
Food and Agriculture Organization of the United Nations
Isaac GUZMAN, FAO
28/06/2021, Virtual Event
Exploring EX-ACT VC
About EX-ACT VC
Tool Objectives
EX-ACT VC
EX-Ante Carbon-balance Tool for Value Chains
© Daniel Hayduk


Tool Objectives
A tool to provide a holistic assessment of agri-food value chains projects
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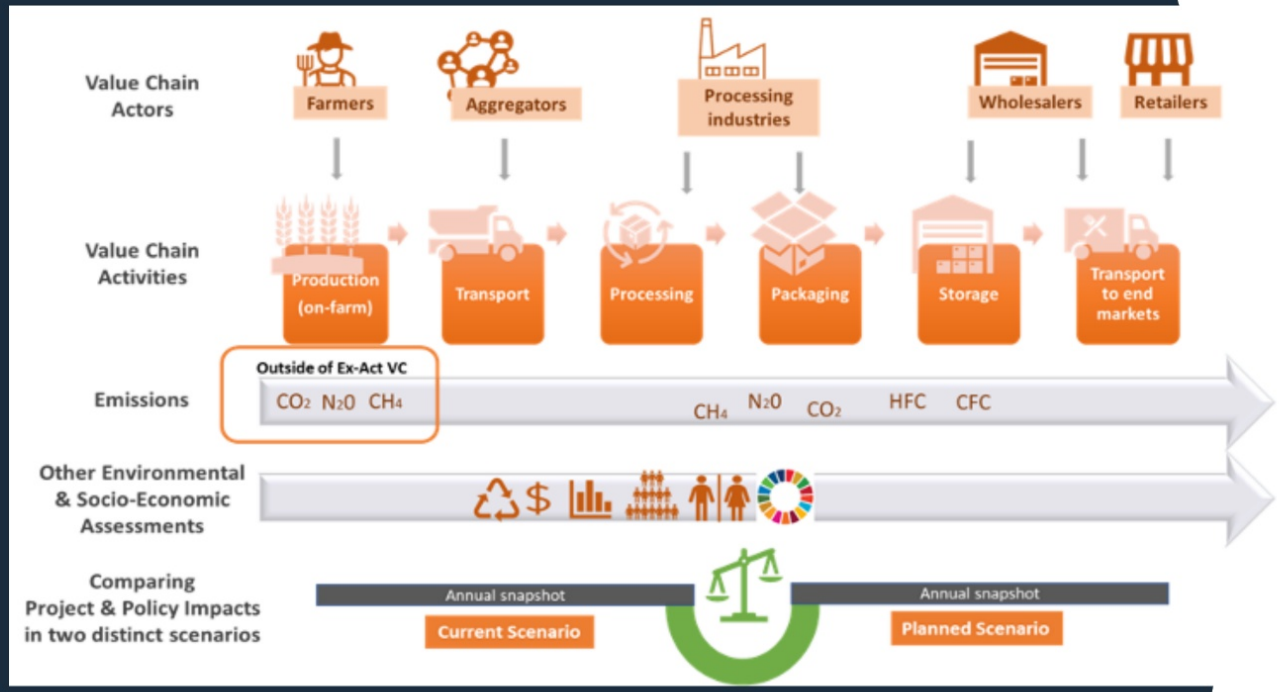
Objectives

Standardized, transparent, cost-effective tool for decision-makers to:

Quantify	performance across environmental and socio-economic dimensions
Identify	drivers of sustainability through comparing two scenarios
Determine	investment entry points
Evaluate	whether objectives are met
Design	sustainable agri-food value chains

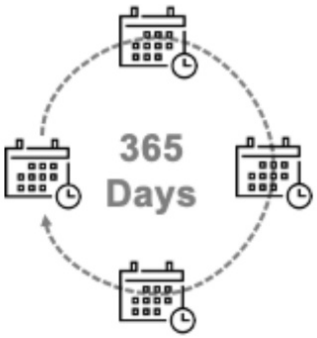
About EX-ACT VC

Logical Framework

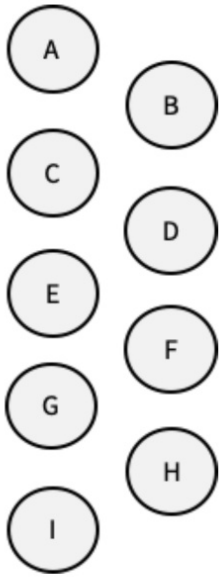


Scope of EX-ACT VC

Five categories of commodities

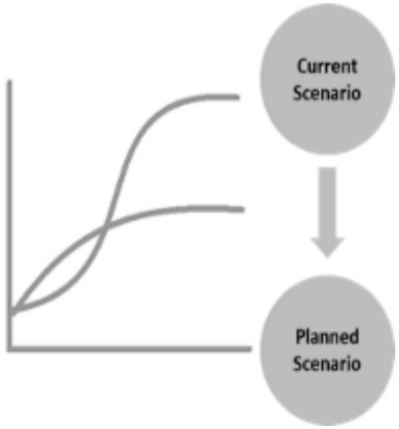


Annual snapshot of the value chain



Up to nine unique categories of actors

Five possible activities for each category of actor



Current scenario vs. planned scenario

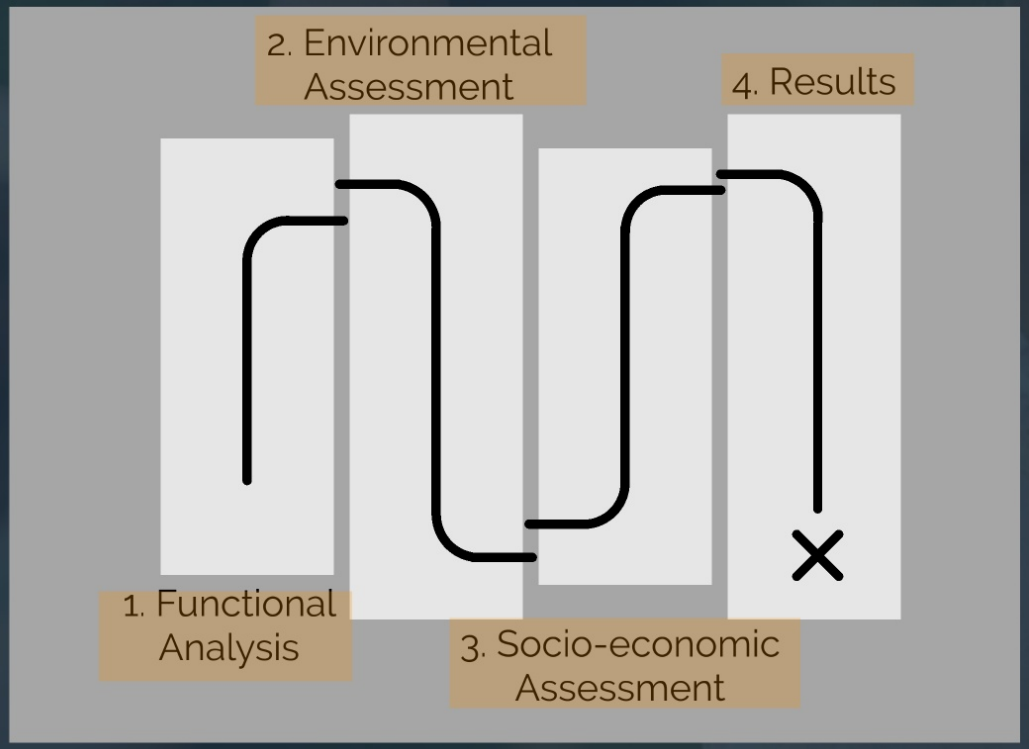
Methodological Steps

1 Identifying
- Value Chain Commodity Mapping
- Actors
- Activities
- Volumes

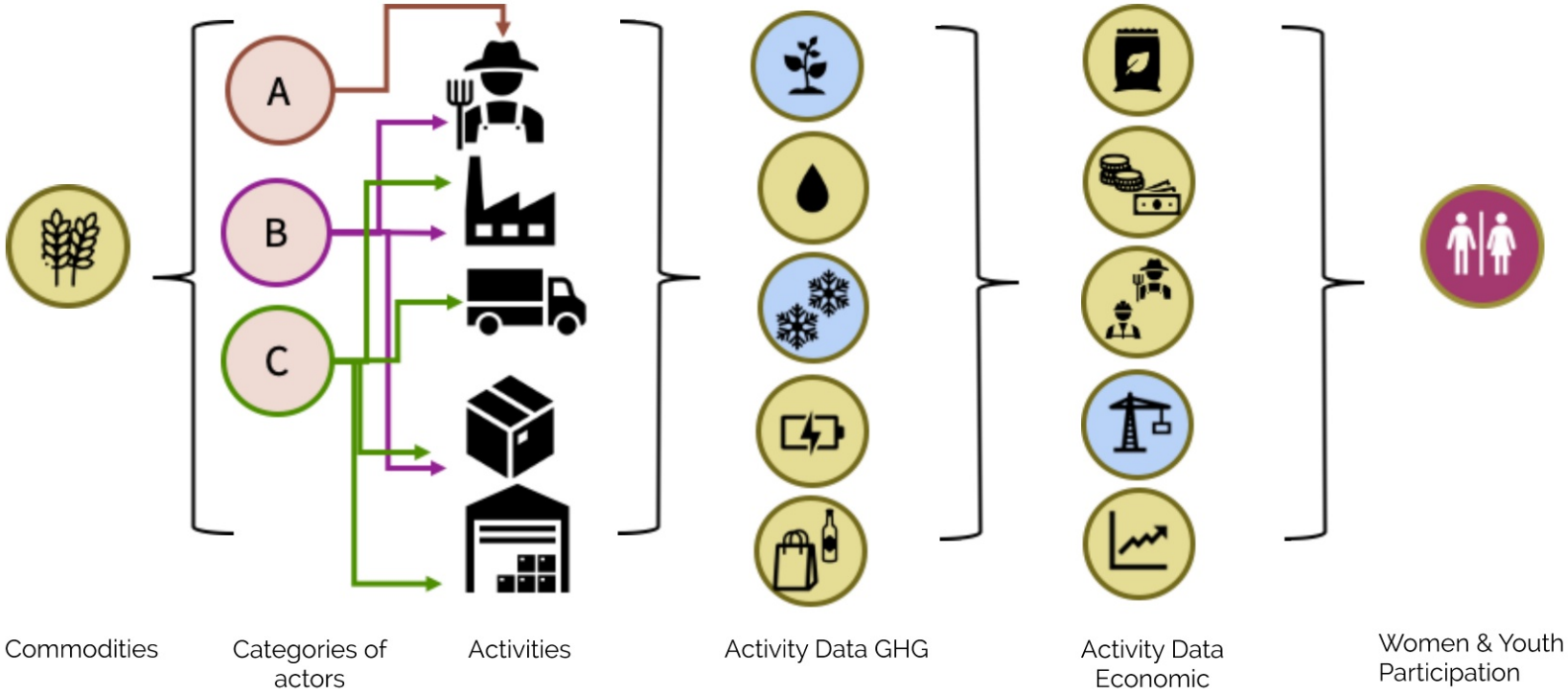
2 Estimating
- GHG Emissions
- Food Loss
- Water Usage

3 Estimating
- Economic Value -Added
- Number of jobs
- Women & Youth inclusion

4 Results



Approach of EX-ACT VC



Main changes in the new version

Revised Methodology

- Wastewater (IPCC, 2019 refinement)
- Storage (GWP of refrigerants)
- Optional inclusion of fixed capital cost

Included modules

- Functional analysis
- Quantitative gender and youth assessment
- SDG's

New GHG Emission Factors

- Transportation (Intensity EF)
- Energy

Removed modules

- Qualitative system resilience assessment
- Land-based emissions calculation

Exploring EX-ACT VC

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EX-ACT VC Version 3.0

Start | Commodity tracker | Off-farm GHG assessment | Socio-economic assessment | Results

Step 1 - Description of Project

User Name	Sravya Mamidanna
Date	27/03/21
Project Name	Commercialization and De-risking for Agricultural Transformation Project
Project Code	P171482
Project Budget (USD)	300 Million
Funding Agency	World Bank
Implementing Agency	
Project Status	Implementation

EX-ACT VC

EX-ANTE CARBON-BALANCE TOOL FOR VALUE CHAIN ANALYSIS

Click for instructions

Step 2 - Description of Value Chain

Value Chain Commodity		Annual Crop
Type of Value Chain		Domestic value chain
Location of Value Chain:	Continent	Eastern Africa
	Country	Rwanda
	Region / Municipality	
Exchange rate (USD / local currency)	1 USD =	1002.04 RWF

Global Warming Potential 100-year	
Fifth Assessment Report (AR5)	
CO2	1
CH4	34
N2O	298

Step 3 - Mapping out the Value Chain

Category of Actor	Please Name Category	Please Describe Category	Number of Actors within Category: Current	Number of Actors within Category: Planned	Describe Commodity Sold	Purchases Commodity From: Current	Purchases Commodity From: Planned	Sells Commodity To: Current	Sells Commodity To: Planned	Primary Production	Storage (Pre-Processing)	Processing	Water Used (Processing)	Packaging	Storage / Display	Transportation: Pick Up	Transportation: Delivery	Is the commodity sold at retail level?	Location of Category of Actor: Country	Exchange rate (1 USD = ___)	Local Currency
Example:	*Small Scale Producers*	*Small-scale vegetable growers*	*20*	*30*	*Fresh Tomatoes*			*Local Coop*		*Yes*	*Yes*	*No*	*Yes*	*No*	*No*	*N.A*	*Yes*				
Actor(s) A:	Maize Producers	Small-scale Maize Producers - Improved	474266	474266	Maize Grain	N/A	N/A	Aggregators	Aggregators	Yes	Yes	No	No	Yes	No	No	Yes		Please select		Please select
Actor(s) B:																					
Actor(s) C:																					
Actor(s) D:	Aggregators	Maize grain aggregators and traders	1	1	Maize Grain	Maize Producers	Maize Producers	Maize Processors	Maize Processors		Yes	No	No	No	No	No	Yes	No	Please select		Please select
Actor(s) E:	Maize Processors	Processors producing Maize Flour	10	10	Maize Flour	Aggregators	Aggregators	Wholesalers	Wholesalers		Yes	Yes	Yes	Yes	Yes	No	Yes	No	Please select		Please select
Actor(s) F:	Wholesalers	Wholesalers distributing Maize Flour	1	1	Maize Flour	Maize Processors	Maize Processors	Other Actor	Other Actor		No	No	No	Yes	Yes	No	No	No	Please select		Please select
Actor(s) G:																					
Actor(s) H:																					
Actor(s) I:																					

Please identify activities performed (either current or planned)

STEP 4 - Description of On-Farm Activities

		Maize Producers		
For the SDG Tracker, can this category of actor be defined as "small-scale"?		Yes		
		Current	Planned	
Value-Chain (Meso) Level Data	Total Amount Harvested	153188.1	160847.5	Tonnes
	Total Land used for Production	56912.0	56912.0	Ha
	Average Yield	2.7	2.8	Tonnes/Ha
	Total Emissions Associated with Production			tCO_2e / yr
Individual (Micro) Level Data	Total Amount Harvested	0.3	0.3	Tonnes
	Total Land used for Production	0.1	0.1	Ha

Flow of Commodity

For the entire category of actors:		Absolute (tonnes): Current	Absolute (tonnes): Planned	Percentage: Current	Percentage: Planned
Maize Producers	Amount harvested	153,188	160,848		
	Amount left unharvested	-	-	0%	0%
	Amount lost during harvest	32,935	18,514	22%	11.5%
	Amount consumed	27,267	28,631	18%	18%
	Amount put in storage, before processing	92,985	113,703		
	Amount lost during storage, before processing	-	-		
	Amount packaged	92,985	113,703		
	Amount lost during transport (delivery)	-	-	0%	0.0%
	Amount of Maize Grain sold to Aggregators (current)	92,985		100%	
	Amount of Maize Grain sold to Aggregators (planned)		113,703		100%
Amount sold to Aggregators - Individual Level		0.20	0.24		

Transportation Details

Tier 2

Type of fuel: Current	Type of fuel: Planned	Type of transport used: Current	Type of transport used: Planned	# of km: Current	# of km: Planned	Type of conditioning: Current	Type of conditioning: Planned	Total Fuel Used (Litres): Current	Total Fuel Used (Litres): Planned
None	None	Animals	Animals	15	15	Non-refrigerated	Non-refrigerated	0	0

Food and Agriculture Organization of the United Nations

EX-ACT VC Version 3.0

Start | Commodity tracker | Off-farm GH assessment

Step 1 - Description of Project

User Name	Sravya Mamidanna
Date	27/05/21
Project Name	Commercialization and De-risking for Agricultural Transformation Project
Project Code	P171462
Project Budget (USD)	300 Million
Funding Agency	World Bank
Implementing Agency	
Project Status	Implementation

EX-ACT VC

EX-ANTE CARBON-BALANCE TOOL FOR VALUE CHAIN ANALYSIS

Click for Instructions

Step 2 - Description of Value Chain

Value Chain Commodity		Annual Crop
Type of Value Chain		Domestic value chain
Location of Value Chain:	Continent	Eastern Africa
	Country	Rwanda
	Region / Municipality	
Exchange rate (USD / local currency)	1 USD =	1002.04 RWF

Global Warming Potential 100-year	
Fifth Assessment Report (AR5)	
CO2	1
CH4	34
N2O	298

Step 3 - Mapping out the Value Chain

Category of Actor	Please Name Category	Please Describe Category	Number of Actors within Category		Describe Commodity Sold	Purchases Commodity From:		Sells Commodity To:		Pri Proc
			Current	Planned		Current	Planned	Current	Planned	

Step 3 - Mapping out the Value Chain

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Category of Actor	Please Name Category	Please Describe Category
Example:	***Small Scale Producers***	***Small-scale vegetable growers***
Actor(s) A:	Maize Producers	Small-scale Maize Producers - Improved
Actor(s) B:		
Actor(s) C:		
Actor(s) D:	Aggregators	Maize grain aggregators and traders
Actor(s) E:	Maize Processors	Processors producing Maize Flour
Actor(s) F:	Wholesalers	Wholesalers distributing Maize Flour
Actor(s) G:		
Actor(s) H:		
Actor(s) I:		

Rwanda

1002.04 RWF

Fifth Assessment Report (AR5)	
CO2	1
CH4	34
N2O	298

Number of Actors within Category		Describe Commodity Sold	Purchases Commodity From:		Sells Commodity To:	
Current	Planned		Current	Planned	Current	Planned
20	30	*Fresh Tomatoes*			*Local Coop*	
474266	474266	Maize Grain	N/A	N/A	Aggregators	Aggregators
1	1	Maize Grain	Maize Producers	Maize Producers	Maize Processors	Maize Processors
10	10	Maize Flour	Aggregators	Aggregators	Wholesalers	Wholesalers
1	1	Maize Flour	Maize Processors	Maize Processors	Other Actor	Other Actor

roducers

Flo

Please identify activities performed (either current or planned)

Primary Production	Storage (Pre-Processing)	Processing	Water Used (Processing)	Packaging	Storage / Display	Transportation: Pick Up	Transportation: Delivery
Yes	***Yes***	***No***	***Yes***	***No***	***No***	***N.A***	***Yes***
Yes	Yes	No	No	Yes	No	No	Yes
	Yes	No	No	No	No	No	Yes
	Yes	Yes	Yes	Yes	Yes	No	Yes
	No	No	No	Yes	Yes	No	No

w of Commodity

Absolute (tonnes)	Percentage

Type of fuel	Type of tran

Is the commodity sold at retail level?	Location of Category of Actor ?		
	Country	Exchange rate (1 USD = ___)	Local Currency
	Please select		Please select
No	Please select		Please select
No	Please select		Please select
No	Please select		Please select

Flow of Commodity

	For the entire category of actors:	Absolute (tonnes)		Percentage	
		Current	Planned	Current	Planned
Maize Producers	Amount harvested	153,188	160,848		
	Amount left unharvested	-	-	0%	0%
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	Amount of Maize Grain sold to Aggregators (planned)		113,703		100%
Amount sold to Aggregators - Individual Level		**0.20**	**0.24**		

Type of fuel	
Current	Pla
None	N

Transportation Details

Tier 2

Type of fuel		Type of transport used		# of km		Type of conditioning		Total Fuel Used (Litres)	
Current	Planned	Current	Planned	Current	Planned	Current	Planned	Current	Planned
None	None	Animals	Animals	15	15	Non-refrigerated	Non-refrigerated	0	0

STEP 4 - Description of On-Farm Activities

		Maize Producers		
For the SDG Tracker, can this category of actor be defined as "small-scale"?		Yes		
		Current	Planned	
Value-Chain (Meso) Level Data ?	Total Amount Harvested	153188.1	160847.5	Tonnes
	Total Land used for Production	56912.0	56912.0	Ha
	Average Yield	2.7	2.8	Tonnes/Ha
	Total Emissions Associated with Production			tCO_2e / yr
Individual (Micro) Level Data	Total Amount Harvested	0.3	0.3	Tonnes
	Total Land used for Production	0.1	0.1	Ha

Food and Agriculture Organization of the United Nations

EX-ACT VC Version 3.0

Start | Commodity tracker | Off-farm GHG assessment | Socio-economic assessment | Results

Step 1 - Description of Project

User Name	Sravya Mamidanna
Date	27/03/21
Project Name	Commercialization and Scaling for Agricultural Transformation Project
Project Code	P171422
Project Budget (USD)	300 Million
Funding Agency	World Bank
Implementing Agency	
Project Status	Implementation

Step 2 - Description of Value Chain

Value Chain Commodity		Annual Crop
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Example:	Small Scale Producers	Small-scale vegetable growers	20	30	Fresh Tomatoes			Local Coop		Yes	Yes	No	Yes	No	No	N.A	Yes				
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Actor(s) B:																					
Actor(s) C:																					
Actor(s) D:	Aggregators	Maize grain aggregators and traders	1	1	Maize Grain	Maize Producers	Maize Producers	Maize Processors	Maize Processors		Yes	No	No	No	No	No	Yes	No	Please select		Please select
Actor(s) E:	Maize Processors	Processors producing Maize Flour	10	10	Maize Flour	Aggregators	Aggregators	Wholesalers	Wholesalers		Yes	Yes	Yes	Yes	Yes	No	Yes	No	Please select		Please select
Actor(s) F:	Wholesalers	Wholesalers distributing Maize Flour	1	1	Maize Flour	Maize Processors	Maize Processors	Other Actor	Other Actor		No	No	No	Yes	Yes	No	No	No	Please select		Please select
Actor(s) G:																					
Actor(s) H:																					
Actor(s) I:																					

STEP 4 - Description of On-Farm Activities

For the SDG Tracker, can this category of actor be defined as "small-scale"? Yes

		Current	Planned	
Value-Chain (Meso) Level Data	Total Amount Harvested	153188.1	160847.5	Tonnes
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Individual (Micro) Level Data	Total Amount Harvested	0.3	0.3	Tonnes
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Results

Flow of Commodity

For the entire category of actors:		Absolute (tonnes) Current	Absolute (tonnes) Planned	Percentage Current	Percentage Planned
Maize Producers	Amount harvested	153,188	160,848		
	Amount left unharvested	-	-	0%	0%
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Transportation Details

Tier 2

Type of fuel: Current	Type of fuel: Planned	Type of transport used: Current	Type of transport used: Planned	# of km: Current	# of km: Planned	Type of conditioning: Current	Type of conditioning: Planned	Total Fuel Used (Litres): Current	Total Fuel Used (Litres): Planned
None	None	Animals	Animals	15	15	Non-refrigerated	Non-refrigerated	0	0


(Micro) Level Data
Total Land used for Production
0.1
Results

EX-ACT VC - OUTPUTS

Environmental indicators

- GHG emissions
- Carbon footprint
- Food loss
- Water usage

CO_2 CH_4 N_2O

Socio-economic indicators

- Economic value of climate mitigation analysis
- Gross production value / G&N value added
- Employment indicators
- Net income
- Gender & Youth inclusion

SDG indicators

- SDG #2 Zero hunger
- SDG #5 Gender Equality
- SDG #6 Clean water and sanitation
- SDG #9 Industry, innovation and infrastructure
- SDG #12 Responsbile consumption and production

Thank you!

Ada Ignaciuk
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EX-ACT for Value Chains
Sravya Mamidanna
Maria Giulia Crespi
Isaac Guzmán Estrada

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For more information, please visit:

http://www.fao.org/tc/exact/ex-act-home/en/

http://www.fao.org/climatechange/epic/home/en/