World-Class Circular Economy Industrial Parks:

Best Practices, Challenges, Opportunities, Training and Collaboration

APEC Policy Partnership for Science, Technology and Innovation

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Produced by

David Ewusi-Mensah (ewusimensah.david@gmail.com)

Project Overseer:
Ir. Dr. Chong Kok Hing
Ir. Dr. Yeu Yee Lee (Elaine)
Professor Basil T. Wong
Swinburne University of Technology, Sarawak Campus, Malaysia

For
Asia-Pacific Economic Cooperation Secretariat
35 Heng Mui Keng Terrace
Singapore 119616
Tel: (65) 68919 600
Fax: (65) 68919 690
Email: info@apec.org
Website: www.apec.org

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Executive summary

The Asia-Pacific Economic Cooperation (APEC) was established in 1989 as a regional economic forum among its current 21 members (economies) to leverage the growing interdependence of the Asia-Pacific. It aims to create greater prosperity for the region's people by promoting balanced, inclusive, sustainable, innovative, and secure growth and accelerating regional economic integration. Co-operation also initiates, for example, synchronised regulatory systems to ease cross-border engagement in goods, services, investment, and people.

As part of APEC's Process to ensure capacity building was the 2023 APEC Conference titled "World-Class Circular Economy Industrial Parks: Best Practices, Challenges, Opportunities, Training, and Collaboration". This conference took place as a virtual event over six (6) days in Malaysia from 30 October 2023 to 4 November 2023. The conference aimed to share best practices, address challenges, explore opportunities, provide training, and foster collaboration. Its objective was to distribute exemplary practices, formulate recommendations, and create toolkits to assist APEC economies in effectively implementing and managing sustainable Circular Economy Industrial Parks (CEIPs).

Circular Economy (CE), with its core tenets of reducing waste, reusing materials, and regenerating nature, has gained widespread recognition as a sustainable model aligned with global goals. CEIPs, as integral components of the CE framework, promise economic, environmental, and social benefits. However, their successful establishment and operation encounter multifaceted challenges, ranging from systemic barriers to practical hurdles.

The conference focused on promoting sustainable CEIPs within APEC economies. Discussions highlighted the potential of CEIPs in leading the transition to a CE through collaborative efforts, ambitious visions, and financial incentives. The event introduced the concept of CE, emphasising its alignment with the UN's Sustainable Development Goals. The benefits of CEIPs, such as economic, environmental, and social advantages, were discussed, along with challenges like funding, infrastructure, scalability, and stakeholder collaboration.

This report summarises highlights from the conference and emphasises the importance of integrating CE principles into CEIPs using the Business Model Canvas and adopting digital solutions for enhanced circularity. Overall, a call to action was made for designing CEIPs with ambitious circular visions and leveraging financial and political support for their growth.

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Chapter 1 - Introduction

The concept of Circular Economy (CE) represents a transformative shift in how societies produce, consume, and manage resources. This has gained significant prominence recently as societies grapple with the challenges of unsustainable consumption and resource depletion. In stark contrast to the traditional linear model of "take, make, dispose," the CE seeks to create a closed-loop system where products, materials, and resources are reused, repaired, remanufactured, and recycled to extend their lifespan and minimise waste. This innovative approach prioritises sustainability, environmental conservation, and economic efficiency (Ellen MacArthur Foundation, 2013).

CE is built on the foundation of fundamental principles, including the following:

1. Closed-loop system: CE emphasises the design of products with durability and ease of repair in mind. This approach discourages planned obsolescence and promotes the creation of goods that can be used for a more extended period (European Commission, 2020).

2. Resource efficiency: To optimise the use of resources by promoting efficient resource extraction, reduced consumption, and the recycling or repurposing of materials. This helps minimise the environmental impact associated with resource depletion (Stahel, 2016).

3. Waste Reduction: The CE seeks to mitigate waste by advocating for recycling, upcycling, and repurposing strategies. Maintaining materials in circulation diminishes the demand for raw material extraction, contributing to a more sustainable and ecologically friendly approach (World Economic Forum, 2017).

4. Product Life Extension: In contrast to planned obsolescence, the CE aims to extend the lifespan of products through strategies like repair, maintenance, and upgrades. This reduces waste and encourages a shift in consumer behaviour towards valuing durability and quality (Geissdoerfer et al., 2017).

CE can bring positive social impacts by promoting inclusivity, fair labour practices, and community engagement. It encourages the development of social enterprises and local initiatives that align with sustainable development goals. To economies, it provides a baseline for environmental sustainability by reducing resource extraction, minimising pollution, and decreasing waste generation. It allows economies to use sustainability resources, economic growth and innovation, cost savings, climate change mitigation, enhanced resilience, and positive social impacts. CE principles represent a forward-thinking and holistic approach to addressing environmental challenges, promoting economic prosperity, and fostering social well-being. Economies that integrate CE practices into their policies and industries stand to benefit from a more sustainable and resilient future.

Circular Economy Industrial Parks (CEIPs) have emerged as a strategic and innovative approach to sustainable industrial development, seamlessly integrating principles of

environmental stewardship, economic efficiency, and collaborative industrial practices. Rooted in the broader principles of the CE, CEIPs embody a tangible manifestation of sustainable development within industrial ecosystems. This professional introduction aims to elucidate the CEIPs concept, tracing its historical evolution and elucidating the driving forces behind its emergence.

CEIPs are meticulously planned industrial zones to optimise resource utilisation, minimise environmental impact, and foster collaboration among co-located industries. Central to the CEIPs concept is the notion of industrial symbiosis, wherein the waste or by-products of one industry become valuable inputs for another, thus creating a closed-loop system. These parks are characterised by integrated planning, shared infrastructure, and the promotion of sustainable practices, reflecting principles aligned with the CE (Chertow, 2007).

While a wide range of terms and alternative names are used to describe concepts related to sustainable industrial development, it's important to note that the adoption and recognition of specific terms may vary across regions and industries. **Figure 1** shows some common and significant alternative names for CEIPs:

CEIPs represent exemplars of sustainable industrial development, drawing inspiration from the CE and historical instances of industrial symbiosis. As these parks evolve and proliferate globally, they embody a pragmatic and impactful response to the industrial sector's economic growth and environmental conservation challenges.

The "World-Class Circular Economy Industrial Parks: Best Practices, Challenges, Opportunities, Training and Collaboration" was in line with the 2020 Leader's Declaration of the Asia-Pacific Economic Cooperation (APEC) to collaborate and facilitate access to affordable energy, enhance energy resilience and security using the widest variety of fuels and technologies to support sustainable economic growth and promote transitions to cleaner energy as part of a strong and inclusive economic recovery. It aimed to create a platform to disseminate the best practices and develop recommendations and toolkits to support APEC economies in implementing and managing sustainable CEIPs, which align with the APEC 2022 theme "Open. Connect. Balance." adopting the bio-circular-green (BCG) economy concept to transform APEC economies towards inclusive and sustainable development.

The Conference was implemented via a six-day online conference format in Malaysia from 30 October 2023 to 4 November 2023 with the following key activities:

1. Knowledge-sharing - Experts shared world-class CEIPs: best practices, challenges, and opportunities.

2. Training and presentation on developing a CE business model proposal for industrial parks or SMEs.

3. Collaboration sessions - Participants collaborated to propose a CE business model for industrial parks or SMEs.

4. Group coaching session during participants' presentations.

The project aimed to create joint value through collaboration among industries, governments and academics.

Figure 1. Alternative names for Circular Economy Industrial Parks.

Chapter 2 - Background and overview of common Circular Economy industrial parks challenges and needs in the APEC region.

The roots of CEIPs trace back to heightened awareness of environmental concerns and the imperative for a more sustainable industrial model. The 1980s and 1990s witnessed increased scrutiny of industrial practices and a paradigm shift towards recognising the interconnectedness of industrial processes. The concept of industrial symbiosis gained prominence during this time, providing the foundational framework for the subsequent development of CEIPs. A seminal example of a CEIP is the Kalundborg Industrial Symbiosis in Denmark, dating back to the 1960s. This innovative industrial symbiosis brought together a power plant, an oil refinery, and other industries to exchange energy, water, and by-products, serving as a pioneering model for collaborative and resource-efficient industrial practices (Lombardi & Laybourn, 2012).

The evolution of CEIPs gained momentum in the late 20th century as governments, industries, and environmental advocates sought innovative solutions to address the environmental impact of industrial activities. Adopting cleaner production technologies and a broader recognition of the economic benefits of resource sharing contributed to establishing various CEIPs globally. Several driving forces have propelled the development of CEIPs. Environmental concerns, regulatory pressures, and the pursuit of resource efficiency have encouraged industries to explore collaborative models that minimise waste and ecological footprints. Governments and policymakers have played a pivotal role by formulating supportive policies, offering incentives, and promoting sustainable industrial practices. The success of early CEIPs, coupled with a growing global emphasis on sustainability, has spurred interest from businesses aiming to enhance their environmental credentials while improving operational efficiency. The increasing prevalence of circular thinking in industrial strategies has further solidified the relevance and importance of CEIPs in the contemporary industrial landscape (Chertow, 2007).

In 2014, APEC Leaders introduced the concept of a "CE" to promote economic and social gains in its economies. Based on the international framework for eco-industrial parks, CEIPs would positively impact the social and economic. In terms of social compliance, the CEIPs and tenant firms are expected to comply with the following:

1. Local regulations on human rights;
2. Local regulations for the protection of indigenous peoples, employment, vocational training and social security;
3. Local regulations on addressing discrimination;

4. Local labour laws/regulations;

5. Local laws on land acquisition and compensation of affected people;

6. Local laws on the protection of cultural heritage.

For example, the Ulsan Mipo and Onsan Circular Economy industrial park promoted a private investment of USD245.8 million (in 2016) to construct industrial symbiosis networking facilities, creating 195 new jobs. In terms of economic compliance, the CEIPs and tenant firms are expected to comply with the following:

1. Local regulations on the reporting of financial performance and disclosure, regulations on the promotion of small and medium-sized enterprises (SMEs) and local business development;

2. Regulations on technology transfer and protection of intellectual property;

3. Regulations on skills development and vocational training;

4. Business regulations, including registration and licensing, financial, trade and fiscal regulations.

For example, Kawasaki Synergy Network in Japan (a city integrated with CEIPs) promoted more than 200 research and development and significant educational institutions that enable the industry and academia to obtain critical feedback on prototypes from academic experts and end-users.

However, many APEC member economies' industrial parks still lack good practices for environmentally sound growth. For example, ISO 50001 Energy Management Systems specifies the requirements for establishing, implementing, maintaining and improving an energy management system. The recent United Nations Industrial Development Organization (UNIDO) study assessing 50 industrial parks in 8 economies against the International Framework for Eco-Industrial Parks supports the claim for this lack. The report indicated that the following topics gain the lowest current compliance:

1. Energy;

2. Local community outreach;

3. Environmental and park management and monitoring;

4. Waste and material use;

5. Climate change and the natural environment.

Low compliance with specific prerequisites and performance indicators under park management, economic, environmental, and social performance indicates a need by the industrial park for technical assistance. This directly led to unsustainable resource utilisation and pollution issues.

CEIPs address the environmental, economic, and social challenges of traditional linear industrial models. CEIPs strive to create closed-loop systems that reduce environmental impact, enhance resource efficiency, and promote sustainable industrial practices by fostering collaboration, resource sharing, and waste valorisation. Nevertheless, economies face challenges in the successful establishment and operation of CEIPs. These challenges (summarised below) are multifaceted and interconnected:

1. **Complex Regulatory Frameworks** – A significant challenge lies in the complexity of existing regulatory frameworks. Traditional regulatory structures are often linear and may not adequately address the circular principles inherent in CEIPs. Economies face adapting or reforming regulations to align with circular practices, necessitating coordination across governmental departments, industries, and environmental agencies (European Commission, 2020). The lack of a harmonised regulatory environment can impede the seamless integration of circularity into industrial operations.

2. **Infrastructural Transition and Retrofitting** - The transition from conventional industrial infrastructure to circular systems poses a formidable challenge. Economies with existing industrial setups must navigate the complexities of retrofitting facilities to align with CE principles. Integrating shared infrastructure for waste treatment, resource recovery, and industry collaboration demands careful planning and strategic investment. The cost and complexity of these infrastructural changes can hinder the swift adoption of circular practices (Chertow, 2007).

3. **Industry-Specific Challenges** - Industries within CEIPs may face unique challenges related to the nature of their operations. Some sectors may find it challenging to adapt their production processes to circular models due to the nature of their raw materials, product lifecycles, or established practices. This industry-specific variability necessitates tailored solutions and targeted interventions to ensure the broad participation of diverse sectors within CEIPs (Geissdoerfer et al., 2017).

4. **Technological Barriers** - Adopting innovative technologies is fundamental to the success of CEIPs. However, economies often encounter technical barriers, including high upfront costs, lack of standardisation, and the need for continuous research and development. Integrating cutting-edge solutions into existing industrial processes may be met with resistance or skepticism, requiring concerted efforts to overcome technological inertia (Geissdoerfer et al., 2017).

5. **Cultural Shift and Stakeholder Engagement** - Achieving a cultural shift towards circular thinking is integral to the success of CEIPs. Engaging stakeholders, including businesses, local communities, and policymakers, in the circular mindset is a multifaceted challenge. Awareness, understanding, and commitment to circular principles vary among stakeholders, necessitating comprehensive educational initiatives and collaborative efforts to build a culture conducive to circularity (Kirchherr et al., 2017).

6. **Financing and Economic Considerations** - The financial implications of transitioning to circular industrial practices can present hurdles for economies. Initial investments in infrastructure, technology, and education may be substantial, and the return on investment may not be immediate. Economies must devise financial models, incentives, and mechanisms to encourage private and public entities to invest in circular initiatives without compromising economic stability (Lowe, 2017).

Chapter 3 - Overview of the Conference

APEC Conference on "World-Class CEIPs: Best Practices, Challenges, Opportunities, Training and Collaboration" was six (6) - day virtual conference organised in Malaysia from 30 October 2023 to 4 November 2023. This Conference, hosted by an independent contractor at the APEC Secretariat, aimed to disseminate the best practices and develop recommendations and toolkits to support APEC economies in implementing and managing sustainable CEIPs. The conference agenda and toolkits are presented in the Annex section of this document.

The Conference utilised seven keynote presentations on Days 1 and 2 on specific topics as summarised below:

1. Keynote address speaker 1 on "Introduction to the world-class CEIPs".
2. Keynote address speaker 2 on "a case study about the best practices Economy 1".
3. Keynote address speaker 3 on "A case study about the best practices Economy 2".
4. Keynote address speaker 4 on "Opportunities in the CEIPs
5. Keynote address speaker 5 on "A business model for a CEIPs.
6. Keynote address speaker 6 on "Sample of business model/Instructions on the assignment of the business model canvas".
7. Keynote address speaker 7 on "Challenges for the CEIPs".
8. Keynote address speaker 8 on:
    - Mentoring Session - Guidance and experience sharing on implementing CE industrial parks collaboration group assignments.
    - Preparation and sharing of the Toolkit.

Meanwhile, from Days 3 to 5, all participants (in five (5) groups based on location and field of expertise) were engaged in collaboration groups to propose a CE business model for industrial parks or SMEs. This was a significant part of the conference proceedings, where the participants built connections with each other and exercised innovation in teamwork.

The Conference was crowned on Day 6 with a group presentation and feedback session where the participants received overall observations on the assignments submitted by the Keynote address speaker 1. This was generally a mentoring session, giving guidance and experience sharing on implementing CE industrial parks.

3.1. Sharing contents from the Experts

3.1.1. Eco-Industrial Parks: Collaboration for Sustainability

After a remarkable welcome address, the project overseer encouraged participants to network and collaborate on small assignments related to the CEIPs. Keynote address speaker 1's presentation, commencing the Conference, focused on the concept of CEIPs, their evolution, characteristics, design principles, and the frameworks developed internationally for their guidance. He emphasised the collaborative approach to managing environmental and resource issues, resulting in enhanced environmental, economic, and social performance. The speaker also discussed industrial symbiosis's role in addressing climate change, managing pollution, ensuring social standards, and promoting shared infrastructure. He highlighted the benefits of eco-industrial parks, including improved business environments, resource efficiency, and synergies in discharging corporate social responsibility. The first part of his presentation concluded with him touching on the social and economic aspects of the concept, such as creating local employment opportunities, improving gender equality, and providing better security measures, as shown in **Figure 2**. The speaker also introduced the concept of a material circularity index to measure the park's performance and discussed various strategies for promoting resource optimisation and circularity within industrial parks. Finally, the speaker discussed the collaborative framework developed by UNIDO, GIZ, and the World Bank Group for Eco-Industrial Parks, which provides guidance for different sectors and considers the practicality and feasibility of implementation. A snapshot of the framework and performance requirements is shown in **Figure 3**.

3.1.2. Product Development and CEIP Requirements in China and Republic of Korea

Keynote address speaker 2 presented the stages of product development and implementation approaches outlined in the Handbook by UNIDO, as shown in **Figure 4**. He discussed economy-specific CEIP requirements, focusing on China and Republic of Korea and highlighted the role of the State Economic Production Agency in China. He also covered the reporting of progress on circularity in industrial production, using category-wise indicators in both economies. During the question-and-answer session, the limitations of the CEIP concept in developing economies and the applicability of design principles to brownfield industrial parks were discussed. The speaker also presented eight case studies of sustainable industrial parks from different countries, emphasising the importance of circularity, innovation, collaboration, and sustainable infrastructure. He concluded with an initiative for a recycling park in Hong Kong, China aimed at providing affordable infrastructure for small to medium enterprises in the recycling industry.

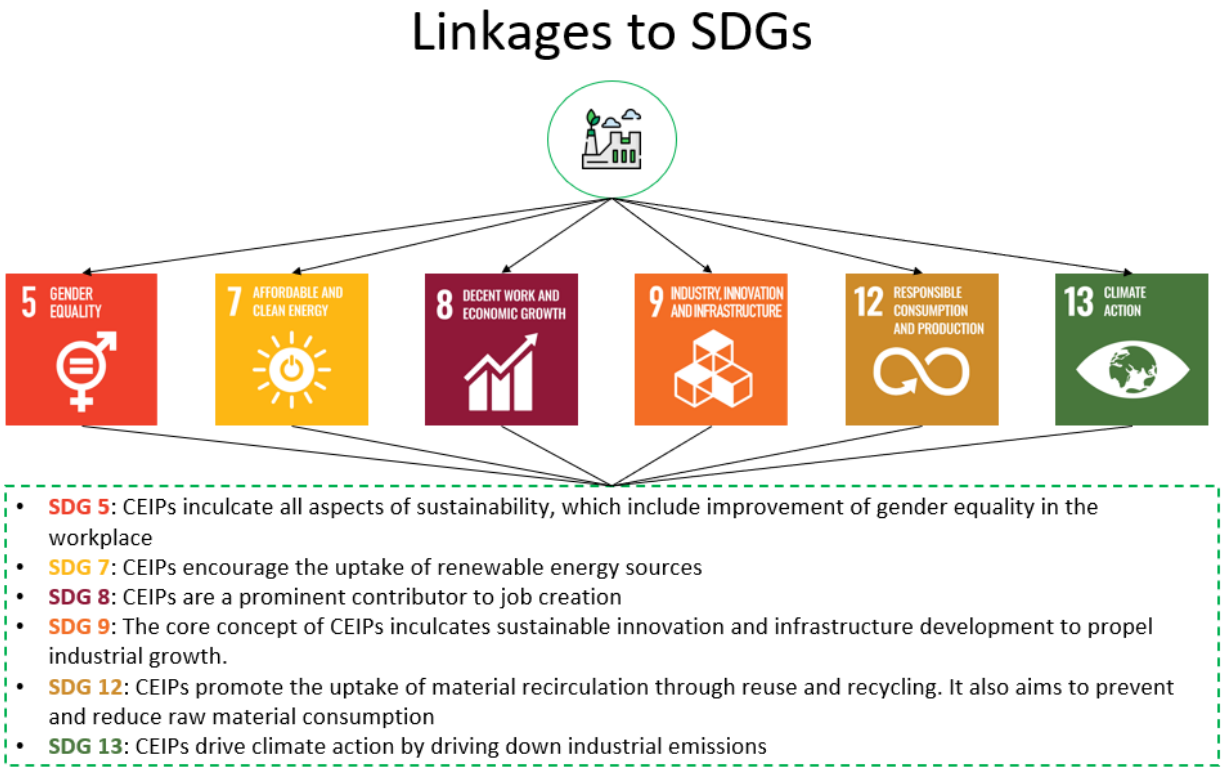

Figure 2. Circular Economy Industrial Parks and the United Nations Sustainable Development Goals.

The speaker introduced the concept of CEIPs, which collaborate and share knowledge to promote sustainable development. The team watched a *video* about Finland's domestic network of CEIPs, which contributes to the CE and benefits both companies and parks. The discussion highlighted the potential of this model at different regional levels in the Asia Pacific region. The speaker also discussed the promotion of CEIPs in Viet Nam and Colombia, emphasising the challenges of transforming traditional industrial parks into CEIPs and the need for policy support. The team also reviewed 6-7 case studies that showcased sustainability, circularity, climate responsiveness, and smartness. The speaker and host discussed the challenges and benefits of establishing and managing eco-industrial parks, focusing on collaboration, transparency, and information sharing within the park. The discussion ended with an open question about best practices in the techno-economy industrial parks.

3.1.3. Circular Economy Challenges in Northeast Industrial Sites

After a conference health break, Keynote address speaker 3 started her presentation by discussing the benefits of the CE as a business model. She also emphasised the importance of sharing lessons learned and best practices to revitalise economic development. The speaker discussed the significance of industrial sites in the northeast United States and the challenges of implementing CE practices in these areas. She emphasised the need to understand these sites' legal liability and potential health risks. The speaker also highlighted the importance of these sites in economic development, scientific and technological

discovery, community building, and educational growth. She underscored the role of collaboration and knowledge-sharing among industry experts from different regions to develop sustainable approaches in the concrete industry. The speaker also emphasised the need for effective remediation of contaminated sites and negotiating with site owners. The speaker and the conference host also discussed the challenges of integrating different industries and sectors to address issues such as carbon emissions, pollution, and water management within cities. They agreed on the need for a shift in approach towards sustainable development.

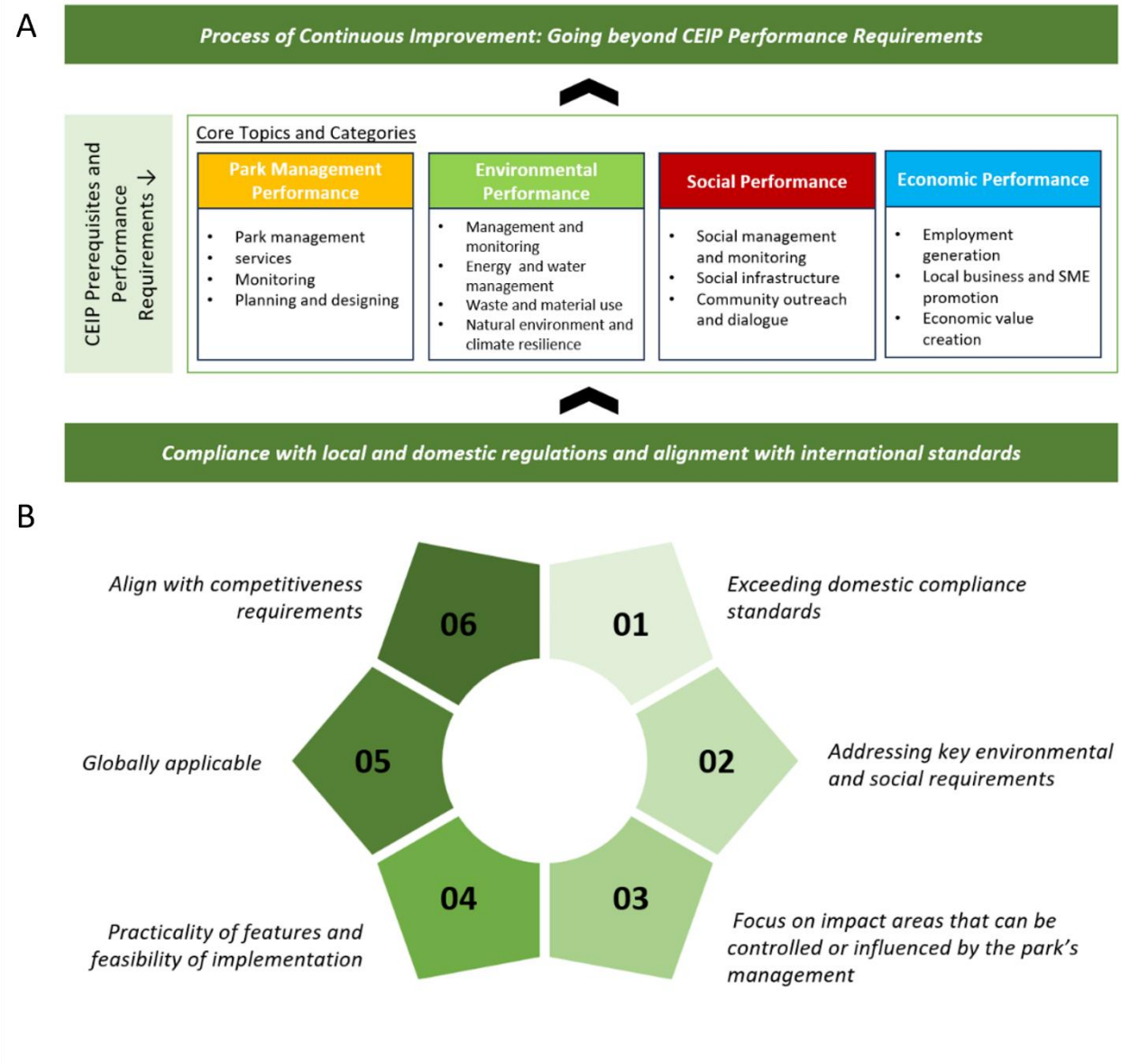

Figure 3. The collaborative framework developed by UNIDO, GIZ, and the World Bank Group for Circular Economy Industrial Parks: (A) Framework summary; (B) Performance requirements for the collaborative framework.

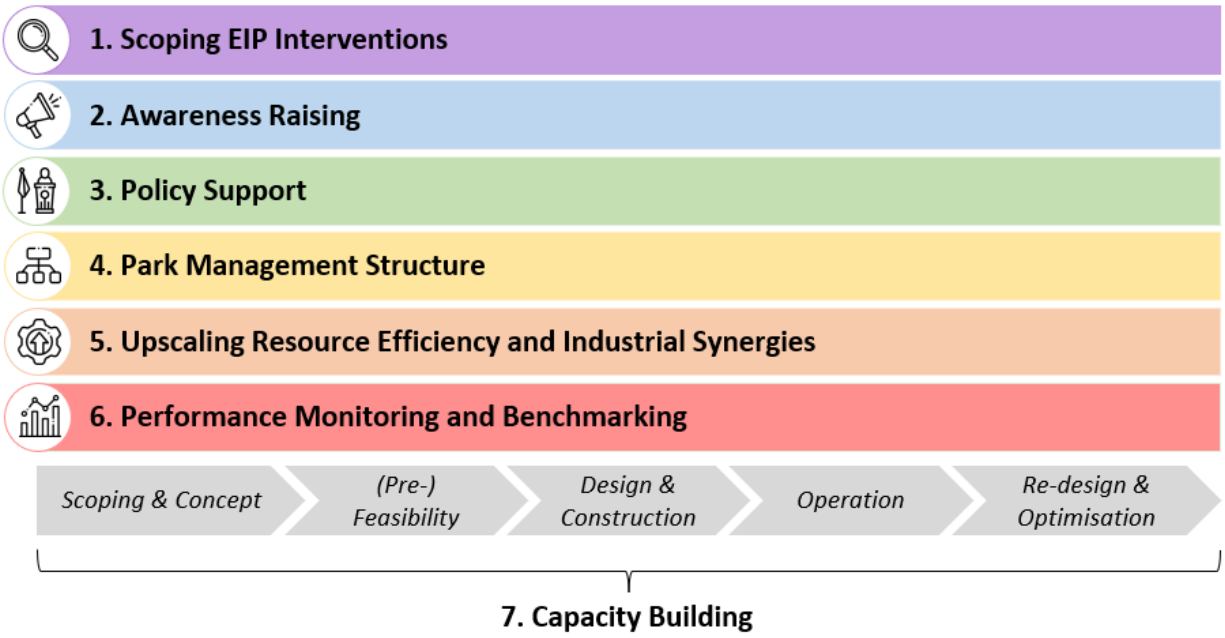

Figure 4. Circular Economy Industrial Parks implementation framework developed by UNIDO.

The discussion then shifted to keynote address speaker 4, ending conference Day 1 with a presentation on opportunities in the CEIPs. The keynote address speaker 4 initiated her presentation by discussing the Circularity Gap report and the current state of circularity worldwide, with the group agreeing that the world was less than 10% circular. The speaker emphasised the significance of transitioning from a linear to a CE and the role of industrial parks in this shift, as shown in **Figure 5**. The speaker shared her company's sustainability and corporate social responsibility journey since 2005 and highlighted that they have focused on regenerative business for the past three years. The speaker also shared that she works with clients at two levels: developing circular economic strategies and creating circular products and services. She also stressed the importance of integrating circularity into operations and utilising circular economic principles in everyday work, research, and development. She also shared a success story about helping a renowned Finnish scientist, Ali Harlin (from the Technical Research Center of Finland), commercialise his patented carbon technology through CE approaches, leading to sustainable growth and partnerships with global brands. She also mentioned their National Circular Design Program, which aids companies in developing their research and development (R&D) processes and product offerings towards circularity.

Figure 5. Fundamental principles of a circular economy**.**

3.1.4. Circular Economy Principles and Companies Overview

The speaker discussed the principles of a CE, emphasising the importance of resource management and decoupling growth from using raw materials. She suggested asking questions about designing out waste and pollution, keeping materials in circulation, and regenerating natural ecosystems through business operations. The conversation touched on planetary boundaries and the role of industrial parks in leading the transition towards sustainability. The speaker also provided an overview of three CE case studies and the concept of industrial symbiosis: Topinpusito, ECO3 and Reborn in Paimio. Topinpusito, a CE hub, is developing and collaborating around material, water, and energy flows within the industrial park, a network of businesses and research institutes. Some businesses operating in the area include Turun Maisemointi and Smart Chemistry Park. She encouraged further exploration of these companies' and concepts' websites for more information. On ECO3, she highlighted that sketching ecosystems, linkages, and material flows allows stakeholders to develop new ideas around new types of products and service offerings. A typical sketch based on ECO3 principles is shown in **Figure 6**. She showed typical examples of how companies like WasteWise apply this concept to recycle and refine 10,000 tons of rubber tyres annually.

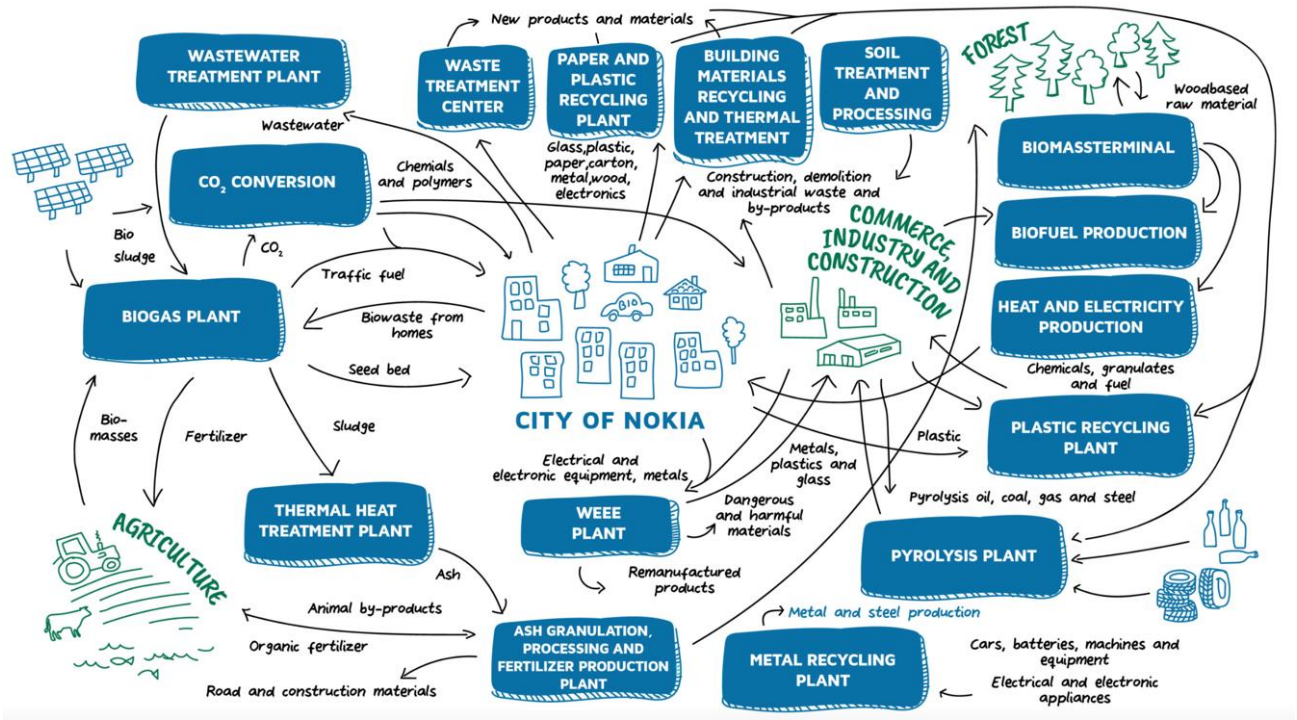

Figure 6. Example of sketching ecosystems, linkages, and material flows with ECO3 concept of industrial symbiosis.

The speaker discussed their project in southwestern Finland's Pioneer, focusing on developing an industrial park. The team introduced a new slogan, 'Reborn in Paimo,' which emphasises the circularity aspect of the area. They defined a circular business ecosystem, a concept previously developed in 2017, and introduced it to interested companies. The speaker presented the company's vision of creating a CE with other companies and emphasised the importance of starting with an ambitious circular vision. The company also stressed the significance of involving companies in the co-creation process from the beginning. The speaker addressed questions about the transition away from a linear economy, the placement of tenants in industrial parks, and the sustainability of a CE without government support.

Day 1, therefore, focused on CEIPs and CE principles in driving sustainable development. The speakers discussed various aspects of CEIPs, including their evolution, design principles, international frameworks, and case studies showcasing best practices. The speakers highlighted the potential of CEIPs to lead the transition to a CE, provided they are designed with future-oriented, ambitious visions and a strong emphasis on collaboration and co-creation among businesses. The discussions underscored the need for financial incentives, political will, and regional support to foster the development of CE industrial parks.

Keynote address speakers 1 and 2 introduced the concept of CEIPs, highlighting their evolution and the main drivers behind their development. CEIPs are communities of manufacturing and service businesses located on a shared property, aiming to enhance environmental, economic, and social performance through collaboration in managing environmental and resource issues. He emphasised the importance of linking CEIPs to

sustainable development goals (SDGs) and outlined design principles for CEIPs, such as reducing environmental impact, maximising energy efficiency, and networking companies with suppliers and customers. He also presented international frameworks for CEIPs developed by organisations like UNIDO, GIZ, and the World Bank Group. These frameworks guide new and existing parks, covering aspects such as park management, environmental performance, and economic performance. The speaker highlighted examples from China and Korea (or ROK or Republic of Korea), where national standards and performance indicators have been established to track the progress of CEIPs.

Keynote address speakers 3 and 4 focused on the CE perspective within industrial parks, stressing the need to move from linear to circular thinking. CE principles in CEIPs can lead to significant innovations, especially when combined with digital technology. The speaker also discussed various strategies and management models for promoting circularity in CEIPs, including using renewable energy and creating symbiotic networks for material exchange.

Case studies were presented to illustrate the application of CE principles in CEIPs. One example was the Toppingpoisto CEIP in Finland, which integrates businesses and research institutes to create products and services based on CE principles. Another example was the ECO3 CEIP, which focuses on multi-site operations and technical cycles for refining industrial side streams. The third case study discussed the Paimio CEIP, which was developed with an ambitious circular vision and co-creation with companies from the outset.

3.1.5. Business model for a Circular Economy industrial park

Day 2 of the conference started with the keynote address speaker 5's presentation on a business model for a CE industrial park and some case study examples. He introduced the concept of the CE, highlighting its alignment with United Nations Sustainable Development Goals (SDGs) related to water sanitation, energy, economic growth, consumption and production, responsibility, life online, privacy, industry innovation, infrastructure, sustainability, communities, climate action, and life below water. He emphasised the CE as a system where materials never become waste but are regenerated by nature. The focus was on eliminating or reducing waste, circulating products and materials at the highest value, and regenerating nature.

The strategic diagram for the CE included finite materials (circulated and reused) and renewables (using materials extracted from renewable sources). The speaker discussed the importance of minimising systematic leakage and negative externalities through the circular process. He connected these principles to business model innovation and initiative creation, highlighting the ease of externalising these concepts.

The presentation transitioned to the CEIPs, introducing 11 tools involved in the eco-investment lab. The tools covered gender equality, clean water and sanitation, renewable energy, decent work and economic growth, innovation and infrastructure, sustainable cities and communities, responsible consumption and production, and climate action. He explained that CEIPs contribute to economic growth, job creation, and sustainable development. The subsequent discussion touched on the components of CEIPs,

emphasising natural systems, energy efficiency, material flows, water management, and park management and supply services. The benefits of implementing CEIPs were categorised into monetary benefits for companies, environmental benefits, and social benefits. The speaker highlighted reducing production costs, environmental compliance costs, and positive impacts on job creation, clean water access, and health systems.

The presentation concluded with an overview of integrating CE principles into the CEIP, using the Business Model Canvas to design and manage business models. The speaker discussed various blocks in the canvas, including value proposition, customer segments, channels, customer relationships, key partners, key activities, key resources, cost structure, and revenue streams, as shown in **Figure 7**. Finally, the importance of eco-social costs and benefits in enhancing the unique value proposition of CEIPs was highlighted.

Keynote address speaker 6's presentation on Day 2, he presented the business campus model for eco-industrial practices, using ongoing examples. The first example he discusses is the Qinana Eco-Industrial Park in Australia, developed by UNIDO, GIZR, and the World Bank. The park employs industrial symbiosis and CE practices, emphasising resource exchange, waste reduction, environmental stewardship, innovation, and community engagement. The business model promotes business collaboration to optimise resources, reduce waste, and minimise environmental impact. He emphasised key principles like industrial symbiosis, CE, and resource efficiency. He also compares this model with two other examples: Cullenburg Eco-Industrial Park and CleanTech Park in Singapore. Cullenburg focuses on waste exchange and resource sharing, achieving significant environmental and economic benefits. CleanTech Park emphasises an innovation ecosystem, CE practices, and collaboration among startups, researchers, and government bodies.

He concludes by providing updates on Indonesia's eco-industrial initiatives, highlighting 138 industrial areas targeted for adopting the eco-industrial park model by 2024. He stressed the importance of collaboration, circular business models, technology, education, financial strategies, regulatory compliance, and continuous improvement in developing successful CEIPs.

3.1.6. Challenges for the Circular Economy Industrial Parks

Keynote address speaker 7 then presented the challenges associated with setting up CE industrial parks, emphasising the importance of addressing these challenges for the success of such projects. He began by discussing system boundaries, highlighting the need to decide whether the park's scope should be limited to its perimeter or expanded to include the local community or even a larger region.

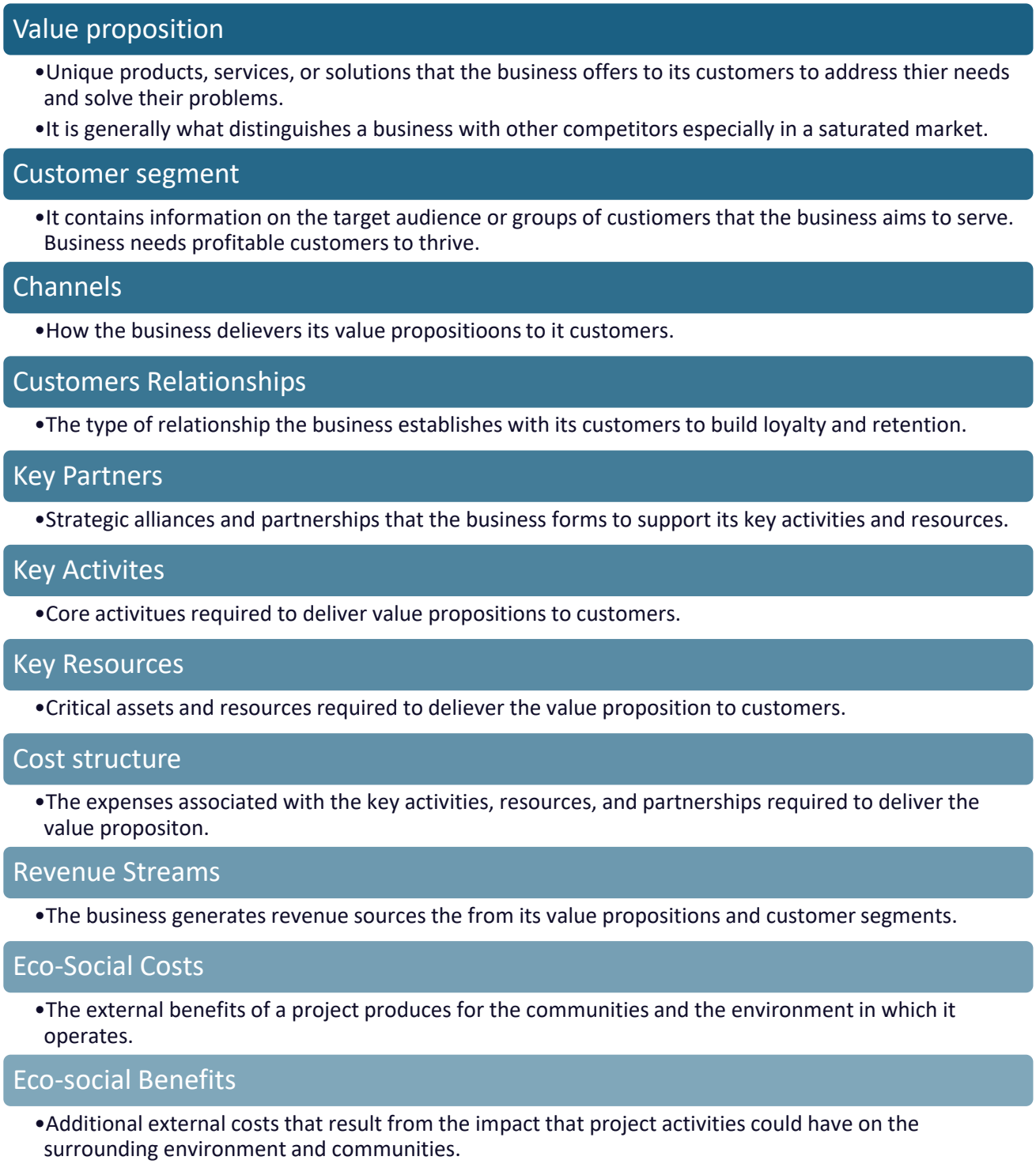

Figure 7. The key elements of a sustainable Business Model Canvas for Circular Economy Industrial Parks.

The speaker stressed the importance of stakeholder consultation in making this decision, as involving the neighbourhood can have various benefits, such as access to skilled labour and collaboration with academic institutions.

The presentation delves into several challenges, including environmental assessments, the relationship between individual companies and the overall park, regulatory and policy frameworks, funding, infrastructure development, economic viability, climate considerations, stakeholder collaboration, resource integration, and transforming existing industrial parks into circular models. The speaker emphasised the need for a comprehensive and proactive approach to address these challenges, incorporating elements such as training centres, certifications, information technology platforms, and climate-proofing strategies.

Furthermore, the presentation highlights the complexity of resource sharing, legal frameworks, and the potential competition or co-operation between multiple parks. The speaker also touches upon the importance of innovation, collaboration with academic institutions for research and development, life cycle analysis, and the challenges associated with brownfield sites and land remediation. The examples of successful circular industrial parks discussed in the presentation serve as valuable lessons for overcoming these challenges and achieving sustainable and circular practices within the industrial sector.

He then highlighted the importance of proactively addressing these challenges and learning from examples of successful CEIPs. He also mentioned that significant challenges can be overcome with careful planning, stakeholder engagement, and innovative solutions.

3.1.7. Participant collaboration project

From Conference Days 3-5, participants were placed in five (5) groups to propose a CE business model for industrial parks or SMEs. During these days of the Conference, they had the chance to know each other and decide on an industrial park or SME to work on. They had the flexibility to decide on the appropriate working platform meetings, agenda and their roles. Group leaders ensured the assignments were completed and submitted for review on Day 5 as they prepared for presentations on Day 6.

On Day 6 of the Conference, in groups of five (5) presentations and feedback sessions, the participants received overall observations on the assignments submitted by the Keynote address speaker 8. This was generally a mentoring session, giving guidance and experience sharing on implementing CE industrial parks. Here are the topics the individual groups chose for their presentations:

1. Group one – The integrated palm oil industrial park.

2. Group two – Developing a Circular Economy: An examination of small and medium enterprise's role in India.

3. Group three – Biogas - Converting food and organic waste into bioenergy.

4. Group four – Koto Kinabalu Industrial Park: Sabah: transformation to an Eco-industrial park in Malaysia.

5. Group five – Business model canvas water recycling/ treated wastewater recycling for the existing industrial cluster.

After the group leaders' end presentation, the keynote address speaker 8 engaged in a brief discussion highlighting the interesting bits of the presentations and asked questions on specific areas for better understanding. He also made relevant recommendations on how to improve their initiatives.

3.2. Evaluation of pre-conference survey research

With the intention of gathering the needs and expectations of participation towards the conference, pre-conference survey research was shared among the APEC network to identify challenges potential participants of the conference face in their economies that will be relevant to highlight in the Conference.

From the response, the conference was expected to host a very diverse group of participants with at least two years of experience in diverse fields of government/policy, academia, industry, international institutions, private/NGO and students. The diversity included water supply, management and treatment, materials and production, waste management, energy, wastewater treatment, recycling value chain, engineering, manufacturing, research and project management. A majority of the participants proved to have moderate knowledge of CEIPs. Again, the majority also acknowledged that their economies have barely prioritised and achieved the following:

1. Economic performance of businesses and industries

    a. In a reduction in production and compliance costs (through strategic business coordination), energy consumption, transportation cost, waste management, etc.

2. Environmental performance of businesses and industries

    a. In sustainability, decrease in the demand for natural resources, waste management (in all forms: solid waste, air emissions, wastewater), waste management and recycling, waste to resources, education and awareness, etc.

3. Social performance of businesses and industries

    a. In creating more job opportunities, lower cost of living, access to basic human needs (cleaner air, cleaner water), education and health care, addressing gender needs, appropriate social infrastructure, etc.

Among the conference objectives shared with potential participants and stakeholders who were planning to register for the conference, about 70% of them were looking forward to experts sharing world-class CE industrial parks. This reflects the awareness of global initiatives in world-class CEIPs. Nevertheless, most participants did not have experience developing CE business model proposals for industrial parks or SMEs.

Additionally, some of the participants had questions before the conference, which were forwarded to speakers to be included or addressed in their presentations. Here are some of the questions participants asked ahead of the Conference:

1. How do we make circular models economically sustainable?
2. Is the CE a practical approach or an approach on paper?
3. What forms of financial support are required to promote the success of CE industrial park initiatives?
4. What challenges are faced when business competitors operate in the same CE industrial park?
5. What are the roles of the economy-wide government or local government in ensuring the success of CEIPs?
6. How are industrial players convinced to be involved in the CEIPs projects?

3.3. Post-conference surveys for all participants

Participants were encouraged to share their views and advice on the conference's impact and efficiency and possible suggestions and policy implications for future APEC-related co-operation programs and activities.

Participants generally found the Conference very informative and well organised. About 95% of the respondents agreed that the project met its intended objectives, incorporated experienced trainers/experts, allocated time efficiently, knowledge sharing and significantly improved their knowledge of CE and CEIPs. Many participants were encouraged to implement their experience and acquired skills in their work, including policy planning, research, developing business models, project design components, additional knowledge for university teaching subjects, and even internal mentorship training in their companies.

Nevertheless, a few suggestions were made to improve and build on upcoming APEC events. Such included shortening the conference day for a more intensive workshop in two or three days, changing to an in-person conference, increasing health break time, improving participant engagement and involving all economies for diverse engagement.

According to participants, APEC can link the project's outcomes to subsequent collective actions by fora or individual actions by economies by promoting the following:

1. Research collaboration, especially between higher learning institutions and relevant government agencies.
2. Set up a database of industrial parks within the economy, which can be updated occasionally for knowledge sharing.
3. Organised field trips to other CEIPs

Compared to the pre-conference survey, participants agreed that the conference achieved knowledge-sharing results, strengthened awareness of CE, and effectively applied the business model canvas in CEIPs. Participants also acknowledged skills and knowledge such as CEIPs from other economies, research gaps in implementing CEIPs, conference toolkits on CEIPs and CE, policy recommendations and understanding the challenges and framework for developing CEIP projects.

3.4. Pre and post-event Participants' Gender Statistic

A summary of the gender statistics of the respondents to the pre-and post-conference survey is provided in **Figure 8**. The statistics of survey participation underwent a subtle shift between both surveys, showing a nuanced change in gender representation. In the pre-conference survey, the participation was characterised by a distribution of 25% female and 75% male respondents, indicating a relatively higher male presence. There was a minor adjustment post-conference, with the distribution showing 20% female and 80% male respondents. Understanding and analysing these gender dynamics in survey participation can provide valuable insights into the inclusivity and diversity aspects of the conference's impact on its audience.

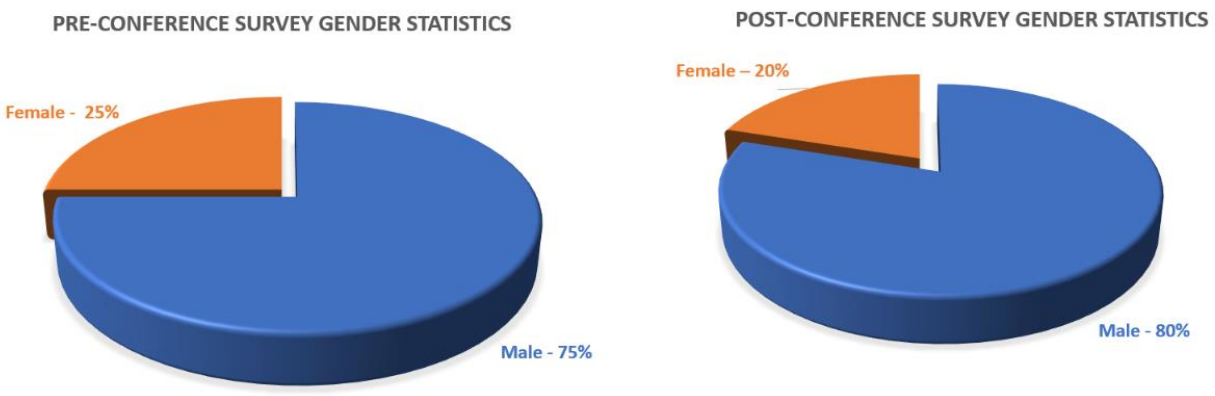

Figure 8. A gender statistic of the respondents to the pre-and post-conference survey.

3.5. List of policy recommendations

In pursuing the aim of this Conference, i.e. to disseminate the best practices and develop recommendations, the Conference convened thought leaders, policymakers, and industry experts to deliberate on innovative strategies and policy frameworks. This gathering focused

on distilling key insights and formulating policy recommendations that align with the evolving landscape of CEIPs. These recommendations stand as a testament to the commitment of stakeholders to foster circularity, promote industrial symbiosis, and drive positive economic and environmental outcomes within the realm of CEIPs. In particular order, here are some recommendations and ideas for developing more holistic CEIPs among APEC economies:

1. Establishing System Boundaries: Determine whether the CEIPs boundaries will be confined to the park or include the neighbouring community and region, impacting the environmental assessment and stakeholder engagement.

2. Securing Funding: Explore various funding options for the CEIP, including grants, subsidies, and private sector investments, to ensure economic viability and support for infrastructure development.

3. Stakeholder Collaboration: Engage with a diverse group of stakeholders, including businesses, regulators, local communities, and investors, to gain support, co-operation, and participation in the development and operation of the CEIP.

4. Resource Integration: Coordinate sharing resources like water, energy, and materials among park members to optimise environmental performance and economic benefits while addressing potential legal and contractual challenges.

5. Addressing Technical Expertise and Innovation: Ensure the availability of technical expertise for the design and implementation of the CEIP and foster a culture of innovation through partnerships with academic institutions and the establishment of R&D facilities within the park.

6. Foster multidisciplinary collaboration within CEIPs to co-create and innovate on CE solutions, ensuring materials are kept in circulation and retain high value.

7. Utilise digital solutions to enable and track circularity within industrial parks, optimising resource usage and waste management.

8. Engage regional support and collaborate with local governments and cities to develop CEIPs that provide regional economic benefits and job creation.

9. Design industrial parks should intentionally focus on CE from the start, creating ambitious visions that guide the development and operations towards sustainability and regeneration.

Chapter 4 - Conclusions

The Conference was highly interactive and provided opportunities for all stakeholders to disseminate the best practices and develop recommendations and toolkits to support APEC economies in implementing and managing sustainable CEIPs.

The discussions highlighted the potential of CEIPs to lead the transition to a CE, provided they are designed with future-oriented, ambitious visions and a strong emphasis on collaboration and co-creation among businesses. The discussions underscored the need for financial incentives, political will, and regional support to foster the development of CEIPs.

The Conference introduced the CE concept, emphasising its alignment with UN SDGS across various sectors. It highlighted CE as a system where nature continually regenerates materials, focusing on waste elimination, high-value product circulation, and nature regeneration. The strategic diagram for the CE incorporated both finite materials and renewables. The components of a CEIP were discussed, highlighting natural systems, energy efficiency, material flows, water management, and park management. The benefits of CEIPs included economic, environmental, and social aspects, such as reduced production costs and positive impacts on job creation and health systems. The integration of CE principles into CEIPs using the Business Model Canvas, focusing on eco-social costs and benefits to enhance the unique value proposition of CEIPs, was also discussed.

A detailed insight into the challenges faced when establishing and operating CEIPs helped to emphasise the importance of considering system boundaries, conducting comprehensive environmental assessments, and understanding the role of individual companies within the park. Hence, there is a need to secure funding, develop robust infrastructure, ensure economic viability, and maintain scalability. Also, the significance of stakeholder collaboration, resource integration, technical expertise, and technology adoption, as well as the necessity of training and capacity building, data management for certifications, and addressing climate risks. Notwithstanding the complexities of managing supply chains, the competition between parks, and the importance of innovation and life cycle analysis.

There is a call to action for designing CEIPs with ambitious circular visions, co-creating with companies from the outset, engaging in multidisciplinary R&D, and harnessing digital solutions to enable circularity. The importance of financial incentives, political will, and regional support in fostering the growth of CEIPs was also underscored.

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Annex

A.1. Conference Agenda.

Table A. 1. Day 1 - 30 October 2023

Time	Agenda/Presentation	Speaker
9.00 AM – 9.05 AM (5 mins)	Introduction to the conference and agenda	Independent contractor: APEC Secretariat.
9.05 AM – 9.10 AM (5 mins)	Welcome address	Project Overseer
9:10 AM - 10:00 AM (50 mins)	Introduction to the World-class CEIPs	Keynote address speaker 1
10:00 AM – 10:50 AM (50 mins)	A case study about the best practices Economy 1 (Questions and answers session)	Keynote address speaker 2
5 mins Health break		
10.55 AM – 11.45 AM (50 mins)	A case study about the best practices Economy 2. (Questions and answers session)	Keynote address speaker 3
11:50 AM – 12:40 PM (50 mins)	Opportunities in the CEIPs (Questions and answers session)	Keynote address speaker 4
12:45 PM – 12.55 PM (10 mins)	Recap/Announcement and closure	Independent contractor: APEC Secretariat

Table A. 2. Day 2 - 31 October 2023

Time	Agenda/Presentation	Speaker
9.00 AM – 9.05 AM (5 mins)	Welcome address and introduction to the conference Day two and agenda.	Independent contractor: APEC Secretariat

Time	Agenda/Presentation	Speaker
9:05 AM - 10:05 AM (1 h)	Business model for CEIPs. (Questions and answers session)	Keynote address speaker 5
10:05 AM – 11:05 AM (1 h)	Sample of business model/Instructions on the assignment of the business model canvas. (Questions and answers session)	Keynote address speaker 6
5 mins Health break		
11:10 AM - 12:10 PM (1h)	Challenges for the CEIPs. (Questions and answers session)	Keynote address speaker 7
12:15 PM – 12:45 PM (30 mins)	Instructions on the business model canvas (BMC) assignment that will be working in collaboration sessions.	Independent contractor: APEC Secretariat
12:45 PM – 12:50 PM (5 mins)	Recap/Announcement and Closure.	Independent contractor: APEC Secretariat

Table A. 3. Day 3 - 1 November 2023

Time	Agenda/Presentation	Speaker
9.00 AM – 9.10 AM (10 mins)	Welcome address and introduction to the conference day three and agenda. (Organising case studies and responding to questions and inquiries)	Independent contractor: APEC Secretariat
Participants' timing 9.05 AM – 1.00 PM	Assignment Based on the group-decided assignment case, all group members will study and work on the distributed BMC segments. The group members	Participants - collaboration sessions

Time	Agenda/Presentation	Speaker
(Depending on your time zone and what the group decides)	could work on their availability, clarify questions, and update progress in the WhatsApp group.	

Table A. 4. Day 4 - 2 November 2023

Time	Agenda/Presentation	Speaker
9.00 AM – 9.10 AM (10 mins)	Welcome address and introduction to the conference day four and agenda. (Organising case studies and responding to questions and inquiries).	Independent contractor: APEC Secretariat
Participants' timing 9.05 AM – 1.00 PM (Depending on your time zone and what the group decides)	Assignment To complete and enhance the group assignment's quality, each group member should review, edit, revise and finalise the added work from the team member at the agreed working platform. The group leader should ensure the assignment's completion.	Participants - collaboration sessions

Table A. 5. Day 5 – 3 November 2023

Time	Agenda/Presentation	Speaker
9.00 AM – 9.10 AM (10 mins)	Welcome address and introduction to the conference day five and agenda.	Independent contractor: APEC Secretariat

Time	Agenda/Presentation	Speaker
Participants' timing 9.05 AM – 1.00 PM (Depending on your time zone and what the group decides	Assignment Group members could continue to review, edit, revise and finalise the group assignment if it is yet to be completed. Before noon, the group leader should ensure the assignment is completed and submitted at the Google link on Day 2. Groups will prepare for a 2 -3-minute presentation on Day 6. Assignments will be reviewed by Keynote address speaker 8.	Participants - collaboration sessions and Keynote address speaker 8.

Table A. 6. Day 6 – 4 November 2023

Time	Agenda/Presentation	Speaker
9.00 AM – 9.10 AM (10 mins)	Welcome address and introduction to the conference's final day and agenda.	Independent contractor: APEC Secretariat
9:10 AM - 11:10 AM (2 h)	Group presentations and feedback sessions where the participants will receive overall observations on the assignments submitted. Mentoring Session - Guidance and experience sharing on implementing CEIPs.	Keynote address speaker 8
11:15 AM – 11:55 AM (40 mins)	Sharing of the Toolkit (electronic form in PDF format). *Toolkit is the knowledge resource to learn more about World-Class* CEIPs *and suitable networking platforms.*	Keynote address speaker 8

Time	Agenda/Presentation	Speaker
11: 55 AM – 12:00 PM (5 mins)	Recap and Conference closure.	Independent contractor: APEC Secretariat

A.2. Toolkit

A.2.1. About the Toolkit

This interactive Toolkit is a comprehensive resource repository curated by the Keynote address speaker 8. Users can explore a variety of materials to familiarise themselves with key concepts related to CEIPs. The Toolkit includes introductory literature on CE, introduces organisations actively advancing the CE agenda globally, and showcases notable research on the application of CE across various sectors and industries.

Moving beyond the basics, the Toolkit provides in-depth information on CEIPs and industrial symbiosis, illustrating how CE principles can be seamlessly integrated into these concepts. Users will find detailed insights into successful case studies accompanied by videos highlighting CEIPs. The Toolkit also offers access to relevant CE networking platforms to encourage stakeholder engagement, fostering collaborative participation.

A.2.2. User guide

The resources in this Toolkit are divided into six sections, including.

- Insights on Circular Economy in the Global Context
- Some Organisations Fostering Circular Economy Across the Globe
- Sectoral/Industry Focus on Circular Economy
- Research on Circular Economy Industrial Parks
- Videos
- Relevant Networking Platforms

It is important to note that all sections contain clickable links to online reports, articles, academic papers, and videos.
Disclaimer: Please note that APEC is not recommending any particular resource ideal for obtaining information on the topics listed in this Toolkit. The resources cited are only samples.
Please note: URLs of online resources may change over time. If you are experiencing a 'broken link', please report it to APEC.

A.2.3. Insights on Circular Economy in the Global Context

Sr. No.	Title of Report/Article	Author	URL
1.	What is a Circular Economy? Visualising the Circular Economy	Ellen Macarthur Foundation	Click here and here
2.	The Circularity Gap Report 2023	Circle Economy	Click here

3.	Global Consultations on Circular Economy	United Nations Industrial Development Organisation	Click here
4.	Decent Work in the Circular Economy: An overview of the existing evidence base	International Labour Organization	Click here
5.	Promoting a Just Transition to an Inclusive Circular Economy	Chatham House	Click here
6.	Securing Reverse Supply Chains for a Resource Efficient and Circular Economy	Organisation for Economic Co-operation and Development	Click here
7.	Squaring the Circle: Policies from Europe's Circular Economy Transition	The World Bank Group	Click here

A.2.4. Some Organisations Fostering Circularity Across the Globe

Sr. No.	Title of Report/Article	Author	URL
1.	Ellen Macarthur Foundation	Ellen Macarthur Foundation	Click here
2.	Product Stewardship Centre of Excellence	Product Stewardship Centre of Excellence	Click here
3.	Leiden-Deft-Erasmus Centre for Sustainability	Leiden-Delft-Erasmus Centre for Sustainability	Click here
4.	Centre for Sustainable Materials Research and Technology	SMaRT@UNSW Sustainable Materials Research & Technology	Click here
5.	Fraunhofer Cluster of Excellence Circular Plastics Economy	Fraunhofer Cluster of Excellence Circular Plastics Economy CCPE	Click here
6.	Centre for Sustainable Design	The Centre for Sustainable Design (CfSD)	Click here
7.	Swedish Life Cycle Centre	Swedish Life Cycle Center	Click here

A.2.5. Sectoral/Industry Focus on Circular Economy

Sr. No.	Title of Report/Article	Author	URL
1.	Turning off the Tap: How the world can end plastic pollution and create a circular economy	UN Environment	Click here
2.	Navigating Plastic Alternatives in a Circular Economy	Closed Loop Partners	Click here
3.	Towards a Circular Steel Industry	International Renewable Energy Agency.	Click here
4.	Driving Ambitions: The Business Case for Circular Economy in the Car Industry	World Economic Forum	Click here
5.	Fashion and the Circular Economy	Ellen Macarthur Foundation	Click here
6.	Creating a Better World: Circularity in Construction	Deloitte	Click here
7.	Taking on Tomorrow: The Rise of Circularity in Energy, Utilities and Resources	PWC	Click here

A.2.6. Research on Circular Economy Industrial Parks

Sr. No.	Title of Report/Article	Author	URL
1.	An International Framework for Eco-Industrial Parks	The World Bank Group	Click here
2.	Eco-Industrial Parks: Achievements and Key Insights from Global RECP Program	United Nations Industrial Development Organisation	Click here
3.	Development of Eco-Industrial Parks and Industrial Symbiosis Networks	Swedish Environmental Research Institute	Click here
4.	Circular Economy in Industrial Parks: Technologies for Competitiveness	The World Bank Group	Click here

Sr. No.	Title of Report/Article	Author	URL
5.	These industrial parks lead the way for a circular economy	Business Norway	Click here
6.	The role of eco-industrial parks in promoting circular economy technologies in the regions	Anna Starodubova, Dinara Iskhakova, and Chulpan Misbakhova, Kazan National Research Technological University, 420015, Kazan, Russian Federation	Click here
7.	Industrial symbiosis networks as part of a circular economy: Employment effects in some industrialising countries	International Labour Organization	Click here
8.	Industrial Symbiosis: Circular Practices in China's Industrial Parks	P4G Partnerships	Click here
9.	Circular Economy Retrofitting of Chinese Industrial Parks	Veolia Institute	Click here
10.	Applying Circular Economy Principles to Industrial Parks: A Case Study of France	EIT Climate-KIC	Click here
11.	Clusters in Circular Economy: Building Partnerships for Sustainable Transition of SMEs	Cluster Excellence Denmark	Click here
12.	This is how we turn more industries into circular economies	World Economic Forum	Click here
13.	Case Study: China (Yeji Industrial Park)	Green Policy Platform	Click here
14.	Case Study: Thailand (Amata Industrial Park)	P4G Partnerships	Click here, here and here
15.	Case Study: Denmark (Kalundborg Industrial Estate)	AMATA	Click here
16.	Case Study: Australia (Oakajee Industrial Estate)	Engie Impact	Click here
17.	Case Study: ROK (Eco-Industrial Park Program)	DevelopmentWA	Click here

A.2.7. Videos

Sr. No.	Title of Report/Article	Author	URL
1.	Eco-Industrial Park Intervention in Viet Nam	United Nations Industrial Development Organisation	Click here
2.	A Guide to Designing High-Performing Eco-Industrial Parks	Green Growth Knowledge Partnership	Click here
3.	How to Design a Circular Economy	Teemill	Click here
4.	Industrial Ecology and Circular Economy	UNSW E-Learning	Click here
5.	Circular Economy and Eco-Industrial Parks	Circular Economy Learning Series	Click here
6.	How to Become a Green SME in a Circular Economy	EU Environment	Click here

A.2.8. Relevant Networking Platforms

Sr. No.	Platform/Organisation	Brief Information	URL
1.	Ellen Macarthur Foundation Network (CE 100)	• Engages leading stakeholders, innovative changemakers and ambitious organisations to develop circular economy opportunities that galvanise impactful solutions from concept to scale. • Provides expertise and insights; support in developing partnerships and demonstrating success; and a space to convene and collaborate.	Click here
2.	GreenBiz Executive Network	• Peer-driven membership group • Supports sustainability professionals from the world's largest companies in driving transformation across their organisations.	Click here
3.	RECPnet	• Global Network for Resource Efficient and Cleaner Production aims to facilitate North-South, South-South and South-North-	Click here

Sr. No.	Platform/Organisation	Brief Information	URL
		South collaboration, including the transfer of RECP-relevant knowledge, experiences and technologies.	
4.	A.SPIRE	• Represents innovative process industries. • Has more than 150 industrial and research process stakeholders. • It brings together organisations from world-leading sectors operating in Europe.	Click here
5.	Scale360°	• Playbook created by World Economic Forum. • Enables connectivity amongst stakeholders like financiers, technologists, activists, public servants and others in need of circular innovation solutions.	Click here
6.	Platform for Accelerating the Circular Economy (PACE)	• Started as a public-private collaboration. • Brings key stakeholders to the table to collaboratively design public policy reforms from both a global perspective through the leaders' network and a local view through the projects.	Click here
7.	ASEAN Circular Economy Stakeholder Platform	• Regional facility helping ASEAN Member States (AMS) achieve sustainable consumption and production by accelerating the transition towards a circular economy.	Click here
8.	Holland Circular Hotspot (HCH)	• Private-public platform. • The HCH foundation, (local) government authorities, knowledge institutes and companies intensively and internationally collaborate and exchange knowledge with the aim to stimulate entrepreneurship in the field of circular economy.	Click here
9.	UNEP Circularity Platform	• Provides an understanding of the circularity concept, its scope and how it contributes to promoting	Click here

Sr. No.	Platform/Organisation	Brief Information	URL
		sustainable consumption and production patterns. • Offers a wide range of resources for adopting circular approaches across sectors including plastics, textiles, and electronics.	
10.	Global Eco-Industrial Parks Programme	• Guided by an approach developed by UNIDO. • Objective: to demonstrate the viability and benefits of eco-industrial park (EIP) approaches, particularly in scaling up resource productivity and improving economic, environmental and social performances of businesses, which contribute to inclusive and sustainable industrial development in participating developing and transition economies.	Click here
11.	European Circular Economy Stakeholder Platform	• Joint initiative by the European Commission and the European Economic and Social Committee. • Brings together stakeholders active in the broad field of the circular economy in Europe.	Click here