BUSINESS MODEL INNOVATION FOR SUSTAINABLE LANDSCAPE RESTORATION
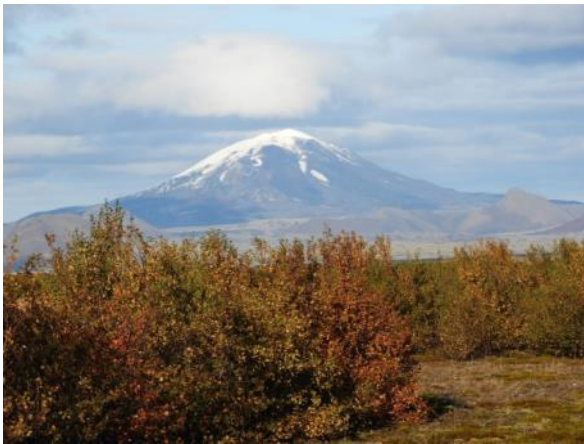
This MOOC was created by ENABLE, the *European Network for the Advancement of Business and Landscape Education*. ENABLE is a strategic partnership of renowned partners including academic partners, private businesses, the public sector and NGOs.

Its current consortium partners consist of Rotterdam School of Management, Erasmus University (RSM), Commonland, United Nations University Land Restoration Training Programme (UNU-LRT), Spanish National Research Council (CSIC-CEBAS) and Nova School of Business and Economics.

The core development team of this MOOC consisted of:

Dr. Steve Kennedy & Eva Rood (RSM)
Dr. Joris de Vente (CSIC-CEBAS)
Dr. Simon Moolenaar (Commonland)
Berglind Orradottir & Dr. Isabel Barrio (UNU-LRT)

TABLE OF CONTENTS

WELCOME TO YOUR WORKBOOK!

Welcome to this eight-week course on 'Business model innovation for sustainable landscape restoration'!

On completion of this course you will be able to:
- **Analyse** social-ecological systems and conduct a stakeholder analysis.
- **Identify** opportunities for sustainable business models based on an opportunity analysis.
- **Design** a sustainable business model to address landscape restoration.
- **Apply** the "4 returns" thinking (returns of inspiration, natural capital, social capital and financial capital) to assess and monitor a new sustainable business model

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In each week, you will have access to **videos**, **readings** and **further resources**.

Your teachers will introduce you to the process of business model innovation, the concept of landscape restoration and to 3 real-life cases of landscape restoration projects. For each step of the innovation process, we zoom in on those landscapes to show you how the theory looks in practice.

The course is designed in **3 phases**: identifying, designing and implementing.

1. The first phase is **identifying**, in which you formulate your vision (week 1) and conduct a systems analysis (week 2) and stakeholder analysis (week 3).

2. In the second phase we move from forming an understanding of the problem and what means we have available to the second phase: **designing**. This includes co-creation and opportunity analysis (week 4), business model design (week 5) and solution validation (week 6).

3. The third phase of the sustainable business model innovation process – **implementing** – includes the assessment and monitoring of business model ideas (week 7) and reflection and iteration (week 8).

Since the process of innovation is iterative, there will also be ample **reflection points** during the course. You can go back and forth, adapt your vision statement and analysis based on new insights you might have along the way.

In groups or individually, you will work on **weekly exercises** that help you create **your own business model** for sustainable landscape restoration.

On completion of this course, we invite you to stay connected to the community and join the **LinkedIn group** 'Business 4 Landscapes' https://www.linkedin.com/groups/13523244/ .

YOUR TEACHERS

Your teachers are introducing you to concepts of sustainable business model innovation for landscape restoration:

Dr. Steve Kennedy is Associate Professor of Corporate Sustainability at Rotterdam School of Management, Erasmus University in the Netherlands. Dr. Kennedy's research interests include how corporate sustainability strategies are translated into successful innovation and the formation of future-ready sustainable business models. His research has featured in peer-reviewed scientific journals such as *Journal of* Management Studies, *Long Range Planning* and *Journal of Cleaner Production.* Dr. Kennedy is the Scientific Director of the Centre for Eco-Transformation and Academic Director of the MSc Global Business & Sustainability*.*

Dr. Simon W. Moolenaar is Head of Science & Education at Commonland. He actively connects science and business with multiple stakeholders in ecosystem and landscape restoration projects that aim for the returns of inspiration and of social, natural and financial capital (the "4 returns"). He develops guidelines for valuation and capturing the benefits of ecosystem restoration together with Wageningen University, co-leads the European Network for the Advancement of Business & Landscapes Education (ENABLE) and serves as co-chair of the Ecosystem Services Partnership (ESP), European Chapter and as vice-chair of the IUCN-CEM thematic group on Business & Ecosystem Management.

Thorunn Petursdottir is a senior expert in natural resource management at the Soil Conservation Service in Iceland. Thorunn is also teaching and supervising fellows at the United Nations University Land Restoration Training Programme (UNU-LRT). Her research interest is on resilience-based management of natural resources including for instance, research on ecosystem functions, landscape restoration and social-ecological system analysis. She has been involved in various European scientific projects, published several peer reviewed articles in scientific journals and actively participated in policy making within the environmental field in Iceland.

Prof. Rob van Tulder is professor of International Business-Society Management at the Rotterdam School of Management, Erasmus University in the Netherlands. He has been teaching and researching on major issues – he calls them 'wicked problems'- at the interface between business and society. Since 2009, he is also the academic director of the Partnerships Resource Centre, which actively supports processes of cross-sector partnerships for sustainable development goals around the world with research and advice.

Furthermore, these are faces you will regularly meet as well:

Berglind Orradóttir - Deputy Director of the United Nations University Land Restoration Training Programme
Dr. Isabel C. Barrio - Associate Professor at the Agricultural University of Iceland
Dr. Carolina Boix-Fayos - Senior scientist at the Spanish National Research Council
Dr. Joris de Vente - Senior researcher at the Spanish National Research Council
Dr. Renato Rosa - Scientific Director of the Knowledge Centre on Environmental Economics at Nova School of Business and Economics
Afonso Almeida Fernandes - architect and founder of CAuSA

You will meet them in more detail as the researchers, scientists and practitioners from the three real-life projects featured in this MOOC.

Other videos have been contributed by:

Prof. Dirk van Dierendonck is professor of Human Resource Management at Rotterdam School of Management, Erasmus University in the Netherlands. His expertise lies in areas such as leadership development and positive organizational scholarship. He serves as academic director of the Erasmus Centre for Human Resource Excellence and is co-founder of the Erasmus Center for Leadership Studies.

Willemijn de Iongh is Knowledge & Research Officer at Commonland where she is the lynchpin connecting knowledge and research within Commonland's Foundation, Projects, Partners and networks. As such, she is your one-stop-shop for applied learning around 4 return landscape restoration approaches. Willemijn has a background in Cultural Anthropology with a focus on natural resource management and sustainable agriculture.

Christine Ornetsmüller is Knowledge & Learning Officer at Commonland where she is responsible for building a knowledge management system that includes a toolbox for the 4 returns Community of Practice. Christine has a background in Land System Science, Geography, Geomorphology, Natural Hazards & Risk as well as Geographic Information Systems (GIS).

GETTING STARTED

This course is designed for you to work as part of a team. You can complete the course individually, but your learning will likely be more effective and enjoyable in a team!

Here is how you get started:

Step 1: Join the course **community on Slack**, a platform that allows for easy collaboration and communication, via this link: https://join.slack.com/t/mooc-businessmodel/shared_invite/enQtNDkzMDUyMTk3NzEyLTZjMGIxYTA0NWZkMmZkYjE1MTg4NDI0YWQ5ZTEwZmYyNTFiYTdiMGJlMDc1NTAzNWM0ZjBmZjI5ZTY3NmJkNTY

Step 2: Introduce yourself to the wider community of fellow learners who signed up to the course. **Post about yourself**, what drives you and what land degradation challenge you would want to work and **comment** on other people's posts.

Step 3: **Connect with inspiring people** that you want to work with. It is suggested to form groups of 3-5 persons. Although, working in pairs or larger groups is also fine. Feel free to form a team with your friends or colleagues.

Step 4: Set up your **group work environment** on Slack. This work environment will allow your team to discuss and create the weekly exercises.

Step 5: Assign a **team leader.** The team leader helps to organise the contributions of the team members and ensures that the weekly exercises are completed and submitted.

Step 6: **Start to find solutions** to one of the biggest grand challenges of our time! Upon enrollment, you have 3 months to finish the course.

Each week you will complete exercises and upload them on Coursera for peer review by another group or individual MOOC participant. We ask that you also peer-review the work of your fellow learners and help them to design their sustainable business model.

If you want to see the work of others or share your work with the *whole* MOOC online community, you can do so via Slack (you can use the same link as indicated above).

LET'S GET STARTED!!!

BUSINESS MODEL INNOVATION PROCESS

PHASE 1: IDENTIFYING

WEEK 1: VISION FORMULATION
WEEK 2: SYSTEMS ANALYSIS
WEEK 3: STAKEHOLDER ANALYSIS

PHASE 2: DESIGNING

WEEK 4: OPPORTUNITY ANALYSIS
WEEK 5: BUSINESS MODEL DESIGN
WEEK 6: SOLUTION VALIDATION

PHASE 3: IMPLEMENTING

WEEK 7: ASSESSMENT AND MONITORING
WEEK 8: REFLECTION AND ITERATION
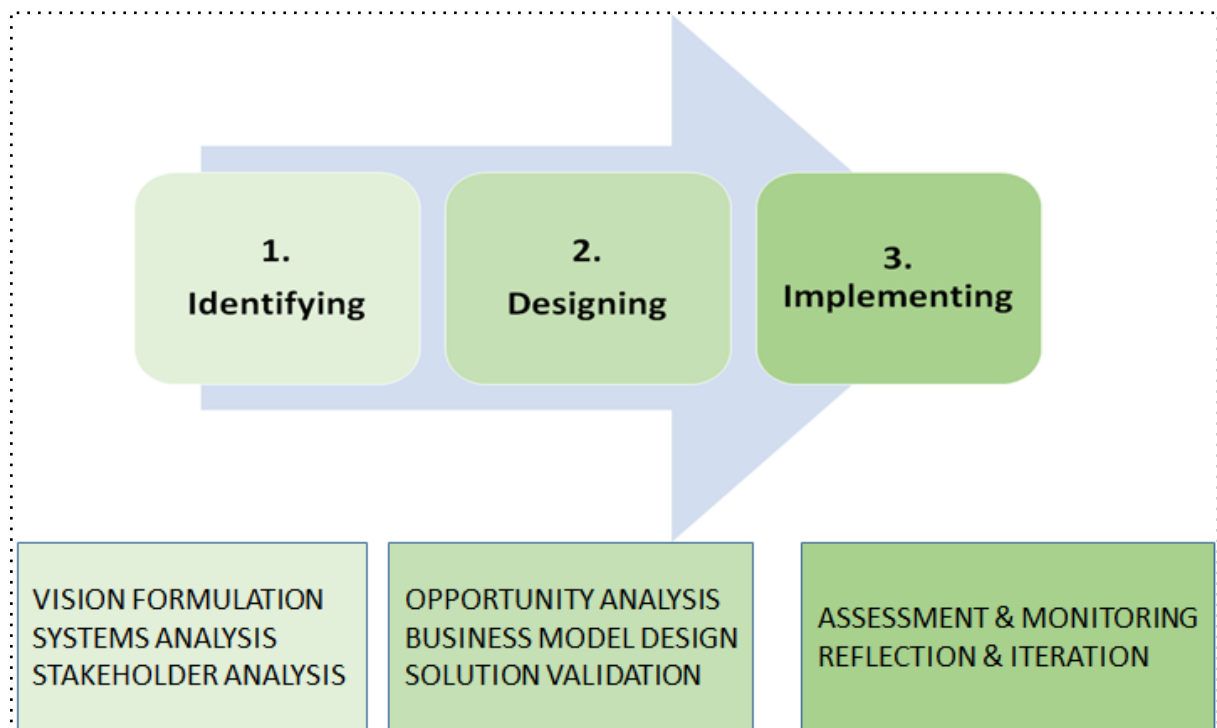
PHASE 1 IDENTIFYING
WEEK 1 VISION FORMULATION
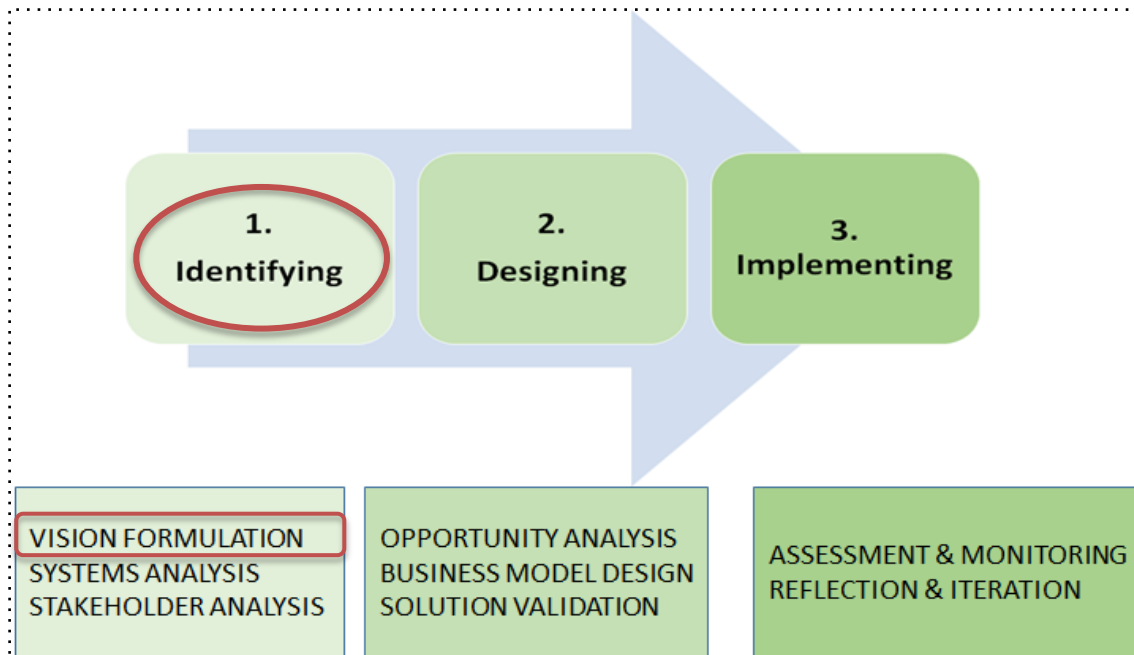
In the first week, we enter into phase 1 of the process: **Identifying**. In this phase we will decide which landscape degradation challenge we wish to address and seek to gain an understanding of why degradation occurs and how stakeholders impact, and are impacted by the problem. This knowledge will put us well placed to unearth potential business opportunities and create effective solutions.

In this week:

● You will **learn** about the following concepts:
   ○ Landscape degradation and restoration
   ○ The role of business models in landscape restoration
   ○ The importance of visions

● We will introduce you to our three **landscapes.** Each of these has encountered different problems related to landscape degradation and formulated innovative solutions by using the approach set out in this course: the power of sustainable business models to successfully restore natural environments. Reading about their projects each week will help you in completing the weekly exercises.
   ○ The Hekluskógar Restoration Project in Iceland
   ○ Crop Diversification in Spain
   ○ The CAuSA project in Portugal

● You will **get active** in the **week 1 exercise** by (see the exercise instructions on Coursera in week 1 for further details):
   ○ Finding a group
   ○ Choosing a land degradation challenge
   ○ Formulating a vision and key question

THIS WEEK'S CONCEPTS

Landscape degradation and restoration

Landscapes are heterogeneous geographic areas characterized by diverse interacting elements. Landscapes include physical elements or landforms, living elements, and human elements like different forms of land use. Landscapes thus combine the physical and biotic elements with the social and cultural overlay of human presence.
Healthy landscapes provide a wide range of ecosystem goods and services, such as food, fiber, fuel, access to freshwater, habitats for biodiversity, space for recreation and living, the cycling of soil nutrients, and carbon storage. Land that is managed sustainably is an important natural asset for economic growth and social prosperity.

Land degradation is part of the challenges addressed by the 17 Sustainable Development Goals (SDG), a shared blueprint developed by the United Nations and numerous countries. In particular, SDG 15 'Life on Land' deals with stopping and reversing land degradation. Land degradation describes a decline in the quality of terrestrial ecosystems and reduced functioning of vital ecosystem processes, such as carbon, nutrient and water cycling. Less functioning ecosystems are less capable of providing the goods and services we humans rely on for our livelihoods, such as food production, provision of freshwater and medicinal resources, regulation of climate and prevention of floods. Land degradation is a pervasive, systemic phenomenon that can take many forms, severely impacting nature, human well-being and societies as a whole.

Human overexploitation and mismanagement of Earth's natural resources risks the health and productivity of Earth's ecosystems. This affects not only the environment but also our economy and social structure, threatening our livelihood and well-being. It is therefore urgent to reverse land degradation if we are to secure our existence on Earth. Market prices for land—its financial value—are generally based on its direct productive potential (for example, the market value/actual retail price of timber, crops, etc.). These prices, however, often do not accurately reflect the total economic value of land, which also includes the four categories of ecosystems services that land provides (provisioning, supporting, regulating and cultural). When these additional values are factored in, the value of land can increase sharply. Studies show, for example, that when these values are taken into account, the global cost of land degradation reaches about US$ 490 billion per year, much higher than the cost of action to prevent it.

Land restoration is the process of assisting the recovery of an ecosystem that has been degraded. Restoration seeks to re-establish the pre-existing ecological structure, functions and services provided by an ecosystem. Landscape restoration consists of the interventions needed to restore multiple ecological, economic and social functions across a landscape. It is about restoring and generating a range of ecosystem services for multiple stakeholder groups. It involves improving the productivity and capacity of landscapes to meet the diverse needs of society.

The urgency of addressing this challenge is increasingly acknowledged by governments worldwide. Yet, building a world that is land degradation *neutral* will require the support of businesses to reverse this negative trend and scale up *sustainable land management*. There are huge

opportunities worldwide that could be leveraged by companies and society as a whole. As much as 2 billion hectares of degraded land have the potential for restoration.

A sustainable business model approach

There are many examples of human impact leading to land degradation with severe consequences for the environment, for ecosystem services and for human well-being in general. Likewise, business can be directly affected by land degradation through decreasing income from a degraded landscape, or indirectly because of increased conflict over resources and market demands for sustainable production. Businesses, through their operations, impact land and depend on land according to their business model. Engaging in landscape restoration can in fact be an opportunity for companies to ensure sustainable and environmentally sound production and value chains. These are all incentives for business model innovation.

A *business model* is essentially a description of how an organisation creates value, delivers value and captures value for itself and its stakeholders. A *sustainable business model* explicitly seeks to capture economic, social and environmental value and creates a fair distribution of costs and benefits across stakeholders. It is suitable for the socio-ecological system in which it is embedded, taking into account the needs, priorities and vulnerabilities of all stakeholders. It may also actively seek to tackle a sustainability challenge of society, such as land degradation!

To create a new sustainable business model, we go through a *business model innovation* process. In order to develop innovative business models for landscape restoration, companies have to take four different licenses into account: a license to exist, license to operate, license to scale and license to experiment. These licenses are related to the four types of return on investment that are central to the ENABLE formula and that this course helps you to identify, elaborate and implement: (1) return of inspiration and the returns of (2) social, (3) natural and (4) financial capital.

Business model innovation takes place in three phases: identifying, designing and implementing. The first phase starts with a vision.

Starting with a vision

Sustainable business model innovation starts with a formulation of a new *vision*. Being clear about why a new sustainable business model is desired and clarifying the goals of the process helps you to orient your thinking of innovative solutions. It also helps you to start considering what business opportunities may be available. Making this vision explicit as a team will minimise the risk of people having different expectations or working towards a different outcome.

Working towards sustainable development at the landscape scale often means looking beyond the scope of a single business, sector and stakeholder group to meet the needs of diverse stakeholders and (business) sectors.

Integrated landscape management, or taking a landscape approach, is a term used to describe a multi-stakeholder approach to landscape management. The level of cooperation within this approach varies from information sharing and consultation to more formal models, with shared decision-making and joint implementation.

We may wish to extend our shared vision beyond our immediate team, and create one with all the stakeholders of a landscape. This can be done a little later in the process, once stakeholders have been identified and contacted.

KNOWLEDGE BOX

A **vision** is a statement about what an organization wants to achieve in the future. A vision is different to a mission statement in that a mission focuses on the organization's purpose, and the vision describes a desired future state if the organization fulfils its mission.

A good vision statement is short, clear, realistic, related to the organization's purpose and future focused.

INTRODUCTION TO THE THREE LANDSCAPES

1. The Hekluskógar Restoration Project in Iceland

*How restoration of birch woodlands can deliver multiple ecosystem services
and improve resilience against volcanic eruptions*

The researchers, scientists and practitioners who present the project to you.

Berglind Orradóttir is Deputy Director of the United Nations University Land Restoration Training Programme (UNU-LRT), which assists strengthening institutional capacity in developing countries to combat land degradation and restore degraded land. She is also Assistant Professor at the Agricultural University of Iceland. She has conducted and is involved in research on the influence of disturbances on abiotic ecosystem processes, and on restoration of ecosystem processes on severely eroded land.

Dr. Isabel C. Barrio is an Associate Professor at the Agricultural University of Iceland, where she teaches a course on rangeland ecology and management. Isabel is also teaching and supervising fellows at the United Nations University Land Restoration Training Programme (UNU-LRT). Her research interests relate to plant-herbivore interactions in tundra ecosystems, and her research in Iceland focuses on the impacts of sheep grazing on common highland ranges, a main land use in Iceland.

Description

Iceland is well known for its volcanoes, and Mt. Hekla is one of the most active ones. At the base of this majestic volcano extend the southern lowlands of Iceland, an area that once was covered with lush birch woodlands. Unsustainable human land use in the area, together with the harsh climate and recurring volcanic eruptions, led to extensive ecosystem degradation, reduced resilience of the ecosystem and large-scale soil erosion. The Hekluskógar woodlands restoration project is an ambitious large-scale restoration project, covering approximately 1% of Iceland (90,000 ha).

Short history

Before humans first settled in Iceland in the 9th century, native birch woodlands covered about one-fourth of the island. With human settlement, extensive wood cutting, and livestock grazing most of the woodlands disappeared, leaving only 1.5% of land covered with birch woodlands. In combination with harsh environmental conditions, the landscape was drastically changed and the resilience of the ecosystem heavily reduced. This is also the story of the Hekluskógar area, the lowlands surrounding Mt. Hekla. When the land was covered with birch woodlands, tephra - the ashes and other particles emitted by the volcanoes - settled quickly and was kept in place within the woodlands. With the disappearance of the woodlands and deterioration of vegetation, production potential plummeted and the resilience of the land to tephra deposition following eruptions was reduced. The Soil Conservation Service of Iceland, in a joint effort with multiple stakeholders including landowners, NGOs, governmental entities and businesses, has made it its task to restore the woodlands of the Hekluskógar area since 2005.

Image 1 - The areas surrounding Mt Hekla (the snow-covered mountain in the centre) used to be covered by lush birch forests that could cope with the tephra deposition after volcanic eruptions. Unsustainable land use, together with harsh environmental conditions, have reduced the resilience of the ecosystem and the associated ecosystem services. Restoration efforts in the area are trying to bring them back ([©] Berglind Orradottir).

Image 2 - "Hekluskógar is an ambitious project, but we are confident we can bring these barren lands back to the healthy birch forests they used to be" Hrönn Guðmundsdóttir, project manager of the Hekluskógar project ([©] UNU-LRT).

1. **The landscape degradation challenge we are seeking to tackle is:**
Large-scale soil erosion in a barren lowland ecosystem that collapsed due to extensive wood cutting, livestock grazing, harsh climate and recurring volcanic eruptions. In this environment, the volcanic ashes and loose surface materials are easily blown around or washed away and cause further damage to the vegetation.

2. **We want to work on this challenge because:**
It provides environmental, social and economic benefits.

The main **environmental value** is restoring a functional ecosystem with all the ecosystem services that come with it, such as carbon capture in vegetation and soils that help mitigate climate change, restoration of biodiversity, better quantity and quality of water resources, and higher resilience to natural disasters such as volcanic eruptions that occur relatively frequently.
The **social values** include a healthier environment that provides better air quality, increased availability of shelter from the strong winds and opportunities for job creation.
Economically, we want to work on this challenge because better conditions of the land increase land use options for landowners and other stakeholders. There is high potential of carbon offsetting for businesses as well as opportunities to show social and environmental responsibility by contributing to the project.

3. **Our vision for this socio-ecological system is:**
Within 30-50 years we envision ecologically functional landscapes with high resilience to natural disasters and carbon offsetting while protecting biodiversity. We envision also multiple benefits from other ecosystem services, such as diverse biomass production that can be sustainably utilized for various business actions, as well as eco-tourism and recreation opportunities.

4. **Our key question that enables us to work towards our vision:**
How can we restore functional ecosystems on heavily degraded lands so that the area delivers multiple ecosystem services and regains its resilience to the frequent natural disturbances?

2. Crop Diversification and low input farming in south-eastern Spain

How crop diversification and low input farming contribute to landscape restoration and economic viability of agriculture.

The researchers, scientists and practitioners who present the project to you

Dr. Carolina Boix-Fayos is a senior scientist at the Spanish National Research Council (CEBAS-CSIC). She studies processes of land degradation and the effectiveness of landscape restoration, considering geomorphological processes at different spatial scales, interactions between fluxes of water, sediments, and organic carbon, and the impacts of land use change, sustainable soil and water management, and crop diversification.

Dr. Joris de Vente is a senior researcher at the Spanish National Research Council (CEBAS-CSIC), where he advances interdisciplinary research on environmental change and Sustainable Land Management (SLM) from local to regional scales. He works on applied research in the context of climate change (adaptation and mitigation) and land degradation (prevention and restoration) in close collaboration with stakeholders. He studies SLM to increase water security and ecosystems resilience to land degradation and climate change and other ecosystem services.

Description

Centuries of human impact on the fragile socio-ecosystems of rural areas in south-eastern Spain have resulted in severely degraded landscapes with a strongly reduced production potential and frequently returning devastating floods, which provoke damage to fields, infrastructure, and even to loss of lives. To reverse this negative trend, we propose diversification of cropping systems to achieve landscape restoration, increasing the resilience, sustainability, and economic viability of agriculture and rural development.

Short history

Thousands of years of human occupation in south-eastern Spain have strongly influenced the landscape. Due to unsustainable land use practices and harsh environmental conditions, human occupation has resulted in strongly degraded and unproductive landscapes that are frequently affected by droughts and floods. People who depend on agriculture for their income are leaving the unproductive landscapes behind to look for opportunities elsewhere in the cities. One of main causes of current land degradation comes from the use of large-scale monocultures, in which the same crop type is produced every year. This results in a loss of biodiversity, soil quality and crop yields, contamination and overexploitation of scarce ground and surface water resources, reduced drought resilience, and increased frequency and severity of floods.

Image 3 - Severe soil erosion features in a monoculture of rainfed cereals (southern Spain; © J. de Vente)

Image 4 -Severe soil erosion features in irrigated horticulture (southern Spain; © J. de Vente).

Image 5 - Runoff and erosion in an olive monoculture (southern Spain; © J. de Vente).

Image 6 - View of the Valdeinfierno reservoir (south-eastern Spain) that lost most of its storage capacity due to soil erosion and siltation (© J. de Vente).

The idea is that diversified cropping systems and low input farming instead of monocultures with high inputs, can contribute to prevent further land degradation, restore degraded landscapes, and increase farm income by creating more outputs in a system that is less sensitive to harvest failure. There is, however, still a lot unknown about how best to achieve optimal benefits from crop diversification and low input farming.

Therefore, in the European funded [DIVERFARMING](link) research project, 25 European research and business partners explore how diversified cropping systems can increase the delivery of ecosystem services while maintaining or increasing economic benefits. At the Spanish National Research Council we participate in this effort by evaluating crop diversification and low input farming under semiarid climate conditions.

Alfonso Chico de Guzman (farmer at la Junquera farm):
Using multiple crops has many advantages for my farm; I create more income from different crops and become less sensitive to crop failure. Besides, combining crops like aromatics with almonds and incorporating beekeeping in my farm will provide better pollination of my almonds and produce honey!

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1. The landscape degradation challenge we are seeking to tackle is:
Loss of soil quality, biodiversity, and vegetation cover, contamination and overexploitation of water resources, leading to reduced crop yields, reduced resilience to climate extremes (droughts and floods), and increased damage to infrastructures.

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2. We want to work on this challenge because:
The degraded landscapes negatively affect society as a whole and the sustainability of the agriculture sector in particular. Restoration through diversification of cropping systems and low input farming will provide environmental, economic and social benefits and provide a great opportunity for sustainable development of rural areas.

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3. Our vision for this socio-ecological system:
We foresee a diversified and revitalized rural landscape in which natural areas and agriculture co-exist and different crops are combined on the fields, making the landscape more attractive for other economic activities, including recreation and education, and more resilient to climate extremes of drought and extreme rainfall.

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4. Our key question that enables us to work towards our vision:
Why are monocultures so widely applied in the area and what are the main benefits and thresholds for diversifying cropping systems?

3. Forest Fires in Portugal

How shelters designed from burnt wood can support sustainable agriculture in areas struck by forest fires

The scientists and practitioners who present the project to you

Renato Rosa is Assistant Professor at Nova School of Business and Economics. *"The time has* come *for the national forces to work together tackling this issue".*

Afonso Almeida Fernandes is architect and founder of CAuSA

Description

On 15 October 2017, 250,000 hectares of forest were burnt in a huge forest fire in Portugal. Although climate conditions (long, hot and dry summers) favour large fires in Portugal, it is not the only or even main driver of the number of fires and disproportionately large burnt areas. In the context of this workbook we discuss the problem of forest fires and study an existing project called CAuSA using some of the frameworks we will learn. Project CAuSA strives to bring small farmers together, who will work towards sustainable agriculture, a condition to prevent future large-scale fires.

Short history

The 1950s and 1960s marked the beginning of seasonal large forest fires in Portugal, resulting from the migration from the mountain regions and progressive abandonment of forest-related activities, closely connected to the decadence of agricultural activity. Forests were no longer managed, bush was no longer cleared, and firewood was no longer used as a source of energy, leading to the accumulation of biomass in forests. The social and economic changes that took place, as well as a consequent shift in habits and customs, provoked a profound change in the relationship between local communities and the surrounding forests. A relationship that was once close, balanced and interconnected slowly ceased to exist, thus paving the way for large forest fires.

Image 7 - The devastating force of the fire in 2017

Image 8 -Burnt down shelters

After the large forest fire in 2017, 20,000 farmers living from subsistence agriculture lost their cultivations and 1500 houses were destroyed. Afonso Almeida Fernandes, a Portuguese architect willing to help the affected populations, developed a simple solution to accelerate and restart these disrupted lives. Based on his technical knowledge, he redesigned shelters, traditionally used for storing and preparing animals and tools, using burnt wood. Offered to these farmers at a lower cost, they may trigger agricultural activities and bring farmers back to the land. The shelter is part of a holistic transformation of local agricultural systems called CAuSA, integrating the different farmers into more sustainable forms of agriculture for the region.

Image 9 - The construction of a new shelter

1. **The landscape degradation challenge we are seeking to tackle is:**
Forest fires contribute to a loss of soil quality, biodiversity, and vegetation cover and contaminate water resources, leading to reduced crop yields and damage to infrastructures.
CAuSA targets part of the affected population by rebuilding the destroyed shelters.

2. **We want to work on this challenge because:**
The fires negatively affect society, economy and ecology across the board. It is essential for present and future generations to raise awareness about the problem and to encourage entrepreneurial solutions tackling and preventing forest fires.

3. **Our vision for this socio-ecological system is:**
A safe, diversified, and revitalized rural landscape in which natural areas and agriculture co-exist, and attract populations to settle is crucial to prevent forest fires.

4. **Our key question that enables us to work towards our vision:**
To prevent future events we must understand what the right incentives are that bring the different stakeholders together.

WEEK 1 GLOSSARY

★ **Business model**

A business model is a description of how a company creates, delivers and captures value. It describes aspects such as what resources are needed to carry out those activities, how these are converted into value, and what the impacts of the activities on stakeholders are. In its earlier conception, business models mainly focused on the creation of economic value. A sustainable business model includes economic, social and environmental value considerations.

★ **Business model innovation**

Business model innovation is the process of transforming businesses through an iterative process consisting of three phases: identifying, designing and implementing. Business model innovation starts from a new vision, takes a systems approach, involves the right stakeholders, develops and implements new opportunities for these stakeholders and creates and captures shared value as well as benefits for the company. Such innovative business models make investing in land restoration more attractive for both public and private partners. In this way, business model innovation not only contributes to business transformation but also to a shift towards more sustainable and resilient economies and societies, including healthy ecosystems and landscapes.

★ **Landscape approach**

A conceptual framework whereby stakeholders in a landscape aim to reconcile competing social, economic and environmental objectives. It seeks to move away from the often-unsustainable sectoral approach to land management. A landscape approach aims to ensure the realisation of local level needs and action (i.e. the interests of different stakeholders within the landscape), while also considering goals and outcomes important to stakeholders outside the landscape, such as national governments or the international community. A landscape approach may be undertaken by one or more stakeholders who engage in actions independently, or by multiple actors as part of a collaborative, multi-stakeholder process. This multi-stakeholder process is referred to as integrated landscape management.

★ **Integrated landscape management**

Integrated landscape management is a term used to describe a multi-stakeholder approach to landscape management. Finding the most appropriate level of cooperation is an important part of integrated landscape management. The governance structure, size and scope, and the number and type of stakeholders involved (for instance the private sector, civil society, government) in developing a **shared vision** as part of the landscape approach vary.

★ **Land degradation**

Land degradation refers to a decline in the quality of terrestrial ecosystems and reduced functioning of key ecosystem processes (energy, nutrient and water cycles). Less functioning ecosystems are less capable of providing the goods and services we humans rely on for our livelihoods, such as food production, provision of freshwater and medicinal resources, regulation of climate and prevention of floods. Land degradation is a pervasive, systemic phenomenon that can take many forms, severely impacting nature, human well-being and societies as a whole.

★ **Land Degradation Neutrality**

The United Nations Convention to Combat Desertification (UNCCD) defined Land Degradation Neutrality as: 'a state whereby the amount and quality of land resources, necessary to support ecosystem functions and services and enhance food security, remains stable or increases within

specified temporal and spatial scales and ecosystems'. Target 15.3 of the United Nations Sustainable Development Goals aims, by 2030, to combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world.

★ **Landscapes**

There are multiple definitions of the term 'landscapes'. In this MOOC we understand landscapes as heterogeneous geographic areas characterized by diverse interacting elements. Landscapes include physical elements or landforms, living elements, and human elements like different forms of land use. They thus combine the physical and biotic elements with the social and cultural overlay of human presence. Healthy landscapes provide a wide range of ecosystem goods and services, such as food, fibre, fuel, access to freshwater, habitats for biodiversity, space for recreation and living, the cycling of soil nutrients, and carbon storage. Land that is managed sustainably is an important natural asset for economic growth and social prosperity.

★ **Landscape restoration**

Landscape restoration refers to the process of assisting the recovery of an ecosystem that has been degraded (adapted from the Society for Ecological Restoration, www.ser.org). Restoration seeks to re-establish the pre-existing ecological structure, functions and services provided by an ecosystem. In time, the ecological processes and functions of the restored habitat will closely match those of the original habitat. Landscape restoration consists of the interventions needed to restore multiple ecological, economic and social functions across a landscape. It is about restoring and generating a range of ecosystem services for multiple stakeholder groups. It involves improving the productivity and capacity of landscapes to meet the diverse needs of society.

★ **Landscape restoration partnership**

Landscape restoration may be undertaken by one or more stakeholders who engage in actions independently, or by multiple actors as part of a collaborative, multi-stakeholder process. This multi-stakeholder partnership with public-private-civic parties can be referred to as landscape restoration partnership, meaning a collaboration between (representatives of) the main stakeholders at the landscape level, who have developed a common understanding and vision regarding the sustainable restoration of the landscape.

★ **License needed to break through a passive use of the SDGs**

In order to develop innovative business models for landscape restoration, companies have to take four different licenses into account: a license to exist, license to operate, license to scale and license to experiment. These licenses are related to the four types of return on investment that are central to the ENABLE formula and that this course helps you to identify, elaborate and implement: (1) return of inspiration and the returns of (2) social, (3) natural and (4) financial capital.

★ **Social-ecological system**

Social-ecological systems are complex arrangements of social and environmental factors and actors. A social-ecological system comprises multiple living and non-living elements that interact to produce a pattern of behaviour. The elements have interconnections that hold them together, and ultimately determine how the system behaves.

★ **Sustainable Land Management**

Sustainable Land Management (SLM) is closely related to land restoration and refers to integrated management of soil, water and biodiversity to adequately maintain and improve ecosystem services for present and future generations. SLM represents a holistic approach to achieving long-term

productive ecosystems by integrating biophysical, socio-cultural and economic needs and values, and forms one of the main mechanisms to achieve Land Degradation Neutrality (LDN).

★ Sustainable Development Goals

The United Nations together with numerous nations developed 17 Sustainable Development Goals (SDG), a shared blueprint for social, environmental and economic prosperity for people and planet. In particular SDG 15 - 'Life on Land' - deals with stopping and reversing land degradation. For more information on SDG 15: **https://sustainabledevelopment.un.org/sdg15**

★ Vision

A *vision* is a statement about what an organization wants to achieve in the future. A vision is different to a mission statement in that a mission focuses on the organization's purpose, and the vision describes a desired future state if the organization fulfils its mission.

★ 4 returns approach

The 4 returns approach assesses a business model not only through financial returns, but also considers the return of inspiration, social capital and environmental capital (see www.commonland.com). The four returns framework is more elaborately described in week 7.

PHASE 1 IDENTIFYING
WEEK 2 SYSTEMS ANALYSIS
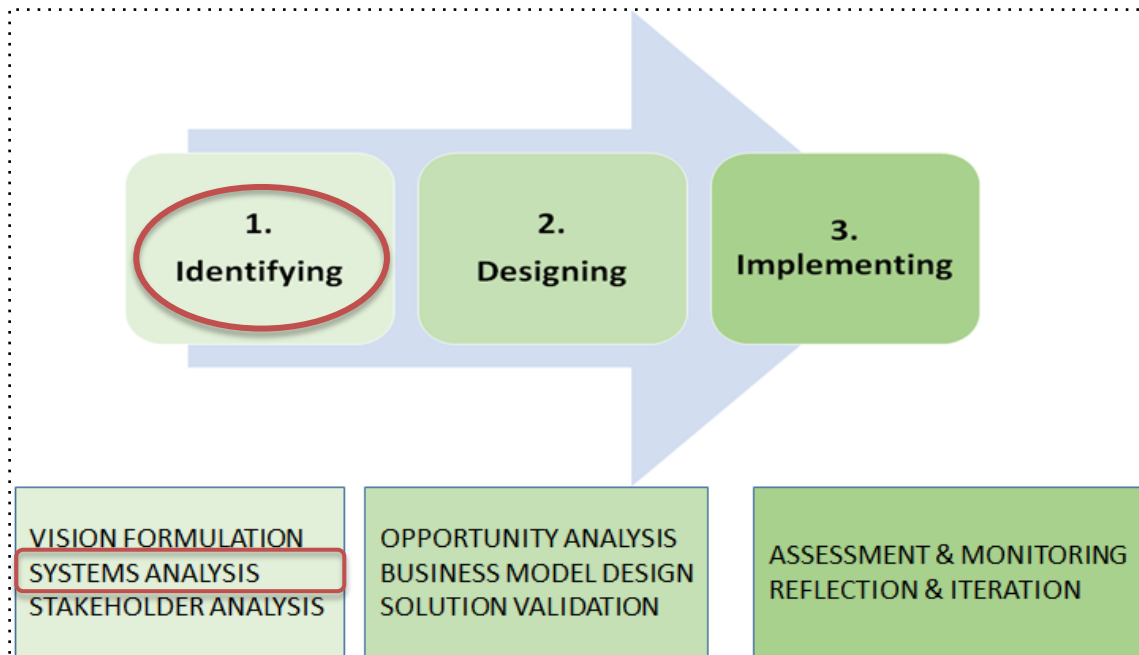
In this week:

- You will **learn** about the following **concepts**:
  - Importance of systems thinking
  - Conducting a systems analysis

- You will read about the **application of concepts in practice** in two of our landscape examples:
  - How does the current land use lead to land degradation and how can diversified crop systems help in Spain?
  - How did unsustainable land use, combined with harsh climate and volcanic eruptions, change parts of the natural system in Iceland and how can restoration of birch woodlands improve the resilience of the system?
    Reading about their projects will help you in completing the weekly exercises!

- You will **get active** in the **week 2 exercise** by (see the exercise instructions on Coursera in week 2 for further details):
  - Identifying boundaries
  - Identifying key factors
  - Creating a system map
  - Constructing a central narrative
  - Determining points of intervention to solve your selected landscape degradation challenge

THIS WEEK'S CONCEPTS

The importance of systems thinking

Many of today's solutions to sustainability challenges are formed from what we observe happening. To use a classic example, we may observe a hungry person and decide to give them a fish to eat. This may solve the problem in the short-term, but it may not stop the person from being hungry the next day. It may also lead to unintended consequences, such as the person becoming dependent upon aid to eat.

In recognition of this, we may try to first analyse the underlying patterns of behaviour that have caused what we observe before formulating a solution. In our example, we may consider that the person is always hungry because the person lacks the equipment and skills to fish. Our solution then is to provide the person these resources in order to catch fish for themselves. This seems like a better solution, but will it enable the person to always have food in the long-term? This will depend on if there will always be fish available in the water source.

To understand the long term abundance of the fish stocks, we need to gain an appreciation of how the **socio-ecological system** works and how its parts are related. We need to consider questions such as: How many fish are currently in the water source? What else determines the number of fish in the water source? Is the quality of the water source improving or degrading? What are the vulnerabilities of the water source (how could it be disturbed)? Who else depends on the fish as their food?

When answered, these questions provide a systems understanding. The person will know how much fish they can extract from water source each week without compromising the long term survival of the fish stocks. The person will also understand the most appropriate fishing technique for the needs of the socio-ecological system. For instance, they may understand that dynamite fishing might not be an ideal method because it disturbs the breeding grounds for new fish to be born.

Our person can then form a business model based on this understanding if they wish to sell the fish they catch. For instance, could they gain a price premium from customers that care about ecologically friendly or restorative fishing practices? Could they obtain a certificate to gain legitimacy with the customer?

KNOWLEDGE BOX

A **system** is a set of interconnected **elements** with a certain function that create their own pattern of behaviour. This pattern may produce desirable outcomes, such as fresh produce for consumption, and outcomes not intended by the actors of the system, such as social erosion or excessive amounts of nutrients entering into water systems.

What is a systems analysis?

A social-ecological system comprises of multiple living and non-living elements that interact to produce a pattern of behaviour. The elements have *interconnections* that hold them together, and ultimately determine how the system behaves. For instance, a football team has players, coaches, opposition, a ball and a field. How these elements interact will determine if the team wins or loses, if the team has fun, if the players get good exercise and how the field is being maintained.

An analysis of social-ecological systems seeks to gain clarity of these interactions to understand why the system behaves like it does. Based on this understanding we are then in a position to consider how to best intervene to make it behave differently.

KNOWLEDGE BOX

Elements: Systems are comprised of elements that can be either tangible, such as buildings, forests, and people, or intangible such as culture or knowledge.

Stocks: Stocks are the accumulation of material or information that has built up over time, such as the stock of fish in a water source or the stock of apple trees in an orchard.

Flows: Material or information that enters or leaves a stock over a period of time, for instance, when a fish is fished it leaves the stock of fish in the water source and moves to the stock of fish held by the fisherperson.

Analysing the system at this early stage helps us to avoid creating solutions that do not address the root of the problem, or may cause unintended consequences. In our earlier example, providing the person a fish to eat may lead to aid dependency, while teaching all persons to fish may lead to quick depletion of fish in the water source.

We may also be able to uncover points in the system which we believe we can focus on to build new solutions - these are known as *intervention points*. At these intervention points, we believe that the systems is in some way open to change and potential solutions may have a positive impact on changing the way the system behaves.

Creating a system map

One way to analyse a socio-ecological system is to create cause and effect *system maps*. Here, we consider the most important factors that influence the behaviour of the social-ecological system and try to understand how they are interconnected.

Any system map will be a simplification of reality. You will need to find a balance between the level of complexity needed to gain a thorough understanding of why we are observing landscape degradation, and simplicity to be useful for understanding and use.

As the whole world is conceivably connected, it is important that we consider the setting of (space) boundaries to make our system mapping feasible. This can be delicate as too broad a scope makes the system difficult to understand, while a too narrow scope may exclude important factors. Options to set boundaries include: using administrative boundaries or a watershed of a watercourse.

SYSTEMS ANALYSIS IN PRACTICE

1. Crop Diversification and low input farming in south-eastern Spain

**Understanding how monocultures cause land degradation with
multiple environmental and economic impacts**

1. Our system boundaries

Our evaluation focuses on south-eastern Spain, especially the autonomous region of Murcia, characterised by strongly degraded landscapes with monocultures of rainfed agriculture under semiarid Mediterranean climate conditions and environmental conditions favourable for soil erosion.

2. Key factors of how the system functions

Traditional rainfed farming in south-eastern Spain consists mainly of almonds, olives and cereals. With irrigation, you can find fruit trees, like orange and peach trees, and horticulture with lettuce and broccoli for example. These land use systems have in common that they are frequently ploughed monocultures. Especially the irrigated systems strongly depend on fertilizers and other agrochemicals. While the rainfed systems have low productions, are not very profitable, and mostly owned by elderly farmers, most irrigated systems have high economic benefits, and belong to large internationally operating companies.

By frequent ploughing, farmers aim to remove the weeds, reduce competition over soil water, and open the soil to enhance infiltration of rainwater. There is often also a social pressure to keep your field clean from weeds. While these factors are important, excessive ploughing can be damaging since it results in a reduction of soil organic matter content, which is crucial for the soils water holding capacity. A soil with less organic matter will be more sensitive to competition over water resources and to soil erosion, less fertile, and less productive. These degraded soils will require more ploughing, more irrigation and additional use of fertilisers. Due to the soils lower water holding capacity, floods are much more frequent and devastating in degraded landscapes, causing damage to crops, villages and infrastructure like roads and reservoirs.

3. Organizing factors as enablers or inhibitors

Inhibitors	Enablers
● Frequent ploughing ● Loss of vegetation cover ● Runoff and soil erosion ● Loss of soil organic matter ● Reduced yield ● Reduced income ● Social pressure for ploughing	● Social and political awareness of land degradation and climate change ● Grassroots initiatives for regeneration ● Subsidies for sustainable agriculture

Image 10 - Example of a strongly degraded monoculture landscape where frequent ploughing has removed top soil downslope (© Joris de Vente)

Image 11 - Soil erosion and soil saturation after a large rainstorm in a monoculture of cereals (© Joris de Vente)

4. Our system map
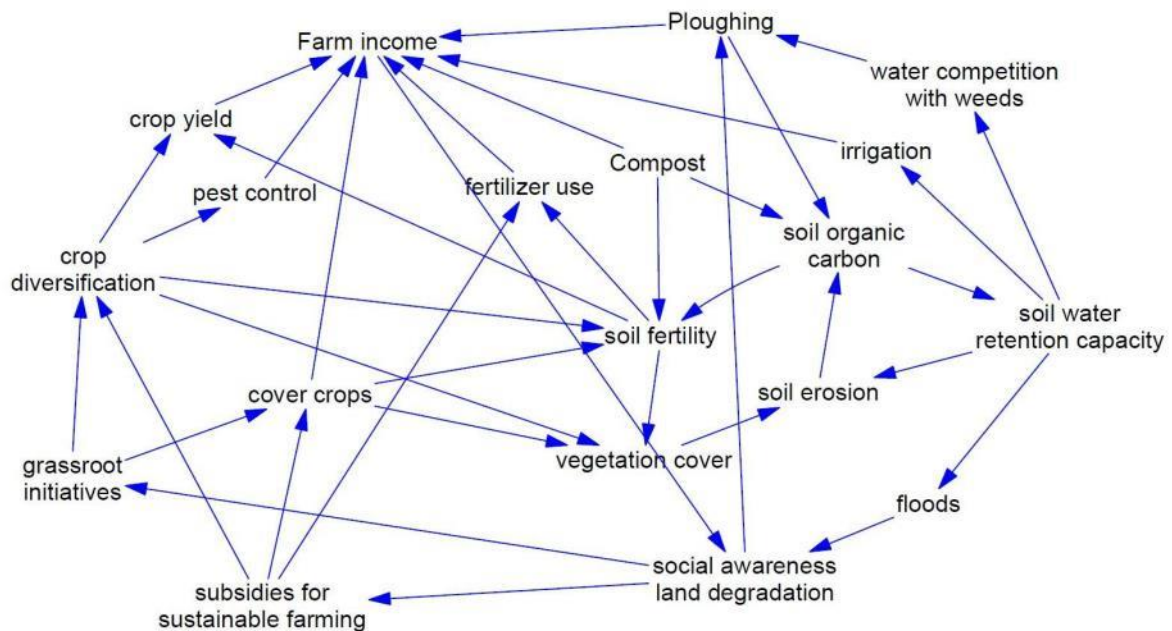
5. Our central narrative

Overexploitation of soil and water resources in frequently ploughed monocultures have resulted in a highly degraded landscape due to a loss of biodiversity, soil fertility and soil organic matter. This results in increased soil erosion processes and further degradation of soil and vegetation, declining crop yields, increased flood frequency, and the need for more input from agrochemicals and more ploughing to prevent competition over water resources. On the other hand, enhancing the soil organic matter content, for example by using compost or increasing the vegetation cover, will lead to higher soil water holding capacity, soil fertility and crop yields, and will contribute to less floods.

6. Critical points of intervention

As we can see in our system map, critical points of intervention include the frequency of ploughing, the use of crop diversification and cover crops. Reducing the ploughing frequency will have an important impact in the system at low cost. Crop diversification and cover crops will help to protect the soil surface from erosion and will provide additional input of organic material to the soils that will help to restore them and increase their water holding capacity. Crop diversification can also lead to increased crop yield and farm income.

Image 12 - Traditional landscape of terraced cereal fields combined with almonds on the terrace ridges (© Joris de Vente)

Carolina Boix-Fayos (Researcher at Spanish National Research Council): "The inputs of organic matter to the soil is strongly related to soil fertility and to the soils physical properties like water retention capacity. Reduced tillage, and the use of cover crops, compost and crop diversification can potentially help increasing the input of organic material to the soil, and could result in a higher water holding capacity, soil fertility, and hopefully also to higher crop yields."

2. The Hekluskógar Restoration Project in Iceland

Understanding that restoration actions need to stop the reinforcing degradation processes to revive/repair the ecosystem processes: the energy, nutrient and water cycles

1. Our system boundaries

The boundaries of our analysis concerning the landscape degradation challenge include the areas surrounding Mt. Hekla, one of Iceland's most active volcanoes. This area has been affected by unsustainable land use that has reduced the resilience of the ecosystems to volcanic eruptions. These areas share key similarities of the landscape and include areas in different stages of degradation. The specific delimitation of the boundaries of the Hekluskógar project includes public and private lands, and specifically excludes land owned by stakeholders that did not want to participate in the project.

2. and 3. Organizing factors as enablers or inhibitors

Inhibitors	Enablers
- Human overexploitation - Traditional land use practices - Some landowners not interested in changing their land use practises - Weak direct, visible economic benefits - Challenging to "sell" the long-term vision of improved ecosystem functions - Wind and water erosion - Harsh climate - Volcanic eruptions with high tephra deposition - Economic downturns/crisis impacting funding	- Strong political support - Strong link to climate actions - Support among local stakeholders - Annual financial support from the national government - Administrative support by governmental agencies - Increasing interest of companies (as part of their social responsibility) - Increasing interest of volunteers that want to participate in the restoration activities in the field - Strong indirect economic benefits - Funding possibilities available - Collaborations between various stakeholder groups within the area - Natural regeneration from planted woodland clusters

Image 13 - Badly degraded land in the Hekluskógar area where erosive forces are very active. The energy, nutrient and water cycles are dysfunctional in this system. Remnants of the birch woodlands are visible in the foothill of the mountain Búrfell (© UNU-LRT).

Image 14 - Land in bad condition is a source of dust which reduces air quality on dry and windy days. Active erosion processes, like wind and water erosion, prevail in those areas and continue to erode the soil and vegetation. This hinders plant establishment and ecosystem recovery (© Berglind Orradottir).

4. Our system map
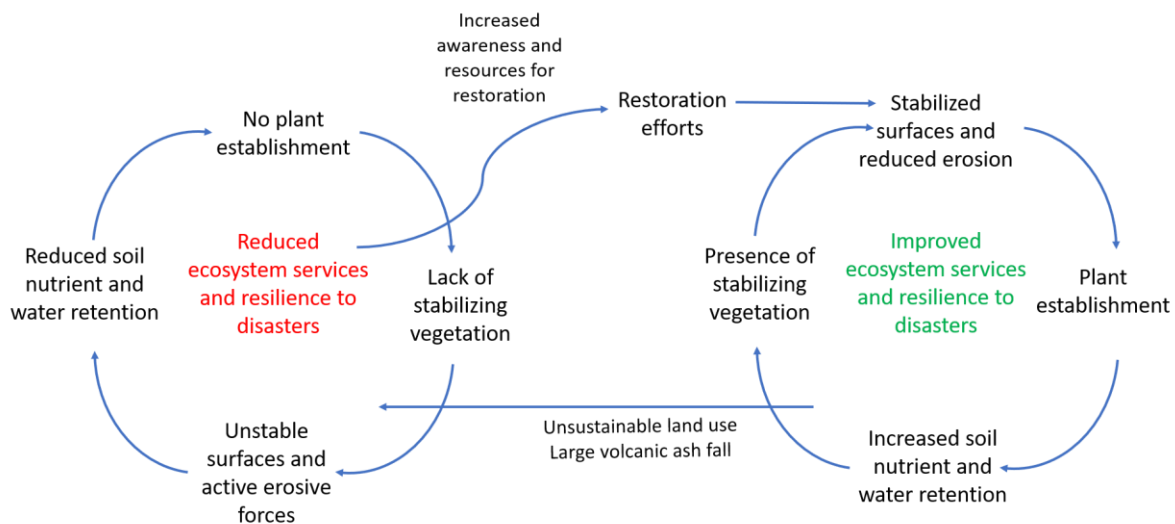
*We include the pre-existing restoration efforts already happening within the landscape in our system map

5. Our central narrative

Unsustainable land use (extensive wood cutting, livestock grazing), the harsh climate and volcanic eruptions have all contributed to severe land degradation in the Southern lowlands of Iceland. The degraded soils have lost their carbon stocks and therefore are no longer able to hold water or nutrients. The soils have lost their fertility. The lack of vegetation hinders energy capture by the plants and thus build-up of new carbon stocks in the soils. This means that the energy, nutrient and water cycles are damaged or dysfunctional and productivity is low.

The degraded ecosystems are therefore no longer able to provide valuable ecosystem services and are more vulnerable to future disturbances. Once vegetation is degraded, active soil erosion processes start to drive the system and drive further degradation. As well, frequent sandstorms and the loss of soil fertility make the area inhospitable.

6. Critical points of intervention

Much of the land in the Hekluskógar area has degraded to an extent that it has lost its capacity for self-repair, and it is locked in a degraded state. The active erosion processes that prevail in the system are barriers to self-recovery. The critical point of intervention in the system is to remove those barriers to natural repair. Active restoration is needed in severely degraded areas, where stabilizing the surfaces helps slowing down active erosion processes and improves resource retention of the ecosystem.

WEEK 2 GLOSSARY

★ **System boundaries:**

Boundaries are limits of the social-ecological system. Setting space boundaries makes system mapping feasible. Defining the boundaries is delicate, as too broad boundaries make the system difficult to understand, while a too narrow boundaries may exclude important factors.

★ **Elements:**

Systems are comprised of elements that can be either tangible, such as buildings, forests, and people, or intangible such as culture or knowledge

★ **Enablers and inhibitors:**

Enablers are factors that support the social-ecological system working as you would like it to work. Inhibitors are factors that prevent the social-ecological system working as you would like it to work.

★ **Flows:**

Flows can be material or information flows that enters or leaves a stock over a period of time. For instance, when a fish is fished it leaves the stock of fish in the water source and moves to the stock of fish held by the fisherperson.

★ **Interconnections:**

Interconnections are links between the elements in a system that hold them together, and ultimately determine how the system behaves.

★ **Intervention points:**

Points in the system which we believe we can focus on to build new solutions. At these points, we believe that the systems is in some way open to change and potential solutions may have a positive impact on changing the way the system behaves.

★ **Social-ecological system:**

Social-ecological systems are complex arrangements of social and environmental factors and actors. A social-ecological system comprises multiple living and non-living elements that interact to produce a pattern of behaviour. The elements have interconnections that hold them together, and ultimately determine how the system behaves.

★ **Stocks:**

Stocks are the accumulation of material or information that has built up over time, such as the stock of fish in a water source or the stock of apple trees in an orchard.

★ **System**

A system is a set of interconnected elements with a certain function that "produces their own pattern of behaviour over time" (Meadows, 2009:2). This pattern may produce desirable outcomes, such as fresh produce for consumption, and outcomes not intended by the actors of the system, such as social erosion or excessive amounts of nutrients entering into water systems.

★ **Systems analysis**

An analysis of social-ecological systems seeks to gain clarity of these interactions to understand why the system behaves like it does. Based on this understanding we are then in a position to consider how to best intervene to make the system behave differently.

★ **System map:**

A system map is a representation of the cause and effect relationships between the elements in a system. System maps include what we believe to be the most important factors that influence the

behaviour of a social-ecological system. System maps are a simplification of reality and need to balance the level of complexity needed to gain a thorough understanding of why we are observing landscape degradation, and simplicity to be useful for understanding and use.

PHASE 1 IDENTIFYING
WEEK 3 STAKEHOLDER ANALYSIS
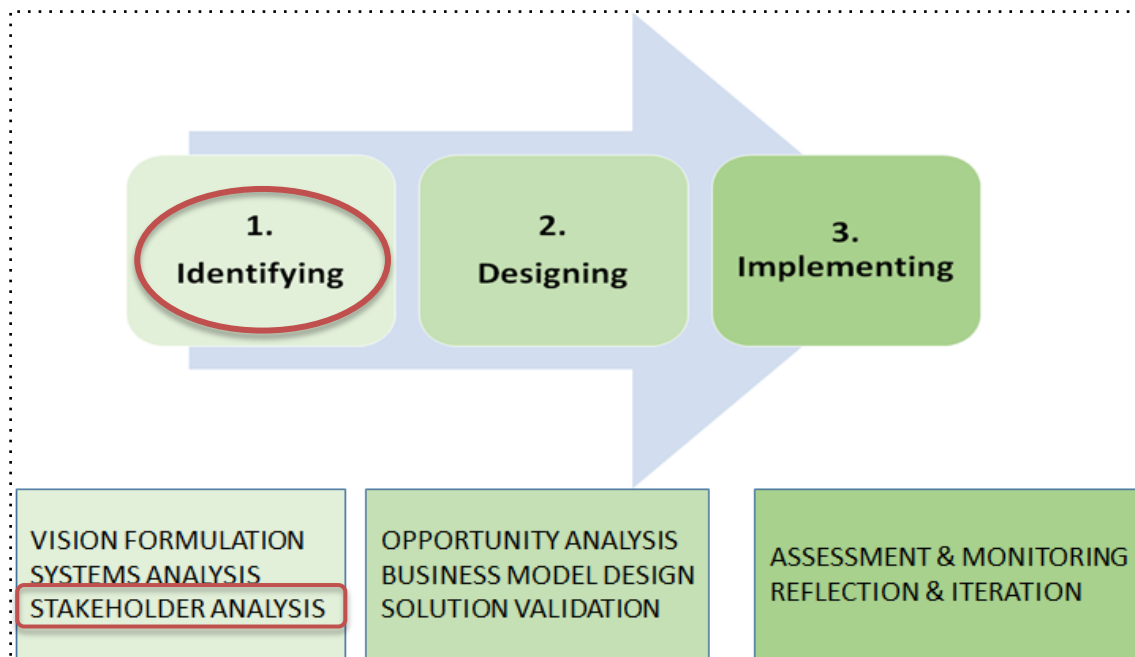
In this week:

- You will **learn** about the following **concepts**:
  - Defining Stakeholders
  - Importance of considering stakeholders
  - Conducting a stakeholder analysis

- You will read about the **application of concepts** in practice in two of our landscape examples:
  - What are the different stakeholders and their dynamic behaviour in addressing the problem of forest fires in Portugal?
  - How are the different stakeholders linked to the landscape and what is their role in the Hekluskógar restoration project?
    Reading about their projects will help you in completing the weekly exercises!

- You will **get active** in the **week 3 exercise** by (see the exercise instructions on Coursera in week 3 for further details):
  - Conducting a stakeholder analysis of your chosen landscape degradation challenge

THIS WEEK'S CONCEPTS

What is a stakeholder?

We can consider a **stakeholder** to be any entity that is affected by, or who can affect, our new business model for landscape restoration. This is a very broad definition that can include many people, groups, and non-human living entities.

Stakeholders can be landowners, local government, local communities, farmers, non-governmental organisations, businesses working on the landscape, tourists, hikers, suppliers of fertilisers, customers of produce made on the landscape…. We can also include nature and animals as stakeholders in their own right.

Why should we consider stakeholders?

Landscapes are places where multiple people and groups in different roles interact with the natural environment and with each other in order to satisfy their specific needs and attain their desired goals. When designing business models for landscape restoration we will need to consider these stakeholders and their interactions. We do this for two main reasons:

Firstly, we will do this from a *normative* basis. It is our moral duty to form a business model that takes into account the legitimate interests of stakeholders, ensures that stakeholders are protected from harm and that benefits that accrue are fairly distributed. For instance, our business model will need to serve the interests of the local community even if they do not have 'power' to stop or impede it.

Secondly, by considering stakeholder interests and creating strong relationships it is easier for our business model to become a success. If stakeholders feel that our business model serves their needs they are likely to support its implementation and offer resources to help its success. Likewise, stakeholders who are capable of impeding the business model will not do so if they feel that their interests are being served. So, there is also a strong *instrumental* reason for involving stakeholders in your new business model.

Conducting a stakeholder analysis

In order to design a business model for landscape restoration that effectively satisfies the needs of stakeholders, we first need to conduct an analysis to understand: Who are our stakeholders, what are their needs and what are the ways in which they can impact our business model?

A **stakeholder analysis** can be performed in many different ways using different tools. We shall consider a five step process:

1. ***Stakeholder Identification***: Can we identify and describe who are the people, groups and entities that have interests in the landscape and a potential new business model?

2. ***Stakeholder relationship with landscape***: What is the nature of the relationship of the entities with the landscape? Do they live on the landscape? Does the landscape provide them with a job?

3. ***Assess 'Stakes' of the 'Holders'***: Based on the relationship each stakeholder has with the landscape, we can determine what might be their interest. For instance, if the landscape provides them a job they may want to retain the job in the long term.

4. ***Stakeholder mapping***: What are the relationships of stakeholders with each other? What are the existing physical, information and monetary flows of the stakeholder network? This step will help reveal to us important dependencies and potential conflicts between people and groups that we will need to account for in our new business model design.

5. ***Stakeholder engagement***: What is the suitability of options for engaging and partnering with stakeholders? For instance, you may wish to assess stakeholders' potential for cooperation or threat. This will help you to understand how to treat each group, and potentially help you to find partners for your business development.

To answer questions of these steps we can conduct desk research, but we can also consider getting out and contacting people. Consider contacting some people or groups that you believe to be stakeholders (or that can represent them). You can ask them if they see themselves as stakeholders and what their interests are regarding the landscape. Also, ask them to identify further people and groups who they believe to be stakeholders of the landscape.

Finally, it's best to see your stakeholder analysis as an iterative process. You will need to return to this analysis once you have a design of your new business model, and when you iterate and pivot this design. For instance, based on your business model design you may identify new stakeholders, or change your ideas on which stakeholders may support or potentially impede it.

STAKEHOLDER ANALYSIS IN PRACTICE

1. Forest Fires in Portugal

The different stakeholders and their dynamic behaviour

Image 15 - Portuguese firefighter

1.   Identify the key stakeholders of your landscape degradation challenge.

Those who live in the villages surrounded by the forest fires, or own the land are the main stakeholders of any project addressing the problem of forest fires. In Portugal, many of these land owners live in urban areas. The paper industry accounts for the management of a significant part of these lands. The Portuguese state is also a main stakeholder. Although it owns only around 3% of this land, it manages the majority of the resources used to combat forest fires.

2.   Evaluate stakeholders' relationship to the landscape degradation challenge.

The village populations and landowners in general suffer severe losses in their own land and infrastructures (houses and/ or agricultural shelters). These are strong emotional and financial losses. In the huge fire in Pedrógão Grande, 64 people died, 250 people were injured, and up to 500 million euros were lost. The central and local governments deal with the different dimensions of the problem and assume most of the reconstruction expenses.

**3.   Assess their stakes/main interest.**

The village populations, specially retired people, have an emotional and financial relationship with these landscapes, where they lived and worked all their lives. Any project addressing the recovery of

the damaged infrastructure or the landscape in general is therefore determinant for their wellbeing. Other landowners, for example non-residents taking some income from their lands, only have a financial relationship with the landscape. The same financial interest leads the relationship of some industries living from these lands (the paper industry for example). The local governments are especially interested to restore the main mean of subsistence for an important part of their population. Some regions also suffer a temporary drop in tourism inflows, which enhances their efforts to revitalize the landscape. Some environmental resources managed by the state are also lost in fires, like water regulation, turning it into a major stakeholder in the process.

4. Identify the main relationships between stakeholders.

There is a strong link among the different stakeholders working in a region affected by forest fires. Driven by emotions, these relationships are often deeply altruistic in a first stage when everything is destroyed, everyone is willing to help. The close relationship between the local governments and the village populations and landowners, for example, is crucial to identify victims, property, and to provide temporary shelters.

These relationships change with time. Evaluating damages and debates about causes and responsibilities usually divides people and weakens the relationship between the populations, landowners and local governments.
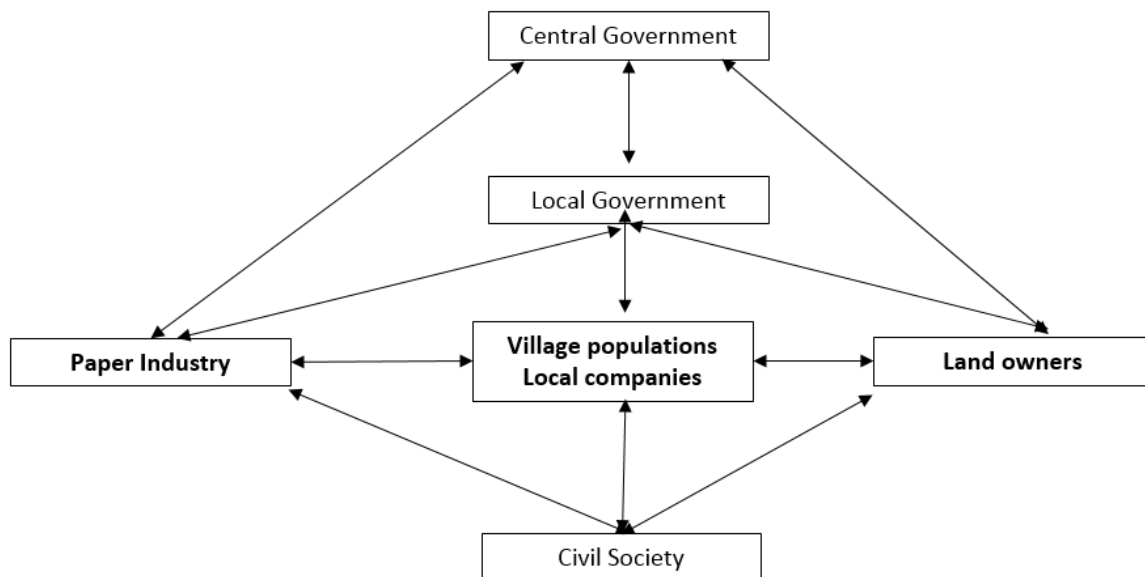
5. Evaluate how these stakeholders could potentially contribute to or block a new business model.

Forest fires destroy the lives of hundreds of people as well as the local community structures, and emotional and socio-economic recovery are determinant in the success of any initiative addressing a long-term solution to the problem.

The village populations, landowners and local companies are usually the main beneficiaries/the most affected in this context, contacting with the fire brigades, local and central governments, and different civil society initiatives that usually reinforce the public aid with donations and labour force. In a first stage, the different stakeholders act together with a same purpose.

In a second stage the dynamics change as we mentioned before, especially when the time comes to evaluate damages. Interests are not always aligned between the government, the populations,

landowners and the local companies. In addition, not all the civil society initiatives are managed well and some of them lack credibility.

In the long-run, the government, the local populations, landowners in general, and the paper industry must align expectations to develop a strong legal framework to prevent future events. The heterogeneity of the landowners, for example, or the management of non-productive lands are some of the challenging aspects to be tackled.

Image 16 - Cooperation between the villagers to rebuild a shelter

2. The Hekluskógar Restoration Project in Iceland

Stakeholders in the Hekluskógar restoration project

1. The key stakeholders of our landscape degradation challenge are:

In such a big area, land degradation affects many people directly or indirectly, so there are many different stakeholders. If we think of the people that live in the area, there are local residents and owners of summer cottages. Some of the local residents are famers who are grouped separately because their interest differs from those of the other residents. We have as well the government and governmental institutions like the Soil Conservation Service of Iceland and the Iceland Forest Service. Then we have the National Power Company of Iceland and local businesses like the tourism enterprises. Finally, there are non-governmental organizations and volunteers.

2. Some examples of stakeholders' relationship to the landscape degradation challenge:

Many of the stakeholders are connected to the land degradation challenge in several ways. For example, if we think of the government, one of their main interests in restoring the area is the potential for damage risk reduction, as restored ecosystems will be more resilient to disasters like future volcanic eruptions. Moreover, the restored ecosystems could bring more tourists and promote local economies and, by strengthening local communities, they would keep more residents in the area. In turn, this means more revenue for the government. On the other hand, farmers and local businesses have economic stakes, as farmers depend on the land to generate income and local businesses depend on customers that need to be attracted to the area. Local residents have social stakes, for instance a feeling of community, and the existence of social ties in the area. All these three stakeholders share a common stake of safety, as restored ecosystems will provide more resilience against natural disasters. Locals also have a stake in the aesthetics of their surroundings. A thriving landscape instead of a barren area contributes to people's well-being.

Image 17 - Many of the stakeholders are connected to the land degradation challenge. Farmers for example depend on the land to generate income. Sheep farmers need land in good condition to graze the animals, but the grazing common has been excluded from grazing because of the poor condition of the land (© Johann Thorsson).

Image 18 - For tourism businesses the area has great potential to attract tourists looking for diverse recreational opportunities and nature exploration. The area also provides opportunities to businesses to carbon-neutralize their activities by binding carbon in vegetation and soils (© Berglind Orradottir).

3. The main interests of some of our stakeholders:

The main interests of the government are the economic viability of the region, reduction damage costs from natural disasters, and reputation. Farmers are interested in ensuring their income, either by using the land in the area, or by abandoning their farms and reorienting somewhere else. Local businesses are interested in guaranteeing their profit, by offering for example outdoor activities and generating revenue from tourism in the area, or by locating somewhere else with better prospects. Finally, local residents want to preserve their communities, but might migrate if the environmental conditions create inacceptable safety risks. They might also move if too many people leave the area or if damage costs get too high.

4. The main relationships between stakeholders.
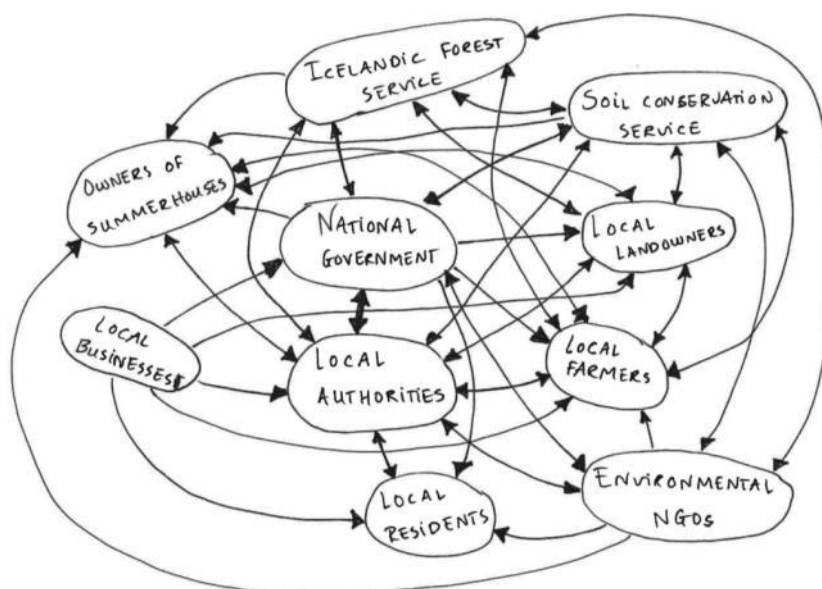
5. **Evaluate how these stakeholders could potentially contribute to or block a new business model:**

Many of the stakeholders can contribute to the success of the Hekluskógar project. For instance, the government, as well as some private companies, provide the main source of funding for the project. Losing these financial contributions, for example during economic downturns could block the new business model.

Some farmers and local residents, and the many volunteers contribute to the project with manpower and their energy. However, this help in making the project possible could be lost if local residents decide to abandon and not return to the area given the current degradation and the little possibilities it has to offer now.

Restoration of the area will definitely benefit farmers but this will happen in the long term -- in the meanwhile some parts of the project area need to be protected from grazing and other uses and this may represent a challenge to some farmers.

Stakeholder analysis of our landscape:

ACTION 1	ACTION 2	ACTION 3	ACTION 4	ACTION 5
Key Stakeholder	Relationship to landscape and its degradation	Main interest of the stakeholder	Main relationships of stakeholders	Potential threat/cooperation
Local landowners	Cultural heritage, landscape degradation in the past, collapsed ecosystem	Increased biomass, recreational opportunities, new business opportunities	Local authorities: rules and regulations, SCSI: cooperation in restoration, IFS: cooperation in planting trees	Not interested or against actions; provide direct and indirect incentives (subsidies/advisory service)
Local farmers	Grazing the landscape during summertime by domestic livestock	Increased biomass to graze domestic livestock	Local land owners: rules and regulations, local authorities, SCSI: limitation of grazing and cooperation in restoration, IFS: limitation of grazing and cooperation in planting trees	Not interested or against actions; provide direct and indirect incentives (subsidies/advisory service)
National governments	Taxes, cultural heritage, disaster risk reduction	Enhanced ecosystem resilience/ ecosystem services such as more woodland cover, water holding capacity, shelter and carbon sequestration	Local land owners: taxes and voting, local farmers: taxes and voting, owners of summer houses: taxes	Not acknowledging the long-term socio-economic values of increased ecosystem resilience nor the multiple economic opportunities that will follow increased ecosystem services; strong and active advocacy and lobbyism
Local authorities	Taxes, cultural heritage, disaster risk reduction	Enhanced ecosystem resilience / ecosystem services such as more woodland cover, water holding capacity, shelter and carbon sequestration	Local land owners: taxes and voting, owners of summer houses: taxes	Not acknowledging the long-term socio-economic values of increased ecosystem resilience nor the multiple economic opportunities that will follow increased ecosystem services; strong and active advocacy and lobbyism

	ACTION 1	ACTION 2	ACTION 3	ACTION 4	ACTION 5
Local business		Depending on their operations, they may be using the land in their business	Carbon sequestration, opportunities to show social and environmental responsibility, improved ecosystem services supporting recreational activities (such as hiking, horse riding, fishing, bird watching / hunting etc)	Local land owners: potential employees, local authorities: rules and regulations	Lack of interest; provide funding through carbon-neutralizing or social-environmental responsibility
Owners of summer houses		Aesthetic, cognitive and emotional ties to the land	Improved shelter, less sand drift, aesthetic values, recreation	Local farmers: grazing rights, local authorities: tax revenue	Lack of interest, don't define themselves as stakeholders; active advocacy and information sharing
National Power Company of Iceland		Use the land for power lines and hydropower stations	Carbon sequestration, opportunities to show social and environmental responsibility	National government: rules and regulations, local authorities: rules and regulations	Active involvement by providing funds and resources
Local residents		Cultural heritage, emotional ties to the land	Improved shelter, less sand drift, aesthetic values, recreation	Local authorities: rules and regulations	Lack of interest, don't define themselves as stakeholders; active advocacy and information sharing
Soil Conservation Service (SCS) (gov.inst)		Restoration of collapsed ecosystem	Enhanced ecosystem resilience / ecosystem services such as enhanced biodiversity of native species, more woodland cover, water holding capacity, shelter and carbon sequestration	National governments: funding, local land owners: cooperation, local farmers: cooperation, local authorities: rules and regulations, IFS: cooperation	Shortage in public fundings, lack of local support; active stakeholder involvement via open and collaborative platforms
Iceland Forest Service (IFS) (gov.inst)		Reforestation of degraded land	Enhanced ecosystem resilience / ecosystem services such as more woodland cover, water holding capacity, shelter and carbon sequestration	National governments: funding, local land owners: cooperation, local farmers: cooperation, local authorities: rules and regulations, SCSI: cooperation	Shortage in public fundings, lack of local support; active stakeholder involvement via open and collaborative platforms

ACTION 1	ACTION 2	ACTION 3	ACTION 4	ACTION 5
Environmental NGOs	Aesthetic, cognitive and emotional ties to the land	Enhanced ecosystem resilience / ecosystem services such as more woodland cover, water holding capacity, shelter and carbon sequestration	National governments: funding, local land owners: volunteers, local authorities: rules and regulations, owners of summer houses: volunteers, SCSI: potential collaboration, IFS: potential collaboration	Potential lack of information sharing and direct involvement to the project; active involvement and direct participation in field work

Week 3 GLOSSARY

★ **Stakeholder:**

A stakeholders is any entity, person or group that is affected by, or who can affect, our new business model for landscape restoration.

★ **Stakeholder analysis:**

A stakeholder analysis is a process to understand: who are our stakeholders, what are their needs and the ways in which they can impact our business model. Stakeholder analysis is a critical step to design a business model for landscape restoration that effectively satisfies the needs of stakeholders. In this MOOC we consider a five step process:

1. *Stakeholder Identification*
2. *Stakeholder relationship with landscape*
3. *Assess 'Stakes' of the 'Holders'*
4. *Stakeholder mapping*
5. *Stakeholder engagement*

PHASE 2 DESIGNING
WEEK 4 CO-CREATION AND OPPORTUNITY ANALYSIS
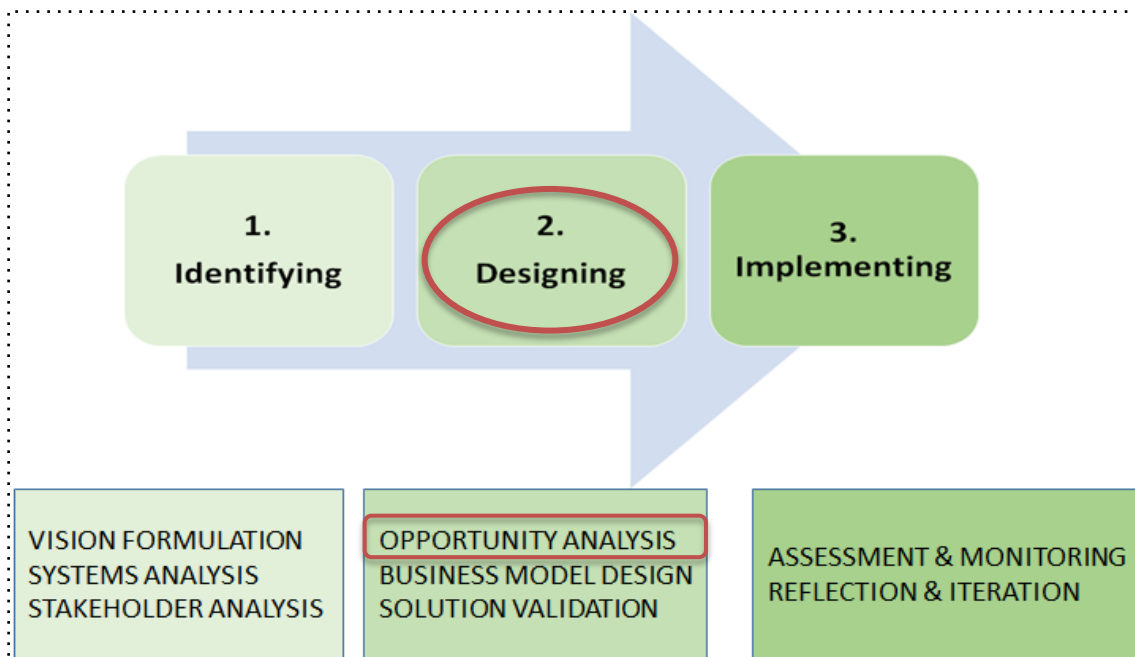
This week we enter into phase 2 of the process: **Designing**. In this phase we move from forming an understanding of the problem and what means we have available, to generating ideas for new business model solutions. Now you will actually start working with your stakeholders to analyse opportunities for value creation based on common goals and commitment.

In this week:

- You will **learn** about the following **concepts**:
  - Co-innovation networks
  - Captured value and destroyed value
  - Brainstorming first business model ideas

- You will read about the **application of concepts** in practice in two of our landscape examples:
  - Why and how did we establish collaboration with stakeholders to select, implement, and evaluate potential solutions for landscape restoration in Spain?
  - How do we involve the multiple and diverse stakeholders in the Hekluskógar project in Iceland?
  Reading about their projects will help you in completing the weekly exercises!

- You will **get active** in the **week 4 exercise** by (see the exercise instructions on Coursera in week 4 for further details):
  - Starting to build your co-innovation network
  - Validate your current understandings
  - Identifying opportunities to add value
  - Generate first business model ideas

THIS WEEK'S CONCEPTS

Building a co-innovation network

To innovate a new business model we want to adopt an open approach, and involve many people. By consciously involving people with different viewpoints and expertise within our innovation process we are able to have many more qualified people work on our business model with us. Their input may improve our ideas and accelerate the process from initial idea to implementation in the marketplace.

'Outsiders' may be a source of ideas, flag up critical problems and give some validation of concepts. Their input will allow us to iteratively test, experiment and enhance our ideas, to quickly learn and develop how our business model could work and be successfully implemented.

Involving a wide range of stakeholders in your business model design helps to identify and meet the interests of different stakeholders within the landscape, while also considering goals and outcomes important to stakeholders outside the landscape, such as national governments or the international community. Effective landscape restoration projects require careful alignment of a wide range of stakeholders, including land owners, academia, civil society, local communities, and the private sector.

To build our *co-innovation network* it is useful to first consider who we already know that could give valuable input to developing a new business model, and then subsequently what new connections we could make. Stakeholders with actual decision making power are likely candidates, as well as stakeholders who we believe would be cooperative to engaging with new business model ideas.

Critically here we want to include persons who may in some way represent possible *customers* and *end-users*. These are the people who would pay for our product/service, and those who may use our product/service. Note that these are not always the same person. For instance, we may develop a recreational service for children (end user) to play on the landscape, but it would be their parents (customers) that would pay for the experience. As such our offering needs to be attractive to both groups. We also need representation of those who are directly or indirectly affected by our new business model.

So, one way or the other, your new business model will start with co-creation. This is often a challenging process and requires careful design of the stakeholder engagement process. While the design of this process needs to be adapted to the local socio-cultural context, there are seven design principles that can help stakeholder processes to be most effective: (1) select participants carefully, (2) make participation attractive and easy, (3) foster trust, (4) provide participants with information and decision making power, (5) use professional independent facilitation of the process, (6) promote long-term commitment and financial support, and (7) adapt language, location, and design to the participants. Although participatory processes will always be challenging, following these recommendations will help you to get the most out of your new business model.

Value captured, destroyed and value opportunity

In the previous week we identified who we believed could be our key stakeholders and worked through what were their respective interests with regards to our selected landscape. We now need to move from this understanding to considering what opportunities there are for adding value to stakeholders.

We can do this by considering the current *pains* and *gains* of the stakeholders. Another way of expressing this is to consider what value is currently being captured and what value is currently being destroyed.

- The *captured value* refers to the gains the respective group is receiving from the status quo. For example, although in a degraded state, does the landscape still generate positive emotions for hikers? Does it still provide the local community with access to cheap milk at a relatively good quality?

- The *destroyed value* refers to the pains the respective group is enduring. We can think about what the stakeholders are losing through the current degradation and what is at stake for them. For instance, are farmers struggling to survive financially as they are suffering diminishing returns due to the soil degradation? Is the abundance of local wildlife suffering because of declines in breeding spots?

Based on our answers to these questions, we can consider what opportunities there may be to add value.

- A *value opportunity* describes a new option of how to create some sort of benefit for the stakeholder. This benefit can be economical, environmental as well as social and may lead to a value proposition for a future business model.

A value opportunity can be found through either by: (1) increasing the current captured value - improving the stakeholders current gain; (2) reducing the destroyed value - reducing the stakeholders' current pain, or ideally (3) transforming value destruction into value creation.

To consider *increasing the current gains* of a stakeholder we can ask questions such as:
- What do they really want to achieve and is the current way the best/easiest way of achieving this? E.g. farmers want a secure financial income and a pleasant living environment.

- What do they really need and can these needs be fulfilled differently? E.g. hikers want a feeling of being in 'nature'.
- What would improve the stakeholders experience with the landscape?
- How would they measure success of improving their gains? E.g. hikers have improved access to a landscape that is not disturbed by human impact.

To consider *decreasing the current pains* of a stakeholder we can ask questions such as:
- What keeps them awake at night worrying? E.g. farmers being uncertain if the land will yield enough crops.
- What risks do they face? E.g. local government face the risk of declining visitor numbers and costs to repairing infrastructure after floods.
- What do they complain about? E.g. hikers complain of lack of access to land.

To consider **transforming value destruction into value creation**, in addition to the questions above, we can ask ourselves:
- How could a company change their product, service, supply chain or monetization strategy such as to create value instead of destroying? E.g. Use non GMO seeds and natural fertilizers only to avoid using chemicals.
- How could stakeholders collaborate such that the negative externalities of one become valuable input for another? E.g. Forest waste as a result from cleaning can be used by companies for biofuel.

Again, here it is critical that we consider the pains and gains of potential customers and end-users. For instance, we could consider hikers potential customers if we are able to increase their gains. We can also consider customers far removed from the landscape. For example, can ecologically conscious customers easily buy 'ecologically restorative' food products?

Brainstorming first business model ideas

Based on our understanding of the opportunities for value creation we can start to formulate our first ideas for new business models. We can brainstorm "How could these value opportunities be fulfilled?"

Our aim here is to come up with as many ideas as possible, so really let your creative juices flow!

There are many different activities that can foster creative thinking in order to find novel and original ideas for business models.

For example, we can start with one key influencing factor that we have identified as crucial for the landscape degradation (week 2). The first person has to say the first word that comes into mind when hearing this word. The next person has to say a word based on the previously said word and so on. This way, you move farther away from the initial key factor and might look at the problem from a different angle.

In another exercise, you can think about how the optimal state would look like and draw the picture that comes into your mind or explain it in detail to your team members. After capturing each other's

vision of the future, think about how it would be possible to reach this particular state of the future. Which changes are required to make it work? Who could help you reach it and how?

TIP BOX
- Brainstorming is all about having **fun** - so keep the atmosphere light and do not judge any of the ideas.
- Reward radical ideas and seek novelty over how realistic you think they may be.
- Revisit the vision you have formulated in week 1.

CO-CREATION AND OPPORTUNITY ANALYSIS IN PRACTICE

1. Crop diversification and low input farming in south-eastern Spain

*Co-creating sustainable land management and landscape restoration solutions
with environmental, social, and economic benefits.*

Joris de Vente (Researcher at the Spanish National Research Council): By using participatory monitoring, in which farmers monitor the effectiveness of Sustainable Land Management and restoration practices themselves, farmers see short-term benefits of restoration. This creates awareness and ownership over the selected solutions. This co-evaluation is fundamental for upscaling and large scale implementation of restoration efforts.

1. Putting together our Co-Innovation Network

To identify effective and feasible opportunities for sustainable land management and landscape restoration, we started a collaboration with key stakeholders in our region in Spain. Based on an initial stakeholder analysis, we identified individuals and groups representing those with interest in restoration, technical knowledge, creative minds, and people with the power to make a difference. Then, we invited a group of individual farmers, farmers' organisations, NGO's, representatives of regional and local administrations, private companies, and scientists to jointly look for opportunities.

2. How we validated our understandings of the problems

With this group of highly motivated people, we started a process to achieve common understanding of the socio-ecological system and the actual land degradation problem, followed by joint selection, implementation, and evaluation of potential solutions to prevent land degradation and restore degraded land. In the first step, we organised a series of stakeholder workshops and interviews to obtain a common understanding of the drivers of land degradation in traditional monocultures, and brainstorm about potential solutions. This resulted in a long-list of restoration and sustainable land management ideas and helped understanding how these would actually lead to landscape restoration and additional income opportunities. Then we jointly defined *environmental, economic, and social evaluation criteria*, and we selected the most promising solutions from the initial long-list, using these criteria in a participatory multi-criteria analysis.

3. Identifying opportunities for value enhancement

During the workshops it became clear that many stakeholders are directly affected by land degradation. Farmers suffered low crop yields and loss of income due to lack of water and nutrients and frequent crop failure during droughts, extreme weather and plagues. Therefore many farmers were obliged to look for additional income from other jobs and most young farmers moved to the cities, leaving elderly farmers behind. As a consequence, other business in villages lost customers and saw their income strongly reduced. Stakeholders stressed how damage to crops and infrastructure caused by floods during extreme rainfall affected up- and downstream areas. They agreed that landscape restoration was highly needed to increase productivity for farmers, create new economic potential, and reduce damage to society from floods.

Image 19 - Group exercises during stakeholder workshops to identify priority opportunities for sustainable land management and landscape restoration (© Joris de Vente).

4. Our first business model idea

Crop diversification and low input farming came out of the stakeholder selection process as promising restoration opportunities with potential economic benefits. For rain fed conditions, combining almonds, olives or pistachio with aromatics (Thyme) and caper crops, green covers, and cereals were selected. To reduce inputs from agrochemicals, reduce soil disturbance and enhance soil quality, it was decided to apply compost and green manure (a mixture of leguminous species like vetch and cereals) and reduced tillage. After this long co-selection process, we started implementing these solutions under experimental conditions in the field to monitor how crop diversification and low input farming affect soil quality, crop yield and production costs compared to conventional farming. The experimental fields are located on the fields of farmers who participated in the selection process. In this way, the farmers actively participate in the monitoring and evaluation of all costs and benefits. We also frequently share results with other stakeholders using newsletters, field presentations, and social networks. Having all stakeholders closely involved really helps to adjust the initial theoretical ideas to complexity of real life in an iterative process. Most importantly, this co-creation process generates knowledge and helps stakeholder overcome possible difficulties together.

Image 20 - Field presentation and discussion on the challenges and benefits of crop diversification and low input farming based on long-term monitoring (© Joris de Vente).

2. The Hekluskógar Restoration Project in Iceland

Creating a restoration partnership

Image 21 - *"If you get the local population engaged in the project, it has much better chances of surviving as opposed to the state coming in with a project, then people may not find it as their project. The local people feel these plants are their own and they will fight for them. This is the best security for the project and all restoration projects of the same kind"* Guðmundur Halldórsson, Research Director of the Soil Conservation Service of Iceland (© UNU-LRT).

Image 22 - *High school students and their parents preparing to plant birch seedlings on a cold autumn day in the Hekluskógar area. The project provides the plants and equipment for planting but the people offer their labour. The good results in the last ten years has sparked enthusiasm in the project, and interest to volunteer and participate has tripled in the period (© Berglind Orradottir).*

1. Putting together our Co-Innovation Network

The initial idea of the Hekluskógar restoration project came from the Soil Conservation Service of Iceland, who quickly realized the importance of making this a joint effort by involving different stakeholders. They created a network of stakeholders based on their enthusiasm for the project, technical knowledge and their interest in seeing the project come to life. These stakeholders formed a collaboration committee, which included people representing the landowners, regional forest NGOs, and three governmental institutions: the Soil Conservation Service of Iceland, the Iceland Forest Service and the Soil Conservation Fund. This diverse group of people was able to provide different viewpoints and expertise. Importantly, this group also included the end-users -that is, the people who live in the area and who will ultimately enjoy the benefits from the restored land.

2. How we validated our understandings of the problems

This group of stakeholders shared their deep concern about the degraded state of the land and the problems it generated. Different stakeholders proposed different solutions to the problem, from seeding agronomic grasses to planting native trees, but they all fundamentally agreed on the need to restore a protective vegetation cover to slow down the degradation processes. In the initial stages this collaboration committee worked together to compile information about land condition and land ownership in the area and assemble current knowledge on native woodland restoration to create a restoration strategy and decide on the methods to use, as well as to prioritize restoration efforts and envision the potential benefits derived from the project.

3. Identifying opportunities for value enhancement

Many of the stakeholders are suffering the consequences of the degraded land. For example, farmers struggle to make a living off the land because of the reduced yields they get from the land in poor condition. Furthermore, local residents have to endure periods of poor air quality during the frequent dust storms. It was clear that restoring the land would bring opportunities to improve this situation by for example, increasing financial income of farmers and the life quality of local residents. In addition, the restoration of the area could create new value opportunity by capturing carbon in vegetation and soils that could contribute to carbon offsetting for businesses and the opportunity to show social and environmental responsibility by contributing to the project.

4. Our first business model idea

The initial goal of the Hekluskógar project was to initiate the process of recovery of the land, which could then maintain itself. For this, it was necessary to first stabilise the surfaces and then plant seedlings of native birch and willows. Researchers suggested that a cost-effective way of restoring such a large area would be to plant in small vegetation clusters and take advantage of the strong prevailing winds that could help the natural revegetation by dispersing seeds from the clusters. Restoring the native birch forests will re-establish the carbon flow into the soils, which will help revive the water and nutrient cycles and increase soil fertility. This will restore the ability of the system to provide valuable ecosystem services and help in increasing the resilience of the area to future disturbances. The value of the land and potential income in the future will eventually enhance, but as the land is extremely degraded, it will take time. The project therefore needs patient long term finances, such as from the government. Other potential income, to pay for the restoration, is from businesses that want to carbon-neutralize their operations.

Week 4 GLOSSARY

★ **Captured value:**

The captured value are the gains the respective group is receiving from the status quo. For example, although in a degraded state, does the landscape still generate positive emotions for hikers? Does it still provide the local community with access to cheap milk at a relatively good quality?

★ **Co-innovation network:**

Innovative business models adopt an open approach, and involve many people. By consciously involving people with different viewpoints and expertise within our innovation process we are able to have many more qualified people work on our business model with us. Their input may improve our ideas and accelerate the process from initial idea to implementation in the marketplace.

★ **Destroyed value:**

Destroyed value refers to the pains the respective group is enduring. We can think about what the stakeholders are losing through the current degradation and what is at stake for them. For instance, are farmers struggling to survive financially as they are suffering diminishing returns due to the soil degradation? Is the abundance of local wildlife suffering because of declines in breeding spots?

★ **Value opportunity:**

A value opportunity is a new option of how to create some benefit for the stakeholder. This benefit can be economical, environmental as well as social and may lead to a value proposition for a future business model. A value opportunity can be found through either by: (1) increasing the current captured value - improving the stakeholders current gain; (2) reducing the destroyed value - reducing the stakeholders current pain, or (3) transforming value destroyed into value creation.

★ **Value proposition:**

A value proposition addresses such questions as: What value is being proposed to stakeholders, including customers? Value propositions need to be considered carefully, and link to the needs of each respective stakeholder.

PHASE 2 DESIGNING
WEEK 5 BUSINESS MODEL DESIGN
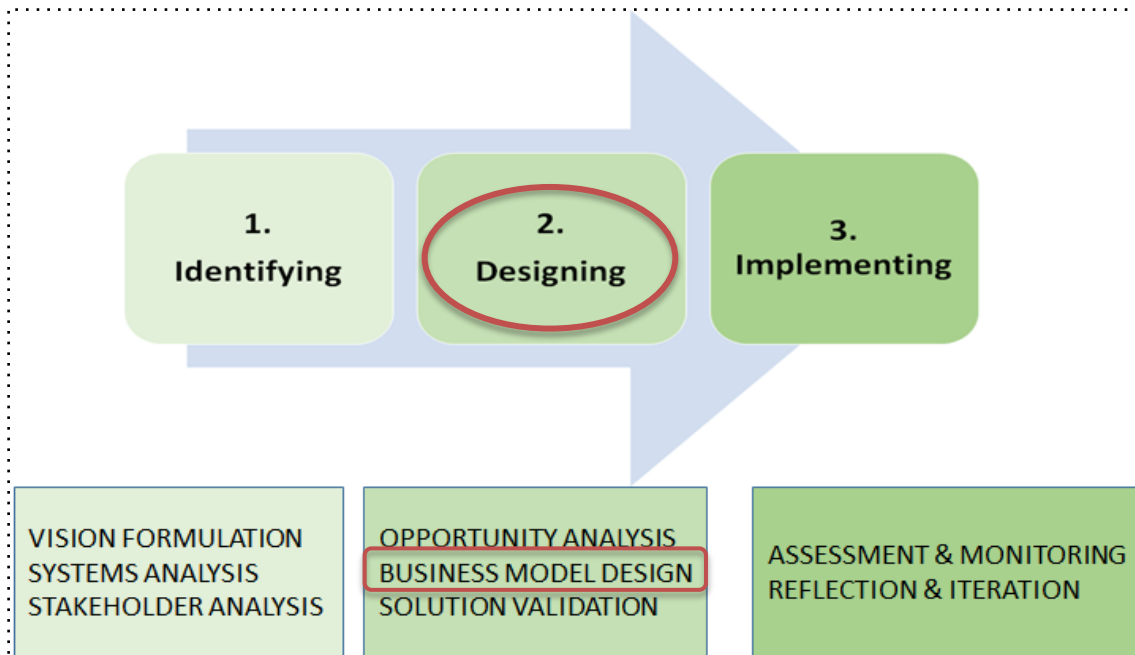
In this week:

- You will **learn** about the following **concepts**:
  - Business models
  - 'The triple layered business model canvas'

- You will read about the **application of concepts** in practice in three of our landscapes:
  - What are the benefits of a project with less tangible economic revenue like the Hekluskógar project in Iceland?
  - How do crop diversification and low input farming provide social, economic and environmental benefits in southern Spain?
  - What are the challenges of the social entrepreneurial project CAuSA in Portugal?
    Reading about their projects will help you in completing the weekly exercises!

- You will **get active** in the **week 5 exercise** by (see the exercise instructions on Coursera in week 5 for further details):
  - Select a business idea to start designing your business model
  - Completion of the Triple Layer Business Model Canvas

THIS WEEK'S CONCEPTS

What is a Business Model?

A *business model* is a rationale of how you will **create value for stakeholders** through your activities. Your business model will describe aspects such as what resources are needed for your activities, how these are converted into value, and what the impacts of your activities are on stakeholders.

By designing a business model we will present **the logic of our proposed activities**. We will work through important questions such as: What will the financial costs of operating be and how will we gain finances to cover these costs? Who will benefit from our activities? What materials and skills do we need to carry out our activities?

We can consider a business model in three core components:

● *Value Proposition***:** What value do you propose to stakeholders, including customers?

Forming the value proposition directly relates to the value opportunities we considered last week. These can be 'gain creators', answering what value we are proposing to create expected or desired benefits for the stakeholder. For instance, are we proposing to generate higher positive emotions for hikers from walking on the landscape? Are we offering farmers more diverse income streams? Or they can be 'pain relievers', answering what value we are proposing that makes our stakeholders feel better in some way. For instance, are we saving farmers financial costs or reducing hikers' fear of physical injury?

Value propositions need to be considered carefully, and link to the needs of each respective stakeholder. For instance, people buying 'ecologically restorative' fruit and vegetables may not do so because they necessarily care about the landscapes. Instead, they may believe that it is more healthy way of eating and feeding their children. Our business model may then have more success focusing on selling 'health' to the customer, than 'restoring landscapes'.

● *Value Creation and Delivery:* How will you bring the respective value to the customers and other stakeholders?

To design value creation and delivery we will need to consider all the aspects that enable the activities to be carried out such as the people and resources required. How many people will we need and what kind of skills do they need? For instance, we may need to engage with somebody with marketing skills, or we may need manual labourers to build new footpaths. What raw materials may we need and how are we going to covert those into 'value'? For instance, we may need organic fertilisers in order to grow new organic vegetables, or new farm machinery for ploughing of fields.

We also need to consider any flows within our activities. For instance, if we make a product then how will it reach the marketplace? Do we need a vehicle or engage with someone that has one? Partnering with others is likely to be a key aspect to how we will create value, and we need to design this into our business model. Partners may be financial supporters, suppliers or transportation firms.

- *Value Capture*: How you will retain value for yourself and how will other stakeholders retain value from your activities?

To design value capture we need to consider all the costs and benefits of our activities, and critically their distribution across stakeholders. It is through value capture that we will attain our vision for the landscape.

Our business model will critically require that it has a financially sustainable model. Will we have enough financial income to cover our costs? If this is not addressed, then we will be unable to continue any of our activities. As such, it is useful to consider this as the starting point of value capture.

Costs and benefits can be **financial, social** or **ecological**. For instance, a farmer may receive additional financial income, but at the expense of additional emotional stress. We need to pay attention to all three aspects, and the extent to which the value capture is sufficient for each stakeholder. For instance, a business model that generates us a lot of financial income but does not restore the health of the landscape (ecological benefit) will not meet our set vision.

The triple layered business model canvas

Business model design commonly utilizes a tool called the *business model canvas* to build up the elements relating to value proposition, value delivery and value capture. Business model canvases act as templates of building blocks that together describe how a business model will work.

A business model canvas can be used as a hands-on tool for your group to think creatively and discuss business model elements. It also steers you to answer critical questions on how the business model will function.

A business model canvas enables you to try out ideas for different combinations of elements, and create a number of alternate business models. We can compare these options, discard them, blend elements together, and have fun with designing how we may operate a new business model!

We will use the "*The triple layered business model canvas*" of Joyce and Paquin (2016). As the name suggests, this tool will allow us to consider three layers of our business model: economic, social, and environmental. When using this tool, please remember that it is a tool to help you. If you find that each specific element on each canvas does not help you understand how your business model will operate, then simply do not use it.

Let's take a look at the building blocks of the three layers of the canvas:

Economic Layer:
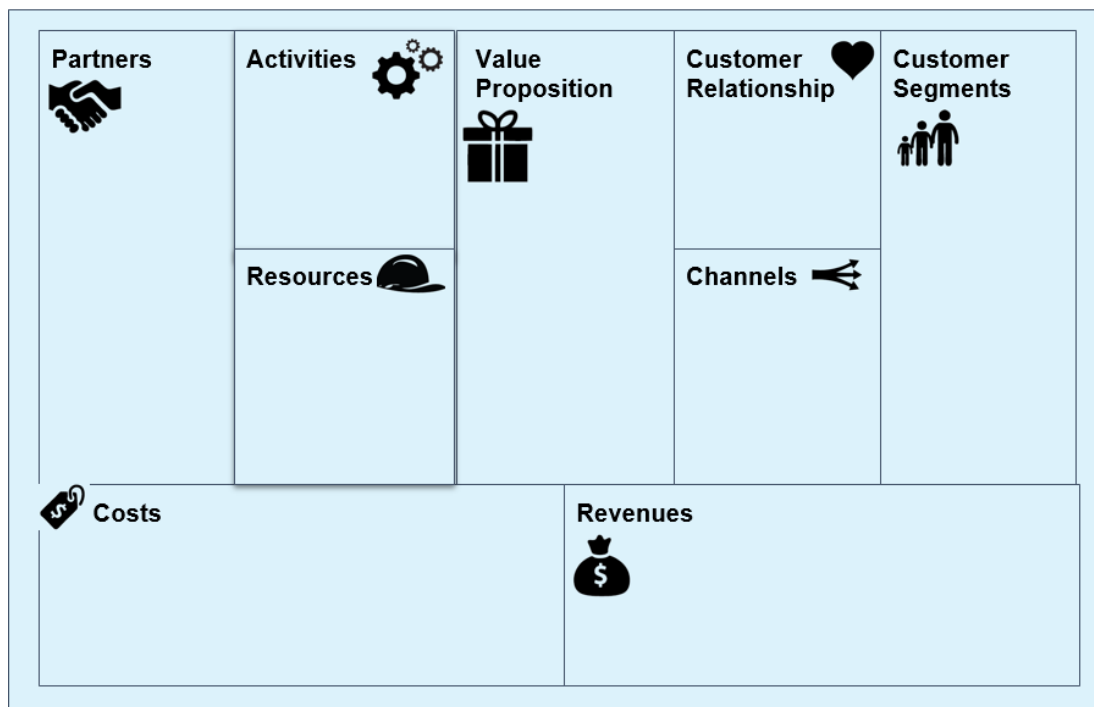
1. *Value proposition:* The key of the new business model as it describes what kind of innovative value or benefits you are proposing to stakeholders, including customers. This value could be a service, a product or some form of combination of both.

2. *Customer Segments:* The different groups of people or organizations you are trying to attract through your value proposition. E.g. middle earning parents in Northern Europe that are environmentally aware.

3. *Channels:* The ways through which you will communicate and reach your customer segments to deliver the value proposition. Essentially, channels are the interface with the customer and comprise communication, distribution, sales as well as after-sales processes. E.g. selling products in health food stores.

4. *Customer Relationship:* What kind of relationships you will establish with certain customer segments. This is important for how will you retain customers or acquire new ones. E.g. a membership club, newsletter or face-to-face contact.

5. *Resources:* Physical assets such as machines, financial assets, or intellectual, such as the human skills or employees that are needed for your activities.

6. *Activities:* The most important activities the company needs to perform in order to make the business model successful. E.g. marketing our services or how we produce our products.

7. *Partners:* All persons and organizations with whom you work together to make your product work. E.g. suppliers, distributors, etc. The alliances are important to make the business model work and concern outsourced activities.

8. *Revenues:* The revenue streams represent all finance that the business model generates. This may be through the sales of their service or product, but also could be from other sources such

as charitable donations or grants from the local authorities. Various other monetization strategies can be used for this as explained before (licensing, pay-per-use, etc.).

9. *Costs:* The cost structure shows all financial costs that occur to make the business model work. E.g. payment for raw materials and payments for labour.

Environmental Layer:
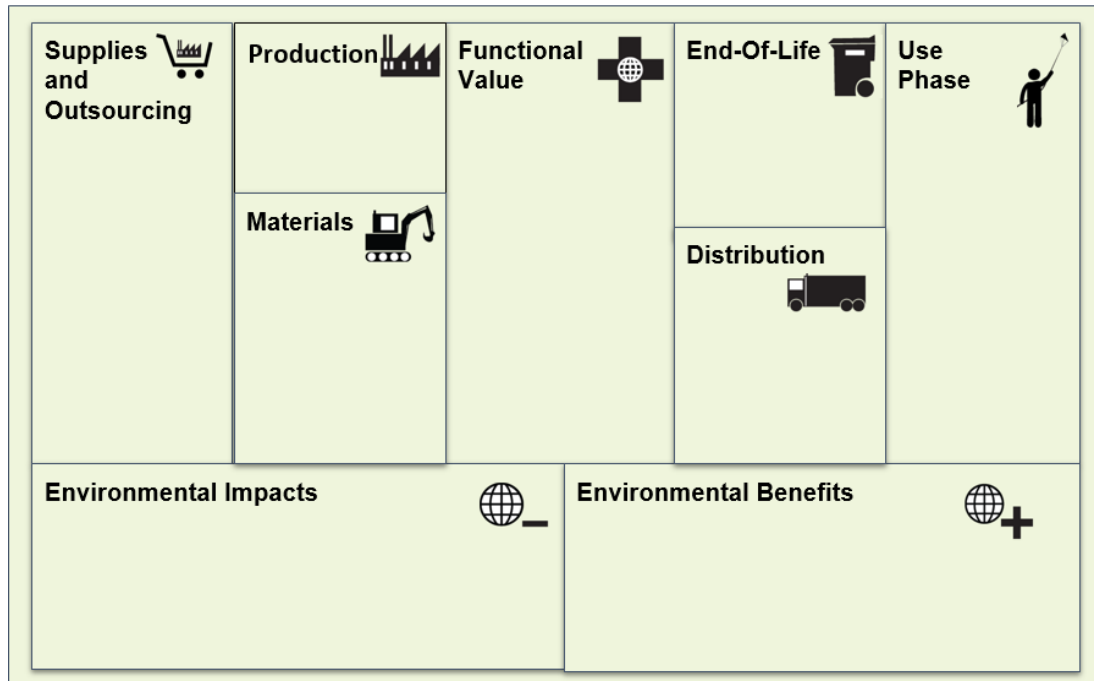
1. *Functional Value:* The physical output of the service or product of the company. E.g. 100 x 1 kg boxes of almonds.

2. *Materials:* The biophysical stocks that are necessary to provide the service or product. These can be the input needed for the product, such as aluminium and steel, or the required infrastructure to deliver the service, such as computers, vehicles or buildings.

3. *Production:* Comprises all activities that are necessary for generating the product or service but have an environmental impact. E.g. production of shipping boxes.

4. *Supplies and Outsourcing:* All material and production materials that are not produced by the company itself. E.g. how much water and electricity will be required and where will this come from?

5. *Distribution:* What kind of environmental impact is generated through the distribution of the service or product to the customer? E.g. a delivery van using petroleum.

6. *Use Phase:* The impact the product or service has once in the hands of the customers. This includes the normal usage, such as washing or charging, as well as maintenance and repair. E.g. the product needs to be washed using an electric washing machine.

7. *End-of-life:* The impact the product or service has at the end of its lifetime for the specific customer. Therefore, reuse, recycling, remanufacturing or disposal have to be taken into account. E.g. what harm/good could the product do if it entered into the water system?

8. *Environmental Impact:* With all the information provided by the previously mentioned components, you can calculate the overall negative environmental impact of the business model. These environmental costs might be calculated in terms of CO_2 emissions, ecosystem impact, natural resource depletion, water consumption or biodiversity loss.

9. *Environmental Benefits:* Critically, besides the impact our business model should produce environmental benefits by restoring the landscape. We can specify quantity of land (e.g. 100 acres of land restored), but also specifically how the land will be restored (e.g. improved water saturation of soil).

Social Layer:
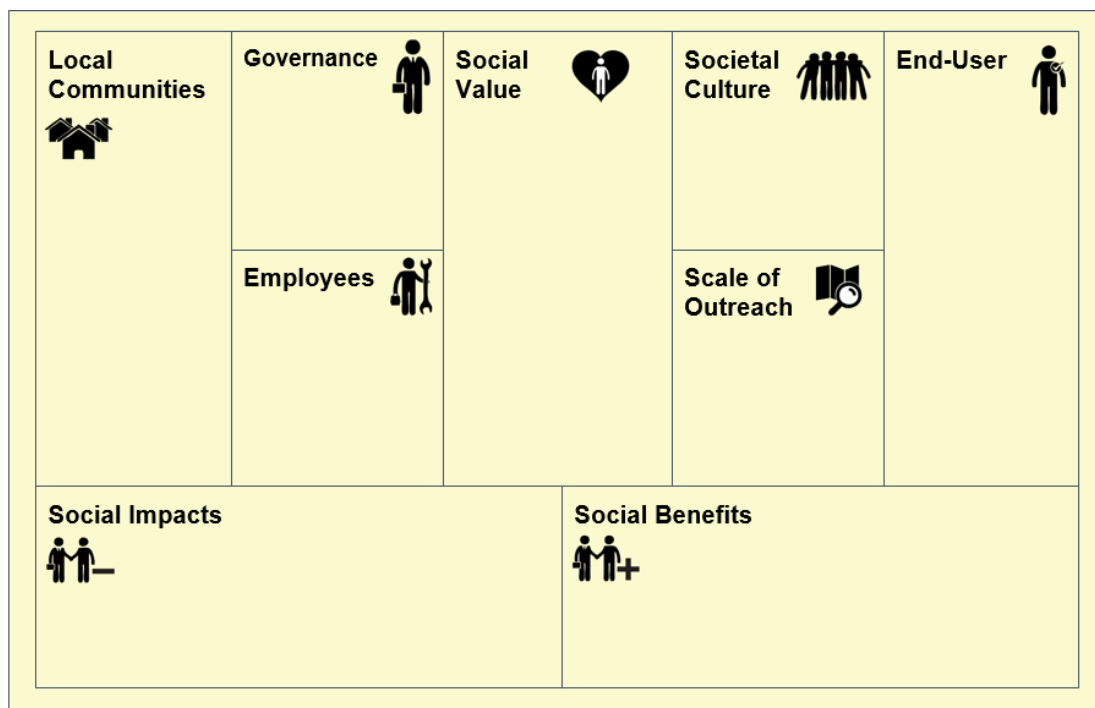
1. *Social Value:* How the business model is creating value for stakeholders and for society as a whole. Hence, the social value can be created for the suppliers of the company, the employees or the customers. For this, consider your previous stakeholder analysis and think for each group, what value the new business is creating. E.g. enhance the quality of life of the local community.

2. *Employee:* The fair treatment and balanced characteristics of the employees in your company. e.g number of employees, fair pay, gender balance, and respecting ethnicity.

3. *Governance:* The internal and external organisational structure as well as the decision-making processes of the company. E.g. transparency to external parties of hierarchical structure. As a start-up you may feel this component to be less relevant, however it may be critical for receiving grant funding or donations.

4. *Communities:* The local community of the landscape and any other local community influenced by production facilities or business partners. E.g. how are we positively impacting the local community?

5. *Societal Culture:* How will our business model impact on the culture of the people? E.g. may it promote a culture of shared responsibility for the wellbeing of the landscape or may it promote a feeling that we can pay our way out of problems?

6. *Scale of Outreach:* What kind of relationships do we have with our stakeholders? Does the business model enable us to develop long-standing relationships with numerous people, or is it focused on an exclusive segment?

7. *End-users:* The end-user does not necessarily have to be the customers, but the one that is really using the product or service at the end. It concerns how the value proposition is fulfilling the need of the consumer and contributing to her or his quality of life. E.g. providing nutrition.

8. *Social impacts:* The social cost of our activities. E.g. working hours, cultural heritage, health, fair competition, etc.

9. *Social benefits:* The social benefits of our activities. E.g. personal development, community engagement, training opportunities etc.

TIP BOX

The "return" of Inspiration: In addition to these three layers, we also invite you to give some thought to how your business case will also spark inspiration to the stakeholders connected to your business.

You could think of the following questions:
- How do I make people aware of the problem(s) that my business case is trying to tackle?
- What is my vision of hope?
- How do I spark participation by various stakeholders in engaging with my business?

BUSINESS MODEL DESIGN IN PRACTICE

1. The Hekluskógar Restoration Project in Iceland
The challenges of a project with less tangible economic revenue

1. Our Business Idea

The concept that we took through to the design canvas was to initiate the process of ecosystem recovery, which could then maintain itself. For this, it was necessary to first stabilise the surfaces and then plant seedlings of native birch and willows. The seedlings would be planted in small vegetation clusters with the idea that the strong prevailing winds could help the natural revegetation by dispersing seeds from the clusters.

Image 23 - Restoration efforts in the Hekluskógar area aim to restore functional ecosystems in the area, ensuring provision of ecosystem services and restoring resilience to natural hazards, like tephra fall from eruptions. The snow-covered mountain in the back is Mt Hekla ([©] Isabel C Barrio).

2. Our Triple Layered Business Model Canvas:

Economic Business Model Canvas

The Hekluskógar project is expected to restore a healthy ecosystem that will reduce damage mitigation costs from the recurring volcanic eruptions, mitigate climate change through carbon sequestration, create healthier environment for the local community, and increasing possibilities for diversified economic activities. Because this is a long-term, large-scale restoration project the economic layer is perhaps least tangible in the short term: economic benefits will probably become more obvious when ecosystems are restored, including the revenues from improved land use options, opportunities for biomass production and tourism development.
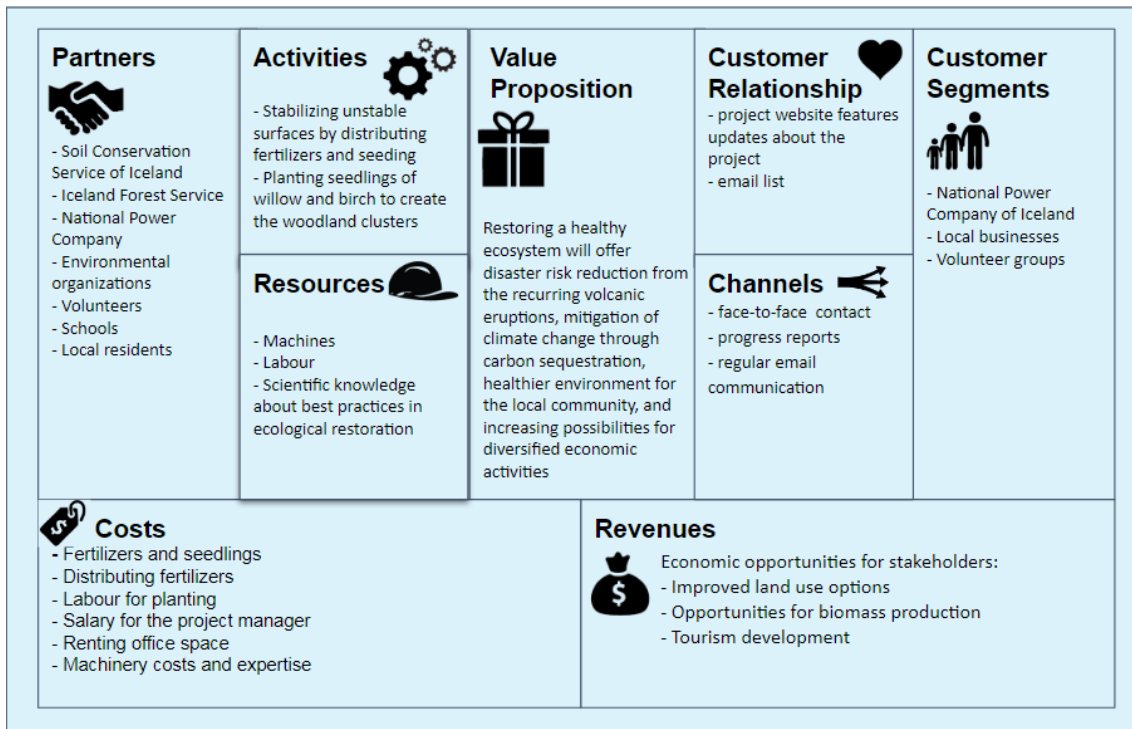
Image 24 - The Hekluskógar project is a long-term large-scale restoration project. While the environmental and social benefits of the project are obvious, the economic revenues are less obvious in the shorter term (© Berglind Orradottir).

Environmental Business Model Canvas

Within a project time frame of 65 years, it is expected that the physical output of the Hekluskógar project will be around 60,000 hectares of land on a trajectory to become well-functioning, self-sustaining ecosystems. Because large parts of the area are in a very degraded state and have unstable surfaces, application of fertilizers and sometimes grass seeds (where seed sources are not

close) will be needed before planting of birch and willow seedlings. Once natural regeneration processes are in place, we will have a progressive reduction in the requirements of materials. Some of these materials, like fertilizers, seeds and seedlings will need to be outsourced, although some might be produced locally. Some of the activities necessary for restoring the land will have an environmental impact, for example the use of machinery and the transport of materials to the restoration sites, but these will be minimal compared to the environmental benefits of the project.

Supplies and Outsourcing
- Production of fertilizers (some produced locally)
- Propagation of seeds
- Growing seedlings of native birch and willows

Production
- Use of machinery
- Transport of materials to restoration sites

Materials
- Fertilizers
- Grass seeds
- Birch & willow seedlings
- Tree planting sticks
- Machines to distribute seeds & fertilizers
- Vehicle & trailer to transport seedlings

Functional Value
Within the estimated project time frame of 65 years, over 60,000 hectares of land will be on a trajectory to become well-functioning, self-sustaining ecosystems

End-Of-Life
N/A

Distribution
Vehicles and machines use petroleum

Use Phase
- Improved fertility of the land
- Sustainable land use

Environmental Impacts
- Use of energy and fuel to power machines and transport of materials to the restoration sites

Environmental Benefits
- Reduced soil erosion
- Improved biodiversity
- Carbon sequestration
- improved water retention of soil
- Increased water quality through enhanced water cycle
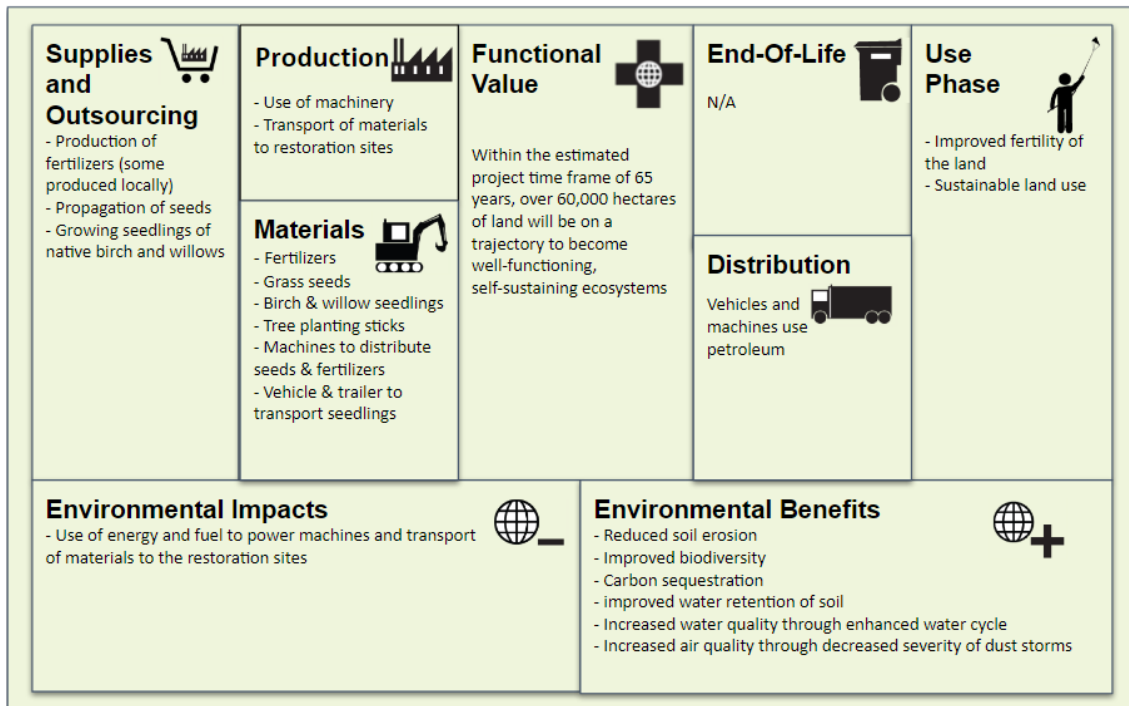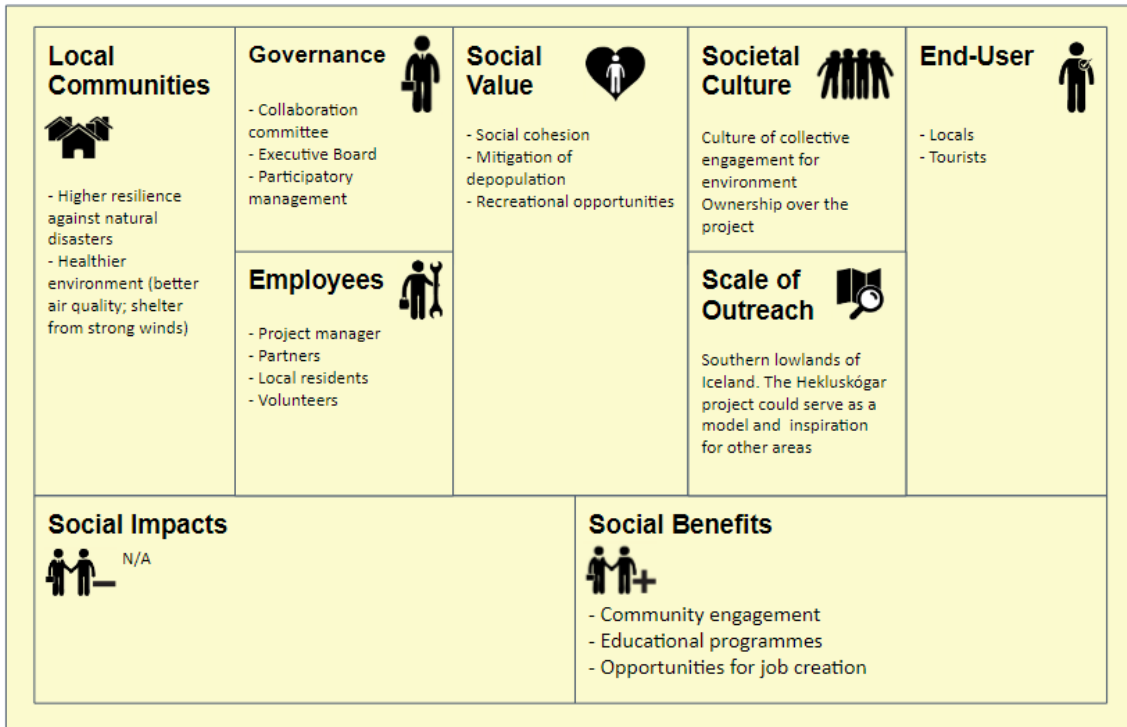- Increased air quality through decreased severity of dust storms

Image 25 - With time the restored ecosystem will become more fertile, providing opportunities for biomass production, such as this barley field. This land was badly eroded and just a black sand a century ago, but it was restored about fifty years ago. This shows the potential of this land when it is restored (© UNU-LRT).

Social Business Model Canvas

The Hekluskógar project has a clear return of social capital. We expect that local communities will benefit from the healthier environment, which provides better living conditions. Many of the local residents have been involved in planting, so they feel some ownership over the project. Through the educational programmes, schools in the area have also been involved, and this has strengthened their bonds to the landscape and contributed to social cohesion in the area.

Local Communities	Governance	Social Value	Societal Culture	End-User
- Higher resilience against natural disasters - Healthier environment (better air quality; shelter from strong winds)	- Collaboration committee - Executive Board - Participatory management	- Social cohesion - Mitigation of depopulation - Recreational opportunities	Culture of collective engagement for environment Ownership over the project	- Locals - Tourists
	Employees - Project manager - Partners - Local residents - Volunteers		**Scale of Outreach** Southern lowlands of Iceland. The Hekluskógar project could serve as a model and inspiration for other areas	

Social Impacts N/A

Social Benefits
- Community engagement
- Educational programmes
- Opportunities for job creation

2. Crop Diversification and low input farming in south-eastern Spain

How do crop diversification and low input farming provide social, economic and environmental benefits in southern Spain?

1. Our Business Idea

The concept that we took through to the design canvas was to use crop diversification and low input farming to achieve landscape restoration, generate more farm income, and provide other ecosystem services like pollination, biodiversity, nutrient cycling, pest control and flood prevention. By combining different crops we hope to reduce the dependency on one single crop yield and be less sensitive to crop failure. We also hope that combining crops and using low input farming and reduced tillage will provide synergies between different crops and help restoring vegetation cover and soil quality.

Image 26 - Alfonso Chico de Guzman (farmer of la Junquera farm): "By mixing different crops on my farm I aim to contribute to landscape restoration and create more economic returns. But, this is not easy and requires a change in the way we used to work. I need to find the right partners to get my new products to the market and reach a customer segment of responsible consumers willing to pay a little more for sustainably produced products."

Image 27 - Example of an almond field with reduced ploughing and a green cover of cereals (© Joris de Vente).

2. Our Triple Layered Business Model Canvas:

Economic Business Model Canvas

The main value proposition of diversified cropping systems and low input farming is to offer sustainably produced, high quality crops that contribute to landscape restoration and reduced damage from extreme weather and climate change. Specifically, regarding the economic layer, we expect that crop diversification and low input farming will capture value by increasing the revenues, since we hope to produce more per hectare from different crops. We also expect new business opportunities in a diversified landscape, because it will become more attractive for tourism. To deliver these values, we need additional resources like machinery for planting and harvesting other crop types, and we need additional knowledge on how to cultivate them. We also need to find the right channels and partners to get our new products to the market and reach a customer segment of responsible consumers. These are all challenging aspects that we still have to figure out, and in which our co-creation process forms a central role.

Partners

- Farmers organisations specialised in sustainably produced crops and `new´ products like aromatics or caper.
- providers of seeds of aromatics and caper
- Producers of natural oils from aromatics.

Activities

- New production forms (reduced tillage, compost and green manure)
- Marketing of the new products.

Resources

- Machinery for planting and harvesting other crop types
- Knowledge on how to cultivate them.

Value Proposition

Sustainably produced, high quality crops that contribute to landscape restoration and reduced damage from extreme weather and climate change

Customer Relationship

Channels

- selling direct to consumers via website.
- selling to farmers association specialised in sustainable produce

Customer Segments

International market for responsible consumers.

Costs

- Compost and seeds for green manure
- Machinery costs.

Revenues

- Producing more crops per hectare
- Selling at a higher price as sustainable products
- production less sensitive to interannual climate variations (droughts).

Image 28 - Drying collected almond harvest at the Alhagüeces farm before sending them to the farmers' association to be sold.

Image 29 - Experimental crop diversification of Faba beans with mandarin trees (DIVERFARMING research project (© Carolina Boix-Fayos).

Environmental Business Model Canvas

We expect major impacts of crop diversification and low input farming in the environmental layer of the business model canvas. The production process and materials will change, since we will use fewer inputs from fertilizers, gasoil, or agrochemicals. We may, however, need other inputs such as compost and we need to plant different crops (aromatics, caper). We will create important environmental benefits, like reduced contamination of soil and water resources, reduced erosion, we will use less water for irrigation, increase carbon sequestration in the soil, and improve biodiversity.
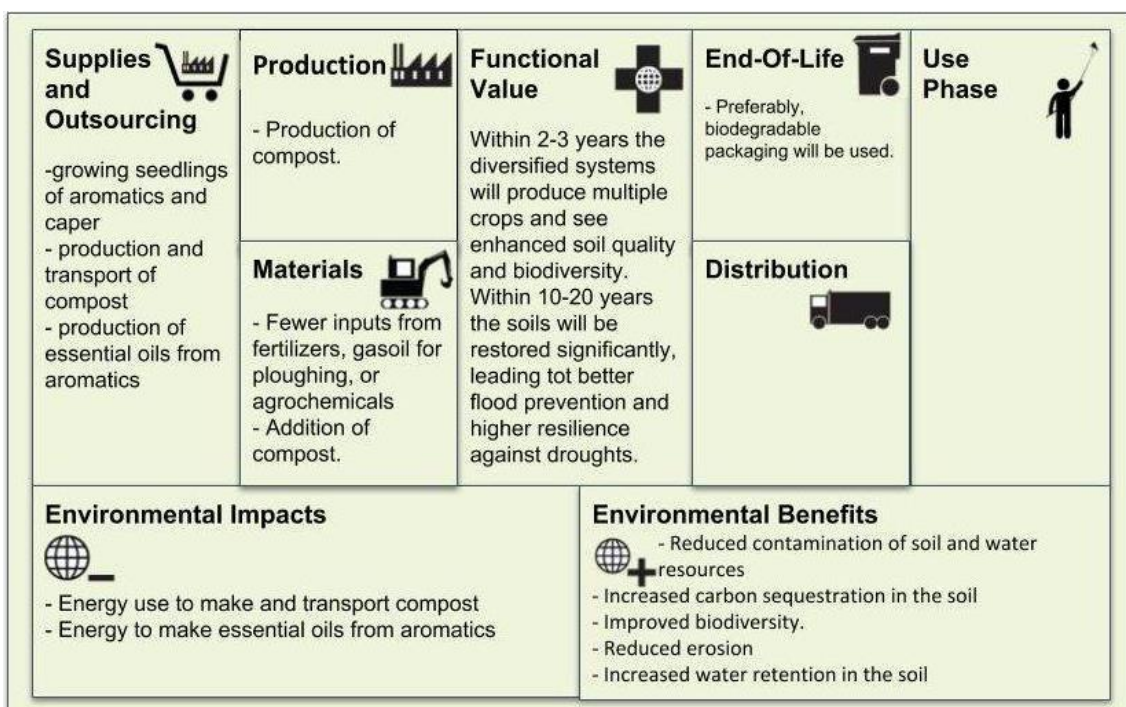
Image 30 - Example of green manure, a mixture of vetch (Vicia sativa) and barley, to increase soil organic carbon and nutrient content and prevent soil erosion between almond trees (© Joris de Vente).

Image 31 - Olive orchard with no tillage and compost application (© Joris de Vente).

Social Business Model Canvas

Regarding the social layer, we expect that diversifying our production activities and using low input farming will lead to additional social capital through enhanced networking and new links between farmers and partners of the distribution channels. Ideally it will contribute to a culture of shared responsibility, and to restore cultural heritage of traditional farming in mosaic landscapes. We also expect our business model to add to farmers' personal development through training and that it contributes to a positive feeling for farmers in a role as managers of the natural environment. We aim for customers to feel satisfaction by contributing to sustainable development. If successful and implemented at a large-scale, diversified landscapes should benefit communities who will be less sensitive to floods causing damage to infrastructure.
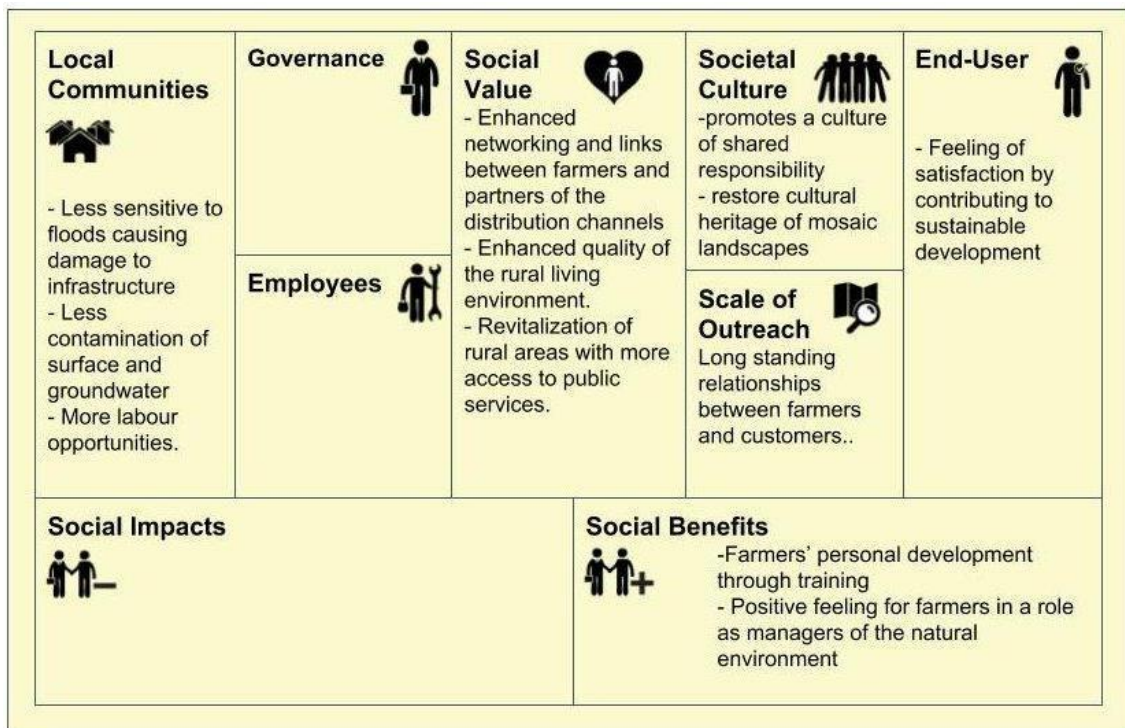
Image 32 - Traditional mosaic landscape of almonds with reduced tillage and green cover of cereals and natural vegetated areas (© Joris de Vente).

3. Forest Fires in Portugal

The challenges of the social entrepreneurial project 'CAuSA'

C A u S A

UNIDOS POR UMA CASA

"United for a cause!"

1. Our Business Idea

We will follow CAuSA's through the business model canvas to understand the challenges of a social entrepreneurial project when most of the times the revenue stream comes from multiple sources.

2. Our Triple Layered Business Model Canvas

Economic Business Model Canvas

CAuSA is a product-based social entrepreneurial project. It has a clear low cost product, the shelters, sold to self-sufficient farmers. In exchange for this low cost shelter, farmers commit to work together with CAuSA in implementing environmentally sustainable farming. The local government (Tondela City Council, for example) is a major partner and provides the financial resources needed for a sustainable operation, mainly stabilizing financial cash flows.

Farmers working together can found new businesses and CAuSA helps them to find new customers for their local agricultural products, local organizations like Santa Casa da Misericórdia de Arganil (http://www.scmarganil.pt/), looking for products that cost less and are of better quality.

Local banks lend money at low interest rates to microfinance the purchase of the shelters.
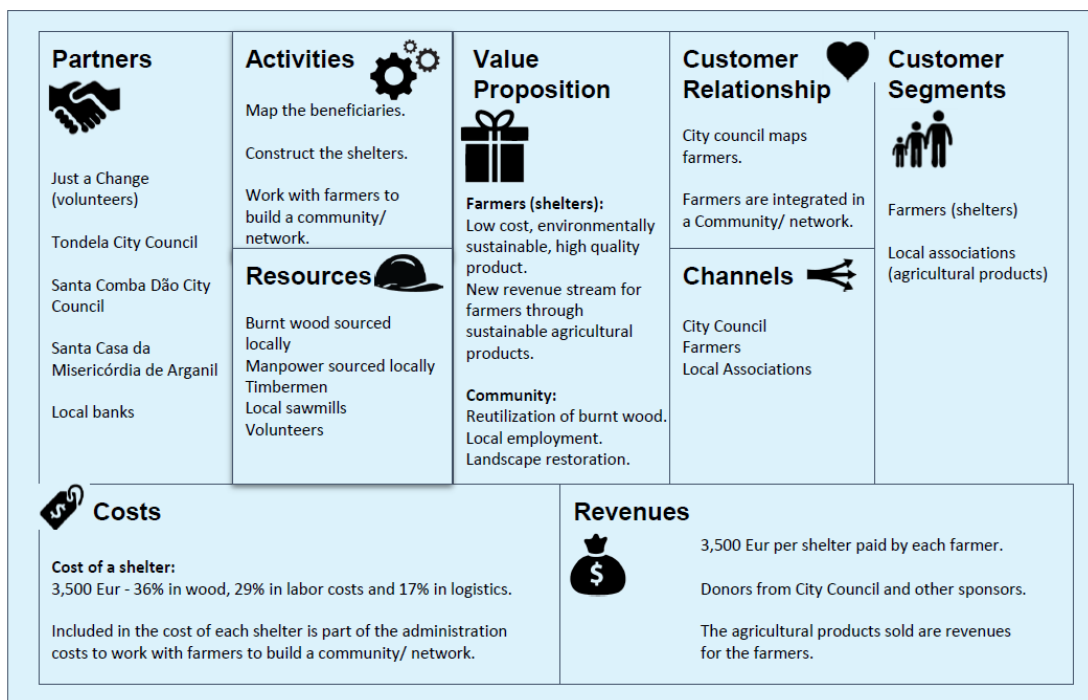
Environmental Business Model Canvas

CAuSA introduces several changes in the design of the rebuilt shelters that contribute to a more environmentally sustainable, and inspirational transformation of the landscapes. The new shelters use burnt wood creating a circular local economy and replace metal ribbed sheets for ceramic roof tiles.
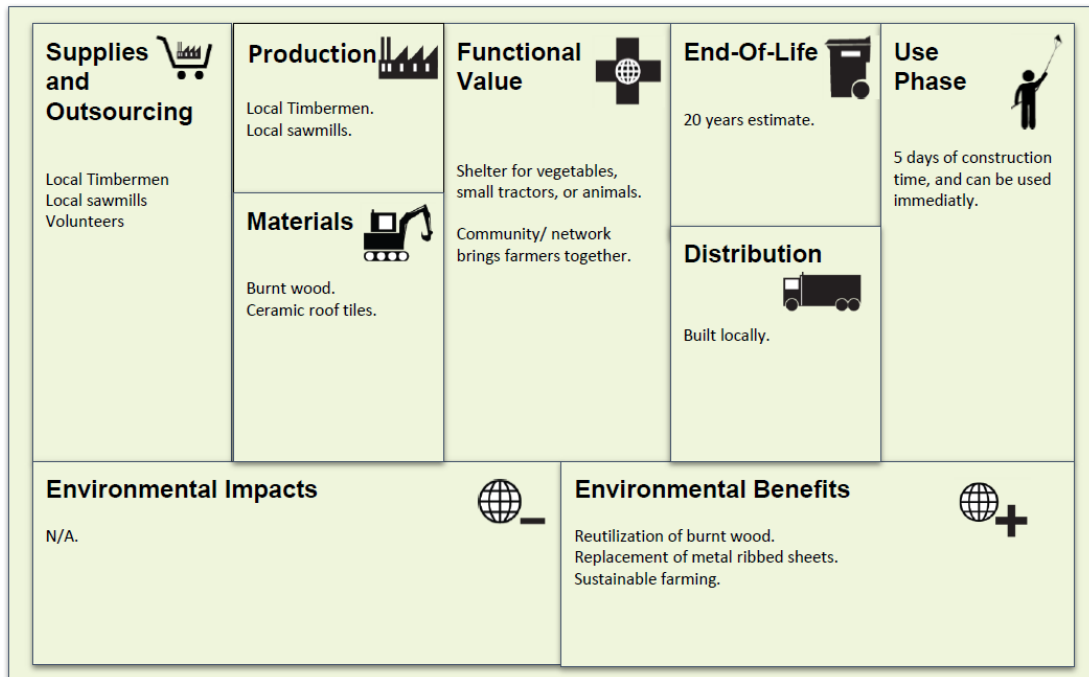
Social Business Model Canvas

Regarding the social layer, the promotion of more environmentally sustainable farming, while developing new businesses is a major contribution to fight land abandonment and promote local employment.
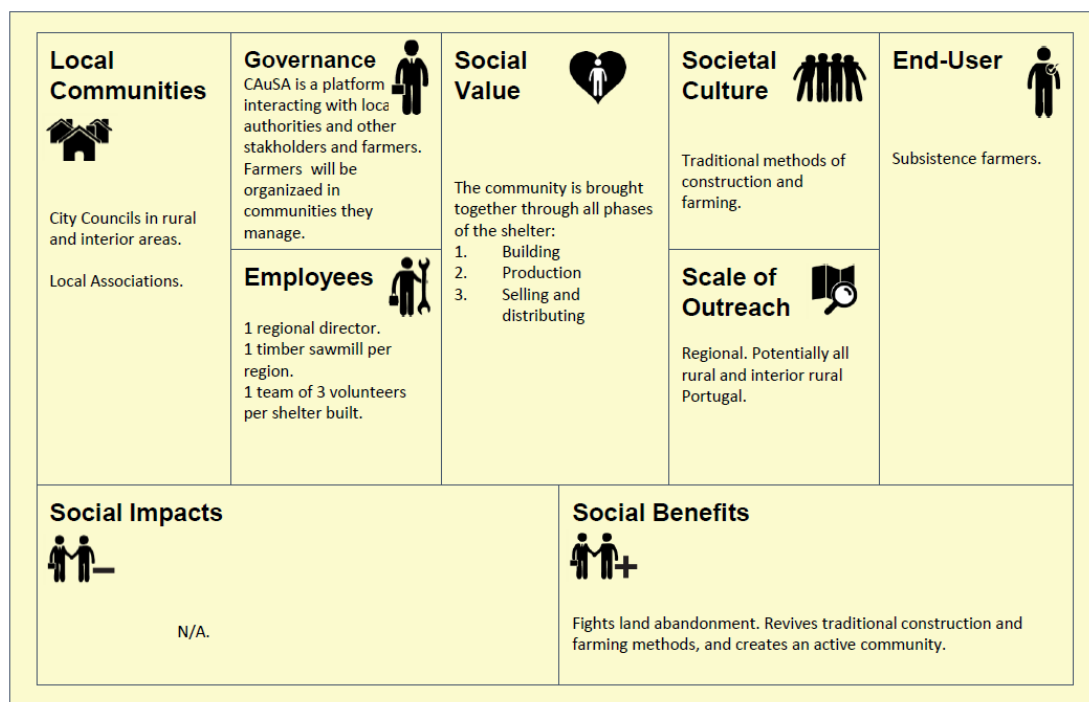
WEEK 5 GLOSSARY

★ **Business model:**

A business model is a description of how a company creates, delivers and captures value. A business model describes aspects such as what resources are needed to carry out those activities, how these are converted into value, and what the impacts of the activities on stakeholders are. In its earlier conception, business models mainly focused on the creation of economic value. A sustainable business model includes economic, social and environmental value considerations.

★ **Business model canvas:**

Tool used to build up the elements relating to **value proposition, value creation and delivery** and **value capture** of a business model. Business model canvases act as templates of building blocks that together describe how a business model will work. A business model canvas allows trying out ideas for different combinations of elements, and creating a number of alternate business models.

★ **Value capture:**

How you will retain value for yourself and how will other stakeholders retain value from your activities? To design value capture we need to consider all the costs and benefits of our activities, and critically their distribution across stakeholders. It is through value capture that we will attain our vision for the landscape.

★ **Value creation and delivery:**

How will you bring the respective value to the customers and other stakeholders? To design value creation and delivery we will need to consider all the aspects that enable the activities to be carried out such as the people and resources required.

★ **Value proposition:**

What value is being proposed to stakeholders, including customers? Value propositions need to be considered carefully, and link to the needs of each respective stakeholder.

★ **Triple-layered business model**

A business model canvas that allows considering three layers of our business model: economic, social, and environmental.

PHASE 2 DESIGNING
WEEK 6 SOLUTION VALIDATION
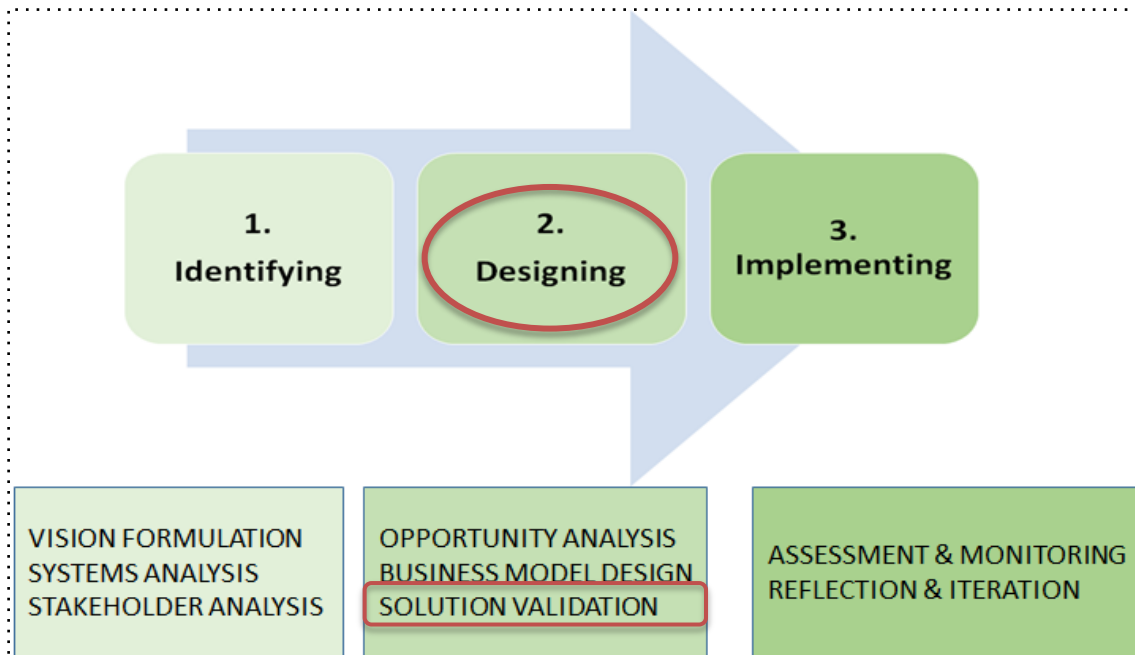
In this week:

- You will **learn** about the following **concepts**:
  - Validating assumptions
  - Validation methods

- You will read about the **application of concepts** in practice in two of our landscapes:
  - What are the key assumptions of the CAuSA project In Portugal?
  - How can we validate that crop diversification and low input farming in Spain will have positive environmental and economic impacts?
    Reading about their projects will help you in completing the weekly exercises!

- You will **get active** in the **week 6 exercise** by (see the exercise instructions on Coursera in week 6 for further details):
  - Identify key assumptions
  - Design testing of key assumptions
  - Test your assumptions!
  - Iterate or pivot your business model

THIS WEEK'S CONCEPTS

Validating assumptions

The design of our new business model rests upon a number of assumptions. Assumptions are any number of things that we have taken for granted to hold true, but actually we do not currently have proof that they are correct. Assumptions could come in many forms such as economic, environmental, political, social, technological, or legal.

Potential assumptions may include:
- Customers will be prepared to pay a premium for sustainably produced food.
- Our selected crops will grow well under the local conditions of the landscape.
- Our selected crops will positively impact the local biodiversity.
- The local economy is growing.
- The local authority will support our new business model through a tax break.

Particularly pertinent here is to pay attention to the *local* **environmental and social-economic factors**. For instance, the local climate conditions, the local ecological conditions and the common local land use practices. Simply transferring apparent 'best practices' may not work for our specific landscape. Therefore, it is critical that we validate all assumptions of a new business model that builds on new land use and management practices that function under the local conditions.

To gain greater certainty that our business model will work how we intend it to, we need to **validate these assumptions**. Validating all assumptions to a high degree of confidence may be difficult so we need to select the ones we believe are most critical and the ones that we have least confidence in.

Validation methods

To validate our assumptions we need to design and execute suitable methods. There are a wide range of methods available that we can use and we need to pick which we believe is most suitable for each of our assumptions.

Ideally, we want to validate our assumptions as fast and as cheap as possible to **learn and change our business model**. Most importantly is that we capture the insights we gain from validation and consider how we may iterate or pivot our business model. Do not treat your business model like a baby that must be protected, or intertwine your ego with your design. Be prepared, to listen to stakeholders and make changes based on the feedback provided!

Here we will now introduce a few common validation methods.

1. Conversational Interview

A conversational interview is a flexible and informal interview with a person of interest to discuss about the solution you have designed, with a particular focus on generating insights on an assumption(s) you have made.

Interviews can be conducted one-on-one or with a group of persons. They may take place in person, via telephone or using conference calls such as via Skype. Who you interview will depend on what

assumption you are wanting to validate. For instance, if we want to validate our assumption that the local government would be prepared to offer us a tax break then we will want to interview someone from the local government.

An important stakeholder group to interview is likely to be the customer or group that will be financially investing in your business model. Your business model is working on the assumption that it resonates with them and that they would be prepared to pay for it. This needs validation! Pitch your solution in the interview to persons from this group and learn from their reaction. Did they understand the product/ service? What was unclear for them? Would they buy this product/ service? Why/Why not?

TIP BOX
- Try to invite honest feedback and do not defend your solution. Instead, try to just listen and note the feedback they give you.
- Pay attention to facial expressions and body language.
- Try to avoid leading questions such as "don't you think that…" as they are steering the participants in a specific direction.
- Don't forget to ask for referrals and if the person wants to be further involved so you can get help with your further testing.
- Consider asking people how they have tried to solve the specific problem of landscape degradation in the past and what happened.

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2. Experiments

You can also think about conducting a simple experiment. For instance, you could make two different versions of a product with a variable changed, say its colour or shape. You could change the way you explain the solution, change the pricing, or change the construction of how the customer may purchase the product.

For instance, we may sell a prototype of our product at an event. We assume that 50 cents is the best price per unit. We can test this by selling the product at that price for one morning and changing to 60 cents for the afternoon. Was there any change in amount of products sold? Another day we can consider our assumption that red packaging works best. In the morning we use red packaging and in the afternoon green. Do we sell more products with the red packaging?

Validation of the environmental impacts and actual contribution to landscape restoration may take a long time and much more expense. It may require equipment and monitoring of large scale experiments on environmental variables like soil quality indicators, available freshwater quantity and quality, soil erosion, and biodiversity, using field and laboratory experiments.

However, validation of ecological restoration through experiments is likely to be incredibly important. It will help us to justify claims of positive environmental impacts and support our value propositions to different stakeholders - including potentially those who are financially supporting the business model. Since local environmental, socio-economic and cultural conditions often determine the environmental impacts and effectiveness of your restoration idea, it is very important to obtain experimental proof of the impacts in your specific area. However, in the absence of sufficient

experimental data during initial stages it may be useful to look at experimental results from other areas with similar conditions, using benefit transfer methods.

TIP BOX
- Validation of our ecological assumptions is likely to be costly and time-consuming. Consider first what can be validated at a lower-level of confidence by having a conversational interview with ecological experts.
- Consider who could help carry out and even fund your experiment. Could a research institute be interested? Could a student conduct the research as part of their studies?

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3. Prototype

A prototype is a simple way of showing how your product or service will look like or function. For example, you can draw a simple sketch, construct a physical model or a diagram of how your solution would work.

By building a prototype we may realise errors in our design, or make realisations on how it could function better.

A prototype can also be helpful for people to understand your idea better and illicit more precise feedback on what could be improved. We can let people play around with a prototype and see how they interact with it. For instance, say we have a product of almonds sold in small bags. When the person picks up the bag see where their attention goes - do they care about the nutrition information? Are the intrigued by the ecological restoration story? Can they easily open the bag to get inside?

As testing a product at large scale might be too difficult or costly, a **minimum viable product** allows testing a product idea with minimal resources. Although minimally viable, it can maximize your insights into the effects.

4. Ethnographic research

Ethnography research refers to a technique of diving into the world of the stakeholder or user. For example, if you have the chance to work with one of the key stakeholders you might understand their needs and problems even better as you are able to experience them first hand as well. We can let stakeholders use our product/service for a period of time and observe their behaviour. Perhaps we find that while initially interested, their use of our product immediately declines.

Moreover, you are able to discover some assumptions taken for granted that a person might not reveal in an interview as it seems obvious for the respective person. However, once you are in the same situation, you might see the importance of this specific factor.

5. Surveys

There are many different programs online that allow you to make surveys and send it to multiple people to fill it in. This way, you can validate your assumptions with a wide range of different persons relatively quickly and cost effectively.

TIP BOX
- Think about the specific questions in detail before sending the survey. Most people will only fill it in once and only have a limited amount of time.
- Make the survey as concise and understandable as possible.
- Online survey programs: Qualtrics (www.qualtrics.com), SurveyMonkey (www.surveymonkey.com), Monday (www.monday.com)

SOLUTION VALIDATION IN PRACTICE

1. Forest Fires in Portugal

Key assumptions for CAuSA

Image 33 - Is the shelter a solid structure?

1. Our key assumptions of our business model:

CAuSA is a project with an underlying product. Some of the assumptions concern the business model of the project, but most of them reflect the quality and demand for the base product: the shelter.

Having in mind the shelter, CAuSA assumes it is strong enough to endure a considerable period of time, and that it will be correctly used and useful on a day to day basis. It is assumed that farmers will approve of these shelters, and understand the cultural value they have. This last assumption is essential for an effective demand.

The business model of the project raises other questions and brings up other key assumptions. CAuSA assumes that farmers will be inspired to grow food using more sustainable methods and that they will be motivated to work together to grow and sell their products, thereby becoming more professionalized and responsible in a commercial world.

2. Designing how to test our assumptions

CAuSA is a good academic example of a complex social entrepreneurial project, clearly defining a prototype and a pilot, and determining two different stages to test the assumptions.

The first stage tested the prototype, the design and structure of each shelter. For the design, a co-creative process involving not only farmers but local villagers was set, inspiring architect Afonso to bring historical and traditional buildings in the landscape back to life. After five prototypes were built, it is now time to test their attractiveness and usage. Informal interviews with the local farmers will test the attractiveness of the structure and identify possible improvements. The interviews include qualitative questions concerning the different dimensions of the structure and quantitative questions which measure the storage capacity. Other engineering tests and observation will confirm that these five prototypes will stand up with different weather conditions.

A second stage addresses the value and the use of the shelters in a medium/ long term perspective, based on surveys and observation, analysing whether or not they would actually serve an important role among self-sufficiency farmers.

To complete the validation of CAuSA's business model, conducting interviews is part of the process to access the quality of the agricultural products for the local associations that take meals to elderly living at home in precarious conditions. This is an important revenue stream for the farmers and customers must be happy with their product.

3. Testing our assumptions:
Although this project is already being implemented, some of the assumptions have not yet been tested. Five shelters have already been constructed, in a co-creative process with the villagers and the self-sufficient farmers described before, and structural tests are missing under different weather conditions.

4. How we iterated or pivoted our new business model:
The five prototypes have not yet provided some results, but the first set of interviews with farmers confirmed the attractiveness of the design. Five families are back home and restarting their lives, and using these prototypes to store agricultural materials.

Based on these results, CAuSA is planning 95 new shelters, while working together with these five families towards a more sustainable and environmentally friendly farming.

Image 34 - Storage capacity of a shelter

2. Crop Diversification and low input farming in south-eastern Spain

Validating the environmental and economic success and impacts of crop diversification and low input farming in Spain.

Raul Zornoza (Polytechnic University Cartagena): *"Diversifying your cropping system and using low input farming is not easy and there is still a lot unknown about how best to achieve optimal benefits. Therefore, we started the DIVERFARMING project, a European funded research project with 25 European partners, representing research and businesses. During the five years of the project, we develop and test diversified cropping systems in 22 case studies across Europe and explore how the diversified cropping systems can increase the delivery of ecosystem services while maintaining or increasing economic benefits. We also evaluate how downstream value chains and the actors involved are impacted by the new diversified cropping systems, and propose new organizational structures adapted to the new production models, from farmer to consumer."*

2. Our key assumptions of our business model:

The key assumptions for our business model are that diversified and low input farming systems have positive environmental impacts with higher crop yields from different crops, and that customers are prepared to pay a better price for sustainably produced products. Expected environmental impacts include reduced soil erosion, increased soil quality, carbon sequestration, increased soil water retention, higher biodiversity and higher crops yields from different crops. We also assume that large scale implementation of these systems contribute to reduced flood frequency and better drought resilience.

3. Designing how to test our assumptions:

To know if diversifying your cropping system and using low input farming will actually provide the expected benefits we first reviewed available previous research regarding aspects of crop diversification and low input farming. We also validated the ideas during the stakeholder workshops with the co-innovation network. However, further evidence of the impacts and effectiveness under local conditions requires field experiments to measure the impacts on environmental and economic impact indicators. To test how downstream value chains and the actors involved are impacted by the new diversified cropping systems we will use interviews.

4. Testing our assumptions:

To test the assumptions under local conditions, we implemented diversified and low input farming systems at experimental farms. We started with test implementation focussed at low input farming with reduced tillage, cover crops and compost at two experimental farms in 2008. In 2017, we started additional experiments at other farms with a large international consortium as part of the European DIVERFARMING research project. Here we test crop diversification and low input farming in 22 case studies across Europe. In Spain, for example, we test intercropping of rainfed almonds with Thyme and with Caper crops. In irrigated systems, we look at intercropping and crop rotations

of citrus fruits with beans, vetch and barley. We also evaluate the effects of low input farming like reduced tillage, compost, and green manure to restore degraded soils.

Since some environmental impacts may appear only after longer periods, we combine short-term monitoring with monitoring from long-term experimental farms where experiments were started already over ten years ago. In the diversified systems at all experimental farms, we monitor *environmental impact indicators* like soil organic matter and soil moisture content, soil fertility, soil erosion, and crop yield, and compare these with the results under conventional monocultures. To assess the *economic impacts*, we look at production costs and crop yield of all the different crops.

Finally, we assess all benefits from ecosystem services provided under each cropping system, such as water regulation, flood prevention, climate regulation, water contamination, biodiversity, and recreational benefits from a diversified landscape. By monetization of these ecosystem services, we calculate the Total Economic Value of each different cropping system. Our validation then consists of comparing the outcomes between diversified cropping systems and conventional monocultures. In addition to the field experiments we also consider the entire value chain of the crops before they get to the market and identify possible complications that may arise in this process based on interviews with different actors in the value chain.

5. How we iterated or pivoted our new business model

We are still in the initial phases of solution validation, but the first monitoring results confirm most of our assumptions. However, results also highlight several important aspects to consider in our business model. It may for example take a relatively long time before crop yields actually increase after implementation of diversified cropping systems. Moreover, local environmental conditions, including the initial state of degradation and annual climate conditions strongly determine the outcomes. Therefore, we suggest that the specific type of crop diversification and low input farming is always adjusted to local farm conditions. During the experiments several practical constraints were identified regarding intercropping, since this may hinder farm operations. This requires adjustments in the implementation design of intercropping.

Image 35 - Mechanical harvesting of almonds (© Joris de Vente).

Image 36 - Field monitoring crop yield in diversified systems (© Joris de Vente).

Image 37 - Experimental field with diversification of rainfed Almonds and Thyme (DIVERFARMING research project)(© Carolina Boix-Fayos).

Image 38 - Field monitoring environmental impacts like effects on soil moisture (© Carolina Boix-Fayos).

WEEK 6 GLOSSARY

★ **Assumptions**

Any number of things that we have taken for granted to hold true, but actually we do not currently have proof that they are correct.

★ **Conversational interview**

A conversational interview is a flexible and informal interview with a person of interest to discuss about the solution you have designed, with a particular focus on generating insights on an assumption(s) you have made.

★ **Ethnographic research**

Ethnography research refers to a technique of diving into the world of the stakeholder or user to validate our assumptions.

★ **Minimum Viable Product**

Allows testing a product idea with minimal resources. Although minimally viable, it can maximize your insights into the effects.

★ **Prototype**

A prototype is a simple way of showing how your product or service will look like or function. By building a prototype we may realise errors in our design, or make realisations on how it could function better. A prototype can also be helpful for people to understand your idea better and illicit more precise feedback on what could be improved.

★ **Validation methods**

To validate our assumptions we need to design and execute suitable methods. There are a wide range of methods available that we can use and we need to pick which we believe is most suitable for each of our assumptions.

PHASE 3 IMPLEMENTING
WEEK 7 ASSESSMENT AND MONITORING
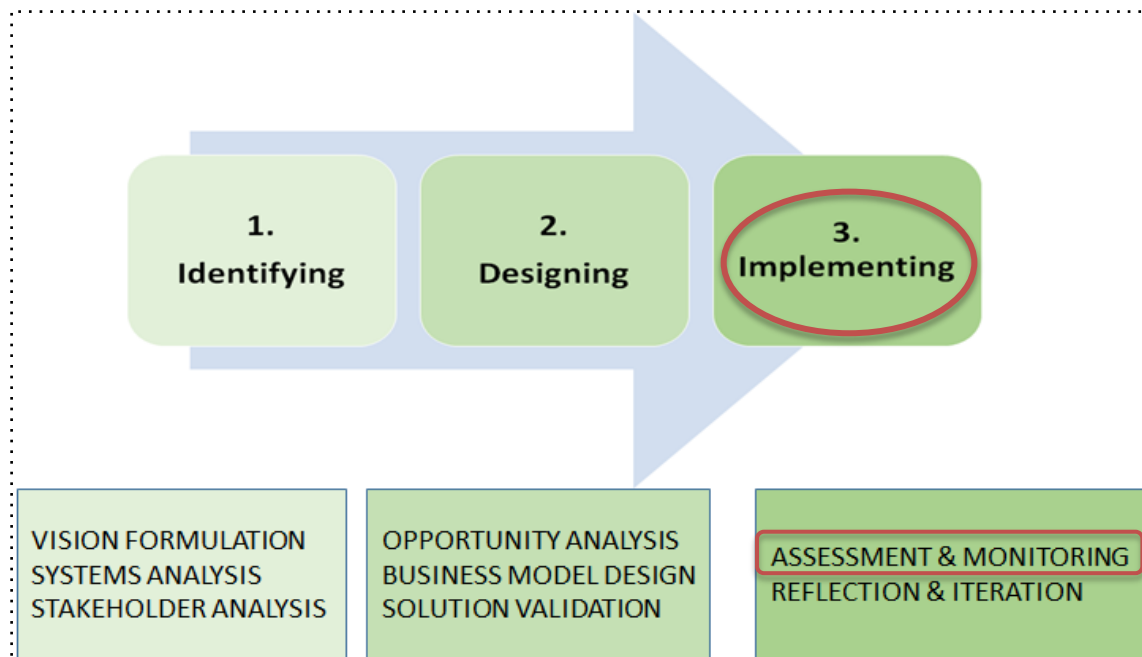
This week we enter into phase 3 of the process: **Implementing**. In this phase your business model moves from being a design concept to an implemented practice that is helping to restore landscapes. We will consider how we will manage the finances, understand if we our business model is delivering its intended value, and forecast potential outcomes. We will also reflect on our constructed business models to consider how they could be scaled-up or scaled-out, and what next actions we need to take to make them a reality.

<u>In this week:</u>

- You will **learn** about the following **concepts**:
  - Financial analysis of business models
  - 4 returns approach (20 years outcomes & value creation in 3 zones)
  - Key Performance Indicators (KPIs)
  - Scenario analysis

- You will read about the **application of concepts** in practice in two of our landscapes:
  - How is the CAuSA project in Portugal monitored?
  - What are the benefits of landscape restoration in the Hekluskógar restoration project in Iceland?
  Reading about their projects will help you in completing the weekly exercises!

- You will **get active** in the **week 7 exercise** by (see the exercise instructions on Coursera in week 7 for further details):
  - Making a financial analysis of your business model
  - Setting specific KPIs to measure the success of your business model for four returns in 20 years
  - Evaluating how you can involve the stakeholders that are impacted through the 4 returns
  - Doing a Scenario Analysis

THIS WEEK'S CONCEPTS

What is assessment and monitoring?

In this week we move our business model out of the design phase and start to consider how we would be able to know if it is on-track to deliver its proposed value. We need to consider questions such as; Is the business model financially viable and does it have enough money to pay workers and buy raw materials? Is the business model actually restoring the landscape? Is the business model actually providing value for the local community?

To answer these questions we will need to make some form of assessments over a period of time. **Assessment** is the judgement of how our business model is performing, judged against a certain set of expectations. **Monitoring** is how we will observe the functioning of the business model and actually collate the data for our assessment. Later on, based on our assessment and monitoring we can consider changes to iterate or pivot our business model if we are not meeting our required level of success.

Considering how we would assess and monitor our new business models at this stage can be very useful. Offering a set of value measures of ecological, social and financial returns will be helpful to garner support for our new business model. It may persuade stakeholders to join our project or entice investors to put forward finance.

We also need to know now what our assessment measures will be in order to understand how we may get this information in the monitoring process. Scientific instruments could be needed to measure ecological aspects such as water flow rates, while community events may need to recorded in how often they occur and how many people were present.

Key Terms

Assessment is basically a 'scanning approach' that helps you judge how your business model is performing versus set expectations. Assessments can be in-depth or more light and help you to judge and decide the value or quality of your business model.

Monitoring is the collection of data through observing and recording that enables you to make assessments. Monitoring is needed to keep track of change and progress in your business model over time and see if you are on-track to achieve set goals.

What is a financial analysis of your business model?

To understand if we have a financially viable business model we need to gain an appreciation of the expected flows of finances. For this we need to understand what are all the costs of operating our business model (the outflows of finance) and what are the expected revenues that we can generate (the inflows of finance).

Outflows of Finance: Costs are required payments such as the salaries of employees, purchase and upkeep of buildings, and purchase of materials.

Costs can be differentiated between fixed and variable. **Fixed costs** are independent from the number of units sold and need to be paid regardless of the outputs of our business model, such as the rent payable for use of a building. **Variable costs** depend on the units sold, with increases in output leading to higher costs. Examples are payment of labour or the raw materials required to make a product.

To put our business model into practice we are likely to need to start with some finance to cover the starting **capital costs** that occur only once, such as the purchase of machinery or setting up a website for the first time. By calculating the capital cost we start to understand what level of finance we need to start the new business.

Inflows of Finance: Revenues are the finances that that we earn through our business model. We can calculate these by multiplying the price of the product or service sold by the number of units sold. We may also consider other forms of finance flowing into our operations. We may apply for a form of **debt finance** from a financial lender such as a bank, we may receive finance through **grants** from governments or philanthropic organisations, or we may receive finance through selling **equity** in our business (e.g. selling a share of the ownership rights).

Cash-flow: It is important that we understand when the costs and revenues of our business model occurs. The main reason for small business failure is having a cash shortage, resulting in the inability to pay short term bills. To help avoid this we can draw a **cash flow forecast** to predict the amount of cash in the business and if there will be shortages.

The table below provides an example of a cash flow forecast.

	Month			
	Jan	**Feb**	**Mar**	**Apr**
Opening Balance of Cash €	10	8	3	0
Inflow				
Total Sales	8	4	9	12
Cash Sales	5	4	6	8
Cash: Credit sales (month previous)	2	3	0	3
Total Inflow (cash coming in during the month)	7	7	6	11
Outflow				
Payment for Stock	4	6	3	2
Payment for Labour	2	3	3	4
Payment for Rent	3	3	3	3
Total Outflow (cost of payments made in the month)	9	12	8	9
Net Cashflow	(2)	(5)	(3)	2
Closing Balance of Cash €	**8**	**3**	**0**	**2**

This example cash flow forecast presents that the firm may enter cash shortages sometime in March. The closing balance of cash in this month is zero. To business may seek to address this issue through different solutions. For instance, can they start with a higher level of cash? Can they invest less cash in purchasing stock (and still have enough stock to cover sales)? Can they differ some payments to their workers by a month or two?

Break-even: When our total inflows of finance match our outflows of finance, the business model will break-even. This is the point where there is no net loss or gain, and the business model is self-sustaining. This analysis will help us determine the minimum output we need to sell in order to cover our costs and start to make profit. The equation to work out break-even for a period of time per number of units:

Break-even number of units = Total Fixed costs / Unit contribution

Let's see an example:
We sell almonds grown from ecological restorative farms. The sales price is €3 and it costs us €1 per unit in labour and raw materials. This results in a contribution per unit of €2. Our fixed costs (e.g. rent on the factory) is €200 per month.

	€
Sales revenue (per unit)	3
Variable Costs (per unit)	1
Contribution (per unit)	2
Fixed Costs	200

With this information we ascertain that we need to sell:

Total fixed costs / Unit contribution = Break-even number of units

200 / 2 = 100 units per month to break-even.

If we believe that this is more than we are able to sell in a month then we can take action. Can we improve our contribution per unit? This can be through lowering our variable costs or selling our product at a higher price. Can we lower our fixed costs per month by moving to a cheaper location?

Outcome Indicators

In Week 1 we formulated a vision of the desired future state of your chosen landscape. Based on this vision we have designed a business model intended to help restore the landscape. Using the triple layered business model canvas will have considered how multiple stakeholders may capture value on social, environmental and financial dimensions. To assess if our business model is actually delivering its intended values, we need to use outcome indicators.

Outcome indicators are sub-goals that help contribute toward the overarching impact goal of your business model. An outcome should be in reach within a more specific timeframe and directly aligned to the impact goal. It goes beyond the direct results of interventions, and forms an intermediate step towards reaching the aspired impact: it connects project/business outputs with

the overall goal. The extent to which you are on track of reaching your outcome indicator can be measured over time with more specific indicators on e.g. number of farmers reached, the improvement of your soils and the cost-benefit ratio of farmers active in your supply chain. This way, they feed into your overarching outcome indicator.

It is highly important that your outcome indicators comply with the following criteria:

- **S**pecific - It has to be clear what the outcome indicator exactly measures. There has to be one widely-accepted definition of the outcome indicator to make sure the different users interpret it the same way and, as a result, come to the same and right conclusions which they can act on.
- **M**easurable - The outcome indicator has to be measurable to define a standard, budget or norm, to make it possible to measure the actual value and to make the actual value comparable to the budgeted value.
- **A**chievable - Every outcome indicator has to be measurable to define a standard value for it. It is really important for the acceptance within your team that the outcome indicators are achievable. Nothing is more discouraging than striving for a goal that you will never obtain.
- **R**elevant - The outcome indicator must give more insight in the performance of the organization in obtaining its strategy. If an outcome indicator is not measuring a part of the strategy, acting on it doesn't affect the organizations' performance. Therefore an irrelevant outcome indicator is useless.
- **T**ime phased - It is important to express the value of the outcome indicator in time. Every outcome indicator only has a meaning if one knows the time dimension in which it is realized. The realization and standardization of the outcome indicator therefore has to be time phased.

This way, you can ensure that you can realistically achieve the goals in a specific, predefined time.

What is the 4 Return Approach?

The 4 returns approach assesses a business model not only through financial returns, but also considers the return of inspiration, social capital and environmental capital. We will need to construct outcome indicators for each of these 4 capitals.

The *return of financial capital* considers the financial performance of the business model. This goes beyond considering the finances of our own organisation, as we have considered above, to now consider the financial return to all stakeholders.

Return of Financial Capital

Data flow	Outcome	Aggregated Indicator
Overarching Outcome Financial Capital	*Local economy: A 4R landscape is capable of attracting new* funding for 4 returns initiatives or existing funding within a landscape is channeled toward 4 returns initiatives.*	*Increased flow of funds toward 4 returns initiatives in the landscape can be shown over time.*
Profitability Index	The restorative business cases are capable of generating positive cash flows.	Positive cash flows have been generated for the restorative business case(s) and/or there is room for reinvesting in the business (To be derived from financial reporting).
Investor Index	IRR for investors is met for their respecitve thresholds (e.g. Hurdle rate or income threshhold)	IRR for investors is met for their respective thresholds (To be derived from financial reporting)
Farmer Income Index	Increased farmer income and/or beneficial cost/benefit ratio in favour of the farmer.	Total increase in annual farmer income and/or beneficial cost/benefit ratio in favour of the farmer.
Most Significant Change Stories	**The Return of Inspiration:** The 4 returns approach inspires people in the landscape and provides them with a sense of hope and pride.	MSC Stories show that by return of Financial Capital people have a deeper connection to their landscape.

*New in terms of additionality: Increased flow of funds towards areas / projects / landscapes where these would not have been without the 4 returns interventions (e.g. government/private/public grants and investments).

COMMONLAND
4 RETURNS FROM LANDSCAPE RESTORATION

1

The *return of inspiration* concerns the engagement of people, innovation as well as awareness and passion. It should "give people hope and a sense of purpose" (Commonland, 2017). Examples of how inspiration can be returned includes the engagement of the local community, community-based landscape art projects, and the importance of the local culture and connectedness with the landscape initiatives. This type of return can be measured through the people engaged and exposed, the number of people participating in workshops and events and other people replicating activities and starting their own 4 returns initiative.

Return of Inspiration

Data flow	Outcome	Aggregated Indicator
Overarching Outcome Inspiration	Return of Inspiration: People are aware of the opportunity of landscape restoration, feel inspired about the 4 returns approach, and start 4 returns initiatives.	Combined number of people aware of the opportunity of landscape restoration, feel inspired about the 4 returns approach, and start 4 returns initiatives.
Awareness Index	People are aware and inspired by the opportunities offered by landscape restoration.	Number of people demonstrating positive attitudes and beliefs towards landscape restoration and its practices (# of people exposed)
Participation Index	People are engaged and participate in the 4 returns approach.	Number of people participating in landscape restoration initiatives and/or in 4 returns restorative businesses (# of people engaged)
Replication Index	People within and outside the landscape start new 4 returns initiatives.	Number of landscape restoration initiatives and/or enterprises being established inside or outside the respective target landscapes.
Most Significant Change Stories	The 4 returns approach inspires people in the landscape and provides them with a sense of hope and pride.	MSC Stories show that by Return of Inspiration people have a deeper connection to their landscape.

COMMONLAND
4 RETURNS FROM LANDSCAPE RESTORATION

7

The *return of social capital* considers the effect your business model has on jobs, security, healthcare or education. Examples of how this return can be measured includes jobs created and trainings provided.

Return of Social Capital

Data flow	Outcome	Aggregated Indicator
Overarching Outcome Social Capital	Strong communities & networks: The community in the landscape is supported by new job opportunities, a strengthened set of skills, and by an effective community network.	(In)direct employment rates, entrepreneurial skills and social landscape network(s) have increased and/or improved.
Employment Index	Direct and indirect employment opportunities are improved for people in the landscape (quantity of jobs)	Number of direct/indirect employees at the venture/landscape level.
Entrepreneurship Index	People's entrepreneurial and professional skills are improved (quality of jobs)	Number of people whose entrepreneurial and professional skills have been improved
Network Index	Different groups are connected via long-lasting partnerships with a 4 returns ambition.	# of different groups connected to convey knowledge, information, and other support for innovation (e.g. Universities, Business schools, governmetal institutions etc.)
Most Significant Change Stories	The Return of Inspiration: The 4 returns approach inspires people in the landscape and provides them with a sense of hope and pride.	MSC Stories show that by Return of Social Capital people have a deeper connection to their landscape.

COMMONLAND
4 RETURNS FROM LANDSCAPE RESTORATION

The *return of natural capital* considers how your business model is impacting the environment, for example the biodiversity, soil, water or vegetation. Depending on the factor, it can be measured through the soil health indicators, water flow quality and quantity and indicative numbers of key species in the landscape.

Return of Natural Capital

Data flow	Outcome	Aggregated Indicator
Overarching Outcome Natural Capital	*Improved Holistic Land Management: Sustainable land use management practices result in improved land conditions (i.t.o. both soil, water, and vegetation quality and availability).*	*Number of hectares (# ha) under improved management (aggregating the progress made on improved soil quality, restoring hydrological systems, as well as vegetation/biodiversity).*
Biodiversity Index	Abundance and diversity of important species in the landscape are improved and maintained.	Number of hectares (ha) where the abundance and the diversity of species are improved and maintained.
Soil Health Index	Soil quality is improved and maintained.	Soil Organic Matter, pH, CEC values increase over 5 year time periods and visual assessments of soil structure and water drainage levels of the soil improve.
Water Index	Water availability and / or quality is improved and maintained.	Improved water flow (m3) and / or improved water quality (%).
Most Significant Change Stories	The Return of Inspiration: The 4 returns approach inspires people in the landscape and provides them with a sense of hope and pride.	MSC Stories show that by return of Natural Capital people have a deeper connection to their landscape.

COMMONLAND
4 RETURNS FROM LANDSCAPE RESTORATION

What is a scenario analysis?

In the previous week we considered and tested some of the key assumptions that our new sustainable business model rests upon. Now we consider what our key uncertainties are. These may be economic, political, societal, technological, environmental, legal, or industry factors. Will a new piece of legislation support or disrupt the model? Will consumers continue to care about a particular concern? Will the local economy take a significant downturn? Will climate change affect my business model?

By identifying these uncertainties and considering how they are connected, scenarios of the future may be created. Commonly we would design scenarios explaining the best case, the worst case and what we believed to be the most realistic case.

The aim here is not to control those futures, but instead to gain an understanding of how the business model may operate under different contexts. For instance, we may already foresee that under the worst case scenario extra investment will be needed or we may need to substantially amend the business model.

We can use the scenarios we build to amend the design of the business model to make it more resilient, help choose between competing designs, or help us to gain support from stakeholders for our new project.

For example, we may consider that we have two key uncertainties. One is how much will be our fixed costs and another how much will be our sales revenue per unit. A quick scenario analysis would find three different break-even points (see table below). We can then also consider how many units

of product/ service we may be able to sell a month under different scenarios and project if we would make a profit or a loss.

Return of Financial Capital	LOW	REALISTIC	HIGH
Sales revenue (per unit)	€ 3	€ 3	€ 4
Variable Costs (per unit)	€ 1	€ 1	€ 1
Contribution (per unit)	€ 2	€ 2	€ 3
Fixed Costs	€ 20	€ 15	€ 10
Break-even (units)	10	8*	4**

* 7.5 units rounded up to 8 units
** 3.3 units rounded up to 4 units

Scenarios may equally be made consider to the uncertainties of the social and ecological aspects of the project and how they would impact upon the value measurements.

For example, we may consider that we are very uncertain on the level of support we will receive from the local community for our proposed business model. Based on this uncertainty we produce the following scenarios:

Return of Social Capital	LOW	REALISTIC	HIGH
Number of new jobs created	1	3	10
Number of school trainings provided	5	10	16
Number of new enterprises created	0	1	2

Finance Q&A

Over the last seven weeks you have worked hard to understand the problem of landscape degradation and have designed a new business model that may deliver value to a range of stakeholders.

A critical aspect of your business model is how it will be financed. In your design you may have successful constructed a revenue model, perhaps through the sale of products or services. In these cases we still need some initial finance to get things going.

Finance can be defined as investing and lending. Sustainable finance considers how finance interacts with economic, social and environmental issues.

So how can we finance our new business models for landscape restoration?

We've asked five leading experts to give their perspectives on Finance for Landscape Restoration. They have done so, guided by the same set of questions throughout this video compilation:
1. What is your vision on mobilizing finance for landscape restoration projects?
2. What is lacking now and what is needed most?
3. How should project finance for Landscape Restoration be designed?

4. What would be good incentives to mainstream sustainable finance and integrate natural and social capital, next to financial capital, in decision making for investments?
5. Can you give some practical private sector (business/finance) examples?
6. What would be your suggestion for a promising way forward to boost finance & investment for landscape restoration?

Enjoy watching their videos! You can find them on Coursera in week 7:

- ❏ *Mark Gough*, Director Natural Capital Coalition
- ❏ *Dr. Rudolf de Groot*, Associate Professor in Integrated Ecosystem Assessment & Management with the Environmental Systems Analysis Group of Wageningen University. He is Founder and Chair of the Ecosystem Services Partnership (ESP).
- ❏ *Prof. Dirk Schoenmaker*, Professor of Banking and Finance at Rotterdam School of Management, Erasmus University and academic director of the Erasmus Platform for Sustainable Value Creation.
- ❏ *Paul Chatterton*, lead and founder of the Landscape Finance Lab, a global platform for incubating sustainable landscapes linked to environmental group World Wide Fund for Nature (WWF).
- ❏ *Willem Ferwerda*, Founder and CEO of Commonland, Executive fellow Business & Landscape Restoration, Rotterdam School of Management.

ASSESSMENT AND MONITORING IN PRACTICE

1. Forest Fires in Portugal

Monitoring CAuSA

Image 39 - One of the five prototypes of a shelter

CAuSA builds the shelters and sells them to self-sufficiency farmers in exchange for a commitment to transition to sustainable agriculture, and the assurance of market offtake from local associations. The success of this partnership depends on local associations that will buy products in a first stage to help create new revenue streams for farmers to repay their debt.

1. Estimated initial investment needed to establish the new business:
Unknown.

2. Our expected outcomes and output/returns for the next 5, 10, 15 and 20 years

Footnote: The stars used in this visual are meant to help guide MOOC participants in assessing the level to which they are connecting with each of the 4 returns. The stars used in this assessment are based on qualitative expert judgement after assessing each of the cases.

Potential outcome indicators for Return of Inspiration: *Number of farmers, local associations and other stakeholders aware of the opportunity of landscape restoration through agriculture around Tondela, that feel inspired about the shelter-for-change approach, starting 4 returns initiatives based on sustainable agriculture.*

Potential outcome indicators for Return of Natural Capital: *Thousands of hectares of land under sustainable agriculture in the Tondela landscape helps create a well-functioning and self-sustaining agro-ecosystem that captures carbon, sustainably managed biomass production, is rich in biodiversity and water resources and higher resilience to natural disasters such as forest fires.'*

Potential outcome indicators for Return of Social Capital: *Transition to sustainable agriculture with a guaranteed uptake by local associations and access to funding from local banks supports and creates new (in)direct jobs, improves community involvement and level of understanding on the need for restoration and sustainable land management.*

Potential outcome indicators for Financial Capital: *Access to (micro) finance from local banks, support from the local government and guaranteed uptake from local associations helps farmers to bridge the expected yield gap in the first 3-5 years of transitioning to sustainable low-input agricultural practices in the region.*

The following targets per five years can be tracked with more specific indicators that feed into your 20 year outcome indicator.

3. Our Stakeholder Engagement

CAuSA is a Platform connecting the different stakeholders, each with a clear interest in the product and its externalities. The city council is attracted by the societal outcomes of the project, namely the employment it takes back to rural communities. The farmers are attracted by the shelter and the possibility of a new revenue stream. Finally the local associations are attracted by lower costs, and high quality agricultural products.

4. Our best, worst and realistic case:

The success of the project depends on farmers' willingness to cooperate and start a dynamic sustainable agriculture production. The reality is that most of these farmers lived from subsistence agriculture before the fires and just suffered severe losses, family members in some cases. A change in mindset while overcoming a strong psychological issue is the biggest challenge for CAuSA.

In a different perspective, financially speaking, this project needs an initial support to run a pilot, funding the construction of at least 95 shelters, to run a pilot a build a strong case.

Best case: Farmers are eager to use the shelters and are highly interested in sustainable agriculture production. Number of shelters constructed = 200.

Realistic case: Farmers take some convincing of the value of the shelters and sustainable agriculture production. Number of shelters constructed = 100.

Worst case: Farmers are unconvinced by the proposed solution and are not interested in sustainable agriculture production. Number of shelters constructed = less than 50.

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2. The Hekluskógar Restoration Project in Iceland

The multiple benefits of landscape restoration

1. **Our estimated initial investment* we need to establish the new business:**

	€
Variable Costs (per hectare)	
Fertilisers	500
Seeds and seedlings	250
Labour	1000
Total Variable Costs (per hectare)	1750
Fixed Costs (per month)	
Project Manager (50% position)	3000
Office Space	1000
Fixed Costs (per month)	4000

*Please note that the values stated here are for demonstration purposes only, and may not be interpreted to accurately represent the costs of the project.

The main source of funding for the Hekluskógar project has come from the Government of Iceland, while roughly 20% has been generated from private companies.

Based on our values we will require €4000 of funding per month to sustain the activities of the project. The fixed costs of the project include salary for the project manager (in a 50% position) and renting of office space.

Each €1750 received above this amount will allow us to restore one hectare of land. Costs for fertilizers, seeds and seedlings as well as labour for planting can be reduced when finances are not sufficient, but that slows down the speed of the project. These variable costs per hectare will of course depend on the condition of the land to be restored and which restoration strategy needs to be applied. Some of these variable costs are offset by volunteers' work planting seedlings, and in-kind contributions of the Soil Conservation Service and the Forest Service. The National Power Company of Iceland has covered part of the costs of distributing organic fertilizers as well as recruiting some volunteers for planting.

2. Our expected outcomes and output/returns for the next 5, 10, 15 and 20 years

Footnote: The stars used in this visual are meant to help guide MOOC participants in assessing the level to which they are connecting with each of the 4 returns. The stars used in this assessment are based on qualitative expert judgement after assessing each of the cases.

Potential outcome indicators for Return of Inspiration: *Number of stakeholders aware of the opportunity of landscape restoration of the Hekluskógar area, that feel inspired about the approach, with a positive feeling of community members as stewards of the natural environment, starting 4 returns initiatives based on recreational tourism & carbon sequestration.*

Image 40 - Networking and connecting different groups of people. There are many opportunities to educate and spark the interest of the youth in the value of nature and the benefits we get from using the land in a sustainable way. No matter how the world turns, we see the Hekluskógar project as a viable and necessary project. (© Askell Thorisson)

Potential outcome indicators for Return of Natural Capital: *Thousands of hectares of land being restored in the Hekluskógar landscape, to create a well-functioning and self-sustaining ecosystem that captures carbon, restores biodiversity and water resources and increases resilience to natural disasters such as volcanic eruptions.*

Image 41 - Thousands of hectares of land on a trajectory to become a well-functioning and self-sustaining ecosystem, providing ecosystem services to the people in the area and beyond. (© Isabel C Barrio).

Potential outcome indicators for Return of Social Capital: *Landscape restoration interventions support and create new (in)direct jobs, improve community involvement and level of understanding on the need for restoration and improve recreational opportunities.*

Potential outcome indicators for Return of Financial Capital: *Restoration of the Hekluskógar landscape helps avoid damage mitigation costs from natural disasters, provides economic opportunities for sustainable biomass production, carbon offsetting and benefits from educational and recreational tourism.*

A closing remark on the Hekluskógar case is that it is a bit of a challenge to develop a sustainable financial capital case for the current project as the project is essentially 'laying the ground' for future business cases to emerge from the landscape restoration. As well, fitting this project within the twenty-year framework is challenging, because results will probably take much longer to appear. Remember that the time frame for the project, as estimated according to the current availability of funding from the government is 65 years!

The following table presents some of the potential indicators of the development of the project in the first twenty years -- but keep in mind the much longer time frame of the project! For example, for the natural capital return we expect that we will only start seeing some restored and fully functioning ecosystems twenty years after the initiation of the project.

3. Our Stakeholder Engagement:

Involving stakeholders and maintaining their enthusiasm and dedication is very important in such a long-term and large scale project. This can be done through providing regular updates on the progress of the project, its achievements and challenges. For the national government and local authorities focus should be put on translating successful restoration into potential economic, environmental and social benefits that will bri   ng benefits to the area in future years. Involving stakeholders in different activities and decisions will also help them feel ownership of the project. Bringing local and young people on-board through education and recreational activities is likely to raise interest and awareness of the multiple benefits of the project. There are opportunities to educate and create interest of the youth in the value of nature and the benefits we get from using the land in a sustainable way.

4. Our best, worst and realistic case:

The success of the project hinges on many external factors. For example, economic downturns as happened in the economic crash in Iceland in 2008, will have negative effects. The 2008 crash resulted in a drastic cut of the promised funding from the government, so restoration activities had to be reduced, and the time frame for the project had to be expanded from 30 to 65 years. Economic recessions also discourage funding from private businesses that would otherwise be willing to take part through carbon capture or payment for ecosystem services. Natural factors like volcanic eruptions and harsh weather events could also reduce the survival rate of seedlings and vegetation condition, reducing the overall success of the project.

Best case: Increased funding by the government and also private funding is available, so more efforts can be put into restoration of more extensive areas and the project progresses more quickly. No or mild natural disasters occur. Number of hectares under restoration in twenty years: 20,000 ha.

Realistic case: Some fluctuations in governmental funding are to be expected from year to year, and these may require adjusting the time frame of the project. As well, variable weather conditions may imply that some years with colder summers natural revegetation may slow down, whereas years with warmer summers may enhance revegetation. Number of hectares under restoration in twenty years: 10,000 ha.

Worst case: A large economic crash as the one in 2008 could drastically reduce funding for the project. A devastating volcanic eruption could wipe out all the planted areas. Number of hectares under restoration in twenty years: 2,500 ha.

WEEK 7 GLOSSARY

★ **Assessment**

Analysis and evaluation of how a business model is performing against a certain set of expectations. Assessment is basically a 'scanning approach' that helps you assess whether or not your business model - in this case - aligns with the 4 returns, 3 zones and 20 years framework. Assessments can be in-depth or more light and help individuals, organizations and businesses to judge, decide, or determine a certain amount, importance, value or quality of their project or intervention.

★ **Financial analysis**

To understand if we have a financially viable business model we need to gain an appreciation of its expected finances. For this we need to understand what are all the costs of operating our business model (the outflows of finance) and what are the expected revenues that we can generate (the inflows of finance).

★ **Key performance indicators (KPIs)**

These indicators help to set goals for a specific employee, division or a whole company. The respective goal can be measured in for example financial, social or environmental return.

★ **Monitoring**

How the functioning of the business model is observed and how data are collected for the assessment of the business model. Monitoring change and progress in your business over time helps you keep focus and overview of where you are aiming to go within a project, program or strategy, and how you are currently taking steps to get there. Simply put, monitoring (by means of a Monitoring Results Framework) captures the essential elements of the cause-effect linkages for your business or landscape interventions; from inputs and actions, to intermediate results and final goals.

★ **Planetary boundaries**

Nine environmental boundaries that together define a safe operating space for humankind: stratospheric ozone depletion, loss of biosphere integrity, chemical pollution, climate change, ocean acidification, global hydrological cycle, land system change, nitrogen and phosphorus flows, atmospheric aerosol loading

★ **Scenario analysis**

By identifying the uncertainties associated with our business model and considering how they are connected, scenarios of the future may be created. Commonly we would design scenarios explaining the best case, the worst case and what we believe to be the most realistic case. We can use the scenarios we build to amend the design of the business model to make it more resilient, help choose between competing designs, or help us to gain support from stakeholders for our new project.

★ **Three zones of landscapes**

Scheme for awareness raising and priority setting in order to achieve integration of stakeholders and activities within a landscape through identifying all three zones in a given landscape:
o   Natural zone (focus on conservation)
o   Combined zone (both conservation and economic activity)
o   Economic zone (focus on economic activity)
See www.commonland.com for illustration.

★ **4 returns monitoring framework**

The 4 returns monitoring framework follows the logic and structure of a Results Framework. The Results Framework is used by many organizations as a planning and learning tool as it helps you keep

focus and overview of where you are aiming to go within a project, program or strategy, and how you are currently taking steps to get there. Simply put, a Results Framework captures the essential elements of the cause-effect linkages for your project or landscape interventions; from inputs and actions, to intermediate results and final goals.
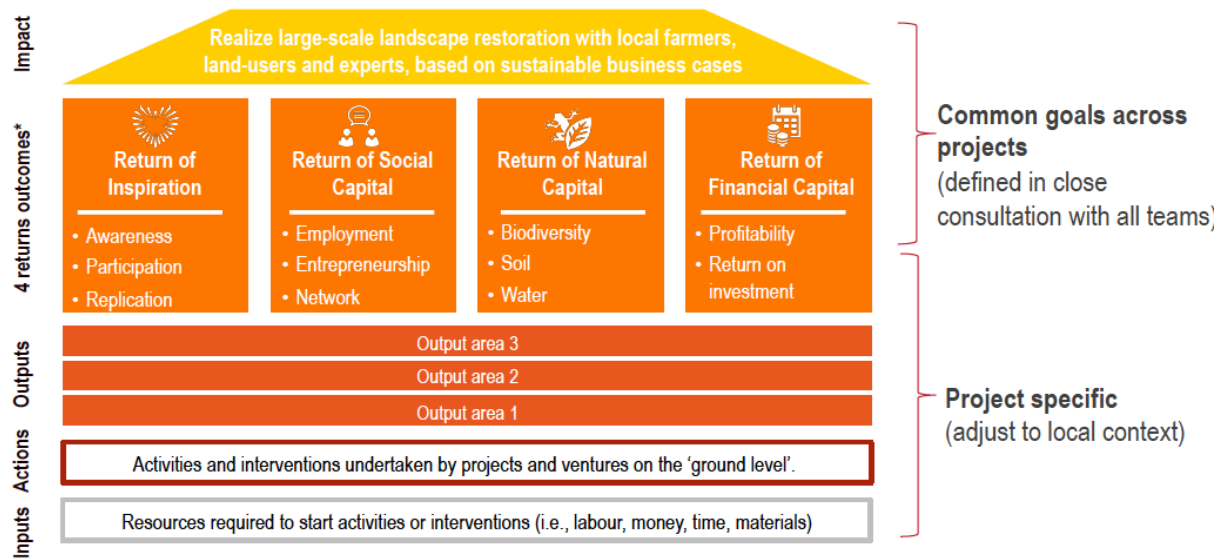
PHASE 3 IMPLEMENTING
WEEK 8 REFLECTION AND ITERATION
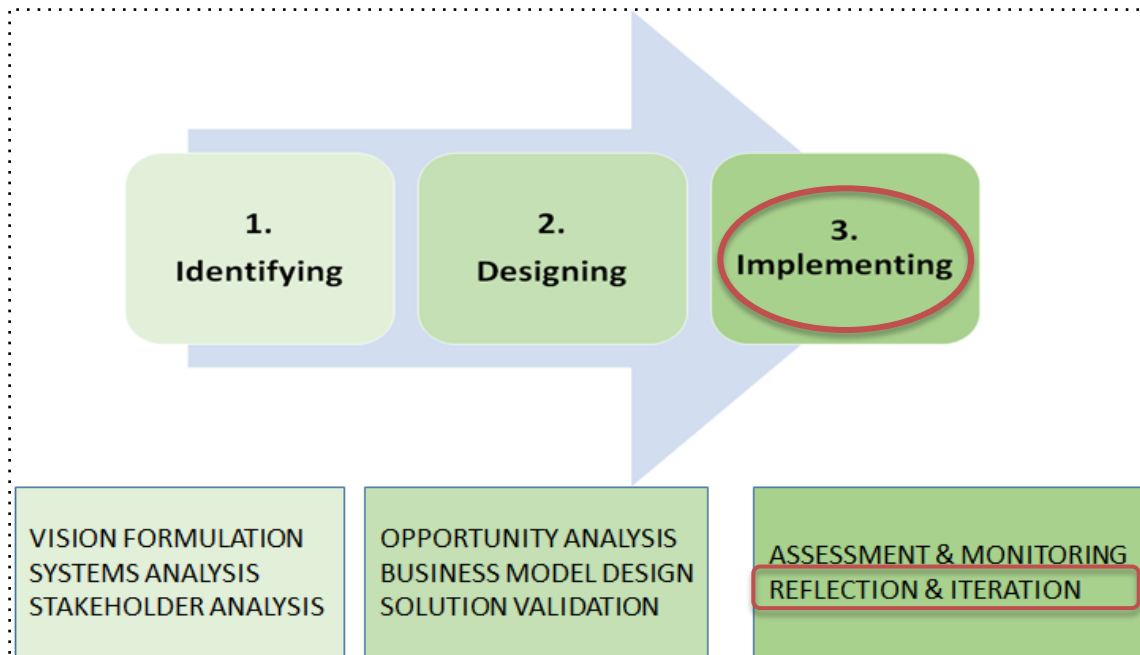
In this week:

- You will **learn** about the following **concepts**:
  - Key leadership principles
  - Our Community of Practice
  - The nexus challenge of the SDGs

- You will read about the **application of concepts** in practice in all of our landscapes:
  What are the main lessons and next steps...
  - ... in the Hekluskógar project in Iceland?
  - ... of crop diversification and low input farming in Spain?
    Reading about these reflections might help you in writing your final reflection.

- You will **get active** in the **week 8 exercise** by (see the exercise instructions on Coursera in week 8 for further details):
  - Reviewing your project exercises of the past weeks in your team or individually
  - Individually reflecting about what you learned and forecasting your next actions
  - Individually submitting your combined project exercise sheets plus your final reflection to Coursera (required) and to the wider community on Slack (optional)

THIS WEEK'S CONCEPTS

Key leadership principles to move from me to we

There are five key leadership principles that are useful when you want to move from an individual to a collective approach - from 'Me' to 'We'. These principles will help you build the internal organization for a business focused on landscape restoration that is sustainable for the long run while generating value for every stakeholder in the system. They emphasize that you as a leader are responsible both for the long-term impact of your organisation and the needs of your employees, and the broader environment you are a part of. They help create a culture where your people support the organization's contribution to society and nature as well as flourish as individuals.

The first principle is called '**Stewardship inspires the long road**': the willingness of a person to take care of and be responsible for the system as a whole and to provide service.

The second principle is '**Purpose and meaning drive motivation'**: a sense of belonging to something greater, which in turn creates a greater likelihood of higher motivation.

The third principle is '**Lead with humility'**: the ability of a leader to put his or her own interest, talents, and achievements in the right perspective, and the willingness to perceive oneself accurately, acknowledging the contributions and strengths of others.

The fourth principle is '**All is connected'**: Encouraging high-quality relationships within organizations, and a caring attitude to the social and natural system it is a part of, is essential for the creation of a trusting culture.

The fifth principle is '**Build on respect'**: Making sure that people feel acknowledged for 1) who they are as human beings and 2) for what they contribute to the organization.

Community of Practice

In the past weeks you have learned about ecological, social and economic principles of landscape restoration and developed your business model that considers multiple returns from landscape restoration.

Now, keep the momentum by joining our online community of four returns practitioners and learners. The platform is there to make it a little easier for you, by giving you access to a joint knowledge base and the opportunity to connect with fellows. Don't underestimate the power of being connected to others who are on a similar track.

Even if they live far away, try to tackle problems of a different ecosystem or come from a different professional work environment than yours - it will encourage you to see others working on similar goals, particular in times when you are confused or frustrated.

But it's also great to celebrate your successes with those, who know by experience how hard it is to restore landscapes. Appreciation for a diversity of viewpoints and remembering that we're all in this together will strengthen us all, so please join us!

Link to the Group 'Business 4 Landscapes': https://www.linkedin.com/groups/13523244/

Zooming out: Realising the nexus challenge of the SDGs

Sustainable Development Goal (SDG) 15 'Life on land' is directly related to SDG 3 'Good health and well-being', SDG 6 'Clean water and sanitation', SDG 13 'Climate Action' and SDG 14 'Life below water' – four other global goals. A negative approach to life on land has direct negative repercussions for the achievement of these goals. On the other hand, an effective approach to life on land, creates all sorts of positive spill-over effects. This interconnection is the so called 'nexus challenge'. Reverse the direction of landscape degradation into one of lasting landscape restoration requires a better understanding of this nexus challenge.

In the preamble to the SDG agenda the United Nations declared that "the interlinkages and integrated nature of the Sustainable Development Goals are of crucial importance in ensuring that the purpose of the new Agenda is realised. If we realise our ambitions across the full extent of the Agenda, the lives of all will be profoundly improved and our world will be transformed for the better" (UN, 2015:6).

REFLECTION AND ITERATION IN PRACTICE

1. The Hekluskógar Restoration Project in Iceland

1.   What we learnt during this project:

The Hekluskógar project has already accomplished many important objectives despite its long-term span. Perhaps the main accomplishment has been that the project has raised awareness of the importance of recovering and preserving functioning ecosystems, not only for risk prevention but also to ensure the delivery of important ecosystem services that are critical to the wellbeing of local communities. We have seen successful establishment of vegetation and the native woodland species have started to spread naturally. This indicates that the chosen restoration methods are appropriate for the harsh conditions in the area. We have learned how the engagement of stakeholders is critical to the success of such a long-term and large-scale project. Active engagement of stakeholders gives them ownership of the project. Stakeholders now understand better the importance of the project and see the benefits that it has already brought and will continue to bring. Further, working together strengthens community bonds and helps in building social cohesion. Finally, we have also learned about the challenges associated with finding and ensuring funding for projects that do not have an obvious, short-term economic benefit.

2.   What our next actions will be:

The Hekluskógar project is far from being completed – there is still a lot of work to do! Planting has been done in many areas, but it will still take decades for the ecosystems to be self-sustaining. Some areas still have unstable surfaces that need to be treated before planting can start, and many seedlings still need to be planted. The challenges ahead are linked to maintaining enthusiasm and cooperation between stakeholders, and to work with the uncertainty of what climate change may bring and what will happen after the next volcanic eruption. However, all this work is now backed up by over a decade of fruitful collaboration and promising results, with many of the originally planted island clusters producing seedlings that are starting to colonize barren areas.

2. Crop diversification and low input farming in Spain

1. What we learnt during this project:

There is still a lot unknown about how best to achieve optimal benefits from crop diversification and low input farming. While our first monitoring results confirm many of our expectations, we have also learned that some aspects of our business model require reconsideration or further assessments. It may for example take a relatively long time before crop yields actually increase after implementation of diversified cropping systems or low input farming. We have learned it is crucial to adjust the specific type of crop diversification and low input farming always to local farm conditions. Moreover, farmers are often reluctant to apply crop diversification until they actually see what benefits they obtain. There may also be practical constraints that require adjustments in the implementation design of crop diversification and we still need more information about the impacts for the entire value chain.

We have learned from this project that early understanding of the socio-ecological system is extremely important. Making a good system map allowed us to understand the actual land degradation process and to identify interactions, feedback mechanisms, opportunities and barriers for implementation of our business model. Continuous collaboration with a range of key stakeholders in a co-innovation network has been fundamental to make this system map as realistic as possible and to design and validate our business model iteratively. Using the triple layered business model canvas proved very useful to make the multiple impacts of our business model as specific as possible and highlight what we need for its successful implementation.

2. What our next actions will be:

Since most ecological and social processes take time, we continue monitoring the economic, environmental and social impacts of crop diversification and low input farming at experimental farms. We also started a process of participatory monitoring in which farmers at twelve additional farms in south-eastern Spain each will monitor the impacts of various regenerative farming practices and share their findings to foster knowledge exchange and wide scale implementation. We use spatial simulation models to assess the impacts of large-scale implementation of crop diversification and low input farming under present and future climate scenarios. To allow a holistic evaluation we are working on monetization of the impacts on a range of ecosystem services. We will continuously share the monitoring and assessment results within the co-innovation network for joint evaluation and iteration.

Week 8 GLOSSARY

★ **Community of Practice**

A Community of Practice is a group of people who share a common profession. Link to the Group 'Business 4 Landscapes': https://www.linkedin.com/groups/13523244/

★ **Leadership principles**

There are five key leadership principles that are useful when you want to move from an individual to a collective approach - from 'Me' to 'We'. These principles will help you build the internal organization for a business focused on landscape restoration that is sustainable for the long run while generating value for every stakeholder in the system. They include: 'Stewardship inspires the long road', 'Purpose and meaning drive motivation', 'Lead with humility', 'All is connected' and 'Build on respect'.

★ **Nexus challenge**

The nexus challenge refers to the interconnection between the achievement - or failure to achievement - between different Sustainable Development Goals. For instance, a negative approach to SDG 15 'Life on land' has direct negative repercussions for the achievement of other SDGs. On the other hand, an effective approach to 'Life on land' creates all sorts of positive spill-over effects.

Weekly Learning Objectives

Week	Learning Objectives
STEP 1: VISION FORMULATION	• Formulate **a shared vision on landscape restoration within a group** • Analyse **the means available for the creation of a new business model** • Explain **how business model innovation can contribute to landscape restoration**
STEP 2: SYSTEMS ANALYSIS	• Analyse **the behavior of a social-ecological system** • Determine **the factors within a social-ecological system that cause the land to degrade** • Identify **opportunities within a socio-ecological system for sustainable business models**
STEP 3: STAKEHOLDER ANALYSIS	• Execute **a stakeholder analysis** • Analyse **the tensions between stakeholder interests**
STEP 4: OPPORTUNITY ANALYSIS	• *Construct* **a co-creation network** • *Validate* **your understandings of system behavior and stakeholders** • *Identify* **opportunities for new business models**
STEP 5: BUSINESS MODEL DESIGN	• *Design* **a commercially viable business model for sustainable landscape restoration.** • *Analyse* **your business model with the triple layered business model canvas**
STEP 6: SOLUTION VALIDATION	• Validate **the value proposition of the business model** • Design **tests for key assumptions of the new business model.** • Analyse **the key uncertainties that may affect the success of the business model**
STEP 7: ASSESSMENT AND MONITORING	• Analyse **the impact of a business model for landscape restoration** • Construct **a plan for monitoring the impact of a business model for landscape restoration**
STEP 8: REFLECTION AND ITERATION	• Discuss **the main challenges and opportunities for business model innovation for landscape restoration** • Evaluate **your next personal actions in light of what you have learned throughout the past eight weeks**

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Validating the Product
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Validation Board
https://www.leanstartupmachine.com/validationboard/
Test and Prototype
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Rapid Prototyping
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Raphaele Deau - Landscape Finance Lab WWF / Scale project
Landscape Finance Lab. The Landscape Finance Lab's mission is to help and connect landscape teams, governments, corporates and financial institutions to incubate sustainable landscapes that generate impact at scale. The LFL is pioneering this new approach in landscapes that span land & sea areas over 1 million hectares, attract investments of $100m+ and are able to run sustainably for decades. We do this by incubating sustainable landscapes using innovative financial instruments, leveraging market forces and unifying stakeholders to create investable solutions. We equip landscape teams and investors with tools and connections to create a sustainable, decades long program and access untapped financing.

Thekla Teunis - Founder and director of Grounded / *Liz Metcalfe* - Business developer at Grounded
Grounded was founded in 2014 by Thekla Teunis under the name "Four Returns". Thekla's inspiration for this new endeavor originated during an eye-opening cycling trip through China, Vietnam, Laos and Thailand. She was struck by the declining state of the agricultural lands she was riding through. After weeks of seeing this degradation she decided that she wanted to work with farmers to make their land healthier and more productive.

Bas van Dijk - Commonland 4 returns partner

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