

Measuring performance of CSA bundles

Technical capacity building for
Zambia Accelerator Partners
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AICCRA

Accelerating the Impact of CGIAR
Climate Research for Africa



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1. INTRODUCTION



Summary

These notes provide guidance on the process of developing an impact pathway and indicators to measure and manage investment performance. The impact investment market is valued at more than US\$ 715 billion ([GIIN, 2021](#)). Global policy processes relevant to Climate-Smart Agriculture (CSA) such as the Paris Agreement and the Agenda 2030 on Sustainable Development Goals (SDGs), recognize that social, economic, and environmental objectives are interconnected and affect all actors, calling action from the impact investment community to unlock private capital to address societal challenges. This creates momentum for businesses in the food and agriculture sector to demonstrate how they create measurable social, economic, and environmental value in addition to financial returns.

Why measure and track performance in the context of CSA investments

identify and track **quick wins** and develop **long-term thinking**

map **costs** and **returns**

develop a plan to turn the “**ideal**” into “**feasible**” and “**attainable**”

Roadmap

for capacity building on performance measurement for AICCRA Zambia Accelerator Partners

Bundles impact pathways
Capacity building of partners in developing CSA impact pathways and indicators. Collective design of impact pathways for CSA bundles



Co-design

M&E Plans
Partners finalize plans to collect and evaluate data, with support from ABC team



Plan & refine



Investment-level impact pathways & indicators
Partners design investment-specific impact pathways, indicators, and plans to collect and analyze data. Support from ABC team

Evaluation
Initial evaluation and reporting of outcomes



Monitor



Additional funding
Partners leverage additional funds based on their ability to show outcomes (and impacts)

2. CLIMATE-SMART AGRICULTURE



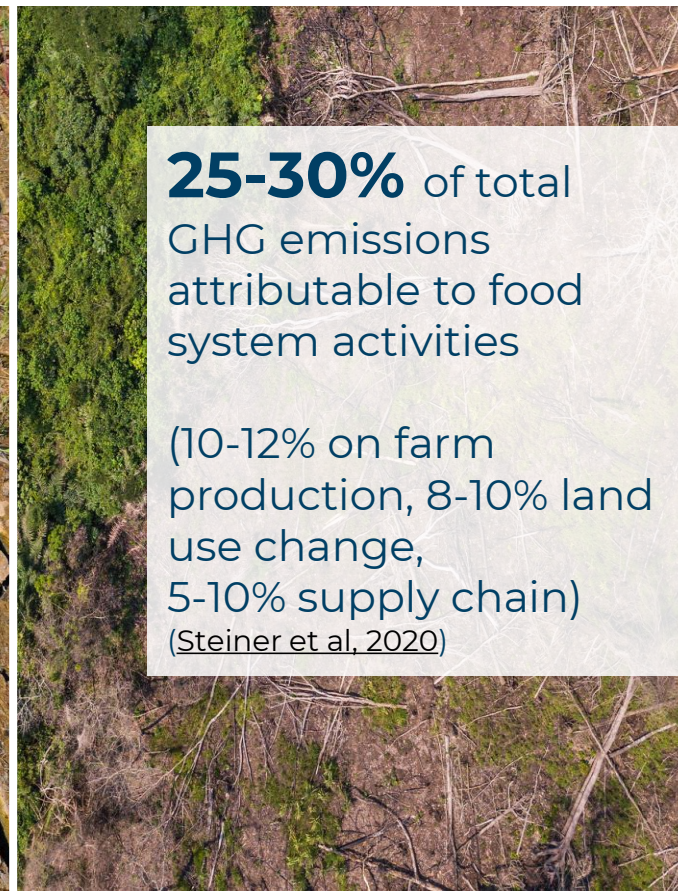
Why invest in climate-smart agriculture?



1 in 3 people
(2.37 B) don't have
access to
adequate food
([WHO, 2021](#))



Over 40% of the
world's population are
"highly vulnerable" to
climate ([IPCC, 2022](#))



25-30% of total
GHG emissions
attributable to food
system activities

(10-12% on farm
production, 8-10% land
use change,
5-10% supply chain)
([Steiner et al, 2020](#))

The three pillars of climate-smart agriculture are linked to the Sustainable Development Goals



There are many ways to incorporate climate-smart agriculture in investments



Soil management | Crop production
| Water management | Livestock
management | Forestry and
agroforestry | Capture fisheries and
aquaculture | Energy management



CSA Landscapes | CSA Value chains



Index-based insurances | Climate
information services | Post-harvest
infrastructure | Institutional
arrangements

More information: <https://csa.guide/#chapter-2>

CSA practices can yield multiple benefits.

Example from intercropping



Regulating pests and diseases



Reduced use of chemical inputs



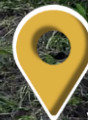
Efficient use of the space



Diversification (tomato, coffee, plantain, etc.)



Increase in soil organic matter



Water and soil conservation



Reduced water runoff and erosion

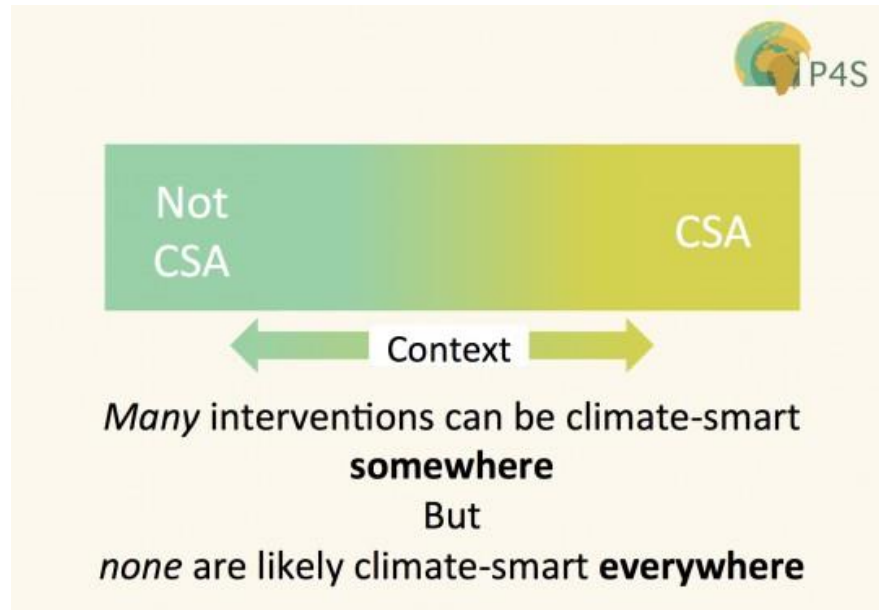


Production stability and increase in productivity



Employment opportunity

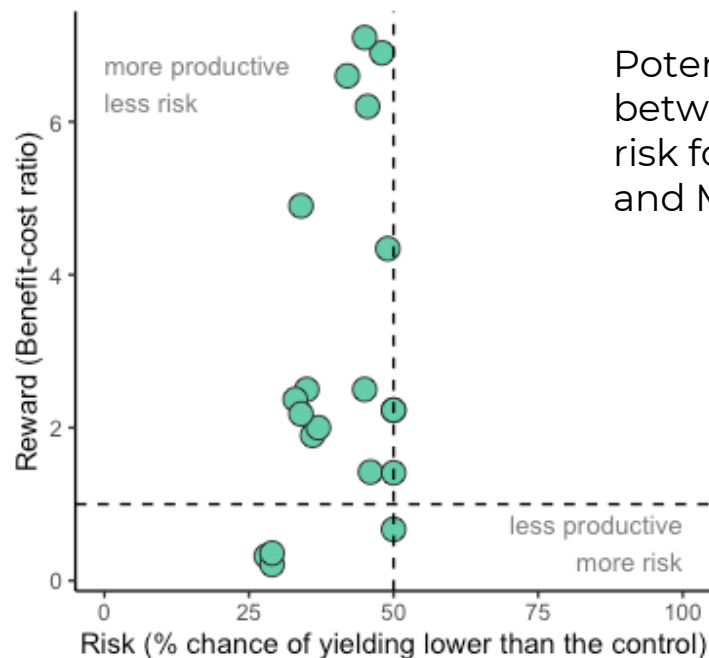
Climate-smart agriculture benefits depend on the context (time, space)



Source: Rosenstock et al 2015 <https://cgspace.cgiar.org/rest/bitstreams/67313/retrieve>

Climate-smart agriculture benefits depend on the level of risk assumed

CSA does not come without risk. This figure shows that farmer investment in improved crop, soil, nutrient management, and agroforestry options reduce production risks, helping farmers adapt, but these rewards come with increased risks. Yields can be greater than business as usual for most CSA practices illustrated here through the green bullets, but they grow with the level of risk

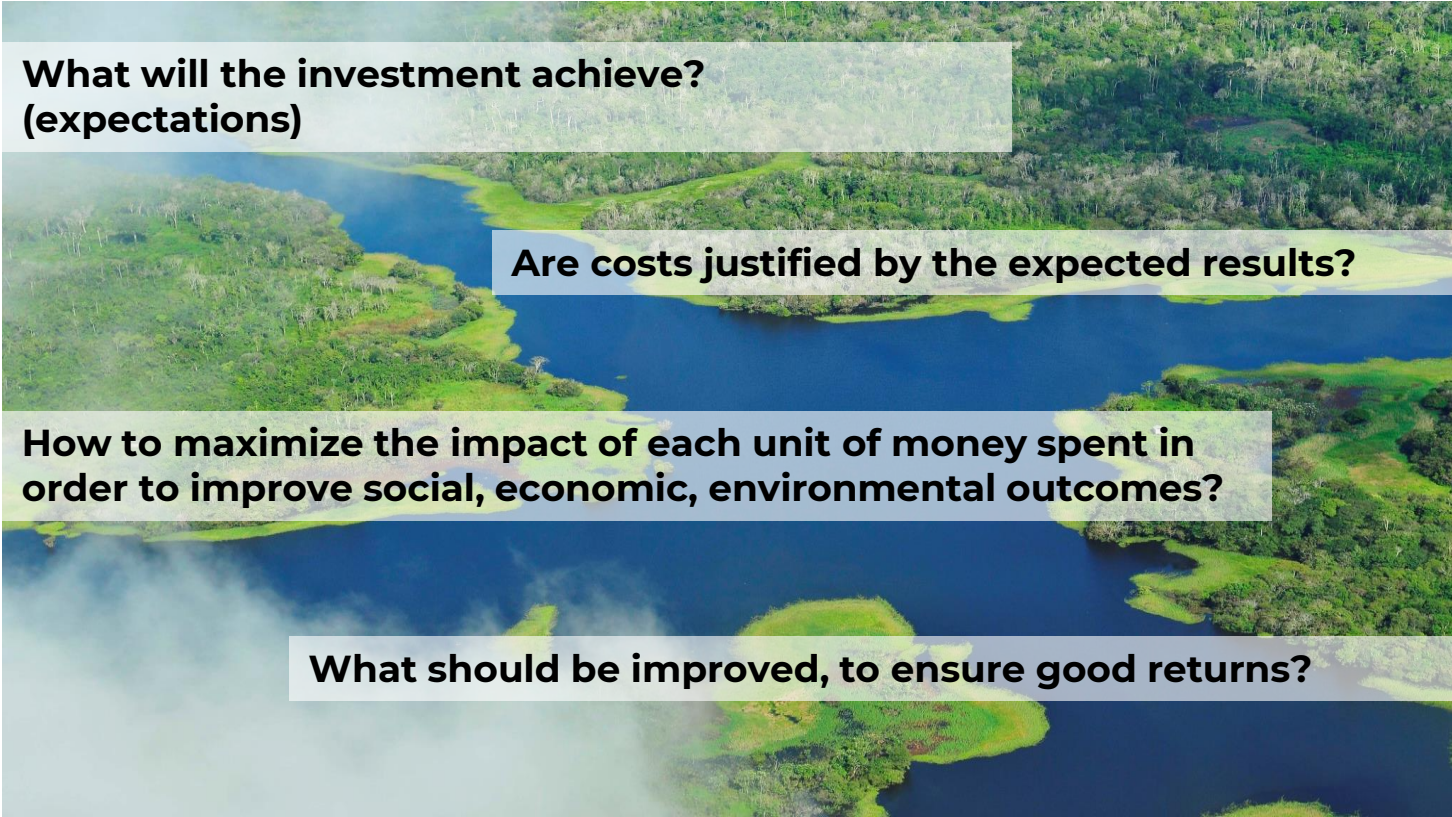


3. IMPACT PATHWAYS FOR CLIMATE-SMART AGRICULTURE INVESTMENTS



Impact pathway are an approach to plan for measuring and tracking investment performance

They lay out assumptions about how the investment will perform



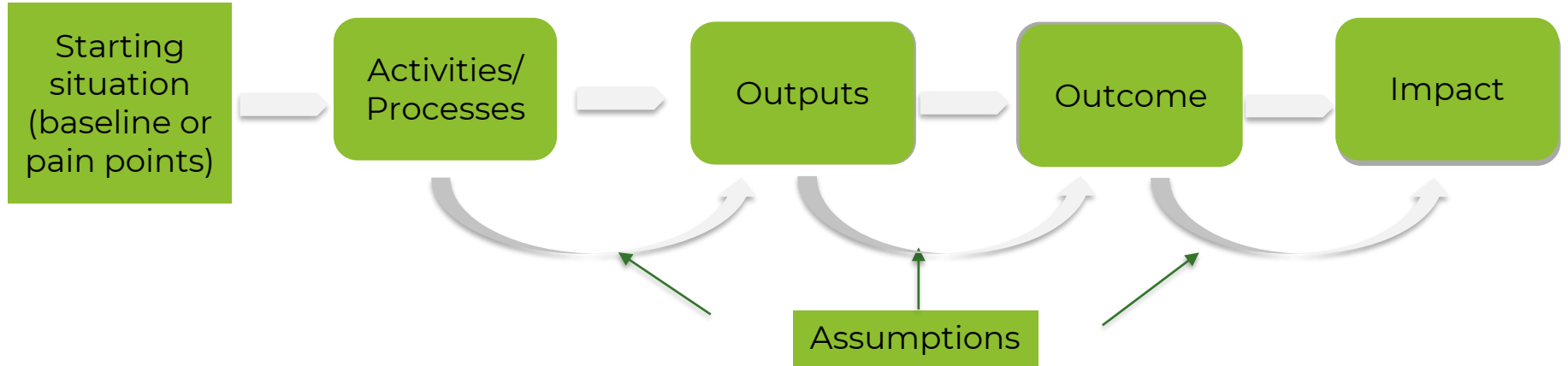
**What will the investment achieve?
(expectations)**

Are costs justified by the expected results?

How to maximize the impact of each unit of money spent in order to improve social, economic, environmental outcomes?

What should be improved, to ensure good returns?

Impact pathway: visual representation



The impact pathway (IP) is a tool that allows you to gain a comprehensive, concrete understanding of the types of value (or costs) of your investment on society. In practice, it is a simplified chain of events and results and interactions between these.

The IP assumes that investment activities create products, goods, services that are termed outputs. These, in turn, are the prerequisite for achieving outcomes and impacts. Relationships between activities, outputs, outcomes, and impacts, are known as assumptions.

Impact pathway elements explained



This is the problem/ challenge that your business seeks to address. It will determine the type of impact you aim to have (solve an environmental problem? Solve a social problem?). The starting situation is closely linked to your value proposition

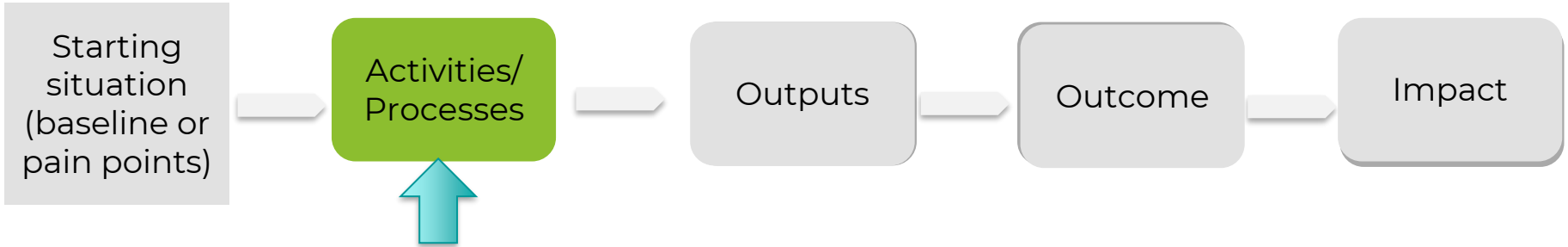
Impact pathway elements explained



This is the vision for how you address the pain point, the desired value you want to create to the society (people, economy, environment). The impact is broad in scope, long-term and goes beyond the traditional business goals of investment profitability and growth.

In the context of CSA, the impact is articulated around goals of food and nutrition security, sustainable productivity, climate change adaptation, and climate change mitigation. Impacts are typically influenced by additional factors that are external to the investment, which means that they are not fully attributable to your business only.

Impact pathway elements explained



These are key actions that you will invest in and that relate to your target beneficiaries. They may range from tool or service development (i.e., construction of pumps, design of financial products), to capacity building activities (i.e., train farmers on use of solar pumps, on farm budgets development, etc.), to marketing and sales (i.e., awareness raising about the product, commercialization of pumps, etc.).

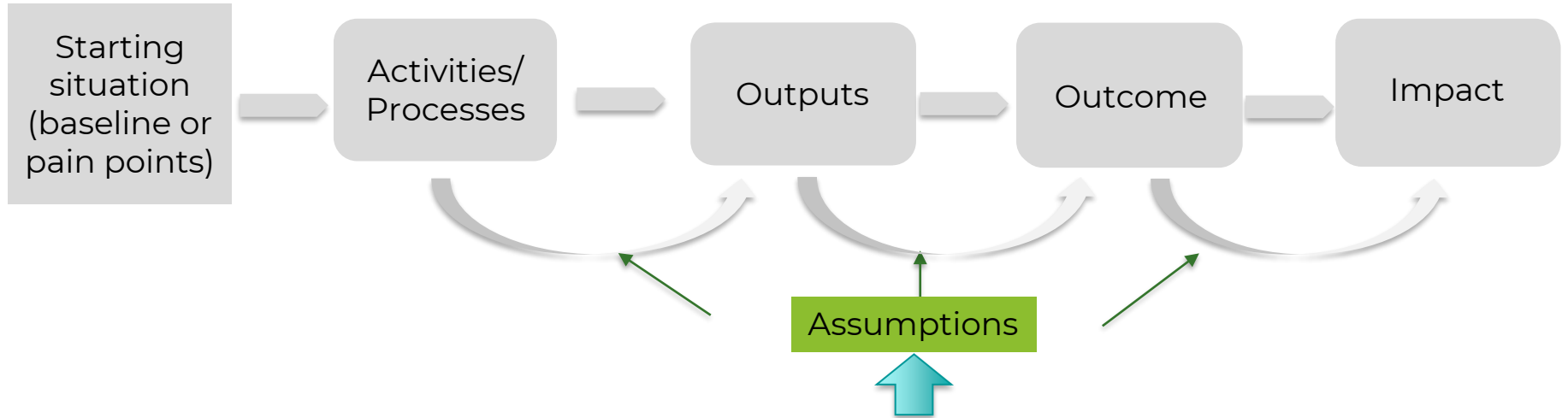
Impact pathway elements explained



These describe a change at the level of the target group, as a result of an output. For instance, if you built capacity to use solar pumps (activity) and your immediate result was number of participants to trainings (output), your outcome might be in relation to how participants' knowledge, awareness, skills or behavior changed (i.e., farmers' actual use of pumps).

Your investment may target improved knowledge, information or capacity or farmers or may aim to go even further along the impact pathway, targeting changes in livelihoods (e.g., improved wealth), improvements in social outcomes (e.g., improved diversity of foods available, etc.), or agri-environmental outcomes (e.g., water use efficiency, soil health, etc.). Defining the scope of these outcomes early in IP design will help to select adequate indicators

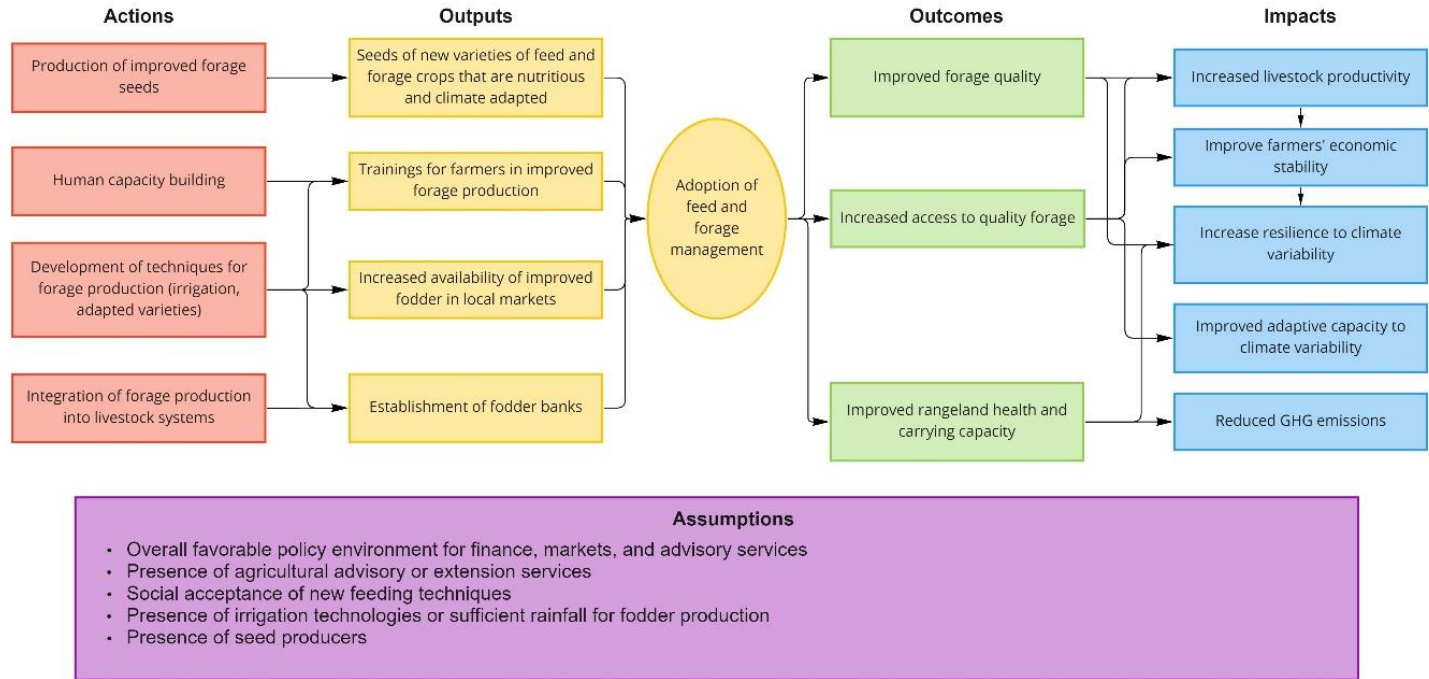
Impact pathway elements explained



When you determine how activities lead to outputs, outcomes, and impacts you make assumptions. These are statements that describe how identify specific conditions and resources that need to exist to allow changes to be produced. Making them explicit and monitoring them will help you understand why what works or not. For example, when improved knowledge of farmers about the use financial products, one assumption could be that information is conveyed at an appropriate level, considering farmers' literacy levels

Example of an impact pathway

Example visualization of an impact pathway for an investment in **improved cultivated forage production, management and utilization**



Tips

Expected outcomes and impacts. Try to identify those changes (outcomes, impacts) that are intrinsic to your business, rather than choosing a long list of ideal situations that are nice to have but are unfeasible given the scope of your business. This will help your impact grow, as your business grows.

Assumptions. Your investment might have many assumptions. Prioritize and select only these critical to the changes you expect to see and validate those as much as possible with literature and experience. The more assumptions you add to the impact pathway, the higher the uncertainty of achieving the desired outcomes and impacts.

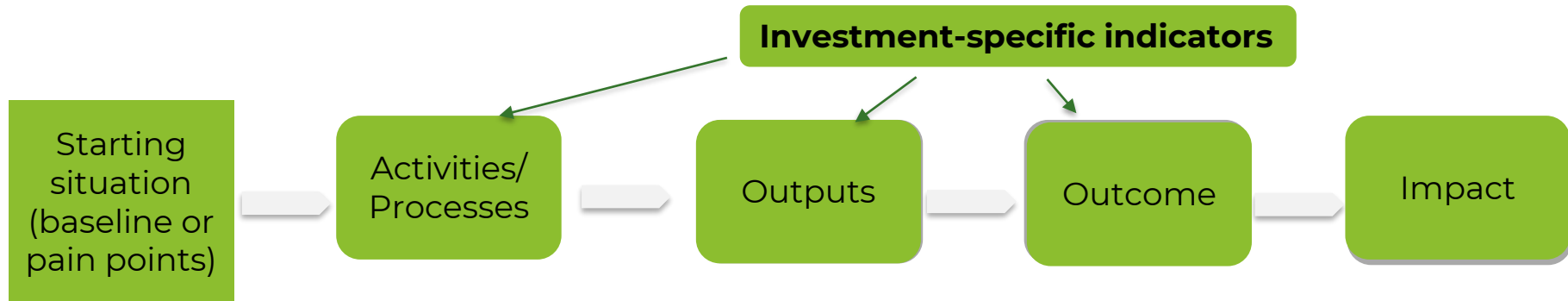
Summarizing the impact pathway: We highly recommend using a flowchart for designing the impact pathway. This allows you to better visualize connections, interactions, and assumptions between the different pathway elements (actions, outputs, outcomes, impacts, assumption).

4. INDICATORS AND METRICS

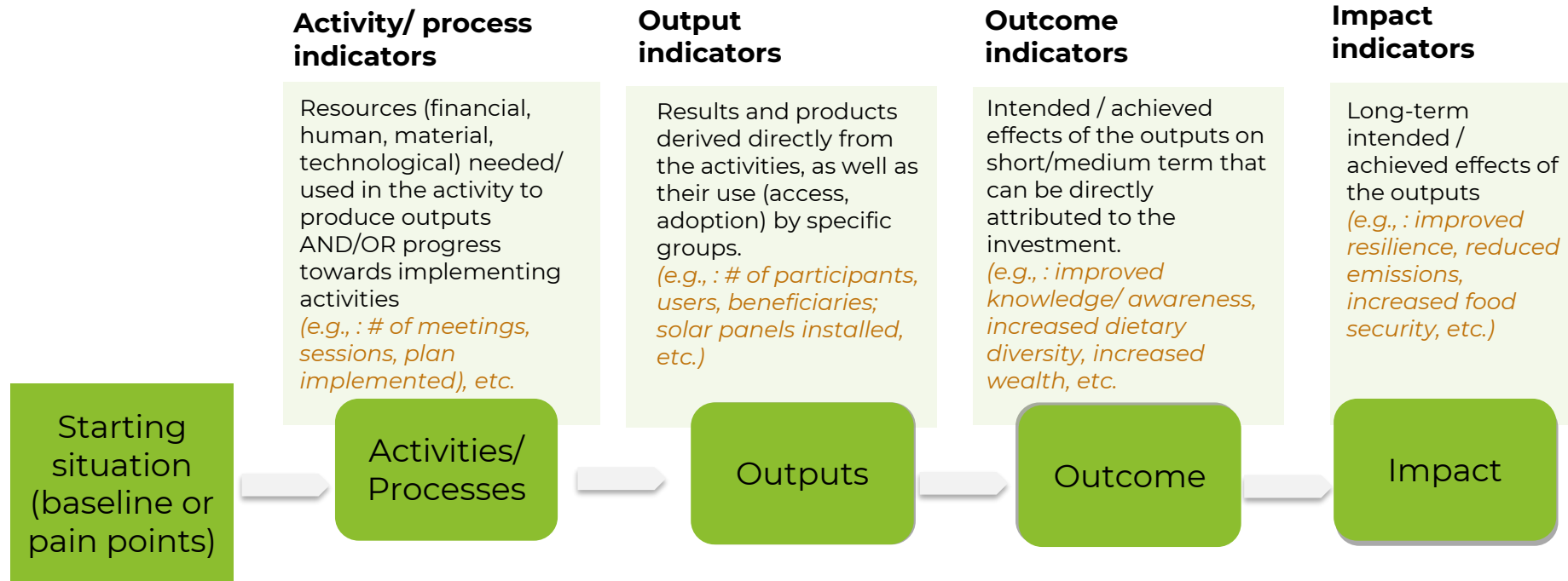


Indicators help to measure and track achievements across the impact pathway and over time

They are also an invaluable resource for strategic planning, as they can help to provide feedback on what works and what does not work. Ultimately, data on indicators are what businesses communicate to their investors, to report progress or raise additional funding.



Indicator types differ by the pathway element they measure



Less is more



The **CREAM** of good indicators

Clear: indicators are precise and have a metric

Relevant: appropriate to the impact pathway

Economic: obtained at a reasonable cost

Adequate: not the best indicator, but acceptable given the circumstances (captures the reality)

Monitorable: is feasible to track at established interval

Examples of CSA **impact** indicators

Indicator	Metric	CSA pillar	SDG indicator
Impacts			
Agricultural yield	kg/hectare, kg/animal, l/animal, etc.	Productivity	12
Post-harvest loss	Quantity or % of harvest lost, by stage (transport, processing storage)	Productivity	12
Farm profitability/income (1)	Gross margin, net income	Productivity Adaptation	1
Food security & nutrition (2)	% of population undernourished, stunted	Productivity Adaptation	2
Climate risk perceptions	% of population perceiving high likelihood of being severely affected by climate hazard	Adaptation	13
Losses due to climate hazards	Value or quantity of agricultural yield or income lost to climate hazards	Adaptation	13
Greenhouse gas emissions	tCO2e/hectare/year (3)	Mitigation	13
Carbon sequestration	tCO2e/hectare/year; hectare of land with improved CO2 sequestration potential (4)	Mitigation	13

(1) Refers to farmer profitability and not the profitability of the investment. It is typically a function of costs and returns (income). (2) Undernourishment and stunting rates are particularly relevant if the investment targets food security and nutrition. (3) To quantify GHG emissions reduced due to the investment, see also [FAO's EX-ACT tool](#) or [USAID's AFOLU Carbon Calculator](#). (4) This is based on the area covered by a farm/landscape practice that has demonstrable, science-proven benefits for carbon sequestration. For the data to be reliable, you need expert support in selecting the relevant interventions.

Even though embedding CSA in business models is relatively new, many companies are including sustainability aspects in their actions and impact frameworks. Many of these sustainability goals are relevant to CSA.

The CSA pillar on sustainable productivity, incomes, and food security and nutrition, is relevant for SDG 1 (poverty), SDG 2 (hunger and nutrition), SDG8 (decent employment). For the adaptation pillar, most indicators are relevant to SD 13 (climate action), but some are also informing other SDGs, such as income diversity (SDG1), food diversity (SDG2), water use efficiency (SDG6). Mitigation indicators primarily map to SDG13.

Examples of CSA **outcome** indicators

Indicator	Metric	CSA pillar	SDG indicator
Outcomes			
Employment	# of full-time equivalent (FTE) jobs created	Productivity Adaptation	1, 8
Food diversity	# of foods consumed/HH/day; Household dietary diversity score (HDDS) (5)	Productivity Adaptation	2
Income diversity	# of income sources/HH; income diversity index (6)	Adaptation	1
Social capital (7)	Frequency of participation in organizations	Adaptation	13
Crop/animal survival rate	% of crops planted/animals in HH	Adaptation	13
Water use efficiency	l/kg of crop or ha	Adaptation	6
Nutrient use efficiency	l/kg of crop or ha	Mitigation	13
Soil quality	t soil/ha/year or % agricultural land affected by surface erosion;	Productivity Adaptation Mitigation	13, 15
Knowledge, capacity, skills	#, % of beneficiaries reporting improved knowledge, capacity, skills (qualitative scale)	Adaptation	13
Adoption/use of practice/technology/service	#, % of adopter/users	Productivity Adaptation Mitigation	12, 13
CSA area	# ha or % of land covered by the CSA practice/technology/ service	Productivity Adaptation	13
Area of native trees planted	# ha or % of farmland	Adaptation Mitigation	13, 15

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(5) HDDS indicates access and consumption of diverse macro and micronutrients. It requires HH to report on consumption of different food groups over the past 24 hours or, in some cases 4 weeks (to deal with seasonality and survey intensity). (6) The index is more data intensive, as it requires information on the income source type and the income generated from the source, in order to calculate the share of income from source and the index. (7) A proxy for adaptive capacity of farmers

Examples of CSA **output** indicators

Indicator	Metric	CSA pillar	SDG indicator
Outputs			
Products/services/goods developed/sold/shared	# of products/services/goods	Productivity Adaptation Mitigation	13
Climate-adapted seeds released	#/ quantity of seed varieties	Adaptation	13
Native tree species distributed	# of species/ trees	Mitigation	13
Beneficiaries of products/services/goods	# of beneficiaries	Productivity Adaptation Mitigation	13

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Additional resources

IRIS+ System Standards: <https://iris.thegiin.org/metrics/>

Provides guidance for measuring ag productivity and mitigation; no relevant climate adaptation/resilience indicators

Sustainable Intensification Toolkit: <https://sitoolkit.com/the-five-domains/economic>

Provides guidance on how to measure different agri-environmental and social indicators at different scales (household, farm, plot)

Smart Indicators for Relief and Development projects: <https://www.indikit.net/>

Provides guidance on how to measure different agri-environmental and social indicators, particularly at individual and household level

WBSCD: https://docs.wbcsd.org/2020/03/Smarter_metrics_for_climate_change_and_agriculture.pdf

Appendix 6 lists possible metrics for resilience; most are output and outcome-level metrics

World Bank: <https://openknowledge.worldbank.org/handle/10986/15033>

Practical examples on how to integrate social capital questions in HH surveys or questionnaires, which can be relevant for measuring capacity to adapt to climate change, depending on the context

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