

# The need for an ecosystem restoration industry, based on a holistic approach of four returns

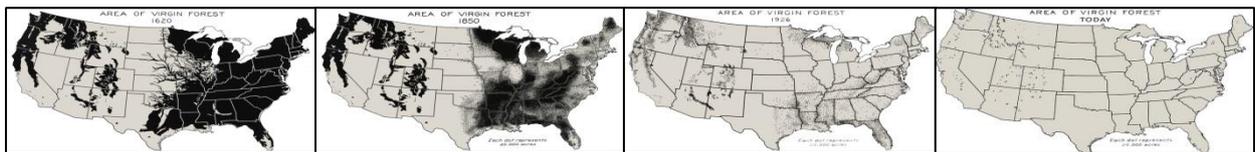
Willem Ferwerda

This presentation is a product of a life-changing experience I had a few years ago: I left the conservation world and instead started bringing different actors together to work on restoring ecosystems.

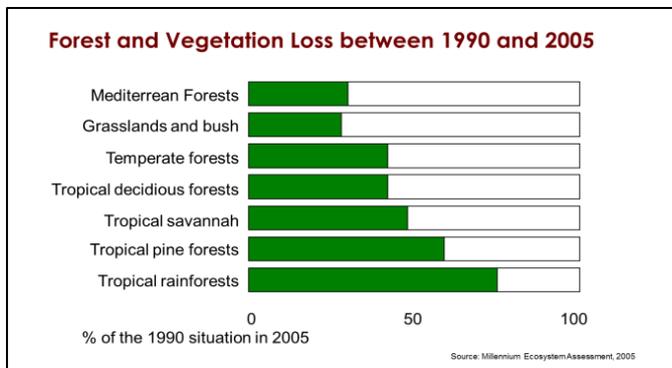
In this presentation I will first look at what happened to ecosystems in the past, during the Great Acceleration. Subsequently I will linger on the relationship between eco-systems and our nature and economy, upon which I will present my quest to bring nature and economy together in a kind of logical framework – i.e. an easy way to understand how business investors and companies can be linked to farmers and conservationists to forge sustainable landscapes. I will end by presenting some examples of running projects.

## The Great Acceleration

The maps below basically show what happened over the last two/three hundred years ago – during what we call the Great Acceleration:



The black patches are the virgin forests that cover the United States in 1620, 1850, 1926 and today.



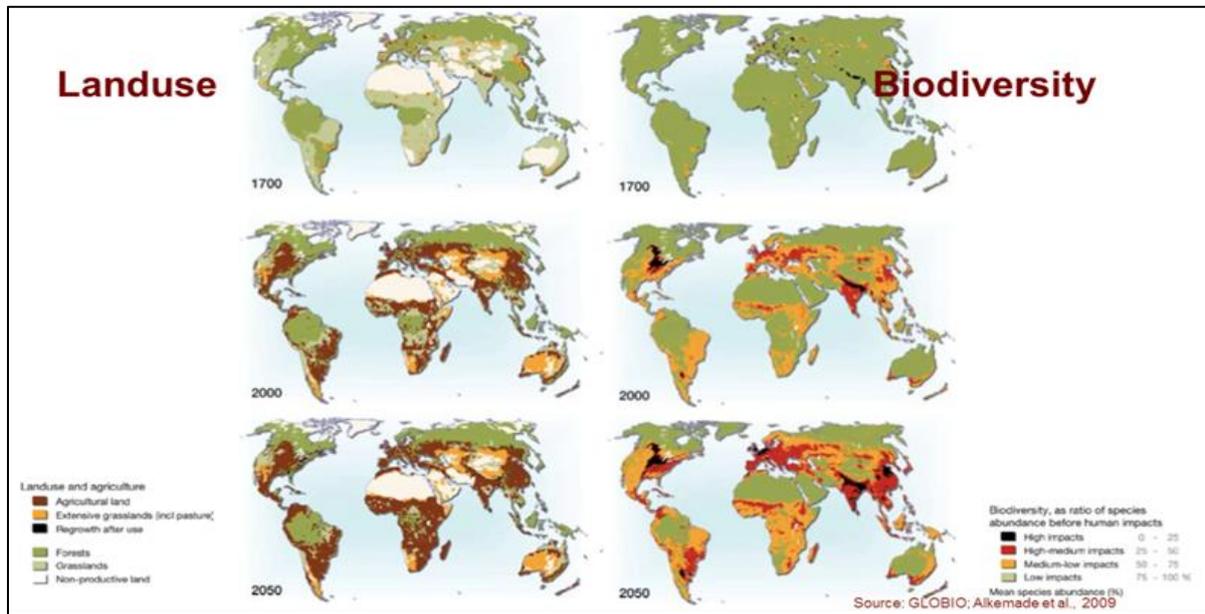
Over time the virgin – i.e. original – forests have disappeared. Of course there is still a lot of forest left, but these are mostly not original forests. Worldwide, you see a similar development: forests have disappeared over the course of the last hundreds of years, because it is easier to cut forests if plantations need to be made or agriculture needs to be practiced.

This development is defined as ‘the Great Acceleration’. It started in 1750 with the industrial revolution. Major changes took place regarding the use of oil, fertilizers and pesticides and in the use of medicines in health care. Until then population growth was slow. Later on world population increased fast, which graphically gets the shape of a hockey-stick. This rapid increase

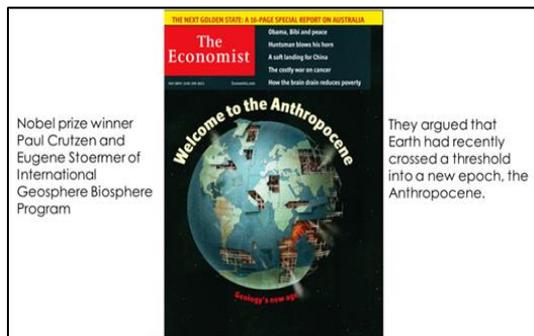
**The Great Acceleration**

- Industrial revolution
- Oil, fertilizers and pesticides
- Medicine and healthcare
- Fuel engine and locomotive

in world population resulted in a rapid increase of consumption and a high demand for resources, not only for the world as a whole but also per capita. This gave rise to increased materialism and consumerism. It is part of our evolution as *homo sapiens*. This great acceleration is still ongoing, but besides prosperity it also leads to other less desirable things.



In the picture above on the left you see the increase of agricultural land use over the last 200 years while on the right you see the simultaneous decrease of biodiversity, species, animals, plants, and topsoil. I am sure that many of you know that there is a relationship between the two and that this development is still ongoing too. Every year great parts of rain forests are cut down and replaced by plantation fields instead, despite demonstrations of opposition groups who wish to conserve biodiversity.



Nobel prize winner Paul Crutzen and Eugene Stoermer of International Geosphere Biosphere Program

They argued that Earth had recently crossed a threshold into a new epoch, the Anthropocene.

Nobel price-winner Paul Crutzen said it as follows: ‘we are entering from the geological phase of the Holocene into the Anthropocene. Mankind is shaping the world now. We are the most important factor determining what the world looks like’. And in 2011 the Economist put a lot of emphasis on this phenomenon: the Anthropocene. What is one of the implications of this Anthropocene? It implies that the global ecology balance sheet is going down, and that we are losing

species hundreds to a thousand times faster than before humans inhabited the planet.

### Ecosystems and our economy

We are losing forests and genetic agricultural material; the number of wild fish is declining; the top soil is lost: every year more than the surface area of The Netherlands is eradicated; coral reefs are dying; and we move species from one place to another, which sometimes doesn't work out well.

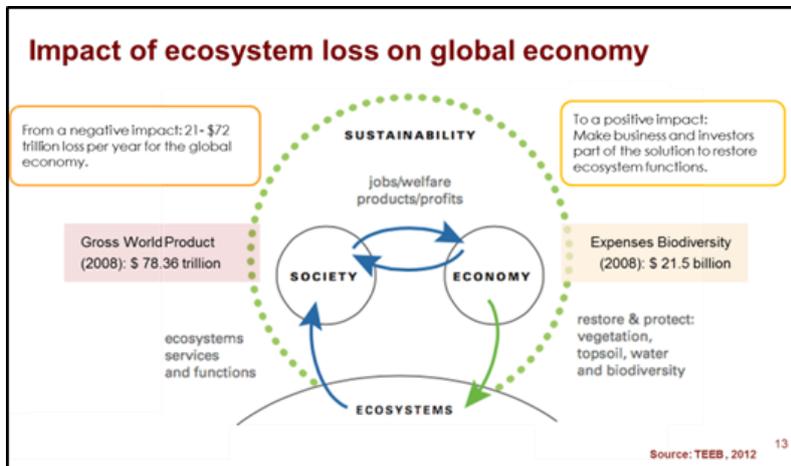
### The global ecology balance sheet

- Species loss is 100 to 1000 times faster as natural loss (23,000 species are threatened (6<sup>th</sup> extinction)
- Last 300 year: 40% of global forest areas has been lost
- 75% of genetic agricultural is lost
- 75% of the wild fish population is overfished
- 13-25 million ha soil is lost per year (Neth. = 4 m ha)
- 1/3 of coral reefs are dying
- Invasive species



Sources: UN Millennium Ecosystem Assessment; IUCN Red List of Threatened Species; World Resources Institute

Examples are the introduction of pines and eucalyptus in the tropics and subtropics. Due to all this, our global economy hugely impacts the change on the Ecology Balance Sheet.



A UN-study 'The economy of ecosystems and biodiversity' concluded that annually the global economy is losing in between 21 and 72 trillion US\$ (12 zeros). Governments and public organizations like charity funds are putting money back into the system in order to protect specific areas (in 2008 an amount of 21,5 billion US\$). There is a huge imbalance, because we take

much more than we return (see the figure above).

One might state that our whole economy is based on ecosystems: what we take out we need to give back. This means that we need to transform our ways of using ecosystems. Like Jan Pronk said, we are entering a new period of transformation of our economy and trade, in which we need to balance our economic activities with the ecosystem functionality of our planet. And as an ecologist this is now my new domain: going from conservation to restoration. But before I go on further on my transformation, we first need to understand what ecosystems bring to us; we must understand that we rely on them for food, water, timber, oil and gas (remnants of old ecosystems of millions and millions of years ago). Scientists concluded that we have four groups of what they call ecosystem services: cultural, supporting, provisioning and regulating ecosystem services. Supporting services are e.g. soil



formation, food, biodiversity, and photosynthesis – the latter being a very important reason that we can even exist. Provisioning services are e.g. production of wood and pollination by bees. Regulating services are amongst others control of flooding, purification of water, carbon sequestration and cleaning of air.

Cultural ecosystem services include basically all religions: so, if you acknowledge that na-

ture provides these services, you understand that a functional and healthy ecosystem is crucial for our economy; and also for us physically, i.e. for our health. Yet many people do not understand that and from the position I was in, I was unable to make people understand. That is why I left my former job and network of ecologists and conservationists, and went to the Business School of Rotterdam instead. I visited many actors within the business, investment, psychology and sociology fields, and consequently went out to speak with farmers, when I started to learn that we need to begin speaking a common language – a language that is yet to be created.

### The need for a common language

When I left my former network, I went to London and met with investors of Hermes, pension funds and commercial investment agencies, and told them that we need to create business cases for ecological restoration and start paying for ecosystem services that are now still considered externalities in our economy. The investors replied that all they heard was *'high risks'*, *'no exit strategy'*, *'low or no revenues'* and *'no proof of a financial track record'*, so I needed to develop a strategy to convince them. I started off with explaining to them what ecosystem services actually are.

**Ecosystem services, ...what is that?**



**Maximization of the interaction between species and biomass**  
that provides us the basis of food, water, carbon, oxygen, environmental security and sustainable energy

Source: Ferwerda, 4 returns. RSM-Erasmus Univ. IUCN CEM 2015

Basically, ecosystem services are the maximization of the interaction between species and the environment providing food, water, carbon and many other valuable things.

**Business as Usual... what does that mean?**



**Maximization of Return on Investment per hectare** creates deforestation, desertification, biodiversity

Source: Ferwerda, 4 returns. RSM-Erasmus Univ. IUCN CEM 2015

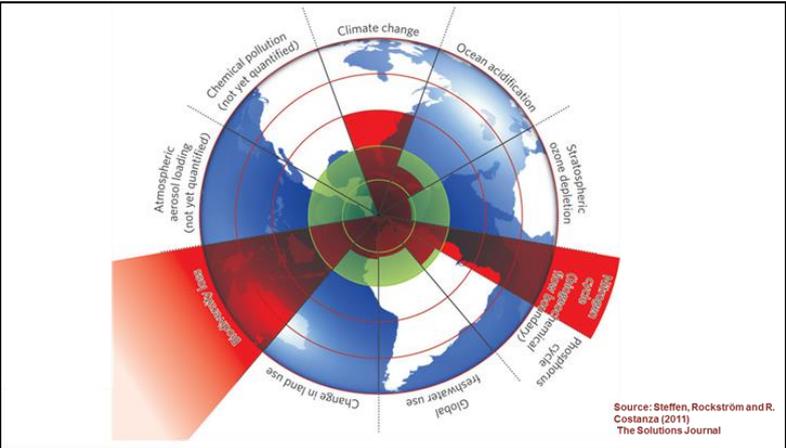
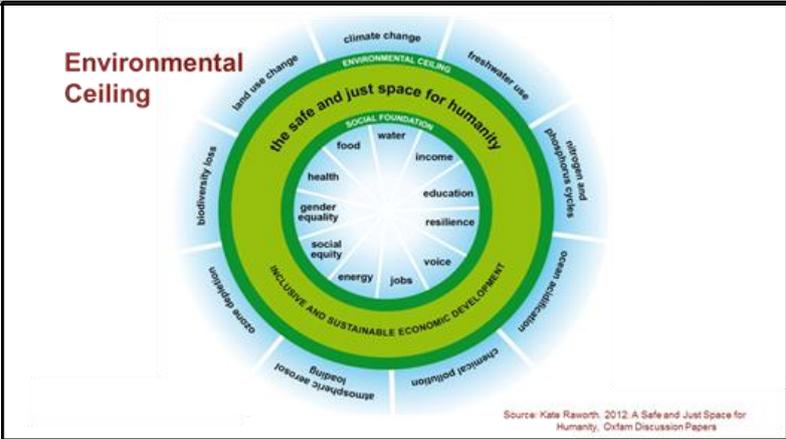
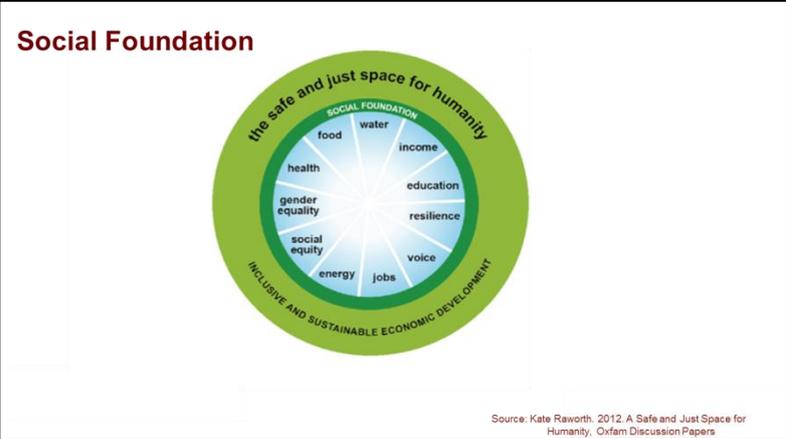
Secondly, what is business? What does 'business as usual' implies? It implies the maximization of return on investment per hectare in a limited timeframe, but everywhere in the world it leads to degradation, deforestation and biodiversity loss. It is unfortunately the same story wherever you go: mangroves, wetlands, green meadows etc. that are losing their original species. The green meadows in The Netherlands, for example, are now composed of two species, while before it inhabited many more.

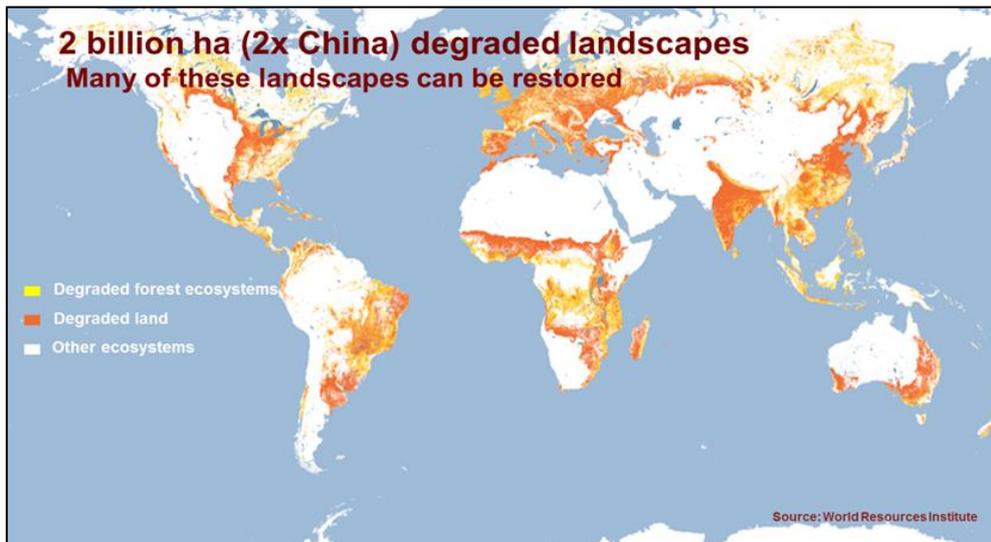
These two paradigms helped to change the storyline towards potential investors: you (and your kids) want to have a social foundation; you want to have access to food, to social equity, to jobs; you want to have a voice (voting rights), resilience (a nice family and so on), good education as well as a good income.

However, intrinsically connected to this social foundation is another layer: the environmental ceiling, with subsequent parameters, such as: biodiversity loss, land use change, climate change, fresh water use, the agricultural cycle that is disrupted by nitrogen and phosphorus, ocean acidification, chemical pollution and atmospheric aerosols loading.

The interconnection between the two layers is then as follows: if everyone wants to have access to the benefits of a social foundation, we run through the environmental ceiling.

Scientists of the Stockholm Resilience Center have concluded that we have severe problems with biodiversity, chemical inputs in agriculture, and climate change – while other problems are developing. Therefore we need to do something! We cannot continue developing 'businesses as usual' like we did the last two, three hundred years, nor can we say that this is just a problem of developing countries or cast it off as either an eastern or western problem – no, this is a global issue.





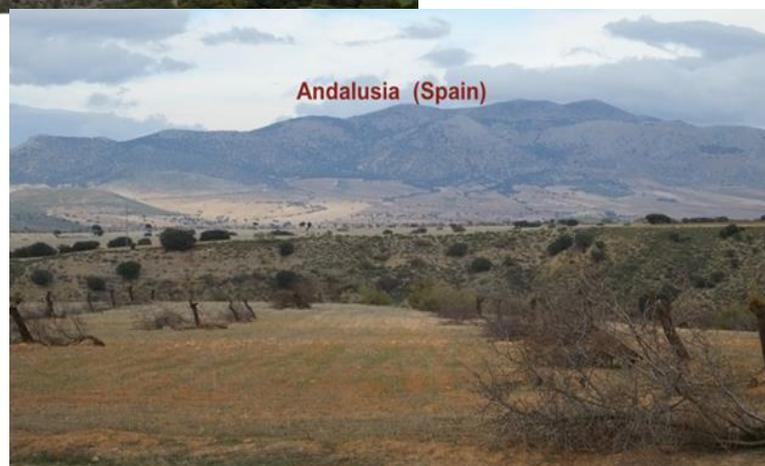
Other scientists computed that two billion hectares, i.e. double the size of China or the US, is degraded in a phase of desertification. And then we haven't even yet spoken about the marine areas... Any-

how, the map above only depicts deforested areas: in orange are the very deforested areas, whereas yellow shows the areas under deforestation. Another important note: many white areas in the Middle East are not deserts, they never were. They were actually a savanna-steppe ecosystem, but have become deserts by two thousand years of overgrazing: a family that once had one camel now have a hundred or two hundred camels, which creates the artificial deserts we commonly associate the Middle East with. Artificial yes, for Egypt and Tunisia were the grain producers during the Roman Empire, and they produced cereals. But how do those landscapes look like now?



Left is the Eastern Cape of South Africa. Two hundred years ago, before the white man came in, it was an area covered by a forest type called thicket: a very beautiful and high biodiversity ecosystem with 400 mm of rainfall, like in Spain. The picture below shows Andalucía. It

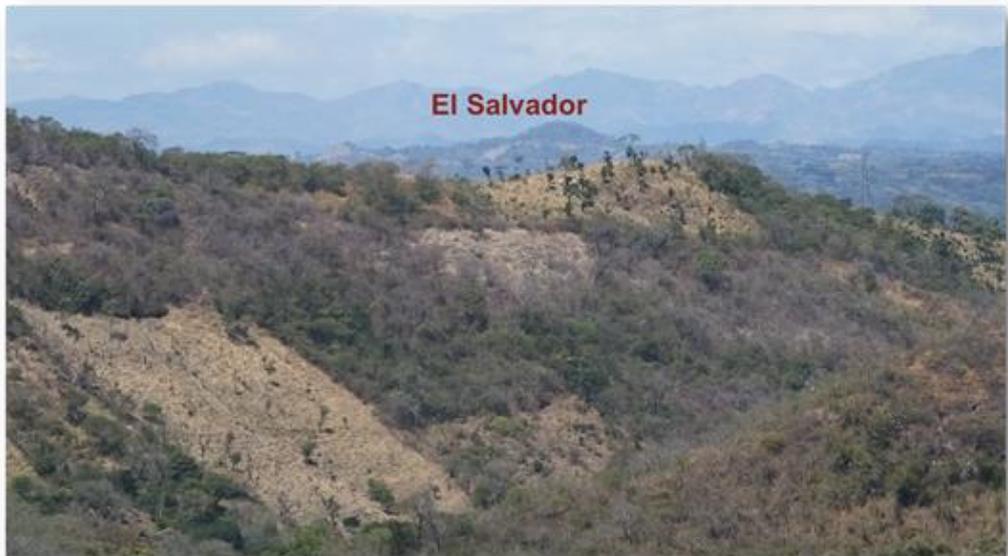
looks very similar to the Southern part of Africa, where they encounter the same problem, except for the fact that in the latter the deforestation started 500 years earlier. So this is Armada, which used to be an oak covered area with different species. Of course there is some steppe landscape as well, but this basically used to be all green.





Then, to the left is Tamil Nadu, India, which used to be a monsoon rainforest. Now it is a very dry and hot area, where the river has disappeared as well. Only occasionally you will find some water flowing there – all due to deforestation and overgrazing.

Next is El Salvador, which is still in an early phase of the process. The deforestation there started some two to three hundred years ago; from a lush rainforest, this is what is left of it.



Last but not the least is an area in Ecuador only one month ago. It was once an Andean forested area, but after a few hundred years of deforestation farmers are trying to survive on

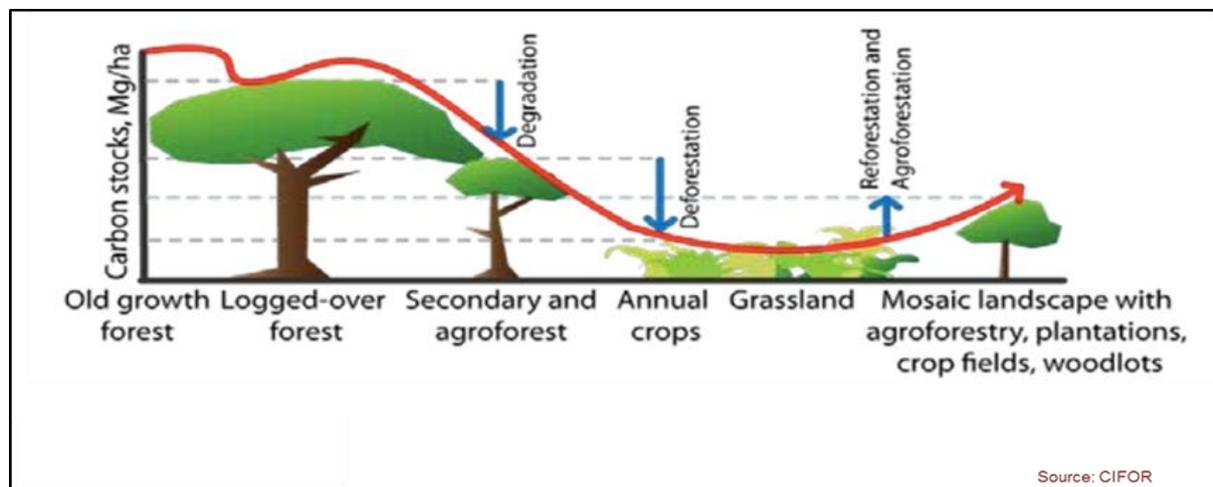
this soil. A lack of rainfall is in this case not the issue, rather than the deforestation in combination with overgrazing and a continuous growth of the population living off the land.

The sad end result of all this is land degradation in many parts of the world, which affects our future and the future of our children.

Fortunately, there are many good initiatives set up in order to stop land degradation: Plant a Pledge, the Land Neutrality Fund of the UN and the Initiative 2020 of the World Resources Institute (to restore twenty million hectares in Latin America, which is five times the size of the Netherlands) to name just a few. Many other initiatives are up and drilling, such as the Bonn Challenge – which, in my opinion, is the most important one. It is an initiative of the Global Initiative of Countries to restore 50 million hectares of degraded land in 2020.

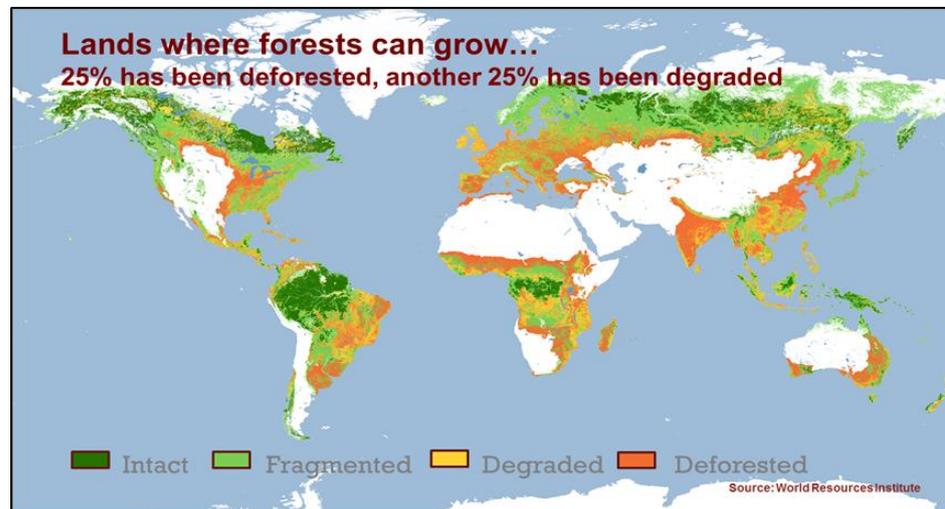


However, no matter how great these initiatives sound, they are still only initiatives on paper. Which is of course important to have, since we need to have guidelines and visions to lead us. But many of the people involved in controlling and countering land degradation, including myself, are wondering how we are ever going to make these initiatives work. How to put them in practice working on the land with the farmers and so on, and going to where we want to go?



At the moment, most of the old growth forest has disappeared. We still have large tracts in the Amazon, DRC, Russia and some parts of South East Asia, but 2 million hectares are now under annual crops and grasslands, while we want to go to a mosaic and productive landscape – i.e. a landscape that consists of a tree cover, and wherein the biodiversity and topsoil is restored; a landscape where we basically can return to paradise.

So, the good news is that it is possible to reclaim degraded land. For one, there is lots of land available, and as a second, we know this is effectively possible since in one country land has been successfully restored.



This case study is about China, where the Chinese restored an area as large as the Netherlands and Belgium together in only 25 years:

Due to severely negative prognoses on erosion and sediment control by Chinese engineers, the Chinese authorities started thinking about the reforestation of the Loess Plateau in 1990, which ended up in the loess-plateau rehabilitation project in 1994. The issues started with the Yellow river being covered with sediment because a few decades before Mao Zedong wanted to create iron and steel production within China, and in order to achieve such production, you need trees. Following his orders the Chinese completely deforested the loess-plateau, which is a plateau very sensitive to wind erosion. So after deforestation its soil degraded very quickly, it was simply carried away by the wind. Then, in the 1990s, the Chinese restored the plateau with support of the World Bank and a clever German forester, Jurgen Vögler. In May 2015 the part of the plateau that was barren in 1995 was even more vegetation-covered than is visible in the right picture above. They reforested the area completely in only 20 years, using many American species like Robinia, and some other local species. What happened is that not only the sediment problem got solved, but also many new economies popped up.

Agriculture, apple orchards, tree nurseries are just few examples of what flourished in the aftermath. Also, the water supply increased and local cities succeeded to survive. The investment of 500 million US\$ of the World Bank visibly paid off greatly, and this success story continues nowadays under the name



Grain for Green. China has become the leader in reforestation on a world scale, for nowhere in the world have we seen such a huge restoration and reforestation process as in China. Furthermore, the project has also become a social success, for it revived the social agenda and the social activities in the loess-plateau. People started coming back, building new cities, opening up new schools and re-establishing health care services.

There are many studies we can fall back to concerning the return on investment per hectare of restoration of a certain ecosystem. I want to show and highlight the example one on mangroves (see the table below; source: Economics of Ecosystems and Biodiversity Studies (TEEB)).

<b>Returns from ecosystem restoration</b>					
<b>Estimated costs and benefits</b>					
Biome / Ecosystem	Typical Cost of restoration (high scenario)	Estimated annual benefits from restoration (avg. scenario)	Net present value of benefits over 40 years	Internal rate of return	Benefit / cost ratio
	US\$/ ha	US\$/ ha	US\$/ ha	%	Ratio
<b>Coral reefs</b>	542,500	129,200	1,166,000	7%	2,8
<b>Coastal</b>	232,700	73,900	935,400	11%	4,4
<b>Mangroves</b>	2,880	4,290	86,900	40%	26,4
<b>Inland wetlands</b>	33,000	14,200	171,300	12%	5,4
<b>Lakes / rivers</b>	4,000	3,800	69,700	27%	15,5
<b>Tropical forests</b>	3,450	7,000	148,700	50%	37,3
<b>Other forests</b>	2,390	1,620	26,300	20%	10,3
<b>Woodland / shrubland</b>	990	1,571	32,180	42%	28,4
<b>Grasslands</b>	260	1,010	22,600	79%	75,1

Source: TEEB, 2010

If you want to restore one hectare of mangroves – which is not very difficult for it involves only one to three species that you can simply plug in the ground – it will cost you about 2880 US\$. You can then calculate the annual benefit and the net present value, which was 86,000 US\$ in 2010. This estimation is perhaps scientifically not completely unbiased or correct, because there are many types of mangroves, and the costs also depend on where in the world you are situated. But this amount at least gives you a kind of average on the cost benefit ratio, which in all ecosystem restoration cases, including the coral reefs which are tremendously expensive, are bigger than 1.

One important and crucial parameter here is time, for we all know that a one-year-old tree differs tremendously from one that is a hundred years old.

In sum, ecosystem restoration is a viable solution to many of the world’s major problems, including climate change, carbon sequestration and biodiversity loss – but also migration.

**A framework that involves Business**

This leads us, however, to an important question: how can we involve the business world in this ecosystem



restoration agenda that is – you could say – mostly a governmental responsibility? In most countries governments are not even very active in this area, so how can we make the ecosystem restoration a part of the real economy? The specialists – from Wageningen to Yale – did not have the answers. So, after a year of searching and more studying, I came back to this thought and realized that the answer lies with the farmer.

However, I also envisioned five obstacles: i) the focus on the short term (within restoration plans and cycles); ii) the poor understanding of the economic value of ecosystems, by business men especially, but also by most other people; iii) a high risk factor or obstacle for investors is the fact that many people are living on the land, in the sense that they don’t know how to deal with the interests of all these different stakeholders; iv) the solutions provided by science and research within both scientific institutions and NGOs are often presented as overly complex, so people practically do not understand the proposed solutions; v) last but not the least: we tend to speak in different languages, all following our own silo-thinking as either experts or business men or politicians or farmers. Rarely ever does someone think and speak in this respect as a real person, combining all the perspectives into one whole.

<b>Involving business in ecosystem restoration!</b>		
	<b>Obstacles to business involvement</b>	<b>Opportunities to address</b>
1	<b>Focus on the short term:</b> Time horizon too short	Focus on <b>patient capital</b> : expand from 3-5 years to 20+ years (impact investors)
2	<b>Economic value of ecosystems is poorly understood</b> and externalities not accounted for	<b>Show case that it works in</b> existing scalable projects
3	<b>High risks because of many stakeholders</b> that may continue behaviors that are detrimental	Stakeholder commitment is critical success element: focus on <b>income, jobs, education &amp; purpose</b>
4	<b>Solutions are often presented as overly complex</b> while simple proven tools and techniques exist	<b>Create a language and model that everyone understands...</b> document baselines and process
5	<b>Silo thinking approach:</b> Most stakeholders work in isolation, well intentioned but not additive	<b>Holistic (systemic) thinking approach:</b> Restoration leadership is about connecting all stakeholders with one approach and clear purpose.

Source: Nature Resilience (2012)RSM - IUCN CEM

I found two kinds of opportunities to address these obstacles: concerning the first obstacle for example, we need to focus more on patient/family capital. Family businesses/private sector companies as well as family capital and offices are the potential agents of change here, for they can think in terms of generations; which is exactly needed for ecosystem restoration. Another opportunity is that we need to show the world that it works, we need to highlight the cases that have succeeded in these goals, such as the loess-plateau – although this is not a core business case since the government was leading the project and no private investors were involved.

**Mankind has created the problem – but we can also contribute to the solution.**  
**We can restore degraded land and increase its value.**  
**The question is HOW?**

But we necessarily need to highlight the cases that work. I, as an ecologist and specialized in ecological restoration in Latin America, know it works, but many people have no clue whatsoever about it. So continuing with erasing the obstacles summed up above: concerning the investors’ high risks: in restoring landscapes, we should not focus on nature, but merely on health, income, and jobs. Then, concerning the overly complex presented

solutions: we need to create a new language, a common language that everyone understands, and which is intrinsically connected to the silo-thinking approach that we need to fight. Therefore, I reintroduced an old word that was not very popular for many years: ‘holistic’ when talking to social scientists or ‘systemic’ when talking to engineers. However, the business domain was still lacking. So in 2009, I met Ray Anderson in Tolburg in Sweden a few weeks before a ‘leaders for nature’-event at the IUCN with top leaders from the business world. In the context of that event I asked him: *‘what can you advise me if I want to bring the concept of ecological restoration into the business domain?’* And he replied that we indeed need to create a common language and a common understanding.

So, I continued working further on his advice and I realized that we unfortunately cannot solve everything: we cannot bring back the species that have become extinct, like certain species from Madagascar or New Zealand and all other places that have been disturbed by man’s activities. Yet we can restore degraded land with the help of many contemporary technologies: we can plant trees in the desert even without irrigation; have holistic livestock management

**Many proven technologies exist...**

 <p><b>Life Land Box – no irrigation</b></p>	 <p><b>Holistic livestock management</b></p>
 <p><b>Waterworks, water tanks &amp; clearing invasives</b></p>	 <p><b>Permaculture</b></p>

Source: Nature Resilience (2012) RSM - IUCN CEM 40

gascar or New Zealand and all other places that have been disturbed by man’s activities. Yet we can restore degraded land with the help of many contemporary technologies: we can plant trees in the desert even without irrigation; have holistic livestock management

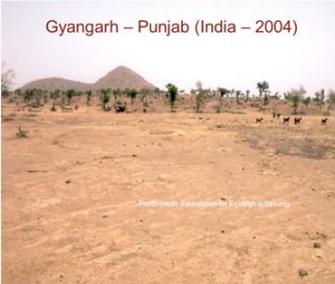
ment; bring waterworks in the landscape; and practice permanent agricultural systems. In sum, we have the technologies and sciences available, yet the scale on which ecological restoration is taking place is not as high as we desire, mostly due to lack of funding and/or common understanding.

The problem is that there are many different actors associated with a landscape/ecosystem. These pictures show the Loess Plateau a few months ago. As Ray Andersen said: we need one approach, one logical framework to create something like this. In finance there are many logical frameworks, which due to certain issues sometimes do not work. Therefore, we need



to create a logical framework that unites all different entities and erases the obstacles discussed above: NGOs, experts, farmers, land users, business men, business schools, education, media, communication etc. We need to involve people like the Chinese farmer portrayed in this picture, a person who now, illegally, brings back goats again in the forest planted twenty years ago on the loess-plateau. They sent them off twenty years ago but he returned and tries to make a living.

Degradation, furthermore, is causing four losses: i) biodiversity; ii) jobs; iii) economic activity; iv) and meaning (psychology; the soul). If you turn that around, restoration gives you four returns instead: 1) inspiration, which is a crucial (psychological) factor; 2) jobs, as an important social factor; 3) environmental capital: biodiversity and topsoil fertility etcetera; 4) and finally, financial capital. The first

<p><b>Degradation leads to four losses:</b></p> <ul style="list-style-type: none"> <li>• Biodiversity</li> <li>• Jobs</li> <li>• Economic activity</li> <li>• Meaning</li> </ul>  <p>Gyangarh – Punjab (India – 2004)</p>	<p><b>Restoration gives four returns:</b></p> <ul style="list-style-type: none"> <li>• Inspiration</li> <li>• Social capital</li> <li>• Natural capital</li> <li>• Financial capital</li> </ul>  <p>Gyangarh – Punjab (India – 2012)</p>
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three returns together, will give you sufficient financial capital, i.e. a return on investment per hectare. This means that we are looking forward to give people hope and a sense of purpose, to bring back jobs, local entrepreneurship, companies, schools and social security.

To identify what is needed in a certain landscape to restore biodiversity, canopy, trees, soil and water, we can measure/calculate what must be done in order to get back the needed quality of life to certain species so to create sustainable long-term profit.

4 returns values per hectare  
**Inspiration**



Different entities	Values measured
<ul style="list-style-type: none"> <li>• Meaningfulness, purpose, holistic awareness</li> </ul>	<ul style="list-style-type: none"> <li>• % of stakeholder group / yr / ha (U curve)</li> <li>• # local cultural &amp; social &amp; religion events</li> <li>• # belief systems; # landscape awareness @ people</li> </ul>
<ul style="list-style-type: none"> <li>• Local culture wisdom &amp; outreach</li> </ul>	<ul style="list-style-type: none"> <li>• % of stakeholder group / yr / ha; # landscape leaders</li> </ul>
<ul style="list-style-type: none"> <li>• Landscape leaders, commitment to local ownership, less corruption</li> </ul>	<ul style="list-style-type: none"> <li>• % of stakeholder group / yr / ha committed;</li> <li>• % -/- corruption benchmark;</li> </ul>
<ul style="list-style-type: none"> <li>• Understanding meaning of long term commitment of companies, investors</li> </ul>	<ul style="list-style-type: none"> <li>• % responding to long term commitment; responsible leadership; % of &gt; # years commitment, investment</li> </ul>
<ul style="list-style-type: none"> <li>• Time for inner reflection, worship, rest and think: happy energy</li> </ul>	<ul style="list-style-type: none"> <li>• % of free time or community time; volunteering; social cohesion</li> </ul>

Source: Four Returns (2015) Ferwerda

Three returns can be measured easily: jobs, environmental capital and finance. You can measure jobs, security, the number of schools, the number of health posts. You can also measure the number of species that are increasing, the extent of tree cover, the number of invasive species, the topsoil layers, the carbon and other elements of the environmental capital. Together with financial capital (which can be measured easily) and inspiration (more difficult to be measured, though not impossible) all these will increase the agricultural production, the value of the land, available water resources, economic activity, marketing and also real estate.

4 returns values per hectare  
**Social capital**



Different entities	Values measured
<ul style="list-style-type: none"> <li>• Jobs</li> </ul>	<ul style="list-style-type: none"> <li>• # of new jobs / project / municipality - ha</li> </ul>
<ul style="list-style-type: none"> <li>• Security</li> </ul>	<ul style="list-style-type: none"> <li>• # various savings yr / project</li> </ul>
<ul style="list-style-type: none"> <li>• Local social cohesion</li> </ul>	<ul style="list-style-type: none"> <li>• # of social ventures / yr / project</li> </ul>
<ul style="list-style-type: none"> <li>• Education &amp; social services</li> </ul>	<ul style="list-style-type: none"> <li>• # schools, trainings, services / project</li> </ul>

Source: Four Returns (2015) Ferwerda

4 returns values per hectare  
**Natural capital**

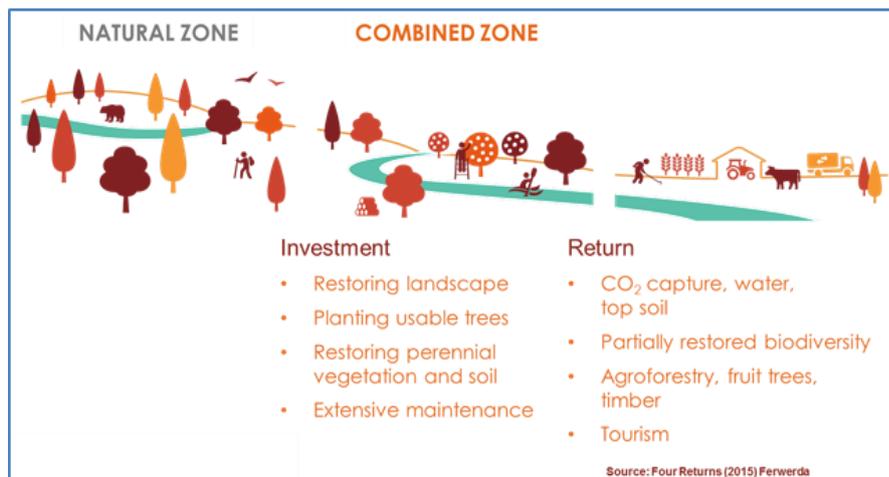
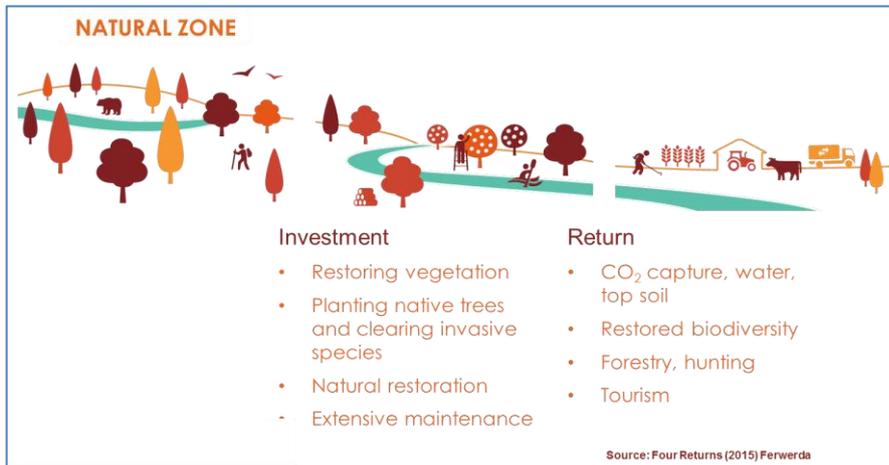


Different entities	Values measured
<ul style="list-style-type: none"> <li>• Biodiversity</li> </ul>	<ul style="list-style-type: none"> <li>• # of (native) species / yr / ha</li> </ul>
<ul style="list-style-type: none"> <li>• Invasive species</li> </ul>	<ul style="list-style-type: none"> <li>• % decrease / yr / ha</li> </ul>
<ul style="list-style-type: none"> <li>• Vegetation cover</li> </ul>	<ul style="list-style-type: none"> <li>• % coverage / yr / ha; % cloud formation</li> </ul>
<ul style="list-style-type: none"> <li>• Top soil</li> </ul>	<ul style="list-style-type: none"> <li>• mm layer / yr / ha; % micro-organisms; % Carbon / ha</li> </ul>
<ul style="list-style-type: none"> <li>• Water</li> </ul>	<ul style="list-style-type: none"> <li>• % humidity; # stream flow (m3 / yr / ha)</li> </ul>

Source: Four Returns, Commonland

To maximize the 4 returns, we apply the 3 zones landscaping principle to every landscape restoration plan, for a period of 20 years.

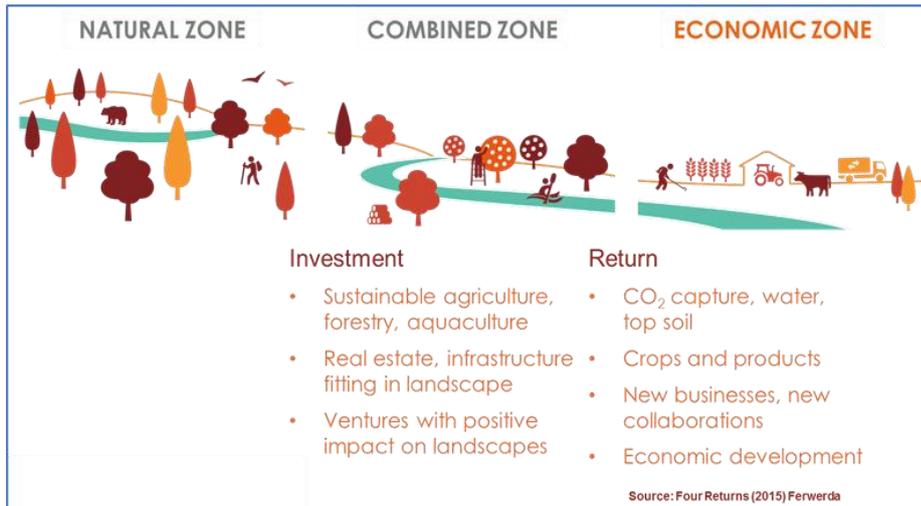
- Nature zone
- Combined mix zone
- Economic zone



But to apply these four returns, we need to think in terms of zoning the landscape, because making a theoretical four returns model will not be enough on its own. The model needs to reflect the necessities of the landscape: a natural zone, an economic zone, and a combined or mixed zone. The natural zone is, anyhow, the zone that needs restoration, whereas the economic zone consists of sustainable agriculture, and the combined zone of agroforestry.

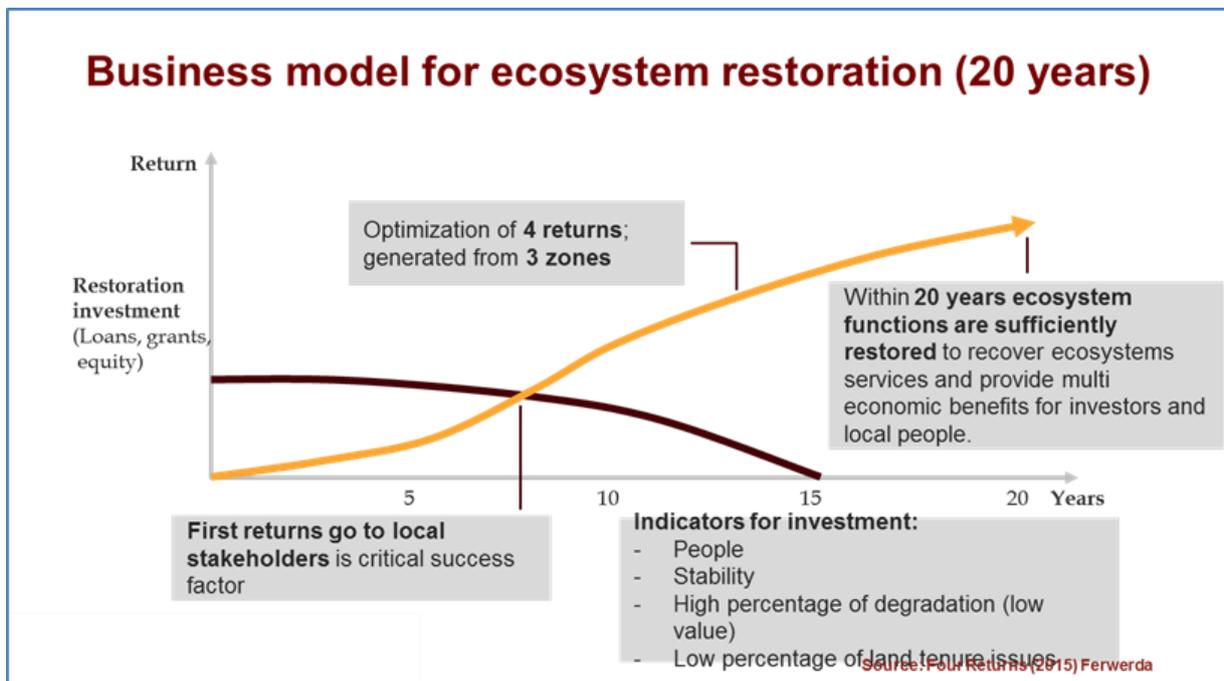
Necessary investments and expected returns will differ per zone: costs such as investments in

the natural zone, restoring the vegetation, planting native trees, nature restoration, extensive basic preservation next to simple maintenance and return in terms of water, top soil, forests, wild life and reductions of emissions of CO<sub>2</sub>. In the combined zone the productivity is higher and in the economic zone even much higher.



In the proposed four returns-three zones system, the timeframe was still lacking. Investors and family officers told me that their maximum time frame was twenty years because they cannot think and plan beyond the two decades timeframe. But two decades is

one generation. Pension funds, large infrastructure companies like oil or mining companies can think in periods of twenty years – and that timeframe is enough for an ecological restoration project. That is why twenty years has become the basis for this business model.



For an ecologist, however, two decades is not that long at all. Yet large areas can be restored within that timeframe. The latter notion formed the closing towards the compromise of a holistic framework to restore degraded landscapes: four returns given by three zones in twenty years.

### Working with four returns

To prove that this framework works, we founded an organization called Commonland that operates with the help of private – and some governmental – funding, plus the professional support from among others Wageningen University, the Business School of Rotterdam, IUCN, and the World Business Council.

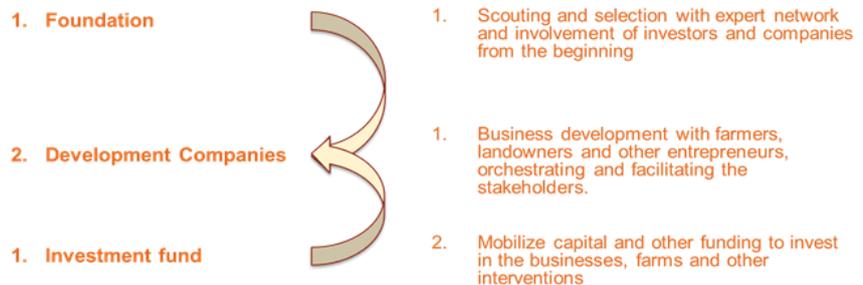
## Design of 4 returns landscape restoration plan based on sustainable business cases for all stakeholders



Commonland has set the following steps: i) developing inspiration; ii) scouting of projects; iii) learning together; iv) attract business developers; v) create companies; vi) and bring in investment with

separate investment funds. Three entities are involved in this process: 1) the foundation to do the scouting; 2) a development company to work on the field business cases; 3) and a development fund. Those three entities are under Commonland now, which in its activities and responsibilities as such, is far more than just an NGO. For there are so many things that need to be taken into account in the restoration process: stakeholder involvement, land tenure, political stability, awareness restoration of the local people (which is probably the most important one!), a nearby business network, and local entrepreneurship.

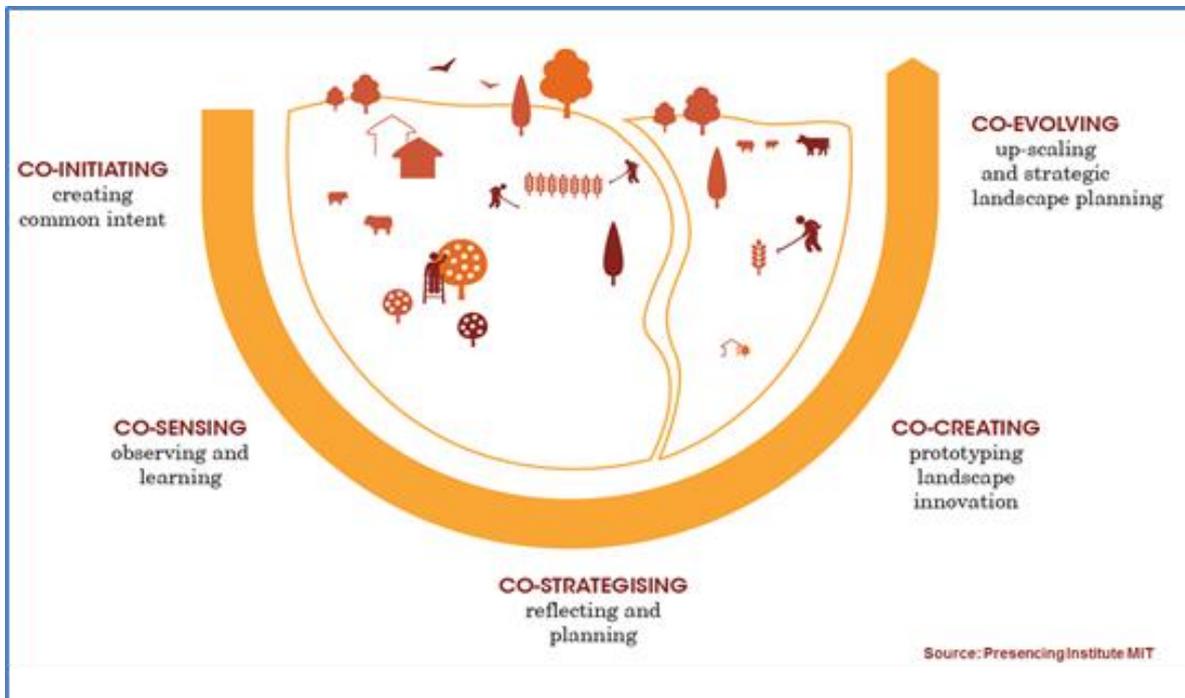
### Working across disciplines





Commonland works in several places now, for example in Andalusía, an area of 500.000 hectares (the same size as Noord-Brabant). It is a complete ecosystem, where we started working with the local farmers who had the necessary awareness and the 'know how'. We brought them together with the nature conservationists, the government and several companies

and designed a plan to restore that area as based on the four returns. We used a specific tool that is called theory U (a business tool developed by the Massachusetts Institute of Technology (MIT)) that drives people to co-initiate and through that process come up with an action plan.



Commonland then asked the people involved in the field, such as the farmers, to write down how they dream about the landscape to look like in twenty years from now. They responded with a description of the landscape filled with (nut) trees, pica nuts, almonds, and without goats, etc. Based on those *dreams*, and with the help of experts, we made a complete new business plan for the whole *altiplano* – its implementation is still ongoing at the moment.





In the Baviaanskloof in South Africa, Commonland is doing the same as in Andalucía.



In the picture above, people show what this valley – which is severely degraded on both sides and has an irrigated system of corn in the middle – can look like if you restore the landscape and take the goats off the hillside and plant pica nuts and lavender in an intercropping system. Here again, a new business development plan was set up with the local farmers, who had decided to swap hundred hectares of economic land and to remove the goats of the twenty five thousand hectares hillsides. They came to understand that the goats were the causal factor for the choices they had to make: stay in the Baviaanskloof without income or migrate to a new place.

### What is need for an Ecosystem Restoration Industry

- ✓ Promote a Common Language
- ✓ Use a simple framework that everyone understands
- ✓ Promote pride to farmers and landusers as the protectors of our land
- ✓ Put policies and legal measures in place to ensure that multiple returns are achieved for the long run
- ✓ Create 4 returns Investment Funds
- ✓ Not exclude but include companies at all levels

➤ Short track: start with a binding agreement on pricing carbon in Paris

All in all, in order to create an ecosystem restoration industry, we first need to have a common language: people need to understand each other. Secondly, we need a simple framework, as our experiences in Australia, South Africa, El Salvador, India and Spain all affirm. Before Commonland came up with the simple framework, we used to sometimes spend months to get our

rational ideas across to the actors involved. So sharing these ideas has become far easier since the introduction of the four returns, three zones and twenty years concept. If you, next to that, bring a map with you, the (spontaneous) ideas from all sides start popping up and the people converse with each other – which, as said above, is the first practical step of getting the whole process started.

In Spain the conservation ministry and the farmers are presently involved in a constructive dialogue. The farmers now understand that they need to restore the protected areas with oak trees, which the conservationists have always been pointing out. The latter understood a long time ago that trees provide water and other kinds of services for increased productivity for – hopefully – organic or sustainable agriculture. The farmers have learned that (chemical) input is basically disturbing and destroying their land, while composting brings the necessary microorganisms back into the soil. They also know now that resource wise planting creates a higher yield. Farmers who are following this logic now experience a triple yield compared to traditional farming systems. So there is room for discussion in moving further forward.

There is also a need to promote farmers as the protectors and the conservators of our future. We need to put them more in the center of our economic system and put policies and legal measures in place so to ensure the establishment of a multiple return landscape industry with a long-term perspective. We should, more importantly, include more companies into this process, since they are still mostly excluded in the current case studies. NGOs and social scientists do keep pointing out the bad behavior of certain companies, but nonetheless, there are people who aspire change and are working there too – and they should get involved. If the number of young inspired and ambitious people were to grow within those companies, their decision-making and subsequent behavior might change as well. As such, Commonland has two leading beverage companies on board, and they were given room and food for thought to find their own place within this process to do and create good business plans.

A last note on what, in the near future, would help a lot, is to create a pricing mechanism in Paris for carbon. We need our politicians for that.

I will end this fifth Dick de Zeeuw lecture with a quote of a farmer in South Africa: “If this works, we won’t be goat farmers any more. We will be lavender and nut farmers. That makes so much more sense”.