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# Chapter 1

## The Roadmap for a Circular Economy

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### ABSTRACT

*The mission of this chapter is to reinforce the need of implementing circularity within any type of economy, especially within the supply chain industry, the reconstructive methods that can be used to design a regenerative pathway, and the change in accountability that has to take place. The final outcome of the chapter will be perfecting an applicable roadmap to distinctive business models. The chapter will also clarify the link needed to be developed between all involved stakeholders, and will look into how each performing actor has to model itself and its own thinking towards a cycle view of societal and business welfare. Each block of the newly created roadmaps represented a step in acquiring total circularity, a full cycle of renewal and regeneration of what used to be called “waste”. Is about the actions taken, the processing, logistics, procurements, consumption changes, and continuance. Each mile of the roadmap has to be considered and rethought in such a way that circularity is attained.*

### INTRODUCTION

Building resilience within an everchanging business environment is a top quality that nowadays everyone has to possess. Because creating new adaptive roadmaps involves a change of mindset, first of all. Transitioning and planning for a circular future is a quality required in all today's economies but executing and implementing the new models of ownership and liability are taking up constant effort. Designing a framework that will facilitate this effort of planning the new strategic way of reaching circularity, is what this chapter is trying. It will also refine and provide the necessary tools for creating new roadmaps adapted to each industry and will try perfecting the existing pathways towards a total circular cycle. The framework for designing a circular roadmap will then be activated and exposed.

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The fact is that if the core of circularity is completely clarified and understood, the businesses and all other participants will be reshaping the way they perform. But how is a circular economy roadmap designed? One must understand that a roadmap is not just a tool provided for ensuring a safer financial future for businesses and societies, provided that the sustainability aspects are touched down. It is about bringing together all involved stakeholders, guaranteeing they have a common goal of stepping into the circular cycle, re-writing the strategy, the concrete measures taken at each step of the loop, and overcoming encountered roadblocks. A process of sustainable knowledge transfer needs to take place for a total transformational change. The authors are laying down the foundation for thoughtful business operations planning. Mapping the importance of each stakeholder, designing the pathways to be followed, and bringing out the circularity implementation issues are aspects that are being clarified within this chapter.

The study aims to elaborate a roadmap that can fill in the gap within the adaptation of supply chain management to the circular economy, by analyzing the latest research from the field of circularity and value chain and finding the necessary tools that can provide an inclusive and comprehensive understanding of the challenges of future business agendas. Bibliometric studies and content analysis will be performed for an in-depth understanding of the systemic approaches reviewed.

## **BACKGROUND**

Everything starts by looking at the main goal of the circular economy, which is to move all operations from the usual necessity level to making circularity becoming a default option (Stahel, 2019). The circular economy concept has emerged from the need of finding solutions to the overuse of natural resources and from the imperative need of extending the liability over the point of sale. Economies have always struggled to make ends meet, to balance the speed of recovery of natural capital with the societal behavior changes and the constant desired financial outcome. It can be resumed to find an equilibrium between the quantitative and the qualitative world. One must keep in mind that a circular economy requires transparency, trust, and transition support. In any considered industry, attaining it involves a re-creation of functionality and a re-writing of economic pathways.

Designing a roadmap that can be followed in the attempt of moving towards this improved direction and ultimately to a well-implemented circularity, requires advanced solutions and a well-thought progression line. Can any economy start and perform without generating any waste? Can the cycle start and close within the same business model? These aspects will be analyzed, and the solutions will be used for creating the strategic roadmap that closes the circularity loop. To the usual components of “what”, “when” and “where”, this paper will add a re-designing of “how”. The roadmap component details will still maintain their importance, but the ultimate goal is to have an as low as possible environmental impact.

The authors are performing a qualitative analysis of Finland’s roadmap to circularity to distinguish its boundaries and applicability for certain countries and industry sectors. As good as it is underlined, the framework needs adjustments to fit the everchanging economies worldwide. But how can the flow of value be kept constant? How does the utility of components continue over the consumption point? Solutions offered by the circular economy involve concepts such as decoupling, promotion of service-life extensions, alternative biodegradable solutions, maximizing the sustainability of stocks (be human, natural, or financial), and so on. (Corona et. al, 2019)

For all of these mentioned aspects to be put into practice, a map that will adjust the taken pathways is highly required. Creating the roadmap that will implement a circular economy starts with the big-

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ger picture, of how a country can adapt itself to circular thinking. The fact is that resource scarcity is a constant for the future and sustainability goals will become more imperative. Implementing sustainable strategies are on the agenda of all countries nowadays, but what is done in practice involves a lot of stakes. Is about concretizing the sustainable measures everyone had pledged to.

The pandemic era has shown that new types of businesses can emerge overnight, especially within the delivery industry, but former older businesses had to adapt their ways to decrease the costs to accommodate performance. So, what are the post-pandemic solutions for maintaining sustainability? How can sustainability, and more importantly, circularity be reached, while still maintaining financial stability? Are businesses looking only at the quantitative side? Are they somehow stimulated or just forced to reach circularity? For sustainability to have an actual meaning in society, and for businesses to share the same vision for a more circular future, grounds need to be set and support needs to be provided. Clarification on the advantages of accepting a drastic change that will implement circularity within the industries is highly required. Redesigning the map that businesses will follow within the global system takes time and effort for ensuring its stability.

In the supply chain industry, one such implementation is needed fast. The Supply Chain Management Review Journal (2022) has looked into the future changes that circularity brings in the supply chain sector, and they have analyzed how the new business models comply with the needs of the industry. It highlighted how much the customers' orientation is influencing the shift towards circularity. The authors are taking these ideas further and reviewing the impact of customers' choices on how the frameworks are adaptive to the industry requirements. The underlining is on the impact of sustainable cycles on the spinal of the supply chain models.

But one can now ask: Is it only the businesses' input into this? Or is society having its toll on the way the new roadmaps are redesigned? There are many thoughts on how much is the circular economy influencing the redesigning of a circular society. And how much the latter influences the value chain creation and global supply chain remodeling. If circularity is targeted to be implemented, social changes are needed too. If the final users' goal is to support sustainability, the business models will need to adapt to reach the consumers' requirements. That is why the new circular strategy has to be implemented from all sides.

The study is limited through its design by the total applicability of the new roadmap to all concerned industry sectors. One must realize that adaptation is of utmost importance in the framing of a circular pathway, and business mindsets need shifting and re-rooting their operational tracks for the new framework to work.

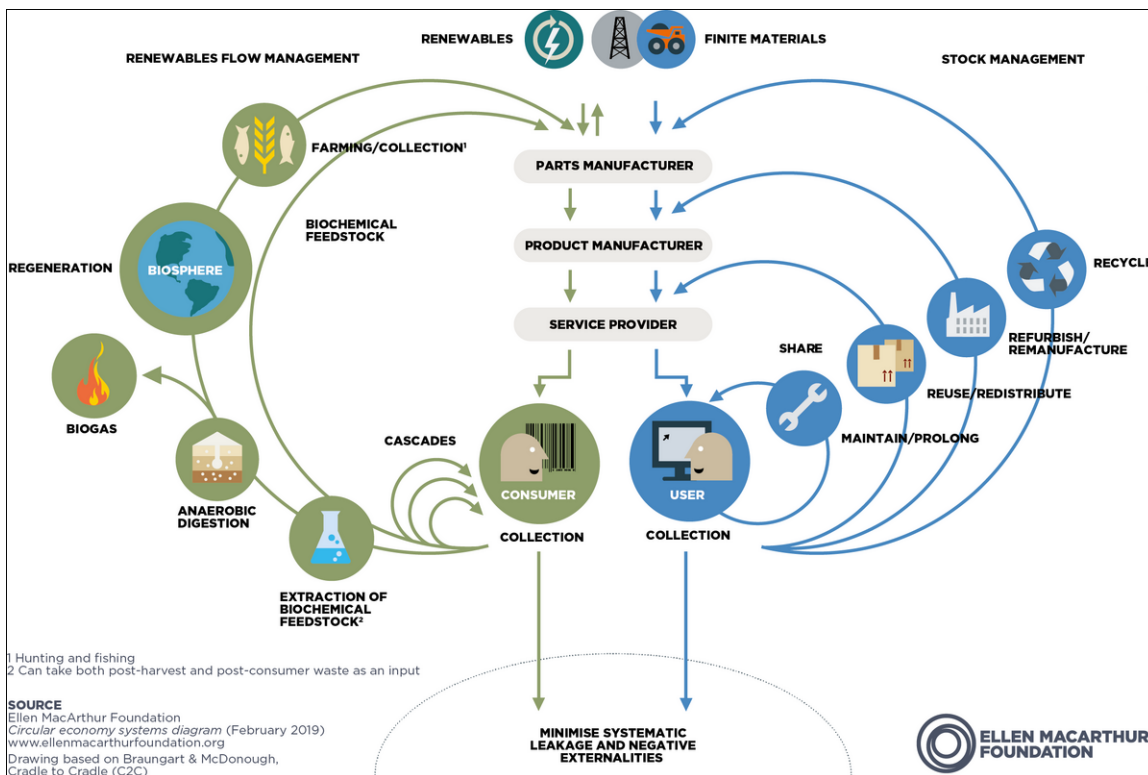
## **MAIN FOCUS OF THE CHAPTER**

The circular economy concept has evolved around the idea of making use of resources for as long as possible and has implemented a design on economies to fit the perfect loop closing on resources being re-put back into consumption. To fit the growing demand of consumers, businesses need to adapt and perform in such a way that it ensures financial stability and sustainable existence, as current societies are more focused on their impact, they require the same from the companies' side. The need of implementing circularity within the value chain is of utmost importance nowadays.

## Industrial Circularity

The circular economy approach outlines the importance of effectively implementing actions and adaptation measures that contribute to global interconnectedness, resulting in a reduction of pollution and waste production. Understanding the benefits brought in by the circular economy to industrial and societal progress holistically changes the dynamics of resource recovery and job creation, as the concept itself goes further than the reduction of waste: it brings value creation to the economy (Iacovidou et al., 2021). The Ellen MacArthur Foundation (2019) has tried visualizing the circularity system and its influence on economies through a butterfly diagram (presented below). The interlinkage of societal and industrial sectors is easily evident, and action-based implementation of sustainable measures is transforming the value chains into a unique circular model framework.

Figure 1. The butterfly diagram: visualizing the circular economy (Ellen MacArthur Foundation, 2019)



One can notice that the diagram's core aspect is the path that links all levels, from manufacturing to the collection and renewable flow. The supply chain is the one that bears the weight of keeping the sustainability of the entire system completely and is the one that facilitates the loop closing of the circular economy. And redesigning it ensures the engagement of economies in the transition to a performant circular synergy. But how is this new circular thinking perceived by the industries? Is it a forced step that they are being asked to make?

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The circular economy's take on industrialization is that it should de-link the profit-making from the growth arising from overconsumption. The challenge of reusing resources and saving energy depends on the cooperation between industries and society. The benefits arising from shift-change pioneering have been demonstrated earlier. Preston F. (2012) was mentioning that the mass production period of the early 20<sup>th</sup> century and the flexible production emergence of the 1970s brought enormous first-mover advantages to the particular economies involved, and the success created has re-shaped a wide range of technological pathways, societal values, and regulatory frameworks. The idea is that the well-thought implementation of a clear roadmap for circularity on a global level depends a lot on enabling a supportive system for sustainable growth and trust in the economic potential deriving from that.

Businesses would affect the necessary changes and become part of the transition if the view is exemplified and their pathways getting helped in stirring direction. But the shift is not going to take place overnight. To reach the level of circularity that is wanted, besides the productivity changes and resource usage, the vision has to be implemented and the support provided to fit the new needs of all stakeholders. Clarification on the financial benefits of circular systems is one step that will push faster the desired transformation.

Ritzen and Sandström (2017) have concluded in their study while researching the transition to a circular economy of two companies within the supply chain, that there are barriers still related to what circular economy is and the advantages it brings, but also to the integration of circularity from different perspectives, and especially from the technological and financial disruptions. They have concluded that the transition towards a circular economy is seen through the lens of managing innovations and handling the hurdles encountered by the industries, from structural, operational, attitudinal, and technological points of view.

One aspect that would need to be highlighted more with regards to the companies' adaptiveness to the circular model is the stability brought by the shorter supply chains and reduced instability of primary resources needed, as the usual political and natural imbalances will not affect any longer. This aspect is beneficial for the supply chain industry especially, as it reintroduces the collection and reverse logistics companies. (Ellen MacArthur Foundation, n.d.)

The fact is that if the core of circularity is completely clarified and understood, the businesses and all other participants will be reshaping the way they perform. The resilience of implementing circularity within the business models will become the expected norm, as long as the industry actors are being guided. And the benefits resulting from shifting to circular business models are reflected firstly, in the creation of a new type of profit, as many costs get reduced throughout (labour, materials, energy, etc.) and secondly, in a strongly built relationship with the final consumers.

## **Society and Industry**

The authors have mentioned the role played by the society members in the sustainable change of the economies. The end consumer is the power authority currently and is influencing the implementation of circular business models through the choices made amongst sustainable suppliers. For a business to still flourish in this adapted environment, it has to support sustainable production. The societal mentality has experienced a faster resilience to the concept of circular economy, especially as the profitability of such change has proven itself easily. Avoiding the premature obsolescence of products increases the households' monthly income, the rise of new circular jobs provides fresh opportunities for the unemployed, and a healthier environment ensures a less polluted city life.

As individuals have already experienced the benefits of circular models, they are demanding a change within the entire society, keeping all stakeholders involved accountable for their share of engagement in the circular cycle and their contribution to societal welfare. The newly remodeled society influences the performance of global supply chains, as buying local trends increases, thus businesses need to act more on a local market to better reach the desired customer pool.

Is a double-way orientation, with society drafting the industry circularity shift, but also with businesses creating more value for the societies they are part of. The other stakeholder in this circular model framework is the local or regional authorities and governments. They can steer the shift to a circular economy by tax regulations, introducing labeling requirements, advocating sustainable business practices, influencing the development of ethical responsibilities, and many other legally sustainable requirements. The new business strategy is thus focused on translating better the other stakeholders' expectations into their future business plans. The stakeholders' engagement strategy is therefore supporting the success of circular business models (Salvioni & Almici, 2020).

### **Supply Chains Shifting**

For the circular business models to be enabled, appropriate tactical practices and operational strategies need to be integrated into the supply chain management (Montag et al., 2021). For clarifying the transparency of a feasible implementation of the circular economy into the supply chain, six archetypal elements have been selected and further investigated: R-Imperatives, Restorative and Regenerative Cycles, Sustainability Framework, Value Priorities, Holistic System-Thinking, and the Paradigm Shift, as exemplified in the below figure (Montag, 2022)

*Figure 2. Circular supply chain archetypal elements (Montag, 2022)*



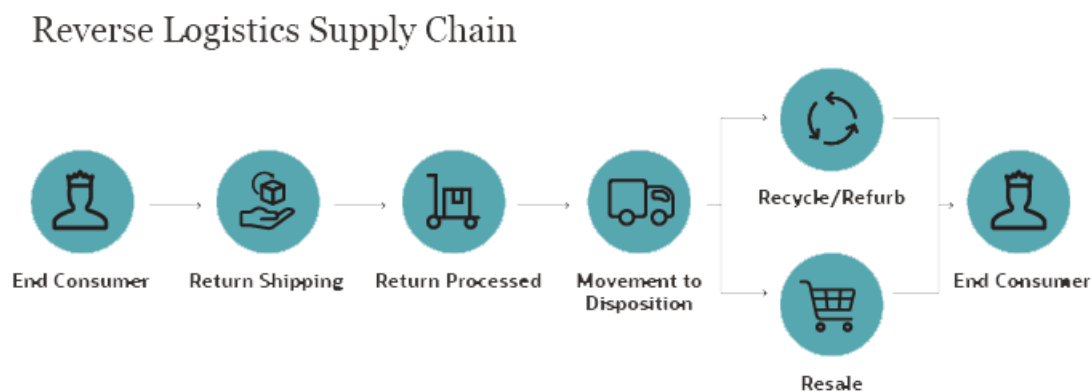
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The so-called R-activities are part of the circular economy redesign and vary in different research from 3Rs to 10Rs, such as reuse, recycle, and repair, just to name a few. The restorative and regenerative cycles are referring to products and materials that flow in reverse or forward toward other supply chains. The sustainability framework is linked to all three dimensions of circular economy: environmental, social, and economic. The focus on value is referring to the circular value creation and delivery through key activities throughout the supply chain. Holistic system thinking is related to the importance of customer perspective for the success of circular systems. The paradigm shift is about implementing circular strategies in the production and consumption systems. (Montag, 2021)

Soufani and Loch (2021) argue that when implementing a circular system within the supply chain, businesses would need to reduce the large-scale manufacturing and the addition of performant characteristics to the products, which in return will drive the customers away as the final product will not suffice their desires. Thus the circular supply chains will act mostly locally in the near future. (Soufani & Loch, 2021). Banker (2021) was mentioning that nowadays, most companies are making efforts not only for reducing waste, but also to turn their supply chains into circular ones, and many are managing that by reverse logistics and return management.

So, are these new systems the answer to a perfected circular supply chain? One must first understand the concepts. Reverse logistics refers to the customer returning the product back to any stage of the supply chain, for a warranty, maintenance, recycling, or end-of-product life. Reverse logistics is used many times to minimize company losses, but also to build loyalty from customers. It works as exemplified in the below figure.

Figure 3. Reverse logistics supply chain  
(Jenkins, 2021)

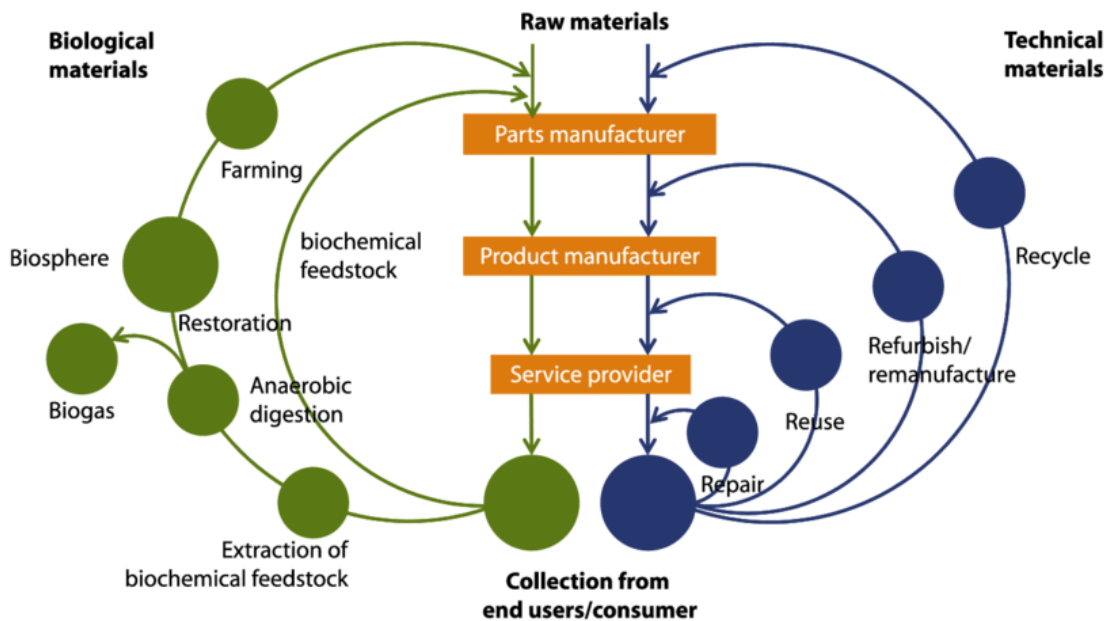


Return management is the process of overseeing the returns made to a company by customers. Is about creating strategies for recovering top value from the returned items. It focuses on speed (using automated returns of material authorizations, known as RMAs), visibility (having proper product information before the product is returned), and control (product reconciliations, updating stock levels, and addressing different errors) (Truong, 2020). Bernon et al. (2018) argue that as the main components of a circular economy are maximizing recirculation and minimizing waste, reverse logistics would clearly



fit within its context, and also could become a major component. Although beneficial, there are still many other challenges that need tackling throughout the value chain logistics. Adapting the butterfly diagram, Bernon et al. (2018) have tried to simplify it (as per the below figure) and support the circular economy concept by mentioning that the “spine” of the diagram represents the outbound logistics and that each side of the “spine” represents the reverse logistics.

Figure 4. Adapted circular economy butterfly diagram (Bernon et al., 2018)



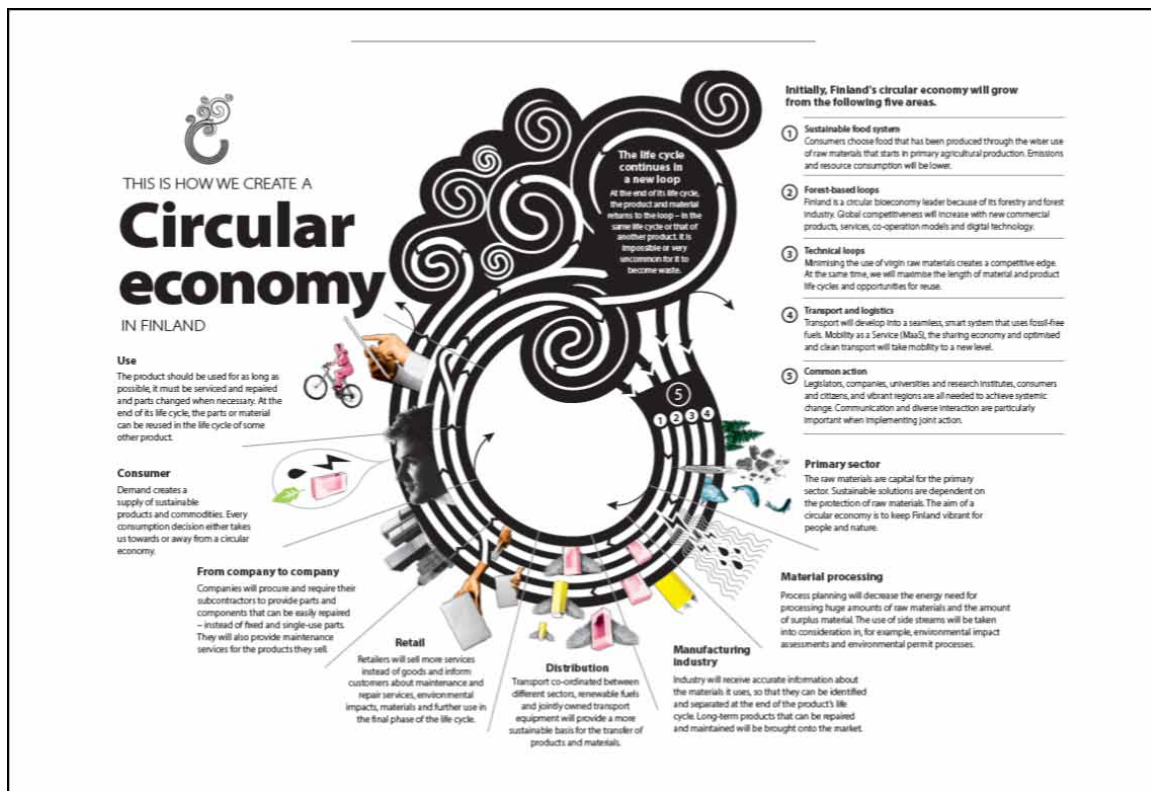
Through their study, Bernon et al. (2018) have concluded the importance of the circular economy values of waste reduction and recycling operations, and their implementation within the reverse logistics processes. The return management and reverse logistics aim to be the red thread that would enable circularity within the supply chains, the unclarified but, at the same time, the core process of the circular economy framework. One must understand that return management and reverse logistics are not just parts of the circularity within the supply chain management, but are core items of the circular economy too, as steps to be implemented within the circular loop. To complete the loop, businesses must reverse the materials and products back into the cycle, including them as new materials for production. Thus, the supply chain process becomes one of the circularity activities.

### First Roadmap to Circularity

The authors are now going to analyze the first circular economy roadmap, which was designed in Finland, in 2016, with the idea of implementing a structural circular change within the society. Unlike the usual process of designing a roadmap, where governments are the ones implementing such strategies,

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Figure 5. Sitra's infographic of the roadmap for circularity in Finland (Sitra, 2016)



Finland's Finnish Innovation Fund Sitra (n.d.) has gathered important stakeholders on working together and designing the first-ever roadmap to circularity, has drafted measures to be followed and started implementing circular ideas on already existing projects too. Moreover, Sitra turned the creation of the Finnish roadmap into a model that was later used by more than 20 European nations to design their own.

As the benefits brought in by adapting a country's economy to be more circular are quite vast, from job creation to value added to societies and local economies, the Finnish government has supported the implementation of a such roadmap with the idea of making the country a global leader in circularity by 2025. The roadmap has focused not just on the local synergies, but also on the global collaboration opportunities. To this, is added the need to constantly adapt, monitor, and develop the intertwined economic and social processes. (Sitra, 2016). The creation was not an easy task and included interviews with stakeholders, brainstorming events, and continuous discussions, which resulted in a total of 250 action ideas, which further were combined into a concrete map of measures and actions (Sitra, 2016).

The need for a systemic change and the importance of local companies was highlighted. A transition towards a circular society can happen if the sustainable ideas are having the support of local authorities and if the unsustainable practices are somewhat "punished". The Finnish roadmap to circularity has brought in more stakeholders' engagement, created new policy actions and pilot projects, and supplemented the implementation of the roadmap through actions that helped accelerate the sustainable processes. (Sitra, 2016). The outcome of this analysis of the Finnish roadmap defines the necessity of setting adaptive

models, by highlighting the importance of local companies and other stakeholders in the creation of such circular planning, especially for countries that lack the support that local authorities should offer.

## **Components of the Roadmap**

For an economy to be successful, the value of its components should be kept always constant at least. But managing that over the consumption point is a challenge of the linear economy. The benefits of circularity implementation are thus encompassed by the new solutions offered through life extensions, economic decoupling, and stock sustainability. The idea of circularity is that the usual business processes are comprising the full cycle, from start until loop closing. “How” this should be done is something that the authors are trying to clarify.

Järvinen et al. (2019) have defined the key role players of the circularity roadmap as central governments, local municipalities, companies, and society and have mentioned that they are the ones who enable the changes within economies and implementation of new strategies that will be the foundation of a circular economy. The authors believe that when deciding on the “how” of designing and implementing a circular roadmap within a specific country, one must first define the areas that are prone to this change and actions that are of utmost need for the near future. As the circularity processes usually have a “snowball” effect on the business models, as one action needs a complementary reaction from an opposite side, progress needs to be seen as the final result of adaptation.

The local challenges and the future goals are areas that need clarification before the roadmap design starts. If local resources’ scarcity is the challenge, then the goal should be a renewal of material consumption, re-usage, and recycling becoming the driving forces. Investigating the roots of economic hurdles is the way to find proper solutions. A weak economy is the result of locally-made decisions. And these decisions can be shifted through the influence of local stakeholders, being societies or businesses. A wealthy economy supports the existence of a wealthy community, an aspect that needs to be understood and should become everyone’s focus. The advantages that the circular economy is bringing have been explained thoroughly by expert research for the last decades.

Once the challenges and goals have been defined, the next step for a roadmap design should be clarifying the aspects that need an instant approach, the wagon wheels that put everything in motion, and the actions that will give support for the coming changes. Counting on the “snowball” effect, one action will trigger another, and the cycle starts moving faster. Finding sustainable solutions and creating action plans is the next step in perfecting the roadmap. Now one must define the actors, as the involved stakeholders are now the focus. Businesses, societies, and local authorities must get together at this point and find advantageous solutions for moving the cycle further and bringing value back to the creators. Communication is the key and commitment is the goal of this step. Perfect planning and then execution will happen if challenges and benefits are well explained and visualized. Turning visions into plans is not easy work, thus the importance of having all stakeholders on board for the transition.

Once the plan becomes real, it requires constant monitoring, evaluation at critical points, and the support of secondary action plans, for unexpected changes. Revisions should be a constant within the process, as many circular cycles require shifts in the business chain design. Establishing the guiding partners is essential. Each stakeholder is a part of the process, and some might have a higher resonance in the loop creation, but that should not be seen as a team imbalance. The knowledge advantage of the team is increasing with each expert member addition.

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Now the roadmap is ready to be implemented. Actors and actions are defined, the wagon wheels are ready to be put in motion, the cycle is starting and ending within the same business model, and the value creation is exponentially increased along the way. The added value of the circular loop is finally making sense for the local economies and the benefits are showing for all members. What remains to be made afterward is to expose the results to the outside public, so that the importance of the circularity implementation is better understood by the reticent parties.

One aspect that one will need to be aware of is that the adaptation of business models to a circular cycle loop needs to happen in an adequate timeframe, as the linear models are becoming slowly obsolete. And for the business processes to be advantageous, the supply chain models need to preserve the time conditions, to become faster and more efficient. The time-based competition is the one that will make the difference for involved businesses, as shortening the cycle loop will provide logistic advantages, that further enhance the profit-making.

### **Time-Based Competition**

‘Time’ is a fundamental concept within the quintessential framework of Logistics and Supply Chain Management. This part will provide a brief overview of Time-Based Competition and how organizations have evolved to make their supply chain processes faster, as to enhance the adaptation to a circular model framework. The authors would investigate, evaluate, and critically assess one of the contributing aspects of supply chain operations, time-based competition. Accordingly, this multifarious chapter would be contrived as an extensive investigation of ‘Time-Based Competition’ using a theoretical encapsulation and hypothesized application using the case study of Nestlé S.A.

### **Nestle and Time-Based Competition**

As a multinational company that has over 2,000 brands worldwide, Nestlé is also the largest food company in the world (Cascade Strategy, 2021). In this research, the authors have delved deeper into the time-based competition concept with one of Nestlé’s famous products – Milo. Milo, the world’s leading chocolate malt beverage, has significant popularity in many countries throughout the world, most famously in Australia and Asia (Especially in Malaysia and the Philippines).

### **Review of Nestlé’s TBC in Three Key Areas**

The authors review Milo’s execution of organizational and structural strategies in three key areas: Manufacturing, Sales and Distribution, Innovation, and Product Development (What Is Time-Based Competition? 2022).

1. **Manufacturing:** Malaysians are said to be the world’s largest consumers of Milo, with Milo having a 90% market share in Malaysia (Wikipedia contributors, 2022). To latch on to this opportunity, Milo has set up six factories in Malaysia, with the World’s Largest Milo production plant. Nestlé has stated that this expansion is to optimize capacity and efficiency to deliver higher productivity and competitiveness (beveragedaily.com, 2019). The Philippines, the second-biggest market for Milo has also set up a production plant that will process a key ingredient of Milo, adding it to the total of 4 factories that take part in producing Milo materials (food navigator-asia.com, 2016).

The production factory in Australia also has over 200 employees and manufactures 200,000 cans of milo a day (Johnson, 2021). The authors conclude that Nestlé is spreading its factories in their main markets to save money on logistics and to quickly adapt to changes in the local needs in the market, which will result in a time-based advantage.

2. **Sales and Distribution:** To maintain a lower inventory that will require less storage and labor capabilities, Milo needs to distribute and sell their products as quickly as possible. Milo is seen in different types of product lines from powder to packaged beverages and in other products like breakfast bars and cereals.
3. **Innovation and Product Development:** Milo has created different Milo recipes in different countries that are catered to the likings of locals, with different materials used in different recipes that have resulted in different prices that suit the economics of those countries. By experience, research, and observation, the authors have concluded that the Malaysian version of Milo is mainly made out of an Extract of Malted Barley and Starch and contains Skimmed Milk Powder, while the Australian version is mainly made out of an Extract of Malt Barley and Rice, Milk Solids, and Soy Lecithin as an emulsifier. The Malaysian version is sweeter while the Australian version has a milky, malty taste. The cheaper version is mainly distributed locally, while the Malaysian-made Australian recipe is mainly distributed to high-end grocery stores in Malaysia and exported to Singapore. Therefore, the authors observe that Milo is using time-based management with the goal of sending the products from production to consumers in the shortest possible time.

### **Constraints for Nestlé that Influence Their Approach**

As a multinational company, one of the biggest constraints of Nestlé is the different laws and regulations of each country. Furthermore, to distribute and market products more efficiently, the company must also have a grasp on the cultural atmosphere of each country.

To overcome these obstacles, offices and manufacturing factories are set in their bigger markets. This signifies that Nestlé is prepared to succumb to the laws of the countries, pay taxes, as well as to provide job opportunities for the locals.

### **Evaluating Nestlé's Implementation**

The authors evaluate the effectiveness of Milo's expansion and growth in Indonesia, which Nestlé identified as one of the countries with the most potential. Building factories requires money and in essence, a company will not have money to expand if its current strategy isn't successful or deemed to be successful in the foreseeable future. In 2019, Nestlé invested 100 million USD into expanding its factories in Indonesia (Post, 2019). And in 2021, Nestlé is said to build a 220 million USD production facility to produce Ready-to-drink beverages for the Milo and Nescafe Brands. Therefore, evidence has allowed the authors to conclude that the time-based strategies that Nestlé has used on Milo are expected to be more profitable and expandable in the future.

## **SOLUTIONS AND RECOMMENDATIONS**

Each block of the newly created roadmap represented a step in acquiring total circularity, a full cycle of renewal and regeneration of what used to be called “waste”. Is about the actions taken, the processing, logistics, procurements, consumption changes, and continuance. Each mile of the roadmap has to be considered and rethought in such a way that circularity is attained.

The outcome of this chapter is a way of trying to perfect an applicable roadmap to distinctive business models. The authors are considering the named steps as of utmost importance for any business area. The importance of the clarity of goals and challenges that need tackling, but also the synergy amongst members have been highlighted, while the logistics and time evaluation have been introduced as part of the roadmap creation itself.

One must understand that the presented roadmap creation is tentative for improving the existing business processes and circularity planning and that the local issues or members’ involvement is requiring changes and adaptation models which might differ from the presented solutions.

## **FUTURE RESEARCH DIRECTIONS**

The present chapter has tried to find an applicable solution to a circularity roadmap creation by analyzing current trends and action plans and looking into the formation of a new circular ideology globally. As circularity application within economies is still at the beginning, authors are understanding that sustainability concerns and technology improvements might stir the direction of circularity to newer trends and evolving economic thinking might add more views on this subject. Sufficiency strategies might foster the security of resources, business models might enter simplistic designs and critical insights into circularity might trigger easier motivation for a societal and enterprise mindset. Future research might evolve in a completely advanced and newly-sprung direction.

## **CONCLUSION**

A process of sustainable knowledge transfer needs to take place for a total transformational change. The authors are laying down the foundation for thoughtful business operations planning. Mapping the importance of each stakeholder, designing the pathways to be followed, and bringing out the circularity implementation issues are aspects that are being clarified within this chapter.

But how is a circular economy roadmap designed? One must understand that a roadmap is not just a tool provided for ensuring a safer financial future for businesses and societies, provided that the sustainability aspects are touched down. Is about bringing together all involved stakeholders, guaranteeing they have a common goal of stepping into the circular cycle, re-writing the strategy, the concrete measures taken at each step of the loop, and overcoming encountered roadblocks.

The final result of this work is a shapable roadmap that can be easily adapted to the requirements of multiple industries. The supply chain sector is given an extra focus, as the authors believe that is one sector that meets the challenges of all industries on one common ground, its complexity overshadowing the others.

Time as a comparative tool to measure competitive advantage stems from the fact that the quantification of the passage of time is indubitably universal throughout the globe; time is a fixed variable. In contrast, other potential variables, such as cost, pose varying alternative considerations in context to datasets or operational factors, whereas time is generally the x-axis in graphical representations. Therefore, businesses traditionally use this dimension as a core operational mechanic and derive other variables and mechanics based on time as a foundation. As a result, the usage of time-based competitions as a comparative matrix is imperative in the realm of business and logistics.

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## KEY TERMS AND DEFINITIONS

**Circular Economy:** A type of economy focused on reduction and prevention of waste, but also on the reduction of resource overconsumption.

**Circularity Loop:** Putting resources back into the economic cycle through R-activities (reuse, recycling, etc.) or D-activities (decomposing, de-combining products to their original components and putting them back into a creation at the same value as if new).

**Economic Decoupling:** Disconnection of economic growth from the pressure put on the environment, allowing financial growth without impacting the natural surroundings.

**Obsolescence:** A process of becoming outdated, no longer needed, as newer and better versions are being launched.

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**Overconsumption:** Extreme usage of resources up to the point where they exceeded the rate at which the resources are being replenished.

**Product Life Extension:** A process of extending the utilization rate of a resource to the maximum possible.

**Resilience:** Power of adaptation to swift changes in the environment.

**Social and Business Welfare:** A state of development that considers society's well-being, while allowing financial growth for companies.

**Stakeholder:** A party who has an interest in the subject or is impacted by the decisions of the subject.

**Stocks Sustainability:** Capital allocation that enables financial returns without impacting the environment or societies.

**Sustainability:** Maintaining the level of resources at a constant level and improving their level for the next generations by approaching the impact that societies and businesses have on them.