Sustainable Cacao-based Agroforestry Development to Support Green Growth in Gorontalo

COP24

Gorontalo District, INDONESIA

Gobel DKM

Kanematsu Corporation

Supported by

daemeter

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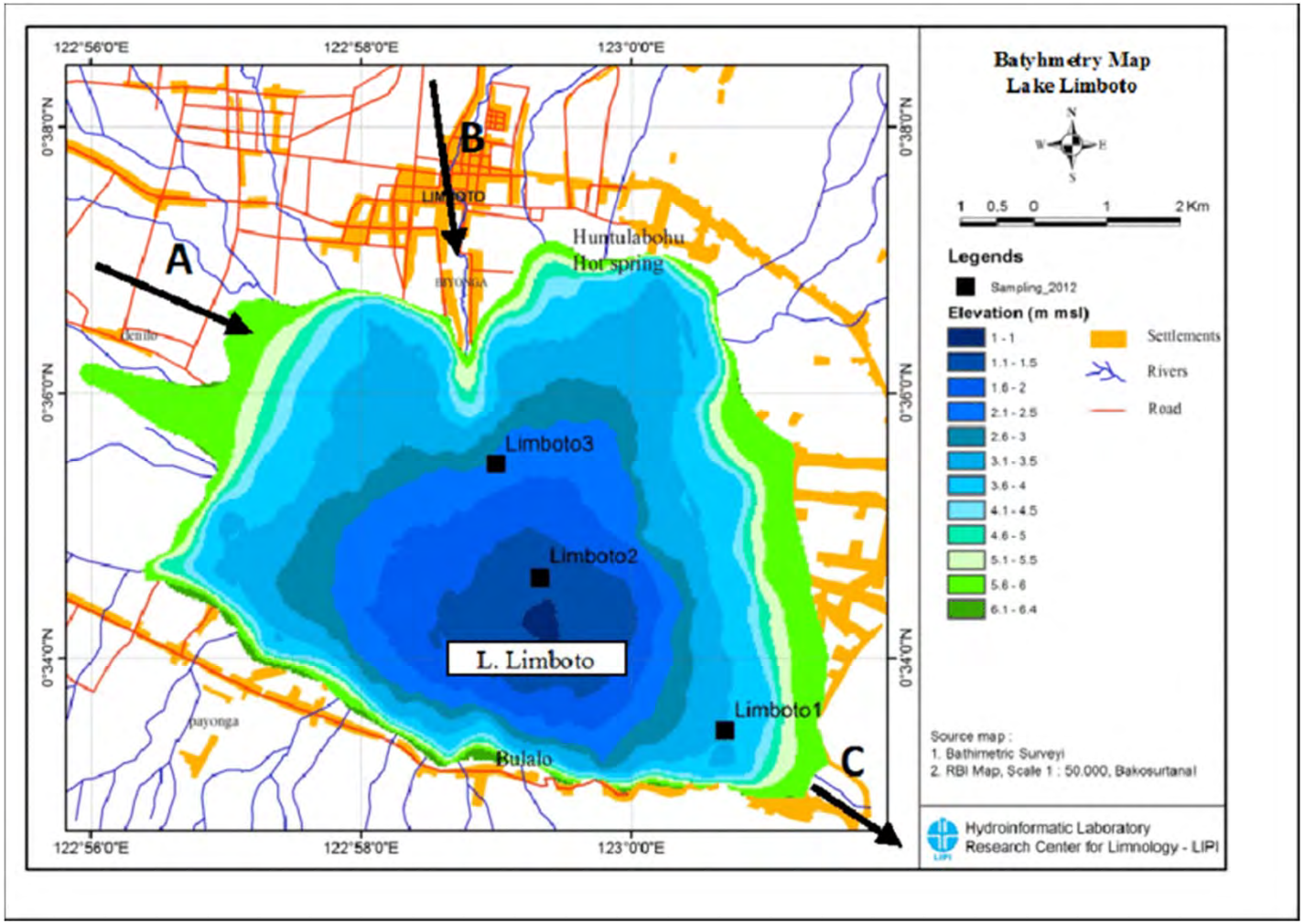
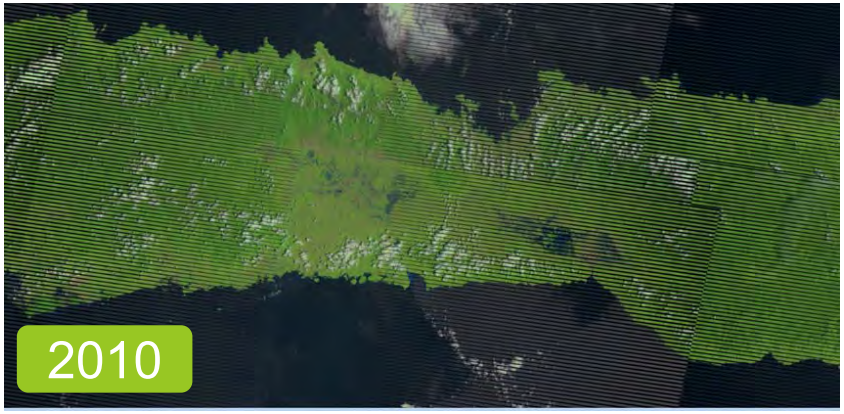
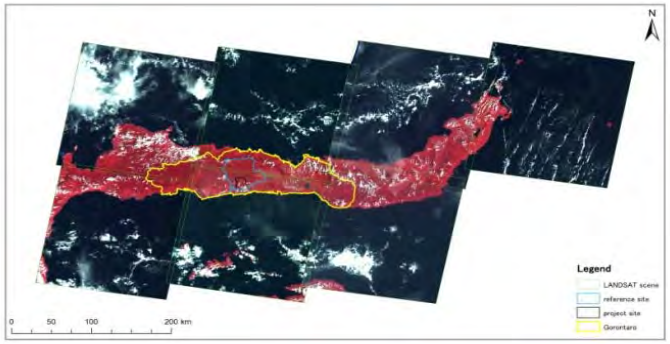
Preserving Limboto Lake

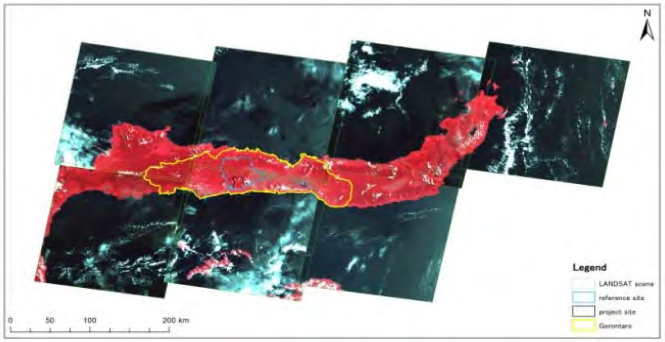


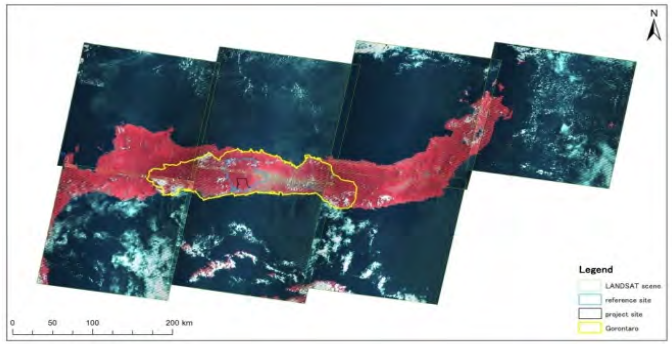
Soil erosion and sedimentation put Limboto watershed at risk.

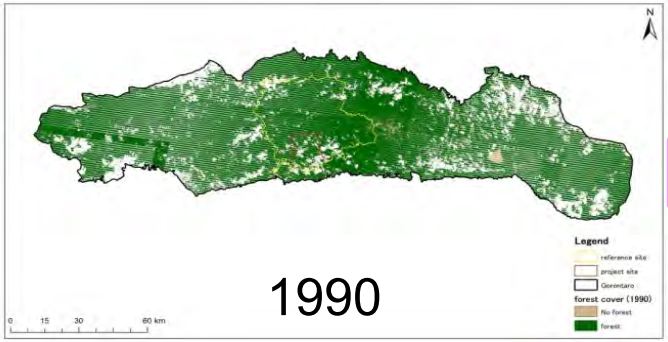
Trend of DEFORESTATION

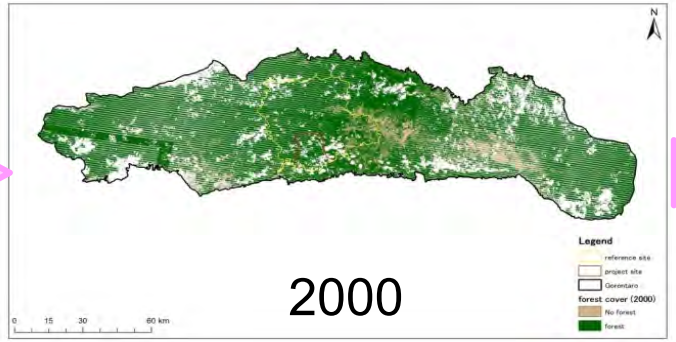


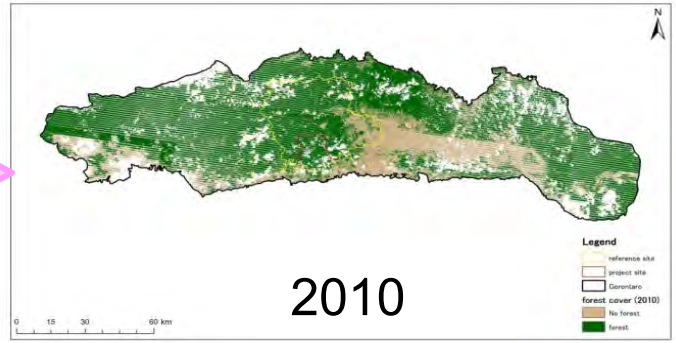












Major reason of CO_2 emission is corn agriculture.

Corn Expansion through "Slash & Burn"

Reference: AKSI CEPAT TANGGAP「1.500 Houses Affected by Gorontalo Flood」2017

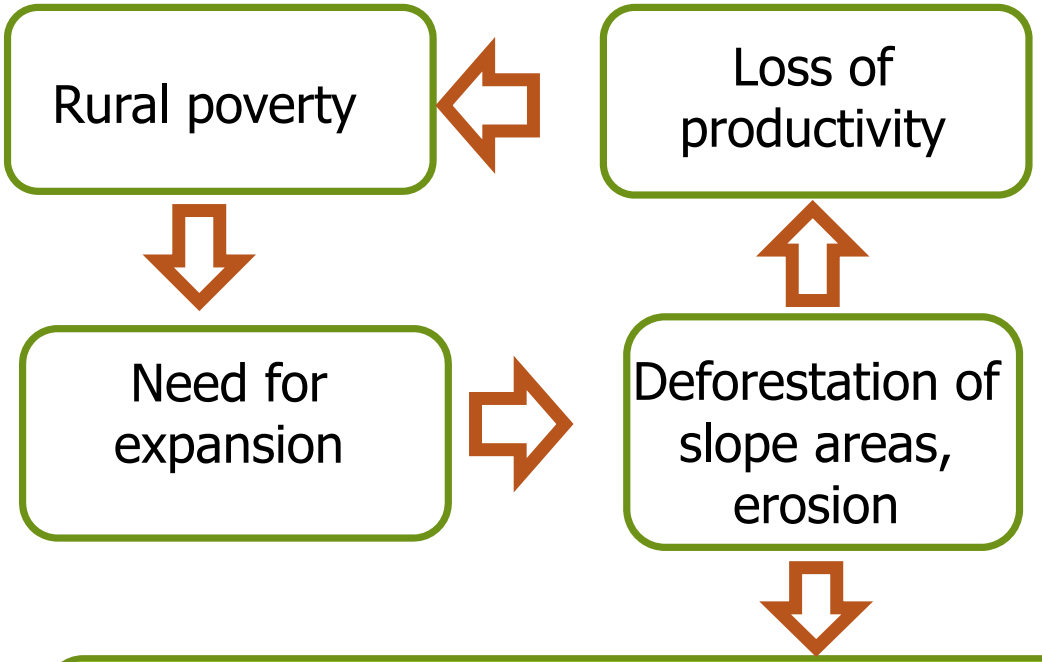
Corn farming has expanded to slope areas, driving both deforestation and erosion, sedimentation and flooding.

Corn Expansion: a Sustainable Strategy for Poverty Reduction?

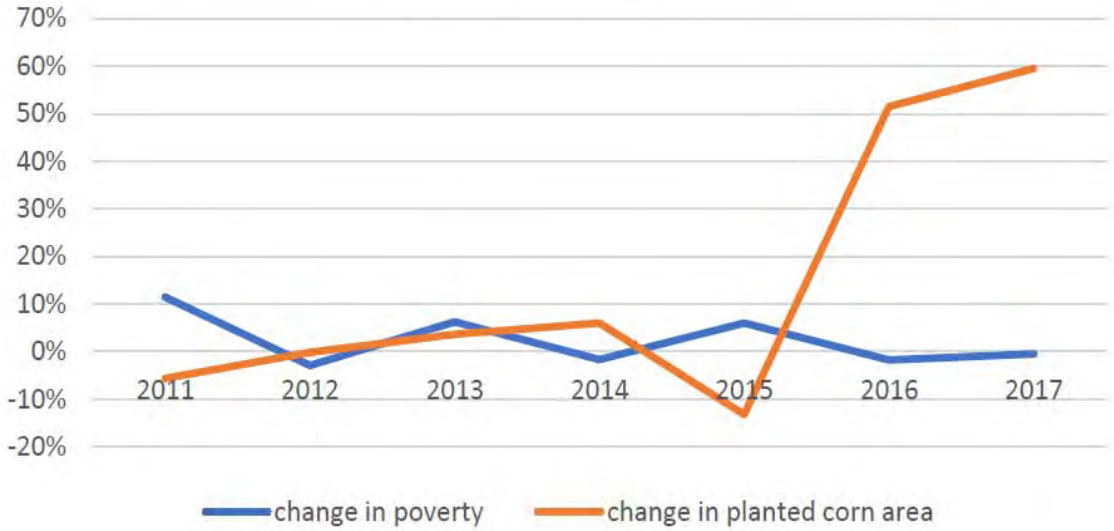
No correlation between corn expansion and poverty reduction

=> We need other developmet strategies.

Cycle of environmental degradation



Relationship between corn expansion and poverty reduction



Forest loss, CO_2 emission, soil fertility loss and Shrinkage of Limboto Lake

Cacao Intervention

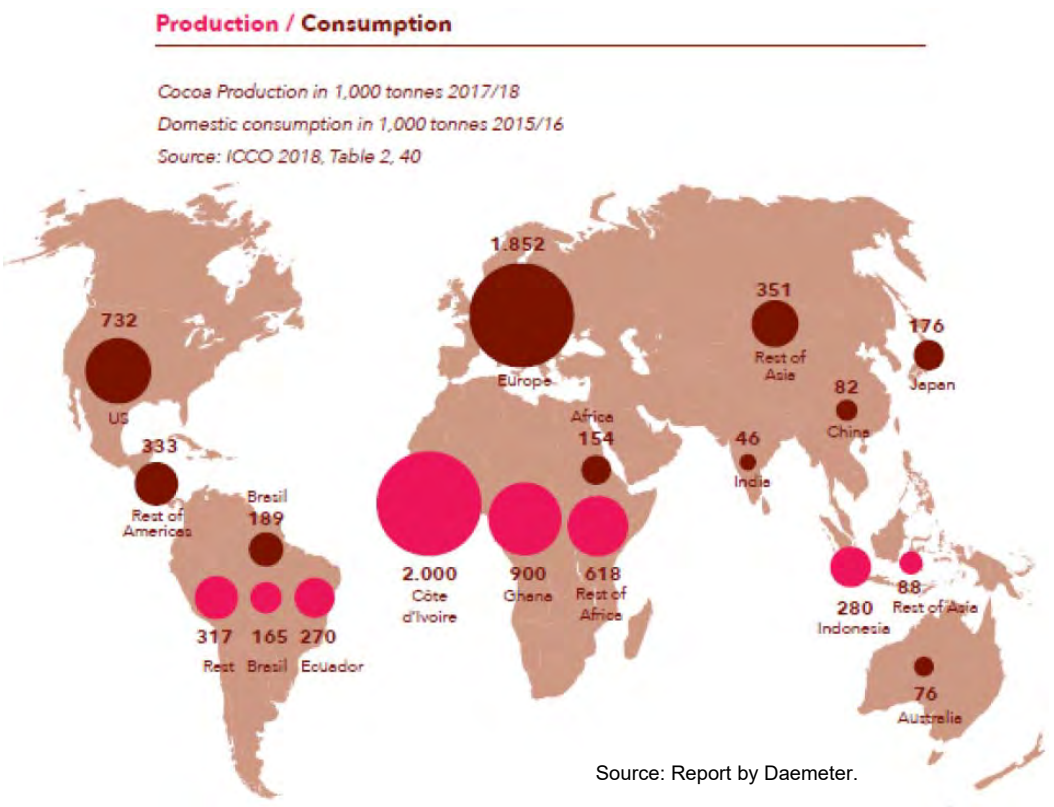
Gorontalo Government aims Green Growth a Change in Development Paradigm

- Sustained Economic growth
  → ***Economic Output***
- Climate Change
  → ***GHG Emissions Reduction***
- Social impact
  → ***Change in Livelihood***
- Natural impact
  → ***High Conservation Value and Ecosystem Services***
- Resilience
  → ***Ability to climate change Impacts (Adaptation)***

Aligning Economic Development & Sustainable Management

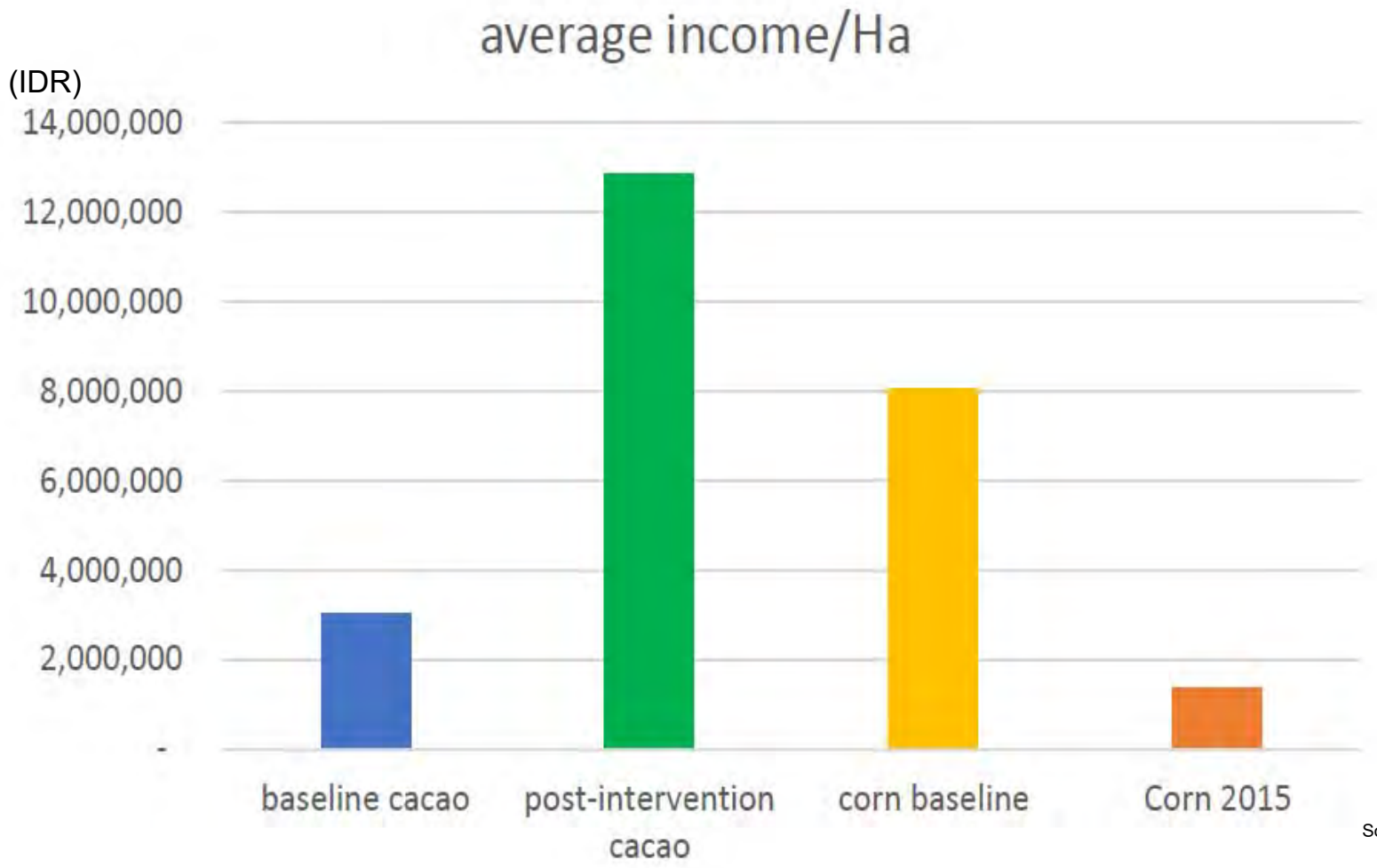
We Propose Sustainable Cacao. Why ?

- Under proper management, cacao is a **competitive alternative to corn**
- Global cacao **demand is expected to grow** within the next decade→promising business prospect
- Increase in demand of **Organic Cacao** (production grew from 3% in 2008 to 31% in 2013. Continues to grow)
- Can be developed in **combination with other seasonal crops**
- **More resilient to Climate Change** than Corn



Conserve forest, reduce CO_2, preserve soil fertility and conserve Limboto watershed through cacao-based agroforestry

Comparative Analysis of Corn and Cacao Farming on Farmers' Livelihoods



Source: Report by Daemeter.

With improved management and access to market, cacao can provide greater livelihood outcomes.

Two Activities

①Development of sustainable cacao supply chain in social forestry
②Rehabilitation of unproductive cacao plantation

Output	Included Model Scope	Impacted Stakeholders	Negative Outcome / Cost	Positive Outcome / Benefit	Quantified Benefit
Increased smallholder revenues	✔	Local communities & industry	Cost of new plantation development	Increased income for smallholders	Additional yearly income of IDR 3.6 million/Ha compared to corn
Reduced deforestation and GHG emission	✔		Cost of capacity building and mentoring	Avoided deforestation and GHG emissions	11.2 million tonne CO_2eq emissions avoided through prevention of over 12,000 Ha of deforestation
Increased land productivity	✔	Local communities	Cost of rehabilitation (side-drafting)	Market value of additional cacao production	Additional value of cacao production close to USD 670,000
Avoided pressure for extensification /encroachment on protected forest	✕	Local communities	Cost of capacity building and mentoring	Value of protected forest ecosystem services	

Green Growth Impact

- **Green Growth Scenario Analysis by 2030**

Analysis Dimension	Green Growth Scenario (Alternative)
1. GHG Emissions	- **11.2 million ton-CO_2eq avoided (20 years)** (from deforestation prevention of 12,000Ha)
2. Sustained Economic Growth	- **Increased Productivity & income** IDR 3 mill (2016) → IDR 12.9 mill (2018) (Corn: IDR 8 mill (2016) → IDR 9 mill (2018)
3. Natural Capital	- **No deforestation** (use of 13,406Ha non-forest land) - **Rehab of 1,100Ha of unproductive plantation** - **Avoid loss of ecosystem services**
4. Social Impact	- **Increased income for stakeholders** - **Reduced exposure to flooding for 178,614 people**
5. Resilience	- **Avoid cost of sedimentation and flood management** - **Avoid cost due loss of productivity**

Market and Financing strategy

- **Access to market, funding options, and capacity building**

PT DKM is committed to expand offtake opportunities as the pilot project is scaled up to link local farmers directly with the market

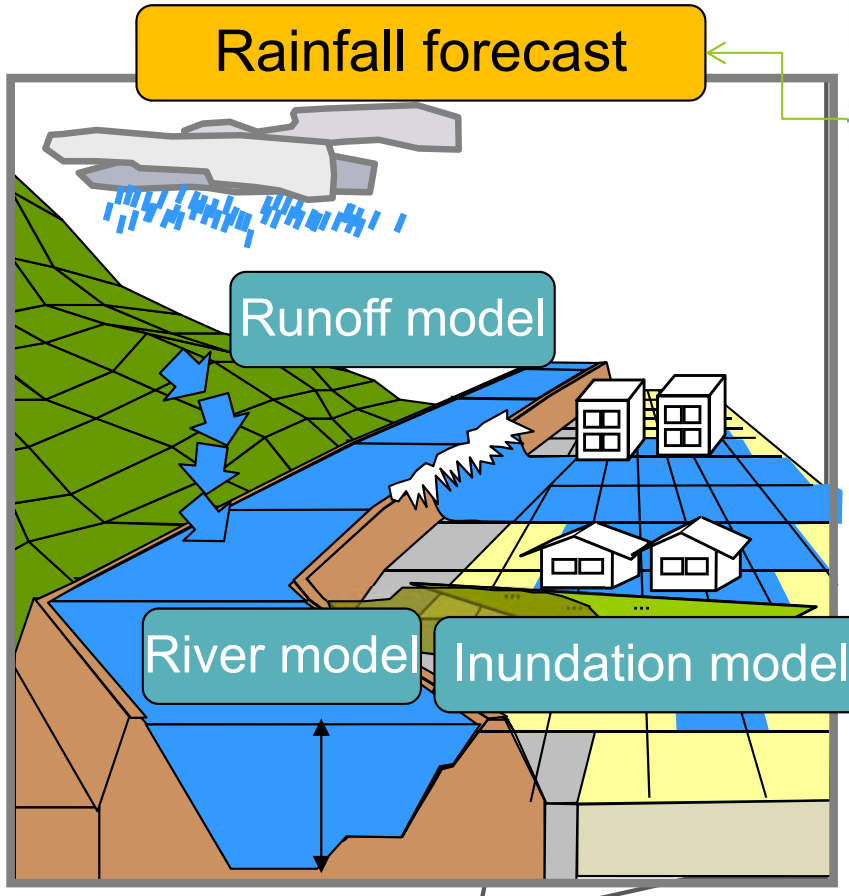
Type of Funding	Funding Agency	Description
National REDD+ mechanisms	*Environmental Fund Management Agency (BPDLH)*	- Channels resources into RE, Energy Efficiency, Sustainable Land Use, GHG emissions reduction
International development Finance	*International Aid Agencies (e.g JICA)*	- Invests in low-emissions, climate- resilient development - *Support capacity building and participatory planning*
Commercial Finance Options (microcredits)	*Bank Rakyat Indonesia (BRI)*	- Credit for community business. Better adapted to smallholder farmers needs
Community-based Climate Finance	*Plan Vivo: provide incentives for community-based conservation*	- Community based carbon trading platform - Investment in conservation - Continued Technical Support - GHG accountability
Private	*Investor*	- Investment in cacao processing facility (cacao mass or chocolate factory)

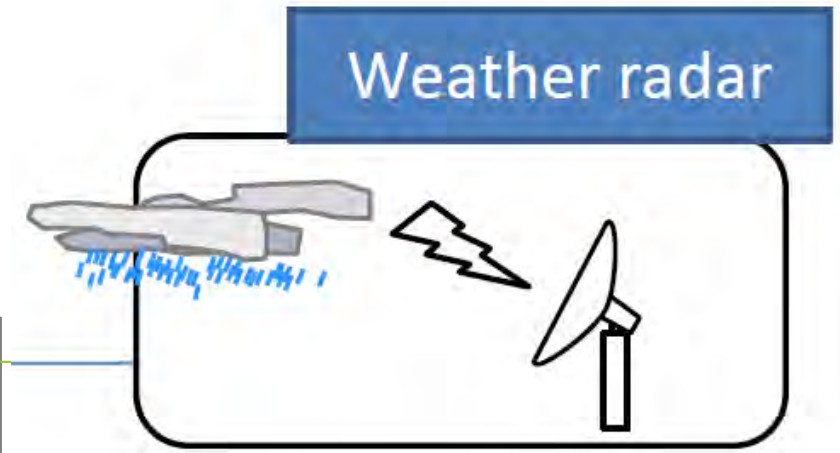
Relevance between REDD+ and Flood Simulator

Issues	Solution	Effect
"Slash & Burn" of corn → Erosion soil flow into the Limboto lake; Heavy rain due to Climate Change → Flood damages to people's daily life & crops	REDD+  Cacao farm	Improve profitability
		"Slash & Burn" Control
		Reducing Flood Damages
	Flood Simulator 	Knowing the Risk
		Application of Urban Design

Early Warning

Connect weather radar
and we forecast the flood.





Laptop PC
in local
office

Flood forecast
center

1. **Flood simulation system to measure the impact of REDD+ program.**
2. **Early warning system**

Please enjoy chocolate
made from Gorontalo cacao beans
Terima kasih