

CIRCULAR AFRICA: A MODEL FOR US ALL?

Alexandre Lemille

Co-founder of ACEN, the African Circular Economy Network



©Wayne Visser- Barloworld Caterpillar.

Alexandre Lemille co-founded the African Circular Economy Network (ACEN www.acen.africa) in 2016 with a group of experts from South Africa. ACEN now operates in 33 countries in Africa, with over 100 experts helping to build a vision for the circular economy in Africa.

Alexandre also uses his Circular Human sphere concept (#CircHumansphere) to trigger debate on the importance of never uncoupling circularity and social justice, and is an active proponent of the vital link between the circular economy and human development (publication: Elsevier Academic Journal). He lectures on the fair and circular economy at several international educational establishments.

He has a Master of Business Administration (MBA) degree from Hult International Business School, Boston (2011).

Today, the African continent faces a pivotal choice: to take advantage of the window of opportunity now open to it for committing to a model centered on the circular economy— better still, the fair and circular economy — or replicate the growth models that proved successful in the past for the Americas, Europe and Asia. This is a choice that only Africa can make and benefit from.

The African Development Bank (ABD), African Circular Economy Alliance (ACEA) and African Circular Economy Network (ACEN) are fully aware of the importance of this choice. They are working together to forge an ecosystem that will boost the emergence of a model as yet little-known in Africa. The task now is to set in place the foundations of a professional framework for extreme resilience in order to adapt the economy to the social and climate challenges that will impact the continent first of all.

Africa needs to show the way at a time of increasing resource scarcity worldwide and a climate emergency that will make living conditions harder than ever.

INTRODUCTION

Africa, like every other part of the world, is closely examining the new circular economy model. This is a collaborative economy that seeks to adapt to social, economic and environmental constraints. But is this really such a new thing for Africa, a continent that has always battled with all manner of constraints and has innovated throughout its history in order to improve the life of its peoples?

Africa today is at a turning point that nobody can deny. Just like India in the 1990s, even China in the 1980s, the race for economic growth is now underway. From Ethiopia to Ghana, growth rates are the envy of long-established economies. But is the rush for all-out growth really the path that Africa should take? In other words, should it move toward an economic model that has unsettled global markets, a growth model with rapacious energy demands that is the cause of vanishing fossil fuel reserves? These are big questions for a continent where over half the population is very young.

At a moment when the continent is seeing an economic slowdown caused by Covid, it is the only place on earth currently able to create a model for human progress based on an economy that acknowledges systemic challenges, in other words, an economy rooted in resilience from the very start of its industrialization phase.

REMANUFACTURING AND REPAIRABILITY: MODELS WITH A FUTURE FOR AFRICAN INDUSTRY

Although often equated with an economy of survival — which has caused such suffering to so many Africans and continues to do so today in the informal recycling and improvisation economy — the circular economy aims to take us beyond recycling and toward a model that seeks to limit it as much as possible.

The circular economy perceives the resource-trading market through the prism of two dimensions: technical nutrients (or resources), our equipment based on metals and non-metals, and biological nutrients, which are material resources derived from our natural ecosystems. Innovative business models can ensure that these resources circulate for as long as possible in our exchange systems, while also rendering them economically viable. The ultimate objective is to generate no waste or pollution with minimal energy input. The continent's leaders must draw inspiration from this approach to apply the fundamentals of circularity principles to economies where the environmental footprint — despite strong growth — remains the smallest in the world.

This might, for example, involve building infrastructure whose modularity is designed-in from the outset, making it simpler to adapt to suit other needs during future lifecycles. But this requires strong political will to change our current practices. Instead of creating a network of factories manufacturing goods that will flood the world with products made in Africa, the idea would be to create interlocking webs of remanufacturers meeting the needs of regional markets in Africa and beyond. Whereas today's factories operate on the basis of unlimited access to virgin materials, remanufacturing, or refabrication, consists of making new objects from non-virgin materials, i.e. that have already been extracted from underground. Flows of previously extracted materials are redirected toward factories, with the aim of reducing the impact of mining and avoiding materials that are still useable piling up in Africa's refuse tips. Remanufacturing offers a threefold advantage: reusing large volumes of durable materials prior to their end of life, avoiding the creation of waste and pollution, and creating jobs that aim to extend the life, or lives, of the products. According to Walter Stahel, one of the pioneers of the modern circular economy, this approach uses far less energy and creates a far higher need for labor than when a product is produced in the conventional manner. He introduced a metric for the labor/weight relationship, man-hours per kilogram (mh/kg), which is used to measure job creation compared to resource use. This enabled him to show that the ratio of man-hours per kilogram of resources used for a remanufactured vehicle engine, compared to manufacturing the same engine from virgin materials, is 270:1.

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The impact on employment is enormous and offers Africa an exciting opportunity for the future: to become the remanufacturing hub, not necessarily for the whole world, but for a region that would include Europe and the Middle East, certainly for so long as transport remains a source of pollution (avoiding risks relating to future carbon taxes).

In any strategy for maintenance, repair, reconditioning or remanufacturing, employment, particularly in economies with young populations, becomes essential to the resilience of this type of model. Furthermore, one of the world's benchmark refabrication specialists is located in Africa: the Barloworld Caterpillar factory, where a third of activity centers on remanufacturing heavy equipment, as detailed in the documentary Closing the Loop presented by Wayne Visser, professor at the Antwerp Management School.

The other massive opportunity for Africa is using repairability and durability to extend the lives of products and their components. Repairability offers two economic opportunities:

return functional objects to the trading cycle as rapidly as possible, and create jobs at the same time. When it comes to durability, the challenge is to design modular products with components that are accessible, ideally open source, and upgradeable. Africa needs to focus on this approach to professionalizing repairability. By way of illustration, the Fairphone smartphone is an example of a particularly virtuous product, one that every country, not just in Africa,

should seek to have on its market. The Fairphone is not just circular but is also type II, meaning open source. The Fairphone is a good-looking 4G smartphone offering a comparable performance to other similar devices. The real innovation lies in its accessibility and upgradeability, thanks to unlimited access to every one of its components. Each component can be unscrewed and reintegrated into the economy. Accessibility of components makes access and repair easier. This could have two instant impacts: the creation of skilled local services that can repair, maintain or even upgrade objects, as well as securing access to certain metals that have become scarce to governments without reserves of their own. The impact on employment and stocks of materials would be considerable if all objects and their components were to become accessible in the markets where they were used.

THE CIRCULAR ECONOMY AS A LEVER FOR INNOVATION IN AFRICA

The circular economy is about perceptions of abundance. The challenge is to shift from the current paradigm of a quantitative abundance of reserves on a planet without limits to a qualitative abundance created by flows of materials. Recycling must be limited in a circular economy, even though we need it for the benefit of the generations to come. This is because recycling is an essentially linear



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concept based on creating waste that is then recovered. From a circularity standpoint, waste must be limited by setting up holistic strategies that promote the durability of objects, and therefore their various uses in their future lifecycles. During an object's design phase, it needs to be thought of as a service provided for a demand, for a function, shared, constantly evolving, perhaps by continually adding new functions. This is very far removed from the notion of recycling, where a pre-made glass bottle, embodying an investment of time, energy and human labor, is usually destroyed so it can be remade exactly the same. This amounts to an excessive and futile use of energy, investment (which could have benefited other solutions), and labor. Circularity is based on natural cycles where energy and material flows are constantly exchanged, continuously changing as they adapt to new contexts. Within this paradigm, the option using the least energy is often chosen. Recycling is therefore not the best solution.

This reasoning has seen the emergence of African businesses such as Agriprotein in South Africa. Influenced by permaculture principles that students at the Songhai Centre in Benin have been learning for several decades, Agriprotein realized that replicating natural cycles and applying them to human environments represents a major opportunity. By laying their larvae on food waste, soldier flies ensure larvae can feed themselves. By growing as much as two hundred times their initial size, they serve, once dried, as staple food for a wide range of animals and their oil is used for biofuel or feed oil. The entire process lessens the impact of human food waste. By recreating the natural animal protein cycle, Agriprotein provides a sustainable solution in a market whose economic potential is estimated at a trillion dollars and, most importantly, a natural method for feeding animals while solving the

issue of human food waste. Agriprotein is now part of the Insect Technology Group (ITG), a holding company comprising leading global companies such as Circular Organics, MultiCycle Technologies and ITG Bio-polymers. Time Magazine included AgriProtein on its Genius 50 list of businesses that are building the future.

However, setting up a circular business in Africa does not require a holding company. Throughout the continent, a host of soil restoration startups are thriving, protecting soil fertility through better understanding of biological cycles and how to adapt to them. This approach has been embraced by the head of Ecofert in Morocco and the co-founders of Lono CI in Ivory Coast, where compost and biological products have become the green gold of tomorrow's Africa. As they pave the way in soil conservation and respect for biological cycles, these new-generation businesses are focusing on the authenticity of their approach to guarantee greater resilience for future farming systems.

Africa is currently home to over two hundred innovation and business incubation hubs identified by the African Circular Economy Network. These hubs have resulted in the emergence of numerous circular startups, with plenty of examples to cite. Hello Tractor in Nigeria provides access to shared agricultural equipment to hundreds of farmers. Also in Nigeria, the international Platform to Accelerate Circular Economy (PACE) has invested in various areas: retrieving precious materials contained in electronics once they are no longer in use so that they can be reused in local production processes; safe handling of dangerous components in electronic waste, and strengthening the conditions conducive to legislation on a self-sustaining system for extended producer responsibility in the electronics sector. In Ghana, Agbogloboshie Marketspace



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(AMP) is a platform that creates value from electronic waste by giving it a second life. Rwanda is proving to be a pioneering force, investing five billion dollars in a zero-waste urban project: the city of Wakanda will spread across 620 hectares without generating any waste. In Ivory Coast and Ghana, Coliba has developed a mobile application that municipalities can use to identify and monetize the locked-in value in waste. In Zambia, ICLEI Africa, an ACEN partner, is implementing a composting program in Lilongwe. Further north in Morocco, Fertidev is working on the development of fully Moroccan biotechnological solutions, optimized and adapted to Moroccan ecosystems and biodiversity to provide added value for agricultural products while protecting farmers, consumers and the environment. And Ethiopia has launched a national program to regenerate its agriculture. More broadly, Djouman is a social enterprise that organizes permaculture AgroBootCamps for the whole of west Africa. Biomimetics are being used to great effect to regenerate the Berg River in South Africa, irrigating the region's vineyards. It is also at the heart of a Nigerian project to create a new district, Abuja Centenary, where technical and biological flows are overlaid in perfect symbiosis.

Africa is truly brimming with inspiring innovations!

NEW FRAMEWORKS FOR A CIRCULAR REVOLUTION

But these initiatives are just the tip of the iceberg.

The continent has started on its path to circular conversion. It is ensuring it has the players, international bodies, incubation programs and, above all, legal frameworks needed to get circularity up and running. In May 2017, in collaboration with the European Union and ACEN, the governments of Nigeria, Rwanda and South Africa signed a cooperation agreement on the circular economy. Known

as the African Circular Economy Alliance (ACEA), it now includes a significant number of countries in west, north and southern Africa, all of which have committed to passing laws to create a framework favoring an economic model that protects resources while reducing carbon emissions. The ACEA has an office at the African Development Bank in Abidjan and is in permanent discussions with stakeholders implementing relevant laws and regulations. In parallel, the African Development Bank (ADB) has created a program, the African Circular Economy Facility (ACEF), in partnership with the Finnish government, aimed at helping governments who have made less progress to implement regulatory instruments and tools for encouraging circularity. With the ACEF program, the ADB also intends to help the business world, small and large companies alike, by providing them with support in the form of incubation programs and initiatives promoting the circular economy with the overarching goal of speeding up transition.

In addition, ACEN provides them with technical support on the ground by identifying economic actors and businesses innovating in the circular economy, while sharing knowledge with as many businesses as possible.

CONCLUSION

What if we were bolder still? What if Africa showed the way to an economy that is both circular and fair?

The continent's population is young and forward-looking. The lack of infrastructure translates into limited effects on the biosphere. It boasts the world's lowest ecological footprint per capita and collaborative societies. African societies are marked by a culture of sharing and survival in the face of multiple challenges, making the continent one of the most innovative parts of the world. One of the only telecommunications companies to have succeeded in adapting to citizens' social needs, Celtel International founded by Mo Ibrahim, initiated the social innovations that have helped Africa to communicate and reinvent itself. One example is the Street Payphone — a pre-paid or post-paid cellphone distributed via street vendors and managed by women who can feed their families thanks to the wages the system provides — using free roaming zones shared across over ten countries. These innovations have been adapted to citizens' needs and their collaborative lifestyles. Seen in Europe as an enviable model, Africa could specialize in collaborative innovative services and develop business models that are still little-known in Europe.

Africa is at a crossroads, a place where the linear economy and the regeneration economy meet. The choice of path to take is Africa's alone. And it can make the choice without having to take drastic action to strip carbon out of its economy. The emergence of this virtuous model with its huge job-creation potential is a wonderful opportunity for the continent as a whole.