

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

---

COP24

Gorontalo District, INDONESIA

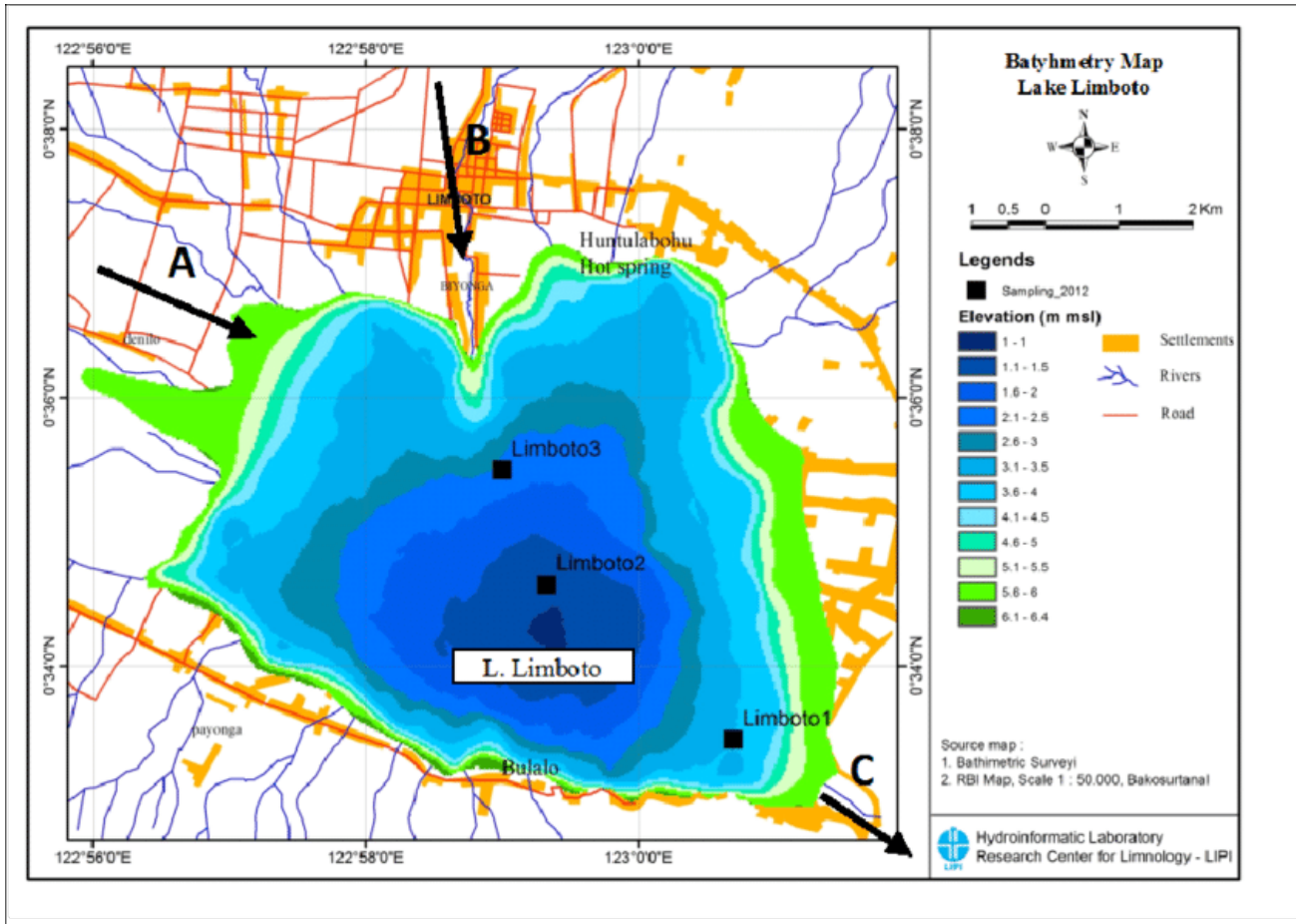
Gobel DKM

Kanematsu Corporation

Dec, 2018

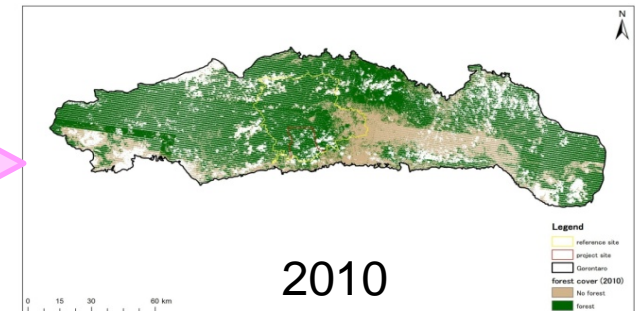
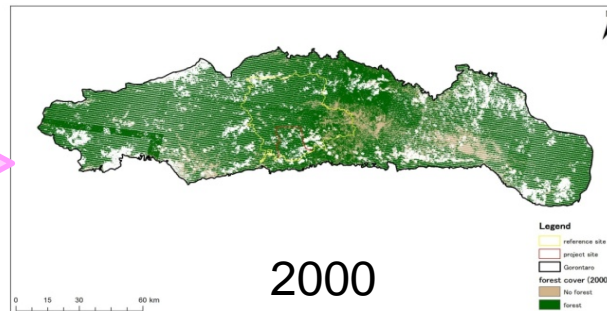
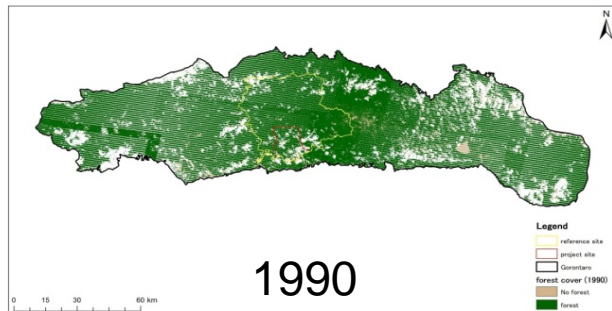
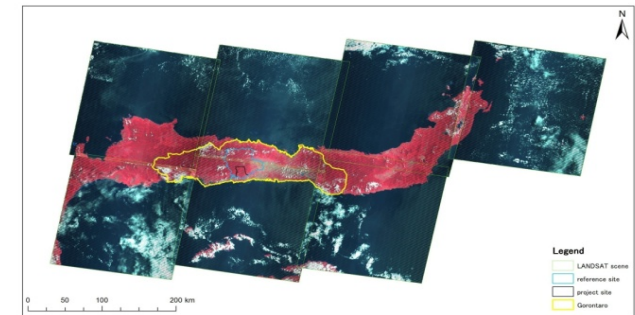
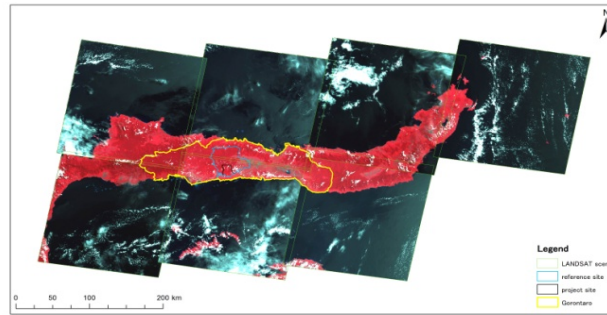
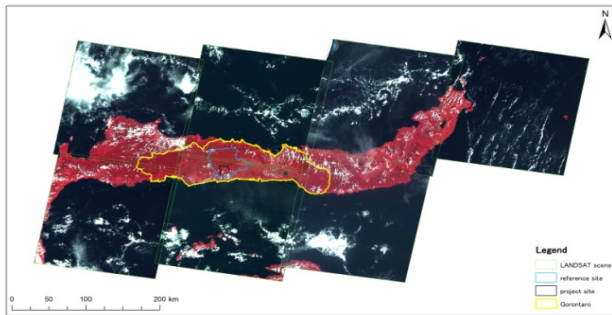
*Supported by*  
 daemeter

# Preserving Limboto Lake



Soil erosion and sedimentation put Limboto watershed at risk.

# Trend of **DEFORESTATION**



Major reason of CO<sub>2</sub> emission is corn agriculture.



# Corn Expansion through “Slash & Burn”



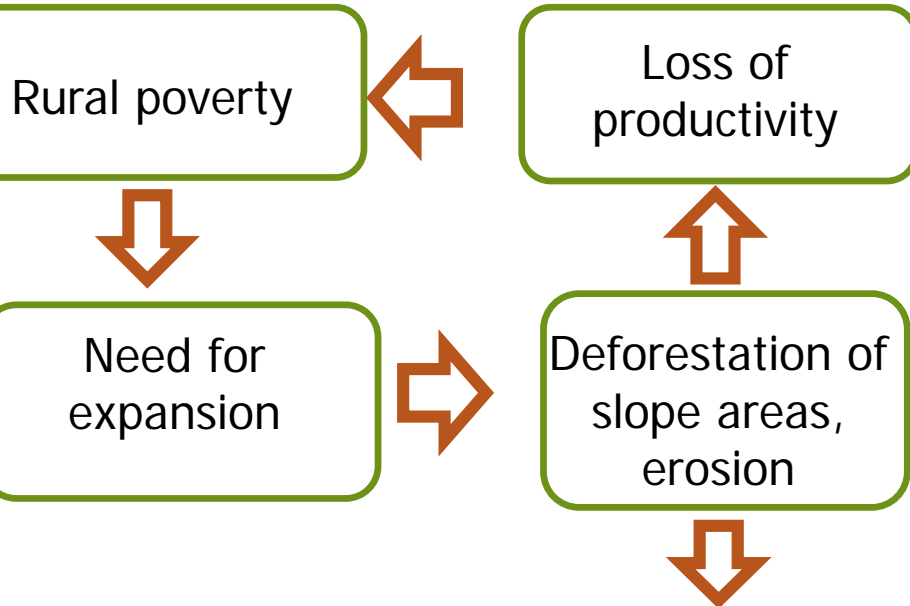
Reference: AKSI CEPAT TANGGAP「1.500 Houses Affected by Gorontalo Flood」2017

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

# Corn Expansion: a Sustainable Strategy for Poverty Reduction?

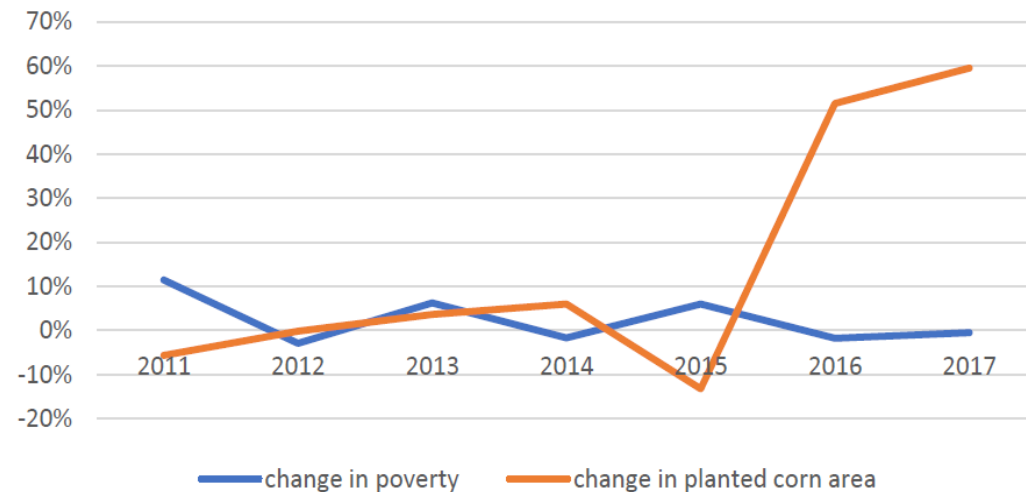
No correlation between corn expansion and poverty reduction  
=> We need other developmet strategies.

Cycle of environmental degradation



Forest loss, CO<sub>2</sub> emission, soil fertility loss and Shrinkage of Limboto Lake

Relationship between corn expansion and poverty reduction



**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)*

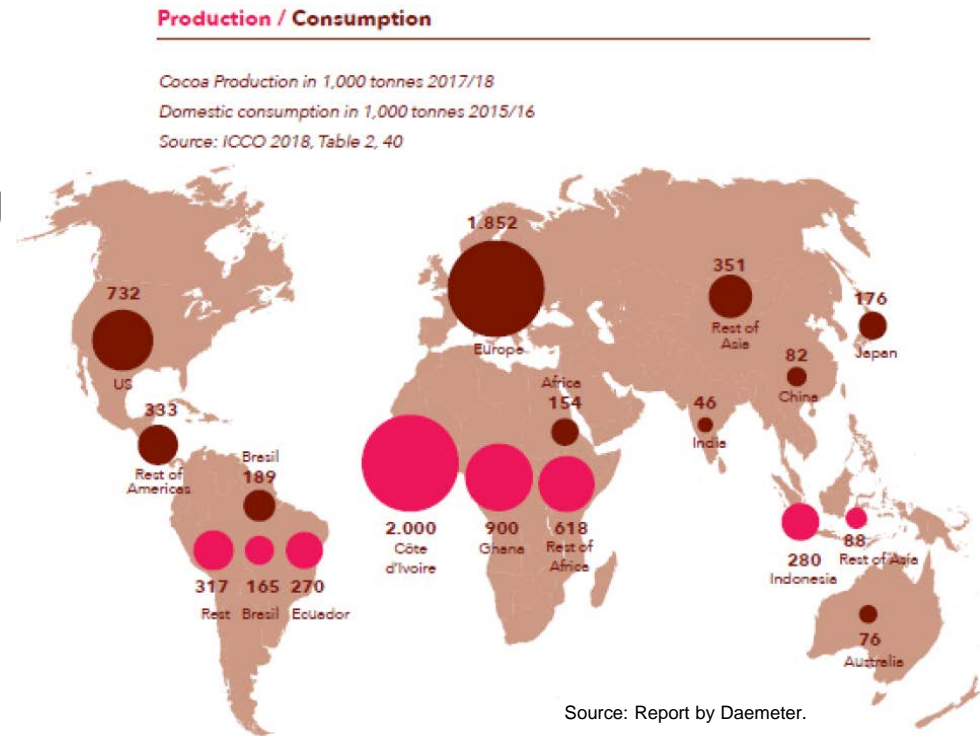


Aligning Economic Development & Sustainable Management



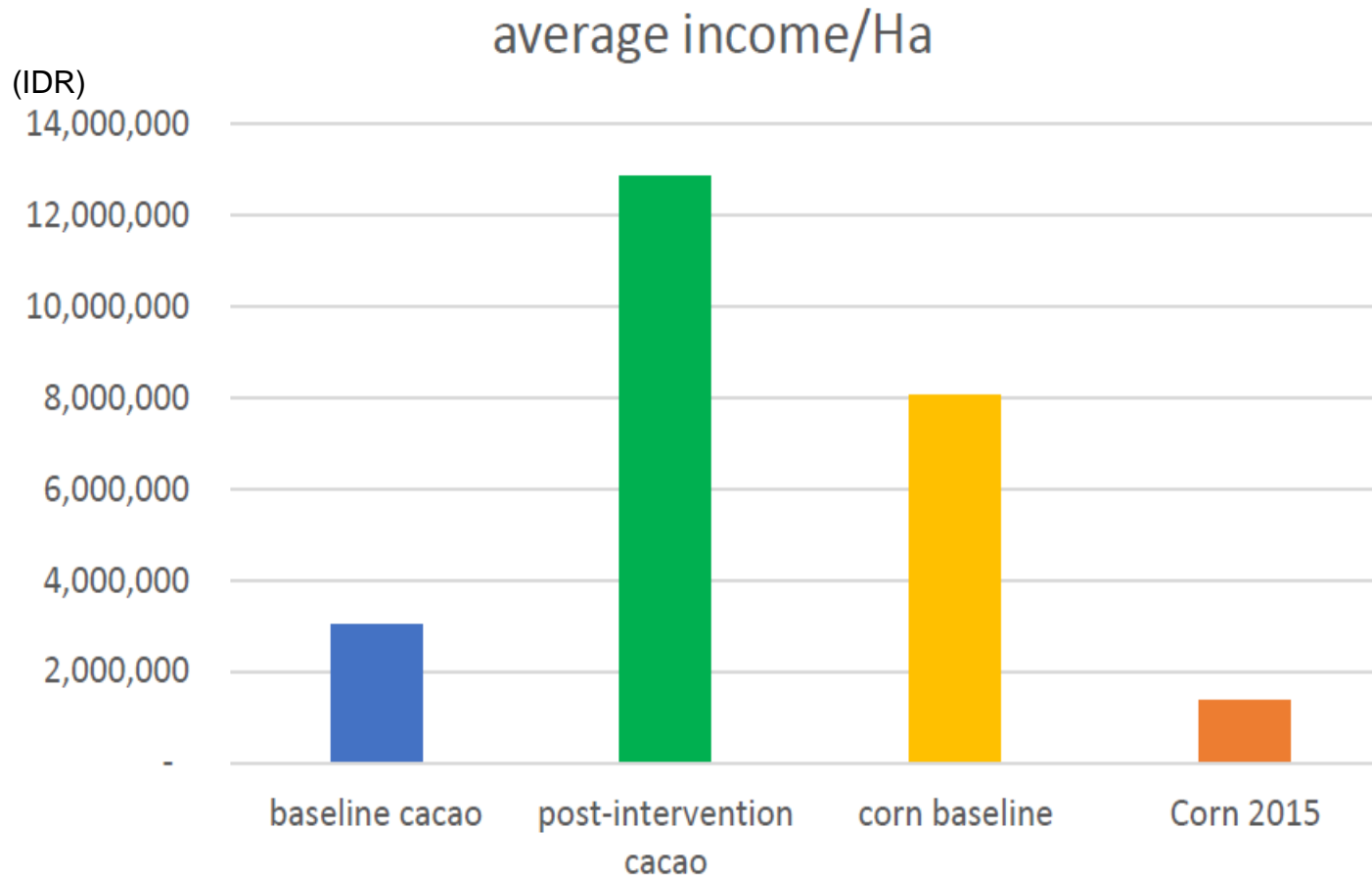
# We Propose Sustainable Cacao. Why ?

- 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<sub>2</sub>, preserve soil fertility  
and conserve Limboto watershed  
through cacao-based agroforestry**

# Comparative Analysis of Corn and Cacao Farming on Farmers' Livelihoods



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



# Two Activities

① **Development of sustainable cacao supply chain in social forestry**

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

# 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 - <i>Support capacity building and participatory planning</i>
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

"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

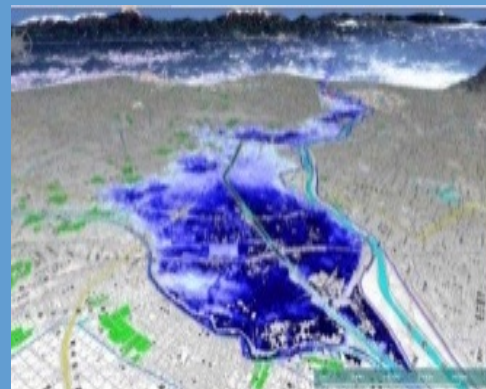
## Solution

**REDD+**



Cacao farm

**Flood Simulator**



## Effect

Improve profitability

"Slash & Burn"  
Control

Reducing  
Flood Damages

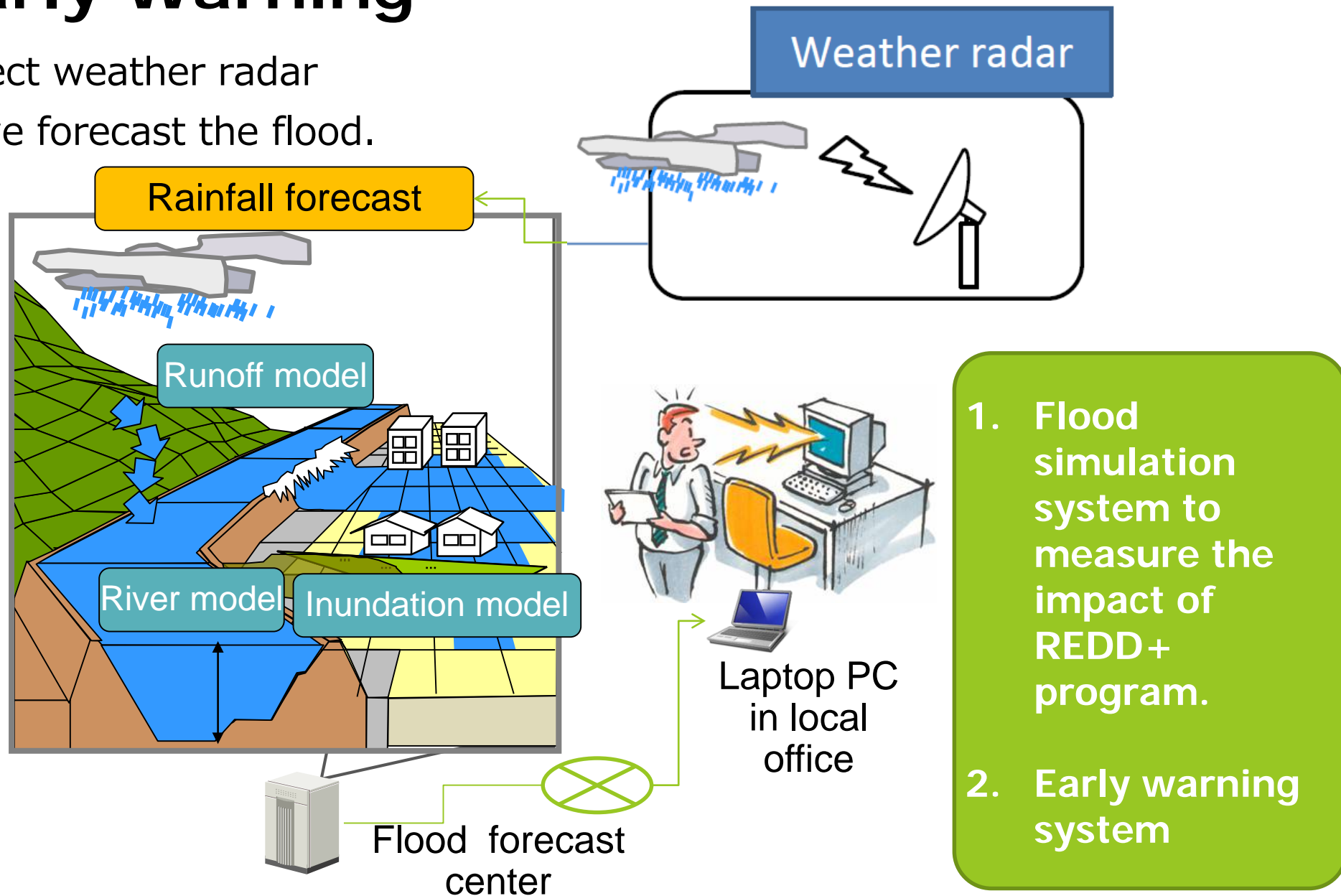
Knowing the Risk

Application of  
Urban Design



# Early Warning

Connect weather radar  
and we forecast the flood.





Please enjoy chocolate  
made from Gorontalo cacao beans  
Terima kasih