Food and Agriculture Organization
of the United Nations

MRV Hub

June, 21st

Solomon Islands

Case Study MRV HUB

June, 21 st

Lorenzo Maestripieri & Aristide Ouedraogo

Food and Agriculture Organization of the United Nations

Case Study of Solomond Islands

Country Context

Food systems Integrated Program-GEF

EX-ACT calculations

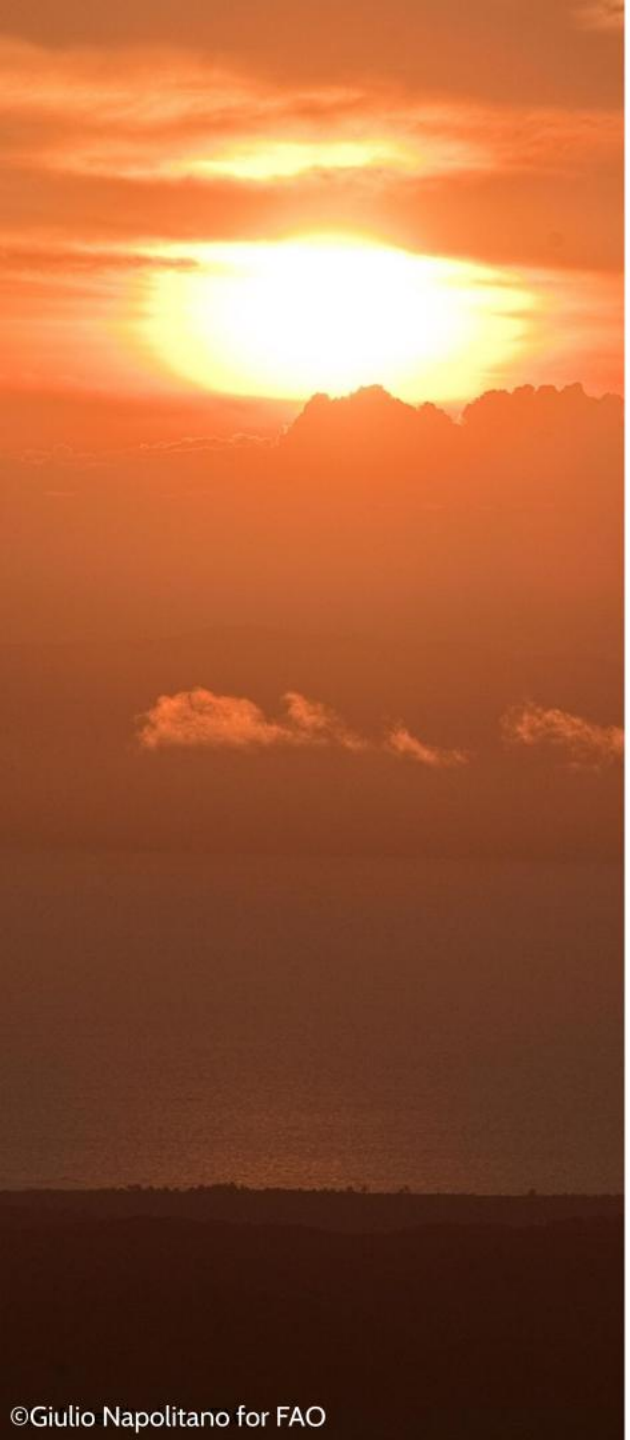
Food and Agriculture Organization of the United Nations

Challenges in Solomon Islands Agriculture

Food and Agriculture Organization of the United Nations

Agriculture in Solomons

- The Solomon Islands use 5% of their agriculture area for oil palm plantations.
- 26% percent of the population is engaged in cocoa production.
- The livestock sector is the third greatest contributor to household income, which the government plans to expand to address changing diets.



Unsustainable practices and climate impacts

- Unsustainable cash crop (e.g. palm) **deforestation** and **fire use** are threatening food security (IPCC 2019)
- Unsustainable **livestock production** and **high intensity grazing**
- Food security is deteriorating, stunting of children under 5 and smallholders below the poverty line are increasing

Food Systems Integrated Program in Solomon Islands

Food and Agriculture Organization of the United Nations

The overall goal of the project is to " address drivers of ecosystem degradation and biodiversity loss, which drive unsustainable migration patterns, high dependence on imported food, and food insecurity".

the intervention will support the integration of cash crops (cocoa, oil palm) with traditionally-managed landscapes and agroforestry systems, that are environmentally and socially sustainable, and improve cocoa production and processing practices to meet international standards that combine sustainability and quality, and support smallholder livelihoods

Project concept note, Feb 2023

Project Area

Intervention areas

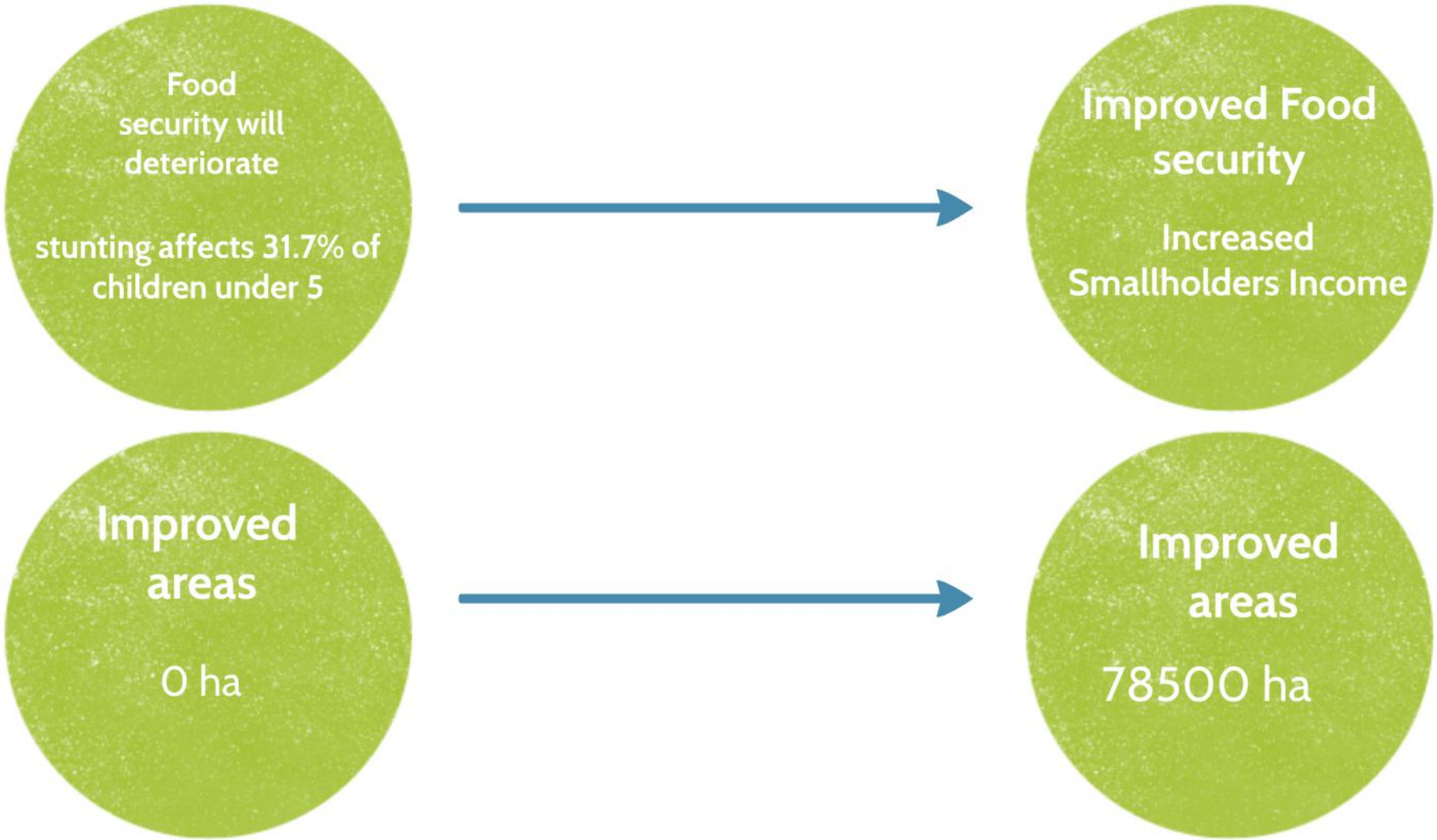
Earth map, june 2023

Climate characteristics

Precipitation	3303.42 mm
Temperature	26.34 °C
GSOC	158.29 TC/ha
EVAPOTRANSP	395 mm

Baseline in Project zone

Targets in Project zone



Assumptions of the project

Food and Agriculture Organization of the United Nations

Project activities and scenario

EX-ACT MODULE	Project activities	Initial/ current situation	Without the project	With the project	Quantity
CROPLAND	Improved cocoa production	Old cocoa with unsustainable practices (full tillage, low carbon	Old cocoa with unsustainable practices (full tillage, low carbon	Shaded cocoa with sustainable practices (reduced tillage, high carbon	32000 ha
DEFORESTATION	Avoiding deforestation	Tropical moist deciduous forest	Oil plantation with full tillage, low carbon input, conversion using fire	Tropical moist deciduous forest	1000 ha
GRASSLAND	Grassland	High intensity grassing	High intensity grassing	Non-degraded	45000 ha
CROPLAND	Maize production	Annual fallow land	Annual fallow land	Annual cropland (for maize)¶ Reduced tillage, medium carbon input and residue exported	500 ha
LIVESTOCK	Improved Chicken production	Low productivity¶ 56500 chickens	Low productivity¶ 56500 chickens	Improved sanitation, feeding and other health issues- High productivity, number of heads double	56500*2 chickens
LIVESTOCK	Improved Pigs production	Low productivity¶ 63 900 pigs	Low productivity¶ 63900 pigs	Improved sanitation, feeding and other health issues- High productivity, number of heads double	63900*2 pigs

EX-ACT application
in Solomon Islands

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EX-ACT description page

1.2 Project site and duration		
Continent	Oceania	
Country	Solomon Islands	
Climate	Tropical	
Moisture	Wet	
Soil Type	High activity clay soils	
Project duration (in years)	*Implementation Phase*	5
	Capitalization Phase	15
	Total Duration of Accounting	**20**

Climate?

Soil?

CLIMATE IDENTIFIER		
MAT	Mean Annual Temperature in C	26.3
MAP	Mean Annual Precipitation in mm	3,303
PET	Potential Evapotranspiration in mm	395
Elevation	Elevation above sea level	157
Climate	***Tropical***	
Moisture	***Wet***	

EX-ACT
of the project

2.1 DEFORESTATION

If country-specific data are available, pleas

Type of vegetation that will be deforested ?	HWPs (tDM/ha)	Fire used? (y/n)	Final land-use after deforestation: Land-use type	Final land-use after deforestation: Agroforestry system	Forested area (ha): Start	Forested area (ha): Without	*	Forested area (ha): With	*	Deforested area (ha): Without	Deforested area (ha): With
Tropical moist deciduous forest	0	YES	Agroforestry	Oil palm	1,000	0	D	1,000	D	1000	0
Please select	0	NO	Please select	Please select	0	0	D	0	D	0	0
Please select	0	NO	Please select	Please select	0	0	D	0	D	0	0
Please select	0	NO	Please select	Please select	0	0	D	0	D	0	0
Please select	0	NO	Please select	Please select	0	0	D	0	D	0	0
Please select	0	NO	Please select	Please select	0	0	D	0	D	0	0
Please select	0	NO	Please select	Please select	0	0	D	0	D	0	0
Please select	0	NO	Please select	Please select	0	0	D	0	D	0	0

2.1 DEFORESTATION

Type of vegetation that will be deforested	?	HWPs (tDM/ha)	Fire used? (y/n)
Tropical moist deciduous forest		0	YES
Please select		0	NO
Please select		0	NO
Please select		0	NO
Please select		0	NO
Please select		0	NO

sed?	Final land-use after deforestation		
n)	Land-use type	Agroforestry system	Sta
S	Agroforestry	Oil palm	1,0
D	Please select	Please select	0
D	Please select	Please select	0
D	Please select	Please select	0
D	Please select	Please select	0
D	Please select	Please select	0
D	Please select	Please select	0
D	Please select	Please select	0

	Forested area (ha)					Deforested area (ha)	
	Start	Without	*	With	*	Without	With
	1,000	0	D	1,000	D	1000	0
	0	0	D	0	D	0	0
	0	0	D	0	D	0	0
	0	0	D	0	D	0	0
	0	0	D	0	D	0	0
	0	0	D	0	D	0	0
	0	0	D	0	D	0	0
	0	0	D	0	D	0	0

EX-ACT

of the project

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Tropical moist deciduous forest	0	YES	Agroforestry	Oil palm	1,000	0	D	1,000	D	1000	0
Please select	0	NO	Please select	Please select	0	0	D	0	D	0	0
Please select	0	NO	Please select	Please select	0	0	D	0	D	0	0
Please select	0	NO	Please select	Please select	0	0	D	0	D	0	0
Please select	0	NO	Please select	Please select	0	0	D	0	D	0	0
Please select	0	NO	Please select	Please select	0	0	D	0	D	0	0
Please select	0	NO	Please select	Please select	0	0	D	0	D	0	0
Please select	0	NO	Please select	Please select	0	0	D	0	D	0	0

EX-ACT

2.3 OTHER LAND-USE CHANGES

If country-specific data a

User notes	Fire used? (y/n)	Initial land-use	Final land-use	Area of land use change (ha) Without	*	With	*
New land for maize production	NO	Annual fallow	Annual cropland	0	D	500	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D

Please go to section 3.1.1 in the Cropland Module to complete the assessment

Total non forest land-use chan

ire used? (y/n)	Initial land-use	Final land-use
NO	Annual fallow	Annual cropland
NO	Please select	Please select
NO	Please select	Please select
NO	Please select	Please select
NO	Please select	Please select
NO	Please select	Please select
NO	Please select	Please select
NO	Please select	Please select
NO	Please select	Please select
NO	Please select	Please select

EX-ACT

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If country-specific data a

User notes	Fire used? (y/n)	Initial land-use	Final land-use	Area of land use change (ha) Without	*	With	*
New land for maize production	NO	Annual fallow	Annual cropland	0	D	500	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D

Please go to section 3.1.1 in the Cropland Module to complete the assessment

Total non forest land-use chan

se	Area of land use change (ha)			
	Without	*	With	*
nd	0	D	500	D
t	0	D	0	D
t	0	D	0	D
t	0	D	0	D
t	0	D	0	D
t	0	D	0	D
t	0	D	0	D
t	0	D	0	D
t	0	D	0	D
t	0	D	0	D

EX-ACT

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If country-specific data a

User notes	Fire used? (y/n)	Initial land-use	Final land-use	Area of land use change (ha) Without	*	With	*
New land for maize production	NO	Annual fallow	Annual cropland	0	D	500	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D
	NO	Please select	Please select	0	D	0	D

Please go to section 3.1.1 in the Cropland Module to complete the assessment

Total non forest land-use chan

EX-ACT

3.2.2.2. Changes in agroforestry systems (with or without changes in management options)

User notes	Agroforestry systems ?	Tillage management	Input of organic material ?	Residue/ Biomass burning	Yield (t/ha/yr)	Start	Without	*	With	*
	Agroforestry - default	Full tillage	Medium C input	NO		32,000	32,000	D	0	D
	Shaded Perennial	Reduced tillage	High C input, no manure	NO		0	0	D	32,000	D
	Please select	Please select	Please select	NO		0	0	D	0	D
	Please select	Please select	Please select	NO		0	0	D	0	D
	Please select	Please select	Please select	NO		0	0	D	0	D
	Please select	Please select	Please select	NO		0	0	D	0	D
	Please select	Please select	Please select	NO		0	0	D	0	D
	Please select	Please select	Please select	NO		0	0	D	0	D
					Total (ha)	32000	32000		32000	

tems (with or without changes in management options)

?	Agroforestry systems	Tillage management	Input of organic material	?	Bi
	Agroforestry - default	Full tillage	Medium C input		
	Shaded Perennial	Reduced tillage	High C input, no manure		
	Please select	Please select	Please select		
	Please select	Please select	Please select		
	Please select	Please select	Please select		
	Please select	Please select	Please select		
	Please select	Please select	Please select		
	Please select	Please select	Please select		

Residue/ Biomass burning	Yield (t/ha/yr)	Start	Without	*	With
NO		32,000	32,000	D	0
NO		0	0	D	32,000
NO		0	0	D	0
NO		0	0	D	0
NO		0	0	D	0
NO		0	0	D	0
NO		0	0	D	0
NO		0	0	D	0
NO		0	0	D	0
	Total (ha)	32000	32000		32000

EX-ACT

3.2.2.2. Changes in agroforestry systems (with or without changes in management options)

User notes	Agroforestry systems ?	Tillage management	Input of organic material ?	Residue/ Biomass burning	Yield (t/ha/yr)	Start	Without	*	With	*
	Agroforestry - default	Full tillage	Medium C input	NO		32,000	32,000	D	0	D
	Shaded Perennial	Reduced tillage	High C input, no manure	NO		0	0	D	32,000	D
	Please select	Please select	Please select	NO		0	0	D	0	D
	Please select	Please select	Please select	NO		0	0	D	0	D
	Please select	Please select	Please select	NO		0	0	D	0	D
	Please select	Please select	Please select	NO		0	0	D	0	D
	Please select	Please select	Please select	NO		0	0	D	0	D
	Please select	Please select	Please select	NO		0	0	D	0	D
					Total (ha)	32000	32000		32000	

EX-ACT

3.2.2.2. Changes in agroforestry systems (with or without changes in management options)

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	Agroforestry - default	Full tillage	Medium C input	NO		32,000	32,000	D	0	D
	Shaded Perennial	Reduced tillage	High C input, no manure	NO		0	0	D	32,000	D
	Please select	Please select	Please select	NO		0	0	D	0	D
	Please select	Please select	Please select	NO		0	0	D	0	D
	Please select	Please select	Please select	NO		0	0	D	0	D
	Please select	Please select	Please select	NO		0	0	D	0	D
	Please select	Please select	Please select	NO		0	0	D	0	D
	Please select	Please select	Please select	NO		0	0	D	0	D
					Total (ha)	32000	32000		32000	

EX-ACT Results

of the project

Project name							
Continent	Oceania	**Project duration (in years)**		**Total area (ha)**	78,500	**Global warming potential**	
Country	Solomon Islands	Implementation Phase	5	Mineral soil	78,500	CO_2	1
Climate	Tropical	Capitalization Phase	15	Organic soil	0	CH_4	28
Moisture	Wet	Total Duration of Accounting	20	Waterbodies	0	N_2O	265

GROSS FLUXES

In tCO2-e over the whole period analysis

PROJECT COMPONENTS		WITHOUT	WITH	BALANCE
Land use changes	Deforestation	440,662	0	-440,662
	Afforestation	0	0	0
	Other land-use	0	-963	-963
Cropland	Annual	0	-3,196	-3,196
	Perennial	-6,284,280	-7,684,548	-1,400,268
	Flooded rice	0	0	0
Grasslands & Livestock	Grasslands	0	-866,250	-866,250
	Livestock	425,321	207,781	-217,540
	Forest mngt.	0	0	0
	Inland wetlands	0	0	0
	Coastal wetlands	0	0	0
	Fisheries and aquaculture	0	0	0
	Inputs & Invest.	0	0	0
Total emissions, tCO2-e		**-5,418,297**	**-8,347,176**	**-2,928,879**
Total emissions, tCO2-e/ha		**-69.0**	**-106.3**	**-37.3**
Total emissions, tCO2-e/ha/yr		**-3.5**	**-5.3**	**-1.9**

+ = Source / - = Sink

Tier 2 Specific GHG fluxes

SHARE PER GHG OF THE BALANCE

In tCO2-e over the whole period analysis

CO2 BIOMASS	CO2 SOIL	N_2O	CH_4	ALL NON-AFOLU EMISSIONS*
-426,815	1,925	-3,434	-12,338	
0	0	0	0	
0	-963	0	0	
0	-3,196	0	0	
-439,653	-960,615	0	0	
0	0	0	0	
0	-866,250	0	0	
		-57,686	-159,855	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	0
	0	0		0
-866,468	**-1,829,098**	**-61,120**	**-172,193**	**0**
-11.0	**-23.3**	**-0.8**	**-2.2**	**0.0**
-0.6	**-1.2**	**0.0**	**-0.1**	**0.0**

Tier 2 Annual emissions

AVERAGE ANNUAL EMISSIONS

In tCO2-e/yr

WITHOUT	WITH	BALANCE
22,033	0	-22,033
0	0	0
0	-48	-48
0	-160	-160
-314,214	-384,227	-70,013
0	0	0
0	-43,313	-43,313
21,266	10,389	-10,877
0	0	0
0	0	0
0	0	0
0	0	0
0	0	0
-270,915	**-417,359**	**-146,444**

EX-ACT Results

of the project

Tier 2
Specific GHG fluxes

GROSS FLUXES

In tCO2-e over the whole period analysis

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	Flooded rice	0	0	0
Grasslands & Livestock	Grasslands	0	-866,250	-866,250
	Livestock	425,321	207,781	-217,540
Forest mngt.		0	0	0
Inland wetlands		0	0	0
Coastal wetlands		0	0	0
Fisheries and aquaculture		0	0	0
Inputs & Invest.		0	0	0
Total emissions, tCO2-e		**-5,418,297**	**-8,347,176**	**-2,928,879**
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0	0	0	0	
0	-963	0	0	
0	-3,196	0	0	
-439,653	-960,615	0	0	
0	0	0	0	
0	-866,250	0	0	
		-57,686	-159,855	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	0
	0	0		0
-866,468	**-1,829,098**	**-61,120**	**-172,193**	**0**
-11.0	**-23.3**	**-0.8**	**-2.2**	**0.0**
-0.6	**-1.2**	**0.0**	**-0.1**	**0.0**

Livestock	Livestock	425,321	207,781	-217,540
	Forest mngt.	0	0	0
	Inland wetlands	0	0	0
	Coastal wetlands	0	0	0
	Fisheries and aquaculture	0	0	0
	Inputs & Invest.	0	0	0
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	Forest mngt.	0	0	0
	Inland wetlands	0	0	0
	Coastal wetlands	0	0	0
	Fisheries and aquaculture	0	0	0

fluxes

In tCO2-e over the whole period analysis

CO2 BIOMASS	CO2 SOIL	N_2O	CH_4	ALL NON-AFOLU EMISSIONS
-426,815	1,925	-3,434	-12,338	
0	0	0	0	
0	-963	0	0	
0	-3,196	0	0	
-439,653	-960,615	0	0	
0	0	0	0	
0	-866,250	0	0	
		-57,686	-159,855	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	0

EX-ACT Results

of the project

Tier 2
Specific GHG fluxes

GROSS FLUXES

In tCO2-e over the whole period analysis

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Coastal wetlands		0	0	0
Fisheries and aquaculture		0	0	0
Inputs & Invest.		0	0	0
Total emissions, tCO2-e		**-5,418,297**	**-8,347,176**	**-2,928,879**
Total emissions, tCO2-e/ha		**-69.0**	**-106.3**	**-37.3**
Total emissions, tCO2-e/ha/yr		**-3.5**	**-5.3**	**-1.9**

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In tCO2-e over the whole period analysis

CO2 BIOMASS	CO2 SOIL	N_2O	CH_4	ALL NON-AFOLU EMISSIONS*
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0	0	0	0	
0	-963	0	0	
0	-3,196	0	0	
-439,653	-960,615	0	0	
0	0	0	0	
0	-866,250	0	0	
		-57,686	-159,855	
0	0	0	0	
0	0	0	0	
0	0	0	0	
0	0	0	0	0
	0	0		0
-866,468	**-1,829,098**	**-61,120**	**-172,193**	**0**
-11.0	**-23.3**	**-0.8**	**-2.2**	**0.0**
-0.6	**-1.2**	**0.0**	**-0.1**	**0.0**

Food and Agriculture Organization
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http://www.fao.org/in-action/epic/en/

Food and Agriculture Organization
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MRV Hub

June, 21st