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Circular Economy and Green Job Creation in Algeria: A Sector-Level Econometric Framework for Recycling, Repair and Remanufacturing

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ABSTRACT

This study proposes an analytical and econometric framework for estimating how circular economy activities contribute to the quantity, productivity and quality of green jobs in Algeria. This relationship is not automatic but depends on the labour intensity of each branch, investment, productivity and regulation. Drawing on a critical review of the literature and Algerian data, it proposes a three-equation branch-by-province system to be estimated using the Pooled Mean Group (PMG) estimator and a difference-in-differences design.

International evidence shows that repair and maintenance account for about 46% of global circular employment, that more than half of it is informal, and that recycling is less labour-intensive than repair. Algeria's household waste recycling rate stands at around 7%. The study concludes that circular jobs should be assessed by their productivity and quality, not by their number alone, and proposes a composite job quality index and a national data system.

Keywords: Circular economy; Green jobs; Repair and recycling; Informal sector; Algeria.

JEL Classification Codes: Q53, Q56, J21, J46, O13, O55.

Résumé:

Cette étude propose un cadre analytique et économétrique pour estimer la contribution des activités de l'économie circulaire à la quantité, à la productivité et à la qualité des emplois verts en Algérie. Cette relation n'est pas automatique, mais dépend de l'intensité de main-d'œuvre de chaque branche, de l'investissement, de la productivité et de la réglementation. S'appuyant sur une revue critique de la littérature et sur des données algériennes, l'étude propose un système à trois équations par branche et par wilaya, estimé à l'aide de l'estimateur des moyennes groupées en panel (PMG) et d'une approche de différences de différences (DID).

Les données internationales montrent que la réparation et la maintenance représentent environ 46 % de l'emploi circulaire mondial, que plus de la moitié de celui-ci est informel, et que le recyclage est moins intensif en main-d'œuvre que la réparation. Le taux de recyclage des déchets ménagers en Algérie s'élève à environ 7 %. L'étude conclut que les emplois circulaires doivent être évalués en fonction de leur productivité et de leur qualité, et non de leur seul nombre, et propose un indice composite de la qualité de l'emploi ainsi qu'un système national de données.

Mots-clés : Économie circulaire ; Emplois verts ; Réparation et recyclage ; Secteur informel ; Algérie.

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1. INTRODUCTION

The Algerian economy poses an old question in a new form: how can a rentier economy generate productive employment outside the hydrocarbon sector? Many answers have been attempted, ranging from large-scale manufacturing industries to support for micro-enterprises. The circular economy, however, offers a different entry point, since it does not seek a new resource so much as it revalorises existing resources that are currently discarded in landfills. The idea is simple to state yet difficult to demonstrate: extending the life of materials and products through repair, remanufacturing and recycling may generate value added and employment, but it may equally generate precarious, low-wage jobs if left to the informal sector.

The literature on Algeria falls into two strands that rarely intersect: environmental and engineering studies that measure waste quantities, composition and recovery rates (Dahmane et al., 2024; Hassaine & Abrika, 2024), and labour economics studies that address unemployment and informality without isolating circular activities. A third strand, published in Algerian journals, treats the green economy and green entrepreneurship from a conceptual and descriptive standpoint. A documented search conducted in three languages, whose protocol and results are reported in Appendix A, revealed that none of the identified studies links the scale of circular activity in Algeria to the volume, productivity and quality of employment within a single analytical or econometric framework. We do not claim that this absence is absolute, since the search was not conducted directly in the Scopus and Web of Science databases; rather, we regard it as strong evidence of an existing gap.

This leads to the central research question: what analytical and econometric framework is appropriate for estimating the contribution of circular economy activities to green job creation in Algeria—in terms of quantity, productivity and quality—and which factors are expected to determine the magnitude and nature of this effect? The paper makes three contributions. The first is conceptual: it distinguishes between the number, productivity and quality of jobs rather than treating employment as a single indicator. The second is methodological: it proposes a three-equation system at the branch-by-province level, with an explicit identification strategy. The third is applied: it develops a composite index of circular job quality and an operational data system. We state explicitly that this is a conceptual–methodological paper: it constructs and justifies the design and presents the available evidence, but does not report estimates.

The remainder of the paper is organised as follows. Section 2 presents the theoretical framework, the literature review and the hypotheses; Section 3 analyses the Algerian context; Section 4 sets out the data and methodology; Section 5 discusses the evidence in light of the hypotheses; Section 6 derives policy implications; and Section 7 concludes with the limitations and avenues for future research.

2. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1. The circular economy: From a multiplicity of definitions to an operational definition

Kirchherr et al. analysed 114 definitions of the circular economy and concluded that most reduce the concept to the reduce–reuse–recycle triad, while only a few describe it as a systemic transformation; moreover, economic prosperity is the most frequently cited objective, whereas social equity is absent from most definitions (Kirchherr et al., 2017). What matters to development economists here is the absence of labour from the concept. If the social dimension is marginal in the definition, circular policies can be expected to be evaluated in tonnes of recovered materials rather than in jobs or their quality—precisely what we observe in Algerian official discourse, which speaks of valorisation rates more than of wages and social protection.

In their review of two decades of literature, Ghisellini et al. confirm that the implementation of the circular economy is still in its infancy, that it focuses on recycling more than on reuse, and that a successful transition is conditional on clear and stable policies and on an economic return that motivates firms and investors (Ghisellini et al., 2016). This bias towards recycling is significant for our topic, as it implies that policies tend to favour the least labour-intensive branch. The paper therefore adopts an operational definition that treats the circular economy as a productive system that extends the life of materials, whose impact is measured jointly by three indicators: employment volume, value added per worker, and the quality of working conditions.

2.2. Green jobs and the channels of employment impact

Drawing on the US occupational database O*NET, Bowen et al. found that approximately 19.4% of workers fall within the green economy in its broad sense, that most of these jobs are indirectly green—that is, existing occupations experiencing increased demand without substantive changes in their tasks—and that greenness is a matter of degree along a continuum rather than a binary attribute (Bowen et al., 2018). The encouraging implication for Algeria is that circular jobs do not require a break with existing skills: the mechanic who rebuilds engines and the electrician who repairs appliances perform circular work with existing skills. The less encouraging implication is that isolating these jobs statistically is difficult, since they are dispersed across traditional sectors.

It follows that the first channel through which the circular economy affects employment is quantitative, operating through a reallocation of labour demand towards maintenance, collection, sorting and processing. The second channel is qualitative, operating through productivity: the higher the value added per tonne recovered, the greater the activity's capacity to pay decent wages. The study by Vona et al. adds a third channel: the tightening of environmental regulation in the United States between 2006 and 2014 had no significant effect on aggregate employment but generated modest yet statistically significant gaps in the demand for green engineering and technical skills (Vona et al., 2018). This implies that enforcing Law 01-19 will not automatically raise employment, but it may expose a shortage of technicians capable of operating sorting and processing centres.

2.3. Aggregate and sectoral effects of the circular transition

Wiebe et al. projected the multi-regional input–output database EXIOBASE to 2030 and compared a business-as-usual scenario with a circular scenario. They found that global material extraction declines by about 10%, and that the employment effect is small but positive, with labour shifting from extractive sectors towards services (Wiebe et al., 2019). This result puts political enthusiasm into proper perspective: the circular economy is a restructuring in which some sectors gain and others lose, not a large-scale job-creation machine. Nevertheless, a contrasting reading deserves consideration in the Algerian case: since employment in hydrocarbons is low relative to the sector's weight in GDP, the employment cost of reduced extraction is limited, while the potential gains in labour-intensive circular services are relatively larger.

At the sectoral level, Llorente-González and Vence examined twenty-four repair, reuse and recycling activities in the European Union and found that recycling is the least labour-intensive, that employment is concentrated in labour-intensive, low-wage activities, and that structural differences across branches call for branch-specific policy instruments (Llorente-González & Vence, 2020). The joint report of the International Labour Organization, the World Bank and Circle Economy confirms this pattern globally: of the 121 to 142 million people employed in circular sectors, repair and maintenance account for 46%, manufacturing for 24.5%, and waste management for only 8%, with more than half working in the informal economy (Circle Economy et al., 2025).

2.4. Hypotheses

Based on the foregoing, a main hypothesis is formulated, positing a positive relationship between the development of circular activities and employment in Algeria, whose magnitude varies with branch, investment and productivity. Four testable sub-hypotheses derive from it within the model proposed in Section 4: (H1) investment in circular branches is associated with higher employment in those branches, i.e., the coefficient α_2 in Equation (2) is positive; (H2) an increase in circular activity is associated with higher labour demand, with a greater elasticity in repair than in recycling, i.e., α_1 is larger in the repair branch than in the recycling branch; (H3) regulation and skills availability are associated with greater formality and stability of jobs, i.e., the coefficient δ_2 in Equation (4) is positive; (H4) growth in circular employment is not necessarily associated with an improvement in its quality, i.e., δ_1 is not significantly different from zero or is negative.

3. THE ALGERIAN CONTEXT

3.1. The development of circular activities and the institutional framework

Hassaine and Abrika show that Algeria's early waste management strategies were reactions to a rapid increase in waste volumes, and that the National Strategy for Integrated Waste Management to 2035, issued in 2016, represents the first attempt to organise the sector according to a circular logic (Hassaine & Abrika, 2024). The

authors estimate the household waste recycling rate at about 7%, against a target of 25–30%. The gap between these two figures is as much an employment issue as a technical one, since each additional percentage point requires a chain of collection, sorting, transport and processing.

However, the most economically telling figure is that the value of the forgone potential amounted to no more than approximately 0.25% of GDP in 2015, or roughly USD 412 million. This implies that the case for relying on recycling alone as a driver of diversification is overstated, and that the greater gain may lie in repair and remanufacturing, where value added per tonne is higher. The authors further note that approximately 95% of the sector's expenditure between 2002 and 2016 came from the central treasury, and that most of it went to controlled landfills and technical landfill centres. Oil rents financed waste disposal rather than waste valorisation—a paradox that encapsulates the Algerian dilemma. Added to this is regulatory instability: metal recovery activities have been repeatedly disrupted by successive suspensions and reopenings of scrap metal exports.

3.2. Formal and informal employment

Dahmane et al. estimated that only about 11% of the surveyed waste is recycled, that less than 1% is composted, and that sustainable management could create approximately 40,000 direct jobs and more than 200,000 indirect jobs (Dahmane et al., 2024). These estimates should be read with caution. A five-to-one ratio of indirect to direct jobs is high by the usual standards of employment multipliers and presupposes inter-sectoral linkages whose existence has not been tested. Moreover, the difference between 11% and 7% is most likely due to differences in the scope of waste covered—a reminder that defining boundaries must precede any measurement.

The question these estimates overlook is the most important one: how many of these jobs already exist in informal form? Informal collectors are the ones who recover paper, cardboard, plastics and metals from households and collection points, and the informal sector dominates the activity and is difficult to enumerate (Hassaine & Abrika, 2024). This is a well-documented pattern across developing countries, where informal recycling provides a livelihood for large numbers of people and reduces management costs for municipalities, making its integration into the formal system a more effective option than its exclusion (Wilson et al., 2006). A substantial share of the expected jobs may thus represent the formalisation of existing work rather than the creation of new work, and distinguishing between the two is a precondition for any credible policy evaluation.

Remanufacturing, the third branch in the title of this study, is the least documented in Algeria: we found no published data on its size or employment, and its practices range from the rebuilding of engines and spare parts in small workshops to a few industrial maintenance units. Here the paper draws on the global estimate that places manufacturing second, at about 24.5% of circular employment (Circle Economy et al., 2025), while cautioning that this figure covers activities that extend beyond remanufacturing in the narrow sense. Table 1 summarises the main available indicators, distinguishing national from global indicators.

Table 1: Selected indicators on the circular economy and employment

Indicator	Value	Scope	Source
Household waste recycling rate	≈ 7%	Algeria, 2019	Hassaine & Abrika (2024)
National recycling rate target	25–30%	Algeria, 2035 horizon	Hassaine & Abrika (2024)
Untapped potential (% of GDP)	≈ 0.25%	Algeria, 2015	Hassaine & Abrika (2024)
Central treasury share of sector expenditure	≈ 95%	Algeria, 2002–2016	Hassaine & Abrika (2024)
Recycling rate of surveyed waste	≈ 11%	Algeria, 2022	Dahmane et al. (2024)
Potential direct jobs	≈ 40,000	Algeria, estimate	Dahmane et al. (2024)
Global circular employment	121–142 million	World	Circle Economy et al. (2025)
Share of repair and maintenance	46%	World	Circle Economy et al. (2025)

Table 1: Selected indicators on the circular economy and employment *(continued)*

Indicator	Value	Scope	Source
Share of informal employment	More than 50%	World	Circle Economy et al. (2025)

Source: Compiled by the author from Hassaine & Abrika (2024), Dahmane et al. (2024) and Circle Economy et al. (2025).

Note: The discrepancy between the 7% and 11% recycling rates reflects differences in the scope of waste covered by each source. The global indicators in the last three rows are provided for comparative reference only and are not directly transferable to Algeria.

4. DATA AND METHODOLOGY

4.1. Variables and data sources

The paper proposes constructing the data at the branch–province–year level, since the annual national series alone does not provide a sufficient number of observations. The variables are drawn from three national sources: the labour force surveys and sectoral accounts of the National Office of Statistics (ONS), with circular occupations coded according to the national classification of activities; the reports of the National Waste Agency (AND) on waste quantities and composition by province; and social security records to measure job formality. Table 2 presents the definitions of the variables and their measurement. We state explicitly that these data are not currently published at the required level of detail; this section therefore presents a design that can be estimated once they become available, without claiming results that the current data cannot support.

Table 2: Definition of variables

Symbol	Variable	Proposed measurement
EMP	Circular employment	Number of workers in the branch or its growth rate
CEI	Circular activity index	Quantities recovered, or number of repair and remanufacturing operations
INV	Investment	Gross fixed capital formation in the branch
VA	Value added	Branch value added at constant prices
PROD	Labour productivity	Value added per worker (VA/EMP)
TECH	Technological level	Share of machinery and equipment in investment
GDP	Gross domestic product	Non-hydrocarbon GDP, as a business-cycle control variable
JQI	Job quality index	Weighted average of the share of workers registered with social security, the wage relative to the average wage, and the share of permanent contracts
REG	Regulation and skills	Existence of a selective sorting programme in the province, and number of trainees in environmental specialisations

Source: Proposed by the author.

4.2. Model specification

The study by Llorente-González and Vence (2020) shows that aggregating circular activities into a single variable obscures precisely the differences we seek to measure; the equations are therefore estimated for each branch *i* in province *j* and year *t*. The employment equation commonly used in the applied literature is specified as follows:

$$EMP_{it} = \beta_0 + \beta_1 CEI_{it} + \beta_2 INV_{it} + \beta_3 VA_{it} + \beta_4 PROD_{it} + \beta_5 GDP_t + \varepsilon_{it} \quad (1)$$

This specification, however, suffers from a structural flaw: productivity equals value added divided by employment, so including both VA and PROD in an equation whose dependent variable is EMP generates a quasi-accounting rather than a behavioural relationship. We therefore propose a three-equation system, in which the first equation tests H1 and H2, the second tests the productivity channel, and the third tests H3 and H4:

$$\ln EMP_{ijt} = \alpha_0 + \alpha_1 \ln CEI_{ijt} + \alpha_2 \ln INV_{ijt} + \alpha_3 \ln GDP_{jt} + \mu_{ij} + \lambda_t + u_{ijt} \quad (2)$$

$$\ln PROD_{ijt} = \gamma_0 + \gamma_1 \ln INV_{ijt} + \gamma_2 TECH_{ijt} + \gamma_3 \ln CEI_{ijt} + \mu_{ij} + \lambda_t + v_{ijt} \quad (3)$$

$$JQI_{ijt} = \delta_0 + \delta_1 \Delta \ln EMP_{ijt} + \delta_2 REG_{jt} + \delta_3 \ln PROD_{ijt} + \mu_{ij} + \lambda_t + w_{ijt} \quad (4)$$

where μ denotes branch-by-province fixed effects and λ denotes time fixed effects. In the logarithmic specifications, the coefficients on log-transformed variables are interpreted as elasticities. If α_1 is positive, statistically significant, and larger in the repair branch than in recycling, H2 is supported in its sectoral dimension. If γ_1 rises while α_2 falls in the same branch, this indicates that investment is oriented towards capital deepening at

the expense of employment. Equation (4), in turn, separates employment growth from employment quality—something the initial specification was unable to do.

4.3. Estimation and identification strategy

The system is estimated in its dynamic form using the Pooled Mean Group (PMG) estimator, which imposes homogeneity of long-run coefficients across units while allowing short-run coefficients and error variances to differ (Pesaran et al., 1999). This estimator is well suited to a data structure with many cross-sectional units and short time series, which is the expected configuration of Algerian data. The ARDL bounds-testing approach (Pesaran et al., 2001) is applied to the aggregated national series as a complementary test for the existence of a long-run relationship, bearing in mind that these series span at best two decades since the enactment of Law 01-19 in 2001, and that limited degrees of freedom weaken the power of the test.

Estimation follows a specific sequence: panel unit root tests to rule out integration of order two; a Hausman test to choose between the PMG and Mean Group estimators; and diagnostic tests for serial correlation, heteroskedasticity and cross-sectional dependence across provinces. Robustness checks include replacing the circular activity index with an alternative measure, re-estimating in levels, and excluding the provinces of Algiers, Oran and Constantine to test the sensitivity of the results to large urban agglomerations. Should administrative data remain unavailable, the alternative is a field survey of firms in the three branches, allowing cross-sectional estimation at the firm level.

The most important constraint, however, is causal rather than statistical: circular activity may expand because employment has increased—for instance, when unemployed youth turn to scrap collection—rather than the reverse. The main identification strategy therefore relies on a difference-in-differences design, comparing provinces that launched selective sorting programmes with those that did not, before and after implementation, while testing for parallel pre-treatment trends. Decisions to suspend metal exports, by contrast, are unsuitable as a primary instrumental variable, as they affect employment through channels other than circular activity—such as trade and prices—thereby violating the exclusion restriction; they may be used only in a robustness check, with cautious interpretation.

5. DISCUSSION

International evidence consistently indicates that the aggregate employment effect of the circular economy is positive but modest (Wiebe et al., 2019), and that inter-branch differences exceed the overall effect (Llorente-González & Vence, 2020). If this pattern holds in Algeria, a policy focused exclusively on waste neglects the bulk of potential circular employment, which lies in repair and maintenance.

To illustrate, consider two branches generating the same value added of DZD 1 billion per year: household appliance repair workshops, and an automated plant converting plastic into pellets. The first branch will employ far more workers at lower wages, while the second will employ fewer workers at higher productivity. A policy that measures success by the number of jobs will favour the former, whereas a policy that measures it by wages will favour the latter; the system proposed in Equations (2), (3) and (4) is what makes this trade-off visible. Table 3 summarises the degree of consistency between the hypotheses and the available evidence, emphasising that none of them has been quantitatively tested in the Algerian context.

Table 3: Hypotheses and their consistency with the available evidence

Hypothesis	Evidence	Status
Main hypothesis	Modest positive aggregate effect and sectoral heterogeneity (Wiebe et al., 2019; Llorente-González & Vence, 2020)	Untested domestically; direction consistent with international evidence
H1 Investment and employment	No Algerian series available for testing	Untested
H2 Labour intensity by branch	Higher labour intensity in repair (Llorente-González & Vence, 2020)	Untested domestically; international support
H3 Regulation and skills	Technical skills gaps (Vona et al., 2018); predominance of informality (Hassaine & Abrika, 2024)	Untested; indirect support
H4 Quantity versus quality	More than half of circular employment is informal (Circle Economy et al., 2025)	Untested; the most strongly supported hypothesis

Source: Prepared by the author based on the reviewed literature.

The predominance of informality makes H4 the most strongly supported hypothesis even prior to any domestic testing, since numbers do not guarantee quality. Countries with a large informal sector, Algeria among them, run the risk of counting as green achievements jobs that lack social insurance and occupational safety standards—which is precisely what the JQI is designed to reveal.

6. POLICY IMPLICATIONS

The joint report of the International Labour Organization and the World Bank recommends using public demand and investment to promote circularity, facilitating access to finance for sustainable enterprises, launching training programmes targeting young people, informal workers and women, extending social protection, and strengthening data systems (Circle Economy et al., 2025). In the Algerian case, where the treasury financed approximately 95% of sector expenditure between 2002 and 2016 (Hassaine & Abrika, 2024), consideration could be given to redirecting part of public demand from landfilling to valorisation—for example, by introducing preferential criteria for remanufactured spare parts in public fleet maintenance contracts. This remains a proposal that requires assessment of its compatibility with public procurement regulations and technical safety requirements, but it directly targets the repair branch, which is the most labour-intensive according to international evidence.

With regard to skills, the findings of Vona et al. (2018) suggest that the gap will lie in technicians rather than manual workers, which calls for the incorporation of industrial sorting and remanufacturing specialisations into the vocational training nomenclature. With regard to informality, the realistic route to integrating waste collectors is not repression but accredited cooperatives bound by contracts with municipalities, providing them with stable income and social coverage while giving the state data on an activity about which it currently has little or no information.

The most urgent proposal, however, is to build a national system of circular employment indicators linking labour force surveys—with coding of circular occupations—to National Waste Agency data and social security records. Without such a system, any econometric model, including the one proposed here, will remain contingent on data that have yet to be collected.

7. CONCLUSION

This study concludes that the question of whether the circular economy can create jobs in Algeria remains incomplete unless a critical corollary is added: *which jobs, and of what quality?* International evidence points to a modest positive aggregate effect, decisive structural differences across branches, a significantly higher labor intensity in repair compared to recycling, and widespread informality. None of the study's core hypotheses could be definitively tested due to empirical constraints in the Algerian context; thus, they can neither be fully accepted nor rejected, though their theoretical direction aligns with global patterns, with H4 receiving the strongest conceptual support. The primary contribution of this paper lies in formulating an estimable econometric design that renders rigorous empirical testing possible as soon as national micro-data become fully available.

FINDINGS:

1. The employment potential of the circular economy is highly heterogeneous, with labor intensity concentrating predominantly in repair and maintenance activities rather than capital-intensive recycling processes.
2. The lack of formalization in waste management and secondary material recovery heavily distorts job quality, wage stability, and social security coverage across Algerian provinces.
3. The quantitative assessment is severely constrained by the absence of homogeneous national employment series, divergent recycling metrics, and sparse documentation of the remanufacturing sector.
4. Despite data limitations, the proposed three-equation branch-by-province system and difference-in-differences framework provide a viable pathway for rigorous causal evaluation in developing economies.

RECOMMENDATIONS:

1. Reorient the performance criteria of the National Strategy for Integrated Waste Management from relying solely on tonnage of recovered waste to incorporating job quality indicators, including wages and social protection coverage.
2. Transition financial incentives away from traditional landfilling operations toward material valorization, repair infrastructure, and high-productivity green enterprises.

3. Integrate informal waste collectors and grassroots recovery agents into the formal economic framework through targeted legal recognition, micro-financing, and cooperative incentives.
4. Build a centralized, systematic statistical tracking mechanism dedicated to mapping green employment, sectoral wages, and productivity trends across all Algerian wilayas.

Research Prospects:

Future research must move beyond theoretical frameworks by conducting comprehensive field surveys across enterprises in the recycling, repair, and remanufacturing branches. Furthermore, updating national input-output tables is essential to accurately measure true economic multipliers, while dedicated micro-level studies on informal waste agents will deepen our understanding of labor market dynamics in transitional economies.

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List of Appendices:

APPENDIX A: LITERATURE SEARCH PROTOCOL

The search was conducted on 15 October 2026 using a general web search engine, with a particular focus on the Algerian Scientific Journal Platform (ASJP) and the Springer and ScienceDirect platforms. Three sets of keywords were used: in English (*circular economy, employment, green jobs, recycling, Algeria*), in Arabic (equivalents of: circular economy, employment, job positions, green jobs, recycling, Algeria), and in French (*économie circulaire, emploi, emplois verts, recyclage, Algérie*). Inclusion was restricted to peer-reviewed studies addressing Algeria and linking the circular or green economy to employment; press articles and opinion reports were excluded. The abstract of each candidate study was screened to verify the presence of data or an empirical method. Table A1 presents the identified peer-reviewed studies and their classification.

Table A1: Identified studies relevant to Algeria

Study	Focus	Method (as stated in the abstract)	Does it measure the circular activity–employment relationship?
Dahmane et al. (2024), *Journal of Material Cycles and Waste Management*	Waste management from a circular perspective	Quantitative case study of waste	Aggregate estimate of potential jobs, without a model
Hassaine & Abrika (2024), *Revista Galega de Economía*	Challenges of activating the circular economy	Documentary analysis and SWOT	No
Sahraoui, *Les Cahiers du MECAS*, 19(1)	Green start-ups	Conceptual, comparative	No
Maamar (2023), *Afaq Journal of Management and Economic Sciences*, 7(1)	Green entrepreneurship and green jobs	Conceptual	No (green economy in general)
Ben Gara Mostefa & Boukhedmi, *Journal of Labour and Employment Law*, 5(3)	Strategy for the transition to a green economy	Descriptive	No
Messaoudi, *Journal of the Institute of Economic Sciences*, 23(1)	Requirements for activating the circular economy	Descriptive-analytical	No

Source: Compiled by the author from ASJP, Springer and ScienceDirect (search conducted on 15 October 2026).

Note: Bibliographic details of the Arabic-language studies are as listed on the ASJP platform; author names and journal titles are transliterated/translated from Arabic. Messaoudi's conclusion that the circular economy in Algeria remains confined to waste management and recycling reinforces the argument advanced in Section 2.1 regarding the implementation bias towards recycling.

To move towards a full systematic review, a standardised search string was formulated for execution in Scopus (TITLE-ABS-KEY field, from 2001 onwards; articles, reviews and conference papers) and its equivalent in Web of Science (TS field), combining three blocks with the AND operator: a circular activity block (circular economy, recycl*, waste recovery, repair*, remanufactur*, reuse, green job*), a labour block (employment, job*, labo?r, decent work, informal*, waste picker*), and a geographical scope block (algeria*, algérie). A sensitivity variant extends the scope to the Maghreb and North Africa. Each record is to be entered in a standardised screening form, and the screening process is to be summarised in Figure A1 in accordance with the PRISMA 2020 guidelines.

Fig. A1 : PRISMA 2020 screening flow diagram

Stage	Step	Number
Identification	Records identified in Scopus, Web of Science and ASJP	[n =]
Identification	Duplicate records removed	[n =]
Screening	Records screened by title and abstract	[n =]
Screening	Records excluded at screening	[n =]
Eligibility	Full-text articles assessed	[n =]
Eligibility	Full-text articles excluded, with reasons	[n =]
Included	Studies included	[n =]
Included	Of which: studies econometrically estimating the circular activity–employment relationship	[n =]

Source: Prepared by the author following the PRISMA 2020 guidelines.

Note: The counts are to be completed after the search is executed in both databases; they are computed automatically in the PRISMA sheet from the screening form provided in the supplementary material.

Among the records identified in the open index OpenAlex whose full text could not yet be examined is a prospective study published in 2026 in the Zenodo repository on the outlook for household waste recycling industries in Algeria and the associated investment and employment opportunities. It is the identified study closest to the subject of this paper and is therefore prioritised for examination: should it prove to estimate the relationship between circular activity and employment using an econometric model, the formulation of the research gap in the Introduction would need to be revised accordingly.