



Partnering with farmers  
towards sustainable agriculture:  
overcoming the hurdles and  
leveraging the drivers

## Practitioners' guide 2.0





For any questions, remarks or suggestions of improvement, please contact [info@saiplatform.org](mailto:info@saiplatform.org)



■ Partnering with farmers  
towards sustainable agriculture:  
overcoming the hurdles and  
leveraging the drivers

Practitioners' guide 2.0



## Acknowledgements

The Sustainable Agriculture Initiative (SAI) Platform would like to thank the numerous individuals and institutions that have made this publication possible thanks to their commitment and cooperation.

First and foremost, a big thank you to the individuals who volunteered to participate in the Farmers and Suppliers Partnership Committee: Boris Rafalski, Unilever; Brian Nash, Ingredion; Camila Garcia Quijano, Danone; Doug Young, Cayuga Marketing; Edward Helmond, Nedcoffee; Hal Hamilton and Elizabeth Reaves, Sustainable Food Laboratory (SFL); Ezgi Barcenas and John Rogers, AB Inbev; Helen Dornom, Dairy Australia; Jan Agri, Delaval; Nathalie Ritchie and Neil Lacroix, Mondelez; Nick Betts, Grain Farmers of Ontario (GFO); Oliver van Hagen, International Trade Center (ITC); Rebecca Kenow, Land O'Lakes; Richard Burkinshaw, Kellogg's; and Robert de Graeff, European Landowners' Organisation (ELO).

Not members of the Farmers and Suppliers Partnership Committee, yet big contributors to the guide, are two individuals who we would like to thank deeply as well, for thoroughly reviewing the report and proposing improvements based on their wide knowledge and experience: Kristin Davis, Executive Secretary for the Global Forum for Rural Advisory Services (GFRAS), South Africa; and Klaas Jan van Calker, Farmer and Consultant on dairy production, Sustainability4U, The Netherlands.

We would also like to express our sincere thanks to many other individuals – farmers, farmer groups' representatives and agricultural project managers – who kindly provided us with their views in a series of interviews: Delphine Pastiaux-Murphy, Global Team for Local Initiatives (GTII) in Ethiopia; Dave D'Haese, EDE Consulting in Vietnam;

Brian Lindsay, Lindsay consulting in the UK; Robby Schreiber, European Initiative for Sustainable Agriculture (EISA) in Belgium; and Edward Helmond, Nedcoffee in Indonesia (also member of the Committee).

We would also like to extend our gratitude to the people who actively contributed to some of the sections or specific examples provided in this report: Didier Moreau, Danone; Andrea Ash and Anniek Mauser, Unilever; Aidee Orozco, McCain; and Hal Hamilton, SFL (also member of the Committee).

A special thank you as well to the contributors to Danone's Change Management Guide, which is a very good source of information on ways to develop partnerships and projects on sustainable agriculture with farmers, and which Danone representatives kindly authorized us to use partly in our report (section General recommendations: Building partnerships towards sustainable practices).

Finally, our deep thanks go to Vincent Minoufflet, former Masters Student at Ecole Nationale Supérieure Agronomique de Rennes (ENSAR), who largely contributed to writing this guide during his six month internship at SAI Platform. He was supervised and helped by Emeline Fellus, Deputy General Manager, SAI Platform, who also coordinated the Farmers' and Suppliers' Partnership Committee. Inputs were also kindly provided by Peter-Erik Ywema, General Manager, SAI Platform as well as Lettemieke Mulder, Senior Communications Manager, SAI Platform.

# Table of contents

<b>1 &gt; Introduction</b>	<b>7</b>	<b>Risk Management</b>	<b>72</b>
<b>2 &gt; Executive summary</b>	<b>8</b>	Risk management:	
<b>3 &gt; General recommendations: Partnering with farmers and facilitating information exchange</b>	<b>9</b>	Production risk management	73
<b>4 &gt; Practical recommendations: Concrete solutions to overcome specific hurdles and leverage specific drivers</b>	<b>21</b>	Risk management:	
<b>5 &gt; Psycho-social Factors</b>	<b>23</b>	Financial risk management	75
External psycho-social factors	24	<b>7 &gt; Resources Factors</b>	<b>79</b>
External psycho-social factors: Social acceptability	25	<b>Financial Resources</b>	<b>80</b>
External psycho-social factors: Institutional pressure	27	Financial resources: Loans and credits	81
External psycho-social factors: Value chain relationship	29	Financial resources: Grants and funding	83
<b>Internal psycho-social factors</b>	<b>32</b>	Financial resources: Climate finance	86
Internal psycho-social factors: Farm management skills	33	Financial resources: Market access	88
Internal psycho-social factors: Cultural background, tradition and habits	35	<b>New Technology and Equipment</b>	<b>90</b>
Internal psycho-social factors: Family protection	38	<b>Labor capacity</b>	<b>92</b>
Internal psycho-social factors: Care for the environment	41	<b>Information sources</b>	<b>94</b>
Internal psycho-social factors: Care for the community	44	Information sources: Recommendations	96
<b>6 &gt; Economic Factors</b>	<b>49</b>	Information sources: Inspiring examples	98
<b>Costs, revenue &amp; profit</b>	<b>50</b>	Information sources: Practical training	100
Costs, revenue & profit: Production costs	52	<b>8 &gt; Political factors</b>	<b>105</b>
Costs, revenue & profit: Investment costs	54	<b>9 &gt; Bibliography</b>	<b>109</b>
Costs, revenue & profit: Labor costs	56		
Costs, revenue & profit: Verification & certification costs	57		
Costs, revenue & profit: Revenue	60		
Costs, revenue & profit: Profit	63		
<b>Yield, quality &amp; competitiveness</b>	<b>65</b>		
Yield, quality & competitiveness: Yield	66		
Yield, quality & competitiveness: Quality	68		
Yield, quality & competitiveness: Competitiveness	70		



# 1 > Introduction

**Everybody is unique. Whether you look at it from a genetic, from an anatomical or from a psychological angle, everybody is unique. So is every farmer. So is the combination of hurdles and drivers which play a role in farmers' willingness and capacity to adopt sustainable practices. And so are the solutions to make it happen.**

Although the combination of hurdles and drivers that pertain to one farmer or one farmer group is unique, the hurdles and drivers that appear in each combination are similar. They can be clustered into four categories: 1- Psycho-social factors; 2- Economic factors; 3- Resource factors; and 4- Political factors; and dozens of sub-categories within each category. If we want to work towards more sustainable farming practices, we need to understand these categories in order to best address or leverage them. For each of the hurdles and drivers, specific processes and tools have been developed and are being used today around the world, to facilitate the adoption of sustainable agricultural practices.

This guide proposes a repository of these processes and tools, as well as concrete examples of how these have been used successfully by various organizations, towards the achievement of their sustainable agriculture objectives.

Importantly, the different "solutions" proposed in this guide in order to help farmers implement sustainable practices include psychological and sociological considerations. In effect, socio-psychological factors play a tremendous role in people's willingness to change, and if these factors are not addressed properly, almost none of the technological solutions that will be brought forward will have a chance of adoption. The world is full of examples of technological advances that are still not being used by people today because of socio-psychological factors, e.g. people unwilling or unable to quit smoking or drinking in spite of the myriad of medical programs and substitutes that have been developed.

With this guide, we provide concrete solutions to people interested in sustainable sourcing and sustainable agriculture, with a real chance of success. But of course these recommendations are only recommendations, and the real work lies in the hands of the reader, his or her partners and the producers in particular. Enough talking, now let's get started!

## WHO IS THIS GUIDE FOR?

**This guide is meant to be used by any organization or person wanting to work, with and for, farmers to move towards a more sustainable agriculture.**



## 2 > Executive summary



This practical guide represents the most insightful and comprehensive resource about successfully developing partnerships with farmers for increased uptake of sustainable agriculture practices worldwide.

It is an easy-to-read collection of pertinent knowledge, know-how and practices gathered from hundreds of experts worldwide from research and academia, extension services, farmer groups, development organizations, NGOs and industry.

The guide has **two key parts**. The first part, “**General recommendations: Partnering with farmers and facilitating information exchange**” provides essential recommendations and concrete examples as to how to build partnerships with farmers aimed at a larger uptake of better agricultural practices. The second part, “**Practical recommendations: Concrete solutions for specific hurdles and drivers**” suggests ways to overcome key categories of hurdles and to leverage specific drivers at the farm.

More specifically, **the first part of the guide** proposes a simple four-step approach for developing successful partnerships with farmers, suggesting processes and tools tailored to local situations and size and scope of these partnerships. The first step of this approach is about conducting a needs assessment, which is key to identifying the challenges and opportunities to be addressed throughout the project. The guide offers a menu of methods and tools for doing this effectively. The second step suggests ways to structure a project or program with farmers. Step three explains how to co-create solutions with farmers, and the fourth step presents means and tools to assess and communicate.

**The guide’s second part** clusters all main hurdles and drivers related to farmers’ adoption of sustainable practices worldwide into four categories: **1- Psycho-social factors; 2- Economic factors; 3- Resource factors; and 4- Political factors**; and a variety of sub-categories. For each of these sub-categories, the document explains not only what the hurdle or driver is, but also suggests concrete means and tools to overcome the hurdle, or leverage the driver. In addition, for each hurdle and driver, there are real examples of how different groups have implemented these means and tools on the ground, and what have been the results.



# 3 > General recommendations: Partnering with farmers and facilitating information exchange

Making the agricultural basis of our food systems more sustainable potentially requires tremendous changes at all levels of the food value chain. Part of these changes will come from scientific and technological innovation, but part of these changes, and probably the most crucial part, relate to people’s mindsets and way of working together - including farmers, agri-suppliers, food processors, consumers, policy makers etc.

This first chapter provides recommendations on how to successfully partner with farmers, building on experiences that have proven their worth the world over in accompanying change towards new and better practices in agriculture. It is a pragmatic learning tool that brings together universal principles and methods, but which naturally requires tailoring to local contexts by the end user. The proposed steps and tools are sometimes quite elaborate because they are meant for large-scale projects too. So feel free to adapt or even skip as relevant. The overall methodology follows a four step approach for any sustainable agriculture program or project:



## Step 1: Needs Assessment

The first phase of a sustainable agriculture program or project is a thorough needs assessment, aimed at building a common understanding among partners, of the issues of focus during the project. Typically, a needs assessment includes: 1) Global assessment of the region’s and sector’s conditions, and 2) Validation of the sustainability hotspots. See Example 1.

### 1: Assessment of the region’s and sector’s conditions

The identification of sustainability “hot spots” in a region and for a specific sector is an important first step towards building a thorough needs assessment for a program or project.

Instead of starting the list from scratch, you may want to get inspired by pre-existing lists of ‘overarching’ sustainability issues first, and to identify which ones to focus on for a specific commodity afterwards. Several international organizations propose lists of “sustainability” themes across the social, economic and environmental pillars of sustainability. To our knowledge, the most recent and complete overarching list of sustainability issues for agriculture is provided by FAO’s Sustainability Assessment of Food and Agriculture Systems (SAFA) – see Tool 1.

**Tool 1: Sustainability Assessment of Food and Agriculture Systems (SAFA)**

Questions to ask include (and it may be important to differentiate by country of origin):

- Ecological:  
What are the main ecological issues for each commodity? To what extent have they been expressed by governments, NGOs and others? Do the issues present a threat to the future availability of the commodity?
- Social:  
What are the main social issues related to each commodity? To what extent have they been expressed by governments, NGOs and others? Do the issues present a threat to the future availability of the commodity?
- Economic:  
How important is the particular raw material for manufacturing your company’s products? Are there any risks that supply of the right qualities will not be secured in the near future (e.g., farm economic viability)?

The result may be represented in a matrix such as tool 2, in which a few criteria are used to assess the relevance of materials A, B, C and D. The criteria depends on the company’s sustainability strategy.

**Tool 2: Simplified issue-raw material matrix to identify sustainability hotspots**

The matrix on the right page illustrates the methodology to identify sustainability hotspots and has been simplified on purpose. Light brown is for non-urgent / non-key issues, dark brown for very urgent or hot issues, and mild brown for what lies in between. In real life, all relevant social, economic and environmental issues will have to be considered in view of your company’s strategy. Under the heading “Labor Rights”, for example, multiple issues must be addressed, including “No forced labor”, “Discrimination”, “Discipline/Grievance”, “Freedom of association”, “Wages”, “Working hours” etc.

**Tool 1: Sustainability Assessment of Food and Agriculture Systems (SAFA)**



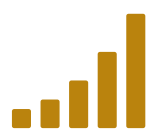
**GOOD GOVERNANCE**

- G1 CORPORATE ETHICS
- G2 ACCOUNTABILITY
- G3 PARTICIPATION
- G4 RULE OF LAW
- G5 HOLISTIC MANAGEMENT



**ENVIRONMENTAL INTEGRITY**

- E1 ATMOSPHERE
- E2 WATER
- E3 LAND
- E4 BIODIVERSITY
- E5 MATERIALS AND ENERGY
- E6 ANIMAL WELFARE



**ECONOMIC RESILIENCE**

- C1 INVESTMENT
- C2 VULNERABILITY
- C3 PRODUCT QUALITY AND INFORMATION
- C4 LOCAL ECONOMY



**SOCIAL WELL-BEING**

- S1 DECENT LIVELIHOODS
- S2 FAIR TRADING PRACTICES
- S3 LABOUR RIGHTS
- S4 EQUITY
- S5 HUMAN HEALTH AND SAFETY
- S6 CULTURAL DIVERSITY

SOURCE: (FAO, SAFA, 2014)



Tool 2: Simplified issue-raw material matrix to identify sustainability hotspots

		MATERIAL A	MATERIAL B	MATERIAL C	MATERIAL D
<b>ECOLOGY</b>	Biodiversity / deforestation				
	Water				
	GHG emissions / climate				
	Erosion				
<b>SOCIAL</b>	Child Labor				
	Health/Safety				
	Labor Rights				
	Land Rights				
<b>BUSINESS</b>	Market share (supply)				
	Quantitative importance / replaceability				
	Qualitative importance / iconic character				
	Supply security issues				

SOURCE: (SAI PLATFORM, IMD, & ITC, 2013)

**2: Validation of the sustainability hotspots**

Once the general assessment of the region's and sector's conditions is available, it is important to validate your findings with some type of "reality check" at farm level, which will also be the occasion of starting to build some trust and cooperation with the suppliers and farmers who will eventually be involved in your project. This can be done in many ways, depending on the level of detail you are looking for, on the complexity of your supply chain and your relationship with suppliers, as well as on what resources are available for this exercise. Here are two possible options:

- Discuss the preliminary findings with your suppliers and supplying farmers as they need to own the challenge from a very early phase, and adapt the assessment results accordingly. If the farmer supply base is too wide to involve everyone, you may refer to a "farmers' advisory panel".

- Conduct a second thorough assessment to understand the farms' conditions and farmers' specific needs. Assessing every farm can prove nearly impossible. A sample of farms and farmers will be sufficient, provided that these are representative of the others nearby. If farmer profiles differ a lot within the same region, then several categories can be established, based on farm size and farm system for instance – see Example 1. For each of these categories, you should ultimately engage in a discussion and/or conduct an assessment of a few farms and farmers. The end results should ideally be discussed with a "farmers' advisory panel" to help draw the right conclusions.

For this again, no need to re-invent the wheel and start the list of questions from scratch!



- A list of questions aimed at understanding the specificities of farms for the production of several commodities is provided by SAI Platform's Farm Sustainability Assessment (FSA) - see Tool 2.
- Results from similar assessments undertaken in various regions may already be available on the on-line FSA tool <http://www.standardsmap.org/fsa/> - which will save you a lot of work and efforts.

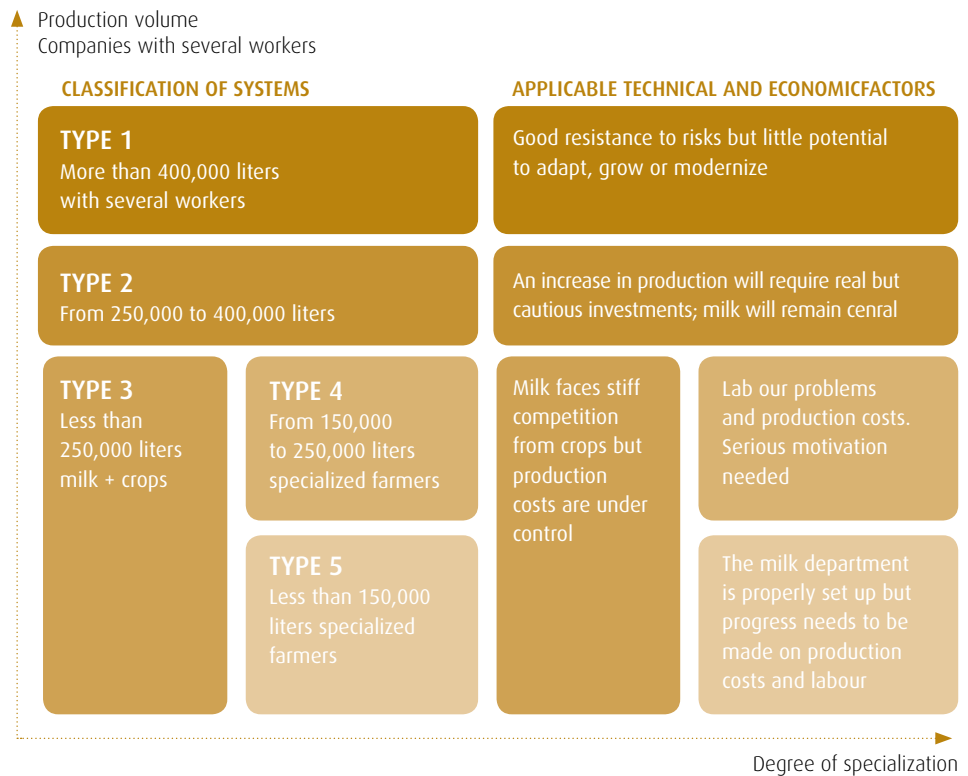
The last step will be to identify the main drivers and hurdles related to farmers' adoption of sustainable practices. This should be done through a series of discussions with representative farmers as well as farmers' advisors (e.g., crop advisor, economic advisor). These people in particular should know what approach is effective to help make changes happen. The structure of the discussion with farmers and advisors could be similar to the one of the practical recommendations of this guide: psycho-social factors, economic factors, resources factors and political factors.

### EXAMPLE 1: FARM TYPES' CLUSTER RESULTING FROM REGION, SECTOR AND FARMS ASSESSMENTS

#### Agricultural systems classification of Horizon project

Anne-Charlotte Dockès of the Institut de l'Élevage (France) explains the technical and economics assessment conducted in south-western France for the Horizon Project, launched by Danone Ecosystem Fund:

- Dairy farmers are classified to identify primary strengths and weaknesses, and medium-term risks and opportunities (See diagram).
- Based on this classification, specific concerns are highlighted.



SOURCE: (DANONE, CHANGE MANAGEMENT GUIDE, 2013)

---

“There are many differences between farmers: differences in age, geography, farming styles etc. For dairy farmers in the Netherlands for example, research has identified styles like: the cow farmer, the machinery farmer, the low cost farmer. If you want to reach all these different farmers, your communication strategy needs to recognize this”

Klaas Jan van Calker, Farmer and Consultant on dairy production, Sustainability4U, The Netherlands

This step is very important to ensure that the solutions which will be developed and proposed, will make sense to producers and tackle their real challenges, thereby having real chances of success. Once the two types of assessments have been conducted, you will be able to cluster farms and to identify key areas of improvement for each cluster – which are a combination of both.

With all of this background information, you are in a good position to develop a formal or informal partnership with farmers towards the adoption of sustainable practices.

### Step 2: Partnering with farmers

Partnering with farmers is the most important aspect in any sustainable agriculture program. There is a need to “connect” the value chain, and for all value chain stakeholders to work together in a climate of trust, in order to make the much needed step changes in sustainability possible.

Building the program or project steps from the bottom-up is crucial if you want to be successful. Only by doing so can you create real ownership and commitment from the farmers. If the change is “required” or imposed on by buyers without any collaboration, the change will simply not happen, or happen much too slowly, or happen for a short period of time and thereafter the farmers will revert to earlier practices.

#### 1- Identifying objectives and partners

The first and foremost component of partnering is to identify and clearly spell out the program or project needs (based on assessments conducted earlier on, in which farmers must also take an active part – see Step 1) and related objectives. Once this is done, you will be able to identify partners who all agree with these objectives and perform different roles within your program(s) or project(s), such as:

- Sponsor the program or project
- Support implementation
- Provide advice based on their areas of expertise and skills
- Contribute to the roll-out of the program or project

Typically, the project sponsor is likely to be your organization, or your organization together with other ones which have a deep interest in the sustainable agriculture project, such as: local government, NGO, company etc. The project’s or program’s strategic goals should be very clear to all partners.

While implementation is primarily ensured by farmers, support and advice can be provided by a wide range of stakeholders having an interest in the project, such as:

- Farmer groups
- Extension services, consultants
- NGOs, foundations
- Local authorities
- Input companies

It is also essential that these groups develop an interest not only in the project per se, but also in the use of sustainable agricultural practices overall – so that changes which will take place during the project will not be reversed once the project is over. The threat of “reverting back to previous habits” exists for all projects, especially those that are started with a top-down approach. Therefore it is key that the project right from the start uses a cooperative approach to identify objectives and activities, and ensures the long-term financial viability and benefits of the new way of working resulting from these activities.

#### 2- Choosing the manager

The second component of partnership development is to choose a project or program manager among the partners. The project manager’s role is crucial for the project success as he/she mobilizes partners, leads the project and oversees the implementation of initiatives.

Therefore, it is essential that the project leader:

- Has a clear mandate from the project sponsor(s)
- Supports the goals of sustainable agriculture and is a firm believer in the work he/she is leading
- Has a track record in project management in a similar area to the one you are implementing
- Is known and has earned recognition from the other partners
- Is a good facilitator to build common understanding and promote cooperation amongst stakeholders

The project manager must thus have recognized skills in the field and hold operational authority in order to create enthusiasm among project participants. Yet, the project manager is not hierarchically above the partners. He or she can draw their attention to common interests so that they invest themselves in their responsibilities and role. The partnership is driven by the community of interest.

### 3- Establishing the governance structure

The governance of sustainable agriculture programs or projects, if appropriate, may be structured around 2 to 3 groups or committees:

- A steering committee, which provides general directions and makes strategic decisions;
- An operational committee, which runs the project;
- And optionally, an advisory committee, which provides critical feedback on the project's progress.

When electing representatives of farmers you should take into account that different farm structures and farming styles are being represented.

Once the partnership has been established with farmers, you will be in a position to get started with "real work", i.e. identifying and implementing "solutions" to address the main sustainability concerns of the different project partners. We advise that this be done through a process of "solutions co-creation" as opposed to a top-down approach, which will not only ensure that all partners are committed to the project, but will also ensure better chances of success to the project, especially in the long-term.

### Step 3: Solutions co-creation

The solutions co-creation is certainly the most exciting step of all: it is when project partners get together, discuss and thereafter agree on what sustainable agricultural practices will be promoted, as well as how they will be promoted and implemented.

This guide provides many possible solutions for addressing specific drivers and hurdles identified for each farmer group, as well as examples of how these solutions have been implemented by different actors. This is a great source of

## EXAMPLE 2: ROLES AND MEMBERSHIP FOR A PROJECT'S STEERING AND OPERATIONAL COMMITTEES

	STEERING COMMITTEE	OPERATIONAL COMMITTEE
<b>MEMBERS</b>	Projects sponsor (director level) Project manager Priority partner(s) who helped build the project Representatives of farmers Financier/donor	Local project managers Partners Representatives of farmers
<b>ROLE</b>	Defines strategic guidelines, objectives and means of implementation Makes budget-related decisions Monitors results	Makes operational choices Conducts project day-to-day Incorporates strategic guidelines set by steering committee
<b>MEETS</b>	Twice a year	Once every two months

SOURCE: (DANONE, CHANGE MANAGEMENT GUIDE, 2013)

“It is hard for farmers to accept that someone else tells them how they can improve things. Our experience is that change is possible but it goes slowly, step by step, gaining their trust. Show successful results. Education is important, but must be brought in the right manner by the right person”

Edward Helmond, Project Manager, Malaysia, Nedcoffee

inspiration, but of course the exact solutions you will select for your project will have to be co-created in a way that reflects the diversity in region specifics, farm conditions as well as farmers’ needs and types (step 1). You will therefore have to spend considerable effort on developing the most appropriate process for discussion and agreement with the project partners, in particular farmers.

#### 1- Innovation and information transmission process

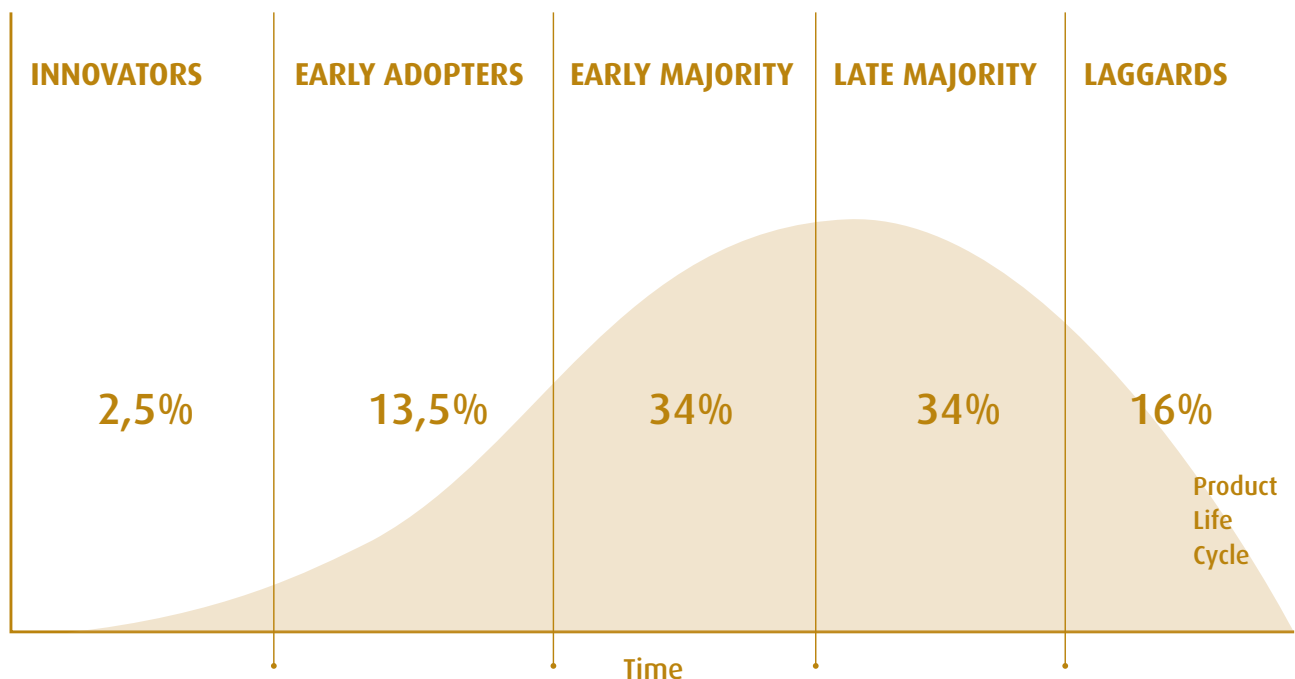
Farmers learn a lot from farmers: they often see their colleagues as an important, if not the most important and reliable source of information (See Section on Information Sources). Depending on different characteristics however, which are not necessarily related to farming styles, farmers will be more or less willing and capable to adopt new ways of working.

Roughly, farmers (and more widely people in general) can be categorized in five groups: innovators who create new ways of working; early adopters who quickly adopt the practices developed by the innovators; early majority adopting these practices quite soon after the early adopters; late majority adopting new ways of working quite a long time after others; and laggards who take an extremely long time to adopt new practices, or never adopt them - see Example 3.

#### - Motivating change

Different types of farmers will be motivated to change by different options. For a sustainable agriculture program with several farmers to be successful, it is therefore very important to analyse the farmer types who constitute the supply base, and to develop appropriate motivations.

### EXAMPLE 3: VAN ROGERS’ INNOVATION THEORY



SOURCE: (WIKIPEDIA)



The Dutch dairy industry uses a model called “RESET” that is in line with this vision. It is based on a mix of “stick and carrot” motivational parameters, as follows:

- R for Rules: if a company wants to make sure change will happen for all farmers, then you need to set minimum requirements (See Section on Market Access).
- E for Education: if people understand why something needs to be changed (because it is better for the next generations or if customers ask for this) they will be more willing to change (See Section on Information Sources).
- Next to these two aspects, S for Social pressure and values will help to make the change (See Section on Psycho-social Factors).
- E for Economic factors also play a large potential motivational role (See Section on Economic Factors): rewards will always help to make changes. Rewards can be provided on a permanent or continued basis, or be provided only during the first years of the project and thereafter phased out and replaced by minimum requirements depending on progress.
- Finally, T for Tools: these can help to improve the status of sustainability.  
See Example 4 for a concrete application of this RESET model.

### 3- Open and trusted space for discussion

Questions, doubts and concerns about the proposed sustainability program and its various activities must be heard, and addressed carefully. Furthermore, individual situations must be taken into account. This can be done through individual counselling or small meetings during which the project manager or facilitator will notably:

- Actively listen and ask specific questions to ascertain problems and the real sources of difficulties;
- Suggest solutions to those problems using concrete examples;
- Propose small-scale in situ testing for comparison prior to launching a more serious commitment
- Encourage and promote progress already achieved.

### EXAMPLE 4: SUSTAINABILITY BASIC REQUIREMENTS, PREMIUM AND MEASUREMENT TOOLS

The Dutch dairy cooperative FrieslandCampina uses an elaborate quality and sustainability program named “Foqus planet” to meet the relevant sector targets by 2020. In 2015, the company switched from a system based on performance categories and points for sustainability gains to a system based on tighter basic requirements, including a grace period and a reward for strong sustainability performance.

One consequence of these tighter basic requirements is a ban on the use of compost and composted material. If member farmers do not (fully) satisfy these basic requirements, they will be given a four-week grace period in which to rectify the situation. Failure to do so will result in the rejection of their milk. Unannounced spot checks will also be carried out.

The company uses six indicators for animal health and welfare, biodiversity & environment and climate & energy, the results for which are measurable. This aims at ensuring that results rather than measures are rewarded. Points are given for the results posted under each indicator, and together these yield an aggregate score. The level of premium paid depends on the overall volume of milk supplied and the total number of points gained. The premium is financed through a pro forma deduction of 0.25 euros per 100 kg of milk supplied.



Provided that participating farmers are literate, an interesting way of gathering their views and concerns in a meeting is to provide them with an opportunity to write these down in a confidential manner on “post-it notes”, and to glue the notes to a single board for discussion afterwards. This allows everyone to have a voice, including people who are generally more introvert or shy. (See Example 5).

All activities that project partners jointly identify must clearly help achieve common objectives. Although the project partners may have many ideas of activities, only a limited number of initiatives should be selected to avoid work overload and lack of focus and of resources. It is therefore highly recommended to sort out activities by level of priority, and to carefully schedule their implementation – in form of a Gantt chart, for instance.

In that sense, the sustainable agriculture project is no different than any other project you are used to: activities must be planned for, people who are responsible for the delivery of each activity must be identified and empowered, related resources must be clearly listed,

delivery time must be made clear before the activity starts, and an evaluation system must be elaborated before the implementation starts. An action plan detailing all of these specificities should be submitted to the steering committee for approval.

In the case of large-scale projects that cover an entire region or involve numerous partners, it may be wise to first develop a smaller-scale pilot project in a single area before rolling out on a wider scale once success has been achieved. Here again, the concepts of innovation and information transmission modes are relevant (See Points 1. and 2. of this section).

Before getting into implementation, you may want to look at past experiences and to identify any factors that could contribute to its success or failure: conflict, lack of commitment, missing deadlines, or technical problems, for example. The operational committee can conduct a risk assessment to define and classify risks. Following this assessment, preventive and corrective measures can be deployed by the project manager.

#### EXAMPLE 5: USING POST-IT NOTES IN MEETINGS TO GATHER PARTICIPANTS’ VIEWS AND CONCERNS

##### ENCOURAGE PARTICIPANTS TO VOICE CONCERNS AND EXPECTATIONS

The kick-off meeting is an opportunity to openly assess farmers’s concerns and expectations regarding the project and include that information in subsequent decisions.

For example, concerns that farmers express can be written down on coloured post-it notes, so that everyone, including the farmers ad project manager, can visia;ise the context and state of mind of the participants. The notes show farmers that their opinion is being heard.

INCREASE MY  
INCOME

HAVE MORE  
TIME

IMPROVE MY  
WORKING  
CONDITIONS

IS IT USEFUL?

WHAT IS GOING  
TO CHANGE?





and agreed with the partners through dialogue to ensure that all are clear about how success is to be measured. They need to be in the form of targets/key performance indicators (KPI's) that are realistic and quantifiable.

Two types of indicators of progress can be considered: "practice-based" and "performance-based" indicators:

- Practice-based indicators are parameters which illustrate that progress is happening. For instance: number of participants in meetings or training sessions; budget spent on various activities; number of good practices adopted by participating farmers, etc. SAI Platform provides a very complete and user-friendly tool, Farm Sustainability Assessment to assess practice-based indicators for free to farmers and their advisors – see tool 3.
- Performance-based indicators are parameters which demonstrate a real improvement in terms of environmental, social or economic sustainability on the ground, which result from various changes. For instance: overall increase of revenue at farm level; reduction in water use or greenhouse gas emissions; or better conditions for workers on the farm, etc. Over 100 tools aimed at measuring the results or impacts of agricultural practices along sustainability issues are available in the public or private domain. SAI Platform has listed and benchmarked these against a set of guidelines in its Sustainability Performance Assessment (SPA) – see Tool 4.

Having read this chapter, you have at your disposal a wealth of information on how to successfully conduct a sustainable agriculture project following a four step approach: 1. assessing needs, 2. partnering with farmers, 3. co-creating solutions, and 4. assessing impact as well as communicating about it. In the next chapter we will focus on what is still missing: knowledge about the hurdles and drivers which are likely to influence farmers' willingness and capacity to adopt sustainable agricultural practices throughout the program, as well as ways to overcome these hurdles and to leverage these drivers. This is what the next chapter is all about.

### Tool 3: Farm Sustainability Assessment (FSA)

SAI Platform has developed Farm Sustainability Assessment (FSA) to help farmers assess the sustainability of their practices - either through an excel sheet or an on-line tool jointly developed with the United Nations's ITC. Both versions provide a final score consisting of economic, social and environment scores, and the on-line version presents visual graphics to quickly identify the main sustainability hotspots. The purpose of Farm Sustainability Assessment 2.0 – the version which was released in 2014 – is threefold:

- To provide a way to assess and communicate farm sustainability and a basis for improvement plans;
- To create a single benchmark for certification schemes and proprietary codes;
- To remove the need for company-specific sustainable agriculture codes.



SOURCE: (SAI PLATFORM, 2010)



**Tool 4: Sustainability Performance Assessment (SPA)**  
 SAI Platform has developed Sustainability Performance Assessment (SPA) to provide one set of guidelines on ways to measure the socio-economic and environmental impacts

of agricultural practices. SPA also provides a benchmark between these guidelines and the main calculation tools available on the market today, such as the Cool Farm Tool, RISE, Field to Market etc.

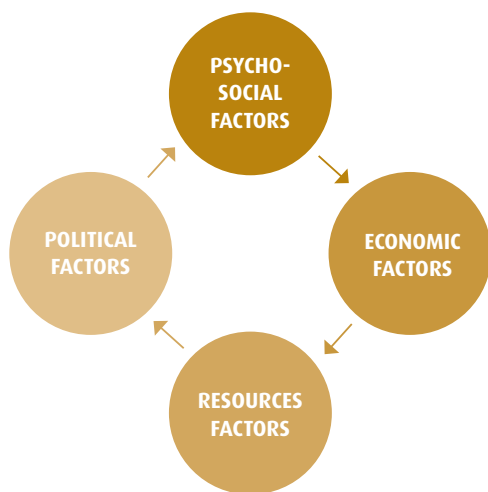
SPA ALIGNMENT OVERVIEW	COOL FARM TOOL	CLIMATE YARDSTICK	ENVIRONMENTAL YARDSTICK FOR PESTICIDES	PRIME	WATER FOOTPRINT CALCULATOR 2010	GALA BIODIVERSITY YARDSTICK	SAFA	FIELDPRINT CALCULATOR	SIMPATICA	RISE 2.0	AGRI YIELD MANAGEMENT SYSTEM	QUICKFIRE (RELATED TO GREENLIGHT, CROPWALKER)	LAND DB/AG CONNECTIONS
CLIMATE & ENERGY	Dark	Dark	Light	Light	Light	Light	Light	Dark	Dark	Light	Light	Dark	Light
PESTICIDES	Light	Light	Dark	Dark	Light	Light	Light	Light	Light	Dark	Dark	Dark	Dark
SOIL QUALITY	Light	Light	Light	Light	Light	Light	Light	Dark	Light	Dark	Dark	Dark	Light
WATER QUALITY	Light	Light	Light	Light	Dark	Light	Light	Dark	Dark	Dark	Dark	Dark	Dark
NUTRIENTS	Light	Light	Light	Light	Light	Light	Light	Light	Dark	Dark	Dark	Dark	Light
BIODIVERSITY	Light	Light	Light	Light	Light	Dark	Dark	Light	Light	Light	Light	Dark	Light
LAND USE	Light	Light	Light	Light	Light	Light	Light	Light	Dark	Light	Light	Light	Light
ANIMAL WELFARE	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light
	Single issue tools						Multiple issue (integral) tools				Farm management systems		
EXPLANATION	Entirely aligned		Almost aligned		Contains elements of SPA approach				Not aligned				
	Entirely aligned		Almost aligned		Contains elements of SPA approach				Not aligned				

SOURCE: (SAI PLATFORM, FINANCIAL TOOL, 2013)

## 4 > Practical recommendations: Concrete solutions to overcome specific hurdles and leverage specific drivers

This chapter provides a detailed list of specific categories of key hurdles and drivers related to farmers' adoption of new practices leading to more sustainable situations, and proposes concrete solutions to leverage drivers and to overcome hurdles.

All hurdles and drivers have been grouped in four categories:



- The category “psycho-social factors” addresses some of the main parameters related to the thinking and functioning of human beings on their own as well as in relation with others – playing a critical role in everyone’s behavior.
- The category “economic factors” lists key economic considerations which affect farmers’ decision-making in favor or against a change of practice year after year.
- The category “resources factors” describes how access to finance, capital and information impacts farmers’ practices.
- Finally, the category “political factors” briefly explains the need not to underestimate the role of policy-making in this whole sustainable agriculture debate.

Each category is then split in sub-categories.

It goes without saying that all categories and subcategories are related, and cannot be considered in isolation. For instance, the amount of subsidies granted by governments for sustainable practices (political factor) will have an impact on the financial resources available to farmers for switching to sustainable agriculture (economic factor) as well as how keen these farmers and other farmers in the community are to do so (psycho-social factors).

But overall, this categorization is quite logical and straightforward, and allows the reader to not only better understand the drivers and hurdles at stake, but also to identify ways of addressing these.

In addition to recommendations, concrete examples are provided of how various companies, and other stakeholder groups, have overcome hurdles and built on drivers. We have compiled the most diverse list possible. Examples are taken from all over the world and relate to all sorts of farming systems. These range from highly intensive, moderately intensive or extensive conventional systems to conservation agriculture, agro-forestry and organic agriculture. As the concept of “sustainable agriculture” is still relatively new and developing, we have included many types of agriculture in this definition, and are not making any judgments on what type of agricultural system is best. We want to highlight that all systems can benefit from, and contribute to sustainable practices. Some may debate if this is right or wrong from a philosophical point of view, but the objective of this guide is to be as pragmatic and concrete as possible, not to promote one particular farming system over another.

With these clarifying considerations in mind, let’s start with a category of factors that are often underestimated and which are nonetheless absolutely key to behavior change: psycho-social factors.



# 5 > Psycho-social Factors

Numerous studies and real-life examples demonstrate that farm transitions are influenced by farm family dynamics, socio-cultural values, religious beliefs, land tenure, succession, and community factors – in addition to economic conditions. Sustainable agriculture adoption indeed is seldom strictly a function of individual profit maximization alone, but also reflects non-individual or societal interests. Producers often mention that they switched practices because it was ‘the right thing to do’, at least in those places where stewardship is part of the cultural norm. For many producers, the pride associated with stewardship makes up for limits in financial rewards (Campbell, Biron, & Hobane, 1999)

While many people may inherently know that psychological and social aspects are important to achieve change in farming practices, a lot of projects and programs actually “forget” to address these. This reduces their chances of success tremendously – especially in the long-term. This chapter lists some of the key social and psychological factors playing a role in farmer adoption of sustainable practices. It also proposes ways to build on these factors so as to achieve long-lasting change in farm practices, and provides concrete examples to do so.

## TABLE OF CONTENTS

<b>External psycho-social factors</b>	24
External psycho-social factors: Social acceptability	25
External psycho-social factors: Institutional pressure	27
External psycho-social factors: Value chain relationship	29
<b>Internal psycho-social factors</b>	32
Internal psycho-social factors: Farm management skills	33
Internal psycho-social factors: Cultural background, tradition and habits	35
Internal psycho-social factors: Family protection	38
Internal psycho-social factors: Care for the environment	41
Internal psycho-social factors: Care for the community	44

---

“To change practices effectively, the farmers must be convinced of the benefits for the environment, society but also for themselves”

Jerôme Pavie, Reine Mathilde project manager at the Institut de l'élevage (French Livestock Institute)



## External psycho-social factors

**Adoption of a sustainable practices is a personal decision, determined by the benefits of the practice itself as well as the individual farmer's preferences, incentives, and constraints. However, societal factors heavily influence the way an individual farmer perceives agriculture (Duram, 1997), and on individual farmers' decisions.**

Firstly, peer pressure plays a large role in farmers' willingness to change practices. In interviews conducted by SAI Platform with farmers, this issue of "what will my neighbors think of my way of doing" was mentioned many times as a hurdle to change of practice. In this context, "opinion leaders," or those individuals in a community that influence the behaviors of other community members, have an important impact on land users in their decision-making. They uphold or create new norms in a community, which influence the behavior of other land users. Gaining opinion leaders' approval and confidence is thus a key driver towards sustainable practices adoption by nearby farmers. A land using community lacking such a leader will be slower to adopt than those communities that have active opinion leaders.

Secondly and conversely, collective action plays an important role in the implementation of sustainable agriculture, and is a key driver. In particular, cooperative arrangements govern numerous activities within village agricultural systems. For example, contour ploughing, stone lines and other structural works require cooperation amongst several or many farmers in order to be effective conservation strategies. Many dimensions of sustainable practices fit the cooperative model, including the establishment and operation of farmers' groups, dissemination of information, pest control and the purchase of agrochemical inputs.

In summary, an investigation of the external social and psychological factors is crucial to understanding what makes farmers adopt, or not adopt sustainable practices, as well as to identifying actions which will help farmers adopt these practices.

---

"I am first and foremost a farmer, but not a very ordinary farmer. In fact, I'm known as a Christian libertarian environmentalist capitalist lunatic."

Joe Salatin, owner of Polyface Farm, USA (producing Beef, Pork, Poultry, Rabbits and Forestry Products)





---

“The toughest aspect of changing my farming practices was the peer pressure to continue using chemicals, and the fear that I would have a failure”

Allan Jarchow, Poultry, cattle and hog farmer in Harris, Minnesota, USA.

## □ External psycho-social factors: Social acceptability

What will my neighbor think of me if I use sustainable practices?

### Definition

Social acceptability is a major issue with the adoption of sustainable practices. Social acceptability in this sense means that a farmer’s practices are viewed as acceptable by his or her family, friends, and local community. All of these people have an influence on farmers’ decisions toward certain types of practices.

### Explanation

Fairweather and Campbell discovered (Fairweather, 1996) that the level of social acceptability of organic farming played a role in a farmer’s decision to farm organically. In addition, due to the social relationships that exist in farming communities, adoption by one farmer affects others’ decisions to adopt (Brown & Malecki, 1976) & (Dillman, 1988). Conversely, research indicates that negative stigmas about sustainable agriculture and the people who practice it exist. Some communities view sustainable practitioners or those considering sustainable practices as hippies who are out of touch with the realities of modern farming (Norman, 2004).

As adoption of an agricultural practice becomes more and more widespread once farmers see their fellow farmers successfully adopting that practice (Rogers, 1983), social relationships with other farmers can be an important catalyst for adopting sustainable practices. These groups provide opportunities for participation and support. Hassanein and Kloppenburg (1995) report that this type of interaction is important for a farmer’s transition to sustainable agriculture. Moreover, information and the perspective of peers are beneficial for farmers struggling to adopt sustainable practices. Food and drink companies can play an active role in establishing and/or supporting such exchanges.

### RECOMMENDATIONS

There are several ways for a company to try and improve the social acceptability of sustainable practices by farmers in a given region:

- 1 The first and probably most impactful option is to engage in long-term efforts in the region where supplying farmers are based, to stimulate a wide adoption of sustainable practices so that these become socially acceptable by farmer peers and ideally by other stakeholder groups. Chapter 4: General recommendations of this guide provide suggestions to partner with farmers in a specific region, and Example 9 provides a good example of such effort. The section on Political factors also provides other recommendations towards the development of supportive policies, which also plays an important role in social acceptability. These options are quite impactful but they are also quite demanding in terms of resources, and will often deliver results after a few years only.
- 2 Develop and/or sponsor alternative farmer peer groups and related exchange channels, so that supplying farmers are in contact with more innovative ones. This can be done in different ways, such as: developing physical farmer exchanges (such as in Example 62); providing access to inspiring examples (See Inspiring examples); developing or sponsoring on-line farmer exchange groups (such as in Example 8) etc.

---

“Farmers are already considered by the public as polluters, notably due to green algae and nitrate leakages. The fact that the first (French) agricultural trade union is against an ecological tax is an outdated fight”

Jose Bove, French Farmer and Member of the French Green Party.

**EXAMPLE 7: NATIONAL LANDCARE PROGRAM IN AUSTRALIA (GUERIN, 2000)**

The National Landcare Program (NLP) in Australia is a community-based approach that has played a major role in raising awareness, influencing farming and land management practices and delivering environmental outcomes across Australian landscapes. There are now more than 4,500 Landcare groups and approximately one in every three Australian farmers is a member of a Landcare group.

The NLP supports collective action by communities to sustainably manage the environment and natural resources in partnership, as well as with funding from the Australian government. The NLP also supports an expansion of property management planning to give land-users improved natural resource and business management skills.



**EXAMPLE 8: ONLINE FARMERS' HUB IN THE UK (FARMERS' HUB, 2014)**

The Farmers' Hub is an online community for UK's potato, oat and apple farmers to showcase best practice as well as to discuss pressing issues for British agriculture. The Hub is powered by PepsiCo UK and hosted by Mark Pettigrew, PepsiCo's European Agricultural Sustainability Manager. His role focuses on two specific projects; "50 in 5" which is the reduction of PepsiCo's carbon and water footprints in agricultural raw materials – by 50% in five years, and "The Supply Chain of the Future", looking at how PepsiCo needs to change its working relationships with suppliers to face the common challenges of climate change, water availability and other resource depletion.

The Farmers' Hub hosts lots of guest bloggers discussing sustainability issues, including irrigation, the use of new technologies, recruiting the next generation of farmers and reducing carbon emissions.



# □ External psycho-social factors: Institutional pressure

I am not sure if the group I belong to supports sustainable agriculture

## Definition

Institutional pressure is the pressure exercised by agricultural institutions/groups representing the interests of farmers, where and when such organizations exist. Typically, agricultural interest groups tend to be more numerous and vocal in developed countries than in developing countries.

## Explanation

Organic farmers have commented that one of the major reasons for remaining in organic production – as opposed to reverting to conventional production – was membership in a producer group (Reed, 2004). Producer groups and any other agricultural interest groups, can in fact play a crucial and positive role in farmers' willingness to try new practices. There is a wide range of such agricultural interest groups in the world. Where and when they exist, these groups can range from large agribusinesses such as cooperatives, to groups representing mid-sized and commodity crop farmers as well as small regional groups of farmers discussing economic or technical results. Some of these organizations are rather conservative and exercise pressure against sustainable agriculture, on the farming community as well as on Governments. For quite some time trade unions in particular have been seen by some as responsible for slowing down some environmental negotiations. Even though there are still many reservations, trade unions increasingly realize that it is indispensable to transform our economies and societies in a sustainable way, which includes social but also ecological sustainability.

In addition, many organizations have emerged in the last decades which advocate policies that support small, local and/or sustainable agriculture. A good example of such organization is the European Initiative for the Sustainable Development of Agriculture (EISA), which is composed of seven national agricultural associations from European countries. It was founded in May 2001 with the common aim of developing and promoting sustainable farming systems, in particular the dynamic, whole farm management concept of Integrated Farming. EISA is an Affiliate Member of SAI Platform.

## RECOMMENDATIONS

Given the political pressure which agricultural interest groups exercise on farmers (but also on other groups such as Governments), it is widely advisable to try and work with farmer organizations rather than against them towards agricultural production changes.

Concretely, if such groups already exist for a specific region and sector, then it is advisable for a company to get in contact with the most influential ones, and explore possible areas of cooperation. If on the contrary such groups don't already exist for a specific region or sector, it can be useful to help create one, which can become a useful intermediary towards the promotion of sustainable practices (See Example 10).



#### EXAMPLE 9: MULTI-STAKEHOLDER DIALOGUE GROUP ON FOOD SUSTAINABILITY IN EUROPE (WWF, 2014)

On 28 April 2014, representatives from across Europe's food chain, including farmer organizations, together with NGO's, issued a joint Declaration ahead of the publication of a European Commission Communication on the 'Sustainability of Food Systems'. The declaration provides 32 concrete policy recommendations to achieve a more sustainable food chain by 2020. These recommendations include: improving the coherence among different food-related policy objectives and among EU stakeholder platforms; and taking into account all aspects of sustainability, ranging from EU agriculture and fisheries, environmental policies, health and consumers, to waste management and energy policies.

This joint initiative was initiated by 'The Stakeholder Dialogue Group on Food Sustainability', a voluntary group established in September 2013 including 18 organizations and companies from across the EU food chain, most of which are also members of the High Level Forum for a Better Functioning Food Supply Chain.

#### EXAMPLE 10: REBIRTH OF A COOPERATIVE MULTIPURPOSE UNION IN NIGERIA (WORLD COCOA FOUNDATION, 2014)

Odode Cooperative Multipurpose Union (CMU) was registered in 1958 as a marketing union in Ondo State, Nigeria. It had a membership of over 650 cocoa farmers. The union was doing well and making progress. However, all development ended in 1986 when the cocoa trade was liberalized in Nigeria. As a result, membership dropped from 650 to 120 cocoa farmers.

When the World Cocoa Foundation Cocoa Livelihoods Program (WCF/CLP) started in 2009, implementers faced a tough challenge in bringing this farmer organization back to life. After many hours of training and support, Odode CMU is back on the path to growth, with 480 members. Odode is now linked to a reputable exporter in Nigeria that provides access to agri-inputs for members. The democratic structure of the cooperative is also stronger. New officers have been elected, the board meets on a regular basis and several committees are operational. The latest achievement by the farmer organization was obtaining its registration under the UTZ certification program, which shows how working with farmer organizations can help promote and adopt sustainable agriculture practices.

According to the president of the group: "Through collective trading, I now obtain good prices for my cocoa. I have benefited through input support from a local exporter, which I will pay back through cocoa supplied to it. The interest rate is reasonable when compared with borrowing on the open market. Farmer Field School (FFS) has also trained me to use fewer chemicals and convinced me of the importance of cleaning and pruning on my farm. My confidence has increased by being a union member. And I have more income."

# □ External psycho-social factors: Value chain relationship

Can my relationship with buyers improve with sustainable agriculture?

### Definition

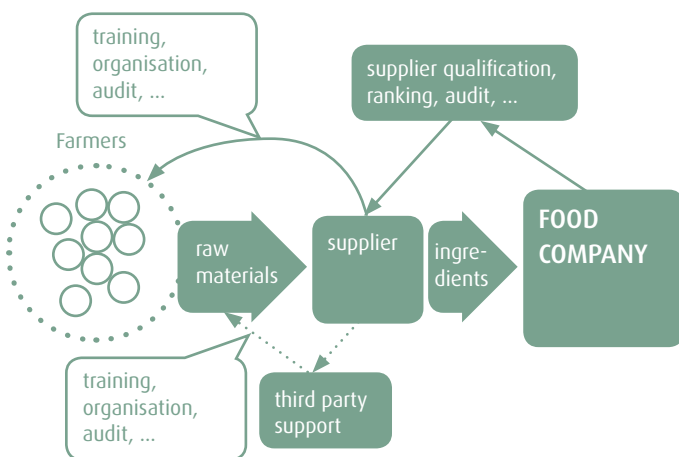
A motivating and sustainable relationship is based on trust between actors. Trust can be defined as 'the extent to which a firm believes that its exchange partner is honest and or benevolent.' (Anderson & Narus, 1990). A partner is deemed to be honest when it is 'reliable, stands by its words, fulfils its promised role obligation, and is sincere'. A healthy and sustainable value chain relationship is thus a relationship in which every stakeholder (supplier, buyer) is 'genuinely interested in one's interests or welfare and is motivated to seek joint gains.' (Geyskens, Steenkamp, & Kumar, 1998)

### Explanation

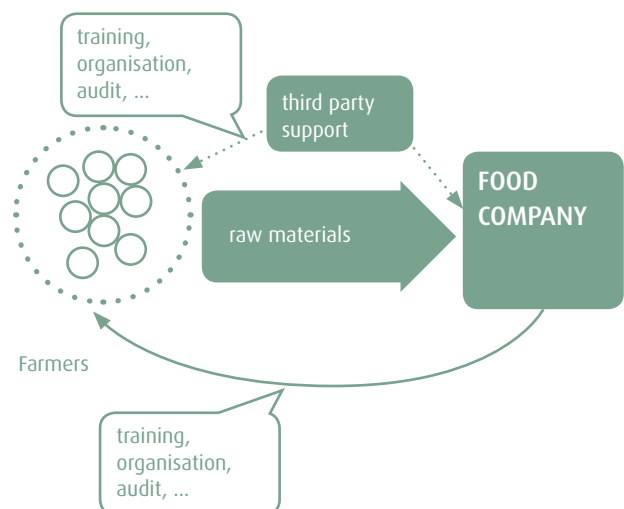
Food and drink companies are increasingly committing to buying agricultural raw materials that are sustainably produced (See Table 6). To achieve that, they increasingly require farmers to adopt sustainable agricultural practices to produce the materials they purchase – either directly or indirectly through suppliers. There are two complicating factors however: 1. Many farmers do not trust food companies and retailers. 2. As we learn from this guide, there are many challenges and hurdles preventing farmers from switching to sustainable agriculture.

Your task will therefore be much more than just including sustainability requirements into your supplier code. It should notably include a thorough assessment of your relationship with suppliers, with a view to maintaining and/or increasing trust throughout the supply chain.

### Indirect sourcing



### Direct sourcing



SOURCE: (SAI PLATFORM, IMD, & ITC, 2013)

---

“It is good to see our customers taking an active interest in the production systems their suppliers use to produce their raw materials and then promote best practice within their supply base”

David Brass, Egg producer, The Lakes UK

## RECOMMENDATIONS

It is important to maintain or improve your company’s relationships with the farmers from whom you directly buy agricultural materials. There are several ways to do that, including:

- 1 Organizing forums for discussion between suppliers and buyers such as on-farm visits (including with colleagues who are not from procurement, such as marketers, and/or end consumers if that is at all possible – to ensure that all value chain stakeholders get to a common understanding);
- 2 Developing partnerships around sustainable agricultural goals – see General recommendations;
- 3 Using long(er)-term contract farming (See Financial risk management);
- 4 Using new technologies to communicate directly with value chain stakeholders (Internet, phone, apps...).

To that aim, it may be necessary to change or adapt your company’s supply model when it buys agricultural raw materials through intermediate suppliers, depending on their number and stance on sustainability issues. In case sustainability arguments are not sufficient to change your company’s supply chain, look for additional business gains that can be realized, such as improving supply security or quality problems.



### EXAMPLE 12: LINKING WORLDS TO BUILD SUSTAINABLE SUPPLY FROM SMALL SCALE PRODUCERS (SUSTAINABLE FOOD LABORATORY, 2012)

The Linking Worlds website, result of a partnership between SFL, Oxfam, CRS, IIED, Unilever, RA and CIAT, contains many suggestions to increase the sustainability and stability of supply from small scale producers while meeting increased volume needs and bolstering brand image in emerging markets. In particular, the LINK process proposes four key tools and two add-on tools:

KEY TOOL #1: Value chain map

KEY TOOL #2: Business model canvas

KEY TOOL #3: Business model principles

KEY TOOL #4: Prototype cycle

ADD-ON TOOL #1: Drivers, trends and key implications

ADD-ON TOOL #2: Business model typologies actors organized.



**EXAMPLE 11: PEPSICO AND CONTRACT FARMING  
IN A POTATO FARM IN INDIA  
(HAZELL, 2010)**

To ensure its supply of potatoes for industrial processing, PepsiCo launched in 1995 a contract farming program for the production of potatoes in India. In 2008, the contract involved about 10,000 producers of potatoes spread across the country. PepsiCo had planned to increase the total number of producers of potatoes under contract to 12,000-15,000 at the end of 2009. The volume of potatoes produced in the framework of this program has experienced tremendous growth and is passed 2,920 tonnes in 2002 to 57,000 tonnes in 2007, covering nearly 60 % of total needs of PepsiCo.

PepsiCo offers under this contract farming systems with a full pack service. It distributes fertilizers, provides access to pesticides and requires producers of potatoes under contract using a specific variety of seed potato of high quality, he sells them at cost. PepsiCo provides farmers with technical advice on production practices, provided by a network of agronomists, extension workers and local trainers. Contract farmers have the opportunity to manage the various risks associated with the production of potatoes through an index insurance product sold through ICICI Lombard General Insurance Company and administered by Weather Risk Management Services (WRMS) 13. PepsiCo has consistently provided farmers with training on this product and many training sessions and meetings for different actors organized.



## Internal psycho-social factors

A farmer's personal philosophies and perceptions have been shown to be important determinants in adoption of sustainable agricultural practices. According to (Roberts, 1995), since it is ultimately up to the farmer to implement a practice, the farmer's viewpoint of sustainable agriculture is one of the most important factors contributing to adoption. This notion is supported by numerous other studies.

Farmers generally adopt sustainable practices because of environmental philosophy or concerns, health risks, interest in producing healthy food (Campbell, Biron, & Hobane, 1999), and personal satisfaction (Beal, 1965). For instance, organic farmers have expressed that their environmental and philosophical views of the world played a bigger role in their farming decisions than financial considerations (Arellanes P. D., 2003).

Given the above, the issue at stake for us is: how can we influence people's overall values and perceptions so they gain interest in sustainability? This in itself is a huge challenge. Nevertheless, companies have a long history of successes in influencing people's behaviors and choices – consumers for instance. With proper mandate and resources, they could influence suppliers, too. The following pages provide details about farmers' internal psycho-social factors and how these play a role in their willingness to switch to sustainable agriculture. Hopefully these will help food and drink companies develop proper engagement strategies, actions and tools towards a wide adoption of sustainable practices worldwide.

For those who have an interest in better understanding these issues, further reading is recommended on how people's minds are ruled by two different systems – basically the rational mind and the emotional mind – and how a lot can be achieved when both systems point in the same direction (Heath, 2007).

---

“The attraction to this method of farming came primarily from our desire to better steward the land and resources, without the use of toxic substances and genetic engineering. We believed that it was morally and ethically unacceptable to continue to grow food in such a way that could threaten our health, the health of others, and the environment at large”

Marc Loiselle, owner of a combinable crops farm in Saskatchewan, Canada





---

“Observe what is happening in your own fields and make decisions according to what you observe in your own fields, not according to what your neighbor is doing or what extension is recommending”

Ray Yokiel, cash grain farm, Minnesota, USA

## □ Internal psycho-social factors: Farm management skills

### What skills are needed to farm sustainably?

#### Definition

Farm Management may be defined as a science which deals with judicious decisions on the use of farm resources (such as land, labor, farm buildings, working capital, inputs, equipment etc), having alternative uses to reach one's objectives (which may be maximum profit, family protection, care for the environment and/or the community – see following psycho-social factors).

#### Explanation

Farm management skills are very diverse and many cannot be learnt from a book but only from experience. It is only through making such decisions and living with the consequences that many farmers learn the difference between good and poor decisions, and of most importance, the differences between profitable, less profitable and unprofitable farming practices (Moran, 2009).

Any form of management requires decision-making, which usually follows six steps:

- Having ideas and recognizing problems
- Making observations
- Analyzing observations and testing alternative solutions to the problem
- Choosing the best course of action
- Acting on this decision
- Taking responsibility for the decision.

Nowak (1991) asserted that some farmers are unwilling or unable to adopt sustainable practices because they lack the necessary management skills, or because they think they lack these skills. For example, adoption of many sustainable practices, such as utilization of cover crops, requires a high degree of management of the farm's biological resources. If, as literature indicates, sustainable practices require a substantial amount of knowledge to be gained by the farmer prior to implementation, then a farmer will need to spend considerable time acquiring this knowledge. For instance, Boergnen (2004) has reported that between 260 and 520 hours of learning time is required for a farmer to transition to reduced-chemical or organic farming.

### RECOMMENDATIONS

Even if your company is a buyer of agricultural raw material and not an extension service, it can help supplying farmers acquire farm management skills in several different ways.

- 1 If your company has sufficient resources and/or if it has identified training as part of its core business activities, it can develop specific training programs on its own or in cooperation with others (See Practical Training & Example 13).
- 2 Otherwise, your company can simply help put farmers in contact with appropriate training centers, and contribute to financing such training (either by paying for that training or by securing funding from other sources such as Government – see Example 14).



**EXAMPLE 13: PROVIDING SHEEP FARMERS WITH FARM MANAGEMENT SKILLS IN NEW ZEALAND (BEEF + LAMB, 2011)**

Beef + Lamb New Zealand invests in farmers' levies to support a growing sheep and beef industry which in turn will provide sustained profits for farmers. To that aim, Beef + Lamb NZ focus on four program areas – Farm, Market, People, and Information – providing farmers with innovative tools and services as well as credible information and analysis to make the best decisions for their business.

For instance:

- Farm: Delivering research, development and technology transfer for whole farm systems.
- Market: Eliminating trade barriers and investing alongside meat exporters to promote New Zealand beef and sheep meat.
- People: Developing tomorrow's leaders and building a skilled workforce.
- Information: Delivering independent information and analysis to help decision-making across the sector.

All these activities are geared towards making continuous improvements on farm, securing better access to overseas markets, and elevating the status of New Zealand beef and lamb to boost demand for the meat.

**EXAMPLE 14: PROTECTING WATER AND IMPROVING THE SUGAR CANE GROWERS' LIVELIHOODS IN SOUTH AFRICA (COCA-COLA & WWF, 2012)**

In South Africa, The Coca-Cola Company and WWF have partnered up with a local growers' association to strengthen and expand collaboration between commercial sugarcane growers and previously disadvantaged smallholder farmers. In this partnership "Project Khula", commercial farmers assist smallholders to establish cooperatives with improved farm layouts and better management practices.

In 2011, project partners worked with smallholder growers in the KwaZulu-Natal region of South Africa to establish two new cooperatives, engaging 97 farmers on 100 hectares of land. Today, trainers work with the cooperatives to map farmland and to create appropriate contours for proper erosion control and drainage. They also train the farmers on sustainable practices such as maintaining and restoring riparian areas and eliminating pre-harvest and postharvest burning. Additionally, this work results in increased use of integrated pest management systems applying natural plant pheromones rather than pesticides to control insect pests.

These improved practices are expected to more than double yields and incomes for participating smallholder farms while improving environmental conditions. A simple monitoring and evaluation system is implemented to quantify the expected freshwater benefits, including reduced run-off, reduced sediment and turbidity, and increased dry-season low flows.

# □ Internal psycho-social factors: Cultural background, tradition and habits

Why would I change my way of doing, which has been working for decades?

## Definition

The personal characteristics of a particular farmer play an important role in his or her willingness to adopt sustainable practices. Some researchers have even suggested that decisions to adopt sustainable practices are more closely tied to farmers' characteristics than any other factor (Alonge & Martin, 1995), (Ervin & Ervin, 1982).

## Explanation

Farmers who have been interviewed report that it is relatively easy to learn a new practice, but hard to keep it as the way of working going forward. As a matter of fact, evolving from "understanding" to actual and long-lasting "behavior change" is one of the biggest challenges to stimulating behavioral change in people. Anyone who has ever made and broken a New Year's Resolution can appreciate the difficulty of behavior change. Making a lasting change in behavior is rarely a simple process, and usually involves a substantial commitment of time, effort and emotion – because cultural background, traditions and habits all play against behavior change. Understanding the elements of change, the stages of change, and ways to work through each stage can help you achieve your goals.

## RECOMMENDATIONS

Extensive literature exists on the subject of behavior change. In a nutshell, there are various steps that must be followed to achieve behavior change in a particular group:

- 1 Base interventions on a proper assessment of the target group, where they are located and the behavior which is to be changed (See General Recommendations Step 1: careful planning is the cornerstone of success);
- 2 Work with other organizations and the community itself to decide on, and develop initiatives (See General Recommendations Steps 2 and 3);
- 3 Build on the skills and knowledge that already exist in the community, for example, by encouraging networks of people who can support each other (See Information Sources, Social Acceptability and Institutional Pressure);
- 4 Take account of – and resolve – problems that prevent people from changing their behavior (See all other sections of this guide!)
- 5 Train staff, or hire/contract/commission specialized staff to help people change their behavior (See General Recommendations Steps 2 and Practical training);
- 6 Evaluate all interventions (See General Recommendations Step 4).

---

“The first thing we changed was people’s mindset regarding agriculture. In agribusiness, minds are often set to maximum profitability, with the farm being just a means of production. We wanted to set the focus on sustainability going hand in hand with profitability, and for people to see farming as a way of life. It really is a cultural change.”

Leontino Balbo Jr., Sugar cane farmer and owner of Balbo Native Group in Brazil

**EXAMPLE 15: PROGRAM FOR GENDER EQUALITY IN COCOA PRODUCTION IN GHANA & IVORY COAST (MONDELEZ, 2014)**

Mondelez International, Inc. is conducting a gender equality initiative for women in cocoa farming in Ghana and Ivory Coast. The action plan is based on a third-party assessment carried by CARE International and Harvard University, which reported that Ghanaian women farmers’ income is approximately 70 percent of their male counterparts; In Ivory Coast, their income is about 30% of men’s. In addition, Harvard analysts claim females in the industry receive 25% less training, 20 % fewer loans and 30 to 40% less access to tools, fertilizer and other agricultural products. CARE analysts note a direct correlation between access to farmer training and finance and the use of farm inputs, which is central to improved productivity and income.

In Ivory Coast, Mondelez focuses on integrating women’s perspectives in Cocoa Life program design and implementation and uses local cocoa platforms to achieve this; establishes clear gender-equity targets; institutes criteria to ensure women’s participation in farmer training and access to finance; adapts training topics, materials and methods and Cocoa Life’s Livelihoods and Community focus areas; and benchmarks progress of each objective in gender mainstreaming against key performance indicators and local metrics.

**EXAMPLE 16: IMPROVING THE SUSTAINABILITY OF CROPPING SYSTEMS WITH PULSES IN CANADA (PULSE CANADA, 2014)**

“Globally, innovations in crop production have allowed farmers to adopt simple, non-diverse crop rotations. Crop scientists globally recognize that these simple cropping systems are susceptible to pests and disease and can have a negative impact on soil and water. Diversity in crop rotations enables farmers to reduce their use of fertilizers and crop protection products, creating a more efficient crop production system from an economic and environmental perspective.

Canada has had success in introducing more diversity into its cropping systems. For example, crop production in Western Canada has evolved from a wheat-fallow crop rotation during the 1960s to a landscape that includes cereals (wheat, barley, and oats), oilseeds (canola, flax and soybeans) and pulses (peas, lentils, dry beans and chickpeas). Although every crop in a diverse rotation is important and brings specific benefits, pulses have been shown to bring additional benefits to rotations: they capture and leave nitrogen behind for the following crop in the form of crop residues. Pulse Canada and many organizations in Canada support the growth of the Canadian pulse industry. Investments in crop variety development and a growing market for pulses have helped Canadian farmers adopt pulses in their crop rotations. Farmers have reaped the benefits in terms of diversified markets for their crops, and more resilient farms in the economic and environmental sense.”



**EXAMPLE 17: USING TRADITIONAL GATHERINGS TO PROMOTE CHANGE IN AGRICULTURAL PRACTICES IN MALAWI (ROBIN, 2012)**

ICRAF (The World Agroforestry Center), founded in 1977, promotes the use of agro-ecological systems involving crops and trees - called agroforestry - to improve agricultural production worldwide. As a means to transmit information about this in villages across the globe, ICRAF employees use a wide range of communication channels. One of these channels is religious centers, where farmers gather on a regular basis.

In Malawi, for instance, ICRAF employees visit Churches to explain how the use of agroforestry can help produce more food in a more sustainable way. In one case showed on a documentary, the ICRAF employee speech is followed by a testimony from a local farmer who has been using nutrient-fixing trees as part of their agricultural practices, and has seen tremendous yield improvements and resilience.

# □ Internal psycho-social factors: Family protection

How can I farm in a way which protects my family, today and tomorrow?

## Definition

Sheltering the farmer family members from risks, and ensuring them the best future possible.

## Explanation

In both conventional and sustainable circles, the most frequently mentioned social concern by farmers is sustaining the family. In effect, the agricultural practices used by a farmer have a wide range of short-term, medium-term and long-term impacts on his/her family members:

- 1 The practices have short-term and long-term impacts on the farmer family members' health – for instance the use of chemicals without proper protective clothing and measures is now widely known to have a link with some types of cancers in farmers and farmer families (Blainey , Ganzleben, & Goldenman , 2008)
- 2 The practices have short-term impacts on the family well-being – for instance the higher the farm profit, the better off are farmer family members every year;
- 3 The practices have long-term impacts on the family well-being, because the farm in that case represents a potential revenue for the farmer children – either as a business if the children chose to continue to farm in the future, or as a lump sum of money if the children chose to sell off the farm (when the farm belongs to the parents).

This link between farm practices and farmer family protection can sometimes represent hurdles, but in general represent strong drivers for farmers towards the adoption of sustainable agriculture.

## RECOMMENDATIONS

Rather than just “assuming” that the farmer knows the pros and cons of using one farming method versus another one for his/her family, it is advised to genuinely ask the question and discuss the subject openly. Of course, you will need to have prepared for such discussion, and have in mind useful facts and figures in favor of sustainable practices to sustain the discussion (as per the following pages of this guide, in particular section on Economic Factors).

But more importantly, you will have to make sure to have that discussion in the right environment and with the right group of people: the extension officer's point of view will have almost no chance to be heard if he/she has no credibility as well as if the group he/she is talking to is composed of like-minded people having prejudice towards sustainable practices. Crucial are the choice of project manager and/or extension officer (See General Recommendations Steps 2) as well as the choice of information sources and communication exchange (See Information Sources)

You may also want to read recommendations about change behavior (See Section on Cultural Background).

---

“There are probably a thousand things we could do to make a profit, but we only choose the ones that support the quality of life that our family enjoys”

Bill Burrows, rancher, California, USA

**EXAMPLE 18: ENSURING A BETTER FUTURE FOR COCOA FARMERS AND THEIR FAMILIES IN IVORY COAST (NESTLÉ, 2013)**

The Nestlé Cocoa Plan aims to help cocoa farmers have productive and profitable farms that respect the environment and provide a good quality of life. In order to tackle key issues facing the cocoa sector – poor living and working conditions, poor quality cocoa harvests and declining cocoa production – the Plan takes the following actions:

- 1 Provision of high-quality cocoa plantlets: These help farmers revitalize their crops with disease-resistant, higher-producing trees. This minimizes the amount of land required for cocoa farming and improves farmers’ earning potential.
- 2 Farmer training on a variety of topics including good pruning and harvesting practices.
- 3 Reducing the complexity of the supply chain and speeding up the processing of raw cocoa beans, thus directly helping the farming cooperatives.
- 4 Social projects, such as building schools and providing water wells.



**EXAMPLE 19: SUPPORT TO DAIRY FAMILY FARMS IN UKRAINE**  
(DANONE, COMPANY NEWS, 2014)

Most peasants in Ukraine own one or two cows only, which is economically unprofitable. On the other hand, there are also large farms with 600-1000 cattle. But there is nothing in the middle. With the project for the development of dairy cooperatives, Danone Ukraine and the International charity fund "Dobrobut gromad" are trying to adapt the family farm model of 1-2 cows to 10-20 cows producing more milk of better quality while reducing costs, and hereby allowing families to earn USD 300-430 UAH net profit – which is much higher than the average net profit of farms in Ukraine.

An important aspect of the project is that families receive consulting support from Danone experts on farm management and productivity. Besides having a larger number of cows, the farm significantly improves its efficiency because the amount of time spent on work on the farm, is greatly reduced. Due to increase in milk procurement and improvement of its quality, the family is able to significantly increase its income.

The establishment of family farms is funded within the framework of the "Development of dairy cooperatives" project, implemented by the International Charity Fund "Dobrobut Gromad" in cooperation with Danone and the support of the Danone Ecosystem Fund (France), Heifer International (USA) and the Department of Foreign Affairs, Trade and Development / SOCODEVI (Canada) with local partners.

**EXAMPLE 20: WORKING WITH FARMS THAT ARE FAMILY OWNED AND OPERATED IN THE US**  
(CHIPOTLE, 2013)

Over the last 50 years, the total number of U.S. farms has plummeted by nearly 40%, from 3.82 million to 2.2 million, due in part to the expansion of large-scale operations and the development of farm land for other uses. While small family farms still represent 88% of the total farms, they account for just 16% of the food produced and many of their operators struggle in the face of larger, better financed competitors. The disappearance of small farms has significant impacts on their local economies. Studies have shown that small farms provide more local jobs and purchase more supplies from other local businesses than their industrial counterparts, creating a multiplier effect to support the community.

The food service company Chipotle supports farms that are family owned and operated. Chipotle claims: "Family farmers take great care to respect their farmland because it's the only land they have. If they plant one crop over and over that depletes the nutrients in the soil, they're the ones who suffer. Family farmers rotate crops, plant multiple crops, avoid pesticides and generally farm in a sustainable way. But just because a farm is small or family owned doesn't mean it meets our standards. That's why we spend a lot of time meeting and speaking with each of our suppliers to ensure we're all on the same page."



# □ Internal psycho-social factors: Care for the environment

## What are the links between agriculture and the environment?

### Definition

The “environment” of a farm is made of the natural environment within, as well as surrounding the farm, i.e. the ecosystem, the plants and the animals living in and around the farm, which all together provide conditions for the farm and community development and growth, as well as risk management. Caring for the environment means taking decisions and implementing actions which can improve or maintain the state of the natural environment and its components.

### Explanation

Farmers’ consciousness of environmental and social problems associated with conventional agriculture represents a very good driver towards the adoption of sustainable practices. Naturally, farmers’ personal characteristics and knowledge have a high influence on their willingness to preserve the environment. For some farmers who have already decided to switch to sustainable agriculture, “environmental consciousness” or “having inherent interest in conservation as a personal core belief”, have played a role. Conversely, even if a farmer doesn’t seem to have much interest in protecting the environment out of “environmental consciousness”, he/she can be convinced to do so for agronomic and economic reasons: maintaining a good environment helps maintain better soil structure and organisms, which are key to sustain higher yields with less costs; maintaining a good environment preserves pollinators, which are key for crop production; and preserving the watershed helps preserve your production base (See Example 4).

## RECOMMENDATIONS

Rather than just “assuming” that the farmer knows the pros and cons of using one farming method versus another one for the environment, it is advised to genuinely ask the question and discuss the subject openly. (See Recommendations for Family Protection).

A less easy, yet probably more impactful way of showing to a farmer what the benefits of sustainable agricultural practices are for the environment and consequently for the farm, is to show these in practice. Organising visits to demonstration farms or discussions with local champions doing sustainable agriculture, is one option (See Inspiring Examples). Encouraging farmers to do a trial on part of the farm is also very good, to allow for comparison of different practices while allowing the farmer to stay in his/her “comfort” zone. In that case it is important to know that a trial should ideally last for several years – as better results from more sustainable practices may only start to show a couple of years after practices have changed (See Information Sources).



**EXAMPLE 21: OPERATION POLLINATOR HELPS PRESERVE BIODIVERSITY AND SECURE FOOD SUPPLY IN EUROPE (FARMING FIRST, 2010)**

Pollinating insects are crucial for many natural habitats and the production of the majority of food crops. However, the number of pollinating insects has declined significantly across Europe, and the rest of the world, which exacerbates an already insecure food supply. According to an EU-funded research project, pollination services provided by insects are worth EUR 153 billion a year globally, accounting to 9.5% of the total value of the world's entire agricultural food production.

Operation pollinator is a five-year EUR 1 million program, launched by Syngenta in July 2009, to provide essential habitat and food sources for pollinating insects across Europe. The project aims to boost the numbers of pollinating insects in order to protect biodiversity and improve crop yields and crop quality. The program is based on the success of Operation Bumblebee in the UK where, within three years, the project increased bee populations up to 600%.



---

“More biodiversity means less parasites problems”

Dell Lesser, GMO soybean and maize farmer, USA

**EXAMPLE 22: ADJUST MANGO FARMING TO CLIMATE CHANGE IN INDIA (INNOCENT, 2009)**

In 2009, innocent (The Coca Cola Company) undertook a project to identify how climate change will impact the growing of the fruit that they use for their smoothies. The project highlighted a number of concerns, one of which was that the areas in India where innocent buys their Alphonso mangoes are already exposed to climate change and that this is likely to intensify in coming years. These findings were supported by discussions with mango growers who described warmer winters, changes to the monsoon, reduced pollination levels and even hail storms (apparently not all that common).

In 2010, innocent started a project to identify farming practices that will help mango trees adjust to climate change, and still allow for the production of quality fruit. Innocent is working with 18 farms for two years, allowing farmers to try out these farming practices across two complete harvest seasons. Already at the end of the first harvest season, initial results from the trial looked great. The farms participating in the trial used 50% fewer agrochemicals, achieved between 25-40% greater fruit retention and also a slightly larger fruit size. It is still early days, though, and there is more work to do. Over the next harvest seasons, innocent will continue working with the farmers, with the ultimate aim of producing guidance documents and training for all farmers.



#### EXAMPLE 23: IMPROVING WATER USE FOR SUSTAINABLE STRAWBERRY PRODUCTION IN DOÑANA, SPAIN

Seventy per cent of Spanish strawberries are grown in the Province of Huelva. In 2013, international brands and retailers buying strawberries from this province contributed 400 million euros to the Spanish economy in export revenue. Unfortunately, the unplanned and uncontrolled growth of strawberry production in this province has put a great strain on the quantity and quality of water resources in this region, particularly in Doñana - which is home to an iconic protected wetland. Continued pressure on these water resources will ultimately lead to severe environmental degradation of the protected Doñana wetland and ecosystems and/or a reduction in the long-term availability of strawberries from this region.

In April 2014, SAI Platform organized a field trip to an innocent (The Coca Cola Company) pilot project which succeeded in growing strawberries with the same yields and quality while using 40% less water. This triggered the launch of the "Doñana Strawberry and Sustainable Water Management Group" comprising many food companies, processors and retailers - Ahold, The Coca-Cola Company, Coop, Danone, Edeka, Eurogroup, innocent, Marks and Spencer, Migros, Sainsbury's, SVZ, Unilever, Wild Flavor - along with the Ramsar Convention and WWF Spain. This group aims to achieve specific outcomes at different levels: government, industry and farm levels. At farm level, the group members plan to help farmers switch to more water saving practices (such as the use of drip irrigation) through the use of relevant information sources, capacity building training and support to access new technology.

# □ Internal psycho-social factors: Care for the community

How does sustainable agriculture contribute to my community well-being?

## Definition

The concept of community well-being is one of the frameworks for community assessment along with other concepts (e.g. local community quality-of life studies, community health or community capacity). It focuses on understanding the contribution of the economic, social, cultural and political components of a community in maintaining itself and fulfilling the various needs of local residents.

## Explanation

Any measurement of sustainability needs to include considerations of social issues. The significance of social sustainability as a component of the sustainability equation is key and has been recognized for long in the agricultural sector in particular. In effect, the sector is facing a wide range of social issues across the world: farmers' age (the average age of farmers worldwide is 55, according to FAO); gender equity; working conditions etc. In addition, other social issues are more specific to the sector in developing countries: child labor; AIDS; non-gender discrimination etc.

All of these social issues already have and/or will soon have a negative impact on the sustainability of agricultural production worldwide. It is thus crucial for the food and drink industry to help tackle these in order to secure their supply of agricultural raw material in the right quantity and quality. (Pepperdine, 2011)

## RECOMMENDATIONS

Companies have a strong role to play when it comes to contributing to community well-being, within the farms as well as outside the farms they buy their agricultural raw materials from. There are three main levels for potential action:

- 1 At the farmer and farmer family level – for instance improving farmers' livelihoods, promoting good health and safety measures, promoting gender equity and children's schooling (See Family Protection).
- 2 At the farm workers' level – for instance promoting good employment and working conditions, promoting good health and safety measures – see Example 24.
- 3 At the community level outside the farm, by encouraging farmers to contribute positively to the surrounding communities and/or to take an active role in these – for instance welcoming school children on the farm, preserving the surrounding environment for community use and welfare (See Care for the environment).



**CULTURAL  
VITALITY**

**SOCIAL  
EQUILTY**



**COMMUNITY WELL-BEING**

**PROSPERITY  
ECONOMIC**

**SUSAINABILITY  
ENVIRONMENTAL**

SOURCE: ([HTTP://WWW.NPSPSA.GOV.AU/](http://www.npspsa.gov.au/))



#### EXAMPLE 24: IMPROVING SUGARCANE FARMERS AND COMMUNITY LIVELIHOODS IN CHINA

With over 20 million people working in sugarcane agriculture and production, the Guangxi Zhuang Autonomous Region provides 60% of China's sugarcane production. Starting in 2009 however, the region experienced a drought of historic proportions, creating shortages of safe drinking water and threatening to devastate millions of livelihoods predominantly supported by sugarcane. While the severity of the drought had an immediate impact on Guangxi's sugar industry, it also created critical economic and social sustainability issues for the region's agricultural sector.

To address these issues, the Coca-Cola Foundation, UNDP, and Chinese government agencies launched The Guangxi Sustainable Sugarcane Initiative. The project

first objective was to install facilities such as pumps, pipes, and storage tanks to transfer treated wastewater from sugar mills back to the cropland. As a result, sugarcane irrigation requirements were reduced by half, while production yields increased by 50%. The second project objective was to provide local residents with better access to safe drinking water through the installation of wells, water pipes, and disinfection equipment for drinking water – as an alternative to carrying water long distances (particularly amongst women). This is expected to significantly reduce waterborne illnesses (particularly amongst children) and to substantially improve the living conditions of sugarcane farmers and their families.



---

“The most important ‘crop’ we produce is our relationships, not only with the land, but with others.”

George Work, Rancher, Monterey County, USA

**EXAMPLE 25: PROVIDING GOOD WORKING CONDITIONS ON FRUIT AND NUT FARM IN CALIFORNIA, USA  
(AMERICAN FARMLAND TRUST, FARM AND FOOD VOICES: LIMONERIA COMPANY, 2013)**

The Limoneria Company grows a variety of fruit and nut crops on nearly 8,000 acres in Southern California. The farm specializes in lemons and avocados, with roughly 3,000 acres of those two crops in production. In their other orchards they grow walnuts, pistachios, cherries and specialty citrus varieties, like cara caras, blood oranges and valencias. For this 120-year old company, sustainability doesn't stop at environmental stewardship: caring for their employees plays a large role too.

The farm management provides its employees with benefits including housing, and funds for educational and community programs. They are very proud of the fact that many of their employees have been with the company for over 30 years. Their company practices have not gone unnoticed: for the last seven years they have been one of the winners of the Best Place to Work award, and in 2013, they were awarded the Integrated Pest Management Innovator Awards by the California Environmental Protection Agency's Department of Pesticide Regulation. The company is highly committed to new technology and practices, and to creating beneficial relationships.

**EXAMPLE 26: PUBLIC PRIVATE PARTNERSHIP TO IMPROVE HAITIAN FARMERS' LIVELIHOODS  
(USAID, 2013)**

The U.S. Agency for International Development (USAID) and Brasserie Nationale d'Haiti S.A (BRANA), a Haitian brewery owned by HEINEKEN, have partnered up to improve the livelihoods of Haitian farmers by sourcing locally-grown sorghum. Through the partnership, BRANA aims at partially replacing the imported malted barley used to make its non-alcoholic drink Malta H with locally grown sorghum, while USAID aims at further improving rural food security and connecting small-scale farmers to markets.

In this partnership, USAID and BRANA jointly support farmer training in modern agricultural techniques and production standards. In addition, BRANA invest in upgrading processing and storage techniques and facilities, developing farmers' associations and federations, and purchasing the sorghum produced. These various elements are expected to increase the average income of about 18,000 small-scale farmers create employment through a multiplier effect in related industries such as storage and transport. This will help reduce poverty in the country.





# 6 > Economic Factors

## TABLE OF CONTENTS

<b>Costs, revenue &amp; profit</b>	<b>50</b>
Costs, revenue & profit: Production costs	52
Costs, revenue & profit: Investment costs	54
Costs, revenue & profit: Labor costs	56
Costs, revenue & profit: Verification & certification costs	57
Costs, revenue & profit: Revenue	60
Costs, revenue & profit: Profit	63
<b>Yield, quality &amp; competitiveness</b>	<b>65</b>
Yield, quality & competitiveness: Yield	66
Yield, quality & competitiveness: Quality	68
Yield, quality & competitiveness: Competitiveness	70
<b>Risk Management</b>	<b>72</b>
Risk management: Production risk management	73
Risk management: Financial risk management	75



## ■ Costs, revenue & profit

Throughout the sustainable practices adoption literature and interviews we went through, economic factors are most frequently viewed as the main barrier. Economics can however also positively influence a farmer's decision to adopt sustainable practices. Put is simply: when considering the use of new practices, a farmer wonders "Will I make or lose money?"

Changing practices represents a risk, and farmers are more likely to take a calculated risk if they understand the risk, can consider such risk comparing an alternative with the "old" technology, and consequently determine whether or not the alternative is better. If an extension agent, suggesting to a farmer that a particular innovation could improve productivity, is unable to explain how much the innovation will cost, how to use it, and what benefits can be expected from its use, one cannot expect that smooth adoption of the innovation.

One of the key things an extension agent can do to promote sustainable practices towards a farmer who is risk averse, is to encourage that individual to try these themselves, or to become involved with groups that are attempting the same (See General recommendations as well as Social acceptability).

Economics is among the key parameters to be considered when comparing conventional practices with sustainable practices – in a trial or discussion with peer farmers. Indeed, Economics ranks highest among farmers as a reason to adopt sustainable practices (Ikerd J. O., 1997). Of the economic drivers associated with sustainable practices adoption, financial savings and/or increased profit potential are the two most frequently mentioned economic benefits. Moreover, many farmers adopt sustainable agriculture specifically to reduce costs (Barlas, Damianos, Dimara, Kasimis, & Skuras, 2001).

For all of these reasons, we chose to write in detail about costs. In farm economics however, there is no absolute definition of what has to be considered as variable costs or as fixed costs: it all depends on the type of research. Based on what we found in the literature as well as during our interviews, we decided to divide costs into four main sub-categories –without distinguishing between fixed cost and variable costs. These four categories are:

1. Production cost,
2. upfront cost,
3. cost of labor and
4. verification & certification cost.

### Tool 5: SAI Platform financial tool

SAI Platform's Arable and Vegetable Crops Working Group in 2012 assigned Andersons Easterns' Jay Wootton to develop a farmers' tool to understand the relation between financial performance and overall farm sustainability. The tool is the key for a better educated conversation and learning between farmers and their customers. It allocates the cost of production for a particular crop to its revenues.

By doing this, the direct impacts per crop of energy use for a tractor, fertilizers, crop protection and also labor and land costs become visible and hence manageable. But there is even more, by understanding this mechanisms it also supports the healthy impact of crop rotation. It shows that costs can be reduced for almost all inputs.

(SAI Platform, Financial Tool, 2013)



## RECOMMENDATIONS

It can be useful to start a discussion with farmers about their costs of production, revenue and profit. Costs are often poorly accounted for, and thus underestimated, while revenue is often mistaken as profit. Explaining to farmers who don't already know it, how costs, revenue and profit generally vary when one adopts sustainable practices, can therefore be very helpful and motivating. An "easy way" to show this fact to a farmer is to promote virtual trial through an on-line simulator (See SAI Platform financial tool).

A less easy, yet probably more impactful way of showing a farmer the real costs, revenue and profit related to more sustainable practices, is to show these in practice. Organizing visits to demonstration farms or discussions with local champions doing sustainable agriculture, is one option. Getting farmers to actually do a trial on part of the farm is also very good, to allow for comparison of different practices while allowing the farmer to stay in his/her "comfort" zone. In that case it is important to know that a trial should ideally last for several years – as better results from more sustainable practices may only start to show a couple of years after practices have changed (See Information sources).



## □ Costs, revenue & profit: Production costs

How much will it cost me to produce agricultural raw materials sustainably?

### Definition

The cost of production can be seen from various angles: inputs may be external or internal. Internal inputs are under the control of the farming household, and include land, labor, management and capital. The money involved in production represents either Cash (Paid) Costs or Non-Cash (Calculated) Costs. Another way to categorize the costs is to distinguish Variable Costs from Fixed Costs. Variable costs rise and fall with the size of the output and the level of the operation. Variable costs (for items such as feed, vaccine and casual labor) can be controlled to some extent and are not incurred when there is no production. Fixed costs (for items such as taxes, insurance, interest, and depreciation on buildings and equipment), are incurred whether or not there is any output. (Food and Agriculture Organization of the UN, 2003)

### Explanation

Some farmers engaged in conventional agriculture fear that switching to more sustainable practices may result in higher production costs. They may think of the following new or higher costs: buying different inputs (e.g., organic fertilizers and pesticides, drip irrigation); buying new machinery (e.g., organic matter broiler, weed eater); and hiring additional labor force. Although there is a wide disparity amongst farms and associated costs, and each case must be addressed specifically, the costs associated with sustainable agriculture are not necessarily higher than those for conventional agriculture (See Table 1).

### RECOMMENDATIONS

See recommendations about costs, revenue and profit.

#### EXAMPLE 27: REDUCED COSTS FOR DAIRY PRODUCTION WITH RAINWATER AND BETTER FERTILIZER USE IN MEXICO (SAI PLATFORM, MEMBERS PROJECTS, 2014)

Growing forage is of key importance to have feed of good quality at competitive price for dairy cows. In Mexico, droughts are becoming a serious issue as occurrence is increasing and no formal solution to avoid their impacts is given. As a consequence, dairy farmers supplying Nestlé started to apply heavily fertilizers to increase land productivity and ensure supply of forage for dairy cows. After a few years with expensive chemical bills, farmers asked Nestlé to help them optimize use of water at farm level to decrease fertilizer needs. A project started in 10 different farms, with an aim to increase the area of irrigation of agricultural lands and decrease the use of chemical fertilizer.

The first pilot has already delivered good results for instance: at the start of the project, 15 hectares were cultivated without use of irrigation. At the end of the project, 10 hectares were cultivated with drip irrigation. Irrigation costs increased by \$9,000, but fertilization costs were reduced from \$18,000 to zero.

The immediate result was more feed for the cows and more money remaining for the farmer to invest in new dairy cows. The system was paid back in one year and allowed optimization of forage growing.

“Using portable infrastructure, tight management, and techno-glitz tools, farmers running pastured hog operations practically eliminate capitalization costs and vet bills.”

Joe Salatin, owner of Polyface Farm, USA (producing Beef, Pork, Poultry, Rabbits and Forestry Products)

Table 1: Estimation of costs for machinery and fuel in a maize soybean rotation in Brazil, comparing Conventional with conservation agriculture (Food and Agriculture Organization, 2014)

SPECIFICATION	SOYBEAN				MAIZE			
	CONVENTIONAL AGRICULTURE		CONSERVATION AGRICULTURE		CONVENTIONAL AGRICULTURE		CONSERVATION AGRICULTURE	
	Quantity	\$US/ha	Quantity	\$US/ha	Quantity	\$US/ha	Quantity	\$US/ha
Maintenance of terraces	0.7 h/ha	2.44			0.7 h/ha	2.44		
Ploughing	2 h/ha	7.28			2 h/ha	7.28		
Harrowing	1.6 h/ha	7.31			1.6 h/ha	6.44	1 h/ha	10.7
Planting	1 h/ha	4.88	1 h/ha	9.74	1 h/ha	3.93		9
Herbicide application	1.6 h/ha	6.79	1.6 h/ha	6.27	0.8 h/ha	3.14	1.6 h/ha	6.27
<b>Total</b>		<b>28.7</b>		<b>16</b>		<b>23.2</b>		<b>17.1</b>
Fuel	82.3 l/ha	21.30	49.61 l/ha	12.84	86.81 l/ha	22.4	58.7 l/ha	15.1
Lubricants		4.77		2.87		5.14		3.48
<b>Total</b>		<b>26.1</b>		<b>15.7</b>		<b>27.6</b>		<b>18.7</b>
<b>TOTAL COSTS</b>		<b>54.8</b>		<b>31.7</b>		<b>50.8</b>		<b>35.8</b>

(FOOD AND AGRICULTURE ORGANIZATION, 2014)

#### EXAMPLE 28: FERT\$MART HELPS PRODUCE MORE FEED FOR DAIRY FARMERS WITH LESS FERTILISER IN AUSTRALIA

Fert\$mart is a national program initiated by Dairy Australia in 2011 in response to increase the efficiency and profitability of fertilizer use and to improve soil health on Australian dairy farms. The program is funded by Dairy Australia and the Australian Government Department of Agriculture, along with additional resources from many other contributing individuals and organizations.

Fert\$mart was founded on the best available science now accessible online in the Dairy Soils and Fertilizer Manual and provides easy-to-follow planning steps to

guide farmers and advisors with fertilizer planning and decision making. Many farmers find that when they get soil and fertilizer management ‘right’, they can produce more feed at no extra cost and with careful planning, it can be a strategic tool to boost feed when it is most needed. Regular soil testing is necessary to make informed decisions on fertilizer use, and the ability to interpret these results is key to making the most cost-effective fertilizer choice. It is also important to understand the balance of nutrients in the farming systems.



## □ Costs, revenue & profit: Investment costs

How much will I need to invest in order to switch to sustainable practices?

### Definition

Investment costs include all expenses that are charged at the beginning of a project or business activity. In the case of transition to sustainable agriculture, upfront costs may be associated with the purchase of the following items: renewable energy or drip irrigation systems, specific machinery, animal-friendly housing systems, plant varieties or animal species that are more adapted to local conditions etc.

### Explanation

Some farmers engaged in conventional agriculture fear that switching to more sustainable practices may bring additional upfront costs. There are two components related to this fear:

- 1 The fact that some of the investment costs associated with a switch to sustainable agriculture are not large, but simply perceived as large.
- 2 The fact that there are indeed some important upfront costs associated with a switch to some sustainable agricultural practices – depending on what practice we are considering, and what are the characteristics of the farm before the switch.

### RECOMMENDATIONS

In order to overcome the perception of investment costs related to switching to more sustainable practices significant, you should consider using methods to change this perception, such as farmer field schools – see Psycho-social factors.

In order to overcome the problem generated by possibly important and real upfront costs related to the use of new practices, there are two key solutions:

- 1 if the farmer has the capacity to make the investment, demonstrate that it is worth it (e.g., return on investment) - see Recommendations about costs, revenue and profit.
- 2 if the farmer does not have the necessary financial means, develop solutions to help him/her cover for these upfront costs, for example by developing a subsidies program within your company or in cooperation with other groups (See Example 32) or by providing some equipment for free (See Example 63). Another option is to connect the farmer to various types of organizations providing financial resources in form of credit or micro-credit, grants or funding, or climate finance (See Section on Financial resources).



**EXAMPLE 29: RETURN ON INVESTMENT INTO RAINWATER HARVESTING TANK FOR BEEF PRODUCTION IN IRELAND (MCDONALD'S, BEEF – IRELAND, DEMPSEY FARM, 2014)**

For his beef production farm in Ireland, farmer Ray Dempsey purchased a new 15,750 liters concrete (above-ground) tank. This tank was sited beside the cow and calf shed to capture the rain water falling on the roof. It is estimated that the system will capture about 200,000 liters of rainwater annually.

Based on local authority water charges (€1.18 per cubic meters in 2012) the farm will save €472 per year, and the large volume of water captured will instantly accessible for uses such as cleaning machinery and buildings, and could be used as an emergency source of drinking water for the cattle.

The payback period for the system has been estimated to be around 10 years.

**EXAMPLE 30: SUBSIDIES TO OVERCOME UPFRONT COSTS IN POTATO FARMING, INDIA (MCCAIN FOODS, 2014)**

In India, where water supply is scarce due to ongoing drought conditions, McCain is leading the development and testing of drip irrigation for potato production. In contrast to traditional flood and even overhead sprinkler methods, the drip method essentially puts the water where and when it is needed – directly to the plant's roots.

While expensive and labor intensive to implement, following McCain's proven pilot results which demonstrated a 50% reduction in water use, the Indian government is now providing subsidies to growers to install this advanced drip irrigation system. Today more than 90% of McCain's contracted potatoes in India are grown using improved irrigation technologies.



## □ Costs, revenue & profit: Labor costs

How much will I spend on workers' wages if I switch to sustainable agriculture?

### Definition

The cost of labor is the sum of all wages paid to employees, including employee benefits and payroll taxes (paid by the employer). The cost of labor is broken down into direct and indirect costs. Direct costs include wages for the employees physically making a product, like workers in agricultural fields. Indirect costs are associated with support labor, such as employees maintaining factory equipment but not operating the machines themselves.

### Explanation

Some farmers engaged in conventional agriculture are worried about switching to more sustainable practices to also generate higher labor costs. Whether this concern is justified depends on a large variety of parameters including the country, farm characteristics, agricultural practices already in place etc.

For some farms, the use of sustainable practices will require less labor and thus lower labor costs – see Example 28 and Labor capacity. Indeed, saving labor cost and overcoming the difficulty to secure reliable labor are drivers for some farmers to adopt sustainable practices (Fazio, 2014).

For farms with a high level of intensification, though, using sustainable agricultural practices is likely to require more labor and the related cost of labor is likely to increase. In some cases, the increase in labor costs will be compensated by a reduction of other production costs (such as the cost of inputs see Production cost). In most developing countries in particular, labor tends to be cheaper than chemical inputs such as fertilizers and pesticides. Consequently, switching to more sustainable practices is typically a profitable option and can lead to 20–90% increases in profit (World Watch Institute, 2014). In other cases, the increased labor costs will be compensated by increased yields, quality and competitiveness (See Yield quality competitiveness).

### RECOMMENDATIONS

There are two levels of recommendations for your company on this subject:

- 1 helping farmers understand how their costs, revenue and benefits are likely to evolve if they use more sustainable practices – see Recommendations about costs, revenue and profit.
- 2 working with governments towards the development of better policies and regulations, which encourage the development of sustainable agriculture because it generates so many socio-economic and environmental benefits at the macro-economic level – see Political factors.

In some other cases, though, compensation with other economic benefits at farm level may not happen – notably given today's regulatory framework which fails at integrating social and environmental externalities (See Political factors). This raises a very important macroeconomic and political issue: What is the overall objective of agriculture? Is it to produce more food at ever decreasing costs and prices, regardless of the social and environmental consequences? Or is it to produce more food at reasonable prices so as to help feed the increasing population while contributing to improving the world's socio-economic and environmental frameworks? In other terms: is it actually a bad or a good thing, that some agricultural practices require more labor and through this generate more jobs in rural communities?



# □ Costs, revenue & profit: Verification & certification costs

## Are verification and certification costs worth it?

### Definition

Verification and certification processes are not intrinsically linked to the concept of sustainable agriculture. A farmer may well decide to go for sustainable practices based on benefits these bring, without needing or wanting to verify and/or certify their products. The pros and cons relate to the costs of verification and certification versus the possible premium and increased market access that certified products may bring.

If farmers decide to go for verification and/or certification, then overall costs will vary depending on a wide range of parameters: scheme, code or standard itself; country of production; commodity; certifying agent; size, type, and complexity of the buyer's operation (See table 2). Verification and certification costs may range from a few hundred to several thousand euros. Before applying, it is important to understand the certifier's fee structure and billing cycle. Typically, there is an application fee, annual renewal fee, assessment on annual production or sales, and inspection fees.

### Explanation

Regardless of the resulting possible price and market access increase, verification and certification costs can represent an obstacle to the adoption of sustainable agriculture, especially for smallholder farmers. In effect, complying with a "standard" (the world standard being taken in a large sense, i.e. any public or private code or scheme) requires considerable efforts from farmers long before the product can be sold as compliant with the standard. Without the support of external groups such as cooperatives and development organizations, it will be practically impossible for most small-scale farmers in developing countries to take part in any certification system.

## RECOMMENDATIONS

The simpler and the cheaper the "standard" is to verify, the easier it is for farmers to meet it. This is the "raison d'être" for SAI Platform Farm Sustainability Assessment (FSA) – a simple tool available at no cost to farmers and their advisors to assess the sustainability of agricultural practices on a farm, which may or may not be associated with a light verification system implemented by the buyers of the product (See Tool 3). Undertaking FSA does not generate any cost to the farmer other than the time spent to answer the questions (couple of hours). On the other side, FSA does not generate any guaranteed premium like some certification standards do. The overall benefits for the farmer are related to the overall improvements on the farm, such as better quality and yields, reduction of cost of production etc., as explained throughout this guide, as well as meeting buyers' expectations.

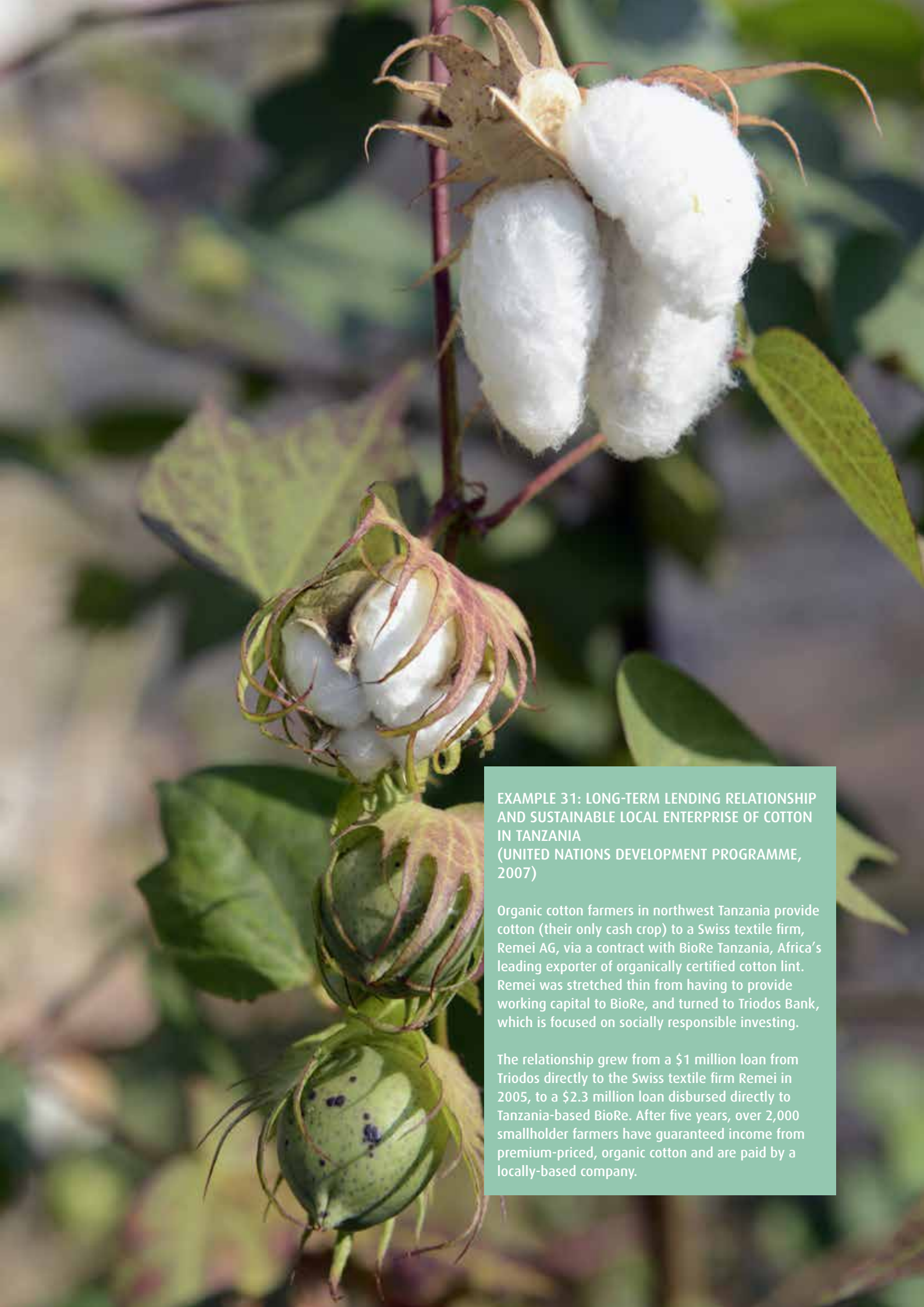
If the farmer chooses to go for a certification scheme in order to benefit from possible premiums associated, then undertaking FSA is also an excellent first step. In effect, FSA's on-line version allows to automatically benchmark results against more than 500 schemes, allowing farmers to instantaneously know if they qualify for such certification.

After this, if farmers decide to go for a scheme with a specific verification and/or certification process, and costs associated, they have two main options:

- 1 for farmers who have the capacity to make the investment: demonstrate that it is worth it (See Recommendations in Costs, revenue and profit).
- 2 for farmers without the necessary financial means: develop solutions to help them cover these costs. One way is to develop a program within your company or in cooperation with other groups, including credit or micro-credit enterprises – see Example 31 and credit or micro-credit section.

Table 2: Sustainability coffee certifications - a matrix comparison.

CERTIFICATION/ VERIFICATION	ORGANIC	FAIR TRADE CERTIFIED	RAINFOREST ALLIANCE	SMITHSONIAN BIRD FRIENDLY®	UTZ CERTIFIED	4 C COMMON CODE
TRACEABILITY/ CHAIN OF CUSTODY	Yes, required by USDA National Organic Program. Organic products traceable from retailer to producer.	Yes, traceable from roaster to producer.	Yes, traceable from roaster to producer; transparency ensured via mandatory transaction certificates.	Yes, traceable from roaster to producer.	Yes, traceable from roaster to producer following supply chain roles. Identity preserved and mass balance functionality. Audited chain-of-custody for logo users.	Identity preservation from roaster to container level ("4C Unit"). Traceable from
ADDRESSES ALL ACTORS IN THE CHAIN	Yes, except handlers who do not further process and retailers.	Yes, in fact all major actors must be registered with the program.	Yes, engages all actors in supply chain, from producer to retailer. Rules/ regulations for participation for actors along the chain include mandatory transaction certificates, license agreements, and seal approvals by Seal Approval Committee.	Yes. Farms are certified; actors further down commodity chain are registered and bound by written contracts.	Yes, rules for participation and chain of custody	Yes, membership association with rules of participation
PRICE DIFFERENTIAL TO FARMERS	Yes. Premiums versus non organic certified coffees are paid to farmers.	Yes, this is the heart of the program. All purchases must be at or above the Fairtrade Minimum Price as set by FLO (price varies by coffee type and origin). If the market price is higher than the Fairtrade Minimum Price, buyers shall pay the market price. Additionally, buyers must pay a social premium of USD\$0.10¢ per pound and, when applicable, a minimum Organic Differential of USD\$0.20¢ per pound.	Yes. Differential is negotiated between buyer and seller.	Growers have used BF seal to obtain 5-10 cents more per pound, over and above what they get for organic, with as much as an 18% "plus" in one long-term arrangement. Importers/ roasters report seal tends to increase the speed of circulation of commodity.	Yes. Differential set by the markets. Feedback on market information of differentials and demand per quality provided to members.	No influence on mainstream market price mechanisms: Free negotiation between 4C members. Price should reflect coffee quality and sustainable production practices.



**EXAMPLE 31: LONG-TERM LENDING RELATIONSHIP AND SUSTAINABLE LOCAL ENTERPRISE OF COTTON IN TANZANIA**  
(UNITED NATIONS DEVELOPMENT PROGRAMME, 2007)

Organic cotton farmers in northwest Tanzania provide cotton (their only cash crop) to a Swiss textile firm, Remei AG, via a contract with BioRe Tanzania, Africa's leading exporter of organically certified cotton lint. Remei was stretched thin from having to provide working capital to BioRe, and turned to Triodos Bank, which is focused on socially responsible investing.

The relationship grew from a \$1 million loan from Triodos directly to the Swiss textile firm Remei in 2005, to a \$2.3 million loan disbursed directly to Tanzania-based BioRe. After five years, over 2,000 smallholder farmers have guaranteed income from premium-priced, organic cotton and are paid by a locally-based company.



## □ Costs, revenue & profit: Revenue

How will my revenue be impacted by the adoption of sustainable agriculture?

### Definition

Revenue, also called income or sales depending on the country, represents the income generated from the sales of goods or services, or any other use of capital or assets associated with the main operations of the farm -, before any costs or expenses are deducted. Revenue is shown usually as the top item in an income (profit and loss) statement, from which all charges, costs, and expenses are subtracted to get the net income.

### Explanation

Many farmers are worried about the possible impact on their revenue from a switch to sustainable practices, which could in turn arise from two causes: lower yield or lower quality. There are three important considerations here:

1 It is true that the farm revenue is likely to decrease in the short-term, when the farmer is changing practices (phase 1 in Figure 1). This is due to the need for the farmer, just like for any human being, to get used to a new way of working, and to maximize its benefits - which takes time. This is also due to it often taking a few years for the benefits of the sustainable practices to appear - such as for example for the soil to become fertile again without extra inputs.

### RECOMMENDATIONS

See recommendations about Costs, revenue and profit.

- 2 Depending on the farm specificities, sustainable agriculture can actually generate a significant increase in revenue in the medium and long term (phases 2, 3 and 4 in Figure 1) - also see table 3 for numbers. This happens in many different ways:
  - increased quality of product, which brings an increased price (See Yield, quality & competitiveness)
  - increased yields in many cases (See Yield, quality & competitiveness)
  - better market access (See Market access)
3. When sustainable agriculture in fact does not generate any revenue increase in the long-term, or even sometimes a reduction in revenue, it still can generate a net increase in profit. And this is what matters most to a farm's economic health and farmer's well-being (See next section on Profit). This aspect is often neglected by many farmers, who tend to generally look at revenue without putting it in relation with total costs.

Figure 1: Theoretical Transition Phases from Conventional to Conservation Agriculture  
(FAO, Farm Management and Economics aspects of Conservation Agriculture, 2004)

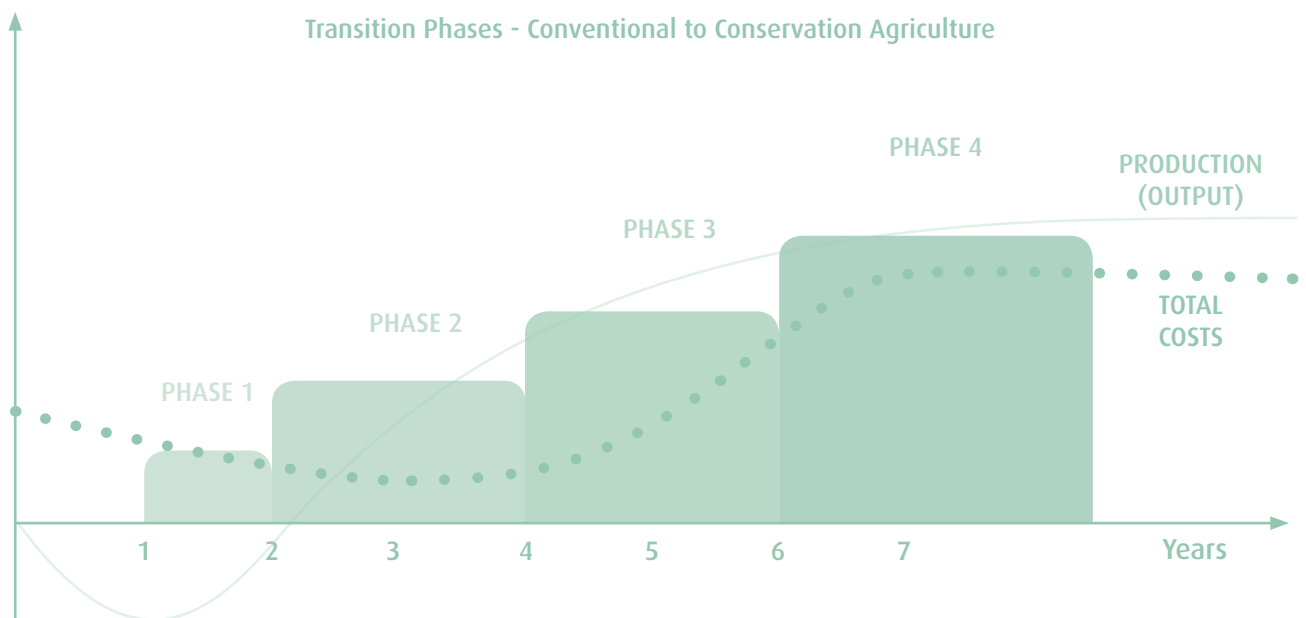


Table 3: Production costs and revenue for conventional and conservation agriculture in Paraguay  
(Food and Agriculture Organization of the UN, 2003)

CROP / COST (\$US 1998)	AREA N°1 (1)		AREA N°2 (2)	
	CONVENTIONAL AGRICULTURE	CONSERVATION AGRICULTURE	CONVENTIONAL AGRICULTURE	CONSERVATION AGRICULTURE
Farm surface (ha)	15,6	15,6	6,8	6,8
Hand work (people-day)	287	240	164	163
Revenue (\$US/an)	2570	4272	1010	2229

(1): Average for 3 farms which switched to Conservation Agriculture  
(2): Average for 2 farms which switched to Conservation Agriculture



**EXAMPLE 32: SOURCING RICE LOCALLY IN THE DEMOCRATIC REPUBLIC OF CONGO (HEINEKEN, 2013)**

HEINEKEN's Operating Company in the DRC is directly involved in the project across eight local regions – Kinshasa, Kisangani, Bumba, Nsioni, Ngele, Budjala, Bukavu, and Lubumbashi. Each region has benefited from the project since its launch in 2008; 73% of the farmers have indicated the project improved their livelihoods, and Kinshasa, for example, has seen the average income per farmer increase by 324%. Total rice production in the project area has increased by 62% and, as a result of training, individual smallholder farmers have seen their average annual production increase by 62%. This increase in farming knowledge and productivity has allowed local brewery Bralima to source 79% of its rice needs locally in 2013. This is a significant increase since 2008, when the company needed to import almost all of its rice from outside the DRC. A direct effect of this can be felt across the country; by purchasing close to 40,000 tonnes of rice locally, Bralima has redirected USD26 million into the local economy. In total, it generates income for more than 58,000 farmer families.

The successes achieved in the DRC through this project demonstrate clearly the benefits of a dedicated effort to increase local sourcing. The combined resources of HEINEKEN, the specialist NGOs and government organizations have provided a concrete and long-lasting improvement in the livelihood for many thousands of people throughout the country.

# Costs, revenue & profit: Profit

How can my farm profit increase with sustainable agriculture?

### Definition

The profit of a farm is the overall revenue minus the overall costs.

### Explanation

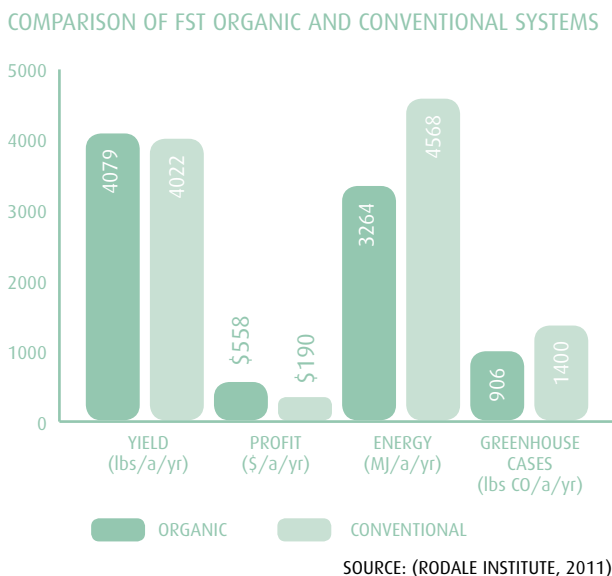
While conventional agriculture has traditionally placed the greatest importance on yield maximization, and thus revenue maximization, sustainable agriculture emphasizes the input minimization and thus cost minimization. The net result from revenue minus costs is the profitability of the farm. Research shows that farmers desperately lack data and information relating to the profitability of sustainable versus conventional systems. It is difficult to provide a general statement about whether the profitability of a farm using sustainable practices is higher or lower than a

### RECOMMENDATIONS

See Recommendations about Costs, revenue and profit.

farm using conventional agriculture. Whether this is the case depends on a myriad of parameters, such as: crop, region, soil fertility, cost of labor, access to subsidies or premiums etc. A wide range of examples can be found in real life and in literature, with very different conclusions. Overall, nevertheless, we can see a tendency whereby the profitability of some farms decreases over the years notably due to soil fertility loss and an increase in inputs purchases and prices, while the profitability of other, more sustainable farms either remains the same or increases – see Figure 1, Example 32 and Example 33.

Figure 2: Comparison of Farming Systems Trial (FST) Organic and Conventional systems



Most of the cases that have been referenced in literature report that farms using sustainable practices are profitable – even without taking into account the possible increase in market access and price due to better quality or premium. (United Nations Development Programme, 2012)

“This is the best project I have ever worked on. Sustainable cultivation ultimately provides the best returns and our members understand this”

Louis Nannes from the Agrarische Unie about the Skylark Project in the Netherlands



**EXAMPLE 33: PROFIT INCREASE WITH IRRIGATION SYSTEM FOR TOMATO PRODUCTION IN PANAMA (SAI PLATFORM, 2014)**

For more than 50 years, the industrial tomato producers of Nestlé in the Province of Los Santos (Península de Azuero, Panama) used gravity irrigation for their lands. This is a system that uses approximately 150 m<sup>3</sup> of water per hectare for every day of irrigation, in a province which has long and dry summers. It was imperative to change the irrigation system in order to: reduce water losses; maximize the efficiency of fertilizers and the application of phytosanitary products; improve soil preservation; and increase the productivity of the cultivated area.

Using drip irrigation has achieved large water savings from 150 m<sup>3</sup>/ha/day (furrow irrigation) to 47 m<sup>3</sup>/ha/day. Since 2008, 8.4 million m<sup>3</sup> of water coming from wells, rivers and creeks were saved. These savings brought a reduction in the total use of water (for all producers) of 2.8 million m<sup>3</sup> of water every year. In addition, tomato yield has increased from 30 to 38 tons per hectare, significantly increasing the producer's return on investment.



# Yield, quality & competitiveness

Crop yields and quality are intrinsically linked. Farmers in developed countries generally grow two to three times as much grain, fruit, vegetables and livestock on a plot of land as they could 50 years ago. And they have very little choice but to do so, if they want to be competitive and stay in business. The overall food safety of the production has increased tremendously too. The nutritional quality however, can be questioned. Some studies report that today's food in developed countries now produces 10 to 25% less iron, zinc, protein, calcium, vitamin C, and other nutrients compared to 50 years ago. According to these studies, this decline would notably be due to plants cultivated to produce higher yields tending to have less energy for other activities like growing deep roots and generating phytochemicals – health-promoting compounds like antioxidants (Worldwatch Institute, 2013). Other studies however report contradictory findings and conclusions.

In parallel, farmers in developing countries often struggle to produce good quality crops while achieving reasonably high yields and reducing post-harvest losses. These three improvements are extremely important to increase the income generated by crop exports and to sufficiently feed the local population.

Sustainable agriculture may be situated in the middle of these two 'extremes', which may allow to produce good quality products with quite high yields. Sustainable agricultural methods, in effect, use manure or cover crops to provide nutrition to crops, have more balanced mixtures of nutrients, and tend to release nutrients more slowly. This causes plants to develop more robust root systems that more aggressively absorb nutrients from the soil profile, and produce crops with good concentrations of valuable nutrients and phytochemicals.

In the end, the competitiveness of a farm will be linked to the quality of the crops produced as well as the yields achieved, in relation with the overall costs (See Section on Costs, revenue and profit for more information).

## RECOMMENDATIONS

It can be useful to start a discussion with farmers about their farms' yields, thereby also addressing product quality, costs of production, revenue and profit. Costs are often poorly accounted for, and thus underestimated, while yields and revenue are often mistaken as pure profit. Explaining to farmers who don't already know it, how yields and quality but also costs, revenue and profit relate, can be very helpful and motivating towards using sustainable practices. An "easy way" to show this fact to a farmer is to promote virtual trial through an on-line simulator (See SAI Platform financial tool).

A less easy, yet probably more impactful way of showing to a farmer what the real yields, costs, revenue and profit are with more sustainable practices, is to show these for real. Organizing visits to demonstration farms or discussions with local champions doing sustainable agriculture, is one option. Getting farmers to actually do a trial on part of the farm is also very good, to allow for comparison of different practices while allowing the farmer to stay in his/her "comfort" zone. In that case it is important to know that a trial should ideally last for several years – as better results from more sustainable practices may only start to show a couple of years after practices have changed (See Information sources).

---

“For five years, only increases our productivity. Whereas before with chemical, it was a failure: no longer yields increased”

Jacques Morineau, agro-ecological farmer

## □ Yield, quality & competitiveness: Yield

What will be the impact of sustainable practices on my yield?

### Definition

We choose to define yield as a measurement of the amount (volume or weight) of crop harvested per unit of land area. Crop yield is the measurement often used for a cereal, grain or legume and is normally measured in metric tons per hectare.

### Explanation

Farmers using conventional methods often focus on the yields their production achieves, regardless of some other important factors, such as: costs versus revenue; quality; and long-term economic sustainability – which tends to decrease over the years when practices are so unsustainable that they damage the soil, and consequently increasing amounts of fertilizers are needed. In this context, it does not come as a surprise that the adoption of sustainable practices by farmers is relatively rapid when these practices quickly increase yields compared to conventional practices, and vice-versa (Arellanes & Lee, 2003).

This is the case for a lot of farms and farming practices. For instance, the UN estimates in a 2008 report that agro-ecology in East Africa could increase yields by at least 120% over a three to 10 year period – see example 35. Other organizations’ studies provide similar numbers – see Figure 3. A main challenge for our purpose is thus to demonstrate if/how yields can be increased resulting from sustainable practices, either in the short or the medium or long-term. And to help farmers make the necessary investment if the yield increase takes several years.

Conservation agriculture (CA) can produce equivalent or higher yields compared to conventional tillage systems (Figure 1). However, as we saw in Figure 1, crop yields may fall in the initial phases of CA adoption, and will only rise above conventional tillage figures when the CA system has stabilized. Wherever possible, local data and information should be used to draw conclusions and provide reliable numbers.

### RECOMMENDATIONS

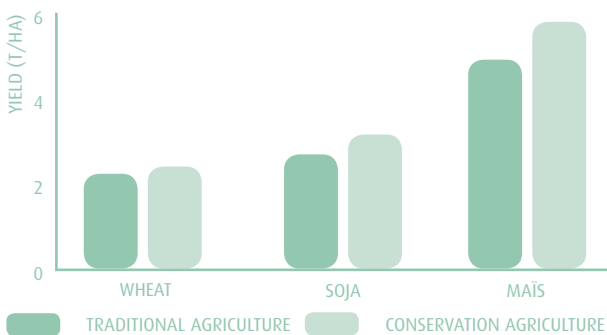
See recommendations relating to yield, quality and competitiveness.





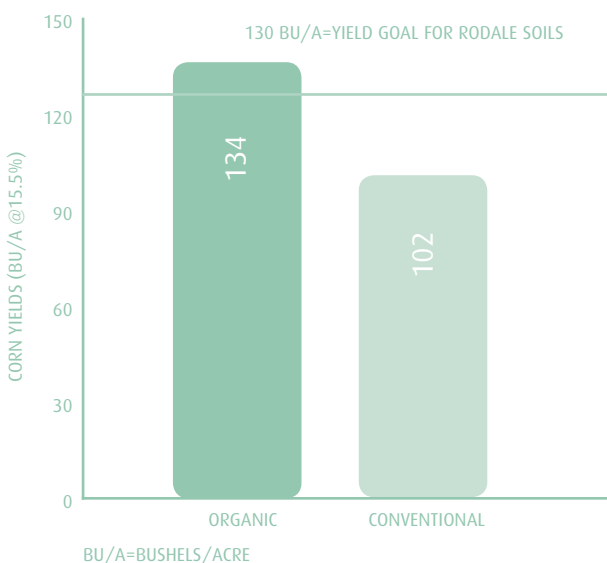
Figure 3: Economic aspects of conservation and organic agriculture (Food and Agriculture Organization, 2014) and (Rodale Institute, 2011)

Wheat, soy bean & maize yields under conventional and conservation agriculture in Brazil.



Trial Farming Systems with corn yields in the USA.

FST CORN YIELDS IN YEARS WITH MODERATE DROUGHT



**EXAMPLE 34: AGROFORESTRY AND INTERCROPPING IMPROVE YIELDS IN AFRICA (UNITED NATIONS DEVELOPMENT PROGRAMME, 2012)**

Several countries in sub-Saharan Africa have used fertilizer-tree systems instead of conventional fertilizer to increase crop yields. These systems use fast growing nitrogen-fixing trees, such as the acacia tree, in sequential fallows, semi-permanent tree and crop intercropping, and other methods. In arid regions for instance, acacias are commonly intercropped with annual crops like millet and groundnuts because the trees fertilize the soil without competing with crops for water. As a result, millet yields 2.5 times more grain and 3.4 times more protein when intercropped with acacia.

A good example of this is provided by agroforestry in Niger, which has improved soil fertility and raised crop yields. Agroforestry spread rapidly once the government relaxed its forest code and allowed farmers to harvest trees on their own land. Millet and sorghum production and farmers' incomes have risen substantially on Niger's more than 4.8 million hectares of agro-forests.

Similarly, in Zambia a majority of smallholder farmers cannot afford commercial fertilizer. Agroforestry there provide an alternative for at least some government-subsidized fertilizer and has the potential to reach farmers that do not benefit from subsidy programs. Trials of maize cropping on unfertilized fields showed average yields of 4.1 tons per hectare with acacia intercropping and 1.3 tons without it. After the introduction of fertilizer-tree systems on their fields, 84% of interviewed households reported improvements in food security.



# □ Yield, quality & competitiveness: Quality

What will be the impact of sustainable practices on my crop's quality?

## Definition

It is not easy to give a single definition of product quality. Four components must be considered, which play a more or less important role depending on people's values and cultures:

- Product-oriented quality covers all aspects of the physical product that together give a precise description of the food product. Examples of product quality may be fat percentage, muscle size of meat, cell content in milk, starch content in potatoes, alcohol strength of beer, pesticides residue levels on product etc. Examples of product-oriented quality standard are ISO 9000 and EUROP classification of meat.
- Process-oriented quality covers the way the food product has been produced, e.g., without pesticides, without growth inhibition, by organic production, according to regulations about animal welfare, etc. Descriptions based on these aspects provide information about the procedure used to make the product, and these aspects may not necessarily have any effect on the product's physical properties. Examples of process-oriented quality standard are organic or fair-trade labels.
- Finally, user-oriented quality is subjective quality perception from a user point of view (end-user or intermediate user in the food chain, e.g., retailer). This covers aspects such as taste, look etc.

## Explanation

The quality of a raw agricultural material very much depends on the agricultural practices that have been used to produce it. A large part of the efforts companies make nowadays to promote "sustainable practices" are similar to promoting "good practices" – which not only have positive social and environmental effects, but also have positive effects in terms of quality, and the overall economic sustainability of the farm (See Examples 37, 38 and 39).

## RECOMMENDATIONS

See recommendations relating to yield, quality and competitiveness.

### EXAMPLE 35: SUSTAINABLE PIG PRODUCTION AND BETTER PIG MEAT QUALITY IN IOWA, USA (BITTMAN, 2011)

In 1994, Bill Niman & Becker Lane began to organize a loose network of Midwestern pork farmers into what is now the Niman Ranch Pork. Niman pork is not organic, but it is "natural" in the old-fashioned sense: no antibiotics; no stalls or crates; and pigs hang out in groups with unrestricted access to outside. The meat produced by both the Becker Lane and Niman operations is expensive — it costs at least twice as much as conventionally raised pork, and they don't produce all that much, at least by industrial standards.

However, as Becker says, "Food isn't just a pile of stuff to be measured by weight and volume, and there's a reason industrially produced meat is just a little more expensive than garbage": it is the quantity versus quality argument. The fact that the quality of the meat produced that way is appreciated is evident: neither operation can keep up with demand.

Chipotle buys all the pork shoulder that Niman Ranch offers them, and much of the rest goes to restaurants and supermarket chains around the country. About half of the non-organic prosciutto made by La Quercia comes from Niman; all of their organic prosciutto comes from Becker Lane.



**EXAMPLE 36: PARTNERSHIP WITH SMALLHOLDERS TOWARDS HIGH QUALITY COFFEE IN COLOMBIA (NESPRESSO, 2014)**

Located high on the Andes Mountain Range, the fertile soils of Caldas create perfect conditions to grow high quality coffees. But the steep slopes, which are carpeted with lush green foliage, make the terrain difficult. Despite the average farm being only one hectare in size, the work of a coffee farmer here can be tough. The Nespresso AAA Sustainable Quality™ Program came to Caldas in 2004 and since then, Nespresso has been working with smallholders to improve the sustainability and productivity of their farms.

In 2006, Nespresso set up a project with sustainable enterprise NGO TechnoServe and other key partners, to help support around 5,000 farmers in the Caldas region. The project focused on improving quality, farm productivity, upgrading wet milling, developing new pricing strategies and improving business management.

The project with TechnoServe laid the foundations for further partnerships with other organizations to provide long-term support to smallholders across Colombia. A five-year agreement with the National Federation of Coffee Growers of Colombia (FNC), is now tackling over 30,000 AAA farmers in two of Colombia's poorest regions: Cauca and Nariño. This includes an investment of USD 10 million per year to strengthen its unique AAA Sustainable Quality™ Program in Colombia.

# □ Yield, quality & competitiveness: Competitiveness

I am worried to become less competitive if I use sustainable practices

## Definition

Competitiveness is a measure of a business advantage or disadvantage in selling its products on the market, whether local or international. To be competitive, a business must be able to offer products or services that meet relevant quality standards at prices that are competitive with those of other sellers, and provide adequate returns compared to the costs incurred to produce them.

## Explanation

There is a general concern among farmers who know about costs, revenue and profit, that using more sustainable practices will generate higher costs, and/or less revenue and profit – see cost, revenue and profit section. As a result, farmers fear they will lose competitiveness if they use sustainable practices.

This is certainly a genuine worry in the short-term. But as food and beverage companies in developed countries increasingly commit to sustainable sourcing, demand for sustainably produced agricultural raw material is in fact increasing and will continue to increase – see Table 4 and Example 60. As a consequence, farmers who don't use sustainable practices will soon lose market access – regardless of how "competitive" they have been in the past from an economic point of view. See Market access section.

## RECOMMENDATIONS

In order to help reduce farmers' concern about competitiveness if they switch to sustainable agriculture while other conventional farmers don't, it is crucial to communicate clearly about your company's sustainability ambitions as well as on the resulting specific requirements for agricultural practices and/or measured impact. There are several ways to do this:

- 1 You can develop your company's own code and related communication tools (See Example 4);
- 2 You can rely on other schemes already existing, such as general or crop-specific certification schemes. A good way to decide upon the best scheme to adopt, in this case, is to look at the on-line list and benchmarking tool provided by ITC's Standards Map (See Tool 5)
- 3 Or you can participate in, and adopt the schemes developed by pre-competitive industry-wide initiatives on sustainable agriculture. SAI Platform is an example of such organization contributing to best practice definition for multiple agricultural raw materials. Its scheme "Farm Sustainability Assessment" (FSA) is an excellent tool to communicate sustainability expectations to farmers (See Tools FSA and SPA).

Table 4: Food & drink companies' sustainable sourcing achievements and commitments

COMPANIES	ACHIEVEMENTS AND COMMITMENT
The Coca-Cola Company (TCCC)	TCCC has a commitment to sustainably source key agricultural ingredients, incl. sugarcane, sugar beet, corn, tea, coffee, palm oil, soy and orange by 2020.
Unilever	36% of Unilever agricultural raw materials were sustainably sourced by the end of 2012; Unilever will source all cocoa and sugar sustainably by 2020
HEINEKEN	HEINEKEN sourced 46% of its African raw materials locally in 2013 and has committed to increase this to 60% by 2020. HEINEKEN also aims for at least 50% of its main raw materials supplied from sustainable sources by 2020



#### Tool 6: ITC's Standards Map

The Standards Map of the International Trade Center (ITC) is an interactive online database which presents comprehensive and comparable information on over 500 standards voluntary sustainability standards, audit protocols and retailer codes of conduct in more than 200 countries and 60 economic sectors. The key features of the Standards Map are:

- Analyze and compare schemes on agriculture, forestry, fisheries etc.
- Make a comparative assessment of standards requirements and assess potential costs and benefits of standard adoption.

- Review standards coverage and scope, cost and price estimates, support and assistance, governance and environmental, social, economic, ethical, traceability and quality requirements.
- Generate maps to view in which countries certified units operate, where specific certification bodies can certify/verify operations and link your queries to ITC's Trade Map.
- A specific Standards Map interface has been developed for SAI Platform's FSA (See Tool 3), which allows on-line benchmarking of FSA with all schemes and codes, as well as sustainability data gathering from farmers if they wish to share this data with their buyers.

See [www.standardsmap.org](http://www.standardsmap.org) for more information.

#### EXAMPLE 37: MASTER RICE GROWER PROGRAM PROVIDES INCENTIVES FOR SUSTAINABILITY IN THE USA (LSU AGCENTER, 2013)

The LSU AgCenter and Kellogg Company have developed the "Master Rice Grower Program", which offers incentives for farmers to adopt conservation practices according to four different levels.

The first level is bronze. It is the initial phase of participation, which includes eight hours of classroom instruction. The silver level, with an initial financial incentive, requires documentation of farming practices and participation in a rice production field day at a model farm. The gold level, offering an additional incentive, requires farmers to develop an approved conservation plan among other steps. At the top or platinum level, farmers will be paid the maximum incentive for implementing their conservation plans, showing the highest level of commitment and expertise in their production programs.

"The program has incentives to address the ultimate goals of enhancing the sustainability of Kellogg's products, as well as providing for advantages for the producer," the director of the LSU AgCenter's Rice Research Station said, adding that the biggest investment farmers have to make is their time to attend classes.

#### EXAMPLE 38: PROMOTING COMPETITIVENESS OF AFRICAN CASHEW FARMERS (RURAL 21, 2012)

The African Cashew initiative (ACi) aims to increase the competitiveness of cashew production and to reduce poverty in Benin, Burkina Faso, Côte d'Ivoire, Ghana and Mozambique. ACi has reached 240,000 cashew farmers in three years, adding about 100 USD to farmers' annual income. Focus areas include:

- 1 Success in the global marketplace depends on the production of superior nuts. Therefore, ACi helps cashew farmers meet international quality standards through training on good agricultural practices to increase yields and quality. The initiative identifies "lead farmers" who can ultimately train other farmers.
- 2 Start-up processors are provided with a range of advice services on how to grow their business, keep up with current market developments, access loans and financing, improve their use of technology and expand processing of cashew by-products.
- 3 ACi informs policy-makers and government officials about the potential of the cashew value chain. It also develops platforms for knowledge sharing about the sustainable development of the cashew sector.



# Risk Management

## Definition

Farmers make decisions every day, which have an effect on their farming operations. Many of the factors that affect the decisions they make cannot be predicted with complete accuracy: this represents risks. Farmers need to understand risks and to develop risk management skills in order to better anticipate problems as well as to reduce negative consequences (FAO, 2008).

## Explanation

A myriad of external and internal parameters have an influence, and thus present a risk to the farm production. Equipment breakdown can be a risk as can market price fluctuations. Borrowing money can be risky when considering sudden changes in interest rates. Risk also occurs as a result of changes in government policies. Such risks often have a major impact on farm income. Finally, there are risks related to the health and wellbeing of the farmer and his/her family and the supply of labor for the farm (FAO, 2008).

Even though some of these risks are external (i.e. resulting from parameters that the farmer cannot control, such as weather or price fluctuations), the choices a farmer makes in terms of farming practices play a tremendous role in mitigating those risks.

For the purpose of this guide, we decided to focus on two main categories of risks faced by a farmer contemplating the adoption of sustainable agriculture: Production risks and Financial risks.

## RECOMMENDATIONS

Whenever estimating the real risks related to a certain type of farming system, it is very useful to start a discussion with farmers about their farms' production risks as compared to the ones encountered by farmers farming differently. A good way of doing that is to organize visits to demonstration farms or discussions with local champions doing sustainable agriculture. Getting farmers to actually do a trial on part of the farm is also very good, to allow for comparison of different practices while allowing the farmer to stay in his/her "comfort" zone. In that case it is important to know that a trial should ideally last for several years – as better results from more sustainable practices may only start to show a couple of years after practices have changed (See Information sources).

For specific risks related to farm production or the farm's financial results, other recommendations are provided in the following pages.



# □ Risk management: Production risk management

## Can I reduce production risks with sustainable practices?

### Definition

Any production-related activity or event that is uncertain, represents a production risk – i.e. a risk of variability in the expected outcome or yield. Variability in outcomes from those expected creates risks to a farmer's ability to achieve financial goals.

### Explanation

Production risks stem from uncertainties regarding factors that affect the quantity and quality of farm produce over the years. There are two main categories of factors which influence production risks:

- 1 External factors on which farmers have little or no control – such as weather changes (e.g., droughts or flooding), diseases and pest outbursts; and;
- 2 Internal factors which farmers can to a great extent control – such as changes in crop variety, practices, equipment etc.

Changing practices and in particular switching to more sustainable ones therefore represents a risk for the farmer, who doesn't know ex-ante how production will be affected by this change. This obviously causes resistance, although in practice, most studies and real-life examples demonstrate that using sustainable practices actually increases farm resilience and thus reduces production risks – while increasing financial results (See Section on Cost revenue profit and Financial risk management). For instance, the comparison of organic versus conventional maize and wheat farming made by the Rodale Institute in the US (See Figure 1) shows that:

- Organic yields match conventional yields and outperform them in years of drought.
- Organic farming systems build soil organic matter, making it a more sustainable system.

## RECOMMENDATIONS

In addition to the general recommendations provided in the risk management section, several strategies and solutions can be provided to farmers to reduce production risks - depending on the farm type and conditions:

- **Diversification.** This spreads risk over several farm operations and is a successful risk management strategy because not all farm operations are likely to be affected in the same way by changing situations. Possible positive impacts are: reduction in income variability; increased cash flow, reduced debt obligations and family living expenses (See Example 39 and Example 40).
- **Build food stocks if/when the produce is not perishable.** In effect, farm produce that is stored on farm, if it can be well preserved, provides some food and/or financial reserve in case of risk in the medium-term. This makes the farm more resilient and increases food security. It also allows for selling the produce at a better price when prices fluctuate a lot (such as for green coffee).
- **For farmers to learn about and apply new technologies and practices designed to address specific risks common to their area of production** (See Information sources).



“In the past, we used chemical fertilizers, but these brought problems in case of drought, and the maize was dying. Since we have been using gliricidia (a nitrogen-fixing tree), the soil quality is very good and in spite of the drought, the maize grows and it works very well”

Hilda Majoni, maize farmer in Malawi, in the video documentary “Les moissons du future”.

**EXAMPLE 39: “MILPA” TRADITIONAL MIXED PRODUCTION SYSTEM REDUCES PRODUCTION RISK IN MEXICO (ROBIN, 2012)**

In Oaxaca, Mexico, Teresa and Eleazar Garcia use an old traditional farming system called Milpa. With this production system, farmers sow corn, beans and pumpkin seeds simultaneously. Each of these plants serves a different purpose: corn plants serve as tutor on which beans grow; and pumpkin leaves maintain good humidity levels at foot corn plants.

Moreover, the biological diversity provided by these three different plants ensures that insects, parasites and diseases appearing in the field do not attack one crop only, but spread over the three varieties of cultures while being naturally maintained at low levels – as opposed to what happens in monocultures where plants are much more fragile and less resistant to such threats.

For specific risks related to farm production or the farm’s financial results, other recommendations are provided in the following pages.

**EXAMPLE 40: POTATO FARM DIVERSIFIES INTO RENEWABLE ENERGY PRODUCTION IN GERMANY (MCDONALD’S EUROPE, 2012)**

The DexTerra farm is situated in Schellerten, Germany. The farm grows 110 hectares of potatoes on contract to the Agrarfrost company. The rest of the rotation is made up of 460 hectares of wheat, 240 hectares of sugar beet, 40 hectares of barley and 150 hectares of maize. The business has diversified into renewable energy with the construction of a 700 Kwhr anaerobic digester (AD). This has enabled the business to provide full-time employment to one of the families involved in the company and is also a profitable diversification development.

Benefits of using a digester include:

- The digester can be used as a direct replacement for inorganic fertilizers (as the nutrients are mineralized during the AD process);
- Cost savings are up to £180 (€205) per hectare;
- five tons of CO2 equivalent are saved for every ton of artificial nitrogen displaced.

This case study shows how small family farms can work together to build an economically viable and diverse business, whilst enhancing the local environment and benefitting the local community.

# □ Risk management: Financial risk management

## What are the financial risks linked to switching to sustainable agriculture?

### Definition

Financial risk occurs when money is borrowed to finance (part of) the farm business. This risk can be caused by uncertainty about future interest rates, a lender's willingness and ability to continue to provide funds when needed, or the ability of the farmer to generate the income necessary for loan repayment. In particular, smallholder farmers borrowing money at high interest rates may have particular difficulty making debt repayments. Lower than expected prices, combined with low yields, can make debt repayment difficult and even lead to the sale of the farm.

### Explanation

The three aspects that need to be considered in managing financial risks are:

- 1 availability, cost of credit and pay-back schedule;
- 2 liquidity or ability to generate cash flow; and
- 3 ability to maintain and increase capital.

Changing practices represents a risk for the farmer, who doesn't know ex-ante how the farm results will be affected by the change. This causes resistance to change even though studies demonstrate that sustainable practices actually reduce production risks (See Production cost), increase farm self-dependency as it relies less on external inputs, and increase farm results (See Cost revenue profit). For instance the comparison of organic versus conventional maize and wheat made by the Rodale Institute in the US, see Figure 1, and shows that:

- Organic yields match conventional yields and outperform them in years of drought.
- Organic farming uses 45% less energy and is more efficient.
- Organic farming systems are more profitable than conventional ones (even without price premium).

## RECOMMENDATIONS

In addition to the general recommendations provided in the risk management section, several strategies can be made available to farmers to reduce financial risks.

One solution is the development of contract farming (See Example 41 and Example 11) and in particular long-term contract farming. This allows farmers to produce agricultural raw material over one or several years, while being assured of a stable income. In such conditions, farmers are more willing and able to switch to sustainable agricultural practices as they are less worried about the related financial risks.

A second solution is the development of cost share programs, whereby costs are shared amongst several parties according to an agreed upon formula. The parties can be farmers or farmer groups only, but also traders, input providers or buyers. Many kinds of costs share programs have been developed and used worldwide, which can help farmers switch to sustainable agriculture: cost-share of inputs and supplies, cost-share of environmental practices, cost-share of specific sustainable practices, cost share of market and infrastructure.

A third solution is to provide farmers with, or facilitate their access to insurance schemes. These can take various forms, including micro-insurance premiums (See Example 41 and Example 42).

A fourth solution is guaranteed price, with or without price premium (See Section on Competitiveness).

Alternatively, you may be able to demonstrate to the farmer with facts and figures, trials or farm visits (See Information sources) that sustainably produced raw materials are better valued and paid for on the market (See also section on Competitiveness here again).



**EXAMPLE 41: MICRO-INSURANCE PREMIUM SHARE IN KENYA**  
(UNITED NATIONS DEVELOPMENT PROGRAMME, 2007)

Farmer insurance, while common in the developed world, is not very common in many developing countries with small growers. In that context, Kilimo Salama (Safe Farming) makes crop insurance affordable for farmers through a scheme of premium sharing with input providers. Farmers can insure as little as one kilo of fertilizer or seed by buying a premium at 5% above cost of the input; this payment is matched by the input provider (seed or fertilizer company).

Twelve thousand farmers participated in the initial pilot; the program now has been expanded to cover harvest and livestock loss with a goal of reaching 50,000 farmers and, eventually, financial sustainability.

**EXAMPLE 42: LOAN & RISK POOLING IN A SMALLHOLDERS COMMUNITY**  
(UNITED NATIONS DEVELOPMENT PROGRAMME, 2007)

Because the availability of collateral is unlikely in developing countries, some borrowers, especially in agriculture, have formed risk pools, which combine the uncertainty of individuals into a calculable risk for large groups. For example, if a small farming community is jointly responsible for a single loan, one farmer may fail, but the group can pool their revenue to pay back the loan. While this is a complicated approach that requires the cooperation and participation of several borrowers (often through the form of a local cooperative), it can reduce risk for both the lenders and borrowers.





**EXAMPLE 43: CONTRACTING WHEAT GROWERS IN THE UK (IMPEY, 2014)**

Kellogg's recently decided to secure supplies of wheat from British cereal growers in order to work with them in the long-term towards yields improvements and profitability increase – while also bringing environmental benefits at the field level. "Connecting farmers with consumers is an inevitable consequence of our involvement, but really, this is all about partnership", explains the company's senior sustainability manager, Richard Burkinshaw. The partners in the UK initiative include two millers, who have been chosen for their expertise. Kellogg's is keen to know where the wheat used in its breakfast cereals is coming from and who is growing it, both for provenance and food safety. "But by taking a whole farm approach to procurement, we believe that our growers will get a long-term reward, which will add to their business success."

Initially, the company's requirement for Group 3 and soft Group 4 varieties is being supplied by two grower groups, who are taking part in a pilot scheme through the company's Origins Program. At this stage, both are small groups of just eight members – one based in Yorkshire and the other in Northamptonshire. But the intention is to expand capacity over a two-year period. "It's a very different approach from that taken by other food companies and there will be some fine-tuning as we receive feedback," notes Burkinshaw. "It is based on the same principles as an Origins Program for sourcing rice in Spain, which now has over 30 farmer members and is in its second year", he reveals. In two years, these growers have seen significant yield increases and better resource efficiency. Origins growers participate in four technical meetings each year, which involve classroom-based training, visits to showcase farms and best practice implementation.



# 7 > Resources Factors

Farming requires resources: land, water, labor, capital, knowledge, the capacity to apply adequate technology, cows, sowing, seed, manure, machines and so on.

The extent to which a farmer or farmer group (e.g., cooperative) has access to these various resources plays a major role in their willingness and capacity to change practices. This chapter explores the hurdles and drivers related to farmers' access to the following resources: financial resources, new technology and equipment, labor capacity as well as information sources.

## TABLE OF CONTENTS

<b>Financial Resources</b>	80
Financial resources: Loans and credits	81
Financial resources: Grants and funding	83
Financial resources: Climate finance	86
Financial resources: Market access	88
<b>New Technology and Equipment</b>	90
<b>Labor capacity</b>	92
<b>Information sources</b>	94
Information sources: Recommendations	96
Information sources: Inspiring examples	98
Information sources: Practical training	100





## Financial Resources

### Definition

There are certainly some farmers in the world with sufficient savings to finance all their farm needs. But the majority of farmers are not in this situation. And most of them, at some point in the life of their farm, need to purchase equipment, land, or improvements for their land that require a little (or a lot) of extra capital.

Finding financing is one of the most challenging obstacles for a lot of agricultural entrepreneurs, in particular smallholder farmers. There aren't many options out there, and the options that exist, are often provided by organizations that are reluctant to invest in agriculture. Moreover, few farmers have the experience and specialized knowledge to put together a loan application confidently.

Several financial resources do exist for farmers, though. These include traditional resources – such as credit and micro-credit organisms – as well as innovative resources – such as groups providing grants or climate finance organisms, as detailed in the following pages.

We also included in this list of financial resources market access, as market access is what allows farmers to receive money for their production, which can be used to finance their farm needs.

---

“Young people usually want to jump into farming. There is always lots of beginning excitement. They are young and see farming as exactly what they want to do. They want to get farms established quickly, but don't have financial resources for it”

Tadj Schreck, young North Carolina farmer





# □ Financial resources: Loans and credits

## Can I borrow money for sustainable farming activities?

### Definition

Credit is the provision by an organization of a resource to a person or company, against the commitment to be reimbursed later on, at specified rate and date. Access to credit is needed by farmers in order to purchase inputs (e.g., equipment, agrochemicals) or to change farm practices while waiting to see the net financial benefits of that change.

### Explanation

Unless farmers have savings, their ability to borrow money will largely determine their capacity to invest in products and machinery aimed at improving the sustainability of their practices.

Traditionally in developed countries, farmers have access to credit via banks if they can demonstrate that they will be in a position to pay back their loan in due time. The problem is that many lenders are hence more concerned with the profitability of a farming operation, and the real or perceived ability to reimburse the loan soon, than with the sustainability of a farm. Moreover, there appears to be some perception amongst lenders that sustainable agricultural practices may be less profitable than conventional practices, which makes the borrowing of money for the adoption of sustainable practices even more difficult for farmers. This presumption may be changed if evidence of profitability and positive cash flow can be presented by the farmer using sustainable practices. Information and education is the key here: education for lenders on the economics of sustainable practices and the markets those systems can tap, and information through data sets for producers to demonstrate profitability to lenders. (Bruckner & Preston, 2011)

In developing countries, farmers often cannot access credit via traditional banks. Some initiatives have thus developed over the last decades (known as “micro-credit”) to provide financial services to poor farmers and small entrepreneurs.

## RECOMMENDATIONS

There are several ways to help farmers borrow money towards the adoption of more sustainable practices:

- A first possibility is for your group to act as a link between farmers and appropriate already existing credit organizations (banks, micro-credit organizations).
- A second, and potentially complimentary option, is for your group to act as a guarantee for farmers towards a credit organization.
- A third possibility is for your group to help farmers build their own credit system on their own and/or with other stakeholder groups, such as a farmer cooperative lending money to its members – see Example 45.
- A fourth possibility is for the company to directly “lend” some money to supplying farmers – for instance by paying part of the supply they will later on receive, ahead of the actual supply date (pre-payment) – see Example 44.

A complimentary, longer-term action that would also be very helpful to help change today’s situation, is to put pressure on finance institutions so they increasingly integrate sustainability concerns in their lending decision processes. We could even think of setting up a “sustainable loans” report where banks will be reported positively if they support sustainable practices.



“Alternative financing resources (...) are critical for fueling the growth of small businesses like ours - businesses that are too young or with too little net worth to be considered ‘bankable’ elsewhere, regardless of our track record and viability”

Joe Bossen, founder of Vermont Bean Crafters

**EXAMPLE 44: CREDIT FOR FERTILIZER HELPS IMPROVE COFFEE GROWERS’ LIVELIHOODS IN PERU (FARMING FIRST, STORY: FOOD AND NUTRITION SECURITY, 2014)**

Coffee-growers in Peru have received support from a homegrown program that provides credit for purchasing fertilizer. The “Family Program”, which was set up by coffee exporter Comercio & Cia in 2003, has given farmers interest-free credit for three consecutive years, whose crop production is then sold back to Comercio & Cia for international trade.

The “Family Program” was launched, to make credit for fertilizer available and to train farmers in the agronomic management of crops. In return, Comercio & Cia is the recipient of the increased yields which are sold to the company at standard price. The success of the scheme was gradual, as farmers were nervous about changing their farming practices, but in response to the improved yields and consequent livelihood improvements, the program quickly expanded.

**EXAMPLE 45: RESOURCE MOBILIZATION—SAVINGS, REVOLVING FUNDS AND LOANS IN UGANDA (NYENDE, NYAKUNI, OPIO, & ODOGOLA, 2007)**

In a conservation agriculture program in Uganda, farmer field schools addressed farmers’ economic needs by setting up a revolving fund. Farmers deposit group savings weekly to raise funds for their respective groups. Some field schools have also devised other ways to raise funds weekly for individual members. This has strengthened the groups; some members wanted individual loans for own activities and this is being addressed by group effort.

Having access to a group revolving fund increased the interest of participating farmers in conservation agriculture and enabled them to adopt its technologies. The capacity of field schools to mobilize their own resources was found to be a good initiative that deserves to be strengthened and replicated by others.



# □ Financial resources: Grants and funding

Can I get non-repayable financial support for sustainable agriculture?

## Definition

Grants and funding are non-repayable funds disbursed by one party (often a governmental body, a corporation or a foundation), to a recipient (here, a farmer or farmer group). Most grants are made to fund a specific project and require some level of compliance and reporting. The grant writing process involves an applicant submitting a proposal to a potential funder, most generally in response to a Request for Proposal from the funder.

## Explanation

A wide range of governmental, development, social and environmental groups offer “free” incentives to farmers who wish to engage in sustainable agriculture. The difficulty for farmers is to know about these opportunities, and to access them. At times, grants or other types of “incentives” are part of a national or regional scheme, and farmers hear about these opportunities thanks to national campaigns, or via farmer groups or cooperatives they belong to. For example, a conventional agricultural producer can receive up to \$20,000 per year to switch to organic farming from the U.S. Department of Agriculture (USDA)’s Environmental Quality Incentives Program. But at times, grants or funding are provided by NGO’s, in which case farmers can hear about these opportunities only through good local and/or global networks. However, not all farmers have access to such good networks.

## RECOMMENDATIONS

There are two main ways to help farmers access funding for sustainable agricultural practices:

- help farmers learn about funding opportunities, and if possible, help them apply for grants provided by governmental authorities or NGO’s – see Example 54.
- for your company to develop a “fund”, on its own or in cooperation with other groups such as NGOs, which directly provides grants to supplying farmers – see Example 46 and Example 48.

We cannot provide any thorough overview of these funding opportunities here, because they are very diverse in regional scope (sometimes applicable to a local region only, sometimes applicable to a country, or global) and in thematic scope (some focus on overall farm management, others on environmental or social matters). But we can recommend ways to inform farmers about these grants, or even to set up a grant system for farmers.



#### EXAMPLE 46: RETAIL STORE PROVIDES GRANTS TO LOCAL FARMERS IN CALIFORNIA, USA

In 2014, Whole Foods Market stores in Northern California helped fund 40 grants for local food and body care product makers to develop their business – one for each of the region’s 40 stores. This is the first time the company has implemented a grant program. Stores fund the grants by donating 5% of the day’s total sales, and a non-profit organization is administering them.

Members of each store’s community selected the 40 winners via Facebook, from among more than 300 initial applicants. To qualify, applicants had to grow or make their product in Northern California, meet the retailer’s quality standards, and earn a maximum of \$100,000 in annual revenue. Applicants did not have to already be a Whole Foods Market supplier, and the company is not requiring winners to take on a more long-term relationship with them following their receipt of grant (although it is open to the conversation).

It is expected that each grant will total between \$3,000 and \$7,000 – enough to conduct a food safety audit, earn Organic certification, or buy a batch of raw ingredients. More information is available on at <http://www.localfoodmakergrant.com>

#### EXAMPLE 47: FARMERS RECEIVE GRANTS FOR INTEGRATED AGRO-ECOLOGICAL PRODUCTION IN BRAZIL

A farm settlement called “Pequeno William” located 38 kilometers out of Brasilia, is an example of the successful farming experiences that have flourished during the last three years in Brazil. The Sustainable and Integrated Agro-ecological Production scheme was implemented in the area in order to grow products without pesticides or agrochemicals. The 21 families living in the settlement grow vegetables in several collective areas. In 2013, the crops yielded \$30,000 worth of produce, which was purchased by the Government.

This project was created thanks to the support of the Technical Assistance and Rural Extension Enterprise (Emater), the Brazilian Service of Support to the Micro and Small Enterprises in Brasilia (Sebrae) and the Foundation of Banco do Brasil. The families are also beneficiaries of Bolsa Família and of the Productive Rural Activities Program, which is part of a wider strategy called Brasil Sem Miséria targeting farmers in situations of extreme poverty. Besides technical assistance, the families have received grants which are paid in biannual transfers over two years in order for them to buy inputs and equipment.

Over the last decade, the federal government has purchased agricultural products from 388,000 family farmers at market prices and invested \$2.3 billion. This represents more than four million tons of fresh and healthy food, benefitting more than 23,000 social welfare organizations.



**EXAMPLE 48: THE KNORR SUSTAINABILITY PARTNERSHIP FUND  
(SAI PLATFORM, IMD, & ITC, 2013)**

Unilever's Knorr brand has set up the Knorr Sustainability Partnership Fund to support growers and suppliers on complex sustainable agriculture projects that they may be unable to tackle alone. Knorr grants 50% of any agreed project budget, matched by an equivalent investment from the supplier or the grower. This enables the supplier to try out new ideas and accelerate implementation of sustainable agricultural practices.

Knorr is co-investing one million Euros per year with its suppliers and farmers in knowledge and equipment. Unilever's direct suppliers make the application, but they can do so on behalf of a grower or group of growers working for that supplier. Evidence of an equivalent investment by the supplier or grower is required.

Priority is given to projects that:

- Bring new knowledge to the industry
- Bring suppliers together in a region to tackle a specific issue
- Enable suppliers & growers to accelerate the implementation of sustainable agricultural practices
- Are relevant to consumers of Knorr products and provide tangible stories.

Projects supported by the fund focus on progress in the following areas:

- Farmer-led experiments for new knowledge (e.g. drip irrigation, precision agriculture, air & soil protection);
- Biodiversity projects within a landscape/area or group of suppliers in the area;
- Ensuring water resources are protected and sustainable within a landscape/area;
- Reducing pesticide use.

# □ Financial resources: Climate finance

How can I get money for my contributions to fight climate change?

## Definition

In its broadest interpretation, climate finance refers to the flow of funds toward activities that reduce greenhouse gas emissions, or help society adapt to climate change impacts. It is the totality of flows directed to projects aimed at reducing climate change.

## Explanation

Climate finance is a rather recent development in the global economy, whereby money is raised against positive contributions to climate change. It thus represents a financial instrument to pay for farmers' sustainable agricultural practices which reduce greenhouse gas emissions (either directly or through sequestration). Climate finance can in this way catalyze transition to a more sustainable agricultural sector while fostering food security and promoting local economic development. Climate finance in theory can therefore be used as an instrument to overcome barriers to smallholders' adoption of sustainable agricultural practices by accessing new funds, designing new disbursement mechanisms, and

## RECOMMENDATIONS

Companies are in a good position to approach climate finance groups (e.g., the World Bank Bio Carbon – see examples in this section) and to help direct their money towards groups of supplying farmers in developing countries, who are willing to switch to sustainable practices with a positive effect on climate change.

Alternatively, companies can set up climate finance systems themselves – see Example 51.

forging new partnerships. (Streck, Burns, & Guimaraes, 2012)

## EXAMPLE 49: FINANCIAL INSTRUMENT TO ACHIEVE SUSTAINABILITY GOALS IN EUROPE (EUROPEAN PARLIAMENT, 2014)

The Natural Capital Financing Facility ('NCF') is a new financial instrument created by blending European Investment Bank (EIB) with European Commission financing through the LIFE program. NCF will provide market-based financial solutions to support bankable projects, which are or have the potential to be revenue-generating or cost-saving, promoting conservation, restoration, management and enhancement of natural capital. The objective is to demonstrate to investors their attractiveness for the longer term, in order to develop a sustainable flow of capital towards projects and achieve scale. The Facility will provide debt and also equity instruments. The NCF may finance projects directly or indirectly through intermediaries which will then provide financing to final beneficiaries.

The NCF has started with a pilot phase of three to four years (2014-2017) with a total amount of EUR 100m for the financing of nine to 12 projects. Projects which are targeted are projects as: Green infrastructure (e.g. green roofs, green walls, rainwater collection / water reuse systems, flood protection and erosion control); Payment for ecosystem services (e.g. programs to protect and enhance forestry, biodiversity, to reduce water or soil pollution), and; Biodiversity offsets / compensation (e.g. habitat banking, on-site and off-site compensation projects). The Facility will finance projects located in the EU-28.



#### EXAMPLE 50: FARMERS EARN MONEY FROM FOREST CARBON CREDITS IN INDIA (TIMES OF INDIA, 2013)

Approximately 1,500 farmers owning 1,600 hectares in Andhra Pradesh and Orissa (India) became the first lot of farmers in Asia and the second in the world to earn income by selling carbon credits from an AR CDM project (Afforestation and Reforestation Clean Development Mechanism). The 1,500 farmers of Srikakulam, Vizianagaram and Visakhapatnam in Andhra Pradesh and Rayagada, Koraput and Kalahandi in Odisha earned Rs 85.28 lakh by selling 79,811 carbon credits, for which they received their cheques at a program organized at Gitam University in the city.

The project was initiated in 2004 with the intention of improving the lives of farmers in rural areas by allowing them to raise tree plantations on highly degraded agricultural lands. Following that, a project idea note was prepared and subsequently a team from the World Bank visited the country for inspection in 2006.

During the next year, VCCSL\* entered into an Emission Reduction Purchase Agreement (ERPA) with the World Bank for sale of carbon credits generated under this project at \$4.05 per carbon credit. Each carbon credit is equal to one tonne of carbon dioxide sequestered.

\*VCCSL is a Knowledge Processing Organization (KPO) established in 2005 to integrate business, development and environmental conservation to provide economic, social and environmental benefits both locally and globally.

#### EXAMPLE 51: "DANONE FUND FOR NATURE" HELPS FINANCES IN SENEGAL, DRC, INDIA & INDONESIA (DANONE COMMUNITIES, 2014)

The Danone Fund for Nature and Livelihoods Fund are unique investment funds created by Danone Group, the Ramsar Convention on Wetlands and the International Union for Conservation of Nature (IUCN) to restore carbon credits with high societal value to its partner investors. They raise funds from their investors and reinvest them into large-scale projects to generate long-term viability. The Funds seek to find the best balance between the financial value of these credits and the value created for local communities. The mechanism can be summarized as follows: through the carbon economy, the fund contributes to ecosystem restoration and development of the local economy and thus to the fight against poverty in countries where it invests.

"Danone's food business is closely linked to nature's cycles. Protecting natural springs and producing milk in sustainable conditions have been key concerns of our business units for years. When we opted to put nature at the heart of our strategy, we adopted an ambitious target: reducing our carbon footprint by 30% from 2008 to 2012. Livelihoods is a new step forward, with carbon offset projects that associate restoration of natural resources and food security — two concerns at the heart of Danone's corporate mission", says Myriam Cohen-Welgryn, General Director of Danone Nature.

Livelihoods programs are developed into four countries: Senegal, Democratic Republic of Congo (DRC), India & Indonesia.



## □ Financial resources: Market access

Will sustainable agriculture improve my market access?

### Definition

Market access is the capacity of a producer to penetrate a market, and/or stay in a market, and sell goods produced on his/her farm.

### Explanation

More and more consumers show interest in social and environmental issues, and more and more food companies commit towards sustainable sourcing (See Table 6). For these people and companies, it is increasingly becoming crucial to buy products and raw materials coming from sustainable sources (See Example 60).

This fact in itself, provided that the information gets to farmers in the right way, represents a potential strong driver for farmers to adopt sustainable practices: producing sustainable products is a way for them to keep their actual customers, or to access new ones. This can be done by selling to food companies or retailers who care for the way agricultural materials are produced, and/or to consumers via direct sales and markets.

### RECOMMENDATIONS

See recommendations in competitiveness section.

Depending on the target group, more or less innovative means and tools can be used to help farmers increase market access. For instance, the on-line ITC-SAI Platform's FSA tool helps farmers quickly assess the level of sustainability of their farm, and what codes or schemes they could qualify for with such level (See Tool 3).

Another example of innovative communication tool used even for smallholder farmers in Africa, is the use of sms to share information with farmers (See Example 60).

---

“It is good to see our customers taking an active interest in the production systems their suppliers use to produce their raw materials and then promote best practice within their supply base”

David Brass, The Lakes UK (egg farm)





**EXAMPLE 52: BETTER COFFEE PRODUCTION AND MARKET ACCESS FOR SMALL-SCALE COFFEE PRODUCERS IN UGANDA (SAI PLATFORM, MEMBERS PROJECTS, 2014)**

The first project of the DE Foundation aimed at improving market access for coffee producer groups. Small-scale farmers, particularly in Uganda, sell such low volumes of coffee that individually they have very little influence on how it is traded. Addressing this issue of small volumes was crucial for improvement to happen. This was done in two ways:

- 1 Improving productivity through farmer training.
- 2 Form so-called farmer-owned and managed Depot Committees (DCs) where producers sell their coffee as a group, opening up local markets to competition.

The project activities included: Forming and training DCs to become better organized and capable of providing more benefits to their members; Assisting DCs in accessing services such as operational credit, training and farming input, Training farmers in application of Good Agricultural Practices. With aggregated volumes, DCs became very interesting business partners to various traders. As a result, prices paid in some of the project areas increased by up to 20%.

**EXAMPLE 53: UNILEVER INCREASINGLY SOURCES FROM SUSTAINABLE PRODUCERS ONLY (GUARDIAN SUSTAINABLE BUSINESS PARTNER ZONE, 2014)**

Unilever has reduced risk to its supplies by increasing its purchases of agricultural raw materials from sustainable sources to 48% in 2013, up from 14% in 2010. This is over a third of the way towards the Unilever Sustainable Living Plan target of sourcing 100% sustainably by 2020.

Particular progress has been made in the sustainable sourcing of vegetable, cocoa, palm oil, sugar, vanilla and sunflower oil by working closely with suppliers, industry bodies and NGOs.

By the end of 2012, 43% of cocoa came from sustainable sources, with 64% of cocoa for Magnum achieving Rainforest Alliance certification. Unilever has been working with supplier Barry Callebaut to run farmer field schools with 20,000 small farmers across West Africa (See FF5). A collaboration with Symrise, one of the world's largest vanilla suppliers, has led to Unilever's first Rainforest Alliance-certified vanilla, with more than 1,100 farmers so far having received training with almost 5,000 more set to benefit from the program. Also, between 2007 and 2012, around 450,000 tea farmers have been trained on the Rainforest Alliance tea standard, in partnership with Unilever, and in preparation for certification.

Marc Engel, chief procurement officer, said: "Climate change, water scarcity, unsustainable farming practices, and rising populations all threaten agricultural supplies and food security. Half of the raw materials Unilever buys are from the farming and forestry industries, so ensuring a secure supply of these materials is a major business issue."

"However, sustainable sourcing is not only about managing business risks, it also presents an opportunity for growth, allowing brands to stand out in the marketplace."

# ■ New Technology and Equipment

## Do I need new technology or equipment for sustainable agriculture?

### Definition

Agricultural equipment consists of farm field and farmstead machinery used for the production of crops and agricultural livestock. Major product lines in conventional industrial agriculture include wheel and track-laying agricultural tractors, planting and fertilizing machinery, tillage equipment, fertilizer and chemical application equipment, harvesting machinery, haying and mowing machinery, milking machines and other farm dairy equipment, poultry equipment, barnyard equipment, sprayers and irrigation equipment, grain dryers and blowers, commercial turf and grounds care equipment, and parts for farm machinery.

### Explanation

New enterprises or new ways of farming often require new technology or farm machinery. This generates two main barriers:

- 1 Already owning conventional technology and equipment is often a barrier to purchasing new ones: farmers generally are more keen to acquire new equipment when the equipment they currently use is old and needs to be replaced.
- 2 Knowing how to use new technology and equipment: farmers will be more interested in using new equipment if using it is similar to the using conventional equipment they are already familiar with, or if they are receiving training on this new equipment.

## RECOMMENDATIONS

Technology and equipment needs must be considered carefully in developing transition plans with farmers. When undergoing a transition, starting with one of the least expensive and most user-friendly alternatives is often advisable because technology and equipment requirements may become more apparent as the process continues. This issue is typically one on which farmers require advice and training before making a switch to new, more sustainable practices – see Example 54 and Example 55. The next section on Information sources provides examples of knowledge sharing and advice provision on sustainable agriculture.

Options for farmers to obtain new technology or equipment vary, but can include borrowing, renting, purchasing, sharing or redesigning existing equipment to meet current and future needs. One way a company can help farmers access equipment is sharing the cost of such equipment (See Example 56), or to subsidize its acquisition – on its own or in cooperation with other groups (See Example 32).

---

“We work with our partners from processing and distributing industry on the development of agricultural practices and look forward to sharing experiences and new technologies with farmers from all over Europe.”

DexTerra Farm, Potatoes, Germany



**EXAMPLE 54: TRANSFER OF TECHNOLOGY BY TRAINING IN VIETNAM (FARMING FIRST, 2009)**

In Vietnam, where some 55 percent of the labor force is involved in agriculture, traditional farming methods dominate the way small growers in the country work. Lacking access to technology and knowledge on how to protect their harvests, millions of farmers in Vietnam struggle with low yields.

To transfer skills and technology to Vietnam's farmers, CropLife Vietnam is working closely with the Plant Protection Department of the Ministry of Agriculture and Rural Development (MARD) on farmer training programs. In 2008, 1,505 growers of vegetables, fruit and tea in nine provinces benefited from training provided by the private-public partnership.

**EXAMPLE 55: INNOVATION AND TRAINING IMPROVE LIVELIHOODS OF MANGO GROWERS IN THE PHILIPPINES (FARMING FIRST, 2011)**

To improve safety for spray applicators, CropLife Philippines partnered with the Fertilizer and Pesticides Authority between 2006 and 2008 to develop an innovative crop protection product applicator. The partners have documented the methodology in a training handbook to benefit the industry, applicators and growers. In addition to creating the extendable pole for spray applicators, the partners also launched training initiatives on Good Agricultural Practices, including Integrated Pest Management (IPM). Farmers have learnt how to identify plant diseases and insect infestation levels and make decisions on the type and amount of pesticide to use by following the exact instructions on the product labels.

**EXAMPLE 56: PARTNERSHIP PROGRAM BETWEEN PEPSICO AND POTATO GROWERS IN RUSSIA (PEPSICO, PERFORMANCE WITH PURPOSE: SUSTAINABLE AGRICULTURE, 2010)**

In 2000, PepsiCo launched a partnership program with potato cultivating farmers in Central and Southern Russia designed to enhance the supply of high quality potatoes. As part of the program, farmers receive quality seeds, agro machinery, loans and credits.

This support constitutes up to 30-40% of operational financing to support the cost of planting. The program also supports the construction of climate controlled storage warehouses. Farmers partnering with PepsiCo in Russia receive loans to buy seeds and fertilizers and receive constant support and consultancy from PepsiCo agro experts. Thanks to the PepsiCo Agro Program, farmers have the potential to increase their crops yields from 13 tonnes per hectare (Russian average crop) to 24 tonnes per hectare.





## ■ Labor capacity

### Will the use of sustainable practices require more labor?

#### Definition

We mean by labor capacity the quantity of work performed by farmers and workers on the farm. In general, this labor capacity and labor needs are accounted for in number of hours of work per hectare per year.

#### Explanation

Some farmers engaged in conventional agriculture think that switching to more sustainable practices, such as conservation agriculture, will require more labor capacity. This is partly true and partly false: it all depends on the farm's characteristics and situation. For some farms, labor needs may increase when adopting sustainable practices, and this may or may not be compensated with a better work spread throughout the year. For other farms, the use of sustainable practices may actually require "less labor" and thus less labor capacity (See Labor costs).

The FAO reports that sustainable agriculture often reduces the number of farming operations needed throughout the year (Food and Agriculture Organization, 2014). Table 5 and Table 6 provide a simple overview of the labor requirements for bean production in Brazil, using conventional or conservation agriculture. Table 8 in particular shows that conservation agriculture using animal traction can use up to 86% less labor. Similarly, the time required to prepare the land using a tractor is reduced by 58%.

Saving labor costs and overcoming the "difficulty to secure reliable labor" at times are even drivers for some farmers towards the adoption of sustainable practices. (Fazio, 2014).

#### RECOMMENDATIONS

It can be useful to start a discussion with farmers about their farms' labor needs and how these may evolve when switching to sustainable practices. The best way to get to a common understanding is to show concrete changes.

Organizing visits to demonstration farms or discussions with local champions doing sustainable agriculture, is one option.

Encouraging farmers to actually do a trial on part of the farm is also very good, to allow for comparison of different practices while allowing the farmers to stay in their "comfort" zone. In that case it is important to know that a trial should ideally last for several years – as better results from more sustainable practices may only start to show a couple of years after practices have changed (See Information sources).

Table 5: Time requirement for mechanized operations under various bean production systems in Brazil

OPERATION	CONSERVATION AGRICULTURE (HOURS/HA)	CONVENTIONAL TILLAGE (HOURS/HA)
Knife roller	0.89	-
Direct seeding	0.76	-
Spraying	1.2	0.6
Harvest	0.93	0.93
Ploughing/disking	-	1.37
Levelling	-	1.38
Conventional planting	-	0.89
Ridging	-	1
<b>Total</b>	<b>3.78</b>	<b>6,17</b>

SOURCE: (FOOD AND AGRICULTURE ORGANIZATION, 2014)

Table 6: Time requirements for land preparation activities under conventional tillage and conservation agriculture (hours/ha)

CONVENTIONAL TILLAGE		CONSERVATION AGRICULTURE	
OPERATIONS	TIME REQUIRED (HOURS/HA)	OPERATIONS	TIME REQUIRED (HOURS/HA)
Tractor		Tractor	0.9
Ploughing	1.5	Knife roller	0.3
Harrowing	1.4	Spraying	
<b>Total</b>	<b>2.9</b>	<b>Total</b>	<b>1.2</b>
Animal traction		Animal traction	
Ploughing	25	Knife roller	3
Harrowing	5	Spraying	1.5
Furrowing	3		
<b>Total</b>	<b>33</b>	<b>Total</b>	<b>4.5</b>

SOURCE: (FOOD AND AGRICULTURE ORGANIZATION, 2014)

# Information sources

Traditionally, access to information and training on good agricultural practices is provided by public extension services. In some countries, public extension services exist and reach a large number of farmers and the ratio of extension workers to farmers is quite positive. For example in China and Vietnam, on average there is one extension worker per 280 farm households. In Indonesia, it is estimated that each extension worker covers about 2.8 villages. However, data also show that coverage is not uniform, and that positions are not always filled, limiting the support farmers are able to receive. For example, in India, extension services only reach 6.8% of farmers. When farmers do not have access to public extension services, they either stay without training and information, or they use other sources of information if they exist. In India, as public extension does not reach many farmers, it is estimated that 17% of farmers get their information from other farmers and 13% from input providers. In Australia, a wide range of sources of information are used by farmers, but family and friends as well as general media represent the main source of information – see Table 7. (Global Forum for Rural Advisory Services, 2012)

The above mentioned numbers show there is a global need to develop information sources and communication channels for farmers to access information sources. The challenge is basically two-fold:

- 1 There is a crucial need to develop good information sources on sustainable agriculture. By “good” information practices, we mean all of the below:
  - Relevant: addressing sustainability issues that are relevant to the audience, for commodities that are relevant to them too. For instance when SAI Platform decided to commission Access Agriculture to develop two videos on sustainable coffee production in Uganda, it was told that images should be carefully picked, as there was no way a producer of Arabica coffee would accept following recommendations provided with accompanying shots of Robusta coffee trees – see Example 38;

- Valuable: the information must make clear what added value the proposed practices will bring to the farmer (e.g., reduced financial risk, better crop quality, better yields, fewer farm accidents, premiums, etc.);
  - Adapted to the local context: adapted to the agronomic, geographical and climatic conditions of the audience (a farmer cultivating crops in a flat country will not care about guidelines on terracing in mountainous regions and will probably lose interest in the overall training);
  - Pedagogical: using the right means to captivate the audience’s interest and transmit the information, such as using exciting pictures, drawings or video clips, and using local language (a handbook in written form will probably bring little or no value at all to an illiterate farmer).
- 2 There is a crucial need to develop efficient channels to bring relevant existing information to farmers.

The following three pages present three main types of information sources available to farmers:

- 1 “Recommendations”: grouping all sorts of recommendations and guidelines in various forms: written, audio, video or even phone messages.
- 2 “Inspiring examples”, grouping all sorts of real-life examples of farmers who have adopted sustainable practices themselves and who can share their experiences with others in a direct or indirect form: through farm visits, or via different media showing what local champions do and how they do it (articles, videos etc.).
- 3 “Training” provided by extension organizations of various types: this is the case of the very well-known and appreciated type of training called “Farmer Field Schools” mostly in developing countries.

Many studies report that the most efficient ways to bring the right information to most farmer groups is to provide concrete, real-life examples through demonstration farms or even better, farmers’ exchanges and farm visits so the information comes from peers who are trusted better than any other group of stakeholders.



“I used to spend all of my spare money on chemical fertilizers. Then I heard of ICRAF and how it grows maize using trees as fertilizer. I searched for information and they came to train me. If you want me to teach you, come to my place”

Mark Majoni, maize farmer in Malawi, in the video documentary “Les moissons du future”.

Table 7: Farmers’ sources of information and advice in Australia  
(Mark, Dale, Andrew, & Daniel, 2009)

FARMERS’ SOURCES OF INFORMATION/ADVICE	PERCENTAGE (%)
Other farmers/family/friends	76
General media	74
Agricultural media	73
Accountants	53
Agribusiness agents	42
Internet	37
State government	28
Industry groups	21
Landcare or similar groups	21
Catchment groups	16
Private consultant	14
Local government	8
Federal government	8
Rural financial counsellor	8
Other	1



## □ Information sources: Recommendations

Where can I get recommendations about sustainable agriculture?

### Definition

Across countries, research institutes, universities, NGOs, governments and companies alike put considerable effort into developing suitable guidelines and training materials for their staff and the farmers with whom they work.

In particular, a multiplicity of Good Agricultural Practices (GAP) codes, standards and regulations have been developed with an aim to improve the sustainability of agricultural practices at farm level, paying special attention to various issues: Ensuring safety and quality of produce in the food chain, capturing new market advantages by modifying supply chain governance, improving natural resources use, workers health and working conditions or creating new market opportunities for farmers and exporters in developing countries. They are often produced as written recommendations, plus sometimes complimentary videos, or even radio messages.

### Explanation

Research shows that farmers across the world, but particularly in developing countries, lack access to information on good agricultural practices. As said before, many recommendations already exist, but several problems are still preventing farmers to access and use these: 1- the necessity to provide really meaningful guidelines that are adapted to the local needs and conditions of farmers; 2- the necessity to develop efficient channels to bring the relevant information to farmers.

Several ways have been tried recently to tackle these problems. One example is Access Agriculture, an international NGO which showcases agricultural training videos in local languages. On their website you can find and download examples of videos or order a DVD copy. The audio tracks can also be downloaded by radio stations.

### RECOMMENDATIONS

Farmers often crave access to information on good practices, and this represents a great opportunity to “promote” sustainability. Many options are available for your company, on its own or in collaboration with other groups such as extension services, NGOs and carefully-chosen input providers, to bring this type of information to your suppliers. If the information you want to bring is in form of “recommendations” rather than concrete examples (next chapter) and practical training (following example), then you may pick from the following options:

- Recommendations provided in a written form, ideally with pictures or drawings to make the material more attractive to go through, and also to be more accessible to people who cannot read well (especially smallholders in developing countries) – see Example 64.
- Recommendations provided in an audio and/or video form, which tend to be more appreciated by farmers but are more difficult to provide to smallholders in developing countries – see Example 65 and Example 66.
- Other types of recommendations, such as sending sms messages by phone – see Example 67.



---

“I am pleased to have seen this film as the producers in our village will start caring much better for their rice seed to obtain good crops. As such it has given us courage, we rice traders, to keep on buying paddy from them to resell, and this will give us joy.”

Affoussath, trader, Oroukayo, Benin

#### EXAMPLE 57: TECHNICAL MANUAL ON CONSERVATION AGRICULTURE IN EAST AFRICA (SUSTAINET EA, 2010)

SUSTAINET EA as a regional Network operating in Eastern Africa, endeavours to bridge the information gap on sustainable agriculture to reach smallholder farmers through publication of simplified technical manuals on good agricultural practices. These manuals contain useful technical information on good agricultural practices that offer practical answers to questions normally asked by farmers of what, why, how. This manual is part of SUSTAINET’s effort to promote sustainable agriculture in the region. It is developed to reflect the experiences and views sustainable agriculture practitioners (farmers, researchers, member organizations and institutions of higher learning).

SEE: [HTTP://WWW.FAO.ORG/AG/CA/CA-PUBLICATIONS/TECHNICAL\\_MANUAL\\_CONSERVATION\\_AGRICULTURE.PDF](http://www.fao.org/ag/ca/ca-publications/technical_manual_conservation_agriculture.pdf)

#### EXAMPLE 58: ACCESS AGRICULTURE: INFORMATION SOURCE ONLINE WITH VIDEO

Access Agriculture is an international NGO which develops and releases agricultural training videos shot around the world, and dubbed in many languages to facilitate learning across countries. Every interested group or person can see examples of videos, download or order a copy on DVD. Audio tracks can also be downloaded for use by radio stations, in order to reach out to smallholders without internet access. Access Agriculture is thus a platform for agricultural staff, service providers, extension agents, the communication professionals and representatives of farmers’ organizations, as well as farmers themselves. The videos are all designed to support sustainable agriculture in developing countries.

SEE: [HTTP://WWW.ACCESSAGRICULTURE.ORG/](http://www.accessagriculture.org/)

#### EXAMPLE 59: RAINFOREST ALLIANCE’S ON-LINE VIDEO TRAINING COURSES

Rainforest Alliance (RA) works to conserve biodiversity and ensure sustainable livelihoods by transforming land-use practices, business practices and consumer behavior. Their aim is to help farmers realize economic benefits by ensuring that ecosystems within and around their operations are protected and that their workers are well-trained and enjoy safe conditions, proper sanitation, health care and housing. RA proposes several videos of farmers’ experiences and actions about sustainable agriculture on its online training platform. Information is notably available about different topics as management issues, farmers’ quality of life, work condition, environment issues.

SEE: [HTTP://WWW.SUSTAINABLEAGRICULTURETRAINING.ORG/?PAGE\\_ID=14&LANG=EN](http://www.sustainableagriculturetraining.org/?PAGE_ID=14&LANG=EN)

#### EXAMPLE 60: EMPOWERING COOPERATIVES TO ACCESS MARKET IN WEST AFRICA (FARMING FIRST, 2014)

TradeNet, a Ghana-based trading platform allows users to sign up for SMS alerts for commodities and markets of their choice and receive instant alerts for offers to buy or sell as soon as anyone else on the network has submitted an offer on their mobile phone. Users can also request and receive real-time prices for more than 80 commodities from 400 markets across West Africa.



## □ Information sources: Inspiring examples

Show me people who are succeeding with sustainable agriculture!

### Definition

By “inspiring examples” we mean examples provided by real-life farmers who have adopted sustainable practices themselves, and who can share their experiences with others. These farmers are a fantastic source of information and inspiration because of their knowledge and experience, and the insights they can provide on what works and doesn’t work when it comes to sustainable agricultural practices.

### Explanation

It is widely known that people learn more from talking with their peers than from being told what to do by non-peers. In this context, one of the best ways to inspire farmers and to bring them useful, convincing information is to give them access to other farmers who have adopted sustainable practices.

There are two main ways to do that:

- 1 Directly, by organizing visits to farms such as demonstration farms;  
A Demonstration Farm is a kind of living classroom, showcasing for farmers practical techniques. A demonstration farm does not simply carry sustainability concepts, it shows farmers what works in reality and what doesn’t, and how it is done in practice. This enables farmers to envision ways to incorporate these techniques on their own land.
- 2 Indirectly, by using different media to bring information to farmers about what local champions do and how they do it.

Local champions are case studies which also demonstrate what works and what doesn’t, and how it is done in practice. They are real inspiring examples for farmers to follow, with lots of communication tools such as farm visits, articles in media, videos etc.

### RECOMMENDATIONS

Helping develop networks of farmers to share knowledge, test new ideas, compare results, and strengthen relationships definitely stimulates learning and change in practices. Companies can facilitate exchanges between conventional farmers and farmers using sustainable practices in several ways:

- 1 They can establish, help create and/or support demonstration farms, and more or less actively stimulate conventional farmers to visit these farms – see Example 62, Example 63 and Example 64.
- 2 They can use different media to bring information to farmers about what local champions do and how they do it – see Example 61.

---

“I’ve made a new best friend, he will be coming to stay with me next fall, we share so much in common”

Guy Choiniere, dairy farmer in Vermont, about the benefits of Ben and Jerry’s farmer exchange

**EXAMPLE 61: MCDONALD'S FLAGSHIP FARMS IN EUROPE**  
(MCDONALD'S, FLAGSHIP FARMS, 2011)

Flagship Farms, developed by McDonald's in conjunction with the Food Animal Initiative (FAI), is an on-line catalogue of examples provided by progressive companies having adopted sustainable practices, while also operating to generally high quality standards. The primary aim of this on-line platform is to showcase inspiring farming examples, to demonstrate some of the benefits of sustainable agriculture, to promote their broader adoption across the farming community as well as to encourage dialogue between farmers about sustainable practices.

The progressive farmers featured on this site are keen to share the challenges faced as well as the benefits of the good practices they have adopted, so as to inspire other farmers towards the adoption of sustainable practices too. Very detailed information is provided for each farm on the economic, social and environmental pillars of sustainability.

**EXAMPLE 62: FARM AND HOME DEMONSTRATION PROJECT "REINE MATHILDE" FOR DAIRY PRODUCTION IN FRANCE**

In developed countries such as France, the dairy market is often over its targets and market prices jeopardize the profitability of some farms. It is therefore necessary to offer producers an alternative solution that will allow them to remain competitive while also protecting the environment.

In March 2010, Danone Dairy France, Stonyfield France and L'Institut de l'Élevage (research institute for livestock farming) launched the project 'Reine Mathilde' in Lower Normandy, France. A pedagogical farm has been opened by GAEC Guilbert, where local farmers can come and learn about new and innovative agricultural practices towards change. This educational and open farm is dedicated to:

- Assisting milk producers from Lower Normandy to move from traditional to organic production
- Helping them build an entirely new production and costs system
- Providing them with the necessary technical and methodological training

The project should make Normandy a role model of organic milk development in France.

**EXAMPLE 63: PEPSICO DEMONSTRATION FARMS IN CHINA**  
(PEPSICO, 2012)

In China, Pepsico operates eight demonstration farms with the Ministry of Agriculture. These farms, which use the most advanced irrigation, fertilization and crop management techniques, are designed to spread the best ideas across China's farming system to improve yields and increase farmers' income.

**EXAMPLE 64: BEN & JERRY'S DAIRY FARMER EXCHANGE: VERMONT, USA AND THE NETHERLANDS**

What happens when you mix dairy farmers from Vermont and the Netherlands together? A wonderful recipe for success! The idea came up in a conversation in 2005 between Ben & Jerry's North America Manager of Natural Resources, Andrea Asch and its Social Mission Manager Europe, Anniek Mauser, and was about sharing best practices between dairy suppliers from both Vermont (US) and the Netherlands. The two primary goals were to meet the spirit and intent of Ben & Jerry's Social Mission by giving back to communities and to create a unique opportunity to share new ideas about sustainable dairy farming. One dairy farmer speaking to another dairy farmer would be an ideal way to learn each other's best practices.

The week that Dutch dairy farmers spent in Vermont was filled with visits to a wide range of farms, from a small unique organic farm to a large farm of over 600 cows. There were academic sessions and visits to the University of Vermont's research farm. Then they met their farming colleagues and spent two days on their host families' farms.

In October 2007, 13 farming families and the Dairy Stewardship Advisory team boarded a plane for the Netherlands. There was a visit to an organic dairy farm discussions with Wageningen University's two research farms and a tour of CONO cheese maker's facility. The success of the Farmer Exchange initiative has an effect far beyond the farms involved. The US farmers reach out other communities to share their experience about the Dairy Stewardship Alliance. Ben & Jerry's Caring Dairy program is being rolled out to 550 dairy farmers in the Netherlands. Ideally the Caring Dairy web site will be expanded to include an English section to capture discussions between both groups.



## □ Information sources: Practical training

Show me people who are succeeding with sustainable agriculture!

### Definition

Aside from recommendations and demonstration farms, there is one last, very effective way of “promoting” sustainable practices: real-life, hands-on “training”, via “Farmer Field Schools” (FFS) or other processes.

### Explanation

Real-life, hands-on training provide opportunities for farmers to learn by doing, which is one of the most successful ways to achieve change. Training systems such as FFS are pedagogical and practical means to teach basic agricultural and management skills. They are also forums where farmers and trainers debate observations, experiences and present new information from outside the community. The topics covered in this training are diverse and can cover a wide range of topics, such as: basic farm management (especially in FFS), product quality, conservation agriculture, organic agriculture, animal husbandry, animal welfare, and soil management.

### RECOMMENDATIONS

Hands-on training is quite resource intensive, but it represents one of the best ways to instigate real, long-lasting change in practices amongst farmers. If a company cannot sponsor such training on its own (See Example 65), it may be able to do so in collaboration with extension services, NGOs, consultancies or other commercial companies such as irrigation companies, which must naturally be carefully selected (See Example 66).

In developing countries, Farmer Field Schools (FFS) are seen by most stakeholders as the very best way to promote sustainable agriculture (See Example 67).



#### EXAMPLE 65: TRAINING WITH DEMONSTRATION FARMS ON SUSTAINABLE MANGOS IN INDIA

India is the world's largest producer of Mangos but has some of the lowest farm productivity rates in the world. As India's demand for mangos grows, so does the need to increase per acre yields on a long-term and sustainable basis. The Coca-Cola Company (TCCC) and its mango supplier Jain Irrigation have partnered to address this need through creating Project Unnati – a farmer training program in the Andhra Pradesh region.

In traditional mango cultivation, trees are allowed to grow as high as possible and are rarely maintained. With the taught Ultra-High Density Plantation (UHDP) technique, the canopy is pruned for maximum light distribution. Grafts of commercial varieties are planted close to each other, while special techniques for pruning, drip irrigation, fertigation and growth promotion lead to optimal yields. Together, these techniques can double mango yields and allow nearly 600 trees per acre compared to conventional planting of 40 trees, while decreasing the quantity of water used per kilo of mango production.

After three years, 300 acres of demonstration plots belonging to 202 farmers have been seeded. These farms are being used to showcase and train farmers. Using dedicated mobile vehicles for field-based training, this program is expected to increase the yields and incomes of more than 50,000 farmers over five years. Further, as UHDP can be undertaken in all regions where mangoes are grown traditionally, practices learned from this innovative project are expected to scale, benefiting farmers and increasing production throughout India.

---

“Farmers used to irrigate abundantly (...) without thinking about saving the water. However, after learning about the research, farmers have reduced liters of water used per plant per irrigation round. Firstly it reduces energy costs for farmers, secondly it saves labor costs and thirdly it protects water resources and the environment, while it maintains yield and normal plant growth.”

Coffee farmer from Vietnam – see Example 7 for full details on the project.

#### EXAMPLE 66: TRAINING COURSES IN VIETNAM USE CONTESTS, STORYTELLING TO REACH OUT TO FARMERS (FARMING FIRST, 2014)

Vegetable production is very important to Vietnam's economy, with many farmers seeking access to export markets as a means of improving their livelihoods. However, meeting quality requirements for export produce can be a challenge for farmers. As a response to this issue, the Plant Protection Department (PPD) of Vietnam's Ministry of Agriculture and Rural Development, in collaboration with CropLife Asia, introduced a joint campaign in 2003.


Initially, 130 trainers were trained during a six-day course in Ha Tay and Ho Chi Minh City. Farmer training courses then took place at 33 farmer field schools in four target provinces. The project also included innovative methods, such as farmer contests and community drama to improve the outreach to more stakeholders and make the program more attractive and interesting to participants. The community dramas were broadcasted on Vietnam Television and reached millions of viewers. Additional attention was gained through a national competition for script writers, with winning screenplays broadcasted on network television. Another outcome of the project was the creation of a forum between farmers and staff from the Ministry, which has helped communications and kept farmers updated on new regulations.



#### EXAMPLE 67: GREEN FARMER TRAINING PROJECT OF BSR AND WALMART CHINA (EDIGER L, 2014)

The Green Farmer training project that Business for Social Responsibility (BSR) is implementing in partnership with Walmart China aims at training one million supplying farmers on food safety and sustainability. To design an effective training program, BSR and Walmart China started out in the field, visiting sites ranging from pomelo farms in Fujian to vegetable farms in Guangdong Province. During each visit, the groups held in-depth conversations with managers, technicians, and farmers about what and how they wanted to learn. Based on this learning, they created a five-step process:

- 1 Identifying needs: The program starts with a one-day needs assessment led by an expert facilitator who uses a variety of techniques, from in-depth discussions with farmers to interactive voting exercises for a roomful of farmers, in order to understand the most pressing challenges and concerns at each farm. By the end of the day, the facilitator and farm manager agree on one or two priority topics for the first training.
- 2 Finding the trainer: At this point, BSR identifies an agricultural expert who has the requisite knowledge, skills, and experience communicating to farmers who haven't necessarily had much formal education. Ideally, the expert is based in the province for the local knowledge of agricultural ecosystems and specific pests and diseases, but also for the regional or local dialects spoken.
- 3 Training: In addition to selecting a suitable expert and crafting relevant training materials, the training maximizes impact by focusing on a smaller group of key decision-makers. This allows providing a much more in-depth and interactive experience, including field demonstrations, which allows those individuals to test and share their knowledge with others as part of their day-to-day work.
- 4 Agreeing on actions to take towards the end of the two-day training, the expert and participants are asked to identify concrete actions that will be implemented. These discussions can get heated, as farmers sometimes initially disagree on what might work and what they are actually willing to try, before reaching a consensus.
- 5 Measuring impact after the training, BSR follows up with farmers to measure the program's impact, i.e., both how far information has spread and whether practices have changed. Generally, the adoption of new practices in agriculture tends to be slow. Trainers thus don't expect dramatic results in the short-term but rather a more gradual adoption of better practices over time, as mindsets and skillsets change. In support of this longer-term approach, farmers are encouraged to stay in contact with the agricultural experts so they can ask questions about alternative techniques or new challenges.



**EXAMPLE 68: RANCH FARM OWNERS' CONTINUOUS TRAINING ON SUSTAINABILITY ISSUES IN THE USA (AMERICAN FARMLAND TRUST, COMBINING STEWARDSHIP PRACTICES, 2013)**

George and Elaine Work, their son Ben and his wife Kelly, own and operate Work Ranch in San Miguel, in southern Monterey County. Work Ranch is a 12,000-acre ranch. George describes his family as 'solar energy converters (...) into usable products, like beef,' –which shows their holistic perspective of the operation.

As a lifelong learner, George has attended many workshops and undertaken training to learn more about how he can improve the ranching operation. One of the most inspiring was a five-day training in Holistic Management, which teaches how to make decisions that are environmentally, socially, and financially sound. George says he is still using the principles he learned in the course on Work Ranch, and as the ranch is transferring to his son, those lessons remain important.

The Works have implemented a number of ecologically beneficial practices on their ranch, starting when George's father was ranching the property. The innovations of Work Ranch have inspired neighbors to implement the same wildlife-friendly troughs. George has continued to stay active in the community and participates on the Central Coast Rangeland Coalition and the Roots of Change Stewardship Council. He is a founding member of Rancher Self-Assessment Project, which provides ranchers with a way to evaluate how sustainable their ranch management decisions are. George was also active in acquiring a USDA mobile livestock processing plant to increase local ranchers' ability to market local products. Work Ranch has future plans for a possible conservation easement, and they are proud to be making the transition into a fourth and fifth generation ranch.





# 8 > Political factors

## Definition

Governments shape the agricultural economy as a whole through policies and programs. These directly influence the adoption of sustainable practices, most frequently through economic stimulus or hindrance.

## Explanation

Political factors play a crucial role in the choice of practices by farmers. Today's agricultural policies in many countries focus on productivity, often neglecting social and environmental issues. As the UK's Prince Charles once asked: "Could there be benefits if public finance were redirected so that subsidies are linked specifically to farming practices that are more sustainable, less polluting, and of wide benefit to the public interest?" The answer to that question without any doubt is yes. But a more complicated question is: how to go about it?

Policies are developed by governments and consequently, companies can influence these through a democratic process as well as by getting involved in policy discussions at an early stage. This is crucial to achieve sustainability goals. For example, if policies in a country financially reward agricultural systems that pollute most, it will be almost impossible for companies to convince farmers to use sustainable practices unless they pay considerably more – which is unlikely to happen. If however policies financially reward or favor agricultural systems that meet certain sustainability standards or performance requirements, this will help companies to convince farmers to use sustainable practices – at no additional cost.

Companies should therefore use their influence in interactions with government authorities towards agricultural policy reform, which, notably:

- Internalizes the costs of externalities (e.g., making farmers pay for the true cost of water use, or pollution generated in water resources), so that food produced with less negative environmental and social impacts naturally becomes cheaper than food produced with more negative impacts;
- Provide economic incentives to financially reward practices generating positive environmental and social impacts (e.g. providing subsidies to farms contributing to biodiversity protection)

## RECOMMENDATIONS

Most of what companies and their employees can do in terms of political factors is to raise awareness and influence, at regional, national or local levels, towards agricultural policy reform in favor of sustainable agriculture. Generally, "lobbying" activities are undertaken by companies' public affairs functions, or in sector organizations – not by procurement executives and buyers for whom this guide is intended. Our recommendations for the readers of this guide are therefore simply two-fold:

- 1 To regularly liaise with your company's public and regulatory affairs department to feed back what your needs are in terms of sustainable agriculture, and ensure that they can take all possible measures to influence policy-making, within the company and/or through sector organizations the company is member of – see Example 69;
- 2 To involve relevant local government representatives in your various sustainable agriculture programs and projects – so they better understand the issue, take ownership of it and are willing to instigate the necessary changes at political level, which will help promote sustainable agriculture in the region – see Example 70 and Example 71.

"The biggest hurdle to sustainable agriculture is the fact that energy is too cheap. The day energy prices increase and farmers won't be able to pay for chemical fertilizers anymore, they will switch to organic agriculture"

German cereal farmer in "Les moissons du future".



**EXAMPLE 69: FOOD SECTOR GROUP PUTS PRESSURE ON THE EUROPEAN PARLIAMENT FOR SUSTAINABLE PRODUCTION (FOOD & DRINK EUROPE, 2014)**

FoodDrinkEurope, the representative body for Europe's food and drink manufacturers, in May 2014 published a short brochure outlining its policy priorities for the new European Parliament. In it they encourage Members of the European Parliament (MEPs) to support a long-term strategic approach to food sustainability – as per their document "Environmental Sustainability Vision Towards 2030" which demonstrates the progress already made by food operators in areas like sustainable sourcing, resource efficiency and sustainable consumption and production but also highlights opportunities that the EU Green Growth Agenda presents for the future. They also ask MEPs to support the work of the European Food Sustainable Consumption and Production (SCP) Round Table, which is co-chaired by the Commission and food supply chain partners including FoodDrinkEurope and which aims to establish the food supply chain as a major contributor towards sustainable consumption and production in Europe.

**EXAMPLE 70: NEW PILOT RETIREMENT FUND FOR COLOMBIAN COFFEE FARMERS (NESTLÉ, 2014)**

Coffee farmers who are part of the Nespresso AAA Sustainable Quality Program in the Colombian region of Caldas can now enroll in a government-backed retirement fund. This is the result of an agreement between Nespresso and the Colombian Ministry of Labor, the Aguadas Coffee Growers' Cooperative, Cafexport/Expocafe and Fairtrade International. The pilot initiative, supported by the Colombian Coffee Growers' Federation (FNC), leverages the national retirement scheme developed by the Colombian Ministry of Labor to reach Colombian workers whose income does not allow them to contribute to a pension.

Nespresso uses its network of around 40 agronomists to extend the scheme to about 1,200 AAA farmers in Caldas. "This initiative fits within our long-term approach to secure farmer welfare and provide social benefits to farmers," said Jean-Marc Duvoisin, CEO of Nestlé Nespresso. "We also believe it will encourage younger generations to continue farming and preserve this essential part of the Colombian economy and heritage."

**EXAMPLE 71: A FRAMEWORK TO PROVIDE THE BASIS FOR A NATIONAL COFFEE SECTOR (HANNIS R. NEUMANN STIFTUNG, 2009)**

Since 2001, six pilot projects have been conducted on sustainable coffee production in Vietnam, reaching approximately 2,500 farmers. The positive impacts have triggered a national dialogue between donors and partners. At the instigation of Sara Lee, Kraft Foods, Nestlé and NKG, a team headed by the Ministry for Agriculture and Rural Development, in cooperation with trade, industry and coffee provinces, initiated a "Rolling Out Process". Under that process, a framework provides

the basis for a national coffee sector program which will ultimately support 500,000 coffee households towards sustainability.

Many farmers were so enthusiastic about their experience in pilots, that they chose to attend a Training of Trainers, and to disseminate better agricultural practices to their neighbors too – using DVDs etc.





504350

00028

## 9 > Bibliography

Alonge, A., & Martin, R. (1995). Assessment of the adoption of sustainable agriculture practices: Implications for agricultural education.

American Farmland Trust. (2013). Combining stewardship practices. Retrieved from Farmland: <http://www.farmland.org/programs/campaign/california-voices.asp>

American Farmland Trust. (2013). Farm and Food voices: Limoneira Company. Récupéré sur American Farmland Trust: <http://www.farmland.org/programs/campaign/voices/limoneira.asp>

Anderson, J. C., & Narus, J. (1990). A Model of distributor firm and manufacturer firm working partnerships (Vol. 54). Consulté le 05 2014

Arellanes, P. D. (2003). The determinants of adoption of sustainable agriculture technologies: evidence from the hillsides of Honduras. Proceedings of the 25th International Conference of Agricultural Economist.

Arellanes, P., & Lee, D. (2003). The determinants of adoption of sustainable agriculture technologies: evidence from the hillsides of Honduras. Proceedings of the 25th International Conference of Agricultural Economists.

Barlas, Y., Damianos, D., Dimara, E., Kasimis, C., & Skuras, D. (2001). Factors influencing the integration of alternative farm enterprises into the agro-food system.

Beal, G. a. (1965). How farm people accept new ideas. Proceedings of the Second Annual Symposium for the Use of Flame in Agriculture.

Beef + Lamb. (2011). Beef + Lamb: what we do. Retrieved from Beef + Lamb: <http://www.beeflambnz.com/people/learning-development/on-farm-training/>

Bittman, M. (2011, July 19). A better sort of pig. The New York Times.

Blainey, M., Ganzleben, C., & Goldenman, G. (2008). The benefits of strict cut off criteria on human health in relation to the proposal for a regulation concerning plant protection products. Brussels.

Brown, L., & Malecki, E. (1976). Adopter categories in spatial context: Alternative explanations for an empirical regularity. *Rural Sociology*. doi:41(1): 99-118

Bruckner, & Preston. (2011). Credit, crop insurance and sustainable agriculture in Iowa. Iowa.

Business cases studies. (2011, October). Stakeholder engagement. Retrieved from Business Cases studies: <http://businesscasesstudies.co.uk/kelloggs/stakeholder-engagement/external-stakeholders.html>

Caliman, F. (2008). Relation between plant yield and fruit quality characteristics of tomato. Vicosa.

Campbell, Biron, B., & Hobane, N. (1999). Moving to local control of woodland resources.

Chipotle. (2013). Issues: Family Farms. Retrieved from Cultivate Foundation: <http://www.cultivatefoundation.org/issues/family-farms>

Coca-Cola, & WWF. (2012). Members projects. Retrieved from Sustainable Agriculture Initiative Platform: <http://www.saiplatform.org/projects/11/98/Project-Khula-Protecting-Freshwater-Resources-while-Improving-the-Livelihoods-of-Disadvantaged-Sugarcane-Growers-in-South-Africa>

Danone 10. (2014). Europe's role. Récupéré sur Danone: Economic and social report: [http://danone10.danone.com/uk/rubrique/#shaping\\_the\\_future/sustainable\\_milk\\_5](http://danone10.danone.com/uk/rubrique/#shaping_the_future/sustainable_milk_5)

Danone. (2013). Change management guide. Fonds Danone pour l'Ecosystème & The French Livestock Institute. Consulté le 02 2014



Danone. (2013, 06). Down to earth: People. Récupéré sur Down to earth: 1. <http://downtoearth.danone.com/2012/06/28/leontino-balbo-i-want-sustainability-to-be-a-way-of-life-for-the-future-of-mankind/>

Danone. (2014, June 13). Company news. Retrieved from Danone: <http://danone.ua/en/media-center/press-center-news/id/na-poltavschini-za-pidtrimki-danon-ukrajina-vidkrito-3-pershi-simejni-fermi-230/>

Danone Communities. (2014, 06 26). Respect of environment, carbon finance, well being for all... in a single investment Fund: Livelihood. Récupéré sur Danone communities: <http://www.danonecommunities.com/node/1099>

DEFoundation. (2011). Cameroon. Retrieved from DEFoundation: Learning, cooperation & results: <http://www.defoundation.org/cameroon/>

Dillman, D. (1988). The social environment of agriculture and rural areas. *Agriculture and Rural Areas Approaching the Twenty-first Century: Challenges for Agricultural Economics*, Iowa.

Duram, L. (1997). A pragmatic study of conventional and alternative farmers in Colorado. *Professional Geographer*.

Ediger L. (2014). Implementing Sustainable Agriculture in Walmart China's Supply Chain. Retrieved from *The business of a better world*: <http://www.bsr.org/en/our-insights/bsr-insight-article/implementing-sustainable-agriculture-in-walmart-chinas-supply-chain>

Ervin, C., & Ervin, D. (1982). Factors affecting the use of soil conservation practices: Hypotheses, evidence, and policy implications. *Land Economics*.

European parliament. (2014). REGULATION (EU) OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL. Establishment of a Programme for the Environment and Climate Action (LIFE) and repealing Regulation (EC) . Brussels. Récupéré sur [http://www.welcomeurope.com/european-funds/life-2014-2020-financial-instrument-natural-capital-financial-facility-ncff-985+885.html#tab=onglet\\_details](http://www.welcomeurope.com/european-funds/life-2014-2020-financial-instrument-natural-capital-financial-facility-ncff-985+885.html#tab=onglet_details)

Fairweather, J. a. (1996). The decision making of organic and conventional agricultural producers. New Zealand, Canterbury: Agribusiness and Economics Research Unit. Research Report No. 133.

FAO. (2002). LAND AND AGRICULTURE: From UNCED, Rio de Janeiro 1992 to WSSD, 2002. Johannesburg.

FAO. (2004). Farm Management and Economics aspects of Conservation Agriculture. [http://www.fao.org/ag/ca/training\\_materials/cd27-english/fme/economic.pdf](http://www.fao.org/ag/ca/training_materials/cd27-english/fme/economic.pdf).

FAO. (2008). Farm management extension guide: Managing risk in farming. Rome. Retrieved from <http://www.fao.org/uploads/media/3-ManagingRiskInternLores.pdf>

FAO. (2014). SAFA. [http://www.fao.org/fileadmin/templates/nr/sustainability\\_pathways/docs/SAFA\\_Guidelines\\_Final\\_122013.pdf](http://www.fao.org/fileadmin/templates/nr/sustainability_pathways/docs/SAFA_Guidelines_Final_122013.pdf). Consulté le 02 2014

Farmers' Hub. (2014). About Farmers' hub. Retrieved from Farmers' hub: <http://farmershub.co.uk/about/>

Farming First. (2009, May 16). Public-Private Partnership Creates Model Farm and Agricultural Resource Centre for Trinidadian Farmers. Retrieved from *Farming First*: <http://www.farmingfirst.org/2009/05/public-private-partnership-creates-model-farm-and-agricultural-resource-centre-for-trinidadian-farmers/>

Farming First. (2009, 10 28). Training Courses in Vietnam Use Contests, Storytelling to Reach Out to Farmers. Récupéré sur *Farming First*: <http://www.farmingfirst.org/2009/10/training-courses-in-vietnam-use-contests-storytelling-to-reach-out-to-farmers/>

Farming First. (2010, May 23). Operation Pollinator: Helping Farmers Preserve Biodiversity and Secure Food Supply in Europe. Retrieved from *Farming First*: <http://www.farmingfirst.org/2010/05/operation-pollinator-helping-farmers-preserve-biodiversity-and-secure-food-supply-in-europe/>

- Farming First. (2011, 01 10). Innovation and training improve livelihoods of mango growers. Récupéré sur Farming First: <http://www.farmingfirst.org/2011/01/innovation-and-training-improve-livelihoods-of-mango-growers/>
- Farming First. (2014, 20 05). Story: Food and nutrition security. Récupéré sur Farming First: <http://www.farmingfirst.org/2009/03/new-cowpea-varietal-helps-african-farmers-increase-profits-by-55/>
- FARRE. (2014). Espace professionnel . Récupéré sur Forum des Agriculteurs Responsables Respectueux de l'Environnement: <http://www.farre.org/>
- Fazio, R. A. (2014). Barriers to the Adoption of Sustainable Agricultural Practices: Working Farmer and Change Agent Perspectives. Auburn University. AL.
- Food & drink Europe. (2014, March 24). Food & drink manufacturers outline priorities for the new european parliament. Retrieved from [http://www.fooddrinkeurope.eu/uploads/press-releases\\_documents/PRESS\\_RELEASE\\_-\\_Feeding\\_the\\_Debate.pdf](http://www.fooddrinkeurope.eu/uploads/press-releases_documents/PRESS_RELEASE_-_Feeding_the_Debate.pdf)
- Food and Agriculture Organization. (2014). Conservation agriculture. Retrieved from Agriculture and consumer department: <http://www.fao.org/ag/ca/5.html>
- Food and Agriculture Organization of the UN. (2003). The economics of conservation agriculture. Service land management and plant nutrition, division of development of land and water. Retrieved from FAO: <ftp://ftp.fao.org/agl>
- Geyskens, I., Steenkamp, J., & Kumar, N. (1998). International Journal of Research in Marketing: Generalizations about trust in marketing channel relationships using meta-analysis. Retrieved 05 2014
- Global Forum for Rural Advisory Services. (2012, June). Fact Sheet on Extension Services. Retrieved from Farming First: [http://www.farmingfirst.org/wordpress/wp-content/uploads/2012/06/Global-Forum-for-Rural-Advisory-Services\\_Fact-Sheet-on-Extension-Services.pdf](http://www.farmingfirst.org/wordpress/wp-content/uploads/2012/06/Global-Forum-for-Rural-Advisory-Services_Fact-Sheet-on-Extension-Services.pdf)
- Guardian Sustainable Business partner zone. (2014, 04 22). Retrieved from The Guardian: <http://www.theguardian.com/sustainable-business/unilever-sources-agricultural-raw-materials-sustainably>
- GUERIN, T. (2000). Overcoming the Constraints to the Adoption of Sustainable Land Management Practices in Australia. Australia. Australia.
- Hanns R. Neumann Stiftung. (2009). Vietnam, Rolling Out Project. Récupéré sur Hans R Neumann Stiftung: <http://www.hrnstiftung.org/project-reader/items/vietnam-roll-out-project.36.html>
- Hazell, P. (2010). L'assurance basée sur un indice climatique: potentiel d'expansion et de durabilité pour l'agriculture et les moyens de subsistance en milieu rural. Fonds international de développement agricole et le Programme alimentaire mondial, Rome.
- Heath, C. & (2007). Made to stick. New York Times.
- HEINEKEN. (2013). Heineken sustainability report 2013. Retrieved from HEINEKEN: <http://www.sustainabilityreport.heineken.com/Sourcing-sustainably/Case-studies/Local-sourcing-of-rice-creates-even-stronger-results-in-2013/index.htm>
- Hosansky, E. (2014). Une station météo connectée pour conseiller les agriculteurs africains. L'express, L'entreprise.
- IATP. (1998). Marketing Sustainable Agriculture, Case Studies and Analysis from Europe. Minneapolis: Institute for Agriculture and Trade Policy. Retrieved from [http://www.iatp.org/files/Marketing\\_Sustainable\\_Agriculture\\_-\\_Case\\_Study.pdf](http://www.iatp.org/files/Marketing_Sustainable_Agriculture_-_Case_Study.pdf)
- Ikerd, J. O. ( 1997). Some Missouri farmers' perspectives of sustainable agriculture. University of Missouri.
- Ikerd, J. O. (1997). Some Missouri farmers' perspectives of sustainable agriculture. Missouri.

Impey, L. (2014, July 30). Cereal giant starts contract for UK growers. Retrieved from Farmers Weekly: <http://www.fwi.co.uk/articles/30/07/2014/145526/cereal-giant-starts-contract-for-uk-growers.htm>

innocent. (2009). Our approach to being sustainable. Retrieved from <http://assets.innocentdrinks.co.uk/innocentsustainability.pdf>

Kahan, D. (2008). Farm management extension guide 2: Managing risk in farming. Rome: Food and Agriculture Organization of the United Nation.

Kellogg's. (2014, January 8). News Releases/ Statements. Retrieved from Kellogg's: <http://newsroom.kelloggcompany.com/2014-01-08-Kellogg-Committed-To-Empowering-Women-And-Smallholder-Farmers>

Leopold Center. (2011, 11 15). Long-running experiment shows organic farming is profitable. Récupéré sur Leopold center for sustainable agriculture: <http://www.leopold.iastate.edu/news/11-15-2011/long-running-experiment> [19/04/2014]

LSU AgCenter. (2013). Rice Research Board Reports. Retrieved from LSU AgCenter: [http://www.lsuagcenter.com/en/crops\\_livestock/crops/rice/Rice+Research+Board+Reports/LSUAgCenterKelloggworkonsustainabilityResultisMasterRice-Growerprogramincentives.htm](http://www.lsuagcenter.com/en/crops_livestock/crops/rice/Rice+Research+Board+Reports/LSUAgCenterKelloggworkonsustainabilityResultisMasterRice-Growerprogramincentives.htm)

Mark, O., Dale, A., Andrew, H., & Daniel, M. (2009). Farmers' use of sustainable management practices. Australia: National Land and Water Resources Audit.

McCain Foods. (2014, 04 05). Sustainable Agriculture ; areas of interest. Retrieved from <http://www.mccain.com/GoodFood/agriculture/Pages/areasofinterest.aspx>

McDonald's. (2011). Flagship Farms. Retrieved from McDonald's Europe Flagship Farms: <http://www.flagshipfarms.eu/>

McDonald's. (2014, 04 16). Beef – Ireland, Dempsey Farm. Retrieved from McDonald's Europe Flagship Farms: <http://www.flagshipfarms.eu/casestudy2.php>

McDonald's Europe. (2012, 12 17). Potatoes – DexTerra Farm, Germany. Récupéré sur McDonald's Europe Flagship Farms: <http://www.flagshipfarms.eu/downloads/casestudies/Potatoes%20DexTerra%20Farm,%20Germany.pdf>

Mondelez. (2014, 05 05). Mondelez Initiative Advocates For Female Cocoa Farmers. Retrieved from National Confectioners Association: <http://www.candyusa.com/CST/CSTDetail.cfm?ItemNumber=10072>

Moran, J. (2009). Business Management for Tropical Dairy Farmers. doi:9780643095168

Nespresso. (2014, 06 06). Sustainable quality, AAA programs news. Récupéré sur Nespresso: [http://www.nespresso.com/soulofcoffee/CH\\_en/content/empowering-small-scale-coffee-farmers-colombia](http://www.nespresso.com/soulofcoffee/CH_en/content/empowering-small-scale-coffee-farmers-colombia)

Nestlé. (2013). A better future for cocoa farmers and their families. Retrieved from Nestlé: <http://www.nestle.com/brands/chocolateconfectionery/chocolateandconfectionerycvs>

Nestlé (Réalisateur). (2014). Nestlé develops sustainable water use for Vietnam coffee production [Film].

Nestlé. (2014, March 20). New pilot retirement fund for Colombian coffee farmers. Retrieved from Nestlé: Media: <http://www.nestle.com/media/news/Nespresso-pensions-colombian-coffee-farmers>

Norman, D. R. (2004). Defining and Implementing Sustainable Agriculture. Kansas.

Nyende, P., Nyakuni, A., Opio, J. P., & Odogola, W. (2007). Conservation agriculture: a Uganda case study. African Conservation Tillage Network. Nairobi: Food and Agriculture Organization of the United Nations.



- Pepperdine, S. (2011). Social Indicators of Rural Community Sustainability: An Example from the Woody Yaloak Catchment. Retrieved from The regional institute Ltd: <http://www.regional.org.au/au/countrytowns/strategies/pepperdine.htm>
- Pepsico. (2010). Performance with purpose: Sustainable agriculture. Retrieved from Pepsico: <http://www.pepsico.eu/purpose/environmental-sustainability/sustainable-agriculture.html>
- Pepsico. (2012). Sustainable agriculture: sustainable farming. Retrieved from Pepsico: <http://www.pepsico.com/Purpose/Environmental-Sustainability/Agriculture>
- Peter, G. B. (2000). Coming back across the fence: Masculinity and the transition to sustainable agriculture. *Rural Sociology*.
- Pulse Canada. (2014). Environment: Pulses improve the sustainability of cropping systems. Récupéré sur Pulse Canada: <http://www.pulsecanada.com/environment/sustainability/sustainable-cropping-systems>
- Reed, M. (2004). More than just fashionable foods – the importance of Social Sciences in organic research.
- Roberts, B. (1995). *The Quest for Sustainable Agriculture and Land Use*. Sydney: University of New South Wales Press.
- Robin, M. M. (Director). (2012). *Les moissons du futur [Motion Picture]*.
- Rodale Institute. (2011). *The Farming Systems Trial*. Kutztown. Retrieved from [www.rodaleinstitute.org](http://www.rodaleinstitute.org)
- Rogers, E. (1983). *Diffusion of Innovations*. New-York: 3rd Ed. New York: The Free Press.
- Rural 21. (2012). *European development days*. The International Journal for Rural Development, <http://www.rural21.com/english/news/detail/article/promoting-sustainable-agriculture-0000549/>.
- SAI Platform. (2010). *Farmer Self Assessment 2.0*. Brussels: <http://www.saiplatform.org/activities/alias/sustainability-indicators/financial-tool>.
- SAI Platform. (2013). *Financial Tool*. Récupéré sur SAI Platform: <http://www.saiplatform.org/activities/alias/sustainability-indicators/financial-tool>
- SAI Platform. (2013, 03 20). *Sustainable Agriculture Initiative: Sustainability indicators and measurement tools*. Récupéré sur SAI Platform: <http://www.saiplatform.org/activities/alias/sustainability-indicators/financial-tool>
- SAI Platform. (2014, 05 16). *Members projects*. Retrieved from Sustainable Agriculture Initiative Platform: <http://www.saiplatform.org/projects/21/98/Improving-corn-farmers-life-and-agronomic-practices-in-Yongqing-China>
- SAI Platform. (2014, 05 20). *Members projects*. Retrieved from Sustainable Agriculture Initiative Platform: <http://www.saiplatform.org/projects/33/98/Changing-irrigation-systems-in-Tomato-production-in-the-dry-arch-of-Panama>
- SAI Platform. (2014). *Members projects*. Retrieved from SAI Platform: <http://www.saiplatform.org/projects/21/98/Improving-corn-farmers-life-and-agronomic-practices-in-Yongqing-China>
- SAI Platform, I. G., IMD, & ITC. (2013). *Sustainable Sourcing of Agricultural Raw Materials: A Practitioner's Guide*. Brussels.
- Sonaiya, E., & Swan, S. (2004). *Small-scale poultry production: technical guide*. Chapitre 8: Production economics. Rome: Food and Agriculture Organization of the United Nations.
- Streck, C., Burns, D., & Guimaraes, L. (2012). *Incentives and benefits for climate change mitigation for smallholder farmers*. Copenhagen. Consulté le 05 2014, sur: [www.ccafs.cgiar.org](http://www.ccafs.cgiar.org)

**Sustainability Coffee Association of America. (2009).** Sustainability coffee certifications: a comparison matrix. Récupéré sur Sustainability Coffee Association of AMerice (SCAA): <https://www.scaa.org/PDF/SustainableCoffeeCertificationsComparisonMatrix.pdf>

**Sustainable Agriculture Initiative Platform. (2014, 05 20).** Members Projects. Récupéré sur Sustainable Agriculture Initiative Platform: <http://www.saiplatform.org/projects/32/98/Rainwater-storage-and-optimization-of-fertilizer-s-application-in-Mexico>

**Sustainable Food Laboratory. (2012).** The mission of the Sustainable Food Lab is to accelerate the shift of sustainable food from niche to mainstream. Retrieved from Sustainable Food Laboratory: <http://sustainablefoodlab.org/>

**SustaiNet EA. (2010).** Technical Manual for farmers and Field Extension Service Providers: Farmer Field School Approach. . Nairobi: Sustainable Agriculture Information Initiative.

**The carrot project. (n.d.).** Creating small farm financing solutions. Retrieved 06 26, 2014, from The carrot project: <http://thecarrotproject.org/home>

**Times of India. (2013, 02 10).** In the media: Indian farmers earn forest carbon credits. Retrieved from Forest carbon Asia: <http://www.forestcarbonasia.org/in-the-media/indian-farmers-earn-forest-carbon-credits/>

**Tulchin, D., Chen, J., & Sunny, Y.-H. L. (2011).** Social enterprise associates. Emerging topics paper series working paper case studies: local food & sustainable agriculture initiatives in the united states. USA.

**UNCTAD. (2013).** Trade and environment review: Make agriculture truly sustainable now for food security in a changing climate.

**United Nations Development Programme. (2007).** International guidebook of environmental finance tools: A sectoral approach. Chapitre 5: Sustainable Agriculture.

**United Nations Development Programme. (2012).** Africa Human Development Report 2012: Towards a Food Secure Future,.

**USAID. (2013, july 13).** USAID Joins Forces with Heineken Subsidiary BRANA to Improve Haitian Farmers' Livelihoods. Retrieved from USAID: News & information: <http://www.usaid.gov/news-information/press-releases/usa-id-joins-forces-heineken-subsidiary-brana-improve-haitian-farmers>

**Wikipedia. (s.d.).** Van Rogers Innovation Theory. [http://nl.wikipedia.org/wiki/Innovatietheorie\\_van\\_Rogers](http://nl.wikipedia.org/wiki/Innovatietheorie_van_Rogers).

**World Cocoa Foundation. (2014).** Success story: Rebirth of ODODE-IDANRE Cooperative Multipurpose Union. Retrieved from World Cocoa Foundation: <http://worldcocoafoundation.org/rebirth-of-odode-idanre-cooperative-multipurpose-union/>

**World Watch Insitute. (2014, 06).** Organic Farms Provide Jobs, High Yields. Retrieved from World Watch: <http://www.worldwatch.org/node/3975>

**Worldwatch Institute. (2013).** Crop Yields Expand, but Nutrition Is Left Behind. <http://www.worldwatch.org/node/5339>.

**WWF. (2014, April 29).** Europe's food chain partners working towards more sustainable food systems. Retrieved from EUBusiness: <http://www.eubusiness.com/focus/wwf-14-04-29>



