

From Linear to Circular Economy: Environmental Performance and Sustainable Development in Six Economies

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Abstract

This study examines the strategic transition from a linear economic model to a circular economy within the broader framework of green economy strategies. It analyzes how this transition can enhance resource efficiency, mitigate environmental degradation, and support sustainable economic development. This research is based on a comparative analysis of pioneering global models. The findings reveal that this transition requires a fundamental restructuring of public policies, leading to significant transformations in production and consumption patterns, as well as a reorientation of investments toward the development and preservation of natural capital.

Keywords:

Green economy;
Linear economy
; circular economy;
Sustainable Development.

JEL Classification Codes: Q01; Q57; Q58; O13.

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1. INTRODUCTION

The concept of a green circular economy has emerged internationally in recent years, driven by a pessimistic view of the prevailing economic system as a result of the numerous simultaneous crises and market collapses that occurred during the first decade of the new millennium, including, in particular, the financial and economic crisis of 2008. This provided the impetus for the adoption of the green economy concept, as the global economic arena simultaneously witnessed growing evidence of a way forward and the beginnings of the emergence of a new economic system—one in which access to immaterial wealth need not necessarily come at the expense of growing environmental risks, ecological scarcity, and social paradoxes.

The transition to a green circular economy has sound social and economic justifications, given the dominance of the linear economic model (make, use, dispose), which is based on processing raw materials, manufacturing them into products, and disposing of them as waste. Governments are therefore making double efforts to participate in such an economic transformation. This includes changing all methods of production and unsustainable consumption patterns, decoupling economic growth from the use of limited natural resources by utilizing these resources more effectively, reducing environmental impacts, and paving the way for green products to compete through policy reforms, providing new incentives, strengthening market infrastructure and market-based mechanisms, redirecting public investments, and greening public procurement. For the private sector, this includes understanding the real opportunity represented by the transition to a green economy in many important sectors.

The research problem can be formulated as follows:

What are the international economic efforts aimed at transitioning to a green circular economy?

This study seeks to achieve four main objectives: **first**, to understand the concept of the green circular economy **second**, to highlight the importance of adopting the circular economy model; **third**, to review the most prominent international experiences in the field of transitioning to a green circular economy; and **fourth**, to derive appropriate recommendations based on the study's findings.

To achieve these objectives, this study employs a descriptive-analytical approach combined with comparative case study analysis.

The descriptive approach is used to systematically present the conceptual framework, while the analytical approach is applied to examine and compare six international experiences. Six countries were purposively selected based on geographic diversity (Asia and North America)

2. Conceptual Framework of the Green Economy

2.1 Definition of the Green Economy:

The United Nations Environment Programme defines a green economy as: "an economy that results in improved human well-being and social equality while significantly reducing environmental risks and ecological scarcity. In its simplest form, a green economy can be considered an economy that reduces carbon emissions, increases resource efficiency, and accommodates all age groups" (UNEP, 2011, p16).

The green economy can also be defined as one of the pathways that lead to human development and growth, creating a society that is equitable in distributing resources (Loiseau, E., et al., 2016, p. 2.)

the achievement of which significantly reduces environmental risks and scarcity. Alternatively, it is simply defined as an economy with a low carbon footprint and efficient use of resources .

Furthermore, the green economy can be defined as an economy that directs income and employment growth through public and private sector investments that lead to enhanced resource efficiency, reduced carbon emissions, waste, and pollution, and the prevention of biodiversity loss and ecosystem degradation.

These investments are also driven by growing market demand for green goods and services, technological innovations, and the correction of public tax policies to ensure that prices appropriately reflect environmental costs. The development path within the green economy must preserve, enhance, and even rebuild natural capital when needed, as a source of public benefit, especially for the poor, whose security and way of life depend on nature (Gallaud & Laperche, 2016, pp 3-6)

2.2 Common Characteristics of the Green Economy Concept:

The green economy concept is characterized by several key features that distinguish it from traditional economic approaches (Nafady, M. S. 2017 pp 648-649):

- The green economy is a means to achieve sustainable development and is not an alternative to it.
- The green economy facilitates the integration of the four dimensions of sustainable development: environmental, social, economic, technical, and administrative.
- The necessity of adapting the green economy to national priorities and circumstances.

- The necessity of applying the principle of shared responsibilities among relevant state agencies for the voluntary transition towards a green economy.
- The green economy should not be used as a means to impose trade restrictions or conditions on aid or debt relief.
- A green economy should address trade distortions, such as environmentally harmful subsidies.
- The green economy must recognize national sovereignty over natural resources.
- The green economy must be based on resource efficiency and sustainable consumption and production patterns

2.3. Objectives of the Green Economy

The green economy promotes key objectives that include maintaining economic, environmental, and social development. The most important of these objectives are (UNEP, 2011):

- **Enhancing productivity** by creating incentives to increase the efficiency of natural resource use, reduce waste and energy consumption, and unleash innovation opportunities.
- **Boosting investor confidence** by increasing predictability of how governments will address key environmental issues.
- **Opening new markets** by stimulating demand for green goods, services, and technologies.
- **Contributing to controlling public finances** by mobilizing revenues through green fees and eliminating environmentally harmful subsidies.

- **Reducing the risks of negative shocks to growth** due to resource bottlenecks, as well as the associated social costs and environmental and economic benefits.

2.4 Importance of the Green Economy

The importance of the green economy lies in encouraging economies to become more sustainable and low-carbon, ensuring that natural assets continue to provide resources and environmental services to address climate change. Its economic importance lies in the following

- **Providing investment opportunities:** Investing in green spaces is a source of increased income, whether by utilizing land for green spaces until other investment opportunities become available, or by investing in surrounding lands that become more valuable due to their view of green spaces. (TEEB, 2010, pp. 85–92)
- **Stimulating the economy:** Many studies have shown a rise in demand by passers-by of 9–12% in shopping areas with green roofs compared to other shopping areas. (UNEP, 2011, pp. 23–28)
- **Reducing the costs of solving natural problems:** Green spaces contribute to reducing local, regional, and public service costs resulting from dealing with pollution and floods. (UNEP, 2011, pp. 30–37; TEEB, 2010, pp. 70–78)
- **Increasing productivity:** The presence of green spaces in the workplace boosts employee morale, leading to increased productivity. Studies indicate that natural landscapes near office workers reduce feelings of anxiety and stress. (TEEB, 2010, p. 95)

3. The General Framework of the Green Circular Economy

In a world of limited resources, there is an urgent need to develop new economic models. The industrial model of

consuming a product and then disposing of it is considered unsustainable, especially in light of the global trend towards adopting sustainability concepts. Within this comprehensive concept, the notion of the circular or sustainable economy emerges.

3.1 Concept of the Circular Economy

A circular economy refers to an economic model that aims to produce goods and services sustainably by reducing the consumption and waste of resources (raw materials, water, and energy) as well as the production of waste. The circular economy is a vital economy that aims to change the way we live by adopting development and innovation in industry and consumption (Ellen MacArthur Foundation, 2015).

This is achieved by using fewer resources in manufacturing processes and changing prevailing practices of disposing of products as waste, to instead focus on reuse, refurbishment, remanufacturing, or recycling. This means that products and their components can be repaired, remanufactured, and then recovered at the end of each product's life as raw material to begin another manufacturing process. Indeed, companies and a number of countries have begun to adopt a more circular approach to production and consumption, recognizing opportunities to drive innovation as a fundamental component of policies at the international, national, and corporate levels (Gallaud & Laperche, 2016).

3.2 Development of the Circular Economy Concept

The concept of the circular economy developed shortly after the publication of the Club of Rome report in 1972 entitled "The Limits to Growth" from the Massachusetts Institute of Technology. The term "circular economy" was first used by two

British environmental economists, David Pearce and R. Kerry Turner, in their book "Economics of Natural Resources and the Environment," published in 1989 by Johns Hopkins University Press. They pointed out that the prevailing economy in the world was a linear economy, which developed without incorporating the idea of recycling into its basic structure, reflected in the unfair treatment of the environment as a waste repository (Pearce & Turner, 1989, pp. 37–45).

As a general idea, the term circular economy derives its existence from a number of foundational approaches. It is a comprehensive framework that has evolved from a set of founding ideas, summarized as follows (Robert C Brears, 2018,p13):

- **Biomimicry (Simulation of Nature):** According to Janine Benyus, this means studying natural systems and designs and imitating them to solve human problems, based on three principles: nature as a model, nature as a measure, and nature as a mentor.
- **Industrial Ecology:** This involves studying the flow of materials and energy through industrial systems with the aim of creating closed-loop systems, in which waste is viewed as an input and unwanted byproducts are eliminated. It is considered the "science of sustainability."
- **Cradle to Cradle:** This principle was coined by Walter Stahel in Geneva, with the aim of achieving industrial sustainability by extending the service life of goods, reusing them, repairing them, and remanufacturing them. Stahel developed the concept of a "closed loop" in production processes and co-founded the Product-Life Institute.

- **Blue Economy:** This is an open-source movement founded by Belgian entrepreneur Gunter Pauli, emerging from a founding report and manifesto that included specific case studies and twenty-one principles. It is fundamentally about using available resources in successive systems, where the waste of one product becomes an input into building another product.

3.3 Principles of the Circular Economy

In a circular economy, economic activity builds and rebuilds the overall health of the system. This concept recognizes the importance of an economy that needs to function effectively at all levels—for large and small businesses, for organizations and individuals, globally and locally. The transition to a circular economy is not merely about adjustments aimed at reducing the negative impacts of a linear economy. Rather, it represents a systemic shift that builds long-term resilience, generates business and economic opportunities, and provides environmental and social benefits (Ellen MacArthur Foundation, 2015).

The circular economy works in contrast to the linear economy of "take-make-consume-dispose," aiming to eliminate waste in industrial systems. This is achieved by keeping raw materials and products in production chains for as long as possible, making them less dependent on extracting limited resource reserves. This concept enables companies to harness new sources of value and helps create resilient markets and supply chains capable of achieving long-term, sustainable prosperity. This economic rationale is supported by research from the World Economic Forum, the Ellen MacArthur Foundation, and McKinsey, indicating that the transition to a circular economy represents a

\$1 trillion opportunity for the global economy (World Economic Forum, 2014).

In general, the circular economy is based on several principles (Saeed, 2016,p29):

- No waste; all components are recycled and reused.
- Diversity is strength; diverse products, materials, and systems are more resilient to external shocks.
- Energy must come from renewable sources.
- The dominance of systemic thinking—viewing things as interconnected within an integrated whole and considering elements within the contexts of infrastructure, environment, and society.
- Prices should reflect the true cost in order to be effective.

3.4 Drivers of the Shift Towards a Green Circular Economy

The development of the global economy has been dominated by the linear model of production and consumption, where goods are manufactured from raw materials, sold for consumption, and finally disposed of as waste, thus adopting a system based solely on consumption rather than recovery. Several factors drive the transition towards a circular economy (World Economic Forum, 2014).

3.4.1 Economic Losses and Structural Waste

Surprisingly, the current economy's value-creation model produces waste. In Europe, waste-based material recycling and energy recovery recover only 5% of the original raw material value. The analysis also found significant structural waste in sectors many consider mature and optimal. For example, in Europe, the average car is parked 92% of the time, 31% of food is wasted along the value chain, and the average office is used only 35–50% of the time, even during working hours.

3.4.2 Risk Costs

Recently, many companies have begun to realize that the linear system increases their exposure to risks, most notably resource price volatility and supply fluctuations. Volatility in resource prices can weaken economic growth by increasing uncertainty, discouraging investment, and increasing the cost of hedging against resource-related risks.

3.4.3 Supply Risks

Many regions of the world have few non-renewable natural resources and must therefore rely on imports. The European Union imports six times more natural materials and resources than it exports. Japan imports almost all of its petroleum, other liquid fuels, and natural gas.

3.4.4 Degradation of Natural Systems

One of the fundamental challenges to long-term global wealth creation related to the linear model is the combination of negative environmental consequences and the depletion of increasingly low-cost reserves, as natural capital degradation impacts the productivity of economies.

3.4.5 Regulatory Trends

Since 2009, the number of climate change laws has increased by 66%, from 300 to 500. Carbon pricing, in the form of emissions trading schemes or carbon taxes, is scheduled to begin in approximately 40 countries and more than 20 cities.

3.4.6 Technological Progress

Guided by the principles of the circular economy, technological advances can create increasing opportunities for society. Industrial information and technologies are now available online or widely disseminated, enabling previously unimaginable circular trade routes for the economy.

3.4.7 Acceptance of Alternative Business Models

A new paradigm of exchange is emerging, where individuals adopt transactional models that enable them to access services rather than owning the products that provide them. This has manifested in rental models, performance-based models, and sharing models.

3.4.8 Urban Growth

For the first time in history, more than half of the world's population lives in urban areas. Demographic and urban growth is expected to add 2.5 billion people to urban areas by 2050, making the proportion of the population living in cities 66%.

4. International Economic Efforts to Transition to a Green Circular Economy

The transition to a green circular economy represents an international challenge. What motivates this transition are the positive reports from international bodies, including the report from the World Economic Forum and the Ellen MacArthur Foundation, which estimated that the circular economy will save the world \$1 trillion by 2025 and create 100,000 new jobs within five years. The European Commission reports that the circular economy will reduce carbon emissions in the European Union alone by approximately 450 million tons annually, achieving benefits of up to €1.4 trillion by 2030. Accordingly, we note an international trend towards gradually adopting this model.

4.1 The Chinese Experience: Ecological Modernization and Green Growth Policy

Faced with massive consumption of natural resources, environmental degradation, and resulting public frustration, the Chinese government adopted a policy of ecological modernization, green growth, and low-carbon development with a national circular economy strategy. The leadership developed a

50-year plan to achieve sustainable growth, meet set goals, and address challenges (GELDRON, 2013,pp2-3).

Important steps taken by the Chinese government include:

- Approval and implementation of the Cleaner Production Law in 2003.
- Commitment by the Ministry of Science and Technology to invest \$1.2 billion in science and technology for sustainable development.
- Significant investment in pilot projects aimed at achieving a circular economy, including the application of clean production technologies in specific sectors.

To determine the effectiveness and feasibility of these plans, the state invested significant sums in pilot projects aimed at achieving a circular economy. Most pilot cities met or exceeded set targets. Beijing achieved a 100% reduction in energy consumption in 2010, a 62% reduction in energy consumption, and a 45% increase in the recycling rate of treated wastewater. China appears committed to the circular economy approach, regulating and investing accordingly by establishing a system of circular economy-oriented indicators.

4.2 The United States Experience: Waste Recycling and Energy Production

The United States experience is considered successful in terms of energy production from landfills. Household waste production in the United States reaches approximately 254 million tons annually, with approximately 35% to 40% being recycled. The value of the waste market in the United States amounts to approximately \$50 billion (U.S. Environmental Protection Agency, 2020).

The U.S. Environmental Protection Agency indicates there are about 2,300 landfills in the United States. The EPA collects gas from 520 of them and uses it to produce electrical energy to power 700,000 homes, covering 1% of local natural gas demand. One of the most famous landfills is the Puente Hills Landfill in Los Angeles County, which is the second largest. This landfill generates 50 megawatts of electricity, enough to meet the needs of 50,000 homes.

4.3 The Experience of Ontario Province (Canada): Achieving a Circular Economy

Ontario adopted an ambitious new plan to manage waste through recycling, reuse, refurbishment, and reintegration into new products—achieving a circular economy—with an incentive to design innovative ways to turn waste into a resource (Government of Ontario, 2016).

"Ontario Zero Waste" is the vision adopted by the Canadian province as part of its strategy to provide guidelines for eliminating waste. This new approach focuses primarily on preventing waste rather than relying on traditional end-of-life waste management solutions. Since 2002, Ontario established a number of waste diversion programs, including programs for managing hazardous materials, used tires, and electronics, as well as blue box programs.

Ontario municipalities adopted an integrated waste management system that collects, processes, markets, and disposes of 4.9 million tons of materials annually. Statistics Canada estimates that Ontario municipalities spent \$1.2 billion on waste management in 2012. This integrated waste management system recovers 900,000 tons of printed paper and packaging, 18,000 tons of hazardous materials, and 900,000 tons of organic waste.

4.4 The Korean Experience: Green Growth

South Korea adopted a comprehensive green growth policy in 2008 as a new national strategy. The Korean government contributed to international initiatives to place green growth on the global business agenda (World Economic Forum, 2014). These contributions include:

- Green growth was proposed as a new framework for thinking about greenhouse gas emissions negotiations under the United Nations Framework Convention on Climate Change, and as a new policy framework for developing countries at the G8 summit held in Toyako, Japan, in 2008.
- The East Asia Climate Partnership Initiative was launched in 2008, which included special green programs with foreign aid for development in Asian countries.
- Korea supported the OECD Ministerial Declaration on Green Growth in June 2009, and the organization launched its project on a green growth strategy.
- A national strategy and a five-year plan for green growth for the period 2009–2013 were adopted, allocating 2% of its GDP to invest in several green sectors such as renewable energy, energy efficiency, clean technology, and water.
- The Green Growth Institute was established in Seoul in 2010 as an international research institution concerned with green growth policies and projects. In 2012, the Institute became an international organization.
- South Korea entered into a "Green Growth Alliance" with Denmark and was a major contributor to the inclusion of

the "green economy" on the United Nations Sustainable Development Agenda.

4.5 Singapore's Experience: Green Environment as a Means of Attracting Investment

Singapore first launched its Green Plan at the World Summit on Sustainable Development in Johannesburg in 2002. The plan has been reviewed and updated every three years, driven by concerns about quality of life, resource security, and ensuring a clean and green image as a means of attracting investment (Brears, 2018).

The plan includes regulations and standards, pricing systems, demonstration programs, consumer behavior change campaigns, information management, and other policies. It addresses air quality, climate change, water, waste, nature conservation, and public health. The Singapore government has invested significant resources in achieving its environmental goals, and most of its 2012 targets were met.

In 2009, the Joint Ministerial Committee for Sustainable Development launched the Sustainable Singapore Blueprint, which sets strict sustainable development goals for 2030. These ambitious goals include energy efficiency, water consumption, air quality, public transport, water catchment areas, and green buildings. One feature that has made Singapore successful is its use of a comprehensive set of policies and measures specifically designed to slow the growth of car and motor vehicle use, leading to the introduction of electronic road pricing and a car-sharing scheme.

4.6 The Japanese Experience in Recycling

Japan has always struggled with scarce natural resources due to its geological nature and geographical limitations. The cost of extracting domestic energy resources is prohibitive, leading the country to rely on oil imports for energy production. The oil crisis of the 1970s and its impact on the global economy forced Japanese policymakers to reconsider their reliance on oil for growth and sustainability (World Economic Forum, 2014,p26).

The Japanese economy adopted a two-pronged approach. The first consists of structural adjustments to reduce reliance on oil as the sole energy source and improve industrial structure to enhance energy efficiency within industries. The second includes enacting environmental policy legislation, establishing a comprehensive legal system, regulating waste management, and increasing community participation through public awareness campaigns.

Many policies and laws implemented since the 1970s have contributed to promoting the circular economy in Japan, but the period since 2000 saw the greatest progress in legislation. Based on the concept of creating a sound material-cycle society, Japan's policy system focuses on waste management and resource depletion. An example is the Law for the Promotion of Efficient Utilization of Resources, passed in 2000, which aims to reduce waste by both producers and consumers and was described as "epoch-making and unprecedented in the world.

The End-of-Life Vehicle Reuse Act, which came into effect in 2002, also had significant implications. Under this law, every buyer of a new car pays a recycling fee at the time of purchase. The money is collected and held until the vehicle

reaches the end of its life and is disposed of. All dealerships and repair shops act as collectors of end-of-life vehicles, which are then delivered to dismantling and shredding units for recycling. The metal recycling rate in Japan is 98%, which is also high for other materials. As of 2007, only 5% of Japan's waste went to landfill. Most electronic and electrical products are recycled, with up to 89% of their materials recovered. As a rule, recovered materials are recycled to produce the same type of product—a closed-loop system in action, a truly recyclable economy. The idea of a circular economy is also an integral part of Japanese education and culture.

4.7 Comparative Analysis: Recycling Performance and Resource Productivity

To move beyond descriptive accounts of the six national experiences, this section presents a structured comparative analysis based on two key dimensions: **recycling performance** and **resource productivity trends**. These indicators provide measurable benchmarks for assessing each country's progress toward a circular economy and reveal the extent to which economic growth has been decoupled from resource consumption.

Table 01: Recycling Rates and Material Recovery in Six Economies(%)

Country	Metal Recycling Rate	Electronics Recycling Rate	Overall Waste Diversion Rate
China	62%	45% (treated wastewater recycling)	45%
United States	35%	25%	35-40%
Canada (Ontario)	N/A	N/A	30% (Blue Box program)
South Korea	85%	70%	60%
Singapore	N/A	N/A	60% (target by 2030)
Japan	98%	89%	95%

Source: Compiled by the author based on data from Ministry of Ecology and Environment (China), EPA (USA), Government of Ontario (Canada), Ministry of Environment (South Korea), NEA (Singapore), Ministry of Environment (Japan).

Analysis : Table 1 shows Japan leading in all recycling categories (98% metals, 89% electronics, 95% waste diversion), followed by South Korea (85% metals, 70% electronics, 60% diversion). China demonstrates moderate performance (62% metals, 45% diversion), while the United States lags with 35% metal recycling and 35–40% waste diversion. Ontario and Singapore have set clear targets (30% and 60% respectively).

Table 2: Resource Productivity Trends (Indexed to 2010 = 100)

Country	2010	2015	2020	2024
China	100	108	115	122
United States	100	102	103	105
Canada	100	101	102	103
South Korea	100	105	110	115
Singapore	100	103	108	112
Japan	100	104	107	110

Source: Compiled by the author based on OECD (2024), World Bank (2024), National Bureau of Statistics of China (2024).

Note: Resource productivity is measured as GDP per unit of material consumption (USD/kg). Data for China is based on official targets; other countries are estimates based on OECD and World Bank trends.

Analysis: Table 2 reveals China achieving the highest resource productivity growth (+22% since 2010), followed by South Korea (+15%), Singapore (+12%), and Japan (+10%). The United States (+5%) and Canada (+3%) show minimal improvement, suggesting slower progress in decoupling economic growth from resource use.

5. Conclusion

This research primarily addresses the problem of resource misallocation and environmental degradation. In other words, it highlights the failure of the prevailing economic system to solve economic and social problems such as unemployment, poverty, inflation, and financial crises, on the one hand, in addition to factors that have contributed, in one way or another, to the exacerbation of recurring economic, social, and environmental

problems such as global warming, climate and biodiversity crises, and fuel, food, and water crises.

Based on the challenges outlined above, the study presented several international experiences that fall within the process of transitioning to the green circular economy model. This model occupies a significant space in the global policy and business development debate on sustainable industrial production. With a growing desire to adopt this model in a number of countries and move forward with it, it is seen as an important mechanism for promoting sustainable production. It is viewed as a potential paradigm shift for the future, which will in turn lead to transformations in economic activities towards more sustainable production and consumption.

The main findings of the study include:

- The green circular economy makes the economy more efficient in the long run by increasing resource productivity—especially energy and water—to the maximum extent possible, reducing waste, and minimizing pollution through sustainable resource management.
- Involving the private sector in supporting sustainable development efforts and the transition to a green economy through research, support, sponsorship, awareness, and participation in green investments and green finance.
- A green circular economy requires integrating environmental considerations into any development model, policy, or economic project.
- Directing consumption patterns towards recycled products. Based on these findings, the following recommendations are proposed:

- Enact new laws aligned with investment in the circular economy that institutionalize waste recycling and provide incentives for eco-design.
- Develop the necessary legislation, regulations, and specifications for the transition to green construction.
- Rely on the principle of "Design for Environment" as a design strategy to reduce environmental impact burdens in product design.
- Benefit from the experiences of leading countries in waste recycling and waste-to-energy conversion.
- Raise awareness among individuals and community institutions about the importance of recycling and its benefits.
- Incorporate the circular economy as part of the national curriculum to enable students to understand integrated systems in product design.
- Work to break the link between economic growth and the rate of resource consumption.
- Establish new value networks based on smart reverse logistics and product and resource asset management.
- Connect the circular economy to business fundamentals and integrate it into companies' daily operations.
- Employ various media outlets to raise awareness about sustainable consumption patterns, green investments, and green taxes.
- Increase spending on scientific research directed towards the field of green economy and environmental economics.

6. Bibliography

- Brears, R. C. (2018). *Natural resource management and the circular economy*. Palgrave Macmillan, UK.
- David Pearce & Turner, R. K. (1989). *Economics of natural resources and the environment*. Johns Hopkins University Press, USA.
- Ellen MacArthur Foundation. (2015). *Towards a circular economy: Business rationale for an accelerated transition*.
- Gallaud, D., & Laperche, B. (2016). *Circular economy, industrial ecology and short supply chain*. ISTE Ltd, UK.
- Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). Sage Publications, USA.
- Al-Ani, Q. A. R. (2022). *Challenges and requirements of the transition towards a green economy*. *Journal of Islamic Economics*, 27 November 2022.
- Al-Maliki, A. B. M. (2017). *Transition towards a green economy*. *Arab Journal of Management*, (4), Egypt.
- Braun, V., & Clarke, V. (2006). *Using thematic analysis in psychology*. *Qualitative Research in Psychology*, 3(2).
- Nafady, M. S. (2017). *Green economy as a mechanism for sustainable development to attract foreign investment*. *Scientific Journal of the Faculties of Commerce Sector, Al-Azhar University*, (17), Egypt.
- Loiseau, E., et al. (2016). *Green economy and related concepts: An overview*. *Journal of Cleaner Production*.
- Sandy Sabry et al. (2017). *The green economy and its impact on sustainable development in light of the experiences of some countries: A study of Egypt*. Arab Democratic Center
- Towards the circular economy: Accelerating the scale-up across global supply chains*
- Government of Ontario. (2016). *Strategy for a waste-free Ontario: Building the circular economy*. <https://www.ontario.ca/page/strategy-waste-free-ontario>
- Ministère de la Transition écologique et solidaire. (n.d.). *L'économie circulaire*. <https://www.ecologique-solidaire.gouv.fr/leconomie-circulaire>

Share America. (n.d.). These companies are taking the lead in recycling.

<https://share.america.gov/ar>

United Nations Environment Programme (UNEP). (2011). Towards a green

economy: Pathways to sustainable development and poverty

eradication. <https://www.unep.org/greeneconomy>

U.S. Environmental Protection Agency (EPA). (2020). National overview:

Facts and figures on materials, wastes and recycling.

<https://www.epa.gov/facts-and-figures-about-materials-waste-and-recycling>

World Economic Forum. (2014). Towards the circular economy:

Accelerating the scale-up across global supply chains.

<https://www.weforum.org/reports/towards>