

TrainERGY project

Good practice - Template

Date:	
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Training for Energy Efficient Operations - TrainERGY



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1 Introduction

1.1 Good practice definition

Good practice is a method or technique that has been generally accepted as superior to any alternatives. It has been proven to work well and produce good results¹.

1.2 Good practice criteria

The following set of criteria will help you to determine whether a practice is a 'good practice':

- **Effective and successful**
A good practice has proven its strategic relevance as the most effective way to achieve a specific objective; it has been successfully adopted and has had a positive impact on individuals and/or communities.
- **Environmentally, economically and socially sustainable**
A good practice meets current needs, in particular the essential ones of the world's poorest, without compromising the ability to address future needs.
- **Technically feasible**
Technical feasibility is the basis of a good practice. It must be easy to learn and implement.
- **Inherently participatory**
Participatory approaches are essential, as they support a joint sense of ownership of decisions and actions.
- **Replicable and adaptable**
A good practice should have the potential for replication and should therefore be adaptable to similar objectives in varying situations.
- **Reducing disaster/crisis risks, if applicable**
A good practice contributes to disaster/crisis risk reduction for resilience.

¹ Nash, J. and Ehrenfeld, J., (1997), "Codes of environmental management practice: assessing their potential as a tool for change." Annual Review of Energy and the Environment 22, pp. 487-535; Bretschneider, S., Marc-Aurele, F.J., Jr., and Wu, J. (2005), "Best Practices" Research: A methodological guide for the perplexed, Journal of Public Administration Research and Theory, (15) 2, pp. 307-323.

2 Good practice description

GP has to be related with one of the topics covered during the training (e.g. Green purchasing, Technologies for reducing waste or Green external operations management). If it is possible, you can try to describe the practice that you would recommend to the supply chain analysed using ScENAT tool.

You can use different resources e.g. company websites, business reports, scientific papers, ScENAT analysis results and your business experience.

Try to answer to all below questions and to not exceed 3000 words.

2.1 Objective

What is the aim/objective of this document?

- To describe the concept of Circular Economy

What is the area of a good practice: green purchasing, green marketing or technologies for reducing waste?

- Technologies for waste reduction

What is the company (from a case study) for which a good practice is recommended?

- ALUMIL

2.2 Introduction

The main ideology of this proposal is that « *A circular economy is a global economic model that aims to decouple economic growth and development from the consumption of finite resources. Increasingly, companies see tremendous opportunity in this model, as it not only allows them to capture additional value from their products and materials, but also to mitigate risks from material price volatility and material supply* » as mentioned by the pioneering work of McArthur et al, 2015).

The Circular Economy paradigm pushes the frontiers of environmental sustainability by emphasising the idea of transforming products in such a way that there are workable relationships between ecological systems and economic growth. This is achieved by creating a paradigm shift in the redesign of material flows based on long-term economic growth and innovation that is not just concerned with the reduction of the use of the environment as a sink for residuals or with the delay of cradle-to-grave material flows (as a reductionist view of

sustainable supply chain management strategies may suggest) but rather with the creation of metabolisms that allow for methods of production that are self-sustaining, true to nature and in which materials are used over and over again (Genovese et al., 2014)

Finding ways to implement supply chains and production systems inspired by circular economy principles has therefore become important if the boundaries of environmental sustainability are to be extended. This is particularly relevant in the European context, in which, for a long time, economic growth has been driven by substantial depletion of natural resources and the degradation of ecosystems, resulting in adverse impacts on humans with planetary boundaries being exceeded. As a result, the European Union has initiated many strategies aimed at delivering smart, sustainable and inclusive growth. One such strategy is the Resource-Efficient-Europe flagship initiative⁶, based on a Circular Economy paradigm and aimed at improving resource efficiency and identifying and tackling the trade-offs between economic development and environmental protection. Furthermore, recently, the European Commission has announced an ambitious new Circular Economy Package; the proposed directives are aimed at *closing the loop* of product lifecycles through greater recycling and re-use, with the objective of bringing benefits for both the environment (fostering energy savings and reductions in Greenhouse Gas Emissions and promoting resource efficiency) and the economy (boosting the promotion of green jobs (EU Commission, 2015)).

2.3 Actors and Stakeholders

The main factor that initially drove the promotion of circular economy principles related to the environmental gains that can be achieved as a result of decoupling global economic development from finite resource consumption. Moving on from this, it has been suggested that a wide spectrum of factors including economic implications can render the sustainability of Circular Economy questionable. However, there is no academic or practical consensus in understanding the economics performances of the circular economy.

It follows that a systematic framework and the development of methodologies for the assessment of the economic efficiency of the circular economy has become the critical next step as these can be considered as critical enablers that can maintain and enhance the circular economy both theoretically and in practice. In particular, as a preface to any model development, a framework of definition for the economic efficiency must be established. This should be centred on objective-based criteria and external constraints that are imposed. This is a timely need because, despite a business rationale for an accelerated transition to the circular economy being made, the potential for economic efficiency of circular economy systems implemented in free-market contexts is currently under-investigated.

In addition, given the range of economic factors that should be measured from the perspective of different stakeholders and the fact that economic efficiency can be evaluated at different stages of the circular economy value chain network (products, processes, firms, industries and economy-wide), the task of developing systematic models for circular economy economic

efficiency assessments can be complex and so poses both theoretical and practical challenges.

Who are the beneficiaries or target group of the practice?

- The company
- Their suppliers and value chain
- Society
- Government
- Technologists

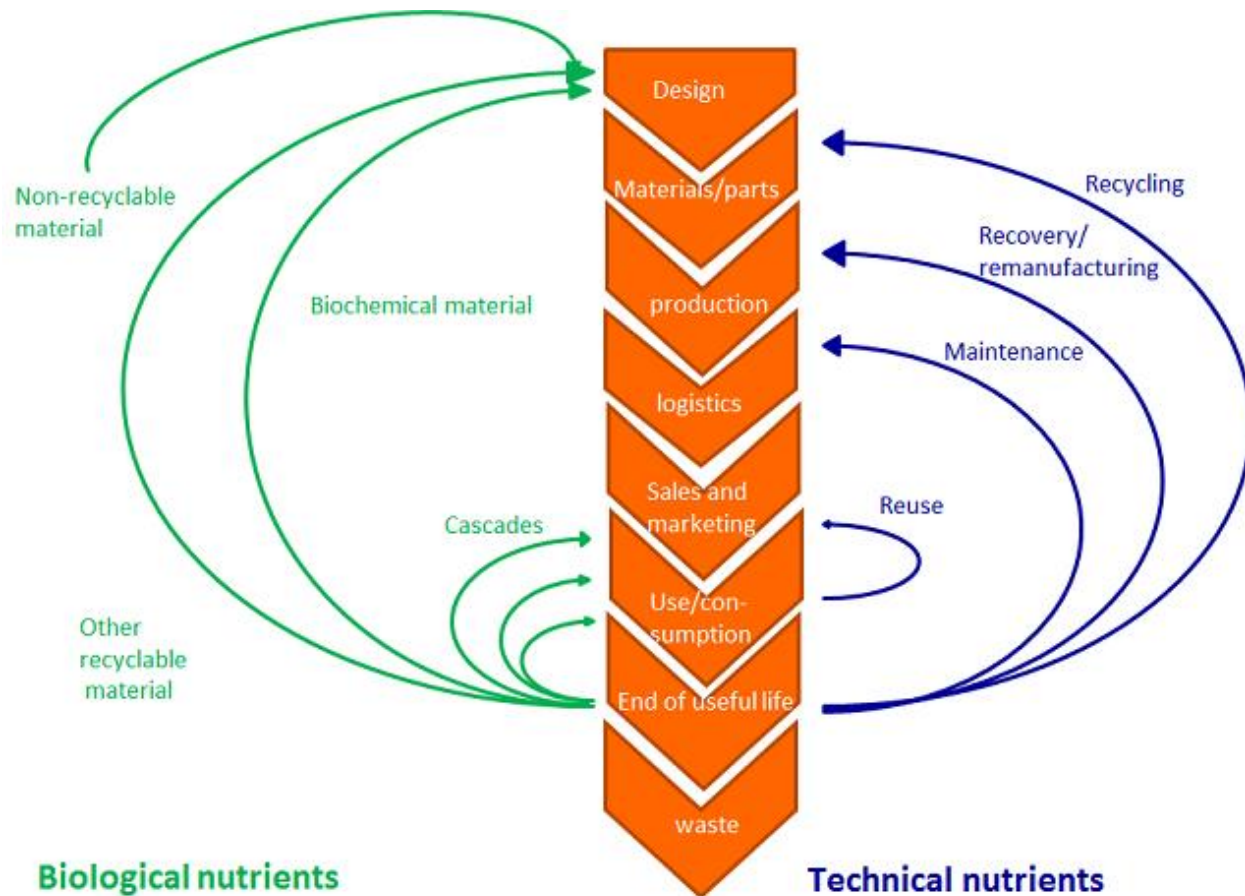
Who are the users of the practice?

- Companies involved in the supply chain

Who are the institutions, partners (e.g. suppliers, clients) implementing agencies and donors involved in the practice? What is the nature of their involvement?

- All the value chain partners are involved in the circular economy concept

2.4 Methodological approach



2.5 Validation

Due to the simple fact that circular economies aim to keep resources in use for as long as possible by extracting maximum value whilst still fully functional, companies have devised strategies to recover and regenerate products once they reach the end of their durable term. Levi is one of the major businesses that are currently working on short term, as well as long-term circular economy processes, which will ultimately benefit society. The level of clothing waste that ends up in American landfills each year is said to be over 24 billion pounds, with that being said, Levis encourages their customers to bring old clothing back to the shop where they recycle the material to create insulation for housing, cushioning material as well as fibers for clothing. Other companies such as Energizer are gradually but successfully implementing a circular economic mechanism. Batteries are considered to be hazardous and for that reason are disposed of immediately after use. However, Energizer has managed to both recycle batteries into materials used for road construction as well as recreate batteries by using old batteries.

2.6 Results/outputs



Using circular economy within an organization is very beneficial because it will lead to decrease the extraction and the import for the resources and this will thus lead to minimize cost for the company. For instance *Alumil* uses a lot of primary resources (i.e Zinc) and the circular economy technology will be an important tool to use in order to be able to reuse the primary materials. As a result, by reusing the primary material, the company will minimize its cost to extract zinc and import it. Moreover, another core benefit is the energy consumption that a company saves while using circular economy.

Using circular economy technology within a companies' business model will lead to use the resources to its fullest and will help the company grow on the long term and establish customer

values. By renewing the materials, it will enable a company to not waste the goods and once again will lead to minimize costs.

2.7 Impact

- Input in the production process: How many enter from initial materials and materials that have been already recycled and thus reused.
- Utility during use phase: the durability of the good that was reused vs. a product that was not made through that process. Will the product that was made from the circular economy system will be better in terms of durability and quality.
- Destination after use: with the potential materials that are brought to be recycled, how many elements are actually used to be reused.
- Efficient of recycling: the recycling process must be efficient in order for the final product to be effective.

2.8 Success factors

What element distinguishes this practice from other similar ones?

Characteristics:

According to Linder and Williande (2015), a circular business model is “a business model in which the conceptual logic for value creation is based on utilizing the economic value retained in products after use in the production of new offerings”. The element that distinguishes the circular economy is the fact that products and services in this model are designed to enable efficient circulation. Biological materials return to the food and farming system and technical materials are being kept in production.

In other words there is no waste since the materials used are designed by intention to fit within a biological or technical cycle. The biological materials are non-toxic and can be composted, whereas technical materials are designed to be used again with minimal energy and highest quality retention. (Ellen McArthur Foundation, 2010).

What are the conditions (institutional, economic, social and environmental) needed for the practice to be successful?

Following are the factors that affect a circular economy's success that might change over the years to come and affect them. (Ellen McArthur Foundation, 2010)

- Demographic trends

The economic aspects of demographics may prove difficult to manage since the mass of new spenders –due to population increase- will have a significant impact on resource demand, a prospect that underlines the potential value of introducing circular economy principles into business models sooner rather than later.

- Political risks

Several projects to-be-develop, are in countries with high political risk. In those countries there is always the possibility of embargo on raw material. Furthermore, political decisions also drive cartels, subsidies, and trade barriers, all of which can trigger or worsen resource scarcity and push up prices and volatility levels.

- Globalization

Emerging markets integrate more thoroughly into global value chains and financial systems because of globalization and the ease of transportation, which means that regional price shocks can quickly become global.

- Climate

The U.S. Environmental Protection Agency suggests that changes in climate could affect snow cover, stream flow, and glacial patterns—and hence fresh water supply, erosion patterns, irrigation needs, and flood management requirements, and thus the overall supply of agricultural products (Ellen McArthur Foundation, 2010).

2.9 Constraints

What challenges the company can encounter in applying the practice?

- Current imbalances are likely to get worse before they get better
- Need for virgin material extraction would decrease substantially
- Growth of landfill and total material stock would decrease

How to make the best use of the tool (tips and traps)

(Ellen McArthur Foundation, 2010)

The principles of the circular economy offer not only a description of how it should work as a whole, but also an outline of specific sources of core economic value creation potential.

There are four simple principles of circular value creation that hold true.

Inner circle:

The tighter the circles are, the larger the savings should be in the embedded costs in terms of material, labour, energy and capital. Given the inefficiencies along the linear supply chain, tighter circles will also benefit from a comparatively higher virgin material substitution effect.

Circling longer:

A second core value creation potential stems from keeping products, components, and materials in use longer within the circular economy. This can be done by either going through more consecutive cycles or by spending more time within a cycle. This prolongation of usage will substitute virgin material inflows to counter the dissipation of material out of the economy.

Cascaded use and inbound material/product substitution:

The arbitrage value creation potential is rooted in the lower marginal costs of reusing the cascading material as a substitute for virgin material inflows and their embedded costs (labour, energy, material) as well as externalities against the marginal costs of bringing the material back into a repurposed use.

Easier-to-separate inputs and designs:

To generate maximum value, each of the above levers requires a certain purity of material and quality of products and components. , In case these materials were selected and combined in a previous single product or if they are collected and handled without segmentation and without regard for preserving purity and quality, then material streams become available as mixtures of materials. These improvements to the product and the reverse cycle process translate into further reductions of the comparative costs of the reverse cycle while maintaining nutrients, especially technical ones, at higher quality throughout the cycles, which typically extends longevity and thus overall material productivity.

2.10 Lessons learned

The circular economy is the new trend that will take place worldwide. Especially in Europe where it is believed that circular economy is the landmark in creating a more resource-efficient economy. Europe imports all its raw materials in order to produce its goods, which make its economy a lot of susceptible. In order to be more independent, Europe decided to change its economy to a circular one. The idea is to keep a given resource circulating within the economy for as long as possible. When something reaches the end of its useful life, we repair, re-use or remanufacture it.

2.11 Sustainability

Aluminum is a material that can be used again and again without losing its quality level, 75% of all aluminum ever produced is still in use thanks to its durability and recycling properties. Also, it is very easy in its recycling process. Many types of research that have been conducted have revealed that if a company chooses to recycle its products and use them as raw materials it will reduce its costs. Furthermore, it will reduce its energy consumption by 95% while it needs much less energy in order to recycle aluminum instead of the energy which would need for the primary production. Also the CO₂ emissions it's less if the plant recycles the products instead of producing them and besides of that, the company will need fewer chemicals and water consumption for its recycling process. Using this tool, circular economy, the company can be more autonomous based on its raw materials. This means that the consumption of raw aluminum will decrease or it will be used for a different purpose. Besides of that, the company can be an environmental friendly while it will reduce its consumptions to energy, water, raw material and chemicals. Finally using this tool new job opportunities will be created which will benefit the society of the country where the company acts. Only in Europe, 31,000 employees have a job because of the circular economy (6,000 direct and 25,000 indirect).

2.12 Demonstration

The circular economy may take place in different sectors or industries. In order to better understand the process of the circular economy, a real life example is presented. UK government decided that it needs to reduce food packaging waste and household food waste. That's why from 2005 is running a program with three phases, which its main goal is to reduce packaging waste and CO₂ emissions. UK government was invested 4 million pounds per year at the department for environment, food, and rural affairs in order to achieve its goal. The department decided that they have to change the packaging of the food and liquid products at the supermarkets and retail shops. Following this process, they could reduce the CO₂ emissions, the cost for suppliers and consumers as well only by changing the packaging. The results were more than satisfying while

the department managed to reduce the waste over 4 million tons, save more than 6.5 billion pounds for the consumers and the suppliers and reduce the CO2 emissions more than 11Mt.

2.13 Related website(s) / resources.

- <https://economics.rabobank.com/publications/2015/july/the-potential-of-the-circular-economy/>
- https://www.ellenmacarthurfoundation.org/assets/downloads/insight/Circularity-Indicators_Methodology_May2015.pdf
- <http://www.eea.europa.eu/highlights/circular-economy-to-have-considerable>
- <https://www.accenture.com/us-en/insight-circular-advantage-innovative-business-models-value-growth>
- <https://www.uschamberfoundation.org/sites/default/files/Circular%20Economy%20Best%20Practices.pdf>
- <https://www.ellenmacarthurfoundation.org/circular-economy/overview/characteristics>
- <http://onlinelibrary.wiley.com/doi/10.1002/bse.1906/abstract>
- <https://www.ellenmacarthurfoundation.org/case-studies/united-kingdom>
- http://european-aluminium.eu/media/1712/ea_recycling-brochure-2016.pdf
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