



# **BUSINESS CASE STUDIES BUSINESS MODELS BASED ON FAB MEASURES**

## SUMMARY

This document lists twelve innovative business models based on functional agrobiodiversity measures, that have been implemented and tested by farmers across North-West Europe, in the pilot areas of the Fabulous Farmers project.

This document was co-written by all the partners in the Fabulous Farmers project and piloted by AC3A.

## ACKNOWLEDGMENTS

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## TABLE OF CONTENT

1. Selling carbon from hedgerows in Pays de la Loire, FR
2. The Brewery 3 Fonteinen in Pajottenland, BE
3. Reduced tillage and cover crops in Brittany, FR
4. Carbon sequestration in Zeeland, NL
5. Hodmedod's British Pulses and Grains, East of England, UK
6. Management of hedgerows, Normandy, FR
7. Non-inversion tillage, Upper Sûre region LUX
8. Heating buildings with hedgerow wood, Brittany, FR
9. Flowerstrips, Noord-Brabant, NL
10. Conservation grade cereals, Southwest England, UK
11. Cover crops and reduction in cultivation, Southwest England, UK
12. Mixed crops with Wildfarmed, Southwest England, UK

## BUSINESS CASE STUDY

Selling carbon from hedgerows  
in Pays de la Loire, FRANCE



### THE FAB MEASURE

A sustainable hedgerow management allows to improve biodiversity and landscape, to contain livestock and enhance crop yields.

### THE PRODUCT SOLD

Carbon sequestration by the biomass of the hedgerow can be sold by farmers to companies as carbon credits to offset their greenhouse gas emissions.

### HOW IT IS VALUED ?

Carbon stored by biomass can be valued as carbon credits sold to companies. 3 to 5 tons of CO<sub>2</sub> are stored by 1km of new hedges, and 1 to 3 tons of CO<sub>2</sub> by 1km of existing hedges. The quantity depends on the type of hedges.

The carbon sequestered by the hedgerows are certified by the environmental authority as carbon credits that can be traded in a voluntary carbon market to private companies, territorial communities, or State.

### THE BENEFITS

Besides storing carbon, hedgerows are beneficial for the environment and the territorial community.

Sustainable hedgerow management can enhance the revenue of farmers, preserve the environment, improve agrobiodiversity, reduce greenhouse gas emissions and store nutrients for crops.



### SWOT ANALYSIS

#### **Strengths**

- Promote biodiversity
- Enhance crop yields
- Management of landscape
- Contain livestock

#### **Weakness**

- Planting and maintenance costs
- Designing a sustainable hedgerow management plan requires a technical expert and comes with a cost

#### **Opportunity**

- Carbon storage and carbon credits

#### **Threats**

- Instability of the price of carbon credits on the marketplace



## THE COSTS OF IMPLEMENTATION

### ANNUAL COSTS IN FRANCE PER 1 KM OF NEW/REPLANTED HEDGEROW

Type of input	Unit	Quantity	Costs per unit (€)	Total cost per input (€)	
Labor	Hedgerow maintenance	day	0.2	120	24
Equipment	Maintenance cutter	day	0.2	10	10
<b>Total costs</b>	<b>34 euros</b>				

### IMPLEMENTATION COSTS IN FRANCE PER 1 KM OF NEW/REPLANTED HEDGEROW

Type of input	Unit	Quantity	Costs per unit (€)	Total cost per input (€)	
Labor	Design and planning	Person-days	0.3	120	36
Labor	Surface preparation for planting	Person-days	0.1	120	12
Labor	Application of mulch	Person-days	0.3	120	36
Labor	Planting trees	Person-days	11	120	1 320
Equipement	Tractor with harrow	Machinery-days	0.1	50	5
Vegetal material	Trees	Piece	1 000	2	2 000
Vegetal material	Tree protection	Piece	1 000	0.5	500
Vegetal material	Mulching	Piece	1 000	1.3	1 300
<b>Total costs</b>	<b>5 209 €</b>				



## SUCCESS STORY



In the context of carbon storage projects (e.g. carbocage), farmers voluntary engaged in the hedge label can benefit of carbon credit through this hedge label. This latter certifies that the hedge is managed in a sustainable manner and, above all, it provides a traceability of the carbon stored to assure it's not double-counted. Solenat is an association of farmers which is committed with a company of distribution of packaging for the food industry "MB pack". This latter has an objective to offset their greenhouse gas emissions by sequestering carbon in the hedgerows of several farms. Concretely, for the committed farmers, this consists in realizing a diagnosis of the hedges and a sustainable management plan. The latter provides for the interventions to be carried out on the entire hedge line: planting, pruning, replanting. In return, they receive remuneration according to the quantities of carbon stored. The Solenat association accompanies the farmers, monitors them and reports back to the company. This first partnership concerns a quantity of 45 tons of carbon per year, and is destined to be reproduced with other regional companies.





## BUSINESS CASE STUDY

The Brewery 3 Fontein in Pajottenland, BELGIUM

### THE FAB MEASURE

This organic brewery works with local farmers delivering the barley and wheat the brewery needs for producing its gueuze beers. Farmers work with FAB-flower strips, crop rotation, agroforestry, cover crops or non-inversion tillage.

### THE PRODUCT SOLD

The Gueuze beer from the [Brewery 3 Fontein](#), it's an 'uncommon' beer with typical characteristics and taste.

### HOW IT IS VALUED ?

Each farmer gets a base price per hectare (€/ha). But if farmers would only be valued based on surface area, they would lose incentives to produce high quality and quantity yield. Therefore, the farmers can also get a bonus, extra price based on the amount of yield (€/ton).

However, there is a maximum value on the valuation of tons/ha. A farmer gets paid for every ton he/she produces, until this maximum value is reached.

### THE BENEFITS

Consumers can benefit if they buy this beer, because in that way they support the local economy in general.

Farmers that are involved in the learning network, but are not producing barley/wheat for the brewery, can still exchange relevant knowledge with other farmers in the network.

The agro-ecological measures these farmers implement have direct benefits for the biodiversity and environment on and near the farms. The measures that improve soil structure and increase carbon sequestration in the soil.



### SWOT ANALYSIS

#### Strengths

- Work with local farmers and good remuneration for them
- Learning network with larger group of farmers
- Improved biodiversity in agricultural area
- Reduced negative environmental externalities of grain/beer production

#### Weakness

- Despite the good contract, it is too technical to communicate this to consumers. However if clients would fully understand the model, their willingness to pay might even be higher.

#### Opportunity

- Make the cultivation of the old cereal varieties more efficient, so they can get higher yields per ha. Increased efficiency of food production

#### Threats

- A bad year in terms of low quantity or quality means a loss for the brewery. They still pay the farmers but then they have to look for their barley and wheat elsewhere.

## THE COSTS OF IMPLEMENTATION

### DIAGRAM OF THE VALUE CHAIN OF A PRODUCT FROM A FAB MEASURE

Price	Type 1	Type 2	Type 3
Base price (€/ha)	600	800	1 000
Bonus price (€/ton)	475	500	600
Estimated yield after harvest cleaning (ton/ha)	4	3.5	2.5
<b>Total price per ha (organic)</b>	<b>2 500</b>	<b>2 550</b>	<b>2 500</b>

- Type 1 = modern cereal varieties: higher yield, available at regular seed traders, lower risk, more experience with variety
- Type 2 = couple of years' experience with these old varieties, risks better known, yields better known
- Type 3 = old species that are cultivated for the first times: higher risk, yields hardly known, lower yields; not available at regular seed traders.





## BUSINESS CASE STUDY

Reduced tillage and cover crops in  
Brittany, FRANCE

### THE FAB MEASURE

The FAB measures used are reduction of tillage and use of cover crops, which have a positive effect on biodiversity and yield.

### THE SERVICE SOLD

The service sold is the improvement of water quality with co-benefits on biodiversity and carbon sequestration (climate mitigation).

### HOW IT IS VALUED ?

In France, there are two possible ways,:

#### The public/private route:

In the framework of article 24 of the Biodiversity Plan, the **Water Agencies** have released €170m to set up **Payments for Environmental Services (PES)** in the framework of a notification to the European Commission. The waterboard Eau de Paris has also mobilised this route. In case of no notification, this is done within the framework of agricultural minimis aids, but this budget is limited and competes with agricultural disasters.

#### The private/private route:

In France, in more regions, farmers' associations have been created to position themselves as management intermediaries between companies that need to offset carbon or mobilise their CSR (social and environmental responsibility) fund and farmers who wish to implement environmental services or enhance their agroecological practices.

### THE BENEFITS

#### For the farmers :

- Reduction of production costs and improvement of crop yields (depending on the pedo-climatic context)
- Reduction of erosion and soil compaction risks

#### For the territory :

- Improvement of biodiversity (soil life) and entomo-fauna,
- Increase in organic matter and carbon storage in the soil
- Reduction of soil evaporation: water storage in the soil



### SWOT ANALYSIS

#### Strengths

- Improved quality of water
- Enhanced biodiversity
- Preservation of soil fertility
- The increase of organic matter
- Reduce nitrate leaching by up to 90%

#### Weakness

- Hard to reduce the use of chemical herbicides for cover crop destruction and weed control.

#### Opportunity

- Create a new revenue for agriculture
- Improving water and environmental quality
- Contribute to climate change mitigation

#### Threats

- The efficiency of the cover crops are climate-dependent



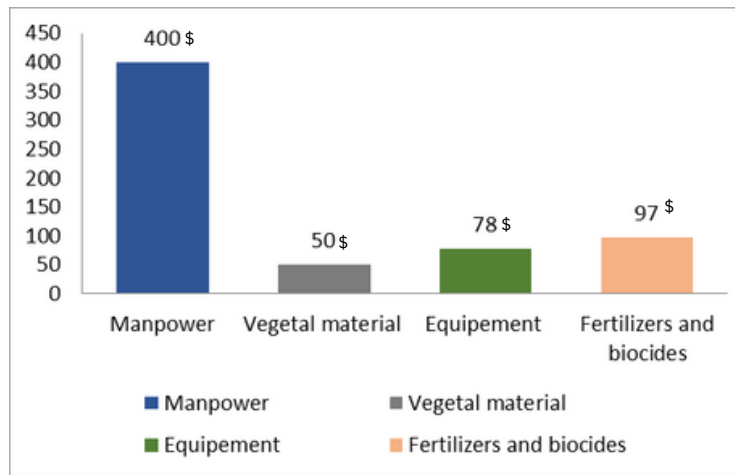
## THE COSTS OF IMPLEMENTATION

### ANNUAL COSTS OF NO TILLAGE SYSTEM WITH COVER CROP IN USD

SOURCE: (WOCAT, FRANCE)

Example of Water quality Credits in the USA:

In USA, Credit price is usually determined from negotiations between buyer and seller. It is usually bounded from below by the costs of load reductions to the seller (e.g., BMP implementation cost), and from above by the cost of an abatement alternative for the buyer (e.g., installation and maintenance cost for an abatement technology).

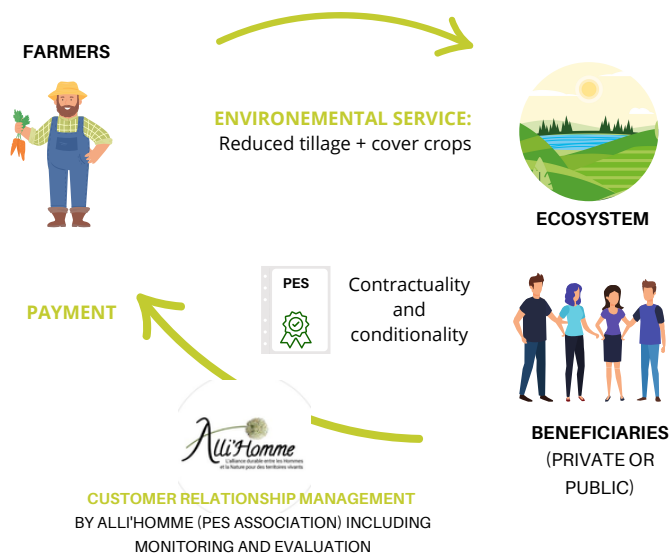


## SUCCESS STORIES

### "PAYMENT FOR ENVIRONMENTAL SERVICES" SCHEME:

#### REDUCED TILLAGE AND COVER CROPS IN BRITTANY IN THE WATERSHED "LAC DU DUC"

(PROJECT INTERREG CPES)



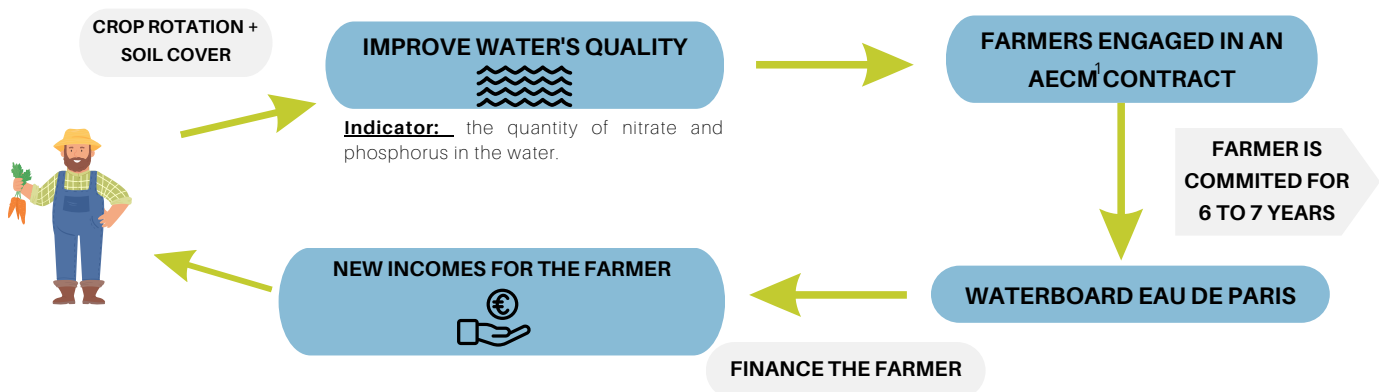
**Indicator:** quality of water: reduce nitrate losses by up to 90% through leaching.

#### Note:

This example is inspired from the project Interreg CPES (England and France), the result of the project demonstrated that privacy companies have an ambition for financing the sequestration of carbon more than the regulation of water's quality.

### "AGRO ENVIRONMENTAL AND CLIMATIC MEASURES" SCHEME:

#### SOIL COVER / CROP ROTATION: DIVERSIFICATION OF CROPS IN NORMANDY WITH THE WATERBOARD "EAU DE PARIS":



<sup>1</sup>Agri-environmental and climate measures (MAEC) enable farmers to receive financial assistance in return for environmentally-friendly farming practices. In the Region Ile de France, the scheme is funded by Europe, the Water Agency and the French government. Applications are accepted on a first-come, first-served basis, subject to the availability of funding. As part of the new 2023-2027 CAP, these measures address four issues in the region: biodiversity, water quality, livestock farming and soil conservation. Soil, water and livestock MAECs are to be committed across the whole farm, with payment per hectare, while Biodiversity MAECs are localised. In Ile-de-France, preserving water quality has been identified as a priority issue, so MAEC Water commitments will be given priority.



## BUSINESS CASE STUDY

Carbon sequestration  
Zeeland - The Netherlands

### THE FAB MEASURE

FAB-measures such as reduced tillage, cover crops and organic matter input will increase the organic matter content of the soil. These measures help to increase the ability to capture and store water in the soil, provide habitat for organisms, makes soils more fertile and farmers less dependent on fertilizers. Because carbon is stored in the soil, these FAB measures contribute to climate change mitigation.

### THE SERVICE SOLD

These FAB-measures help to store carbon in the soil and contribute combating climate change. Farmers are able to deliver this ecosystem service by implementing these FAB-measures. Many companies and other parties are prepared to pay for long term carbon sequestration. Farmers will sell the amount of carbon they store on their farm via a platform that will link farmers and parties who are prepared to pay for these services.

### HOW IT IS VALUED ?

In general a farmer earns about €50 to €100 per ton stored carbon. The list below shows the amount of carbon stored per FAB-measure and per hectare. These values are based on multiple researches by several institutes. By calculating the area where a FAB-measure will be implemented, it is possible to calculate how much carbon a farmer will store per year.

**Reduced tillage : 1.7 - 3.4 tCO<sub>2</sub>/ ha/ yr**

**Cover crops: 0.4 tCO<sub>2</sub>/ ha/ yr**

**Organic matter input 0.4-2.0 tCO<sub>2</sub>/ ha/ yr**

### THE BENEFITS

The benefits of this service are direct and indirect and can be defined by the capture of greenhouse gas emissions, improved soil and water quality. On top these actions generate additional income for the farmer and help protect the environment.



### SWOT ANALYSIS

#### Strengths

- Enhance crop yield
- Beats climate change
- Promote biodiversity
- Improved waterflow regulation
- Improved water quality
- Less dependent of external inputs like chemical fertilizers

#### Weakness

- The price for carbon credits can be sometimes low

#### Opportunity

- Farmers can benefit of CAP funding

#### Threats

- Carbon marketplace are unstable and influencing the price

## HOW THE FARMER WILL MARKET THE PRODUCT

ZLTO facilitates a platform where companies or other parties can sign up when they are interested in paying for carbon sequestration (Go@Positive.com). ZLTO is actively looking for farmers who are interested in this system of long-term carbon storage and the corresponding compensation. When farmers are interested in delivering this ecosystem service, ZLTO helps farmers to calculate the amount of carbon they will store when implementing several FAB-measures. As all parties agree on this collaboration, ZLTO facilitates in drawing up the contracts, cash flow and monitoring.

Companies, organisations, individuals and local government can pay for these services.

## THE COSTS OF IMPLEMENTATION

### ANNUAL COSTS REDUCED TILLAGE PER HECTARE:

Costs	
Seedbed preparation	€107
Extra seed	€19
<b>Total costs</b>	<b>€126</b>

### ANNUAL COSTS COVER CROPS PER HECTARE:

Costs	
Seedbed preparation	€107
Seed	€90
Sowing	€86
Extra costs evergreen covercrop	€64
<b>Total costs</b>	<b>€347</b>

### ANNUAL COSTS ORGANIC MATTER INPUT PER HECTARE:

Costs	
Solid manure	€222
Compost	€215
Champost	€251
Bokashi	€365



## BUSINESS CASE STUDY

Hodmedod's British Pulses and Grains  
East of England, UK



### THE FAB MEASURE

Mixed crops, mixed rotations and reduced inputs.

The product is specific varieties of pulses and grains grown with nature friendly farming practices.

### THE SERVICE SOLD

These FAB-measures help to have more diverse crops grow in the region. At the same time it will reduce the need for plant protection products. With all of this, it can also reduce embodied carbon [1] on the field.

### HOW IT IS VALUED ?

The crops are sold at a premium and under contract with an agreed minimum price.

The product is sold directly to the food processor and retailer who then markets the product.

### THE BENEFITS

The benefits of this service are direct and indirect and the premium gives farmers the opportunity to differentiate their product and gain a premium for farming in a sustainable way. Society benefits from improved biodiversity and reduced embodied carbon [1] in food.

Farmers can get a premium price for the products. Customers get access to a wider variety of products with the assurance that it's grown in a sustainable system. Society can benefit from the increase of biodiversity.

[1] Embodied carbon - [https://en.wikipedia.org/wiki/Embedded\\_emissions](https://en.wikipedia.org/wiki/Embedded_emissions)



### SWOT ANALYSIS

#### Strengths

- Delivers FAB outcomes.
- Access to a price premium
- Gives consumer choice
- Delivers positive externalities

#### Weakness

- Having a single buyer lacks resilience.

#### Opportunity

- The promotion of sustainable farming practices increases the awareness of the impact of farming.

#### Threats

- Luxury products for consumers which may be affected by disposable income fluctuations.

## THE COSTS OF IMPLEMENTATION

The implementation costs of the products is equal to the normal costs of production for cereals. However the yield is typically lower due to the yield.

The consumer pays a premium for the products which is passed down the supply chain to the farmer.

The price premium is dependant on the crop and the growing conditions that season.



## SUCCESS STORY

Hodmedod's British Grains and Pulses was set up to supply produce from British farms directly to consumers. They are specialised in producing less well-known foods Carlin Peas, Fava Beans and Quinoa that is grown in the UK. They work directly with farmers to produce the uncommon crops and then process and pack them before selling them directly to consumers and businesses.

Hodmedod's work with individual farmers and work with those that have sustainable farming practices at the heart of their system. The prices are negotiated directly with each farmer for each crops and vary depending on the success or challenges that they have faced that year.

Consumers buying their products pay a premium for the quality of the product and the assurance that the growers are working sustainably. By looking for small supplies of niche crops, with a supportive pricing strategy they help to sustain greater variety in rotations on farms. This reduces the requirement for chemical pest control which reduce biodiversity and have embodied carbon.



## BUSINESS CASE STUDY

Management of hedgerows  
Normandy, France



### THE FAB MEASURE

The product on this case is wood and the FAB-measure is the management of hedgerows.

### HOW IT IS VALUED ?

The opportunities are to enhance production and diversify production of the farmer; improve and maintain biodiversity. This measure can also enhance forage and increase animal welfare.

The wood is valued by their price in the market.

The price for 1 stere of firewood is **40 to 120 euro**.

The farmer markets the product by long circuit of association or cooperation.

### THE BENEFITS

The direct benefits of this service is the additional income for the farmers from the sale of wood. If we turn to indirect benefits we have the reduction of greenhouse gas emissions, the improvement of biodiversity (soil, water and pollination) and the reduction of the use of fuel.

Farmers and companies can benefit directly from this measure. Environment issues like fertility of soil and quality of water, and biodiversity as pollination are some of the indirect benefits of this product.



### SWOT ANALYSIS

#### Strengths

- Valorization of the wood industry in the region
- Improved biodiversity and environment
- Storage of carbon

#### Weakness

- Hedgerows maintenance: extra cost and workload
- Lack of outlets for wood from hedgerows
- Need for training and support for operators

#### Opportunity

- Enhancement of yield of the main crop
- Diversification of the farmers revenue

#### Threats

- The price of wood is very expensive compared to the wood of forestry



## THE COSTS OF IMPLEMENTATION

### ANNUAL COSTS IN FRANCE

Type of input	Unit	Quantity	Costs per Unity	Cost total per input	
<b>Labor</b>	Hedgrew maintenance	Day	0.2	120	24
<b>Equipment</b>	Maintenance cutter	Day	0.2	10	2
<b>Total costs</b>		<b>26 euros</b>			

### ANNUAL COSTS PER HECTARE:

Type of input	Unit	Quantity	Costs per Unity	Total Cost per input	
<b>Labor</b>	Design and planning	Person-days	0.3	120	36
<b>Labor</b>	Surface preparation for planting	Person-days	0.1	120	12
<b>Labor</b>	Application of mulch	Person-days	0.3	120	36
<b>Labor</b>	Planting trees	Person-days	11	120	1 320
<b>Equipment</b>	Tractor with harrow	Machine-days	0.1	50	5
<b>Vegetal material</b>	Trees	Piece	1 000	2	20 000
<b>Vegetal material</b>	Tree protection	Piece	1 000	0.5	500
<b>Vegetal material</b>	Mulching	Piece	1 000	1.3	1 300
<b>Total costs</b>		<b>5 209 euros</b>			

## WHO CAN PAY FOR THIS VALUE ?

### The agri-environmental and climatic measures

In France, the Agri-Environmental and Climate Measures (MAEC) provide support for farms that are committed to developing practices that combine economic and environmental performance, or to maintaining such practices when they are in danger of disappearing. This is a key tool for implementing the agro-ecological project for France. These measures are designed to meet the environmental challenges faced by local areas, such as preserving water quality, biodiversity and soil, and combating climate change.

### The Eco-schemes (or eco-regimes) :

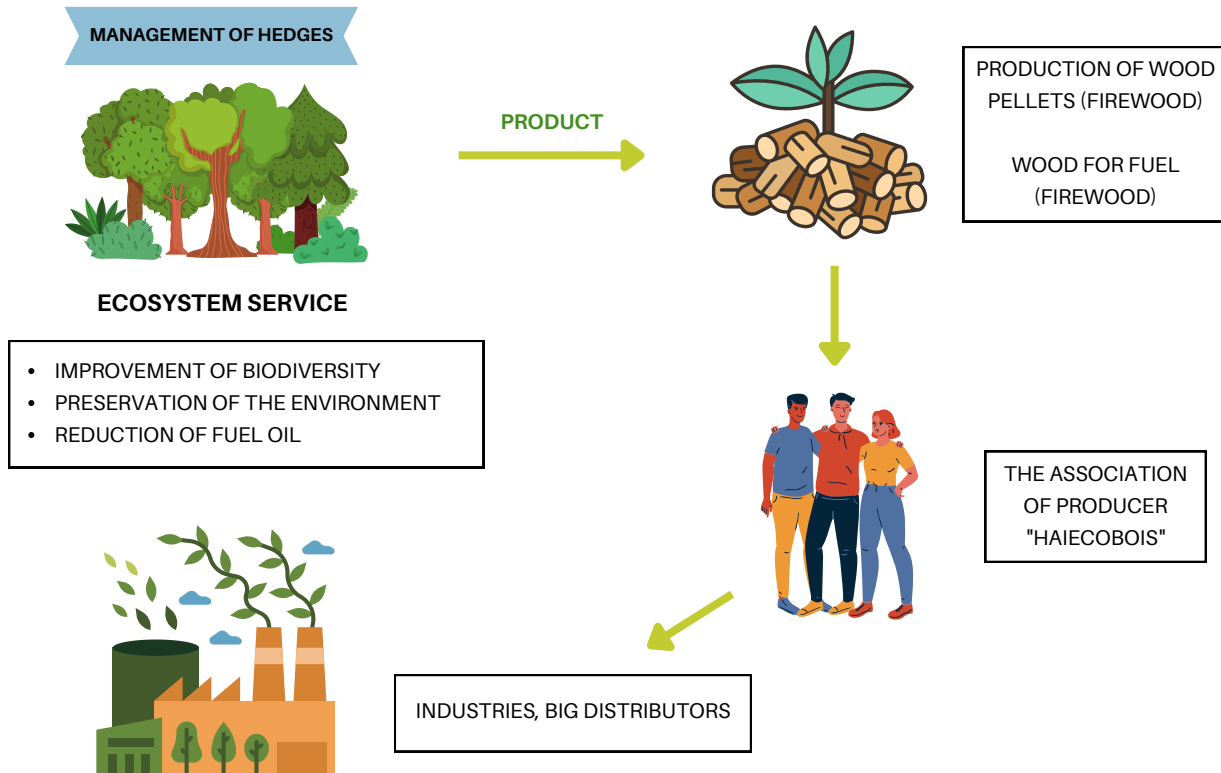
In its National Strategic Plan or NSP, France proposes an eco-regime with :

- 3 types of entry point: agricultural practices, certification and biodiversity via the Agro-ecological Infrastructures (AEI),
- 2 levels of payment: standard (or level 1 - estimated by the Ministry at 60/hectare) or higher (or level 2 - estimated by the Ministry at 82 euros/hectare),
- a premium if labelled hedgerows are present on at least 6% of the UAA and arable land (TA), amount estimated by the Ministry: 7 euros/hectare. According to the current proposal : 1 linear metre of hedge would be equivalent to 10 square metres.



# SUCCESS STORY

## AN EXAMPLE OF SYLVOPASTORALISM CASE FOR THE PRODUCTION OF FIREWOOD



In North-West of France:  
 1m of hedges (15 years old) = 0, 25 m3 of wood pellets  
 1m m3 of wood pellets = 70L de fuel  
 1 wood unit of measure = 2 m3 of wood pellets

The Price = 1 stere of firewood = 40 to 120 euros



## BUSINESS CASE STUDY

Non-inversion tillage  
Upper Sûre region Luxembourg.



### THE FAB MEASURE

Non inversion tillage with special focus on non-inversion tillage to terminate non-permanent grassland, FAB supporting action physical and biological crop protection

### THE SERVICE SOLD

Better water filtration through the soil. No need for costly water filtration in the production of clean tap water.

### HOW IT IS VALUED ?

Better water quality will lead to less regulations (following the principle of "polluter pays")  
Increased soil structure will be beneficial for the farmer as well (i.e., water retention which helps during drought events).

Farmers are represented by LAKU (the cooperative between the farmers, the nature park and the water provider SEBES) who helps implementing the techniques and apply for funds.

### THE BENEFITS

The benefits include:

- the increase of water quality (less nitrogen, less plant protection products and less phosphorus).
- the increase of soil biodiversity
- the reduction of soil erosion
- the reduction of water contamination.

Finally, contractors will have the opportunity to offer a new service.

Communities and inhabitants grouped together in the water syndicate and contractors can also benefit from this product.

### WHO CAN PAY FOR THIS VALUE

Water fund (through SEBES/LAKU)



### SWOT ANALYSIS

#### **Strengths**

- Farmers will play the role of "clean drinking water suppliers"

#### **Weakness**

- No non-public Business involved

#### **Opportunity**

- Strengthen the bond between water supplier and farmer

#### **Threats**

- Work of farmers is taken for granted
- Farmers might not participate due to mistrust towards the government



## THE COSTS OF IMPLEMENTATION

### ANNUAL COSTS IN LUXEMBOURG

- Multiple measures are supported by this scheme, the costs vary from measure to measure.
- In general the additional costs for the farmer are calculated by LAKU and the compensation is then adapted to match the additional costs.
- The employment of consultants by LAKU might be considered as additional costs, those are also covered by the water protection fund.

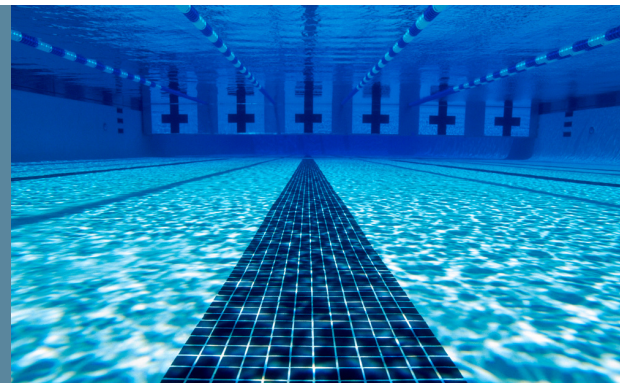
### EXAMPLE OF VIBRA SHANK TILLER USED FOR NON INVERSION TILLAGE



CREDITS: BANQUE IMAGE FRANCE AGRITWITTO

- <https://www.j-reiff.lu/media/1363/6.jpg?width=1200&height=900&mode=crop>





## BUSINESS CASE STUDY

Heating buildings with hedgerow wood  
Brittany, France

### THE FAB MEASURE

Sustainable management of hedgerows

### THE SERVICE SOLD

Service: wood

Product: Logs, timber, energy wood (shredded for boiler), animal bedding wood, mulch wood

### HOW IT IS VALUED ?

The wood from hedgerows is sold to local authorities, companies (e.g. Yves Rocher) and citizens.

It is also used for self-consumption by the farmer (e.g. pig and calf rearing)

### THE BENEFITS

The opportunities of this service include the improvement of biodiversity, the reduction of erosion and risk of compaction, the increase organic matter, the reduction of soil evaporation, the management of landscaple and the diversification of revenues.

The benefits of this measure are direct and indirect and can be listed in the preservation of the environment, the enhancement of the water quality for the consumer and the carbon storage. It can also improve the local economy helping farmers have a new revenue (see example next page) and the circular production.

Farmers, consumers, water agency, the communities and transport & storage companies can benefit from the product.

### WHO CAN PAY FOR THIS VALUE

- Water Agency- Communes, departments, region, watershed : Breizh Bocage
- Farmers
- Brittany wood & energy plan

### THE COSTS OF IMPLEMENTATION

The costs involve tree planting, maintenance and harvesting.



### SWOT ANALYSIS

#### Strengths

- Current wood supply
- Good image from the citizens
- Numerous services of the hedge (biodiversity, erosion, livestock protection)
- Reduce the use of gas and economies

#### Weakness

- Labour time
- Price not high enough
- Long return on investment
- Sector in the process of being structured

#### Opportunity

- Energy crisis
- Local economy

#### Threats

- Import of cheaper foreign wood
- Wood from forest clear-cuts (large operators)
- No/poor management of hedgerows which limits possible valorisation



### QUESTEMBERT AND DOUARNENEZ SWIMMING POOLS HEATED WITH WOOD FROM HEDGEROWS (BRITTANY)



For the past 13 years, the water at Questembert's community swimming pool has been heated using hedgewood.

**Key figures:**

- 96% of the equipment heated with wood (remaining: gas)
- 320 kW boiler
- 70% local wood
- 550 tons per year of wood chips
- Between 52 euros per ton of wet wood chips and 98 euros for the driest

The water at the Douarnenez swimming pool is heated using wood chips coming from a short supply and local chain

**Key figures:**

- On average, 35 tons of wood are burnt each month (50 tons in winter / 10 tons in fine summer)
- Wood covers 85% of heating needs (15% remaining: gas)
- Gas consumption is reduced from 7000-7500 tons of gas per month to 1000 - 1500 tons.

### HEATING THE COOP WITH WOOD

After modernising the henhouse in 2014, Stéphane and Marie Astrid Dahirel opted to use wood to heat the 30,000 broilers reared each year in this 1,500 m<sup>2</sup> building.

Learn more.

Key figures:

- Total investment : 91.825 € (6050 € funded by public subsidies)
- Wood boiler covers 95% of the needs - 5% covered by propane during exceptional cold periods.
- Savings : 12.400 €/year
- Fossil fuel savings : 20.000 litres/year
- 50% of litter needs covered



### HEATING THE NURSERY SCHOOL WITH WOOD

In 2013, the commune of Plélan-le-Grand undertook major renovation and extension work on its nursery school, including a thermal upgrade to replace the electric and oil-fired boilers with wood. Learn more



Key figures:

- Total investment : 200.000€ (51.100 € funded by public subsidies)
- Wood covers 100% of the school heating needs.(68 tonnes).
- Surface heated : 1 800 m<sup>2</sup>
- Savings : 5 000€ in 2016, up to 9 000 € in 2016
- Fossil fuel savings : 20.000 liters/year
- CO<sub>2</sub> emissions avoided : 56 t/year

### HEATING THE SENIOR RESIDENCE WITH WOOD

The Medical-Social establishment for elderly in Parigné opted for a wood-fired boiler for economic and environmental reasons. Learn more

Key figures:

- Total investment : 175.000€ (47.000 € funded by public subsidies)
- Over the period 2015-2016, almost 90% of the energy consumed to heating and hot water is produced from wood energy.
- Wood (95€/MWH) is economically more attractive than propane (130€/MWH).
- Actual consumption : 150t of wood (550MWH) +4.7t propane (60MWH)
- Savings : 20.000€/year (-28% heating costs)
- Fossil fuel savings : 40 t oil eq./year
- CO<sub>2</sub> emissions avoided : 100 t/year



## BUSINESS CASE STUDY

Flowerstrips

Noord-Brabant, the Netherlands



### THE FAB MEASURE

Flowerstrips attract natural enemies of plague insects. Implementing flowerstrips in between or among annual crops helps farmers to become less dependent on plant protection products for proper crop yields.

### THE SERVICE SOLD

Flowerstrips in annual crops are beneficial for biodiversity and contribute to an attractive and diverse landscape. Farmers who are prepared to deliver this ecosystem service provide agricultural land to make this possible. However, this comes at the cost of cultivation area. Therefore farmers get paid for the area that they make available for flowerstrip by local inhabitants, companies or other parties that are prepared to pay for this service.

### HOW IT IS VALUED ?

In the Netherlands a farmer receives about €2000 to €2500 per hectare flowerstrip. This is based on the general loss of income per hectare as farmers cannot grow crops in this area anymore.

### THE BENEFITS

The benefits of this measure are direct and indirect and can be listed as the reduction of plant protection products, the improvement of water quality, the enhancement revenue of farmers, the preservation of the environment and more biodiversity and a better habitat for these organisms.

Farmers, inhabitants, tourists, companies and biodiversity can benefit from the product.

The recreation and eco/agro tourism it's also one of the opportunities from this measure.

### WHO CAN PAY FOR THIS VALUE

- Companies
- Organisations
- Individuals
- (Local) government



### SWOT ANALYSIS

#### Strengths

- Promote biodiversity
- Enhance crop yield
- Improved waterflow regulation
- Improved water quality
- Less dependent on external fertilizer/ inputs

#### Weakness

- Willingness to pay farmers for these ecosystem services

#### Opportunity

- Farmers can compensate loss of income from (obligated) crop-free strips by creating flower strips

#### Threats



## THE COSTS OF IMPLEMENTATION

### ANNUAL COSTS INPUT PER HECTARE

	Costs
<b>Loss of arable soil</b>	€1025
<b>Seedbed preparation</b>	€650
<b>Sowing</b>	€390
<b>Maintenance (weed control, mowing)</b>	€475
<b>Total</b>	<b>€2 540</b>

## HOW THE FARMER WILL MARKET THE PRODUCT

ZLTO facilitates a platform where companies or other parties can sign up when they are interested in paying for flower strips. ZLTO approaches farmers if they are in getting payed for this ecosystemserve. When farmers are interested, they can indicate on which parcels they would like to implement flowerstrips and on what surface. As all parties agree on this collaboration, ZLTO facilitates in drawing up the contracts, cash flow and monitoring



## BUSINESS CASE STUDY

Conservation grade cereals  
Southwest England, UK



### THE FAB MEASURE

Cover crops, Reduction in cultivation, Reduction in inputs, Field margins.

### THE SERVICE SOLD

The farm has to have 10% of farmed area with 'conservation grade' oats, wheat and barley managed to certain standards. It can include cover crops, margins, hedges and woodland in area and there are rules over use of chemical fertilisers and plant protection products.

### HOW IT IS VALUED ?

In compensation, the cereal crops are sold at a premium to normal market price. Price is written into a contract between farmers and buyer and is based on local market price at time of sale.

### THE BENEFITS

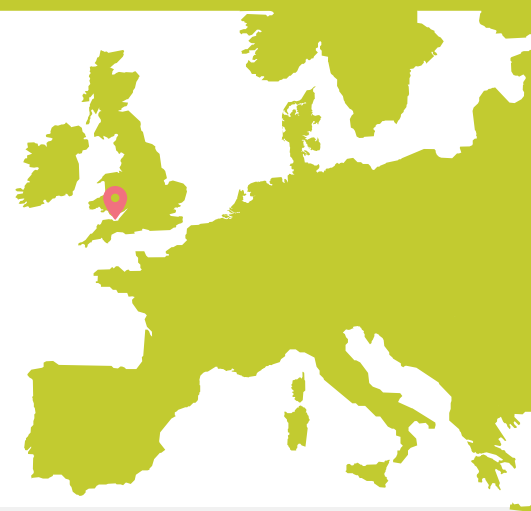
The benefits of this measure are direct and indirect and can be listed as the increase of wildlife areas on the farm, the reduction of use of chemical fertilisers and plant protection products with added environmental benefits. It can also help increase water infiltration and reduction of leaching.

Farmers, inhabitants and local population can benefit from the product in a direct and indirect way.

The recreation and eco/agro tourism it's also one of the opportunities from this measure.

### WHO CAN PAY FOR THIS VALUE

Food manufacturing company pays directly and end consumer (housewife) will pay a premium for food at shop



### SWOT ANALYSIS

#### Strengths

- Support FAB practices
- Additional income stream
- Values wildlife

#### Weakness

- Market is dependent on price and demand for product
- Yield of crop may be lower reducing income and possibly profitability

#### Opportunity

- Opportunities for other crops
- Tourism and learning opportunities

#### Threats

- Premium product can be at most risk from economic downturns.
- Competitors using similar marketing but without verification process of the practices.



## THE COSTS OF IMPLEMENTATION

Price premium is confidential but is likely in region of 5-10% above market price.

## HOW WILL THE FARMER MARKET THE PRODUCT

Crop is sold through a contract with food manufacturing company or onto potential local markets



## SUCCESS STORY

A UK family-owned business Jordans set up a conservation grade brand to support environmental farmers with a premium for their crops. This was to support those who could not commit to organic farming but wanted to support wildlife. Although no longer an independent business there is still a verified brand with a Fair to Nature standard. It requires a minimum of 10% of farmed area to be managed to this standard. Inspections assess farms against these standards and also benchmark use of fertilizer and plant protection products to ensure they are lower than average and are declining over time. Where wildlife features and priority species have been found on farm through monitoring programmes, any opportunities should be taken to enhance those features and create further habitat. Nature based integrated pest management must be utilized. Crops are sold directly to be included in granola and breakfast cereals.

Crops sell for 5% premium over market price at time of sale.





## BUSINESS CASE STUDY

Cover crops and reduction in cultivation  
Southwest England, UK

### THE FAB MEASURE

Cover crops and reduction in cultivation

### THE SERVICE SOLD

Carbon sequestration

### HOW IT IS VALUED ?

The carbon is sold to companies offsetting their emissions as carbon credits. These credits are assessed following a verification/certification scheme which is approved, and which verifies against standards and benchmarking. A UK/ EU standard for soil carbon on farmland is required. It is also necessary to have some form of assessment, and long-term contract to ensure that any carbon gains in one year are not immediately released the following year. Soil organic matter assessments are not 100% accurate but are useful to indicate trends, both up and down. Other measures such as soil bulk density can also be used to support trend analysis.

### THE BENEFITS

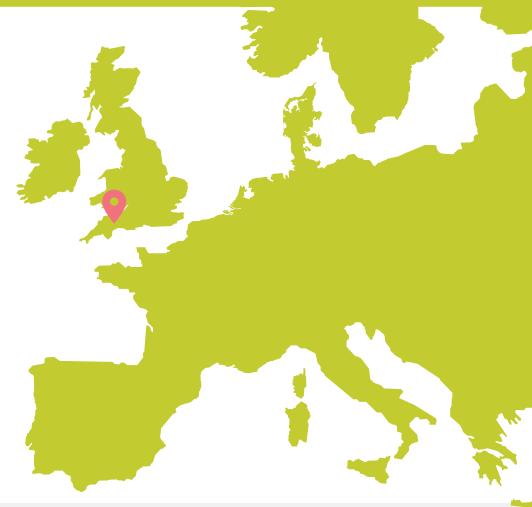
The benefits of this measure are direct and indirect such as the reduction of CO<sub>2</sub> in atmosphere.

Farmers can benefit directly by selling "Carbon offsets" and companies by offsetting carbon. Environment and local population can benefit indirectly.

The opportunities taken by this measure are the increase of soil organic matter, of water infiltration and reduction of leaching. It will also increase biodiversity and reduce weed through 'mulching'.

### WHO CAN PAY FOR THIS VALUE ?

Businesses offsetting their GHG emissions that can afford this measure.



### SWOT ANALYSIS

#### Strengths

- Support FAB practices
- Additional income stream

#### Weakness

- Appearance of green washing if there is no reduction of GHG from company
- Need for verification
- Market fluctuation and risk
- Not guaranteed annual income

#### Opportunity

- Increased biomass production increases income
- Ability to change farming system with financial support
- Secondary benefit of improved soil health

#### Threats

- Potential for fraud
- Long term commitment
- Introduction of a rules-based system which increases the onus on all involved
- Longer term carbon storage requirements



## THE COSTS OF IMPLEMENTATION

### ANNUAL COSTS IN UK

Cover crop seed cost vary rom **£10-60 per hectare**

Current carbon value is **£30/tonne**

### IMPLEMENTATION COSTS IN UK

Drilling costs **£5-20/ha**



## SUCCESS STORY

40 UK farms have combined to provide carbon sequestration to a range of UK and international businesses, ranging from international airline business to a High Street bank. The companies are all no-till arable businesses who follow regenerative practices and who sell the carbon production from their arable fields on an annual basis. This involves carbon from the straw residue from cereal crops and biomass produced by cover crops grown between harvest and drilling of cash crops. The carbon produced is all retained in the field by chopping and account is taken for losses due to breakdown.

The carbon production is calculated based on a model for quantifying emission reductions designed under ISO 14064 standard and is based on the intergovernmental panel on climate Change (IPPC) guidelines and uses a GHG carbon calculator to assess carbon. Although there is soil analysis for verification, the payment is based around practices and known values which will, over time become more accurately valued.

There are contractual conditions one of which is that there should be no deep cultivations for the following 5 years.

Current carbon value is £30 per tonne of carbon, and at 2.5-3t carbon/ha (based on 8t/ha wheat crops) is paying around £70 per ha. This incidentally is a similar value to the straw which could have been sold as animal bedding..





## BUSINESS CASE STUDY

Mixed crops with Wildfarmed  
Southwest England, UK

### THE FAB MEASURE

Reduction of chemicals, use of mixed cropping, cover crops and reduced tillage

### THE SERVICE SOLD

Wildfarmed cereals are grown to a regenerative standard with limited nitrogen fertiliser. Wildfarmed crops are grown with companion plants, or as bi or poly-crops

### HOW IT IS VALUED ?

The product is sold by the farmer at a premium price to Wildfarmed.

All cereals are sold to Wildfarmed who market the flour produced from it. They will also buy mixed crops when grown as a bi-crop at a price reflecting market value of bi-crop

The price is agreed in advance and is based on quantity supplied. The price reflects the growing cost and the environmental benefit. Wildfarmed growers can either fix a price for the following harvest, or opt for a percentage premium above the market price at harvest.

The contracted price is calculated to allow profit at all stages of the process to farmer, wildfarmed, mill and breadmaker

### THE BENEFITS

Any farmer who is willing to grow to the Company standards can take part to Wildfarmed, although contracts are limited to keep supply and demand balanced.

This business model brings farmers:

- increased farmer profitability,
- increased biodiversity, soil health and ecosystem services
- direct linkage of food production to environment.

### THE COSTS OF IMPLEMENTATION

**Annual costs in UK :** Same costs as a normal crop production

**Implementation costs in UK:** no additional costs to implement, less input cost needed



### SWOT ANALYSIS

#### Strengths

- Contract price for farmer-guaranteed buyer
- Environmental benefits
- Audited

#### Weakness

- Lower yields for farmer
- Only one buyer
- Consumer not being able to afford higher cost food

#### Opportunity

- Payment for ecosystem services
- Bi-crop gives additional market value

#### Threats

- Higher degree of management needed
- Depends on premium from food market



## THE COSTS OF IMPLEMENTATION

### ANNUAL COSTS IN UK

Same costs as a normal crop production

### IMPLEMENTATION COSTS IN UK

no additional costs to implement, less input cost needed



## IN PRACTICE

Farm contracts supply from land growing cereals to Wildfarmed. There is a requirement that there are cover crops, companion crops or bi-crops grown and no pesticides can be used.

A cropping plan is designed to optimise nitrogen fixation from legumes and cover crops. Including legumes within cereal crops is not only another source of nitrogen but creates habitat for pollinating insects.

Greater incorporation into mainstream arable production would have hugely beneficial effects on biodiversity. When required, nitrogen fertiliser may be used to a maximum of 80kg N / Ha. 40kg may be applied as granular, the rest as foliar.

All inputs are based on sap testing of plants.

At harvest all grain is supplied to Wildfarmed who mill grain, selling flour to mainstream producers such as Marks and Spencer and sold under the wildfarmed logo. <https://www.wildfarmed.co.uk/>

