

MOVECO Toolbox

Schools of thought

Natural Capitalism



DATE, PLACE, COUNTRY

NAME OF PRESENTER, ORGANIZATION

Aims of this tool

To understand the importance of different schools of thoughts for new circular design, manufacture, use and end of life with the aim to keep materials, products and components within the technical or biological cycle for longer periods, at their highest potential, and evaluate strategical circular development of a company;

To learn how to apply circular design approaches that can be implemented within a company/product lifecycle and define measures to improve the company circularity.

To define steps in developing the company circularity through new ways of thinking



Content of this tool

- Introduction to Natural Capitalism
- Content - General Overview
 - Definition
 - Industrial Capitalism vs Natural Capitalism
 - Lean Thinking for Business
 - Case Study – FLACARA Technical Systems
 - Exercise
- Questions & Answers

Circular economy definition

“A **circular economy** would benefit our environment, but it's also smart economics. The idea is to keep a given resource circulating for as long as possible. That means designing products, processes and services to optimize the use of resources, so that when something reaches the end of its useful life, we re-use, repair, or remanufacture it for another use. Or we recycle the materials it contains and re-inject them into the economy elsewhere.”

- Quote by Karmenu Vella, European Commissioner for Environment, Maritime Affairs and Fisheries (www.unep.org/ourplanet/may-2016/articles/go-circular)

Natural Capitalism – General Overview

During the history we witnessed different *industrial revolutions*.

First - 1800 - water and steam power

Second - 1900 - electricity

Third - 2000 - IT systems

Fourth (Now) - Internet of things, Internet 4.0, and cloud technology

Source: Harvard Business – A Road Map for Natural Capitalism by [Amory B Lovins](#), [L Hunter Lovins](#) and Paul Hawken – <https://hbr.org/2007/07/a-road-map-for-natural-capitalism>

Natural Capitalism – General Overview

Result: the creation of capital “accumulated wealth in the form of investments, factories, and equipment. Actually, an economy needs four types of capital to function properly:

- **human capital**, in the form of labour and intelligence, culture, and organisation
- **financial capital**, consisting of cash, investments, and monetary instruments
- **manufactured capital**, including infrastructure, machines, tools, and factories
- **natural capital**, made up of resources, living systems, and ecosystem services

Source :

<http://www.natcap.org/sitepages/pid57.phpB>

Natural Capitalism – Definition

Natural capitalism: „Any economic system that incentivizes profit based on proper care of the environment. In other words, natural capitalism assigns an economic value to stewardship of the planet. Income from natural capital includes yield from trees and plants. Natural capitalism assumes that goods and services have a value apart from their potential sale price on the market.”

Source:

The free dictionary By Farley - <https://financial-dictionary.thefreedictionary.com/Natural+Capitalism>

Industrial capitalism vs natural capitalism

- Industrial capitalism **values** money and goods

Source:

http://pngimg.com/uploads/money/money_PNG3511.png

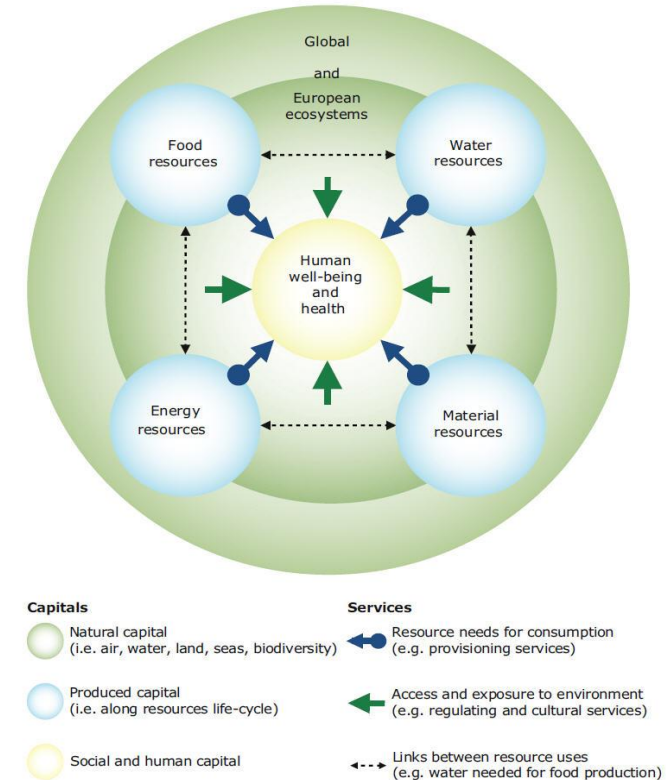


- Natural capitalism **values** natural resources as resources

Source:

<https://www.eea.europa.eu/publications/environmental-indicator-report-2012/>

[environmental-indicator-report-2012-ecosystem/Images/10-1.jpg](https://www.eea.europa.eu/publications/environmental-indicator-report-2012-ecosystem/Images/10-1.jpg)



Industrial capitalism vs natural capitalism

The *difference* between the classic term *industrial capitalism* and *natural capitalism* is, in fact, that the first one, Natural Capitalism became more popular since 1999, with the launch of the book co-authored by Paul Hawken, Amory Lovins and Hunter Lovins, named “Natural Capitalism: Creating the Next Industrial Revolution”. According to authors, there are *four central strategies*, as follows:

1. “Radical resource productivity”
2. “Biomimicry”
3. “Service and flow economy”
4. “Investing in natural capital”

1.Radical resource productivity

Radical resource productivity - is based on “fundamental changes in production design and technology” that can maintain the natural resources in use for a longer period, decrease in natural resources depletion and environmental pollution, create savings in costs, capital and time with positive effects upon companies and environment.

It is important to understand and sustain, through *design for efficiency*, the capacity of the ecosystem to provide services.

Resource productivity seems to be the cornerstone of natural capitalism as if companies use primary resources in an effective way they can get three main benefits: 1. Decrease in resource depletion; 2. Low level of pollution; 3. New jobs .

2.Biomimicry

Biomimicry – the second principle – Innovation inspired by nature: Study and apply nature`s designs and processes to solve human problem. Nature does not produce waste and Natural Capitalism proposes to eliminate the concept of waste. In nature, each output is returned to either the biological system(biosphere) or the technical system(techno spere). It is important that the materials used are not toxic to any of the two environments.

3. Service and flow economy

Service and flow economy – is the third principle of natural capitalism. It represents a new business model based on a very important change from classical production processes of goods and selling them to a new way of doing business based on selling services instead of goods. In the first business model the client has the responsibility for goods usage and for discarding them after use (landfill). Using second solution product ownership is not transferred to client and that encourages “take back process” when product lifecycle is over. Using the second solution create easier ways of closing the loop.

4. Reinvest in natural capital

- **Reinvest in natural capital** – the new pattern of consumption expands human needs and pressures on natural capital increases dramatically that is why regeneration of natural resources become a must. Reward and invest in businesses that achieve the first three principles i.e. sustainable businesses.

As well as other schools of thought, Natural Capitalism shows us that changes (which are not necessarily difficult to achieve) are needed in business management. Advanced technologies (Internet of things and Internet 4.0) can make primary resources more productive, which will benefit not only owners but also those involved in the process. Implementing an increase in resource productivity, at the company level, there are a lot of positive results such as:

- *Lower costs for business and society*
- *Lower costs for environmental damages*
- *Low costs for social disruption*

Source: see the definition of social disruption/ https://en.wikipedia.org/wiki/Social_disruption

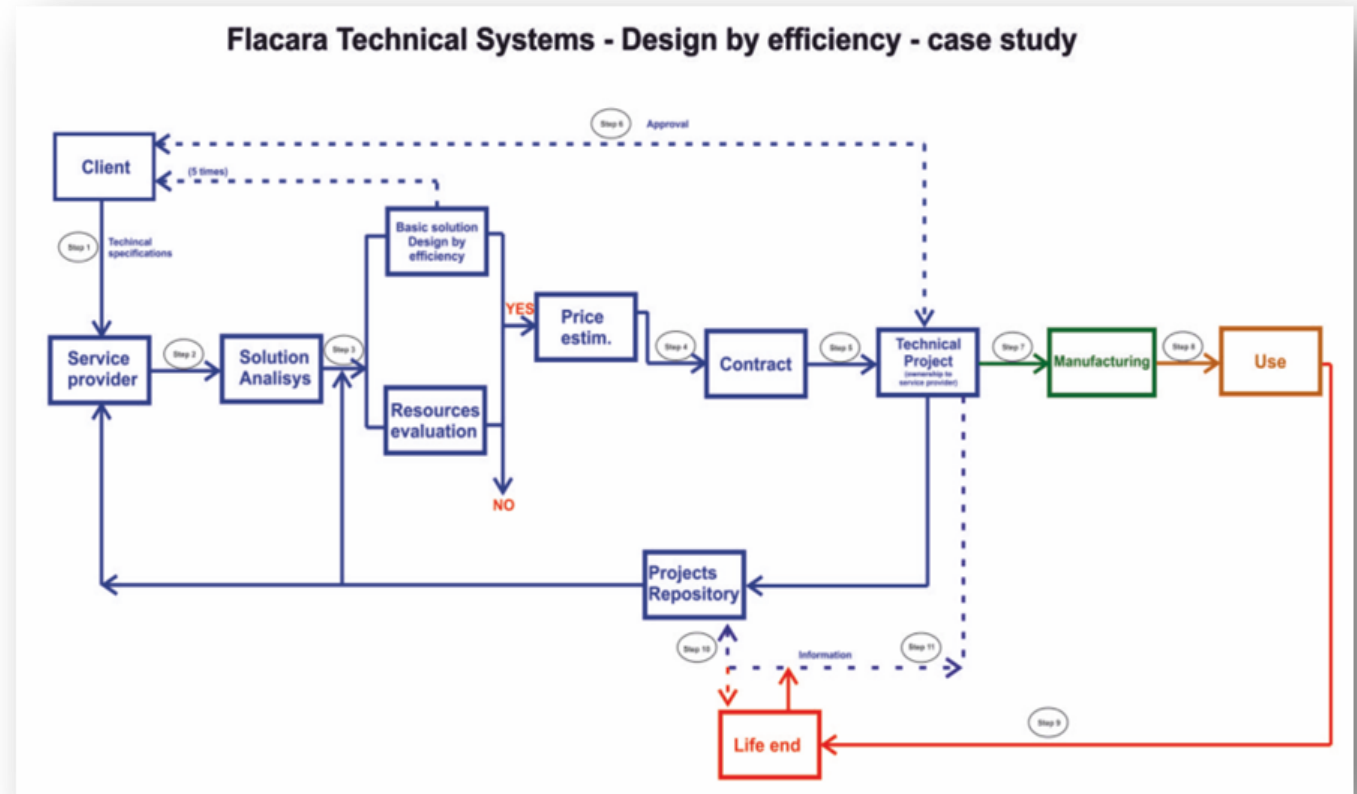
Case Study : Company-Flacara Technical Systems

To better understand the process created under design for efficiency the following case study is suggested:

Company: Flacara Technical Systems,

Company Type – start up - design and assembly of machinery / equipment for industry (automotive, sports equipment, advertising companies etc.)

Location: Bistrita/Romania



Case Study :

Company-Flacara Technical Systems

The new approach has been adopted as a result of a large consumption of materials necessary to achieve models that meet the needs of the customer.

Old approach: Up to five simulation activities were done to create a physical good for customer generating great resource consumption and waste.

New approach: In this new approach, virtually, up to 5 simulations are performed that should lead to the final version, approved by the client. Therefore, the new design for efficiency process is thought for resource economy (time, human, material).

After the completion of the project it enters the manufacturing process where it can still undergo minor changes that are included into the final project and sent to a company repository.

Some parts and components of the electrical equipment are made by a 3D printer saving energy, resources and producing no waste.

Every single part of the equipment can be: reused, remanufactured, and recycled.

Case Study : Company-Flacara Technical Systems

Creating a repository is an innovative idea that helps the company use the projects entirely or partially when:

- A new project (similar) starts
- Components are used in another projects: redistribute/remanufacture
- Components are up-cycle
- Maintenance - keeping the equipment in working order, in repair, etc.
- The end of life process – create no waste

Services:

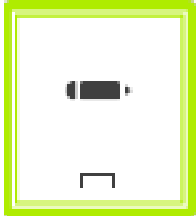
- 12 months guaranty
- Low level of materials consumption
- Better exploitation based on the project repository

Case Study : Company-Flacara Technical Systems

Conclusions

- ☐ Less materials consumption
- ☐ Less energy consumption
- ☐ Less component in product architecture
- ☐ Easy to desassembly for goods
- ☐ Easy to repair
- ☐ Easy to reuse

Exercise



Exercise 1 – think about two natural resources your company use: water and energy. Think how you could use resources more productively, to bring four to ten times more benefit from each unit of energy, water to your company.

Working in small groups create a “to do” list through brainstorming.

Please consider, within your exercise the following natural services:

- Production of oxygen
- Maintenance of biological diversity
- Purification of water and air
- Regulation of the chemical composition of the atmosphere
- Decomposition of organic wastes
- Regulation of the local and global climate
- Maintenance of soil fertility
- Storage and recycling of nutrients

Glossary

For Glossary you need to check any module in the handbook

Contact

Contact details of the host organization (= MOVECO Partner)

This training was delivered by

Contact details of trainer