### **BR.1**

# Prepare for the roadmapping workshop



This activity will help to create a Roadmap Development Matrix, which summarises the benefits, costs and risks of the key innovation ideas and is required for the roadmapping workshop.



#### **INPUTS**

- The new business model selected for implementation from the activity BM.19 Pitch the new business model to the CEO.
- Details of the innovation ideas that are required for the new business model. This comes from the relevant activities of the step Generating ideas at the individual building block level.

#### **OUTPUTS**

Key details of the innovation ideas to be implemented captured within a Roadmap Development Matrix used in the activity BR.2: Do a roadmapping workshop with input from value chain partners.



For your chosen business model, you should have a number of innovation ideas outlined that will be necessary to complete in order to implement the business model.

#### **HOW TO GO ABOUT IT**

- Select one of the innovation ideas from the new business model and fill out a row within the Roadmap Development Matrix template against the following headings:
  - Innovation idea title: Descriptive title for the innovation idea.
  - Benefits: Brief description of the business benefits that can be realized once this innovation has been implemented (e.g. cost saving, comply with legislative requirement, increase product sales, improved market understanding etc.). Some innovation ideas may not deliver any immediate business benefit as they are a stepping stone towards the implementation of the complete business model.
  - Capital investment: Upfront financial investment required to complete the innovation.
  - Implementation effort and cost: Estimate of the person months of work required to implement the innovation idea and multiply by the average monthly salary to get an approximate labour cost.
  - Approximate total cost and payback period: Add the capital cost and labour cost to get a total cost. Divide the total cost by the monthly cost savings or increased revenue due to the innovation to calculate the payback period in months.
  - Implementation risk: The probability of the innovation failing and the impact of such a failure on the company.

- Scheduling considerations: Prerequisites for the innovation idea, the availability of personnel or partners, and any external deadlines (e.g. new legislation compliance deadline) should be captured in this column.
- 2. Repeat the process until all of the innovation ideas are represented by a row of *Roadmap Development Matrix. template*

Further information in the Agri-foods, Chemicals and Metals Supplements

#### **Template of Roadmap Development Matrix**

# Roadmap development matrix

Project Date Version

Innovation idea title	Benefits	Capital investment	Implementation effort (and labour cost)	Approx total cost and payback period	Implementation risk (High/ Medium/Low)	Scheduling considerations



#### LEARNING CASE STUDY OF ROADMAP DEVELOPMENT MATRIX

Innovation idea title	Benefits	Capital investment	Implementation effort (and labour cost)	Approx total cost and payback period	Implementation risk (High/Medium/Low)	Scheduling considerations
Family friendly working policy	Reduced staff turnover and reduced training costs (approx. \$5,000/year)	• \$0	• 3 person months (\$600)	• \$1,200 3 months	• Low	Changes to employment contracts require a 3 month consultation period.
Reduce fish loss in factory	Immediate cost saving (approx. \$24,000/year)	• \$16,500	• 6 person months (\$1,200)	• \$17,700 9 months	• Medium	• None
Marketing     campaign to launch     sustainably sourced     fish product	Increased product sales     (approx. \$20,000 this year)	• \$21,000	• 8 person months (\$1,600)	• \$22,600 13.5 months	• Medium	Need to complete all sustainable fishing projects first.
• Establish sustainable fishing cooperative	Stepping stone to sustainable fishing	• \$4,000	• 6 person months over 24 months (\$1,200)	• \$5,200 N/A	• High	• None
Sustainable fishing     Eliminate purse     seine and long line     gear	Stepping stone to sustainable fishing	• \$15,000	• 4 person months over 12 months (\$800)	• \$15,800 N/A	• Medium	Need to establish sustainably fishing cooperative first.
Sustainable     fishing – Eliminate     Fish Aggregation     Devices	Stepping stone to sustainable fishing	• \$500	• 4 person months over 12 months (\$800)	• \$1,300 N/A	• Low	Need to establish sustainably fishing cooperative first.
Sustainable fishing – Introduce quota	Stepping stone to sustainable fishing	• \$4,000	• 8 person months over 18 months (\$1,600)	• \$5,600 N/A	• High	Need to establish sustainably fishing cooperative first.
Introduce seafood dishes	New product line will generate additional revenue (approx. \$40,000 profit in year 1)	• \$75,000	• 24 person months (\$4,800)	• \$79,800 24 months	• High	Need to agree timescales with cooperative fishermen



#### **TIPS & TRICKS**

# IDENTIFY QUALITY ASSURANCE REQUIREMENTS AND FACTORS TO PROMOTE MARKET ACCEPTANCE OF NEW PRODUCT OFFERINGS

Think about the quality assurance requirements that are required or valued by existing and future customers.

- What factors could prevent acceptance of the product?
   What are the tradeoffs or negative consequences? (e.g. taste, appearance, texture, shelf-life, etc.)
- How must you adjust or change your existing marketing, sales, and purchasing structure to account for this?
- What factors might have an effect on food safety?
   Are any trade-offs

acceptable? Remember that food safety is regulated by law, a food company should be very reluctant to accept any trade-offs in this field.

#### CONSIDER AND MANAGE UNEXPECTED IMPACTS FROM THE NEW PROD-UCT OFFERINGS

Consider if there could be any unexpected impacts from the planned innovation e.g. a significant increase in energy consumption. For instance dried fruits are healthier snacks with long shelf-life, but require significantly more energy for processing compared to fresh fruits. Be sure to investigate such impacts and integrate measures to address them in the roadmap.

# IDENTIFY EXPERTISE REQUIRED TO DEVELOP AND EXECUTE THE NEW BUSINESS MODEL

Consider what expertise is available in-house and what is required:

- Is outside expertise required for product development? Can universities, technical institutes, suppliers, and customers support product development?
- Do you have sufficient R&D and production capacity and budget to perform the necessary steps and tasks? What can you do in-house and what should or could be subcontracted?

#### IDENTIFY TESTING RE-QUIREMENTS FOR NEW PRODUCT OFFERINGS

Consider what the main steps will be to commercialize new product offerings:

- What tests are required?
   What analytical
   equipment is required?
   N.B. It is common to
   manufacture a new
   product on a small
   scale and release it for
   a test market to study
   consumer acceptance.
   Alternatively, consumer
   panels are often used in
   pre-commercialization
   activities.
- What are the costs involved and what time frame is feasible?

# UPDATE KPIS TO MEASURE SUSTAINABILITY PERFORMANCE

A significant change in business model may mean that you need to update the KPIs previously defined in the activity BM.3 'Gather additional data on operational performance'. This should help you to measure and monitor the environmental, social, and economic impact of the new business model Consider the information or data that is required to properly calculate the KPIs and ensure their availability and accuracy.



#### LEARNING CASE STUDY OF ROADMAP DEVELOPMENT MATRIX

This section will guide you through the roadmapping workshop activity using Mango Pulp Co. as an example. The template shows the

key activities the company has to implement in order to transition to the new sustainable business model.

Innovation idea title	Benefits	Capital costs [US\$]	Implementation effort [Person Months, PM]	Implementation risk (High/Medium/Low)	Scheduling considerations
Switch to out-grower schemes  • Selection of suitable cultivars  • Training	Secure a stable supply of raw materials through long term supply agreement with farmers Provide a secure market for small- holder farmers Increased collaboration with farmers	Low	15 person months (spread over 30 months)	High	Good starting point for eco-innovation as many eco-innovation projects will depend on this large organisational change
Provide extension services to farmers Integrated pest control Overall improved orchard management	Secure revenue from providing the service to the farmers as well as increased agricultural production yields and quality	Low	12 person months (spread over 48 months)	Medium	Out-grower schemes need to be implemented
Acquire organic label Find alternative solution to calcium carbide for ripening Alternative purchasing policies to make sure all ingredients are organic	Access new markets for sustainably sourced products through organic label Gain a competitive advantage and possibly be able to charge a higher price for their products. Increase overall revenues as a result	Medium	12 person months (spread over 36 months)	Medium	Out-grower schemes need to be implemented

Innovation idea title	Benefits	Capital costs [US\$]	Implementation effort [Person Months, PM]	Implementation risk (High/ Medium/Low)	Scheduling considerations
Optimise the value chain operational performance through measurement of key performance indicators	Immediate saving through identification of waste (time, material, labour) in all value chain steps and improving: • Process cycle efficiency • Material cycle efficiency • Overall equipment efficiency	Medium	6 person months	Low	None
Develop a new product	Through diversification and new product development Mango Pulp Co. will have an opportunity to place products on new markets such as markets for dried or frozen fruits and vegetables, healthy bars etc	High	12 person months	Medium	Out-grower schemes need to be implemented
Valorise by-products and reduce losses within the facility	Immediate saving through reduction of waste disposal costs as well as sales of valorised by- and waste products	Medium	6 person months (spread over 18 months)	Low	None
Develop plan for marketing of sustainable products	Creating consumer awareness of the Mango Pulp brand in order to gain a higher market share in the market for sustainably sourced fruit and vegetable products	High	6 person months	Medium	Organic label needs to be acquired

 $<sup>^*\</sup>mbox{Low/medium/high}$  investment costs are specific to Mango Pulp Co.



#### **TIPS & TRICKS**

# IDENTIFY QUALITY ASSURANCE REQUIREMENTS AND FACTORS TO PROMOTE MARKET ACCEPTANCE OF NEW PRODUCT OFFERINGS

What quality assurance requirements are required or valued by existing and future customers?

- What additional factors could prevent acceptance of the product? What are the trade-offs or negative consequences (e.g. appearance, texture, smell, etc.)?
- How should you adjust or change your existing marketing, sales, and purchasing structure to account for this?

#### CONSIDER AND MANAGE UNEXPECTED IMPACTS FROM THE NEW PRODUCT OFFERINGS

Consider if there could be any unexpected impacts from the planned innovation, such as a significant increase in energy consumption for drying waterborne paints compared to solventbased paints or more water required for a biodegradable cleaning agent than a solventbased degreaser, etc. Be sure to investigate such impacts and integrate measures to address them in the roadmap.

# DEVELOP PRIORITY KPIS TO MEASURE SUSTAINABILITY PERFORMANCE

Define KPIs and implement them to measure and monitor the environmental, social, and economic impact of the new business model. Consider the information or data that is required to properly calculate the KPIs and ensure their availability and accuracy.

# IDENTIFY EXPERTISE REQUIRED TO DEVELOP AND EXECUTE THE NEW BUSINESS MODEL(S)

Consider what expertise is

available in-house and what is required:
Is outside expertise required for product development?
Can universities, technical institutes, suppliers, and customers support product development?
Do you have sufficient R&D and production capacity and budget to perform the necessary steps and tasks? What can you do in-house and what should or could be subcontracted?

# IDENTIFY PROTOTYPING AND TESTING REQUIREMENTS FOR NEW PRODUCT OFFERINGS

Consider the main steps to commercialize new product offerings:

- What prototype tests are required?
- What analytical equipment is required? It is common to select a trusted and cooperative customer to perform trials of the new/modified product in order to confirm its performance.
- What period is feasible?
   For example, the
   development of new
   mixtures (formulation)
   can take between 6-36
   months, whereas the
   development of new
   substances (synthesis)
   can take between 2-5
   years.



#### LEARNING CASE STUDY OF ROADMAP DEVELOPMENT MATRIX

Innovation idea title	Benefits	Capital costs [US\$]	Implementation effort [Person Months, PM]	Implementation risk (High/ Medium/Low)	Scheduling considerations
Value mapping of all process steps	Identification priority improvement areas: waste time, material, equipment utilisation  KPI to measure manufacturing and business performance	1,000	1 Person Months	Low	Need specialist training course on Value mapping
Lean Manufacturing practices	Increase process cycle efficiency Reduction in lead time from customer order to product delivery Reduce waste time, materials, equipment usage	5,000-20,000	3 Person Months	Low	Need results of value mapping
Green procurement policy for all chemical ingredients	Immediate reduction in brand risk Immediate reduction in occupational health risks	0	2 Person Months	Medium	Need to find trusted suppliers and balance purchasing portfolio
"Sustainable Ink" product development at lab-scale	Reduction of occupational health risks Elimination of chemicals hazardous to human health and the environment Decouple dependency on non- renewable raw materials Higher profit margin due to selling price	5,000-10,000	5 Person Months	Medium	Detailed product development plan must be made including screening, sourcing, process modification

# **BM.4** Generate business model concepts at the big picture level



Innovation idea title	Benefits	Capital costs [US\$]	Implementation effort [Person Months, PM]	Implementation risk (High/ Medium/Low)	Scheduling considerations
Reduction and substitution of hazardous wet textile processing chemicals	Immediate reduction in brand risk Immediate reduction in occupational health risks Provides added value and possibility to obtain ecolabel certification	15,000-35,000	10 Person Months	Medium	Detailed screening of all chemicals used required.  Processed textiles and wastewater to be analysed for Restricted Substances
Screen technologies for chemical recycling of polyester	Provides economic and technical data to determine feasibility of concept	0	1 Person Months	Low	none
Pilot test chemical recycling of returned polyester material	Immediate reduction of raw material costs  Proof-of-concept for customers  Regional market leader in the chemical recycling of polyester fibres	50,000- 125,000	5 Person Months	Medium	Critical for implementation of Fibre Leasing business model
Develop web-based LCA tool to help customers (designers) reduce chemical footprint of designs	Potential to significantly decrease hazardous chemicals and improve sustainability performance of the entire value chain  Provides customers with the ability to improve their sustainability performance	15,000-25,000	4 Person Months	Low	The finished LCA tool is part of the business model value proposition and should be combined with marketing of the new Fibre Leasing business model.



#### LEARNING CASE STUDY OF ROADMAP DEVELOPMENT MATRIX

Innovation idea title	Benefits	Capital costs [US\$]	Implementation effort [Person Months, PM]	Implementation risk (High/Medium/Low)	Scheduling considerations
Value management of product and processes in the value chain:  Process Value Stream Mapping  Product Value Analysis/Value Engineering  Prototype development with customers and suppliers	Measurement of key manufacturing performance indicators to identify waste (time, material, labour) in all production steps.  Identification and analysis of product/service priority function and contribution to overall value.  Customer and supplier engagement in reducing life cycle impacts.	US\$ 20,000	5 person month (over 3 months)	Low	Value management expert required to guide process:  Input from following required: production manager, purchasing, sales, logistics, R&D, maintenance, CFO/ CEO
Develop procurement policy on supplying sustainably produced materials (recycled steel and aluminium) and bicycle components including non-hazardous raw materials	Immediate reduction of environmental impacts across the value chain (e.g. elimination of lead containing paints)	US\$ 500	2 person months (over 6 months)	Low	First establish compatibility requirements with technological improvements planned for the production equipment.

Innovation idea title	Benefits	Capital costs [US\$]	Implementation effort [Person Months, PM]	Implementation risk (High/Medium/Low)	Scheduling considerations
Production optimisation and introduction of technological improvements in the production line	Improved material efficiency Immediate production costs reduction. Waste reduction (e.g. scrap metal, overspray sludge, lubricants/swarf sludge). Lower environmental impact (elimination of lead in paint) Improved health conditions for workers.	US\$ 10,000- 100,000 (range depending on detailed engineering analysis)	2-5 persons months (over 3 years)	Medium	Finish Value Management first.  Simultaneously build capacity of technical staff.  Coordinate selection of new technologies with the new procurement policy.
Reduction of metal waste along the bicycle life cycle in cooperation with value chain partners	Reduction of environmental impact by using secondary raw materials and reused bicycle components  Contribution to overall waste reduction  Cost savings  Increase profits – revenue from offered repair services	US\$ 1,000	5 person months (over 24 months)	Medium	Designate responsible person first.  Train skilled technical staff (appraisal of return bikes, repair and separation) first.
Marketing campaign to launch sustainably produced bicycles and "Return&Reuse" model	Stepping stone to selling of sustainably produced bikes	US\$ 5,000	3 persons (over 12 months)	Low	Establish the new procurement and technology first. Select identify appropriate marketing channels first.

# **BM.4** Generate business model concepts at the big picture level



Innovation idea title	Benefits	Capital costs [US\$]	Implementation effort [Person Months, PM]	Implementation risk (High/ Medium/Low)	Scheduling considerations
Reduction and substitution of hazardous wet textile processing chemicals	Immediate reduction in brand risk  Immediate reduction in occupational health risks  Provides added value and possibility to obtain ecolabel certification	15,000-35,000	10 Person Months	Medium	Detailed screening of all chemicals used required.  Processed textiles and wastewater to be analysed for Restricted Substances
Screen technologies for chemical recycling of polyester	Provides economic and technical data to determine feasibility of concept	0	1 Person Months	Low	none
Pilot test chemical recycling of returned polyester material	Immediate reduction of raw material costs  Proof-of-concept for customers  Regional market leader in the chemical recycling of polyester fibres	50,000- 125,000	5 Person Months	Medium	Critical for implementation of Fibre Leasing business model
Develop web-based LCA tool to help customers (designers) reduce chemical footprint of designs	Potential to significantly decrease hazardous chemicals and improve sustainability performance of the entire value chain  Provides customers with the ability to improve their sustainability performance	15,000-25,000	4 Person Months	Low	The finished LCA tool is part of the business model value proposition and should be combined with marketing of the new Fibre Leasing business model.