Rotterdam School of Management
Erasmus University

Case Development Centre
FOUNDED BY
Rotterdam School of Management
Erasmus University
RSM Erasmus

# Commonland
# The AIVelAI Project

*Altiplano region, Spain © Commonland*


*ENABLE is co-funded by the Erasmus+ programme of the European Union under agreement number-2016-1-NL01-KA203-023013.*

COMMONLAND
4 RETURNS FROM LANDSCAPE RESTORATION

ENABLE
BUSINESS 4 LANDSCAPES

Co-funded by the
Erasmus+ Programme
of the European Union

## Introduction

When he first visited the Altiplano region of Andalusia in Southern Spain, Michiel de Man was struck by the immensity of the dusty plains and how much they reminded him of travels to the Sahara and Australian desert. Driving on country roads in his rental car, he was greeted by one of those 'welcome-to-our-town' type of signs. It read "Bienvenido a Los Veléz!" and had pictures of a sun, trees, and happy farmers. But nothing in the surroundings justified the tone of optimism set by the sign. The barren soils all around were a repetitive pallet of different yellow and earth tones, and deep cracks and gullies in the Earth's crust. He couldn't grasp how this dry and degraded landscape could be one of the world's main production regions for rain-fed almonds. The road was mostly empty, only the odd truck driver or older couple returning from a late Spanish lunch moseyed by and in a fleeting moment of passing he caught their suspicious glances at him.

For decades, younger generations have been leaving the impoverished Southern regions of Spain, headed to Madrid and other major cities in search of opportunities. Tourists are an even rarer sight in the region than young couples and families. So when Commonland and Michiel first made their entry, it was a sight for sore eyes.

As barren as the land is, hope and inspiration among the farmers is depleted. Agriculture in the degraded landscape in the Altiplano region is a tough business. Farmers Worrying if there will be enough rain next season, if the crops will produce enough yield to pay impending debts and bills, takes up the farmer's mental bandwidth and time, leaving them no space to ponder what they might do to reverse the trend and improve the situation.

It was in this state that Michiel first came to the area in 2014, after Commonland, a Dutch foundation for landscape restoration he co-founded, decided it would work in this region for its next business driven landscape restoration project. Michiel and his team were quick to reach out to the locals. At an initial meeting with farmers, municipal officials, and business owners he invited them to voice their ideas and dreams for what the area, called AlVelAl – a acronym for three Spanish provinces Altiplano, Los Vélez, and Alto Almanzora - could look like in twenty years-time.

---

*Lára Hilmarsdóttir prepared this teaching case under the supervision of Tao Yue at the Case Development Centre, Rotterdam School of Management, Erasmus University. The authors would like to thank Michiel de Man, Dietmar Roth, Simon Moolenaar, Willem Ferwerda (CommonLand), Astrid Vargas (Inspiration 4 Action), and Dr. Joris de Vente (Soil and Water Conservation Research Group, Spanish National Research Council CEBAS-CSIC) for their information and comments.*

*This case is based on field research. It was written to provide material for class discussion and for the MOOC Landscape Restoration for Sustainable Development: A Business Approach to Sustainable Landscape Restoration rather than to illustrate either effective or ineffective handling of a management situation.*

*"We asked them to look twenty years ahead into the future and think about how they would want this place to look like for their children. This made them consider it from a different perspective and people started to see the potential of this territory with new ideas. From this we jointly created an inspirational vision for the region".*

Since the initial meetings, Commonland has supported local farmers and entrepreneurs to turn their dreams into reality. Several initiatives have been launched, including La Almendrehesa, which is the biggest one to date. The company helps farmers to switch to sustainable agricultural methods on their almond farms. Other initiatives include restoring and furbishing caves for accommodation, an aromatics business, a composting plant, and several more.

Three years and dozens of small initiatives later, the local team had learned a lot and made substantial achievements in the region. At the same time, of the 630,000 hectares of land designated for landscape restoration at the get-go, there were now only several hundreds of hectares of land where regenerative and sustainable agricultural practices were being implemented. Some of the farmers that had signed up to join the initiatives launched in AlVelAl were hesitant or doubtful of the potential of business-driven landscape restoration. It remains uncertain if there is sufficient market demand for the regenerative products being produced in AlVelAl to motivate the farmers to go 'green' in their land use practices.

It is soon time for Michiel to sit down with Willem Ferwerda, the founder and chief executive officer of Commonland, to discuss the AlVelAl project. Willem will want to know what progress has been made so far, and what strategy Michiel has conjured for the coming years to have increase the impact in AlVelAl. The staff, finance, and time to be allocated to the project depends on whether or not the project has the potential to have a real economic, ecological, and social impact on the land and people living there.

## Landscape Degradation

Land is a finite resource on Earth. Without it and the ecosystems it sustains, life on Earth would not be possible. The UN Environment Program (UNEP) defines ecosystems as "the dynamic systems in which plants, animals, and micro-organism communities and the non-living environment interact with each other and provide services essential to sustain human life"[1].

Ecosystem services refer to the benefits humans obtain directly or indirectly from ecosystems. Those services are typically classified into four categories; provisioning, regulating, supporting, and cultural. Provisioning services include goods that are provided directly by the land such as food, fresh water, and raw materials. Less obvious but no less important ecosystem services include regulatory ones such as climate and water regulation, erosion regulation, and pollination, as well as supporting services such as nutrient cycling and soil formation. Lastly, land also provides many cultural and aesthetic services (Appendix A).

## Increasing Strain on Earth

Natural capital is another term for the stock of renewable and non-renewable natural resources on earth such as plants, animals, air, water, soils, and minerals, that combine to yield a flow of benefits or services to people. These flows can be ecosystem services or abiotic services, which provide value to business and to society. Degradation of ecosystems results in the persistent reduction in the capacity of those systems to provide ecosystem services.

The tremendous growth in the world's population over the past century, from 1.7 billion in 1900 to 7.3 billion in 2015[2], has been possible because of the natural capital that the earth contains. However, at the current rate at which natural capital and the resulting ecosystem services are being consumed, more is required of the planet than it can provide in the long-term. In 2012, the biocapacity equivalent of 1.6 Earth's was needed to provide all the natural resources and services that humanity consumed in that year.[3] In the long-term this consumption rate is unsustainable and will eventually result in the irreversible depletion of resource and degradation of land.

## Costs of Degradation

Ecosystem services are often overlooked and undervalued. The effects of excessive consumption of ecosystem services are already apparent across nearly every part of the world in the form of land degradation. The UNEP notes that "[n]early every country can identify land where land degradation has caused virtually irreversible losses of agricultural productivity, long before the onset of climate change"[4]

Land degradation is defined by the Food and Agriculture Organization of the United Nations (FAO) as "the reduction in the capacity of the land to provide ecosystem goods and services and assure its functions over a period of time for the beneficiaries of these"[5]. Land degradation occurs when ecosystem functions are affected in a systematic negative way due to unsustainable land management (Appendix B).

The Millenium Assessment Report by the World Resource Center showed that in 2000, 10 to 20% of the world's drylands, which cover about 41% of the Earth's surface and are home to 2 billion people, had been degraded.[6] The IRP reports that at least 33% of soils around the world are moderately to highly degraded because of erosion, nutrient depletion, acidification, salinization, compaction, and chemical pollution.[7]

Invariably, land degradation goes hand in hand with a plethora of other problems, ranging from loss of biodiversity and soil erosion, to wars and famine. As the UNEP puts it, "[i]n virtually every case, land degradation has led to social dislocations and economic losses, in addition to off-site environmental consequences, including reduced air and water quality"[8].

To date, most land is valued solely based on the market-value of the crops it yields. However, organisations concerned with ecosystems and land are developing new valuation methods to estimate of the cost of land degradation by expanding the cost-analysis to include not just the provisioning services of land, but also regulating, supporting, and cultural services. The annual cost we incur from impaired ecosystem functions as a result of land degradation has been estimated to be around $6.3 trillion, which equated about 10% of global GDP in 2010[9]. For every 12 million hectares of land that are degraded each year, 20 million tonnes of grain could have been grown instead.

A study by The International Food Policy Research Institute, using the total economic value approach, shows that 46% of that cost of land degradation is incurred by local users of ecosystem services, while the remaining 54% is incurred by beneficiaries other than local land users. This shows that the cost of land degradation is borne by not just those inhabiting the land where the degradation occurs, but rather, more than half of the costs are borne by the entire world population.[10]

## Landscape Restoration

Currently, 60% of all land on Earth is managed, and of that land, about 60% is used for agriculture, which in most places is carried out in an unsustainable way. "Changes in land cover, driven by the way people use land, are perhaps the most important single change in terrestrial ecosystems, affecting the supply of services"[11].

As large as the costs of landscape degradation are, the opportunities are also big. The forecasted growth in human population to 11.2 billion by 2100 is a strong motivation for restoring landscapes. Agriculture can be a part of the solution to landscape degradation, if the right resource management regime is in place.[12]

The UNEP, the UN Convention to Combat Desertification, and the World Resource Institute estimate that there are two billion hectares of severely degraded land suitable for rehabilitation through ecological restoration, and three quarters of that land, or 1.5 billion hectares, are suited for mosaic restoration where forest and trees are combined with other land uses such as regenerative forms of agriculture and agroforestry. Because landscape degradation is for the most part caused by human activity including agriculture, industry, and urbanisation, the reversing of degradation by restoring land is possible by altering the activities causing degradation. The Living Planet Report by WWF urges that "we need to transition to an approach that decouples human and economic development from environmental degradation"[13]. By the same token, human and economic development should be coupled to land restoration.

Awareness of the seriousness of land degradation is growing across the globe, and organisations are in increasing measure taking action to combat it. In 2011, Germany, Brazil, Costa Rica, El Salvador, Rwanda, the United States, South Korea, China, as well as a host of multinational organisations convened in Bonn, Germany,

and set up the Bonn Challenge, an initiative to restore 150 million hectares of degraded land by 2020. The International Union for Conservation of Nature (IUCN), one of the signatories to the challenge, estimates that fulfilling the goals set by parties to the Challenge will create $84 billion per year in net benefits, which would in part be incurred by local rural communities through better income opportunities[14].

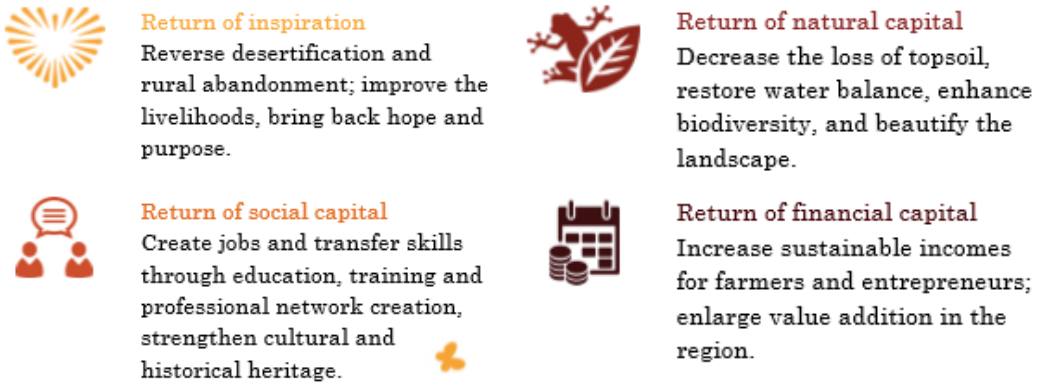
## Commonland

In 2013, leaders from three organisations; the Commission on Ecosystem Management at the International Union for Conservation of Nature (IUCN), Rotterdam School of Management (RSM), and the COmON Foundation got together. Their meeting resulted in the founding of the Dutch organisation Commonland which has since been spearheaded by Willem Ferwerda.

The goal of Commonland is to "realize large-scale landscape restoration with local farmers, land-users and experts, based on sustainable business cases". Commonland differs from many other organisations that are involved in landscape restoration in that business cases are at the heart of its land restoration efforts.

However, Willem realized early on that landscape restoration goes far beyond financial returns for involved stakeholders. He drafted the 4-returns framework that is now central to how Commonland tackles any land restoration effort it is involved in (**Exhibit 1**). The timeframe set for projects is 20 years, which roughly equates one generation. A long-term timeframe is central to ensuring that investors, farmers, and other stakeholders have the long-term commitment to the project required for success.

Exhibit 1: Commonland's 4-Return Framework




*Source: Commonland*

The four returns expected for a restoration project are financial, natural, social, and inspirational. The financial returns are long-term sustainable profits made from restoring degraded land. The natural returns include return of biodiversity, water and soil quality. The return of social capital is the return of employment, business activity, education, and security. Lastly, the inspirational return is giving people hope and a sense of purpose in their habitat (**Exhibit 2**).

Exhibit 2: The Four Returns

| 4 returns | Different entities | Values measured |
|---|---|---|
| **Return of inspiration**  | ▶ Meaningfulness, spiritual/ holistic awareness, Gross National Happiness, re-sacralise nature<br>▶ Local culture wisdom & outreach<br>▶ Landscape leaders, commitment to local ownership, less corruption<br>▶ Understanding meaning of long-term commitment for companies, investors<br>▶ Time for inner reflection, worship | ▶ % of stakeholder group/ yr/ ha: # local cultural, social, religion events<br>▶ # 'defining moments' of people involved<br>▶ % of stakeholder group/ yr/ ha<br>▶ % of stakeholder group/ yr/ ha committed; % -/- corruption benchmark<br>▶ % responding to long term commitment<br>▶ • # volunteers # inspirational sessions<br>▶ • % of free time to rest and think |
| **Return of social capital**  | ▶ Jobs<br>▶ Security<br>▶ Local social cohesion<br>▶ Education & social services<br>▶ Healthcare | ▶ # of new jobs / project / municipality / ha<br>▶ # various savings / yr / project<br>▶ # social ventures / yr / project<br>▶ # schools, trainings, services / project<br>▶ # medical posts, doctors |
| **Return of natural capital**  | ▶ Biodiversity<br>▶ Invasive species<br>▶ Vegetation cover<br>▶ Top soil<br>▶ Water | ▶ # of native species / yr / ha<br>▶ % decrease/ yr / ha<br>▶ % coverage / yr / ha; % cloud formation<br>▶ mm layer / yr/ ha; % microbes; % C / ha<br>▶ % humidity; # stream flow (m3 / yr / ha) |
| **Return of financial capital**  | ▶ Agriculture, carbon, timber<br>▶ Leisure, hunting, bush harvesting<br>▶ Real estate & other incomes<br>▶ Water<br>▶ Decrease erosion, increase topsoil | ▶ Yield / yr / ha<br>▶ Yield / yr / ha<br>▶ Value / yr / ha<br>▶ Production m3 / ha/ yr<br>▶ Decrease costs input chemicals / ha / yr |

*Source: Commonland*

In any area that Commonland starts a project, it divides the area into three zones, each one having a different balance between economic activity and undisturbed nature. The first zone is the natural zone, and as the name implies, it is the one mostly untouched nature. The objective is to fully heal the ecosystem so that it provides all the services it has the potential to provide – rich biodiversity, carbon sequestration, abundant rated soil, and forest products. In this area, hunting and leisure can take place. The combined zone, also called the agro-eco mix zone, is one where the balance tips slightly more towards economic activity, such as agroforestry and tourism.

Ecosystem are restored to the extent that they provide more biodiversity, restored topsoil, carbon sequestration and timber supplied from agroforstry and fruit trees. In the economic zone, economic activity takes priority. Crops and products are grown, albeit always in a sustainble way. Infrastructure and real-estate development takes place in this zone (**Exhibit 3**).

Exhibit 3: Three-zone Division in 4-Return Framework

**NATURAL ZONE**

**Investment**
- Restoring vegetation
- Planting native trees and clearing invasive species
- Natural restoration
- Limited maintenance

**Return**
- CO2 capture, water, soil
- Restored biodiversity
- Forestry, hunting
- Tourism

**COMBINED ZONE**

**Investment**
- Restoring landscape
- Planting usable trees
- Restorating perennial vegetation and soil
- Limited maintenance

**Return**
- CO2 capture, water, soil
- Partially restored biodiversity
- Agroforestry, fruit trees, timber
- Tourism

**ECONOMIC ZONE**

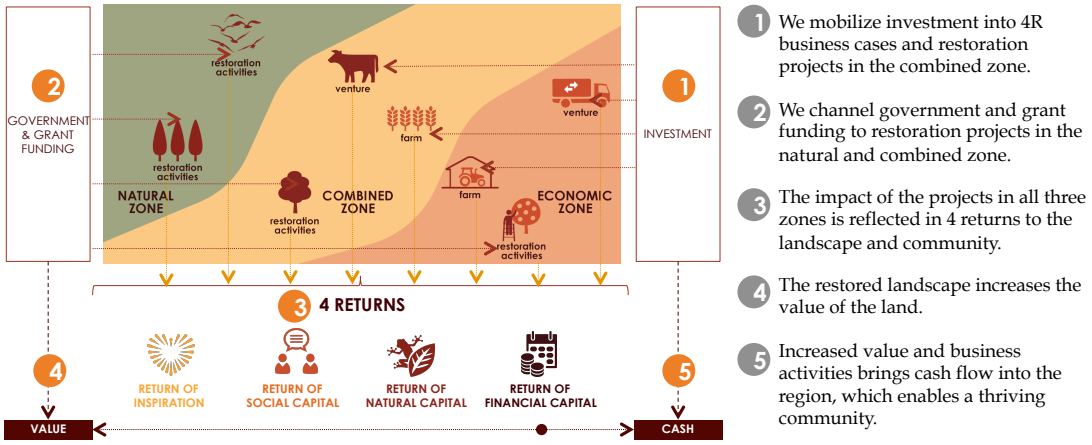
**Investment**
- Sustainable agriculture, forestry, aquaculture
- Real estate and infrastructure fitting in landscape
- Ventures with positive impact on landscape

**Return**
- CO2 capture, water, soil
- Crops and products
- New businesses, new collaborations
- Economic development

*Source: Commonland*

Commonland consists of a foundation and two impact companies; 4 Returns Projects and 4 Returns Partners. Commonland supports 4-returns restoration projects such as the AlVelAl project by mobilizing investment from private partners and by assisting local entities involved in projects to obtain government and grant funding. By restoring a landscape, it's value increases and new business activities arise which brings cash flow into the region benefitting the local community (**Exhibit 4**).

Exhibit 4: Project Development and Financing




*Source: Commonland*

## The Spanish Project

### Scouting

In 2013, Commonland was scouting for landscape restoration projects in Europe, mainly in Spain and around the Mediterranean. In the initial search process, landscape restoration expert Astrid Vargas and Michiel from Commonland identified 51 potential areas in Spain for a new project, of which 31 did not fulfil the first-round of filter criteria. The remaining 20 projects were evaluated based on a matrix of criteria. Eventually, the team picked the AlVelAl region for three main reasons. The first and main reason was the quality of the people on the ground who were already active in various projects to manage land used for agriculture more sustainably, some restoration related. Second, the areas is known for the production of organic, rain-fed almond which, as several farmers were already showing, is a crop that can serve as a good basis for landscape restoration, if regenerative production practices are applied. Third, as the almond area covers over 100.000 hectares, the restoration project offered good potential for large-scale development.

"The scouting process of Spain involved aspects such as land tenure, the social benefits, administrative support, strength of the business cases – but most of all, the importance of identifying people who could drive the process," said Astrid. After deciding on the AlVelAl region, the next step was to hire a good landscape mobilizer. The person would be a bridge of sorts between the Commonland organisation in The Netherlands, and the local people on the ground in Spain. Astrid thought it particularly "important that this person be respected among locals, a good ambassador for our organisation, an organizer, and a coordinator capable to setting the right priorities." In January 2015, Commonland decided on recruiting Dietmar Roth for that role. Dietmar has been living in the region for twenty-three years, and serves as the deputy mayor of Vélez-Blanco, a small town of approximately 2,000 inhabitants, in the province of Almería in Andalucía. He is also the president of the natural park Sierra de María-Los Vélez.

## AlVelAl

Michiel co-founded Commonland in 2013 after working for a strategy consulting firm and later as a business developer for a multinational food ingredients company. He has led the Commonland restoration project in Spain since 2016, when he took over the management from Astrid Vargas, and makes frequent visits to the region to meet with key stakeholders and monitor progress on the ground.

AlVelAl is in the Altiplano region in Southern Spain and is a Mediterranean type of landscape. It covers about 630,000 hectares of semi-arid steppe and plains at 1,000 meters above sea-level. The high-altitude area gets extremely high temperature in summer, at times as hot as 40° Celsius, and very cold weather in winter, often well-below zero on the coldest days. Such climate across barren plains makes for very tough conditions on par with areas at similar altitudes in countries such as Mongolia (**Exhibit 5**).

Exhibit 5: Semi-Arid Steppe Landscape

*Picture of the Altiplano Region, Spain @Commonland*

The region is home to 130,000 inhabitants, most of whom rely on agriculture, livestock, and forestry for their livelihood. Almonds and cereals are the most common types of crops grown, and the region is one of the world's largest area of cultivation for rain-fed organic almonds, with 100,000 hectares dedicated to almond groves, of which 45,000 are certified organic.

Land degradation is a serious problem that plagues the region. For generations, the farmers have employed unsustainable farming practices such as overgrazing, poor water management, growing monocultures, and excessive ploughing. These practices have led to desertification, soil erosion, nutrient depletion in the soils, and a substantial decrease in water quality and quantity.

The path to this severe state of degradation in AlVelAl has been a long one, tracing back thousands of years. The first settlers killed many of the large carnivores and herbivores that grazed on the natural steppe grasslands and forests, which altered the natural landscape dramatically. Over the past two thousand years, as the population grew, inhabitants cut down a significant proportion of the natural forest in the area for building and fire, resulting in deforestation which in turn has altered climate conditions, and caused loss of biodiversity and reduction in soil fertility. In just the past 50 years, the pace of degradation in the area has accelerated at an alarming rate with the introduction of industrial agricultural techniques. Mechanical ploughing has allowed for more frequent and deeper ploughing which results in heavily eroded soils.

During medieval times in Europe, Andalucía and other regions of Spain were settled by Arabs who applied sustainable water and soil management infrastructure in the form of terraces and small irrigation channels. However, the advent of industrial farming techniques, including mechanical ploughing, has destroyed nearly all the natural infrastructure as well as the Arab agricultural infrastructure previously in place. Monoculture – planting crops of the same seed variety over large areas – is widely practiced that contributes to degradation. It is beneficial for the farmers because the reduction in variety of trees and plants reduces the number of pests and insects attracted to the fields. At the same time the reduction in variety of plants throws off the natural balance of prey and predators including species that naturally keep pests in check, and creates little habitat for species that provide pollination services. Fields of monoculture type of crops also leave fields exposed to the harsh winds in the region, which results in wind erosion.

When Commonland first scouted AlVelAl, farming in the region was characterized by monoculture fields with a single variety of almond trees. Almond trees are fairly resistant to pests so excessive use of chemical pesticides is not a big problem in the region, but frequent and deep ploughing is very prevalent. In Michiel's first visit to the region he met a young couple, María and José, who worked on their family's farm. They had recently taken the decision to  to move to Granada where they hoped to create a better life for themselves and their two young children, two-year old Carlos and five-month old Patricia. Like many other educated people their age, they saw few opportunities for improving their economic situation by staying in the area. Rural abondonment has been a steady trend in AlVelAl for several decades now, and the global economic crisis has been particularly hard felt in AlVelAl where the unemployment rate was as high as 40 to 60% at the time. Now it ranges anywhere between 15 and 40% (Appendix C). Agriculture is the main industry in AlVelAl. The region receives very few tourists every year, unlike many other well-known city and sea-side destinations in Spain, where tourism is often the main economic sector.

María and José were two of the people who attended the first meeting Commonland set up in AlVelAl. "They wanted to stay but they had taken what they believed was a rational decision to leave based on the prospects they saw for themselves there. After that first meeting and the inspiration that came of it, they changed their minds and decided to stay, to step up to the challenge of building up the area to provide a better life for themselves and future generations," Michiel recalls from the first meeting. After the first meeting in 2014 with some of the most enthusiastic people in the region, the local team kicked off the first collaborations with local farmers, entrepreneurs, and landowners for socio-economic restoration. One of the first steps was establishing the AlVelAl Association, which quickly grew to 250 members. Together with Commonland, the association has developed a 4-returns plan specific to the AlVelAl region with a timeframe of 20 years.

## La Almendrehesa

Almond is one of the main crops grown in AlVelAl and from the start Michiel realized that converting monoculture farming of almonds to more sustainable ways could likely have a large restoration impact in terms of hectares of land, and number of jobs and families involved. Commonland's first task in the region was to raise awareness among the farmers of the unsustainable nature of farming almonds the way they had been doing for the past decades and, especially, to show the technical and economic potential of alternative practices that could reverse the ecological damage.

Michiel and his team supported local farmers to establish demonstration farms to test and display the techniques and methods for restorative agriculture and to collect data that can be used to quantify the four returns, particularly the economic and natural returns, obtained from switching to this sustainable, regenerative way of farming. The principle idea of regenerative agriculture is to farm and produce food in a manner that restores topsoil and enhances biodiversity of the land where the farming takes places.

Regenerative agriculture is based on the outcomes achieved and these may include restored water cycles, improved ecosystem services, resilience to climate fluctuations, and the strength of farming communities. Michiel has seen that the demo-farms can play a key role in persuading the farmers to make the shift to this type of regenerative and sustainable agriculture, by allowing them to observe it with their own eyes. "The reason why we chose the almond crop is that we have seen that it is possible to convert this way of producing with monocultures towards something more diverse and resilient."

The farmers on the demonstration farm termed the new integrated farming system for almonds they were developing *almendrehesa*. Almond trees are combined with other local crops and products including aromatics for oils, such as lavender and rosemary, bee keeping, and the local Segureño lamb.

While transitioning from typical monoculture almond farm to such a diversified farm requires some investment, it provides greater economic returns in the long-term in the form of increased yield of the almond crops due to higher soil fertility, less erosion, and low-cost natural pollination services. At the same time, the farmers have an opportunity to diversify the sources of income by also selling the harvest of aromatic oil crops which can be processed into essential oils used in the cosmetic and other industries. In addition to financial returns, the almendrehesa beautifies the landscape which is a cultural service, and it provides new job opportunities which can be considered a social return.

In 2015, Commonland set up a company called La Almendrehesa, which would market and process the regenerative and organic almonds produces from almendrehesa farms. Michiel has convinced 20 farmers to join the company, who commit themselves to changing their farming practices to more sustainable ones. In addition to diversifying their crops, it may include composting, creating water harvesting systems, reducing erosion, and creating biodiversity hotspots on their farms. In return, the company sells the almonds brought in by the farmers for a premium price as their almonds are marketed and sold as organic and regenerative.

Commonland soon figured that it would not be possible to make each farmer adhere to the same standards, so a team of specialists including agricultural engineers, has worked with each farmer to find and implement sustainable farming practices that are possible given the specific characteristics of the farm such as size, shape, and sloping of the land. The company has harvested approximately 50,000 kilos of organically, sustainably grown almonds which are stored in a refrigerated space and ready to be sold. Director Frank Ohlenschlaeger is working with the locals that run the company to finalize administrative formalities such as obtaining necessary certifications and licenses from food regulatory authorities and other agencies. “We ought to be selling in a few months according to the business plan and I expect reality to be in line with that,” Frank told those in the company in late 2016.

“We are connecting with a couple of German retailers and other Norther European retailers to access the international market where there is more appreciation for regeneratively produced products. At the moment, there is more of a niche market for such products in the North, compared to the South,” Michiel noted. “At the same time, we are tapping into local markets because the niche there would be locally-produced products. People like to buy things from their neighbours, especially if the product is packed and marketed in an attractive manner, and the quality is high. These are two venues we are exploring for the almonds for this first year of sales.”

In addition to providing economic and natural returns, Michiel has seen how La Almendrehesa can add to the social and inspirational returns. The aim is not just for the Almendrehesa to be as simple trading company that buys almonds from the farmers. Michiel envisions the company creating value-adding jobs in marketing, sales, product design, and other functions that provide attractive employment opportunities to the younger generations of AlVelAl who have been flocking to cities

for improved livelihoods. Although the shift to unsustainable, industrial type of agriculture over the fifty years may not be the direct cause of rural abandonment, Michiel hopes that a shift toward sustainable agriculture will be a part of the solution to reversing that trend.

If La Almendrehesa takes off, it has the potential to have significant and scalable restoration impact in terms of the number of hectares of land restored. The farmers that have joined the company are motivated by the prospects of increasing the revenue generated from each hectare of cultivated land and every kilo of harvested almonds. Michiel is concerned that if the company fails to show market demand and buyers willing to pay the premium price that La Almendrehesa has estimated for the almonds the effort so far in convincing the few farmers that have joined the company will be reversed. Some of the farmers of La Almendrehesa have already started to diversify the crop types they grow by planting rosemary and lavender. The next step for Commonland together with the AlVelAl association will be to establish a subsidiary of La Almendrehesa for marketing and processing of the harvest of those aromatic crops to produce aromatic oils and other derivative products.

## Smaller Initiatives

Letting the locals on the ground be in charge is critical to Commonland's approach. The odds of any initiative becoming permanent were much greater if Commonland took a more hands-off approach, allowing entrepreneurs and farmers in AlVelAl to develop the right skills and knowledge to independently run successful restoration businesses.

At the initial meeting Michiel hosted in AlVelAl, several people had creative business proposals that they had dreamt of for a long time but hesitated to turn into reality. Now, three years into the AlVelAl project, several smaller initiatives in addition to La Almendrehesa were starting to take-off. Angel Hernández is an entrepreneur who is restoring old natural caves in the vicinity of Huéscar in Granada and converting them into accommodation for tourists. By restoring the caves, his objective is to preserve natural and cultural local heritage that would otherwise have been lost. Angel has been working with local minority groups in the community including Roma people on the project. Among the smaller initiatives that Commonland is supporting as part of AlVelAl, Angel's cave lodges have been the most successful in securing financing from external parties.

So far, he has raised 60% of the capital he needs to complete the restoration from commercial banks, and for the remainder he is turning to crowdfunding. In his business plan, Angel has earmarked 1% of future profits for landscape restoration efforts. Michiel has lauded the project, especially because, if successful, it will be an important source of various types of new jobs at different skill and education levels, and it will help diversify AlVelAl's economy which relies largely on agriculture. However, the cave lodges are unlikely to result in wide scale landscape restoration efforts as they cover a small area of land.

## Composting

In 2015, local farmer and entrepreneur Alfonso Chico de Guzmán, together with agricultural experts from Commonland, hosted the first composting workshop. Composting is a simple activity that few of the farmers in AlVelAl were applying in a systematic way. Alfonso has hosted ten workshops that dozens of farmers in the region have attended and it has inspired many of them to start their own small composting projects. He plans on scaling up and is currently building a composting plant that will produce high quality organic soil and plant fertilizer that the farmers can buy.

At the demo-farms run by Commonland and other partners, farmers have started applying the organic compost from Alfonso's first production with significant improvements in the productivity of their almond trees. Applying what is essentially processed waste material enriches the soils which are particularly poor in nutrients in AlVelAl. This in turn helps the roots of the trees absorb the nutrients from the soil. Alfonso and Michiel have seen some farmers harvesting 30 to 40% more almonds per hectare of land after they started using the organic compost. The cost of composting are low, and by far lower than gains made from increased productivity. "The main obstacle to composting was the lack of knowledge. The farmers simply had to learn how to compost", says Michiel.

The composting plant is still in its early stages, and to complete it Alfonso will need an investment of €80,000. The Commonland fund considers co-financing the venture with €30,000, which will be used to buy the main equipment needed including a compost turner. Alfonso has reached out to commercial banks and other investors but has not yet secured the remaining funds needed.

## Wind Breaks

The high altitude of the AlVelAl region brings harsh winds that easily sweep across the exposed lands and contribute to soil erosion, further worsening landscape degradation. Monoculture fields of almond trees and cereal crops are particularly vulnerable in these conditions, their productivity reduced even further from wind erosion.

To combat this, Commonland is working with the farmers to create wind breaks by planting a variety of trees, other than those they grow for produce, and that are endemic to the region and grow fast. These trees are planted along the edges of the fields where crops are grown. In addition to serving as wind breaks, they help attract pollinators and increase the biodiversity on the farms, as well as adding nutrients such as nitrogen to the soil.

The benefits for the farmers are multiple but delayed, especially in comparison to the speed with which the benefits of composting are reaped. Because of the time it takes for the trees to grow tall enough to serve as wind breaks, Commonland has not yet been able to directly quantify the economic benefits farmers derive from them.

At the same time, the investment required is substantially greater than for composting. This has made it harder for Michiel to convince the farmers of planting for wind breaks on their fields. Although some farmers have started diversifying their fields away from a single crop such as almonds or cereals, only a handful have been persuaded to plant enough trees to shield their farms from wind erosion.

## Financial Returns

"The reason that farmers are joining the AlVelAl project is not because they really want to restore the landscape or because they are very inspired. Sure, this partly plays some part but mostly it's the prospect of being able to make a better living," Michiel had realized.

Commonland's belief in restoring landscape to reap the four returns is unfaltering. But for the farmers on the field who rely on their land to provide enough harvest each season for their livelihoods, changing decade old beliefs and methods, and taking on new debt to invest in practices they are unsure will deliver results, is a risky and difficult decision.

By 2016, two years after Michiel first visited AlVelAl, many projects had come to a still-stand often because at the moment of applying for financing, entrepreneurs and farmers had backed out. Many of the project remained small scale, unlikely to have large restoration impact. Alfonso, Angel are among the most driven and committed entrepreneurs in AlVelAl, yet their projects have stalled or been delayed because of risk-aversion and reluctance to take on debt by taking loans from financial institutions to finance their ventures.

Along the way of establishing the Almendrehesa and working with the local farmers, Michiel has seen that farmers tend to have the least bargaining power in the value-chain for the commodities they grow. The Almendrehesa will only be able to sell its regeneratively produced almonds at a premium price if the end-consumer is willing to pay the price.

Michiel and his team considering whether continuing with the Almendrehesa is the best use of limited resources that Commonland has for the Spanish project, in light of uncertainty whether there will be market demand for the regeneratively produced almonds. Commonland's objectives and key activities are first to promote and facilitate regenerative farming, second to support business development that brings about the four returns, and third to restore natural zones. Michiel is considering the mix of different initiatives in the AlVelAl region established so far, and which projects best contribute to achieving Commonland's objectives while also maximizing restoration impact measured in numbers of hectares of land restored.

## Stakeholder Management

Research institutions and universities have been an important group of stakeholders in the Spanish project. Commonland has been working with the University of Almería, University of Grotara, and University of Wageningen in The Netherlands on the AlVelAl project. These institutes are researching and documenting the novel agricultural practices that are being tested as part of the project and on the demo-farm. Gathering empirical and solid evidence is important for Commonland, both to be able to demonstrate in future projects the merits of various agricultural practices, and to persuade farmers to get on board with sustainable agriculture methods.

A second important group of stakeholders are public and government agencies. In 2014, Commonland first approached some of the rural development agencies in AlVelAl and the regional government, Junta de Andalucía. From the start of the AlVelAl project, Michiel and his team has developed bottom-up processes to shape the agenda for AlVelAl, which the rural development agencies liked and picked up as a basis for their own strategy processes. Since adopting this working method, the 4-returns philosophy has been adopted in the agencies strategies for distribution of government subsidies for local farming initiatives. One way that one of the rural development agencies implemented this bottom-up approach was by hiring a social scientist to work with Commonland on scoping out what it was that the farmers needed from the government in order to make a transition to more sustainable farming that would also help them restore the degraded landscape.

In 2016, Commonland hosted a series of meetings in the town halls of the various towns and cities within the AlVelAl region, with representatives from the governing bodies of the three municipalities involved in the project. One of the attendees was the Minister of Environment of Andalucía. “We have received quite some support for different activities and restoration works recently. In my view that has been the indirect result of the relationship building we have been doing but you can never say for sure if it is because of that,” said Michiel.

Subsidies from various agencies are a significant item on the balance sheet of nearly every farmer in AlVelAl. “This area of Spain is infested with subsidy addiction, and as a result it is very hard for the farmers to go without the subsidies. Nearly everyone in the region receives them,” Michiel noted. In some limited instances, the subsidies are tied to conditions the farmers must meet in order to receive them, but setting such conditions for subsidies and tax rebates can be a powerful tools to incentivize farmers to make certain decisions or adopt new techniques.

After two years of facilitating and steering the dialogue between farmers and rural development agencies and government bodies, Commonland is starting to see results-. By the end of 2016, the local government had pledged to ear-mark €12 million to be distributed to farmers in the form of subsidies conditional on two priorities. First is regenerative agriculture, and second is a focus on marketing and other value-adding activities related to regenerative agriculture.

However, this sum of money and the impact it might have fades when compared to the amounts spent by the EU on agriculture subsidies. Michiel realized that although working with the local agencies produced quicker results because of less red tape, the possibility to have large-scale impact would require working with agencies in Brussels.

In 2014, the European Union spent 38% of its budget on agriculture and rural development, which amounted to €58 billion. Most of this money is channelled through the Common Agriculture Policy (CAP). A large proportion of that, or 70%, goes through direct payments to farmers who choose themselves what to grow based on market demand, climate conditions and other factors[15]. After a significant reform to the CAP in 2013, 30% of the direct payments are reserved for farms that employ three sustainable agriculture practices identified by the EU; diversifying their crops, maintaining permanent grasslands, and dedicating at least 5% of arable land to 'ecologically beneficial elements'. Employing these practices should lead to increased soil quality, biodiversity, and carbon sequestration (Appendix D). The 2013 reform also introduced a 25% top-up on the basic payment scheme for young farmers. Under this scheme, farmers younger than 40 years old, or those that are either setting up a new farm or established one in the previous five years, are eligible for a 25% increase on the basic payment they receive for the first five years of running a farm[16].

Lobbying at the local level in Andalucía and Granada was proving effective, but Michiel knew that if Commonland could have an impact in Brussels, the scale of restoration efforts would be amplified substantially. In 2016, Michiel and other senior management staff from Commonland met with the Director General (DG) of Agriculture and Director General of Environment of the European Commission. Although both of these high-ranking EU officials welcomed Commonland's message and applauded their mission, they warned Michiel and his team to manage their expectations. Corporations that sell goods and services for the agricultural sector have significant interest in maintaining the status quo of agricultural practices, and invest heavily in lobbying to maintain it. These companies range from input providers that sell pesticides, fertilizers, and seeds, to the providers of the equipment needed to apply those inputs, to heavy agriculture machinery makers.

A report published by the Corporate Europe Observatory found that between 2010 and 2011, 151 organisations that represent agribusiness related interests declared spending €49.2 million on lobbying activities while 40 organisations representing family farms, workers, consumers, and environmental interests declared €12 million lobbying expenditure. This produces a ratio of roughly 4 to 1 in euros spent on lobbying for corporate interests versus other non-corporate ones.[17] After the meeting with the DGs of the EU, Michiel was discouraged by heavyweight industrial interests, the behemoth red tape, and slow pace of bureaucracy in Brussels. While the opportunity to have a large-scale positive impact on the transition to regenerative agriculture in Europe through the massive budget administered by the EU was tempting, Michiel was starting to doubt whether this was the most efficient way to scale-up from AlVelAl.

## Commercial Stakeholders

Another important stakeholder that Commonland identified for AlVelAl are large corporations that are influential in the value chain of commodities such as almonds. They wield power over consumer preferences and prices, and tend to have more flexibility than large public organisations such as the EU. So far, Commonland has had limited interaction with large companies but after the meeting with EU official, Michiel was encouraged to prioritise corporations in the portfolio of stakeholders. The team identified large buying companies, wholesalers, and retailers using almonds and aromatic herbs as the most interesting and valuable companies for Commonland to interact with.

For cereals production, farmers in the AlVelAl association, with the help of Commonland, have established a cooperation with a local craft brewery that mainly caters to the local Andalucian market, and is fully committed to solely using cereals produced through regenerative agriculture. Michiel is content with this development, but it involves only a minor proportion of the produce harvested in AlVelAl and is limited to a small local market. A large brewery with operations across the globe has expressed interest in buying organic cereals produced as part of the AlVelAl project, but whether a cooperation between the brewery and the farmers will materialize is still unclear.

The main project in AlVelAl remains almond farming. The company has prioritized getting the 50,000 kilos of refrigerated almonds already harvested to the market. Several large almond buying companies have expressed interest but no formal agreement has been reached yet. "There is substantial interest from a number of bigger companies focusing on organic and biodynamic products. But there is a big gap between interest and a sealed deal" Frank warned the farmers depositing their almonds with La Almendrehesa. Germany and some niche pockets in Norther Europe are the most promising end-markets for the AlVelAl almonds at the moment. Commonland has also started talks with smaller firms that use aromatic herbs and essential oils to produce cosmetics.

This year Michiel and farmers of the AlVelAl association will visit BioFach, the world's largest organic products tradefair in Nurnberg, Germany. Michiel is hopeful that this will be a jumping board for the AlVelAl association, showcasing products and connecting with buyers and other possible interested parties.

## Marketing

At the most recent meetings between members of the AlVelAl association including farmers, entrepreneurs, Michiel, and other Commonland team members, an idea surfaced to obtain a Denominación de Origen (DOC) certification for almonds and other produce. The DOC is a Spanish regulator classification system used primarily for wines but also for foodstuffs, certifying both the geographic origin of the product as well as its quality.

Pork products such as cured ham produced for the black Ibericó pigs, and vinagre de Jerez, vinegar from Jerez, are well-known examples. It is similar to other systems in place in Italy and France, for example for sparkling wine from Champagne in France. Generally, products marketed with DOC labelling command a higher price than equivalent products that have not obtained a DOC nor are marketed as such[18].

## Future Strategy

In 2015, Commonland started working with 15 farmers in the region on restoration efforts which covered 5,500 hectares of land. The Dutch organisation has set itself the goal of expanding that figure to 10,000 hectares by the end of 2017 and increase membership of the AlVelAl association from 75 members to 250.

Ultimately, much more remains to be done in the longer term. AlVelAl covers 630,000 hectares of land, most of it heavily degraded from decades of unsustainable agricultural practices. Some small projects are taking off, such as the Alfonso's composting plant which has already shown to have a dramatic, positive effect on the yield of almond trees. But La Almendrehesa remains Commonland's biggest project in the region, and the one with the potential to restore most land. A similar project for cereals would scale this restoration effect even further, but Commonland has not yet established anything equivalent to La Almendrehesa for cereals. Michiel still needs to demonstrate to the farmers that have been growing almonds in an organic, regenerative way for the Almendrehesa that there is market demand for this premium commodity. Without commercial interest, Michiel fears that the effort invested so far in convincing the almond farmers to drastically change their ways will become a sunken cost.

Significant amount of funding for agriculture is available from EU, Spanish, and regional government agencies and increasingly these agencies are reserving greater proportions of the budgets for farmers that employ sustainable agricultural practices. At the local level, Commonland has been influential, both in the policy making process and helping unlock funds for entrepreneurs and farmers engaged in landscape restoration. But the big money is at the EU level where large corporations with an army of lobbyist set the agenda, and influencing policy making in Brussels will likely require significant amount of time, money, and staff from Commonland.

Michiel's meeting with Willem is approaching soon and he will need to layout what the future strategy in AlVelAl is and what resources will be required from Commonland to execute that strategy. Devising how the organisation will support locals to scale up from the few thousand hectares that are currently being restored to the 630,000 hectares that the region covers is the priority.

## *List of Abbreviations*

*IRP – International Resource Panel*
*UNEP – United Nations Environment Program*
*DESA – UN Department for Economic and Social Affairs*
*FAO – Food and Agriculture Organization of the United Nations*
*IUCN – International Union for the Conservation of Nature*
*CAP – Common Agricultural Policy (of the EU)*

## Appendix A: Ecosystem Services

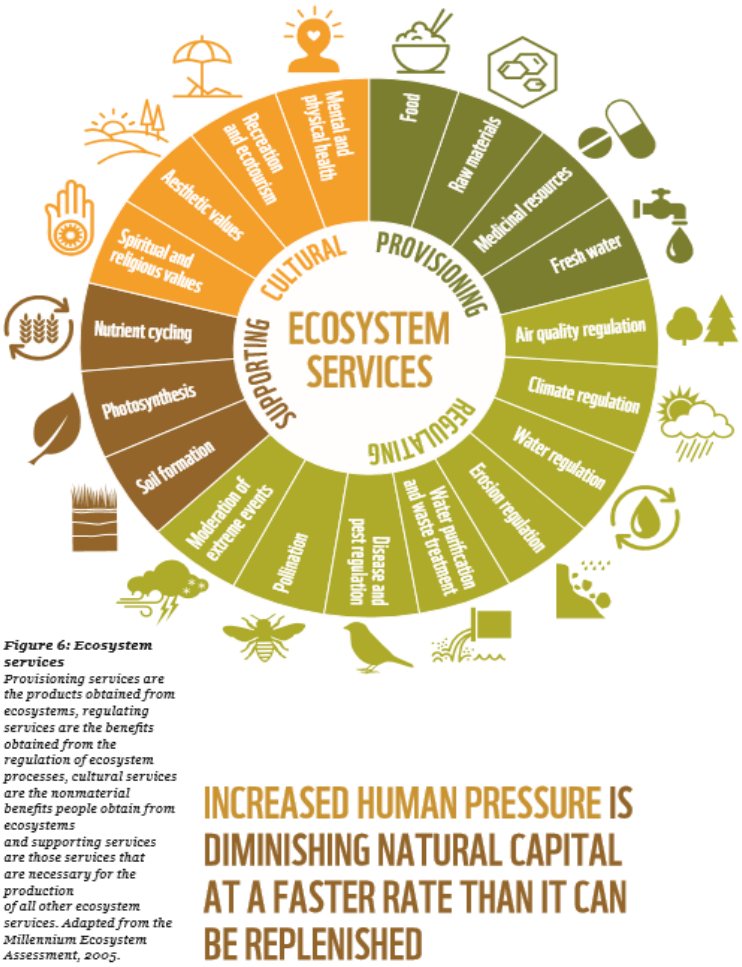



***Figure 6: Ecosystem services***
*Provisioning services are the products obtained from ecosystems, regulating services are the benefits obtained from the regulation of ecosystem processes, cultural services are the nonmaterial benefits people obtain from ecosystems and supporting services are those services that are necessary for the production of all other ecosystem services. Adapted from the Millennium Ecosystem Assessment, 2005.*

*Source: World Wildlife Fund. (2016). Living Planet Report 2016: Risk and Resilience in a New Era.*

**Natural capital** is another term for the stock of renewable and non-renewable natural resources on earth (e.g., plants, animals, air, water, soils, minerals) that combine to yield a flow of benefits or "services" to people. These flows can be ecosystem services or abiotic services, which provide value to business and to society.

**Abiotic services** are benefits to people that do not depend on ecological processes but arise from fundamental geological processes and include the supply of minerals, metals,and oil and gas, as well as geothermal heat, wind, tides, and the annual seasons.

**Ecosystem services:**
Ecosystem services refer to the benefits humans obtain directly or indirectly from ecosystems. Ecosystem degradation results in the persistent reduction in the

capacity to provide ecosystem services.

Ecosystem Services can be divided into provisioning services (food, water, wood, raw materials), regulating services (pollination of crops, flood and disease control, water purification, prevention of soil erosion, sequestering carbon dioxide), cultural services (recreational, spiritual and educational services) and supporting services (nutrient cycling, maintenance of genetic diversity).

Provisioning services: The products obtained from ecosystems, including, for example, genetic resources, food and fiber, and fresh water.

> Food: Ecosystems provide the conditions for growing food. Food comes principally from managed agro-ecosystems but marine and freshwater systems or forests also provide food for human consumption. Wild foods from forests are often underestimated.
>
> Raw materials: Ecosystems provide a great diversity of materials for construction and fuel including wood, biofuels and plant oils that are directly derived from wild and cultivated plant species.
>
> Fresh water: Ecosystems play a vital role in the global hydrological cycle, as they regulate the flow and purification of water. Vegetation and forests influence the quantity of water available locally.

Regulating services: The benefits obtained from the regulation of ecosystem processes, including, for example, the regulation of climate, water, and some human diseases.

> Carbon sequestration and storage: Ecosystems regulate the global climate by storing and sequestering greenhouse gases. As trees and plants grow, they remove carbon dioxide from the atmosphere and effectively lock it away in their tissues. In this way forest ecosystems are carbon stores. Biodiversity also plays an important role by improving the capacity of ecosystems to adapt to the effects of climate change.
>
> Moderation of extreme events: Extreme weather events or natural hazards include floods, storms, tsunamis, avalanches and landslides. Ecosystems and living organisms create buffers against natural disasters, thereby preventing possible damage. For example, wetlands can soak up flood water whilst trees can stabilize slopes. Coral reefs and mangroves help protect coastlines from storm damage.
>
> Erosion prevention and maintenance of soil fertility: Soil erosion is a key factor in the process of land degradation and desertification. Vegetation cover provides a vital regulating service by preventing soil erosion. Soil fertility is essential for plant growth and agriculture and well functioning ecosystems supply the soil with nutrients required to support plant growth.

**Cultural ecosystem services:** The nonmaterial benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation, and aesthetic experience, including, e.g., knowledge systems, social relations, and aesthetic values.

> **Recreation and mental and physical health:** Walking and playing sports in green space is not only a good form of physical exercise but also lets people relax. The role that green space plays in maintaining mental and physical health is increasingly being recognized, despite difficulties of measurement.
>
> **Tourism:** Ecosystems and biodiversity play an important role for many kinds of tourism which in turn provides considerable economic benefits and is a vital source of income for many countries. Cultural and eco-tourism can also educate people about the importance of biological diversity.
>
> **Aesthetic appreciation and inspiration for culture, art and design:** Language, knowledge and the natural environment have been intimately related throughout human history. Biodiversity, ecosystems and natural landscapes have been the source of inspiration for much of our art, culture and increasingly for science.
>
> **Spiritual experience and sense of place:** In many parts of the world natural features such as specific forests, caves or mountains are considered sacred or have a religious meaning. Nature is a common element of all major religions and traditional knowledge, and associated customs are important for creating a sense of belonging.

**Supporting services:** Ecosystem services that are necessary for the maintenance of all other ecosystem services. Some examples include biomass production, production of atmospheric oxygen, soil formation and retention, nutrient cycling, water cycling, and provisioning of habitat.

**Habitat service:** The importance of ecosystems to provide living space for resident and migratory species.

*Biodiversity is critical to the health and stability of natural capital as it provides resilience to shocks like floods and droughts, and it supports fundamental processes such as the carbon and water cycles as well as soil formation. Therefore biodiversity is both a part of natural capital and also underpins ecosystem services. Natural capital and the benefits that flow from it sustain us all: individuals, families, companies, and society as a whole. At the same time, our individual or collective actions can build or degrade natural capital, depending on how we use it.*

*Source: The Economics of Ecosystems and Biodiversity. (N.d.). Retrieved from: http://www.teebweb.org/resources/ecosystem-services/*

## Appendix B: Threats to Special Populations

# THREATS

### Habitat loss and degradation

This refers to the modification of the environment where a species lives, by either complete removal, fragmentation or reduction in quality of key habitat characteristics. Common causes are unsustainable agriculture, logging, transportation, residential or commercial development, energy production and mining. For freshwater habitats, fragmentation of rivers and streams and abstraction of water are common threats.

### Species overexploitation

There are both direct and indirect forms of overexploitation. Direct overexploitation refers to unsustainable hunting and poaching or harvesting, whether for subsistence or for trade. Indirect overexploitation occurs when non-target species are killed unintentionally, for example as bycatch in fisheries.

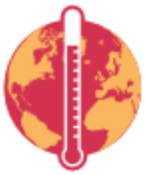
### Pollution

Pollution can directly affect a species by making the environment unsuitable for its survival (this is what happens, for example, in the case of an oil spill). It can also affect a species indirectly, by affecting food availability or reproductive performance, thus reducing population numbers over time.

### Invasive species and disease

Invasive species can compete with native species for space, food and other resources, can turn out to be a predator for native species, or spread diseases that were not previously present in the environment. Humans also transport new diseases from one area of the globe to another.

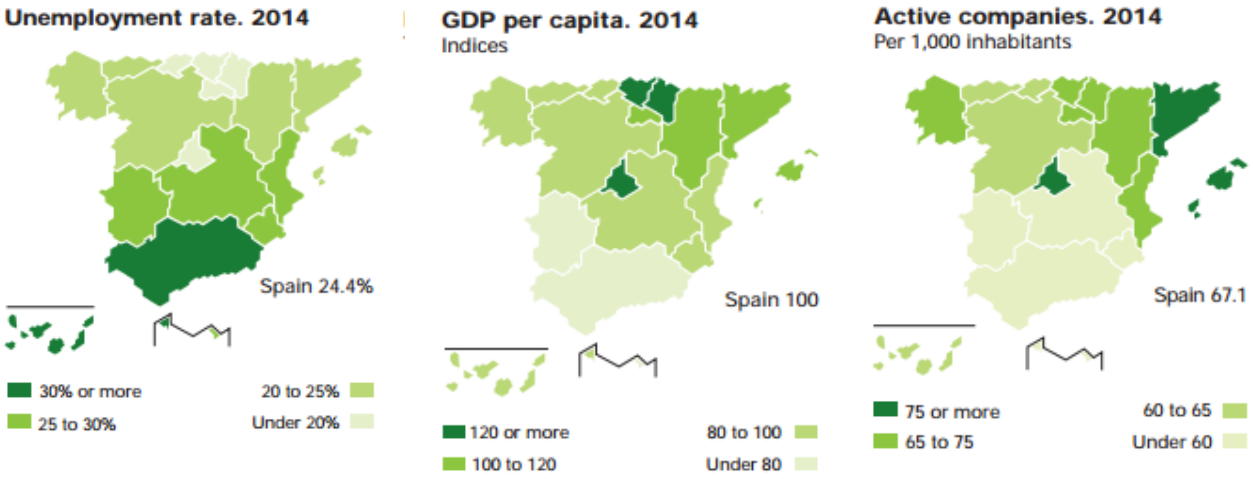
### Climate change



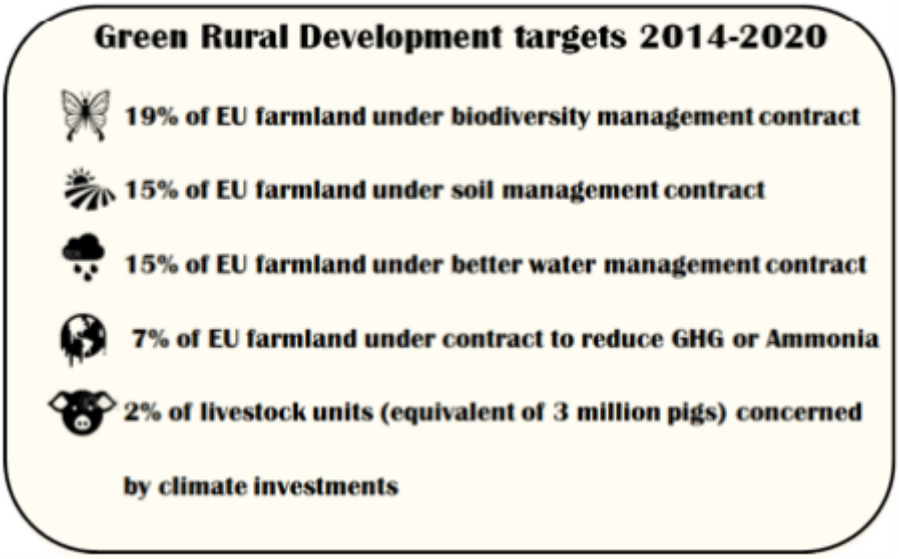
As temperatures change, some species will need to adapt by shifting their range to track suitable climate. The effects of climate change on species are often indirect. Changes in temperature can confound the signals that trigger seasonal events such as migration and reproduction, causing these events to happen at the wrong time (for example misaligning reproduction and the period of greater food availability in a specific habitat).

*Source: World Wildlife Fund. (2016). Living Planet Report 2016: Risk and Resilience in a New Era.*

## Appendix C: Economic Indicators Spain by Province




## Appendix D: EU CAP Green Rural Development Targets 2014-2020



## Endnotes

[1] Unep.org
[2] United Nations Department of Economic and Social Affairs (2015). World Population Prospects: The 2015 Revision, Key Findings and Advanced Tables. Working Paper No. ESA/P/WP.241
[3] World Wildlife Fund. (2016). Living Planet Report 2016: Risk and Resilience in a New Era.
[4] United Nations Environment Program. (2016). Unlocking the Sustainable Potential of Land Resources: Evaluation Systems, Strategies and Tools. A Report of the Working Group of the Land and Soils of the International Resource Panel.
[5] FAO. (N.d.). http://www.fao.org/nr/land/degradation/en/
[6] World Resource Institute. (2005). Millennium Ecosystem Assessment. Ecosystems and Human Well-Being: Synthesis.
[7] United National Environment Programme. (2016). Food Systems and Natural Resources. A Report of the Working Group on Food Systems of the International Resource Panel.
[8] United Nations Environment Program. (2016). Unlocking the Sustainable Potential of Land Resources: Evaluation Systems, Strategies and Tools. A Report of the Working Group of the Land and Soils of the International Resource Panel. Pg. 15
[9] Sutton, P. C., Anderson, S. J., Costanza, R., & Kubiszewski, I. (2016). The ecological economics of land degradation: impacts on ecosystem service values. Ecological Economics, 129, 182-192.
[10] Nkonya E., et al. (2016). Global cost of land degradation. In Nkonya, A. Mirzabaev & J. von Braun (Eds.) *Economics of Land Degradation and Improvement – A Global Assessment for Sustainable Development*. Pp. 117-165.
[11] World Resource Institute. (2005). Millennium Ecosystem Assessment. Ecosystems and Human Well-Being. Volume I, Chapter 28: Synthesis, P. 825-826.
[12] United Nations Environment Programme. (N.d.). http://web.unep.org/ecosystems/
[13] World Wildlife Fund. (2016). Living Planet Report 2016: Risk and Resilience in a New Era. Pg. 4
[14] http://www.bonnchallenge.org/content/challenge
[15] European Commission. (N.d.). CAP at a glance. Retrieved from: http://ec.europa.eu/agriculture/cap-overview
[16] European Commission. (N.d.). The Common Agricultural Policy after 2013. Retrieved from: https://ec.europa.eu/agriculture/cap-post-2013
[17] Corporate Europe Observatory (2012). Agribusiness CAPturing EU research money?
[18] Valenciano, J. P., & Sánchez, I. M. R. (2011). La importancia de la denominación de origen en la industria vitivinícola española. *Ciencia ergo sum, 18* (2), 135-144.