International Journal of Law and Jurisprudence
eISSN: 2255-1824
Volume 15, No. 2 (2026)

Waste recycling as a lever for the transition towards the circular economy in Algeria: A Study of the Legal Framework and Implementation Mechanisms in Light of Law No. 25-02 Amending and Supplementing Law No. 01-19

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Soumission: 22/12/2025 Acceptation: 05/08/2026 Publication: 28/10/2026

Abstract

This study examines the extent to which Algeria's legal framework for waste recycling can facilitate the transition to a circular economy, in light of Law No. 25-02, which amends and supplements Law No. 01-19 on the management, control and disposal of waste. The study focuses on the suitability of the current legal mechanisms for shifting from a traditional waste disposal approach to a focus on waste prevention, the recovery and valorisation of recyclable materials, and their reintegration into the economic cycle.

To address this issue, the study employs a descriptive-analytical approach, supplemented by inductive methods, to examine the relationship between waste recycling and the circular economy, and to analyse the legislative framework and implementation mechanisms in Algeria.

The study concludes that amending the legal framework strengthens the approach to waste valorisation and links it to the product life cycle. However, this development alone is insufficient to achieve a transition to a circular economy, as effectiveness depends on the implementation of legal provisions, improvements to waste sorting and collection, the provision of infrastructure, the promotion of investment and the integration of institutional, economic and technical roles. Realising the circular economy therefore requires moving from the legal enshrinement of principles to their practical implementation within an integrated system.

Keywords: Waste recycling, circular economy, ecodesign, Law No. 25-02, waste valorisation, extended producer responsibility.

Introduction

Economic growth, industrial development and population growth have led to increased production and consumption patterns, resulting in higher waste quantities and more diverse sources and characteristics of waste. This has meant that waste management has had to extend beyond the disposal of residues from human activity, to include the search for mechanisms that can reduce waste generation and recover materials for reintegration into the economic cycle. Consequently, waste management is no longer limited to disposing of it as an environmental burden; rather, it is now associated with transforming it into valuable resources.

Against this backdrop, the circular economy has emerged as an economic model that reimagines the traditional relationship between production, consumption, and resources. It does this by extending the

lifespan of products and materials, minimising resource waste, and championing reuse, recovery, recycling, and valorisation. It seeks to move beyond the logic of the linear economy — primarily based on extracting resources, producing goods, consuming them and disposing of them — towards a model that aims to keep resources and materials within the economic cycle for as long as possible[1].

Given its capacity to reintroduce used materials into the production cycle, waste recycling occupies a fundamental position within this transition. This reduces the depletion of natural resources and the volume of waste destined for final disposal, while creating economic value, investment opportunities and employment. Consequently, waste recycling is not merely a technique for treating waste; it is also one of the mechanisms through which the principles of the circular economy can be translated into tangible economic and environmental practices[2].

Algerian legislation has also evolved in the area of waste management, moving beyond the mere regulation of waste collection, transportation, and disposal. Since the enactment of Law No. 01-19 on Waste Management[3], Control, and Disposal, it has also established principles relating to prevention, sorting, valorisation, and recycling. Subsequently, Law No. 25-02 of 2025 was introduced to strengthen this approach[4] by amending and supplementing the aforementioned law to incorporate concepts and mechanisms more closely related to the circular economy, including ecodesign, integrated waste management, producer responsibility, sorting, valorisation and the reintegration of recovered materials into economic activity.

However, legislative recognition of the importance of recycling alone is insufficient to achieve the transition to the circular economy. This transition depends on the capacity of the legal, institutional and economic systems to transform legal provisions into effective mechanisms that encompass collection, sorting, recovery and treatment, encourage investment, ensure the existence of a market for recycled materials and strengthen the responsibility of various stakeholders throughout the product and waste life cycle.

Accordingly, the study focuses on the following research question:

To what extent can waste recycling, in light of the developments witnessed in Algerian legislation, be an effective means of transitioning to a circular economy?

This main question gives rise to a number of subsidiary questions, the most important of which are: What is meant by waste recycling, and what is its relationship with the circular economy? To what extent has the Algerian legislator established legal mechanisms in support of recycling and valorisation? Are these mechanisms sufficient to achieve a transition from a waste management model to a circular economy model?

In order to address this research problem, a descriptive-analytical approach was adopted, involving the presentation of concepts related to waste recycling and the circular economy, as well as the analysis

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[1]- Nassira Hebri, "Waste Recycling within the Framework of the Circular Economy and the Achievement of Sustainable Development," Journal of Economic Reforms and Integration into the Global Economy, Vol. 13, No. 2, 2019, p. 1.

[2]- Ibid., p. 2.

[3]- Law No. 01-19 of 12 December 2001 concerning the Management, Control and Disposal of Waste, Official Gazette of the People's Democratic Republic of Algeria, No. 77, dated 15 December 2001.

[4]- Law No. 25-02 of 20 February 2025 amending and supplementing Law No. 01-19 of 12 December 2001 concerning the Management, Control and Disposal of Waste, Official Gazette of the People's Democratic Republic of Algeria, No. 12, dated 23 February 2025.

of the legal provisions governing them. The inductive method was also employed to determine the effectiveness of the legal and institutional mechanisms adopted in Algeria.

Based on this, the study is divided into two sections: the first examines waste recycling and the transition to a circular economy, and the second studies the legal framework for waste recycling in Algeria and its implementation mechanisms.

Section One: Waste Recycling and the Realisation of the Transition to a Circular Economy

In order to examine the role of waste recycling in the transition towards the circular economy, it is first necessary to define the fundamental concepts associated with these two subjects and clarify the nature of the relationship between them. Only then can we examine the role that recycling can play in achieving the transition from the linear economic model to the circular model. This section therefore addresses the conceptual framework of waste recycling and the circular economy, before highlighting the role of recycling in supporting this transition.

Subsection One: The Conceptual Framework of Waste Recycling and the Circular Economy

Defining the concepts related to waste, recycling and the circular economy is a key starting point for understanding the transition from a linear to a circular economic model. Therefore, the concept of waste must be defined from various doctrinal and legal perspectives, and the concepts of waste recycling and the circular economy must be clarified, thereby establishing the conceptual framework upon which this study is based.

Paragraph One: The Concept of Waste

Waste is a key concept in the circular economy because the latter relies on reintegrating materials and waste residues into the economic cycle rather than treating them as materials to be disposed of. Therefore, defining the concept of waste is particularly important for understanding the scope of recycling, reuse and valorisation operations.

Firstly: The doctrinal definition

The doctrinal definition of waste varies according to the perspective from which the concept is examined. Some focus on its nature, while others associate it with the disposal method and its environmental impact.

In this context, waste is defined as follows: ‘Materials that have no economic value, resulting from ordinary human activities or industrial processes, and disposed of safely in the main environmental media (terrestrial, aquatic and atmospheric) in accordance with national and international law.’ Such materials may be solid, liquid or gaseous[5].’

The Ministry of the Environment has also defined waste as follows: ‘All residues generated by households, in addition to waste from industrial, commercial, craft and other activities[6].’

These definitions reveal that, in its traditional form, the concept of waste is associated with residues resulting from various human activities that no longer serve the original intended purpose. However, this does not necessarily imply that the remaining material has no economic value. This is particularly important within the framework of the circular economy, which is based on the possibility of

[5]- Maamar Ratib Mohamed Abdelhafiz, International Liability for the Transboundary Transport and Storage of Hazardous Waste, Dar al-Nahda al-Arabiyya, Egypt, 2007, p. 18.

[6]- Hueber, D., Information Manual on the Management of Urban Solid Waste, Algiers, Ministry of Regional Planning and the Environment, 2001, p. 194.

recovering some of these materials and reintegrating them into the economic cycle through reuse, recycling, or valorisation.

Secondly, the legal definition of waste.

The definition of waste is not confined to national legislation; it has also been addressed in several international conventions and pieces of comparative legislation.

Article 2(1) of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, for example, defines waste as substances or objects that are, or are intended to be, or are required to be, disposed of under the provisions of domestic law[7].

In French legislation, Article L541-1-1 of the Environmental Code, introduced by Ordinance No. 2010-1579 of 17 December 2010, defines waste as any substance, object or other movable property that its holder discards, intends to discard or is required to discard[8]. This definition remained in force following the issuance of Ordinance No. 2020-920 of 29 July 2020.

Under Algerian legislation, Law No. 01-19 of 12 December 2001 on Waste Management, Control and Disposal, as amended and supplemented, constitutes the fundamental legal framework for the management of waste. Article 3 thereof defines waste as 'all residues resulting from production, processing, or use operations, and more generally any substance, product, or movable property that its owner or holder discards, intends to discard, or is required to discard or remove'[9].

This definition makes it clear that the Algerian legislator did not limit the concept to actual disposal, but also included intended and legally required disposal. The legislator also broadened the concept to include all movable property, similar to the approach adopted by the French legislator in Article L541-1-1 of the Environmental Code. The law reflects a shift in focus from mere waste disposal to treatment and valorisation operations, as evidenced by the provisions concerning waste that cannot be treated under current technical and economic conditions, such as extracting the recoverable portion or reducing its polluting or hazardous nature.

This approach reveals an evolution in the legal perception of waste, which is no longer merely residue to be disposed of, but instead becomes subject to treatment, valorisation and recovery. This allows some components to be reintegrated into the economic cycle. This transition is particularly important in the context of the circular economy because the fundamental principle of recycling is to recover materials that can be put to beneficial use and transform them into resources that can be reused in production processes.

In addition to other types introduced within the framework of subsequent legislative developments, Algerian legislation also classifies waste according to its nature and source. This reflects the legislator's approach of broadening the scope of legal regulation to cover the various stages of waste management.

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[7]- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, adopted on 22 March 1989 and entered into force on 5 May 1992, 1673 U.N.T.S. 57.

[8]- French Environmental Code, Article L. 541-1-1, introduced by Ordinance No. 2010-1579 of 17 December 2010, Article 2, and amended by Ordinance No. 2020-920 of 29 July 2020, Article 3: "Waste means any substance or object, or more generally any movable property, which its holder discards or intends or is required to discard." Available at: https://www.legifrance.gouv.fr/codes/article_lc/LEGIARTI000042176087 (accessed 20 April 2025).

[9]- Law No. 01-19 concerning the Management, Control and Disposal of Waste, cited above.

Therefore, the legal significance of the concept of waste extends beyond determining its nature to identifying what can be subjected to sorting, collection, treatment, recycling and valorisation operations. This makes the definition of waste a fundamental starting point for examining the extent to which its recycling contributes to the transition from a linear to a circular economic model.

Paragraph Two: The Concept of Waste Recycling and the Circular Economy

To clarify the relationship between waste recycling and the circular economy, it is necessary to examine the concepts of each and identify the points of connection between them. This is because, while recycling is one of the practical mechanisms for recovering materials and reintegrating them into the economic cycle, the circular economy is based on a broader vision aimed at rationalising resource use and reducing waste. This paragraph therefore examines the concepts of waste recycling and the circular economy, highlighting their relationship.

First: Definition of waste recycling

Depending on the approach adopted towards the recycling process and its relationship with the activity targeted by the recycling operation, recycling can be defined from multiple perspectives. According to Egyptian Environmental Law No. 4 of 1994, waste recycling is defined as 'the process that allows materials to be extracted or reused, such as using waste as fuel, extracting metals and organic materials, treating soil, or re-refining oils'[10].

It is also defined as 'transforming a commodity or material of limited value into another useful commodity or material, thereby adding genuine value to the production, use or consumption process'[11]. This definition is consistent with the perspective of manufacturers, who seek to obtain inexpensive or alternative raw materials through recycling in order to maintain the stability and continuity of production processes, rather than halting industrial activity. This is particularly pertinent in many developing countries, where there is strong competition from foreign products[12].

From a comprehensive perspective, recycling can also be defined as 'transforming a commodity or material of limited value into another useful commodity or material, thereby representing genuine added value to the production, use or consumption process'. This definition includes the following points:[13]

- Converting materials or devices that are no longer fit for their intended use or reuse, and which have no real material value, into new materials or products.

The materials used in recycling generally have no real material value and may have no value at all. However, they acquire genuine added value or a new benefit through recycling.

- Materials resulting from the recycling process can be used for industrial production, certain services or even human consumption.

Secondly, the definition of the circular economy:

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[10]- Ahmed Abdel Wahab Abdel Gawad, Fundamentals of Waste Recycling, Arab Publishing and Distribution House, Cairo, Arab Republic of Egypt, 1997, p. 17.

[11]- Thamer al-Bakri, "The Strategic Dimensions of Recycling," Tikrit Journal of Administrative and Economic Sciences, Vol. 8, No. 23, 2011, p. 14.

[12]- See: Nassira Hebri, cited above, p. 4.

[13]- Jaafar Hamza and Ben Cheikh Meriem, "Waste Recycling as a Mechanism for Implementing Cleaner Production in an Industrial Enterprise: A Case Study of TREFISOUD, El Eulma," Journal of Contemporary Commercial and Economic Studies, Vol. 4, No. 2, 2021, p. 361.

One doctrinal definition of the circular economy is that provided by the Ellen MacArthur Foundation, which describes it as an industrial system that is restorative or regenerative by intention and design. It replaces the concept of 'end of life' with 'recovery', and aims to eliminate waste through superior design of materials, products and systems, as well as transitioning towards the use of renewable energy and eliminating the use of toxic chemicals that hinder reuse.

The circular economy is also defined as a comprehensive development approach that prioritises preserving the ecological system and maintaining the value of materials within the production and consumption cycle to enable their reuse over an extended period[14].

Based on the foregoing, the following operational definition of the circular economy can be proposed: an economy based on recycling, remanufacturing, and recovering waste for reuse[15]. This requires a change in production methods and unsustainable consumption patterns, achieved through the rational and prudent use of limited natural resources and environmental preservation. In this sense, it is a means of achieving sustainable development[16].

Section Two: The Role of Waste Recycling in the Transition from Linear to Circular Economies

The importance of waste recycling extends beyond waste treatment and reducing environmental impact to include the reintegration of materials and resources into the economic cycle. Therefore, to explain the extent to which recycling contributes to this transition, it is necessary to clarify the nature of the relationship between the two economies and examine the main economic and environmental effects resulting from recycling operations.

Subsection One: The Relationship between Waste Recycling and the Circular Economy

In the traditional linear economic model, natural resources are extracted and converted into products, which are then consumed and disposed of once they are no longer needed. This leads to the continuous depletion of resources and an increase in waste production[17]. In contrast, the circular economy is based on a different conception of the resource cycle. It seeks to keep products, materials, and resources within the economic cycle for as long as possible, reducing resource consumption and promoting reuse, repair, recovery, recycling, and valorisation[18].

Waste recycling is one practical mechanism for implementing the circular economy as it enables recyclable materials to be recovered, processed and transformed into materials or products that can be

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[14]- Paul Ekins, Teresa Domenech, Paul Drummond, Raimund Bleischwitz, Nick Hughes, and Lorenzo Lotti, The Circular Economy: What, Why, How and Where, background paper for the OECD and European Commission High-Level Workshop on Managing the Transition to a Circular Economy in Regions and Cities, Paris, 5 July 2019, p. 10. Available at: https://www.oecd.org/cfe/regionaldevelopment/Ekins-2019-Circular-Economy-What-Why-How-Where?utm_source=chatgpt.com (accessed 1 April 2024).

[15] - Accelerating the Transition to a Circular Economy in the Arab Region. Available at: https://www.unescwa.org/sites/default/files/pubs/pdf/accelerating-circularity-arab-regionarabic_1?utm_source=chatgpt.com (accessed 20 April 2025).

[16]- Hassina Ghouas, cited above, p. 293.

[17]- Fatima al-Zahra Ghandouz and Ali al-Zoubi, "Requirements for the Transition from a Linear Economy to a Circular Economy for Environmental Protection," Journal of Commercial Sciences, Higher School of Commerce, Vol. 17, No. 1, 2018, p. 30.

[18]- Al-Sadiq Zouine, "Moving towards a Circular Economy to Achieve Sustainable Development in Algeria," Vol. 2, No. 1, 2021, p. 28.

reused in production. This allows used materials to be reintegrated into a new production cycle instead of being sent straight to final disposal[19].

From this perspective, waste does not necessarily represent the end of the economic cycle. Instead, it can serve as an input for a new cycle whenever the materials it contains can be recovered and reintegrated into other production processes. Therefore, a material's economic value does not necessarily end when the product it is part of reaches the end of its initial use. Rather, this value can be preserved through reuse, recovery or recycling.

In Algerian literature, the concept of the circular economy is closely associated with waste valorisation and recycling. Recycling transforms part of the waste into materials that can be used again, reducing the depletion of natural resources and achieving certain economic and social benefits[20].

However, reducing the circular economy to waste recycling alone does not fully reflect its nature, since recycling is just one of its components rather than its sole objective. The circular economy also encompasses waste prevention, extending product lifespans, reuse and repair, and improving product design to facilitate the recovery of components at the end of their lifecycles. Therefore, recycling should be regarded as part of a broader system aimed at preserving the value of resources within the economic cycle.

In this context, the transition from a linear to a circular economy represents a change in how resources and waste are viewed. A resource is no longer merely material extracted and consumed before losing its value, nor is waste merely material that must be disposed of. Instead, the objective is to preserve the economic value of the material for as long as possible.

Subsection Two: The Economic and Environmental Effects of Waste Recycling

Waste recycling is one of the practical means of implementing certain principles of the circular economy, as it is based on recovering recyclable materials, processing them, and transforming them into materials or products that can be reused in the production process. In this sense, recycling makes it possible to close part of the resource cycle by returning used materials to a new production cycle instead of directing them straight to final disposal.

This process is particularly important for materials that can be recovered and processed, such as paper, cardboard, plastics, glass and metals. Separating, collecting and processing these materials enables the production of secondary materials that can replace virgin raw materials either partially or entirely[21].

The effects of recycling extend beyond the environmental sphere to the economic sphere, as collection, sorting, recovery and processing activities can generate new economic opportunities and create jobs in the green economy[22].

Furthermore, transforming waste into reusable materials establishes a market for secondary materials, strengthening the link between waste management and economic policy. As demand for recycled materials increases, the economic viability of collection, sorting and recovery operations improves, making investment in recycling activities more attractive.

However, this depends not only on the availability of recyclable waste, but also on an integrated system covering sorting and collection, transportation and processing, and a market capable of absorbing

[19]- Nassira Hebri, cited above, p. 4.

[20]- Al-Sadiq Zouine, cited above, p. 35.

[21]- Nassira Hebri, cited above, p. 5.

[22]- See: Nassira Hebri, cited above, p. 5.

recycled materials and products. Therefore, weaknesses in any one component of this system can limit the effectiveness of the others.

This issue is particularly important in the Algerian context, as studies on the circular economy indicate that developing the recycling sector is essential for transitioning to a circular model. However, this requires a range of economic, institutional and technical mechanisms, rather than relying solely on legislative measures[23].

From a legal perspective, it is particularly important to regulate these stages because transforming waste into an economic resource requires the responsibilities of those involved in collection, transportation, recovery and recycling operations to be defined, as well as monitoring and incentive mechanisms to be established to encourage investment in this field.

Law No. 25-02 has reinforced this approach by introducing concepts and mechanisms that are more closely aligned with the principles of the circular economy. This makes recycling part of a broader policy aimed at preserving materials and reintegrating them into economic activity.

However, waste recycling will only become an effective lever for transitioning to a circular economy when legal provisions permitting it are integrated with economic, institutional and technical mechanisms capable of ensuring the continuity of the material cycle.

Chapter Two: The Legal Framework for Waste Recycling in Algeria and the Mechanisms for Its Implementation

Although waste recycling is a practical way of putting the principles of the circular economy into practice, its effectiveness depends on how firmly it is embedded in the legal framework and whether there are mechanisms to ensure its implementation. Against this backdrop, Algerian legislation has evolved significantly, starting with Law No. 01-19 on Waste Management, Control and Disposal, and culminating in Law No. 25-02, which amends and supplements the former and introduces provisions that are more closely aligned with the principles of the circular economy. This chapter therefore first examines the establishment of waste recycling within Algerian legislation, before exploring the mechanisms for its implementation and the challenges facing the transition to a circular economy.

Section One: The Establishment of Waste Recycling within the Algerian Legislative Framework

The legislative framework provides the basis for governing various waste management, valorisation and recycling operations, and has gradually evolved within Algerian legislation. Examining the extent to which recycling is enshrined in the Algerian legal system therefore requires a review of the legislative basis established by Law No. 01-19 and an identification of the main new provisions introduced by Law No. 25-02 in the field of supporting recycling and the circular economy.

Section 1: The legislative basis for waste recycling under Law No. 01-19

This law, enacted on 12 December 2001, constitutes the general legislative basis for regulating waste management in Algeria. Since its enactment, the law has established principles and objectives that extend beyond the final disposal of waste to include the prevention of waste generation, the reduction of its environmental impact, and the rational regulation of its sorting, collection, transportation, treatment, valorisation, and disposal[24].

[23]- Al-Sadiq Zouine, cited above, p. 35.

[24]- Law No. 01-19, cited above.

This approach demonstrates the Algerian legislature's early recognition of the importance of managing waste within an integrated cycle rather than limiting public policy to its final disposal. Furthermore, incorporating reuse, recycling, and valorisation into the waste management system established a legal basis for reintegrating some waste into economic activity.

The most significant development in the legislative framework, however, occurred pursuant to Law No. 25-02 of 20 February 2025, which amended and supplemented Law No. 01-19.

Subsection Two: New Developments Introduced by Law No. 25-02 to Support the Circular Economy and Waste Recycling

This amendment was introduced in the context of the move towards strengthening the circular economy, with a set of provisions reinforcing the transition from the traditional waste management approach to one based on prevention, valorisation and reintegrating materials into the economic cycle. This is achieved by establishing principles and mechanisms associated with the circular economy[25].

A key aspect of this transformation is the introduction of ecodesign[26], which involves integrating environmental considerations into the design and development stages of products. This helps to reduce waste generation and minimise environmental impact. This reflects a legislative shift in focus from waste treatment to waste prevention at the pre-production stage, in line with the principles of the circular economy[27].

The law also establishes the principle of extended producer responsibility, requiring producers or holders to ensure or facilitate the valorisation of waste resulting from the materials and products they produce, import or market[28].

This approach is further supported by the introduction of the eco-contribution, as set out in Article 7 bis of Law No. 25-02. This reflects the transfer of some responsibility for waste management from the disposal stage to producers and other stakeholders.

Law No. 25-02 provides for the preparation of the National Strategy for Integrated Waste Management and its action plans in Articles 5 bis and 5 bis 1, in addition to establishing planning instruments at national and wilaya levels[29]. This enables waste prevention, collection, sorting, treatment and valorisation to be linked within an integrated framework[30].

The importance of these new provisions for recycling lies in the fact that the circular economy is not based on recycling in isolation. Rather, it requires a system that begins with reducing waste generation and preserving products and materials for as long as possible and extends to recovering and valorising whatever can be recycled.

Recent studies have examined this legislative transformation, demonstrating that amending Law No. 01-19 under Law No. 25-02 has strengthened legal mechanisms relating to waste management and

[25]- Law No. 25-02, cited above.

[26]- Under Article 2 of Law No. 25-02, "ecodesign" means the systematic integration of environmental aspects from the design and development of products, with the aim of reducing negative environmental impacts throughout their life cycle.

[27]- Article 2 of Law No. 25-02.

[28]- Article 7 of Law No. 01-19, as amended and supplemented by Article 4 of Law No. 25-02.

[29]- Law No. 25-02, Articles 5 bis and 5 bis 1.

[30]- Law No. 25-02, Articles 33 bis and 33 bis 1.

valorisation, establishing an approach to integrating waste into the economic cycle as a resource that can be exploited[31].

These developments confirm that the Algerian legislator no longer views recycling as a process that takes place after waste disposal, but rather as part of the product life cycle, reintegrating recovered materials into economic activity.

Subsection Two: Mechanisms for Activating Waste Recycling and the Challenges of Transitioning to the Circular Economy

The implementation of waste recycling requires more than the adoption of legal principles and provisions; the success of these objectives depends on mechanisms that can translate these provisions into practice. Examining the effectiveness of recycling in Algeria therefore requires identifying the main legal, institutional, economic and technical mechanisms necessary for its implementation, as well as the major challenges that may limit the effectiveness of these mechanisms, and the requirements for transitioning to a circular economy.

First Branch: Legal, institutional and economic mechanisms for activating recycling

Simply establishing recycling and valorisation in legal texts is insufficient to achieve a transition to a circular economy. Instead, this requires institutional, technical and economic mechanisms to ensure the practical implementation of these principles.

Selective sorting is at the forefront of these mechanisms as it enables recyclable materials to be separated from the rest of the waste, preserving their quality and reducing treatment costs. Mixing different types of waste makes material recovery more difficult and affects the economic viability of recycling operations.

The development of recycling activities requires supporting facilities specialising in waste treatment and valorisation, as well as encouraging private investment in this field. The transition to a circular economy cannot be achieved through public administration alone; it requires the participation of businesses, investors and local stakeholders because recycling is an economic activity that requires investment, equipment and markets for recycled materials.

In this regard, the National Waste Agency plays a key role in implementing the national waste management policy by providing information, support, expertise and tools related to waste management and valorisation. A recent study by Jaber Dahimi examined the National Waste Agency's role in promoting the transition to a circular economy, highlighting the initiatives it undertakes in this area[32].

Investment is also particularly important, whether concerning material recycling or other forms of valorisation. In this context, Sakri and Khalfallah's 2025 study addressed the legal perspective on investment in energy recovery from waste, revealing the expansion of the economic field associated with waste valorisation and its extension beyond traditional recycling operations[33].

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[31]- See: Hassina Ghouas, "Waste Management as an Embodiment of the Circular Economy in Algerian Legislation," Al-Ihyaa Journal, Vol. 25, No. 2, 2025, p. 291.

[32]- Jaber Dahimi, "The Contribution of the National Waste Agency to Strengthening the Transition towards a Circular Economy," Journal of Advanced Economic Research, Vol. 10, No. 1, 2025, pp. 9–23.

[33]- Saadi Sakri and Fawzi Khalf Allah, "The Legal Perspective on Investment within the Framework of Energy Recovery from Waste: Between Reality and Aspiration," Journal of Legal and Political Thought, Vol. 9, No. 1, 2025, pp. 577–592.

This approach is further reinforced by the incentive measures established by law to encourage waste collection, sorting, transportation, valorisation and disposal activities. This opens the way for economic instruments to support recycling and valorisation activities.

Conversely, the digital dimension has become integral to the new legislative approach, with Law No. 25-02 seeking to bolster the digitalisation of waste management. The law introduces a national information and mapping system for waste data management, providing a basis for planning, monitoring and following up on waste management and valorisation operations.

Second branch: Challenges of Implementation and Requirements for the Actual Transition to the Circular Economy

The effectiveness of legal mechanisms for waste recycling depends not only on their inclusion in legislative texts, but also on their practical applicability. Previous experience in Algeria has shown that establishing legal mechanisms for recycling is not enough to ensure effectiveness, given the ongoing issues relating to environmental awareness, the efficiency of waste treatment facilities, and a lack of funding and expertise. Accordingly, the importance of the new provisions introduced by Law No. 25-02 is not only measured by the expanded scope of their legislative establishment, but also by the extent to which the established mechanisms can overcome these difficulties and transform legal obligations into actual recycling practices[34].

The first requirement for transitioning to a circular economy is enhancing the effectiveness of waste sorting and selective collection systems, as these are fundamental to the recovery and recycling of materials suitable for valorisation. Inadequate initial sorting and the mixing of different types of waste can reduce the efficiency of recovery and recycling operations and impact the quality of materials suitable for valorisation[35]. Therefore, establishing recycling within the legal framework will not fully achieve its objective unless it is accompanied by the practical organisation of sorting and collection, and the provision of the necessary means and infrastructure for their regular and effective implementation.

Accordingly, the amendment of Law No. 01-19 by Law No. 25-02 reveals an expansion of the Algerian legislative approach to waste management, integrating principles and mechanisms more closely associated with the circular economy, such as prevention, valorisation, extended producer responsibility and ecodesign. However, expanding the scope of legislative provisions alone is insufficient to ensure a transition to the circular economy, unless these new developments are accompanied by effective implementation mechanisms and technical, economic and institutional infrastructure capable of translating legal obligations into practical recycling and valorisation measures.

Conclusion:

The study of waste recycling as a means of transitioning to a circular economy in Algeria shows that shifting from a linear to a circular economic model requires a change in how waste is handled. The

[34]- Hiba Hamza and Naïm Chaouch, "An Analytical Study of the Legislative Trend towards Establishing the Circular Economy in Light of the Provisions of Law No. 01-19 concerning the Management, Control and Disposal of Waste," Journal of Environment, Sustainable Development and Human Health, Vol. 1, No. 1, 2022, pp. 51–72.

[35]- Henniche Redouane, An Attempt to Evaluate Selective Waste Collection in Algeria: The Case of Recycling in the Municipality of Béjaïa, Master's Dissertation in Economic Sciences, Specialization in Environmental Economics, Abderrahmane Mira University of Béjaïa, 2010, p. 93.

aim should be to prevent waste generation, recover materials suitable for reuse and recycling, and reintegrate them into the economic cycle, rather than just disposing of waste.

Analysis of the Algerian legal framework shows that legislators have not overlooked this transition. Law No. 01-19 established principles relating to prevention, sorting, recovery and valorisation, and Law No. 25-02 of 2025 subsequently reinforced this approach by introducing concepts and mechanisms more closely associated with the circular economy.

Based on the foregoing, it is evident that the transition to a circular economy in Algeria hinges not only on the development of the legislative framework governing waste, but also on the activation of the legal, institutional and economic mechanisms established to facilitate this transition. Based on this, the study's main conclusions and the fundamental requirements for enhancing the effectiveness of waste recycling in Algeria can be drawn.

Waste recycling is one of the fundamental mechanisms for transitioning towards the circular economy. However, its effectiveness depends on its integration into a system that encompasses waste prevention, sorting, reuse and valorisation.

The concept of the circular economy encompasses more than just waste recycling, as it involves changing production and consumption patterns by reducing resource depletion, extending product life cycles and reintegrating recovered materials into the economic cycle.

- Algerian legislation, particularly Law No. 25-02 amending and supplementing Law No. 01-19, is developing in a way that strengthens waste prevention, sorting and valorisation. This supports the shift from an approach based on waste disposal to one based on recovering its economic and environmental value.
- The effectiveness of legal mechanisms relating to waste recycling depends not only on their establishment in legislation, but also on the coordination of institutional roles, the availability of technical and financial resources, and the ability of implementation and monitoring mechanisms to ensure compliance with legal obligations.
- Waste valorisation and recycling represent an opportunity to support the national economy by recovering reusable materials and reducing resource waste. However, achieving this objective depends on developing recycling infrastructure, promoting investment and establishing a market capable of absorbing recycled materials and products.

In light of the findings, the following recommendations can be made:

- Finalise the regulatory texts required to implement the provisions of Law No. 25-02, to ensure the effective application of the newly introduced mechanisms for waste prevention, sorting, valorisation and recycling.
- Strengthen selective waste sorting at source and work towards its gradual implementation in line with the capacities and resources of local authorities, while clarifying the responsibilities of the various stakeholders involved in collection and sorting.
- Develop financial and tax incentives to encourage investment in waste recycling and valorisation, taking into account relevant environmental requirements and legal standards.
- Support the creation of a national market for secondary materials and recycled products by promoting their use in industrial and production activities, in line with quality and safety standards. This will enhance the economic viability of recycling operations.

- Strengthen the capacities of local authorities and the National Waste Agency in collecting waste-related data, tracking waste flows and evaluating the results of sorting, valorisation and recycling operations, each within the limits of their respective powers.
- Develop digitalisation in the field of waste management by establishing accurate, up-to-date national databases that can determine the quantities of waste collected, sorted, valorised and recycled, track the stakeholders involved and evaluate the effectiveness of public policies adopted in this field.
- Strengthen environmental awareness among producers and consumers by promoting a culture of source segregation, waste reduction, and sustainable production and consumption patterns to support the transition to a circular economy.
- Strengthen oversight of the implementation of legal obligations relating to waste management, valorisation and recycling, while conducting periodic assessments of the effectiveness of the adopted mechanisms, to identify implementation shortcomings and propose appropriate corrective measures.

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