UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

SUSTAINABLE DEVELOPMENT GOALS

Global consultations on circular economy 2022

Background note

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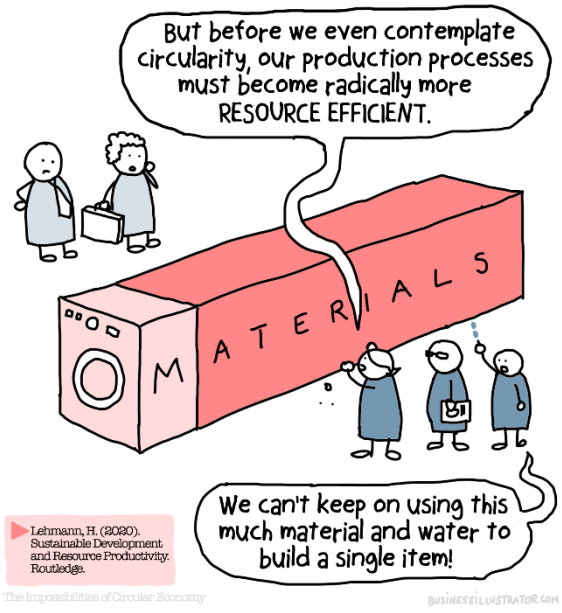
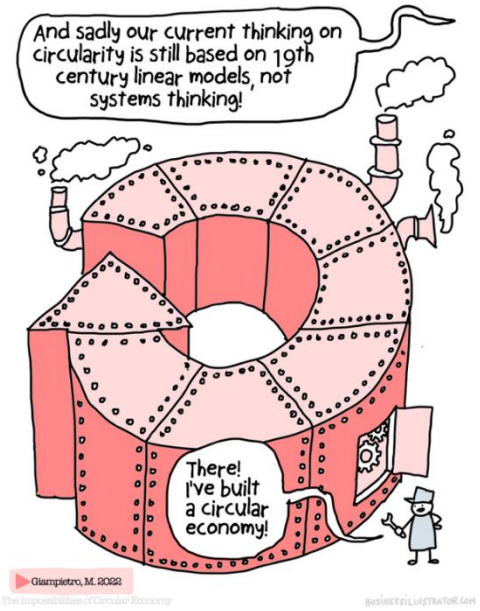
Circular economy

The Ellen MacArthur Foundation defines circular economy as a systemic approach to economic development designed to benefit businesses, society, and the environment simultaneously. In contrast to the "take-make-waste" linear model, a circular economy is regenerative by design and aims to gradually decouple growth from the consumption of finite resources.[1] According to the United Nations Industrial Development Organization (UNIDO), a circular economy returns products, parts, and materials into use several times by:

- designing products to last;
- maintaining value for as long as possible in the economy;
- minimizing the generation of waste and pollution and;
- using renewable energy along value chains.[2]





[1] Ellen MacArthur Foundation (2017), *The Circular Economy in Detail*, Archive.
[2] United Nations Industrial Development Organization (2019), *Circular Economy and the Montreal Protocol Division*

While there is no internationally agreed definition of the concept, there is a growing understanding that circular economy offers a promising solution to some of the most pressing global challenges, notably climate change, biodiversity loss and pollution. Moving from the current linear economy to a circular economy could cut global greenhouse gas emissions by 39 per cent while allowing countries to reduce pressure on vital ecosystems, as the use of virgin materials would also be reduced by 28 per cent.[3]

The 2022 Circularity Gap Report states that such a reduction in greenhouse gas emissions could lead us to achieve the goals of the Paris Agreement, while other authors argue that it could also accelerate economic development and innovation. An annual economic benefit of USD 3.7 trillion could be unlocked through increased resource efficiency, job creation and the mitigation of certain resource-related climate change impacts.[4]

Despite these potential gains, the same report confirmed that the world is today only 8.6 per cent circular, 0.4 per cent less than in 2019. The global capacity to recover and recycle fails to match current rates of consumption. Countries around the world are continually investing in new buildings and infrastructure, while heavily relying on virgin materials to meet the needs of a growing urban population.

Recent developments towards a just transition to a circular economy

The COVID-19 pandemic and measures to contain it posed major challenges to every country in the world. The crisis, however, also brought with it great opportunities. Digitalization trends accelerated, new technologies were adopted, local value chains were strengthened and, although not all were deployed for green purposes, trillions of dollars of economic stimulus were made available. The vision of pursuing sustainable development through the efficient use of resources and sustainable consumption and production patterns, gained increased prominence in international forums.

Since the first round of the global consultations on circular economy convened by UNIDO in 2021, developments favoring the transition to a circular economy have been witnessed. This included the emergence and strengthening of policy instruments, partnerships and initiatives as well as the publication of guiding documents and actions on the ground.

[3] The Circle Economy (2022), *Circularity Gap Report 2022*

[4] Steenmans, Taylor, Steenmans (2021), *Regulatory Opportunities and Challenges for Blockchain Adoption for Circular Economies*, IEEE International Conference on Blockchain.

Policy environment

The fifth resumed session of the United Nations Environment Assembly, convened in Nairobi from 28 February to 2 March 2022, advanced the global discourse on circular economy, including through the resolutions on nature-based solutions,[5] sound management of chemicals and waste[6] and resilient infrastructure.[7]

Recognized as the most important international multilateral environmental deal since the Paris Agreement, the resolution "End Plastic Pollution: Towards a legally binding instrument"[8] is expected to address the full lifecycle of plastic, including its production, design and disposal, thereby introducing circular approaches in international environmental law.

The very first international instrument on circular economy was also adopted on this occasion to enhance circular economy as a contribution to achieving sustainable consumption and production.[9] The resolution calls for rapid solutions, means of implementation, capacity-building, and technology transfer to address the full life cycle of waste. Member States are encouraged to integrate circular economy approaches in relevant national and regional strategies and action plans, cooperate with relevant organizations and networks on sharing and discussing best practices on relevant product information and, in cooperation with the private sector, to enhance the design of products to favour product lifetime extension.

Circular economy as a driver of economic diversification was identified as an additional theme for the implementation of the Nairobi work programme on impacts, vulnerability and adaptation to climate change[10] under the United Nations Framework Convention on Climate Change (UNFCCC). Such inclusion could facilitate and catalyse the development and dissemination of information and knowledge on circular economy to inform and support adaptation policies and practices, with a focus on developing countries. In the context of the UNFCCC, circular economy will therefore be considered as a tool to support climate change mitigation and, at the same time, as an approach to build resilience of the most vulnerable to climate change.

[5] UNEP/EA.5/RES.5
[6] UNEP/EA.5/Res.7
[7] UNEP/EA.5/Res.9
[8] UNEP/EA.5/Res.14
[9] UNEP/EA.5/Res.11
[10] FCCC/SBSTA/2022/L.7

In the Ministerial Declaration of the High-Level Political Forum on Sustainable Development 2021,[11] Member States emphasized the need to intensify the implementation of the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns by 2022 and beyond. The call resulted in the extension of the programme to 2030, aiming for a global strategy for sustainable consumption and production for 2023-2030. The 2022 Ministerial Declaration recognized the importance of this outcome and took note of the decision of the board of the 10-Year Framework to continue the development of the new strategy.[12]

At the regional and national levels, significant progress has also been observed. Over the past years, the benefits of circular economy have been widely recognized by societies, governments and stakeholders, as the concept is reflected in a number of legal frameworks, standards and regulations. Examples include the Circular Economy and Miscellaneous Provisions Act 2022[13] of Ireland, the Circular Economy Package[14] by the European Union, the Law on Waste and Contaminated Soil for a Circular Economy[15] of Spain, the National Development Plan on Circular Economy[16] of Vietnam and the Circular Economy Law[17] of Mexico. Other Member States are in the midst of preparing or now undertaking legislative processes to enact such laws, including for instance, the Sustainable Circular Economy Law in Uruguay, in collaboration with the Partnership for Action on Green Economy and UNIDO.

The standardization in the field of circular economy to develop frameworks, guidance, supporting tools and requirements for the implementation of activities of all involved organizations, is the scope of the Technical Committee 323 (ISOTC323) of the International Organization of Standardization. Established in 2018, the committee pursues the publication of a package of standards by early 2024. This includes the definition of circular economy principles, the description of the transition from linear to circular business models for organizations, as well as the assessment of circularity at different levels.

[11] E/HLS/2021/1
[12] E/HLS/2022/1
[13] Act 26 of 2022
[14] COM/2020/98 final
[15] Law 7/2022
[16] Decision No.687/QD-TTg
[17] NL.125

European Union Circular Economy Action Plan

In March 2020, the European Commission adopted the new Circular Economy Action Plan as one of the main building blocks of the European Green Deal. The plan envisages initiatives throughout the entire life cycle of products and aims to ensure that waste is avoided, while resources used are maintained in the European economy for as long as possible.

On 30 March 2022, the Commission proposed a package of legislative measures as part of the action plan. The package aims at making almost all physical goods in the European Union's market more durable and therefore more environment-friendly, circular and energy-efficient. Measures include a Sustainable Products Initiative, a reform of Eco-design laws and an Eco-design Work Plan for 2022-2024, a Strategy for Sustainable and Circular Textiles, a proposal for the revision of the Construction Products Regulation, and new rules to reinforce the power of consumers.

Alliances and initiatives

In recent years, various stakeholders have been coming together to establish partnerships, alliances and circular economy initiatives. These alliances are now becoming operational, developing knowledge products and strengthening their initiatives.

The Global Alliance on Circular Economy and Resource Efficiency, established in February 2021 by the European Commission, the United Nations Environment Programme and UNIDO, delivered working papers on circular economy and climate change, green recovery and biodiversity.

Regional alliances such as the Regional Coalition on Circular Economy of Latin America and the Caribbean[18] and the African Circular Economy Alliance[19] developed shared regional visions on circular economy while advising Member States on how to promote such visions locally. They have been collaborating with other partners in convening forums dedicated to knowledge sharing, lessons learned and awareness raising. These include the World Circular Economy Forum, the Circular Week and the Summit 22.

[18] Circular Economy Coalition Latin America and the Caribbean (2022), *Circular Economy in Latin America and the Caribbean, A shared vision*
[19] African Circular Economy Alliance (2022), *Five Big Bets for Africa's path to circularity*

With the New Delhi Statement on Environment,[20] the BRICS (Brazil, Russian Federation, India, China and South Africa) have acknowledged the role of resource efficiency and circular economy for the achievement of the 2030 Agenda and the Paris Agreement, as they agreed to enhance cooperation on efficient waste management and pollution prevention. Efforts include strengthening national plans, policy frameworks and Nationally Determined Contributions under the Paris Agreement through the mainstreaming of circular economy principles and practices, unlocking financing mechanisms and schemes to support small and medium-sized enterprises and supporting and actively participating in global dialogues and alliances on circular economy, including for the development of a global framework and agenda.

Key publications and research

As initiatives and partnerships on circular economy grew, the recent years witnessed a significant rise in the number of papers and articles on the topic. Between 2017 and 2019, the number of publications tripled. Regardless of the changing environment due to the COVID-19 pandemic, in 2020 the number continued to grow with an increase of almost 60 per cent over the previous year.[21] In 2021 and 2022, the number of papers published is equivalent to the total of the past 20 years.[22]

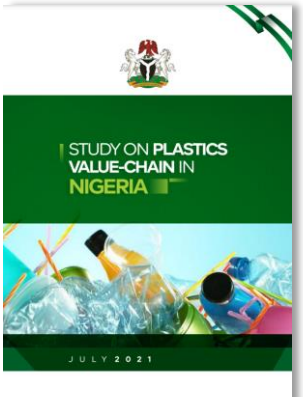
Research on circular economy has proven to be multidisciplinary in nature, bringing together stakeholders from various fields. While recycling and waste management, including e-waste, have been at the forefront of research, the past two years have seen the emergence of interest in topics such as consumer knowledge, awareness and environmental behaviour, sustainable consumption and production in cities, biochemistry, packaging and labelling, plastic-based material systems, and the strong link between the Fourth Industrial Revolution and circular economy. Such publications include the Circularity Gap Report 2022, the Resource Efficiency and Circular Economy Target Setting[23] and a number of articles on sustainable fashion,[24] food systems,[25] climate change, [26] and

[20] 7th Meeting of BRICS Environment Ministers (2021), *New Delhi Statement on Environment*
[21] Alcalde-Galonge, Sáez-Martínez, Ruíz-Palomino (2022), *Evolution of research on circular economy and related trends and topics. A thirteen-year review*, Ecological Informatics 70
[22] Scopus
[23] United Nations Environment Programme (2021), *Resource Efficiency and Circular Economy Target Setting*
[24] Ellen MacArthur Foundation (2022), *The circular design book*
[25] Ellen MacArthur Foundation (2022), *The big food redesign, regenerating nature with the circular economy*
[26] Industrial Analytics Platform (2022), *Circular Economy to fight climate change: Are countries walking the talk?*

plastic pollution.[27] Trade for an inclusive circular economy,[28] circular value chains[29] and gender-inclusive approaches to circular economy[30] are some of the other topics that have been explored over the past year. These have contributed substantially to collect data and build a more comprehensive background in the field of circular economy for decision-making.

Plastic value chain assessments

The assessments provide stakeholders in Egypt, Kenya and Nigeria with an overview of measures to reduce plastic litter through improved waste management practices and available technology options that suit local contexts and needs, so that they can take the necessary steps to reduce the amount of new plastic use in packaging and single-use products. Emphasis was placed on analyzing the status quo - including recent developments and perspectives emerging from ongoing discussions - of the regulatory and institutional framework as well as how stakeholders in the plastics value chain respond to this dynamic environment.



Action on the ground

Despite progress in the legal and regulatory landscape, the implementation of circular economy practices remains limited and isolated, especially given the scale needed to counter the waste and resource crisis. To fill this gap, more initiatives are progressively

[27] Ellen MacArthur Foundation (2022), *Towards a circular economy for plastics in China, opportunities and recommendations*
[28] Chatham House (2022), *Trade for an inclusive circular economy, a framework for collective action*
[29] Sustainable Global Supply Chains (2022), *Circular value chains: An enhances approach to assess value capture and upgrading*
[30] Industrial Analytics Platform (2022), *Why adopting a gender-inclusive approach towards circular economy matters*

emerging. Some of them are a rethinking of old ideas, others derive from the introduction of new and emerging technologies.

Member States have been supported by the United Nations system and international organizations, such as UNIDO, to overcome implementation barriers of circular economy principles and practices, for instance, in 2021-2022 through projects on bio economy, Environmentally Sound Technologies, green chemistry and chemical leasing, eco-industrial parks, to name a few.

Examples of action on the ground

- RECODE: Recycling carbon dioxide in the cement industry

  Carbon dioxide from the flue gases of a rotary kiln in a cement industry is used for the production of value-added chemicals and materials, entailing less energy intensity and related greenhouse gas emissions.

- Southeast Asia Regional Program on Combating Marine Plastics

  The five-year project aims to reduce plastic consumption, increase recycling, and minimize leakages to prevent land- and sea-based marine plastic pollution. It will support the development and harmonization of regional policies, as well as the creation of regional platforms for innovation, investment, knowledge and partnerships.

- Switch to circular value chains to boost the competitiveness of the textile and clothing industry, Egypt

  Two industry pilot projects will be used as a reference to develop a roadmap with recommendations and incentives that can strengthen the regulatory framework for textile waste recycling and help waste management authorities eliminate the obstacles for valorizing textile waste in Egypt.

Emerging trends in circular economy projects include blockchain technology, remanufacturing, bio-based materials, artificial intelligence, the internet of waste, innovative green infrastructure, in particular towards sustainable cities, and clean energy storage. Bringing chemical processing to a commercial scale is driving another trend in the

evolution of circular economy, one that accompanies the reduction of the material footprint by reducing the level of consumption by households, businesses and other economic entities.[31] While extensive efforts are being made, the current pace of transformation towards circularity does not seem sufficient. We need ambitious approaches to accelerate this process.

Examples of action on the ground

- Circular Opportunity Programmes, Uruguay and Paraguay

  By promoting circular economy practices, the national programmes contribute to improving the productivity and profitability of micro, small and medium-sized enterprises. Support is given to the creation of new production lines or the improvement of existing ones as well as the design of a new product or service.

- PIONEER, airport sustainability through second-life battery storage, Italy

  The initiative proposes the use of second-life batteries to store the surplus energy produced during the day by the photovoltaic solar system located in the airport facilities, and then use it during the evening hours when there is a need to cover peak energy demand. With a nominal capacity of 5 MW/10 MWh, it is one of the first projects worldwide to reach this size.

- The life cycle initiative

  The multi-stakeholder public-private partnership enables the global use of credible lifecycle knowledge by private and public stakeholders. By 2022, the initiative will mainstream the use of life cycle thinking into four global areas of decision and policy making in at least 15 countries and 30 companies. It will train at least 2,500 policy makers, business decision makers and practitioners and offer a solution to access all life cycle assessment databases globally.

[31] Roleders, Oriekhova, Sysoieva (2022), *Trends in a global circular economy*, Management Theory and Studies for Rural Business and Infrastructure Development

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