

Using of the Circularity Indicators in the Financial Communication of Listed Companies in the Construction Industry



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ABSTRACT

Purpose: The Building and Public Works sector is experiencing remarkable growth due to the increase in infrastructure needs. Because it is one of the most waste-generating sectors. This growth will explode in the coming years, especially with a linear economy model. Thus, the transition to a circular economic model is necessary and financial communication practices must be aligned with it. Under this objective, this paper seeks to explore the financial communication practices of listed companies in terms of circular economy.

Design/Methodology/Approach: The annual reports of seven (7) Moroccan construction companies listed on the Casablanca Stock Exchange were analyzed and discussed in the light of theoretically approved circularity indicators.

Findings: The content disseminated by the listed construction companies through their annual reports in relation to the circular economy is often limited to the description of broader actions. Some listed companies communicate numerical indicators particularly in relation to energy and water consumption, recycling and recovery of waste, substitution of natural resources by alternative materials.

Practical implications: This paper is a benchmarking tool for listed and unlisted companies in the construction sector, with the aim of improving the quality of the indicators disseminated and increasing the environmental performance of companies.

KEYWORDS: Circular economy; Circularity indicators; Construction; financial communication; listed companies

1. GENERAL CONTEXT

The circular economy aims to bring about a transitional change to the paradigm of the so-called linear economy, based on extraction, manufacturing, consumption and rejection, by limiting the waste of resources and increasing economic efficiency through optimal waste management¹.

However, this summary qualification, far from indicating a definition, brings together the cardinal constituents of the circular economy, which according to governmental and contextual priorities are staggered according to different priorities.

Before going back to the delicate question of the circular economy definition, it is appropriate to point out that its conceptualization is not new. Indeed, as early as the 1960s, the beginnings of the theorization of the circular economy were noted in the work entitled *The Economics of the Coming Spaceship* (Boulding, K., 1966) and in 1976, the notion of loop economics appeared in a report by Walter Stahel and Genevieve Reday for the European Commission and published in a book entitled "Jobs for Tomorrow" (1981).

It was not until David W. Pearce and R. Kerry Turner that the term circular economy appeared in the book "Economics of Natural Resources and the Environment", published in 1990.

However, sources trace the first evocations of the circular economy to the report the limits to growth, carried out in 1972 by researchers from the Massachusetts Institute of Technology (MIT), and to the book Product-life factor, by Walter Stahel (1982)².

¹ Overall definition, arranged taking into account the different approaches of the circular economy.

² Quebec Circular Economy Network.

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Since then, this concept has been put on standby for thirty years before being revisited and presented in 2009 by the Ellen MacArthur Foundation, through the publication of its first documents on the circular economy in 2011 and above all, by the creation of the Institute of Circular Economics, which has become the reference in this field on a global scale.

At the same level, the Sustainable Development Goals 2030 (SDGs) of the United

Nations (UN) also promote the circular economy, in particular through objective 8 : "Promote sustained, shared and sustainable economic growth, full and productive employment and decent work for all" and objective 12 " Establish sustainable consumption and production patterns ".

Moreover, it must be noted that the development of the circular economy concept is no way coextensive to a unification of its definition and understanding, although it is increasingly integrated into the national legislation and programs of a large number of States.

In this regard, the extent of the field covered by the circular economy in the overall economic activity depends not only on the degree of adherence of public and private actors in this dynamic, but also depends on the objectives of growth and job creation and the ability of the circular economy to guarantee these objectives.

2. PLURALITY OF CIRCULAR ECONOMY APPROACHES: KEY FACTOR IN DELINEATING ACCOUNTING EVALUATION TOOLS

Taking into account the observation stated above, it is essential to examine public strategies and if the opportunity arises, the legislative body governing the circular economy or "circular economies", in the Moroccan context among others, in order to delineate its scope of economic application and, to an equal extent, to determine the centrality of the accounting tool in its evaluation.

At first glance, it should be noted that all public strategies and framework laws on the circular economy refer to a transition to the circular economy, which clearly indicates that we are in the presence of a dynamic which is in the establishment phase and not in a well-established order.

This characteristic requires giving more weight to the various innovative processes that should accompany this new dynamic, including resource management and waste recovery, always in conjunction with the objectives of growth and job creation. On this register, the French Law on Energy Transition and Green Growth, adopted in 2015, defines the circular economy as a transitional dynamic and states that: "The transition to a circular economy aims to go beyond the linear economic model of extracting, manufacturing, consuming and discarding by calling for a sober and responsible consumption of natural resources and primary raw materials as well as, in order of priority, ... the lengthening of the life cycle of products, the prevention of waste, the reduction or control of the release, release, discharge or emission of pollutants and toxic substances, the treatment of waste while respecting the hierarchy of treatment methods and cooperation between economic actors." (French National Assembly, 2015).

Other countries have highly established circular economy policies. Like Japan, which has a legal arsenal covering the promotion of efficient use of resources, waste management and the promotion of green purchasing (French Ministry of Ecology, Sustainable Development and Energy, 2014).

In Germany, the dissociation between economic growth and the extraction and consumption of materials (primary and secondary) is part of the national sustainable development strategy.

China has a law on the promotion of the circular economy, inspired by German or Japanese devices, which goes beyond the simple management of waste to deal with all resources.

In all these countries, Japan is arguably one of the most advanced countries with the so-called 3R policy "reduce, reuse, recycle" initiated more than 20 years ago, pursued and supplemented with the goal of "establishing a circular society" (French Ministry of Ecology, Sustainable Development and Energy, 2014).

Regardless of the legal framework in question, it should be noted that the emergence of the concept of circular economy is linked to taking into account the issue of waste management through recycling and of resources through the sustainable supply of ecodesign.

This leads to conclude that the circular economy in this whole legal package is not only the economy of waste or/and recycling but brings together a set of practices, prioritized according to their impacts, aimed at optimizing the use of resources.

3. WHAT ABOUT MOROCCO?

Aware of the importance of sustainable development in economic dynamics, Morocco has adopted a set of legal texts, first of which are Framework Law No. 99-12 on the National Charter of Environment and Sustainable Development enacted in March 2014, and Law No. 28-00 relating to waste management and disposal being adopted in November 2006 (MEMDD, 2006).

Reading the content of the legal framework reveals that the notion of circular economy is almost absent, but indicates on the other hand that the issue of waste management in all these facets is omnipresent in the priorities of the Moroccan government.

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As such, Law 28-00 cited above has the merit of establishing a precise legal classification of waste, including waste from the activities of the economic sector of construction and public works (BTP), classified under the category of inert waste (MEMDD, 2015).

However, it was not until the National Waste Valuation Programme (PNVD) was published in 2015 that the concept of a circular economy in Morocco emerged. Not departing from the general global context, the PNVD speaks of a "transition to a circular economy" as a "key project of ecological and social transition".

However, the PNVD limits this transition to the only waste management component, ruling that the waste recovery sector is a decisive step towards the circular economy through, among other things, the achievement by 2030 of a controlled disposal rate of construction and demolition waste (DCD) of 60% (MEMDD, 2015).

For example, construction and demolition waste in Morocco reached a total of 41.9 million tons, of which 40.48 million tons of inert waste (97.3%):

Figure 1. Quantity waste of construction industry

	Total quantity (million tons)	Inert waste	Nonhazardous waste	Hazardous waste
Construction	4,60	4,12	0,46	0,018
Demolition	0,28	0,26	0,02	0
Rehabilitation	ND	ND	ND	ND
Public works	37,00	36,1	0,55	0,33
Total "construction and public works" Sector	41,88	40,48	1,03	0,35

Source: secretariat of state in charge of sustainable development, Morocco

Waste management, coupled with the concept of shared responsibility of producers (REP) and the promotion of investment and green jobs, thus form the triptych of the transition to the circular economy in Morocco. Resource management, on the other hand, is only part of its waste reduction aspect (MEMDD, 2015).

It is in consideration of this legal delimitation of the notion of circular economy that the accounting assessment of the construction sector in Morocco should take place, while taking into account the socio-economic dimension, linked to the effective capacity of the company to generate green jobs, by creation or conversion.

4. REPORTING OF CIRCULARITY INDICATORS IN ANNUAL REPORTS OF LISTED CONSTRUCTION COMPANIES

4.1 Baseline for the dissemination of circularity indicators by listed companies

The annual reports of large Moroccan companies, especially those listed on the stock exchange, have long focused on the financial dimension of their activities. Although the integration of non-financial indicators related to environmental, social and governance (ESG) aspects dates back several years, in Morocco it was not until 2019 that a circular from the Moroccan Capital Markets Authority required listed companies to include an ESG chapter in their annual reports (AMMC Circular No. 03-2019, Article 2.9).

This report must indicate, in particular for the "Environment" section :

- ✓ The actions and measures implemented to assess and minimize the environmental impacts of the activity
- ✓ Waste management and disposal measures
- ✓ Consumption of water, energy and raw materials, as well as the measures implemented to optimize this consumption.

According to the Moroccan Institute of Directors (2019), 56% of companies (Sample: 78) identify and describe their activities that have an environmental impact. The latter includes direct impact related to clean operations and indirect impact related to the use of products throughout their life cycle. However, quantitative objectives for reducing consumption (raw materials, energy, water, etc.) are rarely published.

4.2 Research method

To answer the problematic of this paper, we are based on the annual reports published by the seven building and public works companies listed on the Casablanca Stock Exchange. These reports have been downloaded from the Casablanca Stock Exchange digital portal.

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Then, we proceeded to a textual analysis of the actions and indicators contained in these reports, often grouped in a dedicated chapter entitled: Environment, Social and Governance.

4.3 Collection of actions and indicators of the circular economy disseminated

Company 1. Afric Industries

- ✓ Use of propane instead of fuel oil to minimize pollution of nature
- ✓ Installation of a buried tank (instead of an aerial tank) to limit the risk of fire and increase the area planted with greenery.
- ✓ Existence of a waste compactor saves space and reduces waste by 80%.
- ✓ Equipping all the workshops with LED fixtures and tubes will save 70% to 90% electricity.
- ✓ Solar-powered water heater.

Company 2. Aluminium of Morocco

- ✓ Quality, Safety and Environment Certification (ISO 9001; OHSAS 18001; ISO 14001)
- ✓ European labels for surface treatment (Association for the development of anodized or lacquered aluminium)
- ✓ Reduce energy consumption (gas, electricity)
- ✓ Reduce water consumption
- ✓ Recycling liquid waste from surface treatments → Valorize waste and controlling air emissions
- ✓ Planting of 100 trees in the enterprise's garden
- ✓ Signature of a partnership for recycling computer equipment (computers and telephones) with the Green Ship Al jisir association.

Company n° 3. Ciment du Maroc Cement

- ✓ Environmental management system: ISO 14001 certified production sites
- ✓ Water consumption is monitored daily. Recycling, maintenance and upgrading of circuits are ensured.
- ✓ Implementation of an energy recovery policy based on the thermal recovery of shredded tires and olive pomace (25,000 tons consumed in 2019).
- ✓ Increase in the percentage of residues replacing natural reserves: pulverised fuel ash and iron oxide residues.
- ✓ Furnace stacks are equipped with analyzers for gas and dust emissions from firing.

Company n° 4. Colorado

- ✓ Renewal of the triple certification ISO 14001, ISO 45001 and ISO 9001
 - ✓ Renewal of the ECOLABEL certificate for all the products of the range
- #### Company n° 5. Jet Contractors
- ✓ A firm waste management and disposal policy
 - ✓ HQE-compliant buildings to reduce energy consumption (insulation and glazing solutions)
 - ✓ Replacement of part of the consumption of fossil, unsustainable and polluting energies by solar energy.
 - ✓ Installation of a photovoltaic solar roof with a power of 693 Kwc and concentrated photovoltaic modules with a capacity of 140 Kwc. These two plants provide 30% of the energy consumption of the headquarters. → Implementation of an ISO 50001 energy management system.
 - ✓ Encourages carpooling and implementation of public transportation
 - ✓ Promote the electronic version of documents
 - ✓ Promote double-sided printing
 - ✓ Rainwater recovery and reuse

Company n° 6. Lafarge-holcim

- ✓ Construction of its wind farm with a capacity of 32 Mw, i.e. a green electricity utilization rate of 80%.
- ✓ Reduction of Nitrogen Oxide and Sulphur Dioxide and dust emissions thanks to continuous monitoring and on-line monitoring of the chimneys at the various sites ;
- ✓ Creation of platforms for the treatment and recovery of industrial and household waste;
- ✓ Favoring alternative fuels instead of fossil fuels that generate CO₂, i.e. 218 KT of alternative fuel consumption.
- ✓ Equipment of water treatment plants and use of dry process technology in the kilns resulted in a consumption of 87 liters per ton of cement produced.
- ✓ Replacement of part of the base materials by alternative materials (fly ash, byproducts of coal-fired power plants), 330,000 tons of alternative materials were consumed.
- ✓ Rehabilitation of 414 hectares and planting of 300,000 trees.

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- ✓ Implementation of an integrated environmental management system and ISO 14001 and ISO 9001 certified.

Company n° 7. SONASID

- ✓ Construction of Morocco's first steel mill for the production of billets by recycling scrap metal and installation of a scrap metal shredder. This action resulted in an annual reduction of 17,880 tons of greenhouse gas emissions.
- ✓ Recovery of mineral oils and their reuse in partial substitution of fuel oil ;
- ✓ Substitution of 90% of SONASID's electricity consumption by green electricity.
- ✓ Installation of water treatment plants and semi-enclosed circulation of cooling water, this allowed a consumption of one cubic meter of water per ton of steel produced.
- ✓ Treatment of scrap metal by-products (black and white slag, steel mill dust and scale): 90% of SONASID's solid waste is recovered.

5. ANALYSIS AND DISCUSSION OF THE QUALITY OF THE FINANCIAL COMMUNICATION REPORTING RELATED TO THE CIRCULAR ECONOMY

It is universally accepted that "what is measured is done" (Nuñez-Cacho et al., 2018). In a circular economy, construction firms are called upon to use circular indicators to communicate with their clients (Howard et al., 2019; Vanegas et al., 2018). Similarly, their annual reports should reflect circular initiatives in a credible and consistent manner to relevant stakeholders, including customers, investors, regulators, media, suppliers, and nongovernmental organizations (WBCSD, 2018).

The annual report is not only a list of actions undertaken, but also an opportunity to provide quantitative indicators on different aspects of the company's activity. This notion of indicators means "valuable analytical tools applied to simplify information. The main objectives of using indicators are related to tracking, monitoring and measuring the progress and performance of specific systems or processes". (Saidani et al., 2018). In the context of a circular economy, indicators can include at least four levels (Saidani et al., 2019): marco (city, region, nation), meso-level (eco-industrial parks), micro-level (enterprises) and nano level (products).

By analyzing the content of the annual reports of the studied companies, we can confirm that these companies mainly use indicators at the nano and/or micro level and affecting one of the four stages of the life cycle (Take, Make, Use and Recover).

CONCLUSION

Faced with the world's population growth, the needs in terms of housing and infrastructure would undergo a remarkable evolution. In a linear "Take-Make-Waste" economic model (Figure 1), this would lead to an explosion in the quantities of waste explained in particular by the extensive exploitation of natural resources, associated with an inefficient use of end-of-life materials (Fořt & Černý, 2020).

Addressing this situation requires a shift from a linear economic model to a more efficient circular model aimed at solving sustainability problems at a higher level through improved recycling and the creation of material loops (Horckmans et al., 2019; Zhang et al., 2019).

The objective of the paper was to focus on the reporting practices of Moroccan listed companies in the construction sector, specifically, the use of circularity indicators in annual reports.

After analyzing the reports of the seven listed companies, we found that the content disseminated differs in form and content from one company to another. Also, two companies in the sample communicate numerical indicators on its circularity model. This work allows companies in the sector to review their financial communication practices in terms of the indicators in the circularity and initiates the debate on the possible relationship between environmental performance and the financial indicators of construction companies.

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