Development of a Hybrid Human-AI Personalised Learning Path for VET for Innovation in Agriculture

Persona.

Project N. 101140019

Co-funded by the European Union

Module: Agricultural Financial Management

Lesson/Unit/Topic Content Development

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

UNIT 1. INTRODUCTION TO AGRICULTURAL FINANCIAL MANAGEMENT

Introduction: Agriculture and its economic challenges.

Agriculture is a fundamental activity in our daily lives. However, the difficulties we farmers face in our daily work are rarely considered. Managing the irregularity of income represents one of its main challenges, given that, although expenditure remains constant throughout the year, income is only generated at specific periods after the harvesting of our crops. This creates significant financial difficulties if we do not plan well and do not actively manage our finances.

Moreover, farmers have to deal with additional uncertainties that affect our activity, such as price variations in an imperfect market or uncertainty due to climate change. Added to these circumstances are the high costs of inputs such as fertilisers, fuel, phytosanitary products and agricultural machinery. Therefore, it is important to manage these circumstances properly, otherwise serious financial problems are likely to arise. Therefore, a proper and constant financial management is not an option to be considered, but an obligation for any farmer for the effective development of any agricultural activity.

What is the reason that forces us to manage financial resources properly?

Financial management is to use tools that facilitate the determination of our income and our expenses, as well as tools that determine the option to develop investments and obtain returns on them. By having a better understanding of how your income is generated and how you spend your funds, you can plan more effectively. This management can prevent setbacks such as lack of cash at the wrong time or not taking advantage of growth opportunities due to insufficient available resources.

Financial management is not only limited to maintaining a balance in the short term, but must also focus on the future. Proper financial planning will facilitate more accurate decision-making. For example, determining whether it is more appropriate to allocate resources to the purchase of new equipment and/or to set aside funds for potential emergency circumstances. All of this allows business stability to be preserved even in adverse situations.

Persona. Co-funded by the European Union

Basic Financial Concepts

Within financial management in the agricultural sector, it is essential to know and know how to handle three key concepts: cash flow, profitability and investment; although they may seem complex at first, they are very useful tools that will allow you to make better decisions.

What is cash flow?

Cash flow is like a snapshot of how your finances are moving: revealing how much cash you have coming in and how much cash is going out of your farm over a specific period of time such as a month or a year. That is, how your money is moving in and out.

What is the relevance of this?

Being consistently clear about your available balance, inflows minus outflows, helps you to:

- Be able to pay your daily expenses (such as fertilisers, salaries or electricity).
- Plan important purchases or investments.
- Avoid liquidity problems, such as not being able to pay a debt on time.

Example: Imagine you own a farm that produces wheat, and you are in the month of June:

- You receive an amount of 10,000 € as income from the sale of wheat.
- You have accumulated expenses totalling €7,500 distributed as follows: €2,000 in fertilisers; €3,000 in wages; and €2,500 in transport.

Your financial statement would be as follows:

- Profits generated by the company amount to €10,000.
- Remaining balance after subtracting €7,500 from €10,000 is a positive cash flow of €2,500.

With this positive cash balance, you can choose to either save this money as a reserve or invest it in improving your equipment by purchasing new machinery.

Persona. Co-funded by the European Union

Profitability: Is my farm viable?

Profitability is the parameter that measures whether your farm's income is adequate to cover expenses and make a profit. It is to identify whether it is worth the economic investment made with respect to what you get for your activity.

The easiest way to do this is:

The rate of return is calculated as the net profit earned divided by total income, multiplied by 100.

Profitability (%) = (Net profit/Total revenue)×100.

Example: Let's say your farm has generated income totalling €50,000 this year and after covering all expenses (such as fertilisers, plant protection and wages), you made a net profit of €10,000.

The profitability, following the above formula, would be calculated as: (10.000/50.000) × 100 = 20%

According to this calculation, you make a profit of €0.20 for every euro you earn. If the result is low, it is because we spend more than we get, therefore, we should consider the possibility of reducing expenses or increasing income.

Persona. Co-funded by the European Union

Investment: thinking about the future

Investing involves using money now to make a profit in the future. In the case of agriculture this may involve economic actions such as:

- Purchasing more efficient equipment.
- Improving crop yields by installing irrigation or water-saving systems.
- Growing different types of crops to reduce potential risks.

What are the factors that make an investment successful?

An investment can be successful when the return on investment (ROI) is greater than the initial cost. ROI indicates the profitability of your investment and is calculated using the following formula:

% Return on Investment (ROI) = (Benefit obtained - Initial cost) / (Initial cost) * 100

Example: You and your family have decided to make an investment of 5,000 € in an irrigation system that ensures to increase and stabilise your production by 15%, this means an additional income of 7,000 € per year. The return on investment would be:
((7.000−5.000)/5.000) × 100 = 40%
This result means that for every euro invested you get a profit of 0.40 € which proves that it is a profitable investment.

How to relate cash flow, profitability and investment?

These three concepts in the financial world are interrelated, for example:
If you do not have the capacity to generate a positive cash flow in your farm, you will not have liquidity, this will prevent you from maintaining the activity and being able to make financial investments.
If you do not consider profitability in your management, you may end up investing in something that has no real return.
At the same time, the right investment can increase your income and increase the profitability of your farm.
That is why it is not enough to understand them separately: you need to look at how they connect in your daily life, to make good financial management of your farm it is important that you learn them and use them in your day-to-day life.

Persona. Co-funded by the European Union

Financial Challenges and Opportunities in Agriculture

In agriculture we are constantly faced with economic challenges that represent difficulties that we have to face on a daily basis as farm workers; however, there are also opportunities that can turn an adverse situation into a viable and sustainable business if we know how to take advantage of them.

Main financial challenges

Agriculture therefore presents challenges that are not so obvious compared to other business sectors. We must bear in mind that in agriculture we do not always control the factors of production such as water availability, climate stability or price variation, it is not an activity in which we control all the conditions or can take direct action on our market.

1. Income variability

In contrast to other economic sectors in which income is more stable over time, in agriculture, the harvest does not occur monthly:

- Harvesting does not occur monthly, as income is generated only after harvesting and selling produce on the market or to intermediaries.
- Crop prices fluctuate according to market conditions in terms of supply and demand, and supply has a global character which tends to reduce the value of our crops.

2. High operating costs

Farming demands constant expenses and investment.

- Fertilisers and seeds are essential elements in agriculture, although their cost is often high.
- Maintaining equipment or facilities in good condition will cause additional costs.

3. Limited access to finance

Banks and financial institutions are often not easy to access for smaller farmers due to, among other reasons:

- Lack of collateral (e.g. property or assets to back a loan).
- Poor credit history.
- High interest in loans for agriculture.

4. Impact of climate change

Phenomena such as extreme drought and heavy rainfall are not only detrimental to agricultural production but also to the management of farmers' finances. The consequences of these climatic events can be very severe for their personal finances if they do not have adequate agricultural insurance to protect themselves, or do not have a financial cushion to cope with unforeseen events.

Financial opportunities in agriculture

While the challenges are obvious, there are also opportunities to use to our advantage as farmers:

1. Subsidies and public support: In Europe, support is provided through the Common Agricultural Policy (CAP) to promote modernisation and sustainability on farms. These subsidies, to which we must be constantly alert, represent a fundamental pillar of support for:

- Acquiring agricultural machinery.
- Develop irrigation systems that are effective and consume less water resources.
- Implement agricultural techniques that are environmentally friendly.
- Diversify activities so as not to depend exclusively on agricultural production.

2. Sustainable financing: More and more banks and organisations promote financing for 'green' projects. For example:

- Sustainable agricultural finance available at favourable interest conditions.
- Microfinance for small-scale farmers.

3. Income diversification: Many farmers are exploring new ways of earning money, such as:

- Direct sales involve cutting out middlemen and selling directly to the consumer.
- Agrotourism, rural tourism and nature tourism providing opportunities to enjoy on-farm activities such as tours, farm work and food sampling.
- Sustainable agriculture to satisfy a market with a growing need for healthy food.

4. Co-operatives and associations: Being part of a co-operative could offer you benefits such as:

- Reduced purchase prices through group purchasing.
- Reaching wider markets with more equitable rates.
- Sharing risks, investments and knowledge.

Strategies to seize opportunities

- Identify available support: Find out about subsidies and support programmes specific to your region or crop.
- Establish a diversification plan: Consider what new activities could complement your current farm, creating opportunities for you and your family.
- Seek allies: Joining cooperatives or associations can open new opportunities and help you not to be alone in the process.

Persona. Co-funded by the European Union

Financial Resilience Strategies

In agriculture, there are inevitable risks due to unpredictable weather and uncertain markets that generate increased costs; however, there are strategies to anticipate these challenges and ensure the ability to adapt to the circumstances, enabling your business to grow even in adverse times; we call this concept financial resilience.

What is financial resilience?

Your and your farm's ability to:

- Overcome challenges such as a poor harvest or declining prices.
- Adapt to changes such as new environmental regulations or technological advances.
- Maximise opportunities by leveraging investments that drive your growth.

Resilience does not develop instantaneously; however, by careful planning and choosing the right strategies, it is possible to establish a stronger business that is prepared for whatever the future holds.

Key strategies to strengthen your financial resilience

1. Diversification of income sources

Relying on only one source of income can be risky. Diversification involves exploring new activities that complement your core business, generate new sources of income and offer new opportunities for you and your family members.

Some examples of diversification:

- Promote crop diversification to avoid relying solely on one particular market.
- Provide rural tourism and agrotourism experiences, including guided tours, hands-on activities and gastronomic experiences.
- Transform your products to increase their value when selling them (e.g. bake homemade jams, make your own cheese, make flavoured oils, etc.).

2. Establish a reserve fund

Putting money aside especially for unforeseen situations can be the key to solving a setback rather than ending up in debt.

- Set a specific goal, for example, to have savings equivalent to the cost of 3-6 months of operating expenses.
- Save in an automated way by setting aside a fixed portion of your monthly earnings.

3. Smart investments

Investing in improvements can boost your business; however, not all investments are equal.

- What effect will this investment have on your income?

Persona. Co-funded by the European Union

- What is the expected outcome?

4. Risk management

It is very important to anticipate, recognise and reduce risks to safeguard your business. Important steps to take include:

- Purchasing insurance policies for your farm to protect against damage caused by adverse weather conditions, fire or low yields.
- Planning crop rotation is key to preserving soil health and minimising problems caused by pests and diseases.
- Employ monitoring technologies, such as moisture sensors, disease forecasting algorithms or weather forecasting systems.

5. Participation in cooperatives

Being a member of a cooperative gives you the possibility to share resources and reduce costs together with other members, which will facilitate:

- Savings on the purchase of supplies by buying as a group.
- Larger markets and better conditions.
- Financing available for important investments.

Gradually build your financial resilience.

- Assess your current situation and reflect on what are the biggest financial risks that your farm would face now.
- Prioritise your actions according to your current financial situation; if you are struggling financially, it is advisable to start by setting up an emergency fund to be prepared for unforeseen events. On the other hand, if your source of income depends only on a single activity, you may want to consider diversifying your activities to reduce risks and maximise opportunities.
- Constantly assess and adjust your financial situation to ensure you are on the right track.

Persona. Co-funded by the European Union

UNIT 2. BUDGETING AND FINANCIAL PLANNING FOR FARMING.

Introduction

Today's agriculture has undergone extensive changes, professionalisation and market demands have made farming evolve into a strategic activity, where financial management and planning are fundamental to the viability and growth of our farms. As with businesses in other sectors, the economic sustainability of a farm depends on how it defines its strategic objectives, how it plans its finances and the financing tools it uses to support its development.

In order to achieve the objectives and grow as a company, financial planning should be established based on:

- The definition of short- and medium-term objectives.
- The identification of funding needs in line with these objectives.
- Select appropriate financing tools for each scenario.

This involves not only managing income and costs, but also identifying investment needs and assessing financing options that allow the farm to grow sustainably.

The Role of Financial Information in Decision Making

In order to access financing through banking institutions, private investors or new financing formulas, it is necessary for the farmer to have reliable, up-to-date and well-structured financial information. It is therefore essential to keep our financial statements up to date, the economic projections derived from these statements and, on the basis of these projections, to make our income and expenditure budgets. Keeping all this information allows us to justify the soundness of the business and its capacity to efficiently manage resources.

Budgets are a fundamental prerequisite for seeking external funding:

- In the absence of prior accounting information, the establishment of assumptions and the development of estimated budgets allows a baseline to be established.
- When we have a financial track record, projecting into the future is essential to assess the viability of new initiatives or investments.
- Having these financial projections allows us to communicate with investors and financial institutions, in these projections we must show how we expect to generate value from the investment.

The Agricultural Budget

A **farm budget** is a financial tool for planning and managing a farm's income and expenditure. Its main objective is to ensure **economic sustainability**, enabling farmers to make informed decisions on investments, operating costs and growth strategies. Budgets are used to:

- Estimate revenues and costs over a given period.
- Detect possible **financial shortfalls** and anticipate solutions.
- Optimise resource management and reduce unnecessary costs.
- Assess the profitability of the farm.
- Facilitating investment, financing and savings decisions.

Practical example

A vegetable farmer needs to forecast his costs for the coming season. By having a well-structured budget, he will be able to estimate how much income he will generate, and so be able to adjust the money he can spend on inputs (seeds, fertilisers, irrigation) and identify whether he may need external financing.

Essential elements of an agricultural budget.

The following components need to be included in the budgeting process:

Revenue

These are all cash inflows received by the holding, including:

- **Sales of agricultural products** (fruit, vegetables, cereals, dairy products, etc.).
- Government grants and subsidies.
- **Income from complementary activities** (rural tourism, training, machinery services).
- **Other sources of income**, such as the sale of organic waste or renewable energy generated on the farm.

> **Example:** A farmer sells 10 tonnes of tomatoes at €1.20/kg. His total income would be **€12,000**.

Fixed Costs

Persona. Co-funded by the European Union

These expenses do not vary irrespective of the level of production. They include:

- Land leasing.
- **Salaries** of permanent staff.
- Agricultural **insurance**.
- **Administrative** and accounting costs.
- **Depreciation** of machinery and equipment.

Example: A farmer rents land for **€1,500 per year**, regardless of the amount of crops he produces.

Variable costs

These expenses vary depending on the level of production. They include:

- Agricultural **inputs** (seeds, fertilisers, plant protection products).
- Water and energy consumption.
- **Maintenance** of machinery and equipment.
- Transport and distribution costs.

Example: If a farmer needs more fertiliser because he is going to lease more land to produce tomatoes, then his expenditure will increase proportionally.

Profit Margin

The **profit margin** is the difference between revenues and total costs. It is a key indicator for assessing the **profitability** of the farm.

If the profit margin is positive, the operation is profitable; if it is negative, cost or revenue adjustments will be needed.

Formula:

$$\text{Profit Margin} = \text{Total Revenues} - (\text{Fixed Costs} + \text{Variable Costs})$$

Example:

- Total income: €50,000
- Fixed costs: €15,000
- Variable costs: €20,000

Profit margin: 50.000 € - (15.000 € + 20.000 €) = 15.000 €.

Persona. Co-funded by the European Union

Types of budgets in agriculture.

There are different types of budgets depending on their purpose:

1. **Operating Budget:**
    - Estimate daily or annual income and expenditure.
    - It helps to plan production and cash flow.

2. **Investment Budget:**
    - Focus on long-term purchases: such as machinery or infrastructure.
    - Evaluates the profitability of new investments.

3. **Cash Flow Budget:**
    - It measures the liquidity of the holding on a month-to-month basis.
    - It allows to anticipate liquidity problems and to adjust expenses.

Example: A farmer who wants to invest in a drip irrigation system will use an **investment budget** to calculate the costs and return on investment.

Persona. Co-funded by the European Union

Budget Template

You can use this template for any farm, allowing you to structure income and costs and determine profitability.

Table 1: Budget Template

Concept	Detail	Amount (€)
REVENUE		
Sales of agricultural products	Product 1, Product 2, etc.	€
Grants and subsidies	Government support, subsidies	€
Additional income	Rural tourism, sale of waste, training	€
Total Income		**€**
FIXED COSTS		
Land leasing	Annual or monthly payment	€
Salaries of permanent staff	Number of employees and salaries	€
Agricultural insurance	Coverage against losses and risks	€
Administrative costs	Accounting, permits, consultancy	€
Other fixed costs	Equipment, preventive maintenance	€
Total Fixed Costs		**€**
VARIABLE COSTS		
Agricultural inputs	Seeds, fertilisers, pesticides	€
Energy and water	Irrigation, electricity, fuel costs	€
Transport and distribution	Logistics, fuel, vehicle maintenance	€
Other variable costs	Temporary labour, contingencies	€
Total Variable Costs		**€**
NET PROFIT	Revenues - (Fixed Costs + Variable Costs)	**€**

Persona. Co-funded by the European Union

Application of the Template: Example

Scenario: A horticulturist wants to draw up a budget to forecast his income and costs for the coming season.

Step 1: Revenue Registration

The farmer sells **15,000 kg of vegetables** at **1.80 €/kg**, and in addition receives a subsidy of **3,000 €.**

Table 2: 1. Application of the Template: Example

Concept	Detail	Amount (€)
Sales revenue	15,000 kg x 1.80 €/kg	27,000 €
Grants and subsidies	Government support	3,000 €
Total Income		30,000 €

Step 2: Recording Fixed Costs

The farmer pays **€5,000 rent**, has **two permanent employees** with an annual salary of **€12,000**, and covers insurance and administrative costs of **€4,500**.

Table 3: 2. Application of the Template: Example

Concept	Detail	Amount (€)
Land leasing	Annual payment	5,000 €
Salaries of permanent staff	2 employees	12,000 €
Agricultural insurance	Coverage against losses	2,000 €
Administrative costs	Accounting, permits	2,500 €
Total Fixed Costs		21,500 €

Step 3: Recording Variable Costs

The farmer is spending **€4,000 on agricultural inputs**, **€1,500 on water and electricity**, and **€2,000 on transport and distribution.**

Table 4: 3. Application of the Template: Example

Concept	Detail	Amount (€)
Agricultural inputs	Seeds, fertilisers, pesticides	4,000 €
Energy and water	Irrigation and electricity	1,500 €
Transport and distribution	Gasoline, logistics	2,000 €
Total Variable Costs		7,500 €

Step 4: Net Profit Calculation

Net Profit = Total Revenues− (Total Fixed Costs + Total Variable Costs)

30,000− (21,500 + 7,500) = **1,000€.**

The farmer makes a net profit of **€1,000** this season, indicating that he needs to reduce costs or improve his productivity to increase his profitability.

Persona. Co-funded by the European Union

Introduction to Financial Statements

Why are financial statements important in agriculture?

Financial statements are the accounting records of each company. These records allow us to analyse the financial situation of each company and to make decisions based on real information. While a budget **projects** future income and expenses, financial statements show **what has actually happened** in a given period.

Those who know how to handle this information:

- You can measure the **solvency and profitability** of your business.
- It can see whether the business needs to **reduce costs or increase revenues**.
- You can be better prepared to **apply for funding**.
- You can anticipate **financial risks** before they affect your farm.

Main financial statements in an agricultural holding

Balance sheet

The balance sheet shows the **financial situation** of the holding at a given point in time. It is traditionally divided into three sections:

- **Assets:** What the farm owns (cash on hand, machinery, land, livestock, product inventory).
- **Liabilities:** What we owe (loans, debts to suppliers, outstanding taxes).
- **Equity:** Difference between assets and liabilities (represents the net value of the business).

Key formula:

$$\text{Equity} = \text{Assets} - \text{Liabilities}$$

If liabilities, i.e. debts, are greater than assets, what we have, the farm is at **financial risk** and may require decisions to be made.

Example: A farmer has:
- **Assets:** €150,000 (land, machinery, cash).
- **Liabilities:** €50,000 (loans and debts).
- **Net assets:** €100,000 = (€150,000 - €50,000).

Persona. Co-funded by the European Union

Income statement

This is what is known as the **profit and loss account (P&L)**. This financial statement shows whether the operation is profitable, i.e. whether it leaves us with a profit in a specific period.

- **Total Income:** Sales of products, subsidies, income from secondary activities.
- **Fixed and Variable Costs:** Operating costs (inputs, labour, rents).
- **Net profit:** Difference between income and expenses.

Key formula:

$$\text{Net Profit} = \text{Total Revenues} - \text{Total Costs}$$

When the net profit is negative, this means that the operation is **loss-making**, and therefore we will need to reduce costs or increase our revenue generation.

Example:
- **Revenue**: €80,000
- **Total expenditure:** 60.000 €.
- **Net profit**: 20.000 €.

If the net profit is negative, it means that the farm is operating at a **loss**, and it will be necessary to analyse cost adjustments or increase productivity.

Cash Flow Statement

As we have seen in Lesson 1, this financial statement records the **liquidity** of the holding, i.e. the amount of cash available to pay for expenses and investments.

It is divided into three sections:

1. **Operating cash flow:** Money generated by agricultural activity (sales, customer collections).
2. **Investment cash flow:** Purchases and sales of assets (machinery, land).
3. **Financing cash flow:** Loans raised or debt repayments.

Key formula:

$$\text{Net Cash Flow} = \text{Cash Inflows} - \text{Cash Outflows}$$

If we find that the cash flow is **negative** for a long period of time, the farm may have difficulties in meeting its monthly expenses.

Example: A farmer has:
- **Cash inflows:** €10,000 (product sales).
- **Cash outflows:** €7,000 (payment of inputs and salaries).
- **Net cash flow:** €3,000

Persona. Co-funded by the European Union

Financial statement templates

We provide you with some templates and practical examples of the three financial statements: **Balance Sheet, Income Statement and Cash Flow Statement**.

Balance Sheet Template

The **Balance Sheet** shows:

- **Assets:** What the farm owns (cash on hand, machinery, land, livestock, product inventory).
- **Liabilities:** What we owe (loans, debts to suppliers, outstanding taxes).
- **Equity:** Difference between assets and liabilities (represents the net value of the business).

Table 5: Balance Sheet Template

BALANCE SHEET	**Detail**	**Value (€)**
ASSETS		
Current Assets	Cash on hand, accounts receivable, inventories	€
Fixed Assets	Land, machinery, infrastructure	€
Total Assets		**€**
LIABILITIES		
Current Liabilities	Short-term debts, outstanding payments	€
Long-term liabilities	Bank loans, machinery financing	€
Total Liabilities		**€**
NET WORTH	Assets - Liabilities	**€**

Persona. Co-funded by the European Union

Applied Example of a Balance Sheet

Scenario: A farmer wants to analyse the situation of his farm at the end of the year. The balance sheet shows that the farm has a good asset/liability ratio, having only 25% liabilities over assets, with a positive net worth of €75,000.

Table 6: Applied Example of a Balance Sheet

BALANCE SHEET	**Detail**	**Value (€)**
ASSETS		
Current Assets	Cash on hand: 5,000 €, Inventory: 10,000 €.	15,000 €
Fixed Assets	Land: 60,000 €, Machinery: 25,000 €.	85,000 €
Total Assets		**100,000 €**
LIABILITIES		
Current Liabilities	Debts to suppliers	7,000 €
Long-term liabilities	Bank loans	18,000 €
Total Liabilities		**25,000 €**
NET WORTH	Assets - Liabilities	**75,000 €**

Persona. Co-funded by the European Union

Cash Flow Statement Template

The **Cash Flow Statement** measures the amount of cash available to meet operating expenses and investments. It is divided into:

- **Operating cash flow:** Money generated by agricultural activity (sales, customer collections).
- **Investment cash flow:** Purchases and sales of assets (machinery, land).
- **Financing cash flow:** Loans raised or debt repayments.

Table 7: Cash Flow Statement Template

CASH FLOW STATEMENT	Detail	Value (€)
OPERATIONAL FLOW		
Sales revenue	Customer collections, production revenues	€
Operational expenditure	Inputs, salaries, energy	(€)
Net Operating Cash Flow	Income - Operating Expenses	**€**
INVESTMENT FLOW		
Purchase of machinery or land	New acquisitions	(€)
Sale of assets	Sale of machinery, land	€
Net Investment Flow	Revenue - Investment Expenditure	**€**
FLOW OF FINANCE		
Loans obtained	Bank or cooperative financing	€
Payment of debts	Payment of loans or interest	(€)
Net Cash Flow from Financing	Revenues - Debt repayments	**€**
TOTAL CASH FLOW	EBITDA + Investment + Financing	**€**

Persona. Co-funded by the European Union

Applied Example of a Cash Flow Statement

Scenario: A farmer wants to analyse the state of his liquidity after one quarter of the season. At the end of the quarter the farm accumulates €4,000 in net cash flow, indicating that its liquidity is in good shape.

Table 8: Applied Example of a Cash Flow Statement

CASH FLOW STATEMENT	Detail	Value (€)
OPERATIONAL FLOW		
Sales revenue	Sale of agricultural products	15,000 €
Operational expenditure	Inputs, salaries, energy	(10,000 €)
Net Operating Cash Flow	15,000 € - 10,000 €	**5,000 €**
INVESTMENT FLOW		
Purchase of machinery	New tractor	(7,000 €)
Sale of assets	Sale of old equipment	3,000 €
Net Investment Flow	3,000 € - 7,000 €	**(4,000 €)**
FLOW OF FINANCE		
Loans obtained	Bank credit	5,000 €
Payment of debts	Loan instalment	(2,000 €)
Net Cash Flow from Financing	5,000 € - 2,000 €	**3,000 €**
TOTAL CASH FLOW	5,000 € - 4,000 € + 3,000 €	**4,000 €**

How do these financial statements relate to each other?

Table 9: Relation among financial statements

Financial Statement	What does it show?	Practical example
Balance Sheet	Financial situation at a specific point in time.	The farmer has assets of €150,000, debts of €50,000, and a net worth of €100,000.
Income Statement	Profitability of the holding over a period.	The operation generated €80,000 in revenue, had costs of €60,000 and a net profit of €20,000.
Cash Flow Statement	Liquidity available on the holding.	The farm had cash receipts of €10,000 and payments of €7,000, leaving a positive balance of €3,000.

We can have high profits, which indicates high profitability, but if we have recurrent negative cash flows, we will surely have liquidity problems to face payments in the short term. This is why it is important to be constantly aware of all the financial statements, so that we have room for manoeuvre to make the best decisions in each management area.

Persona. Co-funded by the European Union

UNIT 3. INNOVATIVE FINANCING TOOLS AND METHODS.

Introduction

Agriculture has its own challenges as we have seen previously, which is why we must look for solutions adapted to the needs of the sector. Aspects analysed such as the variability of income or the high costs of establishment and the seasonality of production mean that we have to look to the financial world, but the reality is that the agricultural sector finds it difficult to access traditional financing markets. This limits the growth and financial management of farms, as well as jeopardising their long-term viability.

In view of this situation, we must look for new financing formulas that respond to our specific needs and that facilitate our access to financing formulas that we cannot find through traditional channels. These formulas offer us options that are more inclusive, flexible and adapted to our sector. Formulas such as microcredits or financial cooperatives, to more complex tools such as bond issues or investment funds, are formulas that open up new opportunities for us to obtain financing, so that we can boost the sustainability and economic growth of our farms.

In this lesson, we will study the difficulties we have in accessing traditional financing, we will identify our financial needs as farmers and we will review 11 innovative financing formulas that we can find within our reach. Finally, we propose you to follow a practical methodology to choose the most suitable innovative financing formula for each situation and the objectives of your farm.

The need for innovative financing formulas

Innovation in financing involves the creation and provision of **new or adapted financial tools** that are tailored to the needs of groups or sectors with difficulties in accessing traditional financing. In the agricultural sector, this translates into flexible, accessible solutions that, as we have seen above, overcome barriers such as lack of guarantee or seasonal income.

Innovative formulas offer solutions to some of the difficulties we have seen in accessing the traditional financial system, as well as adapting to the specific needs of the sector.

Key elements in any financing tool

To understand how a financing tool works and how we can adapt it to our needs, it is essential to analyse the elements that make up any of these tools. These elements build the structure of any financial formula and allow us to assess its viability, flexibility and sustainability.

Persona. Co-funded by the European Union

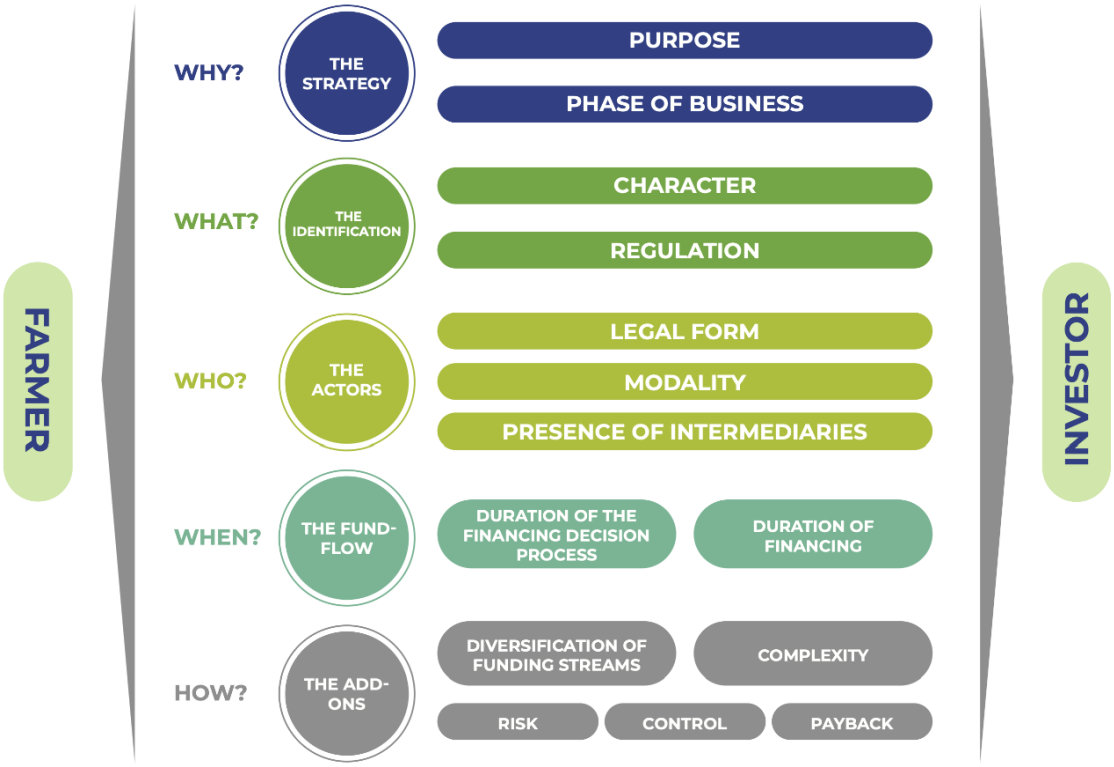

Figure 1: Key elements in any financing tool. Ref. 1

Innovative financing formulas

Along this lesson, we have been able to identify the challenges facing the agricultural sector in terms of farmers' access to traditional financing formulas, the limitations of these traditional methods and the growing need for financial tools adapted to our sector. In this context, innovative formulas have emerged or have been adapted as a key response to overcome these challenges.

Financial Cooperative

Cooperatives are organisations in which several people or entities join together to pool resources for the benefit of their members. Many use these funds to finance projects and/or cover the financial needs of their members, with better conditions than those available from usual financial institutions.

In agriculture, cooperatives have traditionally played a very important role in the acquisition of expensive machinery and the construction of complex infrastructures, but they are increasingly offering financial services by granting small loans to their members.

Persona. Co-funded by the European Union

Figure 2: Graphical representation of financing through Financial Cooperative. Ref. 1

How does a financial cooperative operate?

1. **Initial contributions:** To become a member of the cooperative, each member makes an initial contribution which becomes part of the cooperative's capital.
2. **Creation of the common fund:** All the contributions made by the members make it possible to create a common fund that is at the disposal of its members.
3. **Funding request:** Members in need can borrow funds to finance their projects.
4. **Assessment and approval:** Through its decision-making bodies, the cooperative assesses applications, considering their collective impact, the applicant's profile and the viability of the project.
5. **Repayment and reinvestment:** Loan beneficiaries must repay the loans with a small remuneration, usually in the form of interest, which is paid back into the pool for reinvestment in new projects.

Outline components:

- **Members:** Those who contribute capital and can apply for funding.
- **Cooperative:** The decision-making bodies manage the pooled fund, assessing applications and monitoring how the borrowed resources are used.
- **Beneficiary:** the person who applies for and receives the common funds to finance his/her project and returns them according to the agreed conditions.

Key elements

- **Amount of funding:** The amount approved by the cooperative will depend on the amount requested, as well as on the common resources available.
    - **Typical range:** This amount ranges from small loans (€500) to larger investments (€50,000 or more).
- **Terms:** They are usually flexible, adapting to the type of project or production cycles. Terms from 1 to 10 years depending on the amount requested.
- **Remuneration:** Interest is usually between 1% and 3%, the profits from these loans are paid back into the common funds or shared by the members.
- **Guarantees:** Guarantees are not normally required, as they are based on trust among the partners.

Persona. Co-funded by the European Union

- **Control and monitoring:** The cooperative monitors the use of funds to check that the objectives have been met.

Practical example: In your region, a group of 15 farmers decide to join together to form a cooperative with financial functions. Each member contributes **€1,000**, creating a fund of **€15,000**. At a meeting, the members decide to use these funds to buy a tractor that they will use jointly, this tractor costs **€12,000**, and the remaining €3,000 will be set aside for maintenance and repairs.

- **Repayment term:** Members agree to repay the cost of the tractor over 5 years at an interest rate of 1.5%, with annual instalments adjusted according to each member's use of the equipment.
- **Result:** All members of the cooperative have access to modern machinery, jointly facing an investment that would be too costly to face individually.

Associative Purchases (Associative Purchases)

Purchasing associations are set up as groups of farmers who join together to purchase inputs (usually feed, fertilisers, plant protection products, fuel) jointly. By purchasing in large volumes, they obtain significant discounts, better payment conditions and thus each farmer reduces his production costs. It also increases the spirit of cooperation and creates a sense of belonging.

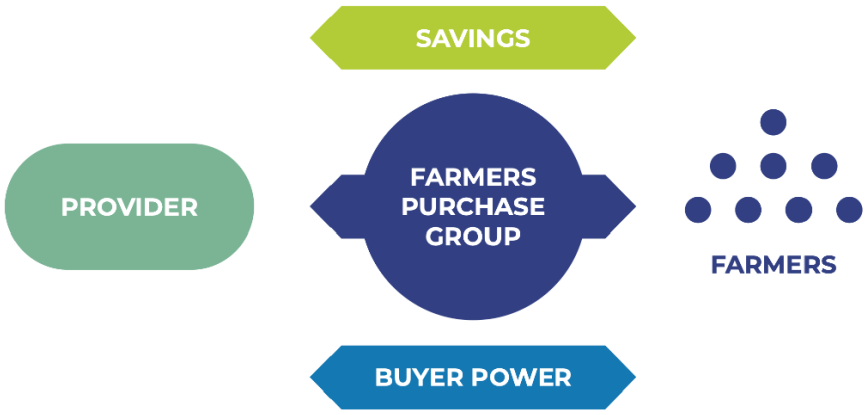

Figure 3: Graphical representation of financing through Associative Purchases. Ref. 1

Persona. Co-funded by the European Union

How does a purchasing association operate?

1. **Group formation:** Interested persons decide to organise themselves formally or informally through these associations.
2. **Determination of needs:** The cluster through its managers decide which goods or services to purchase in their procurement processes.
3. **Collective bargaining:** The cluster contacts suppliers to obtain price and negotiate conditions.
4. **Purchasing and distribution:** The group conducts collective purchasing and is responsible for distributing the inputs among the members.
5. **Individual contribution:** Each member must pay an amount proportional to the amount they receive.

Outline components:

- **Farmers:** Members identify their needs, contribute funds and decide what to buy.
- **Association:** The group represents the collective and negotiates with suppliers.
- **Supplier:** Who offers and delivers the goods at a volume discount.

Key elements

- **Amount of funding:** This will depend on the volume of inputs to be purchased and the number of people who will form the cluster.
    - **Typical range:** Can range from €1,000 for small associations to more than+ €100,000 for purchases within groupings with many farmers.
- **Deadlines:** The length of time farmers have to pay will depend on the terms negotiated with suppliers. They can be short-term, defined terms (cash payment) or payments deferred upon fulfilment of a condition (post-harvest payment).
- **Remuneration:** In this case the benefit to farmers lies not in what they receive but in what they save through these clusters.
- **Guarantees:** It is based on the commitment of members to cover the costs of purchases.
- **Control and monitoring:** The group has a team of managers who are responsible for monitoring purchases, the quality of the goods and the distribution among members.

Practical example: 20 farmers in a rural community decide to form an association to buy fertiliser.

- **Quantity to be purchased:** 200 tonnes of fertiliser.
- **Price without association:** 500 €/tonne.
- **Price traded by volume:** 400/tonne.

Through the grouping, farmers save €100 per tonne, with each farmer paying according to the amount they have requested, adjusting their payments to the conditions agreed within the grouping.

Persona. Co-funded by the European Union

Crowdfunding

Crowdfunding is a recent financing formula, derived from new technologies, which allow collective financing through online platforms, in which each contributor contributes small amounts of money to support a project that applies for funding through the platform. In the agricultural sector, it is being used to finance projects linked to innovation, new technologies, the development of differential products or to create innovative marketing formulas. To qualify for this form of funding, trust must be generated, showing extreme transparency, as the success of the campaign depends on presenting an attractive and well-defined project.

Figure 4: Graphical representation of financing through Crowdfunding. Ref. 1

How does crowdfunding work?

1. **Presentation of the project:** The farmer or group uploads their project on a crowdfunding platform (such as Kickstarter or GoFundMe).
2. **Definition of the financial target:** The applicant defines the total amount to be raised and the timeframe for reaching this target.
3. **Promotion of the campaign:** The details of the project are defined with regard to participants, partners, impacts and expected benefits.
4. **Funders' contributions:** People who want to contribute make small donations through the crowdfunding platform's payment gateway.
5. **Receipt of funds:** If the objective is achieved, the money collected is transferred to the applicant to enable him/her to implement the project.

Outline components:

- **Farmer:** The applicant submits his project on a crowdfunding .
- **Crowdfunding platform:** This is the online tool that connects the farmer with potential funders.
- **Contributors:** Stakeholders who make contributions to finance the project.

Key elements

- **Amount of funding:** It will depend on the size of the project, but normally not very large amounts.

Persona. Co-funded by the European Union

    - **Typical range:** From €500 for basic projects to over €50,000 for more ambitious initiatives.
- **Deadlines:** Collection deadlines vary by platform, the normal is between 30 and 90 days.
- **Remuneration:** There are different alternatives:
    - **Pure donation:** Funders receive nothing in return.
    - **Rewards:** In this case contributors only receive products or benefits related to the project (e.g. a farmer delivers a basket of fresh produce).
- **Guarantees:** Guarantees are not necessary in crowdfunding, however it is necessary to generate trust and clearly state the project in order to attract contributions.
- **Control and monitoring:** The platform and the people involved in the funding need to know how the project is evolving and how the funds are being used.

Practical example: A farmer who grows organic fruit wants to finance the launch campaign of his brand.

- **Financial target:** €8,000.
- **Duration of the campaign:** 60 days.
- **Rewards model:** Contributors will receive a fruit basket from the next harvest.

The farmer presents his project through a campaign on a crowdfunding platform, uploading a description of his branding, photos and videos to show the positive impact of the project. Thanks to this campaign more than 150 people become interested in the project by making contributions, so he reaches his goal within the deadline and can launch his new brand with a web presence.

Crowdlending

Crowdlending is another crowdfunding formula, in which several people (the funders) contribute money to a project in the form of a loan, at the end of the repayment period they will receive their money back plus interest. Unlike crowdfunding, where contributions are often donations or rewards, in crowdlending the funders act as lenders.

Persona. Co-funded by the European Union

Figure 5: Graphical representation of financing through Crowdlending. Ref. 1

How does crowdlending work?

1. **Loan application:** The beneficiary has to submit his project on a crowdlending platform.
2. **Project evaluation:** The platform studies the feasibility of the project and assigns a risk rating.
3. **Publication on the platform:** When the project is approved by the platform, it is published on its website so that interested funders can make their contributions.
4. **Raising the loan:** Interested persons will make small contributions until the funding target is reached.
5. **Repayment of the loan:** Within the defined period, the beneficiary has to pay back to the financiers the money obtained plus interest.

Outline components:

- **Farmer:** Who presents his project and receives the loan from the platform.
- **Crowdlending platform:** It puts the beneficiary in contact with the funders, managing the process of project validation, collection and issuance of the loan.
- **Funders:** Those who are interested in the project and contribute money, receiving a return in the form of interest at the end of the defined term.

Key elements

- **Amount of funding: It** is usually higher than in crowdfunding, being more adapted to medium-scale investments.
    - **Typical range:** From €5,000 to over €100,000.
- **Timeframe:** Can vary from 6 months to 5 years, depending on the scale of the project.
- **Remuneration:** Funders will receive interest as payment for their contributions, the rates being quite competitive, and can vary between 4% and 10%, depending on the risk linked to the project's rating.
- **Guarantees:** Guarantees may be required from the beneficiary, such as a declaration of assets or a forecast of future income from the project, although this will depend on the policies of the crowdlending platform.

- **Control and monitoring:** The platform evaluates the project, assigns a rating, monitors the collection and payment of returns to funders, ensuring that funds are used as agreed.

Practical example: A farmer needs a loan of **€30,000** to install a solar energy system on his farm, for which he turns to a crowdlending platform.

- **Repayment period:** 4 years.
- **Interest rate:** 6%.
- **Repayment pattern:** Quarterly payments of principal plus interest.

The applicant accesses a crowdlending platform where he applies for a loan for his project, in his description he explains the environmental benefits of his proposal, as well as the economic benefits that this investment will have for his farm. After this application, the applicant is assigned a rating and after 45 days, more than 100 funders contribute small amounts to complete their demand for funding.

Business Angels

Unlike venture capital, **business angels** are individual investors who provide their own capital to fund early-stage or expansion-stage business projects. In addition to providing funding, these investors often offer their expertise, knowledge and networks to help the business grow.
In our sector, this type of investor usually supports innovative or sustainable projects, such as new production methods, digital process solutions, or differentiated products.

Figure 6: Graphical representation of financing through Business Angels. Ref. 1

Persona. Co-funded by the European Union

How does a business angel operate?

1. **Project identification:** As in other models, the entrepreneur must present his idea or business to an individual investor interested in the sector.
2. **Negotiation:** If the investor is interested, the parties must agree on the terms of the investment, including the capital invested and the stake the investor will acquire in the business.
3. **Capital contribution:** The business angel will contribute to the project.
4. **Accompaniment:** In addition, the investor will provide support and advice during their stay within the company.
5. **Return on investment:** The business angel will recover its investment from the profits derived from the activity of the business or when it wants to sell its shares.

Outline components:

- **Agricultural entrepreneur:** Who requires funding, presents his project and receives support.
- **Business angel:** A person who provides financing and knowledge in exchange for a stake in the business.

Key elements

- **Amount of funding:** In this case, investments tend to be smaller than the more capital-intensive venture capital.
    - **Typical range:** They can range from €10,000 to over €250,000.
- **Timeframe:** As in the previous case, there are no defined timeframes and the investor's exit depends on the return derived from profits or the sale of their shares.
- **Remuneration:** The business angel earns profits derived from his participation in the business or by selling his shares when the value of the company has grown.
- **Guarantees:** Similarly, no guarantee is required, as the investor assumes the risk in exchange for an equity stake in the business.
- **Control and monitoring:** Business angels tend to be involved in the management of the business, providing advice and validating that the project is growing as planned.

Practical example: A farmer develops an innovative dairy product, such as premium cheese made from organic milk, and seeks to finance a small production plant.

- **Funding requirement:** €50,000 to purchase equipment and launch the product on the market.
- **Offer to the investor:** The investor requires a 15% stake in the business.
- **Result:** A business angel with experience in the food industry wants to invest his money in the business and will advise the farmer on the expansion and marketing of the product.

After several years of sustained sales growth, the business angel decides to sell his stake for much more than his initial contribution.

Persona. Co-funded by the European Union

Microcredits

Microcredit is the provision of small loans and other financial services to individuals or groups with limited access to traditional banking institutions. They are tools to support small farmers, entrepreneurs or rural communities in need of financing for projects with low capital requirements.

Figure 7: Graphical representation of financing through Microcredits. Ref. 1

How does microfinance work?

1. **Loan application:** The applicant must present his or her need for financing to a microfinance institution.
2. **Evaluation:** This institution as in other formula analyses the viability of the loan.
3. **Approval and delivery:** When the evaluation is positive, credit/loans are granted in small amounts.
4. **Repayment:** Repayments of repayments are made on a frequent basis, adapting them to the farmer's income flow.
5. **Technical assistance:** Some microfinance institutions provide advice on how to apply for and manage these microcredits.

Outline components:

- **Farmer:** Who applies for and receives the loan, repaying it in small instalments.
- **Microfinance institution:** Who assesses, grants the credit and supervises its use.

Key elements

- **Amount of funding:** Amounts are usually low.
    - **Typical range:** They can range from €50 to €5,000.
- **Terms:** Repayment can range from 6 months to 2 years, depending on the activity financed.
- **Remuneration:** It will depend on the institution providing the microloans, however, they are usually lower than in traditional loans.
- **Guarantees:** Unlike other loans or credits, it does not require guarantee, although it does:
    - **Solidarity groups:** One or more persons responsible for payment.
    - **Reliable track record:** Have a solvent credit or financial history.

Persona. Co-funded by the European Union

- **Control and monitoring:** As mentioned above, the concessionary institution evaluates, grants and monitors compliance with the conditions of the microcredit.

Practical example: A woman farmer needs a microcredit of **€300** to install a fence in her vegetable garden.

- **Repayment period:** 12 months.
- **Monthly fees:** 25 €.
- **Interest rate:** 5%.

Thanks to the loan, the farmer was able to install the fence and prevent animals and people from accessing her produce.

Debt Issuance (Debt Issuance)

Debt issuance is a financial mechanism whereby companies issue bonds that securitise that debt, and investors interested in acquiring those bonds pay for them. The issuer undertakes to repay the capital obtained from the sale of these bonds, while paying interest over a certain period of time. Unlike crowdlending, this method is used to finance large projects, such as infrastructure modernisation or farm expansion.
Bond issuance, which represents debt, allows access to significant resources without giving up a stake in the business, as is the case with other formulas already seen, and is therefore a more attractive alternative for those who want to maintain control of their activity.

Figure 8: Graphical representation of financing through Debt Issuance (Debt Issuance). Ref. 1

How does debt issuance work?

1. **Definition of the instrument:** The issuer (farmer or agribusiness) issues bonds and sets the terms and conditions, including the value of the bond, the interest rate and the repayment term.
2. **Selling the debt:** Investors buy the bonds, which represent a fixed portion of debt, in exchange for a future return in the form of interest.
3. **Use of funds:** The issuer will use the money raised to finance its activity.

Persona. Co-funded by the European Union

4. **Payment to investors:** The issuer will repay the principal represented by the bonds purchased by each investor within a set period of time and pay them the interest accrued.

Outline components:

- **Issuer:** The person who issues and sells the bonds representing the debt.
- **Investors:** Those who buy the bonds and receive interest as a return.
- **Agricultural project:** Object to be financed with the resources obtained.

Key elements

- **Amount of funding:** The amount will depend on the needs of the project and the number of investors interested in acquiring these bonds.
    - **Typical range:** Can go from €50,000 for local projects to millions of euros for large agricultural enterprises.
- **Terms:** They are usually medium to long term, between 3 and 10 years.
- **Remuneration:** Investors will receive interest on a periodic basis at a fixed or variable interest rate r this will depend on market conditions and the level of risk.
- **Guarantee:** Like other forms of debt, guarantee can be attached which may include tangible assets, such as land or machinery, or only be secured by the creditworthiness of the issuer.
- **Control and monitoring:** In this case, investors do not participate in decision-making, but the issuer is obliged to comply with the conditions agreed in the bond issue it has launched in the market.

Practical example: An agricultural company wants to build a modern greenhouse to increase its strawberry production.

- **Amount of funding:** €500,000.
- **Interest rate:** 4% per annum fixed.
- **Term:** 7 years, with annual interest payments and repayment of the principal at the end of the period.

An agricultural company wants to issue bonds, once purchased by investors, it can complete the construction of the greenhouse and generate sufficient income to meet interest payments and accumulate funds to repay the principal at the end of the debt.

Persona. Co-funded by the European Union

UNIT 4. RISK MANAGEMENT AND RESILIENCE BUILDING.

Introduction

Our industry is constantly affected by major external risks, such as **weather,** market fluctuations, **legal changes or financial problems**. If we do not manage these potential risks, we may encounter problems that affect the financial stability of our farm.

Throughout this lesson we will try to identify the best strategies to **identify, assess and mitigate risks in agriculture**, trying to build what we will call **financial resilience, therefore we will**:

- **Be able to identify risks** affecting the sustainability of a farm.
- **To be able to apply assessment methodologies** (**Risk Matrix** and **SWOT Analysis)**, with which we will be able to assess the effects of these risks.
- **Implement strategies to reduce their effects**, such as financial planning, agricultural insurance and income diversification.
- **Focus on building business resilience**, optimising the use of resources, investing in more sustainable technologies.

With all these tools we will finally plan how to build our **Risk Management and Resilience Development Plan**, with which we will propose strategies that will make it possible to maintain the stability of our farm in such a demanding environment as the one we have.

Risk Management in Agriculture

Risk management is an area that is not always given the attention it needs, but its management is very important to ensure the viability and financial stability of our farms. With this management we are not going to eliminate the potential risks that may affect us, but we can identify them, analyse them and manage them to try to reduce their impact and improve our resilience to potential complications. It is about being able to anticipate the occurrence of these circumstances, and to have strategies that respond to these situations, ensuring the stability and sustainability of the business.

Types of risks in agriculture

Before we start our risk management plan, we must know and understand what the main threats in the sector are, we must understand them and adapt solutions to each of them:

- **Production risk:** There are actors such as droughts, floods, pests and diseases are going to affect our productivity and therefore impact our income.

Persona. Co-funded by the European Union

- **Market risk:** Such as variations in the prices of our products and factors of production, which will affect our profitability.
- **Financial risk:** Such as the already discussed access to finance, or poor debt planning or liquidity problems that may compromise our economic stability.
- **Human risk:** Such as not having a trained team or having processes that generate occupational hazards.
- **Legal and regulatory risk:** Potential changes in agricultural, fiscal, labour or environmental regulations that generate investment costs or potential penalties.

The importance of financial resilience in agriculture

Our sector is subject to great uncertainty, which is why resilience is fundamental for our personal wellbeing and the sustainability of our farm over time. A resilient farm must be able to respond and adapt to the occurrence of adverse situations, avoiding generating long-term stability problems.

Factors that will help us build financial resilience include:

- **Diversification of income:** We should not depend on a single product or market.
- **Efficient cost management:** Investing in technologies and processes that allow us to optimise the use of resources.
- **Building financial reserves:** Build up a reserve fund over time to be able to cope with potential unforeseen events.
- **Use of agricultural insurance:** Transferring risks to third parties that offer us coverage is a common practice that we should include in our strategies.

Basic tools in risk assessment

In order to implement our risk management plan, we must have tools to know, analyse, measure and prioritise potential risks, and thus anticipate their occurrence, some of the most commonly used methodologies are:

Risk matrix: Classifies risks by their likelihood of occurrence and their impact on the farm.
SWOT (Strengths, Weaknesses, Opportunities, Threats and Opportunities) Analysis: Analyses internal and external aspects that may affect the sustainability of the farm.
Climate and market monitoring: Analysis of meteorological information and price analysis to anticipate potential significant changesz.
Financial vulnerability assessment: Ongoing analysis of our indebtedness, liquidity and capacity to pay.

Persona. Co-funded by the European Union

Identification and Assessment of Risks in Agriculture

If we want to manage risks, we must have the tools to identify, assess and prioritise them, by analysing their probabilities and measuring their potential impact we can make better decisions on our farms.

Methods of financial and operational risk analysis

Analysing risks involves assessing 3 main elements:

1. **Probability of occurrence:** What is the probability of that event occurring?
2. **Financial and operational impact:** What effect can it have on the business?
3. **Responsiveness:** How prepared are we to deal with it?

To address this risk analysis, we have different tools with which we can organise and prioritise risks according to their potential severity.

Method 1: Risk Matrix

The **risk matrix** allows us to classify risks according to their probability of occurrence and impact on the business, making it easier to prioritise actions.

Table 10: Methods of financial and operational risk analysis: Risk Matrix

Impact	Low Probability	Average Probability	High Probability
High	Moderate risk	Significant risk	Critical risk (urgent action)
Medium	Low risk	Moderate risk	Significant risk
Under	Minimal risk	Low risk	Moderate risk

Example:
Climate risk (extreme drought): High probability, high impact→ Urgent action.
Price risk (rise in inputs): Medium probability, high impact→ Significant risk.
Regulatory change on fertilisers: Low probability, medium impact→ Moderate risk.

Method 2: SWOT Analysis (Strengths, Weaknesses, Opportunities, Threats and Opportunities)

The **SWOT analysis** allows us to analyse which internal risks (weaknesses) and external risks (threats), as well as those aspects that can positively affect the business (internal-strengths and external-opportunities). It allows us to minimise the impact of negative aspects and enhance the positive ones.

Persona. Co-funded by the European Union

Table 11: Methods of financial and operational risk analysis: SWOT Analysis

Internal Factors	External Factors
Strengths: Available resources, advanced technology, financing capacity.	**Opportunities:** New markets, technological advances, sustainable financing.
Weaknesses: Dependence on a single product, lack of training, low liquidity.	**Threats:** Climate risks, price volatility, changes in regulations.

Example:
Weakness: High level of indebtedness.
Threat: Rising interest rates on bank loans.
Strength: Product differentiation through organic certifications.
Opportunity: Possibility of exporting to more profitable foreign markets.

Method 3: Simulation and Monitoring Models

Using historical data and digital analytics tools we can anticipate risks more accurately.

- **Financial simulation models:** We can evaluate different scenarios derived from different price variations.
- **Climate monitoring:** Use of weather stations and forecasts to anticipate weather events.
- **Market data analysis:** Track product and input prices to anticipate effects on our profitability.

Example: A farmer who is using models with historical data to analyse the profitability of his crops under various climate scenarios and which allows him to adjust his production decisions.

Application of risk assessment tools

We are going to see how these methodologies can be applied on a farm, using several of these tools in a structured way.

Step 1: Risk Identification

- We will identify those internal and external aspects that affect our production and finances.
- We will use SWOT to identify risks and opportunities.

Persona. Co-funded by the European Union

Step 2: Risk Ranking

- We will use the Risk Matrix to see what risks need to be addressed urgently.

Step 3: Mitigation Strategy

- Decide what actions to take to reduce the probability of occurrence and its impact.
- Establish tools to predict a risk before it occurs.

Exercise: Risk Assessment on a Farm

Instructions: We are going to analyse a fictitious farm and you will have to use the methodologies described above. A rainfed cereal company facing these risks:

Climate change: A decrease in rainfall is affecting their profitability.
Price volatility: Fertilisers have risen by 30% in the last year.
High indebtedness: Short-term loans have increased their interest rate.
Regulatory changes: Regulations have reduced the use of inorganic fertilisers.

Homework: develop a report in which you include:

A **Risk Matrix**, ranking risks by likelihood and impact.
A **SWOT analysis** to understand your strengths and opportunities to mitigate risks.
A proposal for management **strategies** that reduce the impacts of these risks.

Risk Mitigation and Risk Management Strategies

After identifying and assessing all risks, we will need to develop **mitigation and management** strategies to minor the potential impact, for which we have available some tools to reduce our vulnerability to potential adverse events. With some of the strategies we could **reduce the probability of the risk occurring** or **reduce its negative effects**.

Financial planning to reduce vulnerabilities

Financial plan is important to reduce the financial risks of a farm, with a sound financial plan we can anticipate market changes and adapt to unexpected contingencies.

Elements of an effective financial plan

Persona. Co-funded by the European Union

- **Budgeting and cost analysis:** Ongoing cost control allows adjustments to be made in times of crisis.
- **Contingency fund:** Generate liquidity reserves to cover emergencies.
- **Scenario analysis:** Working with simulations under various potential scenarios to foresee possible impacts to adapt our response.
- **Debt management:** Avoid excessive indebtedness that may limit us in times of emergencies.

Example: A farmer wants to build up a **reserve fund of** 10 % of his annual income to ensure that he is able to cope with losses or price changes that limit his profitability.

Financial instruments for covering risks

Other coping mechanisms exist for facing unforeseen situations in uncertain environments.

1. Agricultural insurance

Agricultural insurance should be one of our key tools to reduce the impacts of climatic events or other threats that can affect our production.

Types of agricultural insurance:

- **Weather insurance:** To mitigate drought, frost, storms and floods.
- **Yield insurance:** Covers production losses due to adverse conditions.
- **Income insurance:** It can compensate for the loss of income due to price changes.

Example: A wheat farmer is going to take out yield insurance because of low rainfall in last years with a significant reduction in his crop, thereby reducing his losses compared to his average crop.

2. Contingency funds and price hedges

As with insurance, there are alternatives available to reduce the variation in income:

- **Futures contracts:** It suppose enter into an agreement to sell in the future at a pre-fixed price, which reduces the impact of price variations.
- **Customer diversification:** Selling to different customers or in different markets to reduce dependency.

Persona. Co-funded by the European Union

Diversification as risk reduction strategies

Strategies as diversifying production or introducing new technologies can reduce the impacts of climate change or market changes.

1. Income diversification

- **Complementary crops:** Combining different crops in one season to reduce risks and lessen the impacts of having a single production.
- **Agro-tourism and direct sales:** Have several activities which complement each other and generating more income such as direct sales or agro-tourism.

2. Use of technology and adaptation to climate change

- **Efficient irrigation:** By optimising water consumption, more water will be available in case of drought.
- **Crop monitoring with sensors: S**ystems that help to predict pests and diseases, preventing significant damage.
- **Improvements in storage:** These reduce post-harvest losses.

Exercise: Implementation of Risk Management Strategies

Instructions: You will be the manager of a fruit farm that faces the following risks:

Climate change: High temperatures are impacting our crop yields.
Rising input costs: Fertilisers and pesticides have risen by 40%.
Fluctuations in demand: Increased competition has reduced selling prices.
High indebtedness: It has a high level of indebtedness with increasing rates.

Assignments: Write a report in which you should develop a risk mitigation plan integrating financial strategies and diversification initiatives:

Decide on three strategies to reduce the impact of these risks.
Justify your choices.
Propose a plan to develop these actions in one year.

Persona. Co-funded by the European Union

Developing a Risk and Resilience Management Plan

In this section you will integrate everything you have learnt in this lesson to design a **Risk and Resilience Management Plan** adapted to your farm. You will be able to apply **risk assessment** tools**, mitigation and resilience strategies** in a practical case, with the purpose of enhance the financial sustainability of the business.

Structure of the Risk Management and Resilience Plan

To develop the plan we will structure it in five sections, taking into consideration the key factors of risk and resilience management in agriculture.

1. Initial risk assessment

- Description of the business: type of production, location, size and main markets.
- Identify the internal and external risks of the operation.
- Measure the probability and potential impact of identified risks.

2. Mitigation strategies

- Use of assessment tools (Risk Matrix, SWOT Analysis).
- Establish measures to reduce vulnerability.
- Select monitoring systems.

3. Financial and operational resilience strategy

- Financial planning to optimise income and expenditure.
- Diversification of products, markets and sources of income.
- Introduce technology to improve efficiency.

4. Implementation of adaptation and response measures

- Establish short-, medium- and long-term initiatives.
- Allocation of responsibilities and resources to implement the initiatives.
- Define a system for continuous analysis and tuning of the plan.

5. Monitoring and evaluation indicators

- Evaluation of the effect of the selected strategies.
- Improve strategies according to the results obtained.
- Document risk and resilience management.

Persona. Co-funded by the European Union

UNIT 5. FINANCIAL SUSTAINABILITY AND REGULATORY COMPLIANCE.

Introduction

In an environment where regulations, market expectations and environmental challenges play a key role, ethical management that also ensures regulatory compliance will be key to ensuring the long-term viability of any farm.

In this lesson, we will focus on the formulation of a sustainable financial strategy, considering elements linked to social responsibility, regulatory compliance and efficiency. We will proceed to assess the implementation of strategies aimed at income diversification, responsible financing, cost optimisation and risk mitigation. We will examine the European regulatory framework in the field of agriculture and present various tools that will facilitate compliance, optimise your financial records and strengthen your relationships with employees, suppliers, investors and others.

In conclusion, we will examine how implementing these responsible management practices not only facilitates regulatory compliance but also enhances the competitiveness and financial sustainability of your operation.

Designing a sustainable financial strategy

The concept of financial sustainability is not limited to generating the necessary income to cover expenses, but goes beyond that and involves developing a stable economic plan that allows you to reduce risks and maintain the viability of your business in the long term. Maintaining a sustainable approach to this model leads us to seek a balance between **profitability, social responsibility and regulatory compliance**, so that we can adapt to market and regulatory changes.

Principles of financial sustainability

A sustainable financial model should focus on four key principles:

A. **Diversification of income:** We need to not depend on a single product or market, so we need to complement our income with other lines of business or by diversifying our production.

Example: On a cereal farm, income can be generated through agro-tourism or the sale of processed products (flour, oil).

Benefit: Reduces risk from climatic shocks, price variations or changes in demand.

Persona. Co-funded by the European Union

B. **Efficient cost management:** For this we can acquire technologies or new procedures that make better use of a farm's resources.

Example: Drip irrigation systems that reduce water consumption or the automation of processes such as fertigation.

Benefit: This allows us to reduce daily costs without compromising productivity or quality.

C. **Access to responsible financing:** Under a holistic consideration of the business, the selection of financing sources should be aligned with the company's strategy and sustainability objectives.

Example: How to choose green finance or grants or ethical investment programmes instead of high-interest loans without sustainability criteria.

Benefit: It allows access to specific sources of funding, and to reduce the financial burden, grow and improve without putting liquidity at risk.

D. Risk management: We must be able to identify and act to reduce the impact of financial, climate and market risks.

Example: Such as the use of agricultural insurance or the establishment of a reserve fund or signing forward contracts that allow us to hedge prices.

Benefit: This allows us to maintain the stability of the business in the event of unforeseen events and allows us to plan for the long term.

Designing a sustainable financial model

A sustainable financial strategy should not only focus on a few key elements**:**

- **Income and expenditure planning:** Realistic budgeting and ongoing cash flow analysis are essential.
- **Prioritisation of strategic investments:** When allocating resources to areas we should focus on those that generate productivity, profitability and efficiency in the use of resources.
- **Monitoring of financial and sustainability indicators:** We must have a constant control of our financial indicators, for which the control and analysis of ratios is key.

Persona. Co-funded by the European Union

Example of a sustainable financial model

Table 12: Example of a sustainable financial model

Element	Strategy implemented
Income diversification	Sale of fresh and processed products (honey, preserves, oils)
Cost reduction	Use of renewable energies, automation of processes
Access to finance	Application for CAP support and green vouchers for efficient irrigation
Risk management	Agricultural insurance and forward price hedging contracts
Impact assessment	Regular reporting on carbon footprint and sustainability

Implementation Exercise: Building a Sustainable Financial Strategy

Instructions:

You are the owner of a farm and you need to design a sustainable financial strategy. Try to answer the following questions based on the elements presented above:

Income diversification: How can we have additional sources of income without jeopardising the current activity?
Cost management: How can you reduce your costs without affect your quality?
Access to finance: Which funding formula best fits your business strategy? Explain why.
Risk management: In your opinion, what are the biggest financial, climatic and market risks your farm faces? How can you control them?
Monitoring and evaluation: What would be the ratios or indicators that in your opinion could help you to evaluate the stability of the farm?

Regulatory compliance in agriculture

Part of a company's long-term sustainability depends on regulatory compliance. Regulation not only sets the legal framework within which you must operate, but can also affect your access to finance, your competitiveness and your relationship with stakeholders.

Next, we look at how regulations affect farm management and what tools we have at our disposal to comply with legal requirements without jeopardising profitability.

European standards in farm management

Common Agricultural Policy (CAP)

The CAP is the EU's main regulatory tool for the management of European agriculture, defining its regulatory framework in terms of production, but also establishing financing formulas.

- Eligibility for CAP support:
    - Comply with environmental principles (efficient use of water, reduction of emissions).
    - Animal welfare, animal health and food safety.
    - Administrative obligations, records and transparency in farm management.

- Impact on financial sustainability:
    i) It has mechanisms for accessing funding for modernisation.
    ii) It requires us to have accounting and operational records.
    iii) CAP funds can lead to heavy dependency without financial planning.

Environmental regulations

Environmental regulations, outside the CAP, aim to ensure that any productive activity has the least impact on the ecosystem in which it lives.

- **Water Framework Directive:** Impacts on the efficient use of water in agriculture, as well as promoting the implementation of more sustainable irrigation systems.
- **Farm to Fork Strategy:** European policy formula that seeks local sustainability, through better margins for the farmer, reduced emissions and reduced usage of pesticides and chemical fertilisers.
- **Organic Farming Regulation:** Defines the principles to obtain organic certification, what facilitates access to markets that are more concerned about healthy and environmentally responsible food.
- Impact on financial sustainability:
    iv) It can involve higher costs to adapt to your requirements.
    v) It gives us access to subsidies and other public aids.
    vi) It allows us to enter markets that demand ecological and sustainable products.

Labour and tax regulations

Farms must comply with the general and farming rules governing labour relations, as well as those of the fiscal framework to avoid penalties that could affect their financial stability.

- Regulation on working conditions in the agricultural sector: Regulates working hours, minimum wages and safety at work.
- **Tax regulations:** Requires the correct declaration of income, application of agricultural VAT and social contributions.
- **Audit and financial control requirements:** Some of the CAP support and funding programmes require clear accounting and regular controls.

Persona. Co-funded by the European Union

- Impact on financial sustainability:
    - Failure to comply with these rules entails financial penalties and loss of aid.
    - Transparency improves the link with banks and potential investors.
    - Efficient tax management can reduce unnecessary costs.

Tools to ensure compliance

To avoid the pitfalls of non-compliance of legal and financial requirements, farms can apply management tools and strategies.

Compliance management in agriculture

- **Regular internal audits:** Checking compliance in labour, tax and environmental matters.
- **Financial traceability systems:** Be strict in keeping up-to-date accounting records and to ensure compliance in case of inspections or audits.
- **Ongoing training:** Make sure you are aware of the regulations applicable to your company.

Monitoring and evaluation of compliance

- Selection and use of **key compliance indicators** (certifications, audits passed, number of sanctions avoided).
- Implement market **software** for **financial control ensuring** labour, accounting and tax records.
- Produce, where necessary, **sustainability reports** for potential funders and clients, demonstrating compliance with sector requirements.

Responsible agricultural management practices

Markets and our environment not only value compliance with standards, but also a farm that wants to be sustainable must integrate **responsible practices** in its business model. If we are to achieve financial sustainability, it depends not only on managing revenues and expenses, but also on how we relate to employees, suppliers, customers and the environment.

Being aware of and adapting to these good practices will contribute to the stability of the business, but it will also make it easier to enter more demanding markets, improve our reputation and facilitate the relationship with potential funders.

Responsibility towards employees and suppliers

The management of labour and commercial relations is a key element in the sustainability of a farm. Having a fair and safe working environment, as well as transparent business relationships

with our suppliers, will reduce conflicts, improve the productivity of our workforce and our financial stability.

Good practices in employee management

- **Fair working conditions:** Here we should focus on wages, ensuring compliance with labour regulations and always respecting the rights of the workers.
- **Continuous training and education:** We must improve training to improve the productivity of our workforce.
- **Occupational health and safety:** In addition to ensuring occupational safety by developing good practices in risk prevention, avoiding potential accidents.

Good practice in supplier relations

- **Transparent business relationships:** We must develop contractual models that clearly define payment terms, delivery conditions and quality requirements for transactions between the parties.
- **Promoting local production:** It is advisable to have suppliers nearby to promote the regional economy and reduce transport needs.
- **Certifications and quality standards:** If we adhere to sustainable practices, it is advisable to ensure that our suppliers also adhere to these practices.

Financial impact:

- It enables us to minimise staff turnover, as well as the costs of recruiting and training new employees.
- It helps to avoid conflicts with workers and suppliers.
- It promotes the efficiency of our value chain, reducing unnecessary costs.

Food safety and traceability

Food safety guarantees compliance with the standard, but the fact is that national and international markets are increasingly demanding **products with guaranteed traceability**, which does not mean that quality control systems must be in place to guarantee these requirements.

Key elements of food security

- **Control of inputs:** The rational and responsible use of fertilisers, phytosanitary products and additives is a requirement, and we must avoid the presence of dangerous residues in the products.
- **Traceability systems:** We must keep a record of production, from planting to sale.
- **Hygiene and handling protocols:** Sanitary regulations must be complied with in all our production and distribution processes.

Persona. Co-funded by the European Union

Financial impact:

- Access to markets requiring food safety certifications.
- Minimises the risk of sanctions or the commercial impact of compliant products.
- It builds consumer confidence, which builds consumer loyalty in the long term.

Environmental Sustainability and Resource Efficiency

Agriculture coexists with and impacts the environment, adhering to sustainable principles protects natural resources, gives us competitive advantages and in some cases reduces operating costs.

Good practices in environmental sustainability

- **Efficient water use:** Use of precision irrigation to reduce water consumption.
- **Reduction of the use of chemical products:** Introduction of integrated production, regenerative agriculture or organic farming with the reduction of fertilisers and pesticides.
- **Waste management:** Introduction of circular economy and waste reduction.
- **Renewable energies:** Introduction of solar energy, biogas, pellets, etc.

Financial impact:

- Lower costs due to savings in water, chemical and energy consumption.
- Generate more green finance options.
- Better reputation of the company, better access to demanding markets.

Tools to ensure compliance and sustainability

If we want to comply with financial management principles, in addition to following industry standards and meeting market requirements, we must have management tools and strategies that allow us to assess and improve our compliance with these requirements. Throughout this section we will identify some management systems, audits and digital tools that facilitate the control and monitoring of all these aspects.

Compliance management in agriculture

Compliance is a concept that refers to the fulfilment of regulatory requirements, policies and internal processes that guarantee ethical and legal management required in an industry. In our sector, compliance covers not only accounting and tax aspects, but also an environmental, labour and food safety regulatory framework.

Key elements of farm compliance management

1. **Codes of conduct and business ethics:** these are written documents that define the management principles and values by which a company is governed in relation to sustainability, labour relations and financial transparency.
2. **Documentary control and traceability:** These are up-to-date and accessible records relating to finance, production, quality and sustainability, which enable us as a company to demonstrate our compliance in potential inspections and audits.
3. **Internal and external audits:** Many companies voluntarily undergo periodic assessments that allow them to identify potential areas for improvement to avoid incurring legal or market risks.
4. **Continuous training of the team:** It is advisable to be permanently informed about changes in regulations and best management practices.
5. **Risk reporting and control mechanisms:** Facilitate the participation of employees, customers and suppliers who can inform us of areas for improvement.

Financial impact:

- Reduce regulatory non-compliance and potential sanctions.
- Greater transparency generates greater trust, and this in turn generates greater access to finance and markets.
- Strengthening the competitiveness of the company.

Monitoring and evaluation of financial and regulatory performance

Identifying areas of control and being able to design and use **key performance indicators (KPIs)** will enable us to assess our social, financial and environmental impact.

Financial indicators

- **Net profitability: This** allows us to relate income and expenses after tax.
- **Operating cash flow: This** tells us the availability of liquid cash.
- **Debt ratio:** Indicates the company's ability to borrow.

Sustainability and compliance indicators

- Water consumption per hectare
- CO_2 emission reduction
- Compliance with labour regulations
- Certifications obtained

Financial impact:

- Having KPIs simplifies control and decision process.
- It allows access to international markets and green finance.
- It can improve efficiency in the use of resources.

Persona. Co-funded by the European Union

Digital tools for compliance management

There are many digital technologies on the market that can enable us to manage compliance.

Agricultural and financial management software

- **Agricultural ERP (Enterprise Resource Planning):** A comprehensive information management system for production, finance, labour, compliance and sustainability.
- **Traceability software:** Helps to comply food safety regulations through a system for recording production processes.
- **Digital accounting systems:** Facilitates accounting and tax records, enhancing better financial control and minor compliance risks.

Big Data and AI in farm management

- **Climate and financial risk prediction:** Through algorithms we can analyse historical information to anticipate risk situations.
- **Optimisation of input use:** There are decision support systems (DSS) that allow us to identify the best moment to apply treatments, when it is necessary to irrigate, etc.
- **Real-time monitoring:** You can monitor the state of crops and the environmental impact by precision agriculture, with the use of sensors, drones, etc.

Financial impact:

- Reduce costs with the automation of processes.
- With better information we make better decisions.
- It enables compliance with standards and the availability of up-to-date records.

Creating a Compliance Plan

We will apply the concepts of this lesson that will allow us to create a **Financial and Regulatory Compliance Plan** adapted to a farm. Throughout the process we will integrate financial sustainability strategies, compliance and responsible practices.

Structure of the Financial and Regulatory Compliance Plan

The plan that we are going to develop will be structured in 5 sections that allow us to comply with the principles of financial sustainability and compliance in the agricultural sector.

Initial farm diagnosis

- Description of the farm: type of production, size, location and management model.
- Current financial situation: revenues, costs, profitability margin, etc.
- Level of regulatory compliance: applicable regulations, certifications obtained, etc.

Persona. Co-funded by the European Union

- Main challenges: financial, regulatory or sustainability issues identified.

Financial sustainability strategy

- Plan for revenue diversification and cost reduction.
- Financing strategies: public, private.
- Financial risk plans (insurance, reserves, forward contracts, etc.).
- KPIs for monitoring farm finances.

Regulatory compliance strategy

- Identification of European and national regulations with which we must comply.
- Compliance compliance plan (audits, digitisation of records).
- Initiatives to achieve quality, sustainability and food safety certifications.
- Continuous training plan in the labour, regulatory and environmental fields.

Mainstreaming responsible practices

- Plans to improve working conditions and supplier relations.
- Initiatives to improve food safety and product traceability.
- Plans to reduce input use and improve environmental impact.
- Selection of technologies to enhance efficiency and sustainability.

Compliance monitoring and evaluation

- Financial and regulatory KPIs that allow us to measure the progress of the plan.
- Development of documents that enable transparency vis-à-vis investors and regulatory authorities.
- Planning of audits and periodic monitoring.

Exercise: Developing a Financial and Regulatory Compliance Plan

Instructions:

As a manager you will design your Financial and Regulatory Compliance Plan, following the outline proposed above.

Working scenario:

As the owner of a 100-hectare vegetable farm, you face the following challenges:

1. **Lack of diversification, which** makes **you** vulnerable to market fluctuations.
2. **High production costs**, due to high water and energy consumption.
3. **You struggle to comply with environmental and food safety regulations.**
4. **You encounter difficulties in accessing finance due to lack of accounting records.**
5. **You do not have quality certifications**, which does not give you access to international markets.

Tasks: develop a plan in a structured and well-argued document, justifying the decisions you will make to maintain compliance and ensure regulatory compliance and financial sustainability.

Following the proposed structure, you must complete these 5 sections:

- Carrying out an **initial diagnosis** of the farm's regulatory and financial situation.
- Establish your **financial sustainability strategy** to qualify for funding, reduce costs and diversify revenues.
- Define your **compliance plan**, establish which regulations apply to you and how you are positioned with respect to their requirements.
- Defines **opportunities for improvement** in the management of employees, suppliers and environmental impact.
- Establish **monitoring and evaluation KPIs** to measure the achievement of the measures to be developed.

Persona. Co-funded by the European Union

REFERENCES

Ref. 1 *FARMINFIN: Farming concepts and innovative funding (2019-2021)*. Erasmus+ Project n° 2019-1-BE01-KA202-050397. FARMINFIN is an Erasmus+ project that aims to train farmers with the knowledge, skills and competences to apply innovative financing methods that are appropriately tailored to their own farms, their business approach and their personal circumstances. https://farminfin.eu/

Ref. 2 Food and Agriculture Organization of the United Nations (FAO). (2020). Innovative risk management strategies in rural and agricultural financial markets. FAO.

Ref. 3 David Guerrero, D. F., Burbano Ruano, J. J., & Andrés, C. (2021). Financial management in companies in the agricultural sector: a literature review. Aglala, 12(S1).

Ref. 4 Klein, B., Meyer, R., Hannig, A., Burnett, J., & Fiebig, M. (2001). Best practices in agricultural finance. Rethinking Agricultural Finance (AFR) Series, No. 3. FAO.

Ref. 5 FARMINFIN Project. (2020). Farming Concepts and Innovative Funding Report. Proyecto n° 2019-1-BE01-KA202-050397.

Ref. 6 Van Corporate. (2024). Agricultural finance: the reconfiguration of the primary agricultural sector.

Ref. 7 FARMINFIN Project. (2020). FARMINFIN Catalogue About Innovative Financing Products in Agriculture. Proyecto n° 2019-1-BE01-KA202-050397.

Ref. 8 Santesmases Mestre, M. (n.d.). Fundamentals of Marketing. Ed. Pirámide.

Ref. 9 Barrow, C., Barrow, P., & Brown, R. (n.d.). The Business Plan Workbook. Kogan Page.

Ref. 10 Spanish Ministry of Agriculture, Fisheries and Food. (n.d.). Financial Instruments CAP Strategic Plan 2023-2027.

Ref. 11 De la Vega, I. (n.d.). The Business Plan: An indispensable tool. Business Institute.

Ref. 12 Extension Risk Management Education. (n.d.). Introduction to Risk Management.

Ref. 13 Santesmases Mestre, M. (n.d.). Marketing: Concepts and Strategies. Ed. Pirámide.

Ref. 14 Rural and Agricultural Finance Network (RFILC). (2020). Financial innovations for the agricultural sector. RFILC.

Ref. 15 Kotler, P. (1969). Broadening the Concept of Marketing. Journal of Marketing, 33(1).

Ref. 16 Coke, A. (n.d.). How to create a successful business plan: A manager's step-by-step guide. Amacom.

Ref. 17 Alonso Sebastián, R. (n.d.). Agrifood Business Economy. Mundiprensa.

Ref. 18 Johnson, R. (n.d.). Perfect Business Plan. Century/Arrow.

Ref. 19 Ballesteros, E. (n.d.). Agricultural and Food Business Economics. Ed. Mundiprensa.

Ref. 20 Gutiérrez Ossa, J. A., Castaño Giraldo, N. E., & Asprilla Mosquera, E. (2014). Mecanismos de financiación y gestión de recursos financieros del sector agropecuario. Apuntes del CENES, 33(57).

Ref. 21 Spanish Agency for International Development Cooperation (AECID). (2013). Agrocredit: a commitment to financial innovation for rural development in the Dominican Republic. AECID.

Ref. 22 Heney, J. (2005). How to improve the financial management capacity of farmers. FAO.