Case studies | Land-use | Systems innovation

Innovations in land use

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Contents

Agriculture, forestry and other land uses represent a fifth of global greenhouse gas emissions. The world's climate and ecological emergency cannot be addressed without significant transformations in forestry and agriculture, in our diets and in our approach to food waste.

EIT Climate-KIC tackles these connected challenges by developing portfolios of innovations that work together – across education, technology, governance, finance, policy, citizen engagement and other relevant levers of change – to transform entire systems. **Systemic innovation** is today widely recognised as essential to tackle the complex problem of climate change to deliver the rapid and far-reaching changes we need to meet the goals of the Paris Agreement. This approach can trigger the radical transformations of our societies and economies that cannot be achieved through isolated, incremental innovations.

In this brochure we single out just a few of the land-focused innovation projects paving the way for our systemic transformation initiatives that we have coined Deep Demonstrations. In these endeavours, we aim to explore how to:

- transform landscapes into carbon sinks.
- create resilient food systems and diets.
- improve the climate resilience of entire regions.

We hope you will find this brochure inspiring and that it may stimulate collaboration opportunities with EIT Climate-KIC and our pan-European innovation community.

Daniel Zimmer
EIT Climate-KIC Director, Sustainable Land Use

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* Please refer to the Appendix for more information on our Deep Demonstrations.

CASE STUDY 1

Landscape Finance Lab

The world is facing the dual threats of ongoing climate change coupled with, and linked to, global biodiversity loss.

The Landscape Finance Lab is an online platform created to attract large amounts of green capital for sustainable land initiatives and systematically refine products for broader applications.

The Lab will transform the landscapes it is currently working with into sustainable, thriving and profitable ecosystems.

The climate change challenge

The world is facing two dual threats of ongoing climate change coupled with, and linked to, global biodiversity loss. Healthy landscapes, rich with biodiversity, are critical in ensuring the world stays below the 2°C target set in the Paris climate accord.

Unfortunately, in sustainable land and oceans management, global efforts are largely inadequate. Tropical rainforests are burning as wildfires spread erratically and governments fail to respond adequately. Oceans are ridden with plastic, while waters are acidifying and warming – degrading and destroying entire ecosystems.

Land use contributes to around a quarter of greenhouse gas emissions. Yet green finance – environmental investments – is almost completely targeted elsewhere, for example in transport and infrastructure. Only 1–3 per cent of investments go towards land-based projects and solutions.

Progress requires integrated resource management. Rather than focusing on the sustainability of individual projects or energy sources, problems must be tackled at a systemic level. However, it is difficult to coordinate across sectors to make a concerted impact. This involves bringing together private companies, governments, NGOs and research circles to understand and tackle the problem together. In the last few years, many large multinational corporations, governments and NGOs have come to an agreement about the steps needed to stem the crises. The next steps involve obtaining investments to fund wide-scale transformations.

A solution requires land-based projects to be de-risked and made more attractive to potential investors. Implementing large-scale landscape solutions is a complex, challenging issue that requires partnership between multiple stakeholders.

Solution

Landscape Finance Lab (LFL) is an online platform created to attract large amounts of green capital for sustainable land initiatives (above $50 million per project) and systematically refine products for broader applications. It helps stakeholders to package together separate land initiatives into larger products, structuring and launching projects with wider impacts.

This kind of sustained, large-scale financing with shared risk levels allows land managers to work on long-term solutions over vast areas and makes projects more attractive to investment banks. The Lab is working to transform ten landscapes into sustainable, thriving and profitable ecosystems, protected and appreciated by humans and wildlife alike, thrusting them into commercial opportunities to bring their solutions to a global scale by 2025.

If one landscape programme costs around $100 million for a decade, then to shift 100 landscapes to sustainability costs around $10 billion – less than the cost of one aircraft carrier. Surely the world can afford this? Surely we can't afford not to!

Paul Chatterton, Founder and Lead, Landscape Finance Lab, WWF

Impact

The Lab is working in 17 countries transforming 23 landscapes through holistic, high-value and large-scale projects. Six of these projects bring in over $100 million in investment each. For example:

In Fiji, a ridge-to-reef adaptation project is providing protection and regeneration to a reef covering 39 per cent of Fiji's land and sea space. The Great Sea Reef accounts for 80 per cent of Fiji's offshore fishing and 70 per cent of its tourism, and is integral to Fijian culture.

In Cameroon, the Democratic Republic of Congo, and Gabon, LFL is designing an action plan to combat wildlife crime and introduce sustainable forest management in a 178,000km forest home to numerous endangered species.

We envision a world where regenerated landscapes create returns for people, nature and economies.

Landscape Finance Lab Annual Report, 2019, Vision Statement

EIT Climate-KIC's role

Funding such as that by the EIT Climate-KIC attracts further investment, creating a positive feedback cycle for the project. The EIT Climate-KIC's support has been instrumental in helping the LFL team reach their goals and is already transforming landscapes across the world.

On top of financial support, EIT Climate-KIC also provided business knowledge in the form of innovative models, and networking opportunities with useful contacts that the project is now working alongside. It is helping LFL seek new investors, partners and innovators to join its mission.

FACT FILE

TOTAL INVESTMENT

- PROJECT COST €766,500
- EIT FUNDING €335,250
- CO-FUNDING €431,250

PARTNERS PROFILE

- South Pole Carbon Asset Management Ltd.
- The Gold Standard Foundation
- WWF Austria

WEBSITE

landscapefinancelab.org

LEVERS OF CHANGE

- Individual behaviour
- Organisation governance
- Policy
- Finance
- Technology
- Skills
- Market structures
- Information flows
- Production systems

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CASE STUDY 2

WINnERS

Climate change and extreme weather events are becoming more disruptive to food production and supply chain operations.

WINnERS (Weather Index-based Risk Services) is a multi-funder innovation project that offers risk management services to build resilient supply chains from the smallholder to the global retailer.

Through the WINnERS programme, **25,000 farmers** have already been insured for their maize production in Tanzania.

The climate change challenge

Weather-related disasters such as floods and droughts will likely become more intense with climate change, resulting in irregular crop yields. With ensuing disruptions in production and distribution could come higher and more volatile food prices. Recently, the locust invasion in East Africa which has resulted in an unprecedented food security crisis is most likely the result of unusually heavy rainfall in the regions.

On the African continent, yields in staple crops are expected to drop as a result of climate change. By 2030 some African countries could see yields in rain-fed agriculture fall by half and the prices of certain food crops are predicted to increase by anywhere between 50 per cent and 120 per cent by 2030.

Many smallholder farmers fail to sign deals with food retailers which would enhance their financial stability, mainly because of the difficulties associated with maintaining a stable level of production in the face of new extreme weather events related to climate change. On the other hand, the frailty of smallholder farmers places pressures on the food supply chains which European distributors rely on.

The situation is also worse for women in many emerging countries, who face poor social conditions and are absent from higher managerial positions. Climate change threatens to compound all of these already existing problems.

In the WINnERS programme, European universities are teaming up with banks, insurers, food companies and smallholder farmers to find ways to increase resilience in supply chains in a way that protects buyers, banks and most importantly producers from climate-driven risk and losses. Technology offers the use of a truly sustainable feedstock for new products.

Solution

The WINnERS programme aims to develop a de-risking framework involving all stakeholders of the food value chains, in order to make smallholder farmers creditworthy to their local banks, and allow them to access inputs and markets for staple crops.

At its core sits an index-based insurance that uses machine – learning to deliver robust climate risk information. The system analyses meteorological and climate data, and a series of algorithms produce highly accurate agricultural risk information. This information helps farmers plan ahead to secure their crops and is integrated in an insurance and loan scheme, where the premium depends on the implementation of sustainable farming practices.

By enabling financial access to smallholder farmers, **WINnERS** places conditionality around the loans that incentivises climate-resilient practices at the farm level.

Fabrizio Rossi, Programme Lead, Sustainable Land, EIT Climate-KIC

Impact

Through the WINnERS programme, 25,000 farmers have already been insured for their maize production in Tanzania, and part of the funding for the programme is specifically dedicated to promoting gender equality and financial inclusion for female farmers in Tanzania.

WINnERS services and products are already working to bring more sustainable food production and improved market access for smallholder farmers. Better farming practices – such as intercropping, in which separate crops are planted in close proximity – leads to improved yields and higher levels of resilience to adverse weather such as heat stress, or lack of rainfall.

The programme aims to reach **a million farmers** in sub-Saharan Africa by the year 2022.

Fabrizio Rossi, Programme Lead, Sustainable Land, EIT Climate-KIC

EIT Climate-KIC's role

EIT Climate-KIC provided initial funding and supported the project's development. It has successfully secured more than $1.5 million in additional funding from banks and funders to scale the de-risking service across Africa. The WINnERS programme is still evolving, thanks to the backing and guidance from EIT Climate-KIC. The team wants to move on to multi-crop insurance programmes, increase the geographical footprint of the project further and develop new agricultural practices along the way. The EIT-backed programme aims to operate in ten countries, and to reach a million farmers in sub-Saharan Africa by the year 2022.

FACT FILE

TOTAL INVESTMENT

- PROJECT COST €1,314,011
- EIT FUNDING €377,828
- CO-FUNDING €936,183

PARTNERS PROFILE

- Imperial College London
- African Development Bank
- CIRAD, Agricultural Research Centre for International Development
- Climate Justice Resilience Fund (CJRF)
- Ecole Polytechnique
- Mercy Corps
- Munich Re
- Pass Trust
- University of Utrecht
- The World Bank

WEBSITE

winners-project.org

LEVERS OF CHANGE

- Individual behaviour
- Organisation governance
- Policy
- Finance
- Technology
- Skills
- Market structures
- Information flows
- Production systems

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CASE STUDY 3

Feed-X

Food security will be a defining issue in supporting a world population set to grow rapidly in the coming decades.

The Feed-X programme aims to source, test, finance and scale sustainable vegetal protein alternatives for animal and aqua-farming feeds.

Feed-X aims to shift **10 per cent** of the global feed industry towards more sustainable production, drawing on novel alternative solutions by independent entrepreneurs.

The climate change challenge

Food security will be a defining issue in supporting a world population set to grow rapidly in the coming decades. There simply are not enough resources currently to feed a population expected to reach 9.5 billion by 2050.

Feeding the world also has a tremendous environmental impact: global agricultural emissions grew by 8 per cent between 1990 and 2010 and they are expected to grow further, by 15 per cent above 2010 levels by 2030. At this point, they will amount to almost 7 billion tonnes of greenhouse gases (GHGs) per year.

Most of these increases are driven by the shifting composition of diets in developing countries, and the corresponding population growth in these regions. The rise in agricultural emissions will be particularly acute across Asia and sub-Saharan Africa: these two areas will account for around two-thirds of the increase in food demand over the first half of the twenty first century.

The agricultural sectors expected to grow most are the production of vegetable oils and animal products, both of which cause disproportionately high levels of GHG emissions. The largest proportion of GHG emissions in animal production comes from feed. Certain compound feeds for animals comprise ingredients, such as soy, wheat and fish products, that have severe negative impacts on the environment – there are links between tropical deforestation and soy, for example.

Mitigation through certification schemes will not be enough to account for the rise in production if we are to meet future demands. Novel solutions will supplement the transformation of the feed industry, leading to increasing food security and diminishing environmental impacts – in aquaculture and beyond. The most effective solutions must be determined and brought to global markets as soon as possible.

Solution

Feed-X aims to revolutionise alternative feed solutions for aquaculture, initially focusing on salmon and shrimp. The project is part of a wider initiative known as Project X, which will accelerate development across other global industries over the next decade in a bid to reverse biodiversity decline and climate change. It aims to shift 10 per cent of the global feed industry towards more sustainable production, drawing on novel alternative solutions by independent entrepreneurs.

Feed-X hopes to remove the barriers to sustainably fed, affordable food by fast-tracking the development of promising alternative feed ingredients and technologies, and thrusting them into commercial opportunities to bring their solutions to a global scale by 2025.

The largest proportion of greenhouse gas emissions in animal production comes from feed.

Karen Lawrence , Senior Research Manager, Feed-X (WWF)

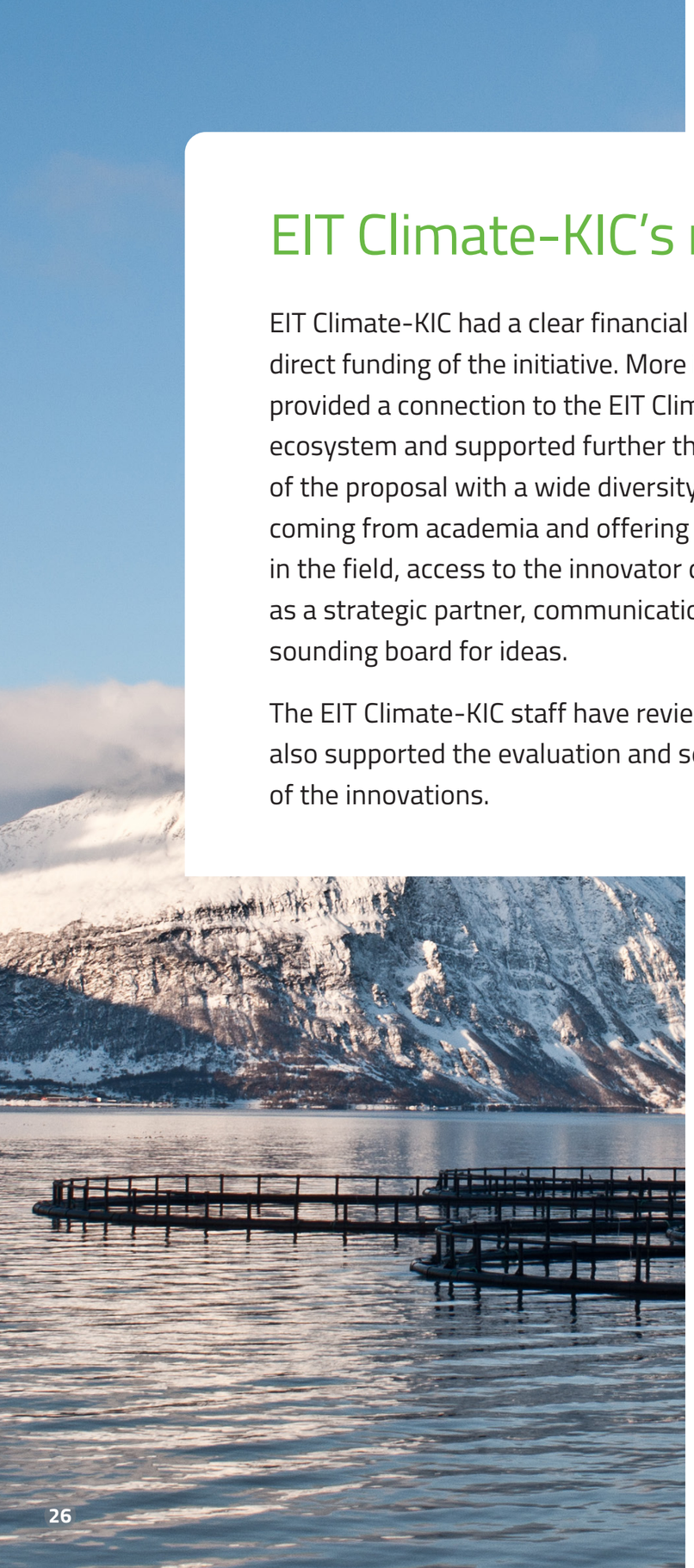
Impact

Feed-X has selected ten successful innovators that have produced exciting developments in sustainable aquaculture. The chosen innovators will be working with established research groups and organisations to identify the environmental impacts of each solution as they become clear.

Throughout the process, the environmental and ethical credentials of each of the companies will also be verified and certified. The next steps are to work out the journeys for each of the selected innovations to include test, validation and testing and scaling, so that the best three can be scaled to commercial levels.

Feed-X aims to shift 10 % of the global feed industry towards more sustainable production, drawing on novel alternative solutions by independent entrepreneurs.

Karen Lawrence , Senior Research Manager, Feed-X (WWF)



EIT Climate-KIC's role

EIT Climate-KIC had a clear financial impact through direct funding of the initiative. More importantly, it provided a connection to the EIT Climate-KIC partners ecosystem and supported further the development of the proposal with a wide diversity of partners coming from academia and offering unique expertise in the field, access to the innovator databases and as a strategic partner, communications and a general sounding board for ideas.

The EIT Climate-KIC staff have reviewed reports and also supported the evaluation and selection process of the innovations.

FACT FILE

TOTAL INVESTMENT

- PROJECT COST €816,181
- EIT FUNDING €689,996
- CO-FUNDING €1,506,177

PARTNERS PROFILE

- Wageningen Research
- Edinburgh Centre for Carbon Innovation (ECCI), Edinburgh University
- Project X

WEBSITE

projectxglobal.com/our-pilots/feed-x-challenge/

LEVERS OF CHANGE

- Individual behaviour
- Organisation governance
- Policy
- Finance
- **Technology**
- Skills
- **Market structures**
- Information flows
- Production systems

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CASE STUDY 4

Friendly Fruit

Fruit supply chains are already experiencing negative impacts due to warping climates, from early and erratic crop flowering to the reduced quality of fruits.

Friendly Fruit aims to implement the appropriate structure to promote environment-friendly agricultural practices in various regions in the fruit industry.

Friendly Fruit will bring systemic change towards a sustainable fruit value chain through new guidelines and the impact assessment of new practices.

The climate change challenge

Fruit production – like all agricultural practices – must adapt to climate change by decarbonising operations. Fruit crops also use high levels of polluting phytosanitary products in the form of pesticides and fertiliser.

Supply chains are already experiencing negative impacts from warping climates, with early and erratic crop flowering, reduced quality of fruits, the emergence of new diseases, and water supply issues all presenting new challenges. On top of these, larger threats such as floods, storms and droughts will likely increase in severity in the coming decades.

A reduction of harmful greenhouse gas emissions across supply chains in the sector can be supplemented and strengthened through the introduction of sustainable initiatives like water management, improvements in soil quality, biodiversity protection and carbon capture. Improving local farming practices could have a dramatic impact on GHG emissions and has the added benefit of working hand in hand with more equitable social conditions for food production workers.

The global food- and fruit-processing company Danone pledged to cut its GHG emissions in half by 2030. Through the Friendly Fruit project, launched with co-partners INRA, a French public research institute dedicated to agricultural science, Danone's fruit buyers are analysing current fruit production practices to create guidelines to improve sustainability across the entire industry.

Friendly Fruit is aiming to both define and systematise sustainable agricultural practices and empower farmers with key knowledge on implementing these practices. This will not only reduce the negative environmental and social impacts associated with current methods of fruit production, but also make supply chains stronger.

Solution

Friendly Fruit has changed agricultural practices in various regions to allow environment-friendly strawberry and apple production, which account for 11 per cent of the global fruit market. The project focuses on the supply chain in close links with the farmers. It will bring systemic change towards a sustainable fruit value chain through new guidelines and then assess the impacts of these practices.

Several innovations are being introduced, such as pest-resistant and high-performing fruit varieties better adapted to weather changes, mechanical weeding systems intended to decrease herbicide use, and subsoil smart-sensors which monitor water levels and improve the management of this vital resource.

Friendly Fruit is aiming to both define and systematise sustainable agricultural practices and empower farmers with key knowledge on implementing these practices

François Laurens, Researcher, INRA

Impact

Although still in its early stages, the Friendly Fruit initiative is showing some interesting environmental results. One apple orchard saw a 30 per cent reduction in water use in 2018, thanks to the monitoring equipment installed to control water supply.

Five farm labs have been set up in Morocco to test new cultivars of strawberries, work on better use of water and fertilisers, and implement new biocontrol approaches to control pests and diseases.

The final aim of the project is to disseminate the knowledge and expertise as widely as possible, to achieve impacts along the whole fruit chain in Europe and beyond.

Although still in its early stages, the Friendly Fruit initiative is showing some interesting environmental results.

François Laurens, Researcher, INRA

EIT Climate-KIC's role

EIT Climate-KIC's Climate Smart Agriculture Booster initiative provided Friendly Fruit with €1.8 million in funding, and a network of experts and project partners. It also helped to translate ideas generated in research labs into practical, real-world solutions to be experimented with, and implemented in farms across the European Union and beyond. EIT Climate-KIC is now discussing with various food retailers to draw more partners into the project, and facilitating the dissemination of the scientific output. It hopes to instil the same values and practical innovations in fruit producers across Europe to help transform the wider industry.

FACT FILE

TOTAL INVESTMENT

- PROJECT COST €1,088,174
- EIT FUNDING €680,341
- CO-FUNDING €407,833

PARTNERS PROFILE

- Wageningen University
- L'Institut national de la recherche agronomique
- Institute of BioEconomy – The Italian National Council of Research
- Alma Mater Studiorum – Università di Bologna
- Danone
- Agro Transfert
- Materne SAS
- Università Politecnica Delle Marche

LEVERS OF CHANGE

- Individual behaviour
- Organisation governance
- Policy
- Finance
- **Technology**
- **Skills**
- **Market structures**
- Information flows
- Production systems

WEBSITE

agrisource.org/en/7_113/5c332f7107c805cd14cf5eb4/friendly-fruit.html

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CASE STUDY 5

WEBio

Biomass is a promising renewable resource for energy, chemistry and material purposes. Mostly untapped as a climate solution, it could represent an easy win for European countries willing to reach the target of net zero emissions.

The project's team developed an IT platform to track biomass and optimise its use. It allows access to local, geospatial and actualised data on bioresources.

The project's team developed an IT platform to track biomass and optimise its use. It allows access to local, geospatial and actualised data on bioresources.

The climate change challenge

The term 'biomass' covers a large variety of materials, including by-products and organic waste from both animal and vegetable sources. Uses for these resources are various, and span agriculture, building materials, chemicals and energy production.

Across Europe the current tracking and repurposing of biomass is underdeveloped and leaves parts of its potential market unexploited. While technologies to assess the value of bioresources have been continuously improving in recent years, biowaste owners are still ill-informed and biowaste often ends up degrading in the open air, emitting greenhouse gases in the atmosphere in the process.

Where sufficient data does exist, it is often used only at the local or national level and it is not updated regularly, hindering efforts to develop commercial applications for biomass. Such applications hold a high potential in reducing emissions from the agricultural sector and offer substitutes for a wide range of materials and energy sources with much larger carbon footprints.

The primary objective of the group of researchers behind the WEBio Platform was to improve the management of bioresources for climate positive projects, optimise the use of biomass in order to minimise their environmental impact and find markets for underused bioproducts such as animal slurry.

What was lacking, they found, was a global and generic solution to provide geospatial data on biomass's potential per parcel of land, its quantity and characterisation. Such a tool held the potential to ease the process of determining the best use for suitable bioresources.

Solution

The WEBio Platform has been designed for entrepreneurs and innovators at the local level to be able to assess and measure the regional biomass available to them, and to develop innovative projects with low carbon emissions. All the information is made homogeneous and dynamic and is georeferenced – which means that one can follow in real time the availability of wood waste in a given forest.

So far the platform provides access to up-to-date geospatial data on four types of biomass: wood, by-products from crops used for energy purpose, livestock effluents and sewage sludges. All this information is paired with a set of good practices for effective management of each type. The data itself is combined from different sources: aerial and ground data, and biological, chemical and environmental information.

> The current biomass and bioresource assessments across Europe are insufficient and leave parts of the market underexploited.

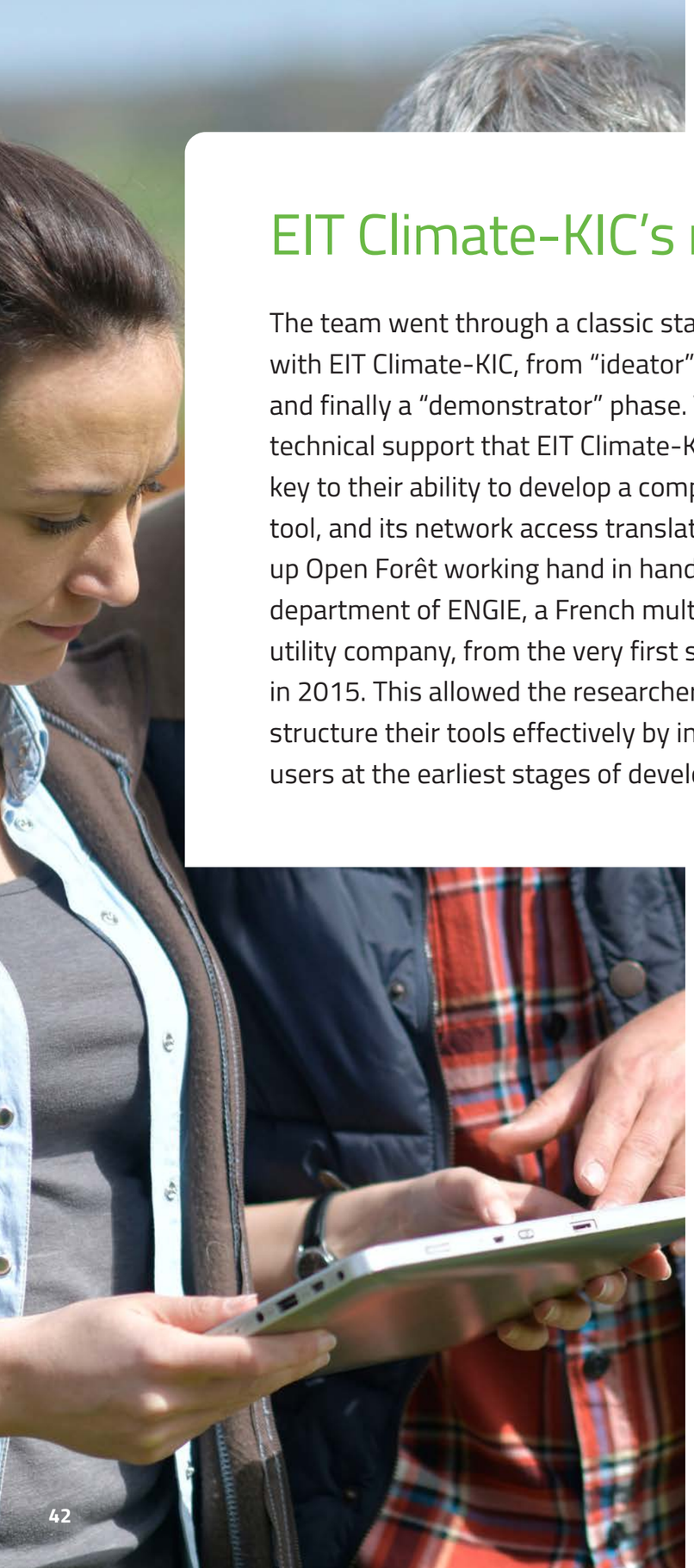
Elodie Le Cadre Loret,
Lead Scientific Advisor, ENGIE

Impact

By creating a resource that provides the best information to optimise bioresource usage in the struggle against climate change, the WEBio Platform already contributes to the acceleration of the transition towards a sustainable bioeconomy in Europe. In France alone, the WEBio Platform reached a total of 40,000 prospective clients. When launched it is expected to be a game-changing tool as it will cover a large part of Western Europe.

> The WEBio Platform is a resource that provides the best information to optimise bioresource usage in the fight against climate change.

Elodie Le Cadre Loret,
Lead Scientific Advisor, ENGIE



EIT Climate-KIC's role

The team went through a classic start-up's journey with EIT Climate-KIC, from "ideator" to "accelerator", and finally a "demonstrator" phase. The financial and technical support that EIT Climate-KIC offered was key to their ability to develop a completely new digital tool, and its network access translated into the start-up Open Forêt working hand in hand with the research department of ENGIE, a French multinational electric utility company, from the very first steps of the project in 2015. This allowed the researchers to design and structure their tools effectively by including potential users at the earliest stages of development.

FACT FILE

TOTAL INVESTMENT

- PROJECT COST €548,038
- EIT FUNDING €365,359
- CO-FUNDING €182,679

PARTNERS PROFILE

- ENGIE S.A.
- Fondazione Edmund Mach
- Open Foret

WEBSITE

webio-platform.com

LEVERS OF CHANGE

- **Individual behaviour**
- Organisation governance
- Policy
- Finance
- Technology
- Skills
- Market structures
- **Information flows**
- Production systems

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CASE STUDY 6

geoFootprint

To boost sustainable crop supply chain management to the necessary levels, more robust, transparent and compatible environmental data is needed.

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geoFootprint is a global tool combining geospatial data with environmental footprint analyses of crops based on remote sensing data.

geoFootprint will enhance our understanding of how farming practices affect the environment, and how environmental changes affect the supply of critical crops.

The climate change challenge

For many companies in the agro-food, cosmetics and apparel sectors, future growth depends on the continued availability and quality of crop production. However, agricultural practices need to be decarbonised in order to meet Paris Agreement goals and keep the increase in global temperatures below 1.5°C. Unfortunately, it is difficult to obtain accurate, real-time data on the carbon footprint of crops locally.

Agricultural supply chains are critical when it comes to tackling climate change, as this often accounts for large proportions of a producer's GHGs. Many crop-based industries and major food producers have set themselves ambitious environmental targets, aiming to reduce their carbon footprint by improving the management of their supply chains.

There is a lack of environmental data with sufficient detail for large stakeholders to effectively understand and manage their carbon emissions. To accelerate sustainable crop supply chain management to the necessary levels, more robust, transparent and compatible environmental data is needed.

The goal of the geoFootprint project, co-financed by the EIT Climate-KIC, is to bridge this data gap, removing inconsistencies and incompatibilities between data sources and datasets, and providing a more in-depth view of the current environmental situation in each supply chain.

Through the development of a commodity-monitoring tool designed specifically with climate footprints in mind, geoFootprint's service will determine and define the impact of major commodities across the planet. This means producers and suppliers will be able to monitor, track, and improve progress towards regional and global sustainability goals.

Solution

geoFootprint will take the form of a user-friendly online world map to measure the environmental footprint of agricultural practices and supply chains of major crops with an unprecedented level of detail. Companies and other relevant stakeholders will have access to key environmental information to help them make sustainable decisions and support better crop management practices.

Using geographic information system (GIS) location technology, the tool will enhance and merge available data to derive generic emission factors and environmental metrics at unprecedented levels of specificity and accuracy, up to a level of precision of 10 x10 kilometres.

> There is a lack of environmental data with sufficient detail for large stakeholders to effectively understand and manage their carbon emissions.

Xavier Bengoa,
Senior Sustainability Consultant, Quantis

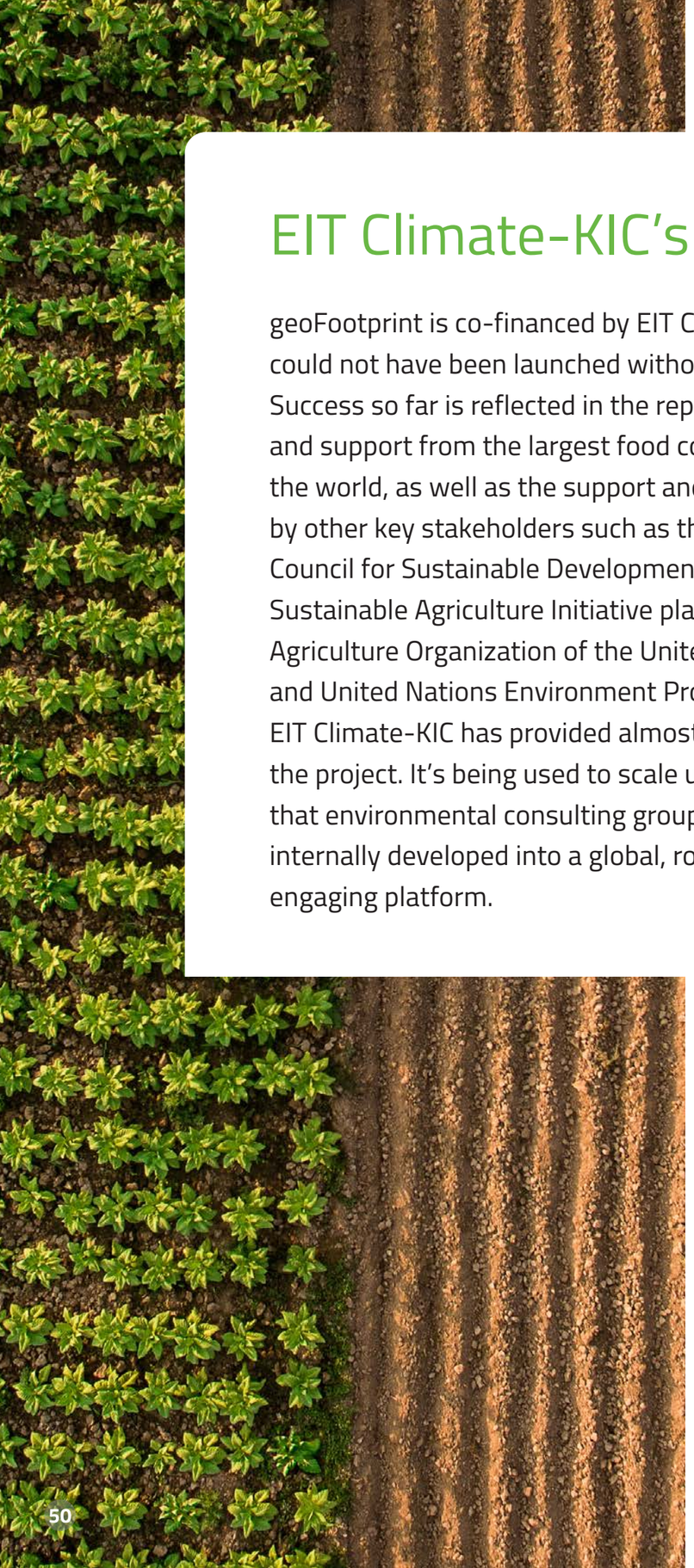
Impact

geoFootprint will empower companies in crop-based industries with far more granular supply chain data so they can make better environmental management decisions and accelerate their transition towards sustainable agriculture. The tool will also enhance our understanding of how farming practices and local characteristics affect the environment, and how environmental changes affect the supply of critical crops.

Governments and companies will have a new capacity to model and visualise farming practices and determine strong and weak points in the supply chain regarding environmental sustainability.

> geoFootprint will empower companies in crop-based industries with far more granular supply chain data so they can make better environmental management decisions.

Xavier Bengoa,
Senior Sustainability Consultant, Quantis



EIT Climate-KIC's role

geoFootprint is co-financed by EIT Climate-KIC and could not have been launched without its support. Success so far is reflected in the repeated interest and support from the largest food corporations in the world, as well as the support and advice given by other key stakeholders such as the World Business Council for Sustainable Development (WBCSD), the Sustainable Agriculture Initiative platform, Food and Agriculture Organization of the United Nations (FAO) and United Nations Environment Programme (UNEP). EIT Climate-KIC has provided almost €1 million for the project. It's being used to scale up a prototype that environmental consulting group Quantis has internally developed into a global, robust and engaging platform.

FACT FILE

TOTAL INVESTMENT

- PROJECT COST €585,000
- EIT FUNDING €292,500
- CO-FUNDING €877,500

PARTNERS PROFILE

- Arx-IT Consulting
- Quantis
- Cool Farm Alliance

WEBSITE

geofootprint.com

LEVERS OF CHANGE

- Individual behaviour
- Organisation governance
- Policy
- Finance
- **Technology**
- Skills
- **Market structures**
- **Information flows**
- Production systems

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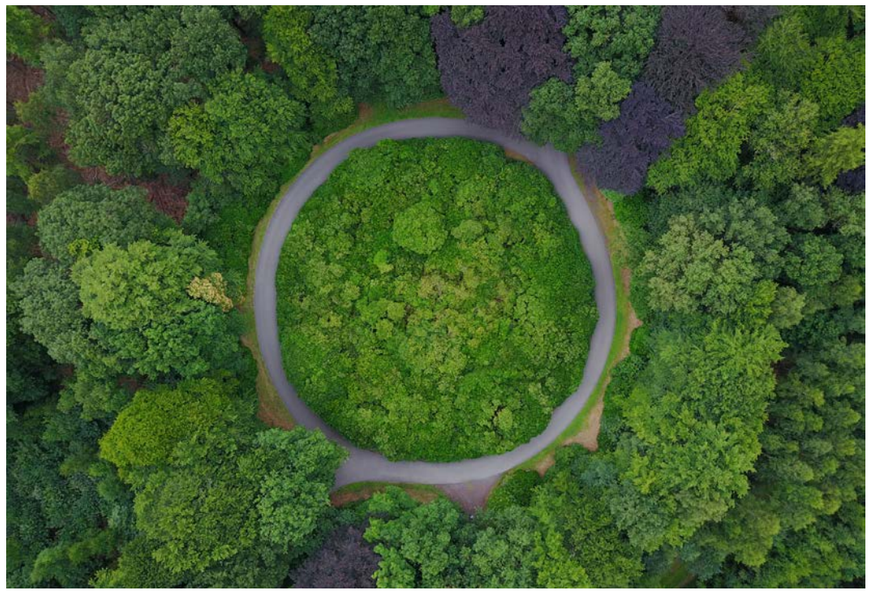
Systems innovation as a service

EIT Climate-KIC offers “systems innovation as a service” to help Europe deliver a transformative green recovery.



The innovation projects you see in this booklet represent just a sample of the world-leading climate innovation we have convened in the landscapes space in the last ten years. We draw on our **ten-year track record** in land, finance, sustainable production, cities, education and citizen engagement when we build portfolios for systemic change.

Deep Demonstrations

EIT Climate-KIC’s response to the climate emergency has been to focus our efforts on systems innovation, and to generate options and pathways for radical transformations in whole countries, cities, regions, industries and value chains.

Deep Demonstrations are the large-scale projects through which we offer our “systems innovation as a service” model to Europe’s most ambitious “challenge owners” – that is the mayors, government ministries, industry and community leaders, and funders who have the means and mandate to tackle Europe’s biggest climate change challenges. We are currently working with governments in Slovenia, Bulgaria, Italy, Scotland and Ireland; with transitioning regions in Spain, Poland, the UK and Italy; with systems thinkers in food, shipping and materials sectors; and with the mayors of some of Europe’s most ambitious cities.

Through these demonstrations, we work with our partners to design **bespoke innovation portfolios** capable of catalysing whole systems change. Portfolios may include innovations and interventions in education, technology, policy, procurement, finance, citizen engagement and other relevant levers of change. In addition to drawing on our own projects and programmes, we also shape calls for new proposals.

Work with us

In 2019 EIT Climate-KIC launched eight Deep Demonstration projects to act as:

- A test bed environment for tackling climate change through systems innovation to build a net-zero-emissions economy.
- Sources of innovation and learning that can accelerate change and provide policy inputs.

We invite new partners and funders to work with us to expand and progress this initiative, for a rapid and inclusive green recovery across Europe.

✉ Interested? Email us to start the conversation:
gudrun.freese@climate-kic.org

Healthy, Clean Cities

Cities face an enormous challenge in becoming resilient, healthy places to live, while reaching net-zero emissions in just a few years. EIT Climate-KIC is working with 15 of the most ambitious mayors and municipalities in Europe to design portfolios of joined-up innovations capable of unlocking wholesale transformation across all city systems – from mobility to waste to energy to health and the built environment. Our first cohort of partners includes Amsterdam, Edinburgh, Kraków, Križevci, Leuven, Madrid, Malmö, Maribor, Milano, Niš, Orléans, Sarajevo, Skopje and Vienna.

Long-termism

Short-term thinking in investment cycles and in ideas of economic value are acting to prevent the 1.5°C transition we need. Transformation of major systems in the real economy – agriculture, transport, energy, manufacturing, built environment, etc. – will require myriad interventions and innovations in the financial system. This deep demonstration aims to work with some of the most powerful "problem owners" in this space – from the school children who need us to adopt long-term thinking to pension funds to the Organisation for Economic Co-operation and Development (OECD) – to embed new concepts of value, monetisation and externalities in the financial system, and to address the underlying behaviours and mindsets – including short-termism – that govern our choices and decisions.

Resilient Regions

The impacts of climate change involve slow-onset changes, extreme events and increasing systemic risks. Some regions of Europe are particularly exposed to these impacts due to the make-up of their landscapes, economies and societies. EIT Climate-KIC will take a systems innovation approach to forging resilience in these regions. This deep demonstration is designed to create a transformational impact by shifting regions' hazard-by-hazard risk reduction practices to a state where people, communities, and systems are able to withstand and bounce back from shocks, persist through slow-onset stresses and transform through crises. Early partners include regional governments in Andalusia, Nouvelle-Aquitaine, the Dolomites and Glasgow City Region.

Landscapes as Carbon Sinks

Increasing rural depopulation in Europe, and economic practices that mine soils and landscapes for profit, are causing land to be sources of emissions, not sinks. Lack of land management is also raising wildfire risk that can create bursts of emissions, whereas opportunities for carbon sequestration are missed. Deep demonstrations of turning landscapes from carbon sources into sinks will need to tackle a lack of investment, forge new social contracts with soil and forests, and line up value chain incentives. Current partners include Chalons-en-Champagne, a French landscape ecosystem, and the government of Scotland.

Resilient Food Systems and Diets

Whether it's widespread plastic packaging, high levels of food waste or diets high in meat consumption, our food systems are incompatible with a 1.5°C future. The farming sector alone accounts for approximately one-third of global GHG emissions. To reform our food system and boost global health we must tackle food production, distribution and consumption, as well as metrics, policies and habits. We will need to work with people and places and at the level of global value chains. This deep demonstration aims to catalyse a shift towards a sustainable, healthy food system that can feed future generations within planetary boundaries.

Just Transformations of Heavy Industry Regions

Many regions and people across Europe still rely on economies that are incompatible with tackling climate change. These can be coal-producing region or regions with polluting heavy industries. People and economies engaged in these sectors are therefore highly vulnerable during the transition to a decarbonised future. Inclusivity, and climate, social, economic and democratic justice, are vital to the success of rapid structural change. EIT Climate-KIC's Deep Demonstration of Just Transformations will build into a Just Transformation movement, with the aim of demonstrating that such just transformations are indeed possible. We are working with pioneering and ambitious challenge owners across Europe to achieve democratic and inclusive transformations of whole regions. The movement will put the voices of citizens, workers and youth at the core of regional economic transformation. Our first partners include regional governments in Silesia in Poland, Mondragon in Spain and Emilia Romagna in Italy.

Circular, Regenerative Economies

We are working with the government of Slovenia in a deep demonstration of rapid change to a circular and regenerative economy and society. They have identified circular economy as a strategic development priority to ensure a prosperous future and high quality of life for Slovenian citizens. Innovation will tackle material production and waste flows across five key economic systems: forestry, built environment, manufacturing, food and mobility. We are also in the early stages of a partnership with the government of Bulgaria and the government of Italy.

Resilient, Net-Zero-Emissions Maritime Hubs

We are working with ambitious partners on land (ports) and at sea (shipping industry) who share an ambition to create a circular, inclusive, net-zero-emissions maritime sector. The maritime sector accounts for 90 per cent of global trade and 3.1 per cent of global GHG emissions – a figure projected to increase threefold by 2050. Ports are places where multiple systems collide – shipping, energy, waste, tourism and other transport for example. They are emissions hotspots in themselves, but also hubs with the potential to effect enormous change. We are working with ports in Valencia and Piraeus as well as the Cyprus Ship Registry, through the Cyprus Deputy Ministry of Shipping.

Climate-KIC is supported by the
EIT, a body of the European Union