials.
○ Emerging and developing economies can get access to products at lower economic and environmental costs.	○ A shorter life span of products could increase pressure on waste management systems unless effective circular infrastructure and capability is present. ○ Could lock countries into less efficient and outdated technological solutions that contradict environmental and emissions goals. ○ Could create competition with and undermine local manufacturing/ MSMEs – need capacity building and reduction of trade barriers to enable them to access international markets.
○ The Circular Economy can potentially create new business and job creation opportunities at a macro level.	Uneven distribution of high-value new CE jobs – without investment in capacity building and upskilling, emerging economies may get only low-value waste or scrap management jobs.
○ The growing market for service-based businesses creates opportunities for providing novel circular service offerings, such as software, online services, and rentals.	Upskilling and capability building is required to ensure communities in emerging and developing economies can take cater to the demand for services, to offset risks of reduced demand for non-circular products.
○ Eco-design regulations will reduce hazardous material exposure for waste workers.	○ The lack of effective waste management regimes could add to issues of informal and illegal waste management, and loopholes for illegal trade in hazardous, contaminated waste. ○ Lack of capacity, weak standards, and enforcement regimes could result in growing emissions, waste/ environmental footprint, and social problems. ○ Waste crime and illegal shipments especially in the informal economy need to be curtailed for these benefits to cascade down to low-income communities

3.3 Policies for Circular Economy Capacity Building

As discussed above, while fit-for-purpose trade policies are a key enabler for the engagement of emerging and developing economies in the circular transition, it is only part of the solution, as a lack of local capacity to participate in this new economy will also be a barrier. The Ellen MacArthur Foundation Policy Toolkit defines six policy intervention types[117] needed to overcome barriers and enable scaling the circular economy. Implementation of these policy interventions needs to consider the contextual circumstances of emerging and developing economies.

Intervention	Considerations for emerging economies to build resilience
Regulatory frameworks	• Revamp waste management policies and regulations • Implementation of policy interventions to replace plastics with sustainable materials for cleaner production or fiscal mechanism, such as polluter pay taxes or Extended Producer Responsibility (EPR) to encourage the take-back and recovery of materials for recycling • Include social sustainability factors into regulatory schemes to enhance the quality of jobs, such as worker health and safety and hygiene.
Fiscal frameworks	• Tax incentives and punitive measures to encourage circular production and use, while disincentivizing non-circular processes, e.g., tax reduction, landfill and virgin material taxes • Tax incentives to lower barriers for MSMEs to participate in global markets • Tax incentives for the private sector to encourage collaboration with MSMEs.
Public procurement and infrastructure	• Leverage public procurement to increase demand for circular solutions by embedding green requirements to incentivise development and scale-up • Lower barriers and incentivise public sector agencies to include MSMEs in public procurement • Invest in the development of infrastructure for waste management, circular industries, and trade infrastructure, including both digital and physical infrastructure to enable inclusion.
Business support	• Technical support, advisory and training for MSMEs and informal economy actors, including expertise in international standards • Financial support schemes in the form of grants, subsidies, access to financing, guarantees, R&D support schemes • Access to finance to help scale and support business growth.
Education, Information Awareness	• Elevate the overall image and status of the informal economy and MSME jobs involved in the circular sector • Public awareness campaigns to influence consumer habits and lifestyles • Integration of training and knowledge development into educational curricula, including school, university and vocational.
Collaboration platforms	• Convening public-private-academic partnerships and collaboration regulatory and policy development, business matchmaking and joint initiatives • Convene collaboration around institutional infrastructure such as standards and capability development, eco-labelling • Actively include MSMEs and informal sector actors in collaboration and deliberation to ensure representation • Convene regional and international collaboration towards standardisation and harmonisation of frameworks and labelling schemes.

[117] Ellen MacArthur Foundation. (2015). Delivering the circular economy: A toolkit for policymakers. Retrieved September 4, 2023 from https://ellenmacarthurfoundation.org/a-toolkit-for-policymakers

4. RECOMMENDATIONS

Research by Chatham House[118] and OECD[119] has identified a number of actions to facilitate a just circular transition. We adapt these recommendations to identify considerations in the context of Vietnam, Lao PDR, and Myanmar. In addition, we emphasize the need to integrate social and environmental justice when considering the design and implementation of environmental policies, to protect the jobs and livelihoods of all stakeholders across the value chain, from producers to SMEs, waste pickers, in particular women and citizens.

	Recommendations	Consideration for LMV
Trade policy actions	• Develop circular standards classifications and definitions and integrate them into free trade agreements • Harmonize standards across local, national, regional and international levels. Review multilateral frameworks such as the Basel Convention for tighter control of chemical exposure in plastics • Update Harmonized System Codes to reflect circular trade in secondary goods and materials, considering factors of quality, sustainability, and circular use.	• Ensure representation of MSMEs and informal sector actors in deliberations • Using the global plastic treaty negotiations as a platform to include emerging economies and consider regional and local contexts for policy implementation • Ensure measures and initiatives are put in place to prevent the trade of illegal waste.
	• Develop digital trade systems and infrastructure to facilitate cross-border circular flows, including goods identification, tracking, provenance, and automation of customer procedures, to increase transparency and reduce logistical costs to promote sustained growth to compete at a global level • Define data standards and infrastructure for interoperable capture & sharing of information about goods and services.	• Stimulate and incentivise the use of alternative substitute materials and products in developing economies • Considerations of cost to the consumer when introducing substitute products, especially for low-income groups • Coordination and training, capacity building and agreement on policies to promote substitutes with a minimum set of environmental LCA indicators to evaluate performance vs environmental impact promoting circular and non-toxic alternatives.
	• Convene global coordination, international dialogue and exchange of information over trade and customs.	• Aid for trade mechanisms to help develop capabilities, and technology development to promote higher recyclability rates
	• Regulatory and Fiscal measures to incentivize circular solutions and disincentivize non-circular alternatives.	• **Combination of upstream and downstream solutions. Engagement with suppliers and buyers** through the implementation of policy interventions to replace plastics with sustainable materials for cleaner production or fiscal mechanism, such as polluter pay taxes or Extended Producer Responsibility (EPR) to encourage the take-back and recovery of materials for recycling • Subsidies (grants, incentives in direct and indirect taxation, e.g., tax deductions, tax credits; (VAT) for alternative products that meet the sustainability criteria to replace plastics • Setting standards such as ecolabeling.

[118] Barrie, J., & Schröder, P. (2019). How to use global trade for a just circular transition. Friends of the Earth Europe

[119] Yamaguchi, K. (2019). International trade and circular economy - Policy alignment. Journal of Material Cycles and Waste Management, 21(4), 724-730.

	Recommendations	Consideration for LMV
Capacity Building	• Invest in Infrastructure to support the development of national and regional circular economy capabilities	• Consider the needs for both hard and soft infrastructure – e.g., skills, knowledge, training, and awareness building for MSMEs and informal economies • Invest in waste management infrastructure • Invest in digital infrastructure • Local capacity for inspections, testing, certifications
	• Leverage public procurement to create demand for circular offerings and incentivize scale-up of solutions.	• Reduce procurement barriers for MSME participation, incentivize collaboration
	• Build awareness and education	• MSME facilitation for participation in green global value chains MSMEs are often unaware and lack expertise in international environmental standards to participate in global markets, which limits their competitive advantage. Providing guidance and technical assistance to MSMEs will promote environmental standards and green business practices. • Consumer awareness of environmental impacts through campaigns and education activities for waste management for behaviour change. Promotion of alternative materials, for example, reusable cups and containers and refill systems for food and household products.
	• Business Support Schemes – Technical & Financial Assistance	• **Informal sector inclusion** for increased materials recovery, through incentives setting baseline pricing for materials to increase collection rates and technical assistance for skills development to promote best practices for separating and segregating materials. For example, plastics will lose value if they are contaminated with chemical or organic matter. Other plastics will be harder to recycle if mixed with and not adequately segregated. In addition, some products contain a combination of different polymers, making recycling harder to recycle. • **Provide technical and financial assistance to MSMEs.**

5. CONCLUSIONS

Global and international initiatives promoting a circular economy of plastics and sustainable trade offer a promising outlook for reducing plastic pollution in Vietnam, Lao PDR, and Myanmar. However, achieving this goal will require a systemic change, comprehensive and integrated approach that considers the needs and constraints of all stakeholders, including the informal recycling sector, to ensure that no one is left behind. Addressing the plastic crisis will require upstream and downstream solutions, from policy intervention to societal behaviour change.

To combat the plastic crisis and avoid greenwashing, measures beyond recycling that follow the waste hierarchy principles should be taken, including eliminating SUPs, and materials with toxic and hazardous chemical compounds, prioritising sustainable alternatives to plastic materials, and promoting reuse and refill business models. Harmonising trade practices across borders is also critical in promoting sustainable growth in emerging economies and reducing the cost of innovation. All stakeholders, including governments, industry, and civil society, must work together to find solutions contextualised to the country's specific needs and constraints, promoting environmentally sustainable production and trade.

In order to ensure that human rights and social justice are upheld, it is essential to establish interventions that prioritise transparency, disclosure, and regulations, such as EPR and Polluter Pays mechanisms. These interventions will enable the creation of a safe circular economy of plastics that protects people's livelihoods, particularly those of vulnerable groups and the informal sector. By implementing regulations that limit the use of harmful chemicals in products and a cap on the extraction and production of virgin feedstocks, which threaten the environment and human health, we can take a significant step towards achieving this goal. Such regulations are crucial for creating a sustainable future, as they will help minimise plastic waste's negative impact on the environment and the people who depend on it. Additionally, these regulations will promote responsible practices throughout the plastic value chain, from production to disposal.

For LMV, improving digital systems and data collection will be indispensable to ensure the traceability of transparent trade plastic flows. Investment in capacity building, technology, and infrastructure development will also be crucial to divert waste from landfills and avoid environmental leakage. These measures can aid in the transition to a more sustainable system, promoting economic growth and environmental sustainability. Finally, adequate funding and financing from trade aid and the private sector will be required to help with the transformation and promotion of circularity of plastics and substitute materials, supporting the transition to a more sustainable future.

The urgency to address the plastic crisis cannot be overstated. It requires a concerted effort and transformative action from all stakeholders to shift towards an effective and just circular economy of plastics and sustainable trade. This will demand a fundamental shift in how we produce, use, and dispose of plastics. The path toward progress for LMV to combat plastic pollution and promote socioeconomic inclusion is through a comprehensive and integrated approach that prioritises sustainability, transparency, and inclusivity. By working together, LMV can achieve a more sustainable future where the negative impact of plastic waste on the environment and human health is eliminated.

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