Reading note[1]

The Circular Economy: Challenges to Achieving a Performance Economy[2].

Walter R. Stahel[3], and François-Michel Lambert[4] .

Published by Dunod, March 2025, 272 pages.

1. A brief summary

What if economic growth no longer depended on the quantity of goods produced and purchased, but on their extended lifespan, and their usage intensification and maximization? In their book *'Circular Economy. The challenges to be overcome to achieve a performance economy'*, François-Michel Lambert and Walter R. Stahel, a pioneer of circular economy thinking, invite us to rethink our relationship with production, consumption and value. This book describes an economy where performance goes hand in hand with sustainability, where every stakeholder – business, citizen, public decision-maker – becomes a part of a more sufficient and efficient model. This book is essential for understanding the changes to come, and for taking action today towards a truly sustainable 21st-century economy. It offers a new conceptual framework to better grasp the challenges of the circular economy, especially through the concepts of realms of R and D[5], and the fully developed vision of what a performance economy should be – a concept pioneered by Walter Stahel (alongside Orio Giarini) with the landmark 1990 publication *Les limites du certain* (or *The Limits of the known)*.

2. Table of contents

The book is divided into three parts:

[1] Note to readers: this reading note has been self-translated from French to English. Given the number of concepts and notions, some translations were quite challenging. In such cases, you will find a footnote with the original French name.
[2] The original title in French is : *Economie circulaire. Les défis à relever pour atteindre une économie de performance.*
[3] Walter R. Stahel, "founding director of the Institut de la Durée in Geneva. He is regarded as the father of the concept of the circular economy, which he developed in *The Product-Life Factor* (1982) and later in *The Limits of Certainty* (1990)".
[4] François-Michel Lambert, "supply chain specialist and Member of Parliament from 2012 to 2022, founder of the National Institute for the Circular Economy (INEC) in 2012, vice-president of the www.aifrec.fr, he heads Soroa, a consultancy firm specialising in ecological transformation and influence".
[5] « Domaines de R et D »

b. Circularity, sustainable development, the society of caring[6]
c. Disseminating knowledge and skills

II. Part 2: The material world
a. The realm of R
b. The realm of D, child of the Anthropocene
c. The point of sale[7]
d. The challenge of sharing
e. Injecting innovative ideas, systems, components and materials into existing stocks

III. Part 3: The intangible world of invisible quality cycles
a. The challenge of legislating

Conclusion. A way forward.

3. Contents of the book

History of the circular economy

From precarious natural circularity to the Industrial Revolution

Before industrialisation, circularity occurred naturally: nature produced resources, and in turn digested the waste - the parts not used by humans. The 19th-century Industrial Revolution then enabled humans to break free from this precarious circularity, thanks to greater mobility and a profusion of objects with diverse uses. Gradually, industrial progress, particularly in chemistry, led to nature's new inability to break down the new synthetic molecules. It is the Anthropocene, the starting date of which is still debated, but which marked the moment when humans became more powerful than nature, influencing its cycles. This Anthropocene is reflected in particular in the overconsumption of materials. The authors regularly refer in their book to the conclusions of the Meadows report[8], *The Limits to Growth*, published in 1972. They update it based on the work of the French agency for the ecological transition, Ademe*, 'Carbon and Material Footprints*'[9], noting that the French model implies a consumption of 20 tonnes/year/capita of virgin materials, whereas scientists recommend a global trajectory of 5 tonnes/year/capita, with Ademe advocating a national target of 10 tonnes/year/capital by 2050.

Circular economy and sustainable development

[6] « Société de la prévenance »
[7] « Le point de vente »
[8] https://fr.wikipedia.org/wiki/Les_Limites_%C3%A0_la_croissance
[9] In French: *Empreintes carbone et matières.* https://librairie.ademe.fr/changement-climatique/6250-prospective-transitions-2050-feuilleton-empreintes.html

The concept of the 'circular economy' is linked to that of sustainable development. As early as 1713, the industrialist Hans Carl von Carlowitz concluded that we should limit ourselves to felling only as many trees as could regrow, in order to maintain forest resources.

In 1972, the term 'sustainable development' was adopted by the UN at the Stockholm Conference, and in the 1992 Rio Declaration. Today, the 2030 Agenda and the Sustainable Development Goals have firmly established this term in the social and political sphere, with objectives that are primarily qualitative, relating to notions of ethics and behavioural compliance. Recognising that the dominant 'extract – produce – consume – dispose' model has long been a driver of growth, but is no longer sustainable today, it is crucial to move from a linear industrial economy to a circular industrial economy.

Circular economy: preserving the stocks

Stahel and Lambert's book focuses on **the industrial circular economy**. The principle behind this is to 'preserve, or even increase, the economic value and utility of stocks of objects, as well as the value and purity of materials, as high as possible and for as long as possible' (p. 30). Using a metaphor, the authors present the linear industrial economy as a river through which water simply flows. By contrast, the industrial circular economy is compared to a lake where the water quality must be preserved. This therefore implies rethinking the concept and indicators of economic growth. Wealth and value should be shifted from purchase and consumption—which are the current benchmarks—to the value of usage of a better-designed, more durable, and more repairable object, in order to maximise its use and ensure it can be recycled at the end of its life. In short, "it is a matter of moving from the notion of added value to that of preserved value" (p. 31).

The industrial circular economy has three objectives of preserving:

- "the value and utility of stocks of manufactured objects (infrastructure, buildings, equipment and other manufactured goods), at the highest possible levels and for as long as possible;
- the value and purity of atoms and molecules (recovery of synthetic materials from end-of-life objects) for as long as possible;
- the value of primary raw materials from the natural environment (water, wood, etc.)" (p. 50)

Beyond recycling: the realms of R and D

The realm of R focuses on manufactured objects

The realm of R concerns objects that are currently in use. It has a strong territorial dimension. This realm is inconceivable in a traditional linear economy, as these are services that take place after the point of sale. The realm of R contributes in particular to waste prevention: reuse, repair, remanufacturing, refurbishment, refilling, resale, and

reprogramming. The aim is to keep the object in working order within loops that are as small and local as possible for greater cost-effectiveness and reduced resource use, substituting energy and resources with human action.

This domain is intrinsically linked to the concept of **care**: the user looks after their object, and once it no longer works, they entrust it to the manufacturer or a professional who has the information, parts and tools to enable its maintenance and repair. Logistical costs are high, so it is necessary to create loops that are as local as possible.

The realm of R is the most effective one for maintaining and preserving resources:

- 'Reusing objects allows us to "conserve" the water and energy consumed, and the CO2 generated during production, manufacturing and distribution […];
- The use value of an object is greater than the sum of the economic value of its materials; reusing objects by extending their useful life is more cost-effective than recovering the molecules […]" (p. 84).

The industrial circular economy's realm of R requires trust, skills, individuals, regulations, a change in user behaviour and innovation. The book provides concrete examples of actions falling within the realm of R, and of companies that have implemented some of these actions.

The realm of D

The realm of D enables us to meet the second objective of the industrial circular economy: preserving the value and purity of atoms and molecules. This requires the development of technologies, processes and industries for the separation of composite materials in order to obtain molecules and atoms of the highest possible purity, with a view to reintroducing them into production processes in the same way as virgin molecules or atoms. This realm follows on from the realm of R; it is less effective at conserving resources, particularly because it is impossible to recover the water and energy consumed, or to account for the CO2 emitted during the manufacturing and distribution of the object.

In this domain, once materials have been sorted and separated, recovering molecules and atoms to the highest possible degree requires the implementation of complex technologies and processes, notably to:

- 'depolymerise plastics […];
- separate metals […];
- delaminate carbon fibre-based composite objects […];
- devulcanize tyres to recover rubber, steel and *carbon black* […];
- stripping objects […];
- dismantling infrastructure and buildings […]" (p. 121).

There are many challenges involved in implementing the D domain:

- "moving away from the ease of recycling as the preferred solution for discarded materials;
- putting an end to mixed materials that are complex to separate;

- developing methods to recover pure molecular resources;
- prioritising the use of standardised and identifiable alloys" (p. 120).

The challenge of innovation

For Walter R. Stahel and François-Michel Lambert, the linear industrial economy is incorporated into the circular industrial economy as a transition stage in this transition stage, thereby requiring a number of **"radical innovations**, both in terms of materials and technologies and at the level of systems, notably supply chains, economic and financial accounting methods, in the organisation of territories and cooperation between stakeholders ' (pp. 186–187).

To enable these radical, far-reaching changes, which involve society as a whole, the authors emphasise that scaling up depends on a shift in our conception of value, requiring a rethinking of the criteria underpinning Gross Domestic Product (GDP), which currently measures only the flow of goods and services. It will take boldness to achieve greater sufficiency, to think differently by focusing on conservation at the molecular level rather than at the level of the object.

By emphasising the need for cross-disciplinary approaches, ethics and systems thinking, the identified research priorities are as follows:

- 'engineering, to develop innovative components […];
- management sciences, to organise and steer new system organisations through the circular supply chain approach;
- the reinvention of objects in terms of their use and maintenance […];
- the design of new molecules or molecular assemblies that are easy to separate and recover […];
- the development of technologies to recover molecules dating from the early Anthropocene […];
- the invention of performance economy models through applications that merge production and use, thanks to the contribution of digital technology, the Internet of objects and artificial intelligence" (p. 188).

To fully address the global challenges posed by constraints in resources—this circular industrial economy structured around R&D, requiring major systemic innovations—it is crucial to fundamentally rethink the economic model underpinning our production-consumption society.

The role of the point of sale

In implementing the industrial circular economy, the role of **the point of sale** is crucial, and radically different from that in the linear economy. In the linear economy, points of sale—which mark the end of the **supply chain** (resource extraction, material production, manufacturing, distribution and logistics, and sales)—are often intermediaries to whom producers entrust the sale and delivery of their products, facilitated by extensive marketing and advertising campaigns. For manufactured goods, the point of sale marks the transfer from the

manufacturer to the buyer-user, notably transferring ownership rights and civil liability for these goods.

In the context of an industrial circular economy, the point of sale marks, on the contrary, the start of the supply chain, encompassing the linear one but adding 'organisational loops ensuring that the manufactured object remains within the realms of R and D' (p. 138). In other words, it is from the point of sale that the manufacturer-owner of the object seeks to ensure the extension and intensification of the object's use, its reuse, repair and remanufacturing, the recovery of its components (realm of R), and subsequently the molecules and atoms of the object at the end of its life (realm of D).

A shift in the economic model: building on what already exists

Performance economy

To radically transform our model in order to move closer to the target of a material footprint of 10 tonnes per year per French by 2050, it is essential to act beyond the realms of R and D, which are material realms. The laws of physics cannot be circumvented; human rules, on the other hand, are malleable. Transformations must therefore take place in the immaterial realm, that of cycles of invisible qualities. This leads us to the concept **of the performance economy**, defined in the book as an economy 'in which economic actors optimise their offerings throughout the object's entire lifecycle and sell results rather than objects' (p. 153). Its basis implies that the producer remains the owner of the object, selling the good and its molecules as a service. They retain civil liability for the object, risks and waste, thus in a broader and more comprehensive manner than Extended Producer Responsibility (EPR) schemes. The consumer purchases the functionality and performance of the good.

In an industrial circular economy based on the performance economy, everyone plays a specific role in managing existing resources:

- "As a user, by purchasing the use, function or performance of objects, such as renting or borrowing goods as a service;
- As an owner of the object, by ensuring the continuity of its use through sale, donation, repair, the recovery of used components or the regeneration of the materials used;
- As a manager of a fleet of objects, through the conscientious maintenance of these objects and by selling the object as a service for as long as possible" (p.155).

There is no longer a point of sale for the object; the supply chain becomes a system for tracking and repositioning objects to ensure a perfect match with the user's needs. It encompasses the supply chain of the realms of R and D and the supply of the system via the linear supply chain.

Rethinking our consumption: sharing and caring

Closely linking the circular economy and sustainable development, the concept of **caring** plays a central role in Walter R. Stahel and François- -Michel Lambert's book. As the authors point out, caring is "a special relationship between actors, often over a long period, which maintains the value of stocks as assets, whether they are of natural origin […], human in nature […] or cultural" (p. 29). It represents a profound paradigm shift: moving from a logic of rapid, disposable consumption of constantly renewed objects to a logic of care, maintenance and appreciation of what is already there, of what exists. Moving from a flow society (the river) to a world of stock management (the lake).

In this approach, an object is no longer merely a commodity to be acquired and replaced, but a companion with which the individual builds a lasting relationship (cultural, traditional, emotional, historical). This consideration is based on the recognition of a longer value of usage: by maintaining, repairing, sharing or passing on an object, we preserve not only its utility, but also the resources, energy and human know-how it embodies. It is a logic that is at once economic, ecological and social. The care given to objects becomes a means of forging bonds between people, of intergenerational transmission and of respect for shared resources.

Caring is also part of the dynamics of **sharing**: renting, pooling, exchanging or lending rather than systematically buying. These practices create new forms of ownership and solidarity, where access to a function takes precedence over possession. This sharing economy, bolstered by digital technology, perfectly illustrates the shift from a consumer economy to an economy of performance and use, where value stems from the satisfaction of a need, not from the act of purchasing.

The authors also highlight the paradox of the term "sustainable consumption", considered as an oxymoron: one cannot "consume sustainably" in the traditional sense of the term, as all consumption involves the use of resources. What we should aim for, they explain, is **sustainable usage**. In other words, **sustainability does not arise from the production of new objects, but from the ability to make existing ones last.**

Caring requires time, knowledge, proximity and shared responsibility between the user, the producer and the community. By fostering this culture of care and responsible usage, the circular economy goes beyond a mere environmental framework to become a societal project, founded on respect for living things and physical limits (first and foremost entropy), for objects, and for the bonds that unite us.

Driving change: the need for policy and regulation

Ownership and civil liability

The book highlights the importance of legislators and public policy in enabling a transition to the circular industrial economy, which seeks to extend the use of objects and maintain the value of the molecules and atoms of which they are composed. To enable this

transition to happen, it is crucial to consider the allocation of roles and responsibilities among the various stakeholders involved.

Thus, it is recommended that legislation be introduced to make the producer **the ultimately responsible owner (PUR)**[10], as defined by a performance-based economy. Linked to this concept of the PUR is the implementation of **full producer civil liability (RCCP)**[11], 'which creates an invisible civil liability loop, whereby goods and materials that have lost their value at the end of their useful life are returned to their manufacturer. […] This [RCCP] makes it possible to align the responsibilities of all manufacturers: those who sell their products and those who have chosen to sell the service provided by the products (performance economy) whilst retaining ownership of the products, thereby internalising their civil liability" (pp. 216–217).

The introduction of a producer responsibility scheme will encourage producers to adopt eco-design for their products, to extend their lifespan and maximise their use as much as possible, in order to minimise civil liability for the end-of-life of the product.

Economic measures and financial incentives

For this model to take hold, fiscal and economic levers are decisive. The authors advocate for a tax system geared towards resource conservation: taxing extraction rather than labour, rewarding sustainability rather than volume, and valuing use rather than ownership. Thus, **sustainable taxation** encourages the transition to a circular economy:

- "By reviewing the role of value added tax (VAT) to favour activities that preserve the value of the object or its components […].
- By allocating carbon credits to circular economy activities. Activities in the realm of R and, to a lesser extent, in the realm of D avoid significant GHG emissions and resource wastage [but they] are not yet integrated into carbon credit processes […].
- By developing a new tax system for resource conservation, aligned with the material footprint objective, either negative when applied to virgin materials (specific taxes), or positive, such as the creation of a Resource Savings Certificate (RSC) scheme […].
- By establishing bonus-penalty criteria based on an object's material impact or the level of recoverability of atoms and molecules. […]
- By providing tax incentives for the performance economy through tax exemptions or reductions for companies offering performance economy models. […]" (pp. 224–225)

Stahel and Lambert emphasise the need for new indicators to assess economic and environmental performance. The GDP, which focuses on production, does not reflect the preservation of stocks or the quality of cycles. The authors therefore advocate measuring **absolute decoupling** — that is, the ability to grow economically whilst reducing the absolute use of natural resources — and **intensification of use**, which assesses the performance- of

[10] « Propriétaire ultimement responsable »
[11] « Responsabilité civile complète des producteurs »

a good over its lifetime. The authors identify two indicators that would allow for comparing the circularity of objects:

- 'value per weight, in monetary units per kilogram of the object (euros/kg);
- labour per weight, in hours of labour per kilogram (mh/kg)" (p. 230).

Legislating for the transition

The authors explain that **legislation** must become **dynamic**, that is to say, capable of evolving in step with the complexity and pace of economic and technological change. Public policy cannot simply set static thresholds. To make the transition, public authorities and industry should pay particular attention to measuring embedded resources, or grey energy/grey resources[12], which are not measured in the linear industrial economy. It is difficult to measure these **intangible** (or embedded) **stocks** of water, energy, raw materials and CO_2 emissions, 'from the mine to the point of sale' (p. 236), but doing so will enable the transition to be steered over the long term, by integrating not only production but also the conservation of natural, human and cultural capital.

Governments and institutions have a responsibility to orchestrate this systemic transition. The role of policy is not limited to regulation: it involves creating a collective vision and coordinating stakeholders—businesses, local authorities, citizens—around a common goal of sustainability. Governments must promote research, open innovation and training in circular economy professions. They must also lead by example, by incorporating circular performance criteria into public procurement and their own investment policies.

[12] « Energie/ressources grises »