



TRAnsition paths to sUstainable legume-based systems in Europe

Economic Pillar

Description and metrics of indicators



TRansition paths to sUstainable legume-based systems in Europe

Indicator Structure and Theme ratings for the Economic sustainability pillars

PRODUCTION(E1)		
Scale: Low(-); Medium; High(+)		
THEME	SUB-THEME	INDICATOR
Economic Behavior Scale: Weak(-); Medium; Strong(+)	Snapshot Scale: Low(-); Medium; High(+)	Net Income
		Safety Nets
		Full Cost Accounting
	Planning and Forecasting Scale: Low(-); Medium; High(+)	Internal Investment
		Long Term Profitability
		Sustainability Management Plan
Vulnerability Scale: Weak(-); Medium; Strong(+)	Relationship with suppliers Scale: Weak(-); Medium; Strong(+)	Stability of Supplier Relationships
		Dependence on the Leading Supplier
	Market Scale: Weak(-); Medium; Strong(+)	Stability of Market
		Price Determination
		Product Diversification
Welfare Scale: Low(-); Medium; High(+)	Quality and Safety Scale: Low(-); Medium; High(+)	Control Measures
		Food Quality
		Certified Production
	Value added to Community Scale: Low(-); Medium; High(+)	Regional Workforce
		Local Procurement
	Footprint Scale: Low(-); Medium; High(+)	Food Loss and Waste Reduction
		GHG Reduction Target
		Land Use and Land Cover Change





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PROCESSING (E2)		
Scale: Low(-); Medium; High(+)		
THEME	SUB-THEME	INDICATOR
Economic Behavior Scale: Weak(-); Medium; Strong(+)	Snapshot Scale: Low(-); Medium; High(+)	Net Income Cost of Production Safety Nets
	Planning and Forecasting Scale: Low(-); Medium; High(+)	Internal Investment Long Term Profitability Sustainability Management Plan
	Net Trade	
	Market Scale: Weak(-); Medium; Strong(+)	Stability of Market Guarantee of Product level Product Diversification
		Stability of Supplier Relationships Dependence on the Leading Supplier
		Guarantee of Supply Level
Vulnerability Scale: Weak(-); Medium; Strong(+)	Supplier Scale: Weak(-); Medium; Strong(+)	Control Measures Food Quality Certified Production
		Product Labelling Traceability System
		Regional Workforce Local Procurement
	Quality and Safety Scale: Low(-); Medium; High(+)	
Welfare Scale: Low(-); Medium; High(+)	Labelling Scale: Absence(-); Presence(+)	Product Labelling Traceability System
		Regional Workforce Local Procurement
	Value added to Community Scale: Low(-); Medium; High(+)	

TRANSPORT AND DISTRIBUTION (E3)		
Scale: Low(-); Medium; High(+)		
THEME	SUB-THEME	INDICATOR
Economic Behavior Scale: Weak(-); Medium; Strong(+)		Net Income Safety Nets Internal Investment
Externalities Scale: Weak(-); Medium; Strong(+)	Control Measures	
	Footprint Scale: Low(-); Medium; High(+)	GHG Reduction Target
		Food Loss





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MARKETS AND RETAILERS (E4) Scale: Low(-); Medium; High(+)		
THEME	SUB-THEME	INDICATOR
Economic Behavior Scale: Weak(-); Medium; Strong(+)	Snapshot Scale: Low(-); Medium; High(+)	Net Income
		Safety Nets
		Cost of Marketing and Storage
	Planning and Forecasting Scale: Low(-); Medium; High(+)	Internal Investment
		Long Term Profitability
		Sustainability Management Plan
Net Trade		
Vulnerability Scale: Weak(-); Medium; Strong(+)	Consumer Scale: Weak(-); Medium; Strong(+)	Stability of Consumer Demand
		Product Diversification
		Guarantee of Product Level
	Supplier Scale: Weak(-); Medium; Strong(+)	Stability of Supplier Relationships
		Dependence on the Leading Supplier
		Guarantee of Supply Level
Welfare Scale: Low(-); Medium; High(+)	Quality and Safety Scale: Low(-); Medium; High(+)	Control Measures
		Food Quality
		Certified Production
	Labelling Scale: Absence(-); Presence(+)	Product Labelling
		Traceability System
	Value added to Community Scale: Low(-); Medium; High(+)	Regional Workforce
		Local Procurement
		Food Redistribution Scheme(Including waste management)





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CONSUMERS (E5)			
Scale: Low(-); Medium; High(+)			
THEME	Sub-theme	Sub-sub theme	INDICATOR
Economic Aspect of Behavior Scale: Weak(-); Medium; Strong(+)	Price and Availability Scale: Low(-); Medium; High(+)	Price Scale: Low(-); Medium; High(+)	Price of Food
		Price Promotion	
		Food Expenditure	
		Availability of Products	
	Willingness to Pay Scale: Low(-); Medium; High(+)	Willingness to Pay for Healthy Products	
		Willingness to Pay For Convenience	
		Willingness to Pay For Environmental Friendly Products	
		Vulnerability Scale: Low(-); Medium; High(+)	Food Scarcity*(quality and quantity) Financial Vulnerability
	Product Information *(Labelling and other Information)		
	Education and Information		
	Culture		
Social Aspect of Behavior Scale: Weak(-); Medium; Strong(+)	Taxes and Bans		
	Educational Campaigns		
	Income support Policies		
Policy Scale: Weak(-); Medium; Strong(+)			

Table of Indicators for the Economic sustainability pillars

LEGEND:	
E	Economic Pillar for the Agri-food Chain
1	Production link
2	Processing link
3	Transport and Distribution link
4	Markets and Retailers link
5	Consumers link





TRAnsition paths to sUstainable legume-based systems in Europe

Table of Contents

DESCRIPTION AND METRICS OF ECONOMIC INDICATORS.....	8
Net Income	8
Safety Nets.....	9
Full Cost Accounting	10
Internal Investment	11
Long Term Profitability	12
Sustainability Management Plan	13
Stability of Supplier Relationships	14
Dependence on the Leading Supplier.....	15
Stability of Market	16
Price Determination	17
Product Diversification	18
Control Measures	19
Food Quality	21
Certified Production	23
Regional Workforce	25
Local Procurement.....	26
Food Loss and Waste Reduction.....	27
GHG Reduction Target	28
Land Use and Land Cover Change	29
Cost of Production	30
Net Trade	31
Guarantee of Product level.....	32
Guarantee of Supply Level.....	33
Product Labelling	34
Traceability System.....	36
Food Loss	38
Cost of Marketing and Storage	39
Stability of Consumer Demand.....	40
Food Redistribution Scheme (Including waste management).....	41
Price of Food.....	42
Price Promotion.....	43
Food Expenditure	45
Availability of Products	46
Willingness to Pay for Healthy Products.....	47
Willingness to Pay For Convenience	48
Willingness to Pay For Environmental Friendly Products	49
Food Scarcity*(quality and quantity).....	50





TRAnsition paths to sUstainable legume-based systems in Europe

Financial Vulnerability	51
Product Information *(Labelling and other Information).....	52
Education and Information.....	53
Culture	54
Taxes and Bans	55
Educational Campaigns.....	57
Income support Policies	58

DESCRIPTION AND METRICS OF ECONOMIC TEMES AND SUBTEMES	60
PRODUCTION (E1).....	60
Economic Behaviour	60
Snapshot	60
Planning and Forecasting.....	61
Vulnerability	61
Relationship with suppliers	62
Market	63
Welfare	64
Quality and Safety	65
Value added to Community	66
Footprint.....	67
PROCESSING (E2)	68
Supplier.....	68
Labelling.....	69
TRANSPORT AND DISTRIBUTION (E3)	70
Externalities	70
MARKETS AND RETAILERS (E4).....	71
Consumer	71
CONSUMERS (E5).....	71
Economic Aspect of Behaviour	71
Price and Availability	72
Price	72
Willingness to Pay.....	73
Vulnerability	73
Social Aspect of Behaviour	74
Policy.....	74





TRAnsition paths to sUstainable legume-based systems in Europe

DESCRIPTION AND METRICS OF ECONOMIC INDICATORS

INDICATOR NAME: Net Income

SUB-THEME: Snapshot

THEME: Economic Behaviour

LINK: Production (E1)

DESCRIPTION

It is a measure of financial sustainability over a period of time (for instance last five years). It indicates the financial status of a firm hence is used most frequently by the producers (or processors, retailers, transporters etc.) to determine their financial status.

METRICS

It is measured as total revenues from production or services provided minus costs and expenses incurred to produce or provide services. High - If the income is greater than 0 for more than 2 years. Medium – if the income is greater than 0 for 2 consecutive years and Low- if the income is less than 0.

RATINGS

Scale: **Low (-)**; **Medium**; **High (+)**





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INDICATOR NAME: Safety Nets

SUB-THEME: Snapshot

THEME: Economic Behaviour

LINK: Production (E1)

DESCRIPTION

Safety nets are financial mechanisms put in place to provide support in times of financial hardship. This indicator measures whether the firm has access to such a financial support or not to mitigate short term cash flow. It could be an access to bank loans, credits, private funds, financial support or even own savings put aside for future need. Examples of safety net measures are the Financial Instruments (FIs) which were first introduced in the 2000-2006 EU Rural Development Programme (RDP) (EU, 2017) to correct market failures/imperfections that give rise to an insufficient funding of areas perceived as too risky by the private sectors and crop insurance policies (USDA, 2011).

METRICS

Yes - Presence of a sufficient number of such instruments capable of maintaining the firm's capital flow;

No – Absence of such instrument.

RATINGS

Scale: No (-); Yes (+)





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Full Cost Accounting

SUB-THEME: Snapshot

THEME: Economic Behaviour

LINK: Production (E1)

DESCRIPTION

This indicator includes financial, social and environment measures. It includes financial performance of the firm alongside the social and environment impacts of its products and activities. As sustainable production is getting more importance in recent years, more and more firms will be required to include full cost accounting in their management plans. Using a Life Cycle Analysis (LCA) in alongside economic analysis of products and its distribution to the market is one such example of full cost accounting.

METRICS

A firm's records and analysis of its economic, social and environment performance and impacts.

Yes – if such records are kept

No – if the firm does not keep such record.

RATINGS

Scale: No (-); Yes (+)





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Internal Investment

SUB-THEME: Planning and Forecasting

THEME: Economic Behaviour

LINK: Production (E1)

DESCRIPTION

Regular investment over a period of time is required to sustain productivity and make progress. The level of investment over time is the measure to determine this indicator. Without proper investment, it is less probable that an enterprise could make significant progress (SAFA, 2013). Investments in monitoring performance and efficient machineries to improve productivity can be considered as examples of this indicator.

METRICS

This measures the extent to which the firm has invested over last few years (eg., five years) to improve firm's performance. High – if the firm has regularly invested multiple times over last five years. Medium – if the firm has invested once over last five years. Low – if the firm has not invested over last five years.

RATINGS

Scale: **Low (-); Medium; High (+)**





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Long Term Profitability

SUB-THEME: Planning and Forecasting

THEME: Economic Behaviour

LINK: Production (E1)

DESCRIPTION

This indicator implies the long term financial sustainability of the firm. It measures long term investment and expected returns of profit over 5-10 year time period. A short term profitability does not guarantee a long term sustainability on an enterprise. Investing in upscaling the skills of employers and efficient machineries as well as access to resources and market to generate profits over a longer term will guarantee financial sustainability of an enterprise.

METRICS

Identifying investments on a firm that generates profits over a number of years. High – if multiple investments are made over a longer time (more than 5 years). Medium – if atleast one such investment is made. Low- if no such investments are made over at least last five years.

RATINGS

Scale: **Low (-)**; **Medium**; **High (+)**





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Sustainability Management Plan

SUB-THEME: Planning and Forecasting

THEME: Economic Behaviour

LINK: Production (E1)

DESCRIPTION

Indicator Sustainability management plan identifies if a firm has adopted management plans to ensure financial (and social/environment) sustainability of the firm. The management plans include proper accounting and keeping records of resource allocations, waste disposals, recording outputs etc. A manager can then make decisions on management strategies to ensure sustainability of the firm.

METRICS

The indicator is measured by the presence of such plans (YES) or absence of such plans (NO)

RATINGS

Scale: No (-); Yes (+)





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Stability of Supplier Relationships

SUB-THEME: Relationship with suppliers

THEME: Vulnerability

LINK: Production (E1)

DESCRIPTION

The indicator assesses the stability of the relationships between a firm (farm) and its input suppliers. A pattern showing a stable trend without major fluctuations may lead to an improvement in the performance of business partners and contribute to minimise the vulnerability of the firm (farm) to unexpected changes to input procurement processes (FAO, 2013. SAFA Sustainability Assessment of Food and Agriculture systems indicators. <http://www.fao.org/nr/sustainability/sustainability-assessments-safa>). Stability of the relationships between the firm (farm) and its input suppliers is measured over medium to long term and applies to businesses of any size and at any supply chain stage.

METRICS

Share of ongoing supplier contracts during the past 5 years, or since creation of the enterprise if more recent than 5 years.

RATINGS

Scale: Low (-) 0%; Medium 50%; High (+) 100%





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INDICATOR NAME: Dependence on the Leading Supplier

SUB-THEME: Relationship with suppliers

THEME: Vulnerability

LINK: Production (E1)

DESCRIPTION

The indicator assesses the type of relationship a firm (farm) has with their main supplier, which is determined by the relative reliance on a specific supplier for obtaining essential inputs. Lower reliance on any single supplier through diversification of supply structure reduces supply risk, creates benefits for the firm (farm) through competitive advantage of having a specialised range of suppliers, and may contribute to enhance business growth of any suppliers, however at times it may reduce access to economies of scale aspects of supplier contracts and thus a risk assessment analysis is recommended based on the specific circumstances of firms (farms) (FAO, 2013. SAFA Sustainability Assessment of Food and Agriculture systems indicators. <http://www.fao.org/nr/sustainability/sustainability-assessments-safa>). Dependence on the leading supplier is measured over medium to long term and applies to businesses of any size and at any supply chain stage.

METRICS

Share of the supply of inputs sourced from the main supplier.

RATINGS

Scale: Weak (25%); Medium (50%); Strong (100%)





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Stability of Market

SUB-THEME: Market

THEME: Vulnerability

LINK: Production (E1)

DESCRIPTION

This indicator assesses the capacity of firms (farms) to understand and forecast market stability and accordingly plan and implement a marketing strategy that allows it to build stable marketing channels through which it can identify and finalise contracts with a diversified number of buyers at an appropriate time for the firm (farm) and perform contingency planning against market risk taking into consideration the specific circumstances of the firm (farm). (FAO, 2013. SAFA Sustainability Assessment of Food and Agriculture systems indicators. <http://www.fao.org/nr/sustainability/sustainability-assessments-safa>). Stability of market is measured over medium to long term and applies to businesses of any size and at any supply chain stage.

METRICS

The extent to which the firm (farm) has implemented the necessary mechanisms e.g. marketing strategy and contingency planning to build stable marketing channels.

RATINGS

Scale: Low (0%); Medium (50%); High (100%)





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Price Determination

SUB-THEME: Market

THEME: Vulnerability

LINK: Production (E1)

DESCRIPTION

This indicator assesses the firm (farm)'s decision with regard to the target price for its products and services. This is based on production costs and market situation (competition and consumers), and impacts the revenue earned and profits generated. The difference between the selling price and the cost per unit of production depends on the perceived quality and availability of the product or service, and buyers' purchasing power. (FAO, 2013. SAFA Sustainability Assessment of Food and Agriculture systems indicators. <http://www.fao.org/nr/sustainability/sustainability-assessments-safa>). Price determination is measured over medium to long term and applies to businesses of any size and at any supply chain stage.

METRICS

The ability of the firm (farm) to negotiate with its buyers and determine a price that ensures the necessary profit margin.

RATINGS

Scale: No (-); Yes (+)





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Product Diversification

SUB-THEME: Market

THEME: Vulnerability

LINK: Production (E1)

DESCRIPTION

This indicator assesses the capacity of the firm (farm) to diversify its range of products and services. Diversification may require investment in skilled labour and technology, and may lead to a lower environmental footprint, higher income through higher and/or diversified production and access to new markets, and lower production risk. Assessment of the capacity to invest and potential risks associated with business diversification/expansion is necessary and has to consider the specific circumstances of the firm (farm). (FAO, 2013. SAFA Sustainability Assessment of Food and Agriculture systems indicators. <http://www.fao.org/nr/sustainability/sustainability-assessments-safa>). Product diversification is measured over medium to long term and applies to businesses of any size and mostly at the production and processing stages of the supply chain.

METRICS

Extent to which the firm (farm) has the capacity to diversify e.g. increase its range of products and services.

RATINGS

Scale: **High (100%)**; Medium (50%); **Low (0%)**





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Control Measures

SUB-THEME: Quality and Safety

THEME: Welfare

LINK: Production (E1)

DESCRIPTION

Control Measures refers to the actions that the enterprise can take to reduce the potential of exposure to food hazards, or to reduce the likelihood of the risk of exposure to the hazards being realized. This might include the following tasks: conduct a risk analysis to identify all possible hazards; identify any steps in the production process that are critical to the safety of food; implement effective procedures to ensure as appropriate food safety by eliminating or isolating hazards; conduct a monitoring and evaluation of these procedures to ensure their effectiveness to avoid any food contamination. Food contamination should be avoided; implementing control measures enables the enterprise to prevent and combat any situation that might lead to food contamination. Food safety has a direct impact on consumers' health, as well as on the employees that are in direct contact with the food ingredients. An integrated approach to ensure food safety requires a strong cooperation by the food industry and chain stakeholders in order to build consumers trust and confidence. The enterprise requires investing in education programmes, preventive measures and adoption of adequate practices. A food safety hazard is a biological, chemical or physical agent in, or condition of, food with the potential to cause an adverse health effect. Some examples include improper use of agricultural chemicals (i.e. insecticides, fungicides, herbicides, fertilizers), metal and rock fragments, the appearance of virus, bacteria and parasites and the use of genetically-modified organisms that have been proven to be harmful. (FAO, 2013. SAFA Sustainability Assessment of Food and Agriculture systems indicators). <http://www.fao.org/nr/sustainability/sustainability-assessments-safa>).





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METRICS

This indicator measures whether the enterprise has food hazards and safety control measures in place that comply with correspondent regulations. For the measurement you should:

- Implement sound good agricultural and manufacturing practices.
- Review the policies and practices that have been implemented in terms of food quality and
- safety control in the production and processing department.
- Check whether there are mechanisms in effective operation to prevent and control food hazards and food contamination.
- When applicable, check whether the measures in place are updated and comply with correspondent regulations referred to food safety.

RATINGS

Scale: **Absence (-)**; **Presence (+)**

Presence (+): There are mechanisms in effective operation that fully comply with correspondent regulations to prevent and control food hazards and food contamination; AND There are no records of food contamination incidents since the mechanisms are in place.

Absence (-): There are no mechanisms in place to prevent and control neither food hazards nor food contamination; OR There are records of food contamination incidents in the last five years.





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Food Quality

SUB-THEME: Quality and Safety

THEME: Welfare

LINK: Production (E1)

DESCRIPTION

Food Quality refers to the set of rules defined to guarantee food quality and to meet the highest nutritional standards respective to the type of product. Quality standards are also important for forest products, including wood products and non-wood products. For storage and transportation, quality refers also to cleanliness and packing that guarantee quality assurance within the supply chain. Food standards are a body of rules or legislation defining certain criteria, such as composition, appearance, freshness, source, sanitation, purity, which food must fulfil to be suitable for distribution or sale. The enterprise implements quality control measures to ensure that the expected level of quality of the product and nutritional standards are met. Product quality is an important component to leverage the enterprise' market positioning and growth. Its competitive advantage lays predominately in two main factors: the quality of the product and its price. Achieving high-quality levels and the highest nutritional standards might benefit considerably the enterprise' business growth. Even though each product might require to meet specific nutritional standards, there are some that might be recommended across the food chain, for instance: level of calories based on the ranges defined by the Dietary Reference Intakes (DRIs), low content of saturated and trans fat, no added sugar, low content of additives, rich in fiber, minerals, vitamins and proteins. The national departments or ministries of health, education or agriculture tend to define and recommend specific nutritional standards for each product that the enterprise should know to ensure its compliance (Cardello, 1995; FAO, 2013).

METRICS

This indicator measures the share of the total volume of production that meets quality standards, that is the set of parameters describing internal (e.g. taste, maturity, nutritional content) and external (e.g. cleanliness, color, freshness, shape, presentation, packing) characteristics, which are necessary to ensure safety, transparency in trade and good eating quality. To measure food safety:

- Review the quality control report referred to the total volume of production for a given period.
- Check whether the quality control report observes the required standards, according to the norms that the product needs to meet.





TRansition paths to sUstainable legume-based systems in Europe

- Calculate the share of the volume of production that has successfully passed the quality control.

RATINGS

Scale: **Low (-)**; Medium; **High (+)**

High (+):

- 100% of the volume of production has successfully passed the quality control that measures the required and highest nutritional standards the product needs to meet; AND
- The enterprise has advanced in adopting the best practices to produce food products that meet the highest nutritional standards considered for its target population; AND
- The respective staff is informed and trained in adopting the best practices to meet the expected food quality levels and the highest nutritional standards

Medium:

- One or two of the criteria mentioned above (under the "High (+)") is/are not satisfied.

Low (-)

- Any amount of the production has not passed the quality control that measures the required nutritional standards the product needs to meet; OR
- The enterprise has not implemented any step towards adopting best practices to produce food products that meet the highest nutritional standards and food quality levels.





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Certified Production

SUB-THEME: Quality and Safety

THEME: Welfare

LINK: Production (E1)

DESCRIPTION

Certified production enables an enterprise to assure its customers of the sustainability of the entire supply chain. It is a growing field and is gaining credibility, as very large and powerful enterprises are subscribing to it, and investing in ensuring sustainable production across the supply chain. Increasingly, consumers are demanding certification, to the extent that certified agriculture products are increasing their market share at significant rates. Consumers are also becoming wary of self-certification schemes, where producers or marketers create independent "certification" by awarding themselves a brand which mimics independent certification. By contrast, certified sustainable production employs independent or collaborative verification systems, with transparent auditable protocols. Certified production might include organic standards, both third party and participatory guarantee systems, HACCP food safety systems, Fairtrade, Rainforest Alliance, Forest Stewardship Council, Marine Stewardship Council, Aquaculture Stewardship Council, or other voluntary sustainability standards. Certification standards, which are closely associated with large producers and marketers, are subject of some controversy, as to who's interests are given primacy in decisions taken (FAO, 2013; McGee, 2015).

METRICS

Using procurement, distribution and production records, there is need to establish:

- That all procurement, distribution and production is assessed as certified or not, and that this is regularly recorded.
- An assessment is in place for any non-certified procurement, distribution and production which details the problem with the procurement, reason for the decision, plan to remedy and date for review.
- The enterprise has evidence that it transparently reports to its stakeholders on its progress towards certified sustainability procurement, distribution and production.





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RATINGS

Scale: No (-); Yes (+)

Yes (+):

- The enterprise keeps a procurement record which identifies the certification status for all procurement, distribution and production; AND
- The enterprise is able to provide evidence of assessments for any non-certifiable procurement, distribution or production, and this assessment details the problem, reason for the decision, plan to remedy and date for review; AND
- The enterprise has evidence that it transparently reports its progress towards certified procurement, distribution and production to its stakeholders.

No (-)

- The enterprise has no records of certification of its procurement, distribution or production; OR
- The records of certified procurement, distribution or production are not independently verified or are self-awarded; OR
- The enterprise' claims to stakeholders of certified supply cannot be proven.





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Regional Workforce

SUB-THEME: Value added to Community

THEME: Welfare

LINK: Production (E1)

DESCRIPTION

This indicator assesses the contribution of the enterprise to the local economy through employment of local labour directly involved with the community and micro-environment where the enterprise operates. This contributes to the sustainable development of the region through creation of an adaptable skilled labour force, support of employment progression and skills upgrading, improvement of local employment rates and development of local governance and capacity. Additionally, it may strengthen the business viability of the firm (farm). (FAO, 2013. SAFA Sustainability Assessment of Food and Agriculture systems indicators. <http://www.fao.org/nr/sustainability/sustainability-assessments-safa>). Regional workforce is measured over medium to long term and applies to businesses of any size and mostly at the production and processing stages of the supply chain.

METRICS

Extent to which the firm (farm) hires regional employees when similar skills, profile and conditions are offered in relation to other candidates to perform adequately the required duties and responsibilities.

RATINGS

Scale: **Low (0%)**; Medium (under 50%); **High (over 50%)**





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Local Procurement

SUB-THEME: Value added to Community

THEME: Welfare

LINK: Production (E1)

DESCRIPTION

This indicator assesses the contribution of the enterprise to the local economy through procurement from local/regional suppliers. Procurement from local suppliers may contribute to make the local/regional economy more dynamic, encourage growth of stakeholders through integrating them in the supply chain, supporting their productivity and cost efficiency through provision of training, technology or financial resources, generate value through employment, and overall investment in the community and skills development. This may also lead to benefits for the firm (farm) with regard to the quality of the inputs used. (FAO, 2013. SAFA Sustainability Assessment of Food and Agriculture systems indicators. <http://www.fao.org/nr/sustainability/sustainability-assessments-safa>). Local procurement is measured over medium to long term and applies to businesses of any size and mostly at the production and processing stages of the supply chain.

METRICS

Extent to which the firm (farm) has purchased its inputs from local/regional suppliers when equal or similar conditions exist, in comparison to non-local suppliers.

RATINGS

Scale: Low (0%); Medium (under 50%); High (over 50%)





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Food Loss and Waste Reduction

SUB-THEME: Footprint

THEME: Welfare

LINK: Production (E1)

DESCRIPTION

This indicator assesses the extent to which the firm (farm) mitigates food losses and waste, whether has a clear strategy to identify where losses/waste occur, assess their magnitude, identify causes of loss/waste, identify potential mitigation measures and implements them in an efficient way considering the specific circumstances of the firm (farm). The losses and waste correspond to all stages of the supply chain, namely production (pre- and post-harvest), storage, transport and processing, to consumption. (FAO, 2013. SAFA Sustainability Assessment of Food and Agriculture systems indicators. <http://www.fao.org/nr/sustainability/sustainability-assessments-safa>). Food loss and waste reduction is measured over medium to long term and applies to businesses of any size and mostly at the production and processing stages of the supply chain.

METRICS

The capacity of the firm (farm) to mitigate food losses and waste in the firm's (farm) operations while optimising overall efficiency as regards planned quantities of by-products and food reaching the intended destinations i.e. passing to subsequent operational stages within the firm (farm) and respectively reaching the buyers e.g. processors, retailers, consumers.

RATINGS

Scale: **Managed (loss/waste mitigation strategy implemented)**; **Not managed (loss/waste mitigation strategy not implemented)**





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: GHG Reduction Target

SUB-THEME: Footprint

THEME: Welfare

LINK: Production (E1)

DESCRIPTION

This indicator assesses the extent to which the firm (farm) has a clear strategy to identify where emissions occur, assess their magnitude, identify causes, identify potential mitigation measures and capacity to implement them in an efficient way considering the specific circumstances of the firm (farm). The GHG emissions occur at all stages of the supply chain, namely production (pre- and post-harvest), storage, transport and processing, to consumption. (FAO, 2013. SAFA Sustainability Assessment of Food and Agriculture systems indicators. <http://www.fao.org/nr/sustainability/sustainability-assessments-safa>). GHG reduction target is measured over medium to long term and applies to businesses of any size and mostly at the production and processing stages of the supply chain.

METRICS

Implementation of a GHG emissions mitigation strategy at firm (farm) level.

RATINGS

Scale: Not achieved (GHG emissions mitigation strategy not implemented); Achieved (GHG emissions mitigation strategy implemented)





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Land Use and Land Cover Change

SUB-THEME: Footprint

THEME: Welfare

LINK: Production (E1)

DESCRIPTION

This indicator assesses the extent to which human activities cause modification of the Earth's terrestrial surface. Current Land Use and Land Cover Change rates and intensities have increased at unprecedented levels with corresponding impact on ecosystems. In the context of this indicator, land use refers to human activities stemming from agriculture, forestry, aquaculture and industrial activities that alter processes using land surfaces, whereas land cover refers to the physical and biological cover over the surface of land, including water, vegetation, bare soil, and/or artificial structures. (FAO, 2013. SAFA Sustainability Assessment of Food and Agriculture systems indicators. <http://www.fao.org/nr/sustainability/sustainability-assessments-safa>). Land Use and Land Cover Change is measured over medium to long term and applies to businesses of any size and mostly at the production and processing stages of the supply chain.

METRICS

Implementation of a strategy at firm (farm) level to minimise the footprint of its operations as regards land use and cover and avoid conversions from ecologically valuable to less valuable habitats caused by the enterprise's operations.

RATINGS

Scale: **Not managed (no land use and cover change strategy in place); Managed (land use and cover change strategy in place)**





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Cost of Production

SUB-THEME: Snapshot

THEME: Economic Behaviour

LINK: Processing (E2)

DESCRIPTION

This indicator is used to determine profitability of the firm. Costs of production include all expenses incurred by an enterprise to produce a certain product. It consists of cost of raw inputs, labour, machinery and other costs such as fuel, electricity and administrative costs. An optimal cost structure of production is important for financial, environment and social sustainability of the firm.

METRICS

This indicator is determined by the firms efforts to register all costs of production systematically over a number of years. High – if the firm keeps records every year over a number of years. Medium – if the firm keeps records occasionally over the years. Low – if the firm does not register costs of production at all.

RATINGS

Scale: **High (+); Medium; Low (-)**





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Net Trade

THEME: Economic Behaviour

LINK: Processing (E2)

DESCRIPTION

This indicator suggests the value of exported processed product to imported inputs over a number of years. This may not be true for small firms but for larger firms it is a good indicator to measure the financial sustainability of the firm.

METRICS

It is based on the value of exported product compared to the value of imported inputs for a firm over a number of years. High – if net trade is greater than zero over last five years. Medium – if the value is greater than zero for at least last 3 years. Low – if the firm has negative net trade for last 5 years.

RATINGS

Scale: **Low (-); Medium; High (+)**





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Guarantee of Product level

SUB-THEME: Market

THEME: Vulnerability

LINK: Processing (E2)

DESCRIPTION

This indicator assesses the extent to which the firm has in place the mechanisms required to ensure that its operations are sufficiently resilient to withstand environmental, social and economic shocks. These are mechanisms to minimise production related risks such as shortages or reduction in quality not corresponding to the standards agreed as part of business commitments. (FAO, 2013. SAFA Sustainability Assessment of Food and Agriculture systems indicators. <http://www.fao.org/nr/sustainability/sustainability-assessments-safa>). Guarantee of product level is measured over medium to long term and applies to businesses of any size and mostly at the production and processing stages of the supply chain.

METRICS

Implementation of mechanisms to prevent/mitigate disruptions to firm's operations that may affect planned quantity and quality of its products.

RATINGS

Scale: **Low (0% no mechanisms in place)**; **Medium (50% some mechanisms in place)**; **High (100% mechanisms in place to cover any production related risks)**





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Guarantee of Supply Level

SUB-THEME: Supplier

THEME: Vulnerability

LINK: Processing (E2)

DESCRIPTION

This indicator assesses the extent to which the firm has in place the mechanisms required to ensure that contracts with its suppliers cover any potential risks linked to environmental, social and economic shocks that may affect the quantity or quality of its inputs. Additionally, the indicator should consider whether the firm has the capacity to efficiently and timely replace suppliers who cannot fulfil contractual obligations using its contacts with other potential suppliers.

These are mechanisms to minimise production related risks such as shortages or reduction in quality of its products due to inadequate supply of inputs. Guarantee of Supply Level is measured over medium to long term and applies to businesses of any size.

METRICS

Implementation of mechanisms to prevent/mitigate disruptions to firm's supply of inputs that may affect planned quantity and quality of its products.

RATINGS

Scale: **Low (0% no mechanisms in place)**; Medium (50% some mechanisms in place); **High (100% mechanisms in place to cover any input supply related risks)**





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Product Labelling

SUB-THEME: Labelling

THEME: Welfare

LINK: Processing (E2)

DESCRIPTION

Product labelling is an essential part of transparent accountability to consumers. According to the Codex Alimentarius Commission (COD EX STAN 1-1985), "Labeling means any written, printed or graphic matter that is present on the label, accompanies the food, or is displayed near the food, including that for the purpose of promoting its sale or disposal." Information usually provides details on the content and composition of products but also particular aspects of the product, such as its origin, or its production method, including whether it has been produced using a certified organic production or other methods. Some foodstuffs, such as those containing genetically modified organisms or allergenic substances, especially foods intended for infants or even various beverages, are subject to specific regulations. Labelling may also identify value-based systems, such as whether goods have been produced using a certified fair trade system. Labelling of certain non-food products must also contain particular information such as toxicity, hazard and flammability, to guarantee their safe use and allow consumers to exercise real choice. In addition, the packaging of foodstuffs must adhere to production criteria to avoid contaminating food products with both food and nonfood contaminants. Labelling must be genuine, and in the best systems, this is independently verified, such as an organic certification or fair trade certificate. Therefore, labelling and claims vary from ethical and nutritional, through safety and production process characteristics and can include the mundane, such as origin through to whether the food is the result of genetic engineering. The standard is that labels must be clear, honest and verifiable (FAO, 2013; Boström et al., 2008).

METRICS

- For mandatory labeling as required in the country of sale, 100% of compliance is expected. However, where an enterprise markets to numerous jurisdictions, the highest standard required by any jurisdiction should be applied to all.
- Where an enterprise has adopted labeling and information beyond the minimum standard, this should be noted and again 100% compliance is expected, as anything less is worse than no labeling at all.
- Measurement:
 - All product labeling is audited against legally required code in the country in which it is sold.





TRAnsition paths to sUstainable legume-based systems in Europe

- All voluntary claims (e.g. fair trade, organic) are checked against the independent certifier statement.
- Where content and nutritional claims are made, these are routinely independently audited.
- Labeling codes used are included in the enterprise quality management documentation and any variance from the code is documented and reported internally.

RATINGS

Scale: **Absence (-)**; **Presence (+)**

Presence (+): The enterprise fully complies with all relevant legally required labelling codes for its products. It seeks to go beyond minimum standards in providing consumer information, is responsive to its stakeholders and has an accessible system, whereby consumers and other stakeholders can obtain further product and product quality and safety information.

Absence (-):

- The enterprise has not complied with labeling codes and has sought to avoid the impact of these codes; OR
- Products are knowingly or regularly incorrectly labeled.





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Traceability System

SUB-THEME: Labelling

THEME: Welfare

LINK: Processing (E2)

DESCRIPTION

A traceability system is a series of mechanisms and procedures that ensure traceability over all stages of the food chain so that products can be easily and correctly identified and recalled. The Codex Alimentarius Commission (COD EX STAN 1-1985) defines traceability as "the ability to follow the movement of a food through specified stage(s) of production, processing and distribution". The "ability to follow the movement" refers to tracing both directions: trace forward in the food chain and trace backward in the food chain. Furthermore, "movement" can relate to the origin of the materials, processing history or distribution. Traceability systems could be composed of rules and documented procedures, organizational structures, processes and management resources (i.e. personnel, financial resources, equipment, information technologies), regulations and training. A traceability system can also use information system technologies for electronic data entry and database management systems. Traceability systems improve management of risks related to food safety, guarantees products authenticity and give reliable information to customers. New legal requirements in many developed and developing countries increase pressure on exporting countries to comply with traceability requirements and especially, with those included in the World Trade Organization agreements, to justify sanitary or phytosanitary objectives. Additionally, traceability is a requirement in all B2B voluntary certifiable standards in good agricultural and manufacturing practices, including HACCP principles. There are two main international standards and guidelines that regulate the establishment and operation of a traceability system: ISO 9001: 2000, a standard for quality management and quality assurance; and ISO 22000: 2005, a standard for food safety and management systems. In the case of forest products, it is important to track the chain of custody of all types of products to ensure that they originated from sustainably managed forests verifiable (Moe, 2008; FAO, 2013).

METRICS

This indicator measures the share of the volume of production that can be identified and recalled along the food chain and in the market place through a traceability system, at least in the last production year. To measure:

- Check whether sound good agricultural and manufacturing practices are in place.





TRansition paths to sUstainable legume-based systems in Europe

- Check whether a written procedure details how the enterprise identifies, and eventually recall, withdrawals from the market.
- Review the enterprise business records regarding the volume of production for at least the last production year, and verify the way the product is identified when advancing to the next stage of the food chain, or to the market place.
- Check for any record on the product that will allow following its movement through the different stages of the production, processing and distribution, and to recall it when required.
- Calculate the share of the volume of production that can be followed and recalled through the different stages of the food chain and the market place.
- Check in the production, processing and distribution department for any mechanism and procedures in place that can identify, follow and recall the product through the food chain.

RATINGS

Scale: **Absence (-)**; **Presence (+)**

Presence (+):

- Complete product information (i.e. ingredients, processing inputs) is available across the supply chain due to tracking and traceability systems; AND
- 100% of the total volume of production for at least the last year has a traceability system in place; AND
- The enterprise is able to provide evidence of a traceability system in place and it can be proven at least yearly under recall mock tests throughout the enterprise activities; AND
- The enterprise has evidence that measures are taken when results of tests do not comply with traceability objective.

Absence (-):

- 0% of the total volume of production for a given period has a traceability system in place; OR.
- The enterprise has not advanced in designing and adopting a traceability system.





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Food Loss

SUB-THEME: Footprint

THEME: Externalities

LINK: Transport and Distribution (E3)

DESCRIPTION

This indicator assesses the extent to which the firm mitigates food losses, whether has a clear strategy to identify where losses/waste occur, assess their magnitude, identify causes of loss/waste, identify potential mitigation measures and implements them in an efficient way considering the specific circumstances of the firm. (FAO, 2013. SAFA Sustainability Assessment of Food and Agriculture systems indicators. <http://www.fao.org/nr/sustainability/sustainability-assessments-safa>). Food loss and waste reduction is measured over medium to long term and applies to businesses of any size.

METRICS

The capacity of the firm to mitigate food losses in its operations while optimising overall efficiency as regards planned quantities of food reaching the intended destinations e.g. processors, retailers, consumers.

RATINGS

Scale: **Managed** (loss mitigation strategy in place); **Not managed** (no loss mitigation strategy in place)





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Cost of Marketing and Storage

SUB-THEME: Snapshot

THEME: Economic Behaviour

LINK: Markets and Retailers (E4)

DESCRIPTION

This measure indicates the profitability of the firm. An optimal cost structure of marketing and storage is important for financial, environment and social sustainability of the firm.

METRICS

The firm registers costs of marketing and storage effectively over a number of years. High – if such records are maintained continuously over last 5 years. Medium – if such records are kept at least once over last 5 years. Low – if no such records are kept.

RATINGS

Scale: **Low (-)**; **Medium**; **High (+)**





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Stability of Consumer Demand

SUB-THEME: Consumer

THEME: Vulnerability

LINK: Markets and Retailers (E4)

DESCRIPTION

This indicator assesses the extent to which the firm has in place the mechanisms required to ensure that contracts with its buyers or, if the firm is in retail, its supply, are covered against any potential risks linked to unanticipated fluctuations in consumer demand. Additionally, the indicator should consider whether the firm, unless in retail, has the capacity to efficiently and timely replace buyers who cannot fulfil contractual obligations following such market instability through using its contacts with other potential buyers. These are mechanisms to minimise risks such as shortages or excess of supply linked to unanticipated demand fluctuations. Stability of consumer demand is measured over medium to long term and applies to businesses of any size.

METRICS

Implementation of mechanisms to prevent/mitigate disruptions to firm's supply due to unanticipated demand fluctuations.

RATINGS

Scale: **Low (0% no mechanisms in place)**; Medium (50% some mechanisms in place); **High (100% mechanisms in place to cover any demand related risks)**





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Food Redistribution Scheme (Including waste management)

SUB-THEME: Value added to Community

THEME: Welfare

LINK: Markets and Retailers (E4)

DESCRIPTION

This indicator assesses whether the firm has a food waste management strategy, particularly whether it is involved in food redistribution activities/scheme. Food redistribution may lead to a more effective use of resources and implicit lower waste generated (Nordic Council of Ministers. 2017. Preventing food waste-better use of resources, <http://norden.diva-portal.org/smash/get/diva2:1115667/FULLTEXT01.pdf>; Davies, A., and Evans, D. 2018. Urban food sharing: Emerging geographies of production, consumption and exchange. *Geoforum* 99, 154-159). There has been recent focus in the literature on food redistribution between different agents along the supply chain, mostly in the hospitality and retail sector using different transformative mechanisms and via a number of channels from the more traditional to online collaborative platforms and other ICT-enabled modes (Falcone P.M., Imbert E. 2017, Bringing a Sharing Economy Approach into the Food Sector: The Potential of Food Sharing for Reducing Food Waste. In: Morone P., Papendiek F., Tartiu V. (eds) *Food Waste Reduction and Valorisation*, Springer). Food redistribution has not only economic and environmental benefits but also food security and social impacts, and thus any approach to redistribution has to be aligned with the social justice context. Food surplus redistribution may lead to social inclusion benefits and be central to the nexus of waste reduction, social inclusion, and community engagement (Schanes, K. and Stagl, S. 2018. Food waste fighters: What motives people to engage in food sharing?. *Journal of Cleaner Production* 211, 1491-1501).

METRICS

The capacity of the firm to mitigate food waste through implementation of a waste management plan and involvement in food redistribution activities/scheme.

RATINGS

Scale: Yes (waste management plan implemented through e.g. food redistribution); No (no waste management plan implemented and no involvement in food redistribution activities)



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TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Price of Food

SUB-SUB-THEME: Price

SUB-THEME: Price and Availability

THEME: Economic Aspect of Behaviour

LINK: Consumers (E5)

DESCRIPTION

Food price is the amount of money charged for a food product. Technically, the price of food is the sum of all the values that a customer gives up to gain the benefits of having or using the food in question. Thus, consumers exchange a certain value for having or using the product. That value is called price. Price has been the major factor affecting buyer choice. However, in recent decades, non-price factors (e.g., the origin and the healthiness of the food) have gained increasing importance. Food prices are affected by several factors such as the cost of inputs, labour, transport, processing, marketing, weather, market speculation, and food demand (Köster, 2009; Swinnen, 2011).

METRICS

Two main methods are used to figure out what price to attach to each unit of a food product: competition-based pricing and cost-based pricing. Competition-based pricing is a pricing method that makes use of competitors' prices for the same or similar product as a basis in setting a price. The business may sell its product at a price above or below such a benchmark. Setting a price above the benchmark will result in higher profit per unit but may also result in fewer units sold, as customers would prefer products with lower prices. On the other hand, setting a price below the benchmark might result in more units sold but will cause less profit per unit. The cost-based pricing method consists of adding the direct material cost, the direct labour cost, and overhead to determine what it costs the company to offer the product or service. Then, a markup percentage is added to the total cost to determine the selling price. This markup percentage is profit (Hinterhuber, 2008; Johansson et al., 2012).





TRAnsition paths to sUstainable legume-based systems in Europe

RATINGS

Scale: Low (-); Medium; High (+)

Low price: the selling price is described as low if it significantly lower than average market price

Medium price: the selling price is described as medium if it equal or close to average market price

High price: the selling price is described as high if it significantly higher than average market price

INDICATOR NAME: Price Promotion

SUB-SUB-THEME: Price

SUB-THEME: Price and Availability

THEME: Economic Aspect of Behaviour

LINK: Consumers (E5)

DESCRIPTION

Price promotion is a sales' promotion technique, wherein the firm reduces the price of a product drastically, but for a short period. Companies adopt several promotional pricing schemes such as special-event pricing, cash rebates, warranties and service contracts, and psychological discounting. Special-event pricing consists in offering discounts and rebates on festivals, during the off-seasons with the intention to pull as many customers as possible. Cash rebates consist in offering the cash rebates on their items if purchased in a particular time period. In the case of loss-leader pricing, big retailers reduce the price of a well-known brand with the intention to have additional store traffic. Through this strategy, the retailers try to compensate for their margin loss from the additional sales achieved from additional customers. Warranties and service contracts consist in offering extended warranties and free services of the product to the customers. Finally, under psychological discounting, the companies artificially set the high price of the product and then offer it at substantial savings (Kendrick, 1998; Kaser, 2012).





TRansition paths to sUstainable legume-based systems in Europe

METRICS

There are different techniques to measure the effectiveness of price promotions (Palazon and Delgado-Ballester, 2009; Hawkes, 2009):

- 1) Compare the sales and gross margins for the promoted product before the promotional period, during the promotional period, and after the promotional period.
- 2) Compare the overall average order size and the lines per order during the promotion periods to those same metrics during non-promotion periods.
- 3) Compare the total sales per day of all items during promotional periods (including the items not promoted), to the total sales per day of all items during non-promotional periods.
- 4) Compare the results for the various promotions against each other. Rank which promotions provided the best sales and gross margin lift for the company. Compare the results against those in prior years to see if the trends are favourable, or if certain promotional activities are getting stale.
- 5) Compare the added gross margins generated by each promotion, to the underlying incremental cost of each promotion, to determine the overall net profit generated by each program.

RATINGS

Scale: **Low (-)**; Medium; **High (+)**





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Food Expenditure

SUB-THEME: Price and Availability

THEME: Economic Aspect of Behaviour

LINK: Consumers (E5)

DESCRIPTION

It is the share of total household expenditure (as a proxy of income) spent on food. It is an indicator of household food security because it is widely documented that the poorer and more vulnerable a household, the larger the share of household income spent on food. This observation is known as Engel's law, which demonstrates that as incomes rise, both within a country and across countries, expenditure on food increases but expenditure on other things increases even more, so that the share of total income spent on food declines. Given this observation, the indicator is especially helpful to understand the impact of food price fluctuations on both the quality and quantity of household (Humphries et al., 2017; Venn et al., 2018).

METRICS

Data on food expenditure can be obtained from a limited number of sources, some are open access and others are available upon request (e.g., country's National Bureau of Statistics).

- 1) Household surveys data (e.g., Living Costs and Food Survey in the UK). In the survey, households are asked to provide data, or estimates, of the amounts they spend on consumption goods and services and for other purposes over a given period. They are also called Household consumption surveys or Household budget surveys. This type of survey is possibly the most important source of information on poverty, food security, and nutrition outcomes at national, sub-national and household level (Grosh and Glewwe, 2000).
- 2) Scanner data come from two types of data collections. (1) Point-of-sale (retail) collections which use the universal product code (UPC) of products sold at retail checkout counters to identify products and quantities sold and their prices. (2) Household scanner panels, which are usually random samples of households in which household members are asked to scan in the UPC of the items they have purchased, using scanners provided to them (Baron and Lock, 1995).

RATINGS

Scale: **Low (-)**; Medium; **High (+)**



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TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Availability of Products

SUB-THEME: Price and Availability

THEME: Economic Aspect of Behaviour

LINK: Consumers (E5)

DESCRIPTION

Availability refers to the physical existence of food in desired quantities and of the desired quality. On national level, food availability is a combination of domestic food production, commercial food imports and exports, food aid and domestic food stocks (Steinhart et al., 2013).

METRICS

Several indicators are used to measure food availability (Kumar, 1989; Hutto, 1990):

- At the individual or household level
 - Frequency of vegetable consumption
 - Frequency of meat and fish consumption
 - Frequency of dairy products
 - Number of meals eaten a day
 - Dietary diversity of 8 major food groups: cereals, milk, meat, sugar, vegetable oils, fruits, vegetables, starchy roots
- At the macro level
 - Cereal yields
 - Food Production Index
 - Livestock Production Index
 - The ratio of total exports to food import

RATINGS

Scale: Low (-); Medium; High (+)



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TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Willingness to Pay for Healthy Products

SUB-THEME: Willingness to Pay

THEME: Economic Aspect of Behaviour

LINK: Consumers (E5)

DESCRIPTION

Willingness to pay refers to the maximum price at or below which a consumer will buy one unit of the product labelled as healthy. To be labelled as healthy, the food must be low in sugar, saturated fat, and salt. It must also provide at least 10 per cent of one or more of vitamins A or C, iron, calcium, protein, or fibre. It is also popular in research papers to report the price premium for healthy food products. The price premium is computed as the difference between the willingness to pay for a food product labelled as healthy and its counterpart that is not labelled as healthy (Grunert et al., 2007; Gao and Schroeder, 2009).

METRICS

Willingness to pay is generally expressed as the amount of money per unit of product. Data on consumers' willingness to pay for healthy food are generally collected using value-elicitation methods (e.g., contingent valuation, experimental auctions) or preference-elicitation methods (e.g., discrete choice experiment, ranking conjoint analysis, best-worst mechanism). In the value-elicitation methods, consumers are directly asked to report their maximum willingness to pay for the food product labelled as healthy. In preference-elicitation methods, consumers are presented with a set of alternatives of the same food product that are described in terms of, e.g., their nutritional content and price; and are asked to indicate the alternative they prefer most (or rank the alternatives from the most to the least preferred). Then, a choice model is used to estimate consumers' marginal utility for the health label and the price. Finally, consumers' average willingness to pay is computed as the negative of the ratio of the marginal utility for the health label divided by the marginal utility for the price (Ryan et al., 2007).

RATINGS

Scale: Low (-); Medium; High (+)



Page 47
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TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Willingness to Pay For Convenience

SUB-THEME: Willingness to Pay

THEME: Economic Aspect of Behaviour

LINK: Consumers (E5)

DESCRIPTION

Willingness to pay for convenience food refers to the maximum price at or below which a consumer will buy one unit of food that is easier to prepare and consume compared with its conventional counterpart. Convenience foods are appealing to people who have poor cooking skills or have no time to search and execute recipes from scratch. Convenience food includes a range of products like noodles, soup, frozen vegetables, casserole mixes, dessert mixes and yoghurts. To measure the WTP for convenience, first, the attribute convenience of the studied food product needs to be defined. Then, two products one with the attribute convenience and one without this attribute should be identified and valued. The price premium for convenience is the difference between the willingness to pay for the food with the attribute convenience and the food without this attribute (e.g., Ready to eat lasagne versus frozen and not cooked lasagne) (Lly et al., 2007; Ikiz et al., 2018).

METRICS

Willingness to pay is generally expressed as the amount of money per unit of product. Data on consumers' willingness to pay for convenience food are generally collected using value-elicitation methods (e.g., contingent valuation, experimental auctions) or preference-elicitation methods (e.g., discrete choice experiment, ranking conjoint analysis, best-worst mechanism). In the value-elicitation methods, consumers are directly asked to report their maximum willingness to pay for the convenience food of interest. In preference-elicitation methods, consumers are presented with a set of different alternatives of a food product. The alternatives are described in terms of, e.g., convenience level and price; and are asked to indicate the alternative they prefer most (or rank the alternatives from the most to the least preferred). Then, a choice model is used to estimate consumers' marginal utility for the attribute convenience and the price. Finally, consumers' average willingness to pay is computed as the negative of the ratio of the marginal utility for the attribute convenience divided by the marginal utility for the price (Hensher et al., 2015; Grunert et al., 2009).

RATINGS

Scale: Low (-); Medium; High (+)



Page 48
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TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Willingness to Pay For Environmental Friendly Products

SUB-THEME: Willingness to Pay

THEME: Economic Aspect of Behaviour

LINK: Consumers (E5)

DESCRIPTION

Willingness to pay for environmental-friendly food products refers to the maximum price at or below which a consumer will buy one unit of the product labelled environmentally friendly. There is no legal definition of environmentally friendly food products. In academia, researchers who wanted to measure consumers' willingness to pay for environmentally-friendly food products used a product such organic food, food labelled as produced with low greenhouse emissions, or food labelled as having lower food miles (i.e., transported for less distance) etc. The price premium for an environmentally-friendly food product, say organic, is computed as the difference between the willingness to pay for a food product labeled as organic and its counterpart that does not carry the label organic (Meas et al., 2014; Trivedi et al., 2015; Akaichi et al., 2019).

METRICS

Willingness to pay is generally expressed as the amount of money per unit of product. Data on consumers' willingness to pay for environmentally-friendly food are generally collected using value-elicitation methods (e.g., contingent valuation, experimental auctions) or preference-elicitation methods (e.g., discrete choice experiment, ranking conjoint analysis, best-worst mechanism). In the value-elicitation methods, consumers are directly asked to report their maximum willingness to pay for the food product labelled as environmentally friendly. In preference-elicitation methods, consumers are presented with different alternatives of a food product. The alternatives described in terms of, e.g., their environmental friendliness and price; and are asked to indicate the alternative they prefer most (or rank the alternatives from the most to the least preferred). Then, a choice model is used to estimate consumers' marginal utility for the attributes environmental friendliness of the product and the price. Finally, consumers' average willingness to pay is computed as the negative of the ratio of the marginal utility for the attribute environmental friendliness divided by the marginal utility for the price (Hess and Daly, 2014).

RATINGS

Scale: Low (-); Medium; High (+)



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TRansition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Food Scarcity*(quality and quantity)

SUB-THEME: Vulnerability

THEME: Economic Aspect of Behaviour

LINK: Consumers (E5)

DESCRIPTION

Food scarcity may result in situations where supply is lower than demand (quantity) or does not meet the quality requirements e.g. nutritional needs. This can follow situations such as unforeseen weather events and pest infestations, or unequal distribution of resources within a region/country, institutional and policy framework, and barriers to trade and food aid. Imperfect distribution of resources has been acknowledged as a main cause of food scarcity. The World Trade Organization estimated that an equal distribution between Earth inhabitants of the total calories from food produced worldwide would ensure 2,750 calories per person per day (Conley, D. 2018. Global Food Scarcity: Definition, Distribution, Roadblocks. Science Literacy: Using Research-Based Facts To Make Real-World Decisions, University of Nebraska-Lincoln <https://sdn.unl.edu/global-food-scarcity>)

METRICS

Food scarcity is measured by the degree to which food demand is not met by the food supply in either quantity or quality.

RATINGS

Scale: Low (-); Medium; High (+)





TRansition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Financial Vulnerability

SUB-THEME: Vulnerability

THEME: Economic Aspect of Behaviour

LINK: Consumers (E5)

DESCRIPTION

Household's consumption decisions are determined by their financial stability and departures from this to the point of their being financially vulnerable may affect not only their ability to purchase e.g. food but, under certain macroeconomic conditions, the economic stability of the market (Fuenzalida, M, Ruiz-Tagle, J. 2011. Household Financial Vulnerability. Central Banking, Analysis, and Economic Policies Book Serie. In: Rodrigo Alfaro (ed.), Financial Stability, Monetary Policy, and Central Banking, edition 1, volume 15, chapter 10, pages 299-326 Central Bank of Chile). Household consumption is influenced by a number of factors, one of the most important being income. Income fluctuations due to e.g. changes in employment status of household members combined with unsustainable debt levels may lead to household's financial vulnerability and implicitly lower purchasing power and unhealthy consumption patterns.

METRICS

Financial vulnerability is measured by the ability to maintain a sustainable level of income generation that meets household demand for goods and services and thus ensures, among others, a sustainable food consumption pattern.

RATINGS

Scale: **Low (-)**; **Medium**; **High (+)**





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Product Information *(Labelling and other Information)

THEME: Social Aspect of Behaviour

LINK: Consumers (E5)

DESCRIPTION

Food product information such as information on the origin of the product, nutritional content, and portion sizes is critical to help consumers make confident and informed food choices. Food labels are commonly used to communicate information about the characteristics of food products. Labelling requirements vary across countries. For example, in the UK, mandatory labelling requirements for all packaged foods are as follows (Food Standard Agency, 2018; European Commission, 2018)):

- name of the food
- list of ingredients
- ingredients or processing aids causing allergies or intolerances that are stated in the 14 Allergens
- quantity of certain ingredients or categories of ingredients
- net quantity of the food
- date of minimum durability or the 'use by' date
- special storage conditions and/or conditions of use
- name or business name and address of the food business operator
- country of origin or place of provenance
- instructions for use where it would be difficult to make appropriate use of the food in the absence of such instructions
- the alcohol strength by volume for beverages containing more than 1.2 % of alcohol, by volume
- nutritional declaration

In the case of unpackaged food products, producers and marketers do not have to label their food in the same way that manufacturers and sellers of packaged food businesses do. However, the producers and marketers of non-prepacked food products must provide consumers with information on allergen and intolerance information (Food Standard Agency, 2018; European Commission, 2018)).





TRAnsition paths to sUstainable legume-based systems in Europe

METRICS

There is an extensive literature in economics and marketing on the effect of product information on consumers' preferences and demand. Both stated- and revealed-preference methods were used to measure this effect. Contingent valuation, choice experiment, and experimental auctions have been the most commonly used stated-preference methods to investigate the effect of providing consumers with information on products' characteristics such as healthiness, sustainability, origin, and price (Akaichi et al., 2017, 2019). Revealed-preference methods, such as scanner data and household survey data, were also used to assess the effect on consumers' purchases of branding, retailers' promotions and other marketing strategies (Revoredo et al., 2018; Rajavi et al., 2019).

RATINGS

Scale: **Absence (-)**; **Presence (+)**

INDICATOR NAME: Education and Information

THEME: Social Aspect of Behaviour

LINK: Consumers (E5)

DESCRIPTION

Sustainable consumption patterns involving aspects such as environment, animal welfare and human health may be influenced by a number of factors, such as education and access to information. While on their own they may not necessarily lead to behavioural change, it has been acknowledged that in conjunction with other behavioural determinants, they may have a significant impact on behaviour. Consumers are not always aware of the attributes of the food they consume and increasing awareness through well-targeted information-based tools may lead to change in consumption patterns and correction of perceived barriers to consumption. Such barriers for instance in the case of legumes include lack of preparation and cooking knowledge, lack of knowledge of the health and environmental benefits, availability of convenience products (legume based processed foods). Improved access to information through e.g. cooking demonstrations, recipe ideas, educational advice, clear dietary guidance at the national level will help highlight the nutritional profile of legumes within the overall dietary pattern (Figueira, N.; Curtain, F.; Beck, E.; Grafenauer, S. Consumer





TRAnsition paths to sUstainable legume-based systems in Europe

Understanding and Culinary Use of Legumes in Australia. *Nutrients* 2019, 11, 1575; Jallinoja, P., Niva, M., Latvala, T. 2016. Future of sustainable eating? Examining the potential for expanding bean eating in a meat-eating culture. *Futures* 83, 4-14. DOI 10.1016/j.futures.2016.03.006)

METRICS

Education and information indicator is measured through the level of provision of education and information supplied to consumers to potentially influence change to more sustainable consumption patterns.

RATINGS

Scale: Low (-); Medium; High (+)

INDICATOR NAME: Culture

THEME: Social Aspect of Behaviour

LINK: Consumers (E5)

DESCRIPTION

Cultural background of consumers is one of the factors influencing sustainable consumption patterns. In the case of legumes, consumption has been higher in food cultures such as Mexican (refried kidney beans), Indian (dhal and pappadums), Mediterranean (navy bean soup), Middle Eastern (falafel and hummus), and overall in the Caribbean, tropical Latin America, South Asia, western and eastern sub-Saharan Africa, where legume dishes are a traditional component of the food culture. This has largely been due to the high cost and limited availability of meat but also due to religious beliefs in some of these countries. In some northern European cultures, vegetable proteins are perceived as the protein of the poor and therefore they would be unlikely to feature as main ingredients as part of meals on social occasions. In Europe legumes are associated with rural heritage and ethnic foods more likely originating from Southern countries. Exposure to new cultures through e.g. travel and public and media interest in cuisines and dishes from other parts of the world may affect perceptions of cultural suitability (Figueira, N.; Curtain, F.; Beck, E.; Grafenauer, S. Consumer Understanding and Culinary Use of Legumes in Australia. *Nutrients* 2019, 11, 157; Jallinoja,





TRAnsition paths to sUstainable legume-based systems in Europe

P., Niva, M., Latvala, T. 2016. Future of sustainable eating? Examining the potential for expanding bean eating in a meat-eating culture. *Futures* 83, 4-14. DOI 10.1016/j.futures.2016.03.006)

METRICS

Culture as an influence on consumption is measured as the level of exposure to food cultures more likely to encourage sustainable consumption patterns.

RATINGS

Scale: **Low (-)**; Medium; **High (+)**

INDICATOR NAME: Taxes and Bans

THEME: Policy

LINK: Consumers (E5)

DESCRIPTION

Taxes and bans are tools used by governments to discourage the production of and/or the demand for food products with undesirable attributes (e.g., unhealthy foods, non-ethical products and farming practices). Food tax is a surcharge, generally, applied to food products whose consumptions has negatives externalities (e.g., obesity, pollution, addiction). The food tax helps to decrease the consumption of food products with undesirable attributes by increasing their prices. Furthermore, the money raised through food taxes is generally used by the government to pay for the social cost caused by the consumption of the taxed food. Fat and sugar taxes are among the well-known food taxes that were applied to encourage healthy choices (Bertail and Nichèle, 2010); 2010; Escobar et al., 2013).

Bans constitute another tool used by governments to stop the use of farming and processing practices that were proven to have negatives externalities on the public, farm animals, and the





TRAnsition paths to sUstainable legume-based systems in Europe

environment. For example, bans, such as banning the use of gestation crate (pigs), battery cages (hens), and castration (lamb), were used in the EU to improve the welfare of animals raised in modern EU farms. The trans-fat ban is another example of the use of bans to reduce the consumption of food products with unhealthy attributes. In fact, by the mid-2000s, it was clear beyond doubt that trans-fats increase the risk of coronary heart disease. Denmark banned partially hydrogenated oils in 2003, and several other countries followed suit; in the United States, New York City passed such a ban for restaurant foods in 2006, and the state of California did the same in 2008 (Downs et al., 2013).

METRICS

Demand analysis has been commonly used to assess the effect of taxes on the demand for the taxed food products. Price elasticity is the main output of demand analysis. It measures the percentage change in the demand of the studied product following one per cent change in its price. For example, if the price elasticity of a product A is equal to -2.5, this suggests that an increase in the price of product A by 1% will lead to a decrease in its demand by 2.5%. This also implies that if the price of product A increases by, for example, 10% following the application of a tax, its demand will decrease by 25% ($=-2.5 \times 10\%$). There are two types of price elasticity: own-price elasticity and cross-price elasticity. While the own-price elasticity measures the sensitivity of demand for product A to a change in its price, the cross-price elasticity measures the change in the demand for product A to a change in the price of product B. Information on cross-price elasticity is useful to assess how taxing a food product will affect its substitutes and complementary products. For instance, taxing soft drinks may decrease its consumption but may also increase the demand for juice, if juice and soft drinks are complementary products (Gramer et al., 2001; Lin et al., 2011).

RATINGS

Scale: Weak (-); Medium; Strong (+)





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Educational Campaigns

THEME: Policy

LINK: Consumers (E5)

DESCRIPTION

This indicator is interlinked to the education and information indicator and features the tools used to promote behavioural change to more sustainable consumption namely the means of delivering the information perceived as more convincing e.g. food education campaigns in schools or healthy food ad campaigns (Figueira, N.; Curtain, F.; Beck, E.; Grafenauer, S. Consumer Understanding and Culinary Use of Legumes in Australia. *Nutrients* 2019, **11**, 1575; Jallinoja, P., Niva, M., Latvala, T. 2016. Future of sustainable eating? Examining the potential for expanding bean eating in a meat-eating culture. *Futures* **83**, 4–14. DOI [10.1016/j.futures.2016.03.006](https://doi.org/10.1016/j.futures.2016.03.006))

METRICS

Educational campaigns indicator is measured through their perceived usefulness by consumers in adopting more sustainable consumption patterns.

RATINGS

Scale: **Weak (-)**; Medium; **Strong (+)**





TRAnsition paths to sUstainable legume-based systems in Europe

INDICATOR NAME: Income support Policies

THEME: Policy

LINK: Consumers (E5)

DESCRIPTION

They are generally financial incentives given by the government to individuals or businesses in the form of cash, grants, or tax breaks with the aim of keeping the prices of food products low for people to be able to afford them and also to encourage their production in the first place. Subsidies are the most popular income support policy (Callan et al., 1998; Schwartz and Clements, 1999). There are at least four types of subsidies.

1. Production subsidy is provided to encourage the production and consumption of a product. In order for manufacturers to increase their production output, the government compensates for some of its parts to lessen their expense while increasing their output. As a result, production and consumption grow, but the price remains the same. The drawback of such an incentive though is that it promotes overproduction and incurs the cost for product storage.

2. Consumption subsidy happens when the government offsets the costs of food, education, healthcare, and water.

3. Export subsidy consists of encouraging exports by subsidising the cost. However, this can be easily abused, especially, by exporters who exaggerate the prices of their goods so that they receive a larger incentive, eventually raising their profits at the expense of the government's spending.

4. Employment subsidy is given by the government to companies and organisations in order to enable them to provide more job opportunities.

Perhaps the most popular in the EU is the Common Agricultural Policy CAP, which is a system of subsidies paid to EU farmers. Its main purposes are to guarantee minimum levels of production so that Europeans have enough food to eat and to ensure a fair standard of living for those dependent on agriculture (Gray, 2000).

In developing countries, income support policies are heavily used to reduce food insecurity and malnutrition. Maize, rice, wheat, sugar, and cooking oil are the most subsidised food products in developing countries (Besley and Kanbur, 1988).





TRAnsition paths to sUstainable legume-based systems in Europe

There is an increasing body of literature on the negative effect of the use of subsidies. It seems that the use of subsidies harms the environment, distorts trade, and benefits those in society who do not require support (Rivas, 2003).

METRICS

Several approaches have been proposed to measure the effect of income support policies (see for example, Cerulli (2010)). As aforementioned, one of the main objectives of income support policies is to increase (directly or indirectly) individuals' income. An easy way to assess the sensitivity of the demand for food products to a change in consumer income is to estimate the income elasticities of these products. The income elasticity measures the percentage change in the demand for a product following a change in consumer income. For example, if the income elasticity of fruit and vegetables is equal to 1.6, this implies that an increase of consumer income by 1% will increase the consumption of fruit and vegetables by 1.6% (Gramer et al., 2001; Haque, 2006).

RATINGS

Scale: Weak (-); Medium; Strong (+)





TRansition paths to sUstainable legume-based systems in Europe

DESCRIPTION AND METRICS OF ECONOMIC TEMES AND SUBTEMES PRODUCTION (E1)

THEME: E1.1 Economic Behaviour

LINK: Production (E1)

DESCRIPTION

This theme includes indicators for both short term and long term economic sustainability of a firm. It consists of both short term and long term economic status of a firm. Short term status as indicated by a snapshot of financial condition of the firm provide mostly year to year financial position of the firm. Long term status includes a firm's capability to forecast, make decisions and invest to keep the

RATINGS

firm economically, socially and environmentally sustainable.

Scale: Weak (-); Medium; Strong (+)

SUB-THEME: E.1.1.1 Snapshot

THEME: Economic Behaviour (E1.1)

LINK: Production (E1)

DESCRIPTION

This sub-theme consists of indicators capturing short term economic sustainability of a firm. It includes net income, safety nets and full cost accounting. These indicators provide an understanding of the firm's economic position on a short term which indicates if the firm is sustainable or not.

RATINGS

Scale: Low (-); Medium; High (+)





TRAnsition paths to sUstainable legume-based systems in Europe

SUB-THEME: E.1.1.2 Planning and Forecasting

THEME: Economic Behaviour (E1.1)

LINK: Production (E1)

DESCRIPTION

This sub-theme is indicative towards long-term sustainability of a firm. It includes long term profitability, investments and management plans which all indicates towards firm's capacity to stay sustainable over a long period of time.

RATINGS

Scale: Low (-); Medium; High (+)

THEME: E1.2 Vulnerability

LINK: Production (E1)

DESCRIPTION

Vulnerability in production, as elsewhere in the supply chain, represents the exposure of a firm (farm) to exogenous shocks, arising out of economic openness i.e. operating as part of a market and influenced by market forces and behaviour of other economic agents such as input suppliers and buyers. The exposure to exogenous shocks and implicit economic vulnerability may constitute a hindrance to economic development through increased risk affecting the growth process, without necessarily compromising the overall viability. (Briguglio, Lino; Cordina, Gordon; Farrugia, Nadia; Vella, Stephanie (2008) : Economic vulnerability and resilience concepts and measurements, WIDER Research Paper, No. 2008/55, ISBN 978-92-9230-103-3, The United Nations University World Institute for Development Economics Research (UNU-WIDER), Helsinki). Overall vulnerability in agriculture applies at various spatial scales (from farms to countries) and has been used to describe the response of agricultural systems exposed to diverse socio-economic changes, such as market fluctuations or land use changes. To reduce impact of exogenous factors and implicit vulnerability, the adaptive capacity of agricultural systems represents their ability to design and implement effective changes through mobilising natural, financial, institutional, or human resources available (Urruty, N., Tailliez-





TRAnsition paths to sUstainable legume-based systems in Europe

Lefebvre, D. & Huyghe, C. Stability, robustness, vulnerability and resilience of agricultural systems. A review. *Agron. Sustain. Dev.* **36**, 15 (2016). <https://doi.org/10.1007/s13593-015-0347-5>.

METRICS

The degree of exposure of the firm to exogenous shocks and their adaptive capacity to reduce the potential impact of these shocks.

RATINGS

Scale: Weak (-); Medium; Strong (+)

SUB-THEME: E.1.2.1 Relationship with suppliers

THEME: Vulnerability (E1.2)

LINK: Production (E1)

DESCRIPTION

The sub-theme assesses the relationships between a firm (farm) and its input suppliers. The relationships with suppliers are characterised by stability and dependence, with trends displaying minimal fluctuations and minimal difference between the dependence on some suppliers as compared to others, seen as the optimal state of minimal vulnerability. Relationships between the firm (farm) and its input suppliers are assessed over medium to long term and apply to businesses of any size and at any supply chain stage.

METRICS

Share of ongoing supplier contracts and corresponding mechanisms to reduce disruptions to firm's (farm) supply of inputs.





TRAnsition paths to sUstainable legume-based systems in Europe

RATINGS

Scale: Weak (-); Medium; Strong (+)

SUB-THEME: E.1.2.2 Market

THEME: Vulnerability (E1.2)

LINK: Production (E1)

DESCRIPTION

Market refers to the means by which goods and services are exchanged between buyers and sellers either directly or through mediating agents or institutions. Market may affect the vulnerability of firms through market stability, price fluctuation, and demand for and constraints to product differentiation.

METRICS

The ability of the firm (farm) to respond to market requirements i.e. implement the necessary mechanisms to build stable marketing channels, negotiate with its buyers and determine a price that ensures the necessary profit margin, diversify its production.

RATINGS

Scale: Weak (-); Medium; Strong (+)





TRAnsition paths to sUstainable legume-based systems in Europe

THEME: E1.3 Welfare

LINK: Production (E1)

DESCRIPTION

Welfare in production encompasses aspects of food quality and safety, value added to community through local employment and procurement of services, and environmental footprint in terms of e.g. greenhouse gas emissions and land use change. Ensuring the required level of welfare is dependent on achieving the necessary level of food safety and socio-environmental protection in production as well as at any other stage of the supply chain (Hediger, W., Knickel, K. (2009) Multifunctionality and Sustainability of Agriculture and Rural Areas: A Welfare Economics Perspective, Journal of Environmental Policy & Planning, 11:4, 291-313, DOI: 10.1080/15239080903412453).

METRICS

The capacity of the firm (farm) to minimise its footprint on the environment, maximise safety and quality of food production, and local procurement of labour and services.

RATINGS

Scale: Low (-); Medium; High (+)





TRAnsition paths to sUstainable legume-based systems in Europe

SUB-THEME: E.1.3.1 Quality and Safety

THEME: Welfare (E1.3)

LINK: Production (E1)

DESCRIPTION

This sub-theme refers to the actions that the enterprise can take to control and reduce the potential of exposure to food hazards, or to reduce the likelihood of the risk of exposure to the hazards being realized; to guarantee food quality and to meet the highest nutritional standards respective to the type of product; and assure its customers of the sustainability of the entire supply chain through certification.

METRICS

This sub-theme measures whether the enterprise has food hazards and safety control measures, monitoring and control of certification and food quality standards in place that comply with correspondent regulations.

RATINGS

Scale: Low (-); Medium; High (+)





TRAnsition paths to sUstainable legume-based systems in Europe

SUB-THEME: E.1.3.2 Value added to Community

THEME: Welfare (E1.3)

LINK: Production (E1)

DESCRIPTION

This sub-theme assesses the contribution of the enterprise to the local economy through employment of local labour directly involved with the community and micro-environment where the enterprise operates; through procurement from local/regional suppliers, and through involvement in food redistribution activities/scheme.

METRICS

Extent to which the firm (farm) hires regional employees, purchases its inputs from local/regional suppliers and contributes to food redistribution locally.

RATINGS

Scale: Low (-); Medium; High (+)





TRAnsition paths to sUstainable legume-based systems in Europe

SUB-THEME: E.1.3.3 Footprint

THEME: Welfare (E1.3)

LINK: Production (E1)

DESCRIPTION

This sub-theme encompasses the impact of a firm (farm) on environment, food waste and land use and the mechanisms it employs to reduce these, such as strategies to identify causes of food waste, GHG emissions and implement corresponding mitigation measures. Footprint and its prevention/mitigation are measured over medium to long term and apply to businesses of any size and along the supply chain (FAO, 2013. SAFA Sustainability Assessment of Food and Agriculture systems indicators. <http://www.fao.org/nr/sustainability/sustainability-assessments-safa> ; Hediger, W., Knickel, K. (2009) Multifunctionality and Sustainability of Agriculture and Rural Areas: A Welfare Economics Perspective, Journal of Environmental Policy & Planning, 11:4, 291-313, DOI: 10.1080/15239080903412453).

METRICS

Implementation of a strategy at firm (farm) level to minimise the footprint of its operations as regards food waste, GHG emissions and land use and cover and avoid conversions from ecologically valuable to less valuable habitats caused by the enterprise's operations.

RATINGS

Scale: Low (-); Medium; High (+)





TRAnsition paths to sUstainable legume-based systems in Europe

PROCESSING (E2)

SUB-THEME: E2.2.2 Supplier

THEME: Vulnerability (E2.2)

LINK: Processing (E2)

DESCRIPTION

The sub-theme assesses the relationships between a firm (farm) and its input suppliers. The relationships with suppliers are characterised by stability and dependence, with trends displaying minimal fluctuations and minimal difference between the dependence on some suppliers as compared to others, seen as the optimal state of minimal vulnerability. Relationships between the firm (farm) and its input suppliers are assessed over medium to long term and apply to businesses of any size and at any supply chain stage.

METRICS

Share of ongoing supplier contracts and corresponding mechanisms to reduce disruptions to firm's (farm) supply of inputs.

RATINGS

Scale: Weak (-); Medium; Strong (+)





TRAnsition paths to sUstainable legume-based systems in Europe

SUB-THEME: E2.3.2 Labelling

THEME: Welfare (E2.3)

LINK: Processing (E2)

DESCRIPTION

According to the Codex Alimentarius Commission (COD EX STAN 1-1985), "Labeling means any written, printed or graphic matter that is present on the label, accompanies the food, or is displayed near the food, including that for the purpose of promoting its sale or disposal." Information usually provides details on the content and composition of products but also particular aspects of the product, such as its origin, or its production method, including whether it has been produced using a certified organic production or other methods.

METRICS

- Measurement:
 - All product labeling is audited against legally required code in the country in which it is sold.
 - All voluntary claims (e.g. fair trade, organic) are checked against the independent certifier statement.
 - Where content and nutritional claims are made, these are routinely independently audited.
 - Labeling codes used are included in the enterprise quality management documentation and any variance from the code is documented and reported internally.

RATINGS

Scale: Absence (-); Presence (+)

Presence (+): The enterprise fully complies with all relevant legally required labelling codes for its products. It seeks to go beyond minimum standards in providing consumer information, is responsive to its stakeholders and has an accessible system, whereby consumers and other stakeholders can obtain further product and product quality and safety information.

Absence (-):

- The enterprise has not complied with labeling codes and has sought to avoid the impact of these codes; OR
- Products are knowingly or regularly incorrectly labeled.





TRAnsition paths to sUstainable legume-based systems in Europe

TRANSPORT AND DISTRIBUTION (E₃)

THEME: E_{3.2} Externalities

LINK: Transport and Distribution (E₃)

DESCRIPTION

This sub-theme encompasses the impact of a firm (farm) on environment, food waste and land use and the mechanisms it employs to reduce these, such as strategies to identify causes of food waste, GHG emissions and implement corresponding mitigation measures. Externalities are measured over medium to long term and apply to businesses of any size and along the supply chain (FAO, 2013. SAFA Sustainability Assessment of Food and Agriculture systems indicators. <http://www.fao.org/nr/sustainability/sustainability-assessments-safa> ; Hediger, W., Knickel, K. (2009) Multifunctionality and Sustainability of Agriculture and Rural Areas: A Welfare Economics Perspective, Journal of Environmental Policy & Planning, 11:4, 291-313, DOI: 10.1080/15239080903412453).

METRICS

Implementation of a strategy at firm (farm) level to minimise the externalities caused by its operations as regards food waste, GHG emissions and land use and cover and avoid conversions from ecologically valuable to less valuable habitats caused by the enterprise's operations.

RATINGS

Scale: Weak (-); Medium; Strong (+)





TRAnsition paths to sUstainable legume-based systems in Europe

MARKETS AND RETAILERS (E4)

SUB-THEME: E4.2.1 Consumer

THEME: Vulnerability (E4.2)

LINK: Markets and Retailers (E4)

DESCRIPTION

Consumer is a person who decides on the purchase of a good or a service for personal use, based on personal preferences, beliefs, intentions, and needs or the influence of external factors such as advertising and branding.

RATINGS

Scale: Weak (-); Medium; Strong (+)

CONSUMERS (E5)

THEME: E5.1 Economic Aspect of Behaviour

LINK: Consumers (E5)

DESCRIPTION

Economic Aspects of Behaviour are the economic factors that determine consumer behaviour such as personal income (especially, disposable income which is the amount of money that a consumer has at his/her disposal for spending or/and saving), household income, consumer willingness to pay, availability of products and services (i.e., having products and services available when the consumer needs them), prices of products and services (and their effect on affordability), and consumer market-specific vulnerability (consumer inability unable to engage effectively in a market).

RATINGS

Scale: Weak (-); Medium; Strong (+)





TRAnsition paths to sUstainable legume-based systems in Europe

SUB-THEME: E5.1.1 Price and Availability

THEME: Economic Aspect of Behaviour (E5.1)

LINK: Consumers (E5)

DESCRIPTION

Price and Availability: price and availability are among the key economic determinants of consumer behaviour. Food prices and food availability are linked. The lack of availability of food products is likely to drive food prices up, at least for a short time until the shortage of food is addressed (with sufficient quantities that are made available to those who need them at the right time and place).

RATINGS

Scale: Low (-); Medium; High (+)

SUB-SUB-THEME E5.1.1.1 Price

SUB-THEME: Price and Availability (E5.1.1)

THEME: Economic Aspect of Behaviour (E5.1)

LINK: Consumers (E5)

DESCRIPTION

Price is the monetary value of a good, service or resource established during a transaction. Price can be set by a producer, seller, the market and to a less extent by the buyer. Price is generally expressed as currency per unit of a commodity or service (e.g., kg, hour, task)

RATINGS

Scale: Low (-); Medium; High (+)





TRAnsition paths to sUstainable legume-based systems in Europe

SUB-THEME: E5.1.2 Willingness to Pay

THEME: Economic Aspect of Behaviour (E5.1)

LINK: Consumers (E5)

DESCRIPTION

Willingness to pay is the maximum amount an individual is willing to pay for a product or service. Willingness to pay is a key component of individuals' demand and is a critical piece of information for a business in the process of pricing their product or service.

RATINGS

Scale: Low (-); Medium; High (+)

SUB-THEME: E5.1.3 Vulnerability

THEME: Economic Aspect of Behaviour (E5.1)

LINK: Consumers (E5)

DESCRIPTION

Vulnerability at consumption level represents the exposure of consumers to exogenous shocks, such as fluctuations in food supply in terms of safety, quality and quantity, and fluctuations in income that may hinder food consumption. The exposure to exogenous shocks and implicit economic vulnerability may constitute a hindrance to household resilience through increased risk affecting the consumption patterns, without necessarily compromising the overall household viability.

METRICS

The degree of exposure of the household to exogenous shocks and their adaptive capacity to reduce the potential impact of these shocks.

RATINGS

Scale: Low (-); Medium; High (+)



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TRAnsition paths to sUstainable legume-based systems in Europe

THEME: E5.2 Social Aspect of Behaviour

LINK: Consumers (E5)

DESCRIPTION

Social Aspects of Behaviour are the social factors that determine consumer behaviour such as family (desires, attitudes, and values of the other family members), reference groups (close friends and relatives, work colleagues, professionals), social class (e.g., 'rich', 'middle', and 'poor'), and culture (i.e., symbols, anti-factor and behavioural patterns which are passed on socially from one generation to the next)

RATINGS

Scale: Weak (-); Medium; Strong (+)

THEME: E5.3 Policy

LINK: Consumers (E5)

DESCRIPTION

Policy is a principle or statement of intent that is meant to guide decisions and achieve specific outcomes. Policies are called public policies when they are designed and proposed by governments. However, policies can be proposed or adopted by governments, companies, NGOs and even individuals. Policies can also operate at different levels: the global, national, regional, local and organizational levels.

RATINGS

Scale: Weak (-); Medium; Strong (+)





TRansition paths to sUstainable legume-based systems in Europe

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