# MALANG GLOBE IBCC 2025

THE CASE:

# TERRA

*Implementing Technological Solutions for Global Sustainable Impact*

**TEAM**

**ShARE IITK**

# DVELVING INTO COMPANY'S CURRENT SCENARIO

Analysing company's presence to find root causes .

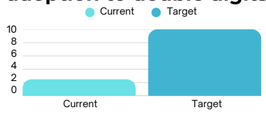
## COMPANY OVERVIEW

- Terra provides science-driven AgTech solutions to smallholders, cooperatives, NGOs and government in Southeast Asia.

**Satellite Imagery**
**Climate Modelling**
**AI Driven Analytics**
— **Current Technologies Used**

- Terra faces an issue of limited farmer adoption, fragmented data infrastructure and rising cost of data acquisition and customisation.
- Addressing such issues are key concern for scaling the company's presence.

- Only ~2.5 % of Southeast Asia's 71 million smallholder farmers use digital agriculture solutions (as of 2019).
- **Terra has a high growth potential.With continued investment, improved technology and affordability it can scale its adoption to double digits.**




### UNDERSTANDING THE DEMOGRAPHICS OF FARMERS IN SOUTH EAST ASIA

**65%**
Farmers with primary or less education

**95%**
Farmers with mobile phones

**62%**
Farmers with internet access
*(forSouthEastAsia region)*

Types of Farmers(on the basis of land ownership)

**Small**

Farm Size: 1-4 Hectares
Average Annual Income: 2000 USD
Accounts for 40-50% of the total farms present in the region.

**Medium**

Farm Size: 5-10 Hectares
Average Annual Income: 44,000 USD
Accounts for 30-50% of the total farms present in the region.

**Large**

Farm Size: >10 Hectares
Average Annual Income: 1,00,000+ USD
Accounts for 10% of the total farms present in the region.

**Hence, 90% of farmers in South East Asia region are small and medium sized occupying land area between 0-10 hectares. Thus affordability becomes their foremost reason to use new technology.**

## CORE CHALLENGES

**1**

**56**

- 56% of emerging market farmers cited upon high upfront costs as the primary reason for not adopting new tech.

- Somefarmers haveconcernsabout thecomplexity of using tech in, especially when it involves changing long-established farming practices.


- The global tech market is expected to grow to $22.5 billion by the end of 2025.

**Less Users**

**Less Profits**

- Still, agricultural technology adoption rates in rural areas remain low.
- Pointing to a disconnect between the availability of technology and its uptake.

**2**

**3**

**Europe-64%**
**North America-60%**
**South America-50%**
**Asia-9%**

- Agri-tech product adoption is lowest in Asia, with only about **9 percent** of farmers using or planning to use at least one agricultural tech product; adoption varies between countries in this region as well.

- Vietnam at region's highest mechanization Indoneisia targeting 70% farmland
- mechanzation by 2026. Thailand targets +35% subsidised push to tractors distibution

**81**

- Large farmers—more than 5,000 acres—are the most willing to adopt agtech solutions (81 percent)

**76**

- 76 percent of medium farms (2,000 to 5,000 acres) to adopt

**36**

- 36 percent of small farms (fewer than 2,000 acres) adopting or planning to adopt in near future..

**4**

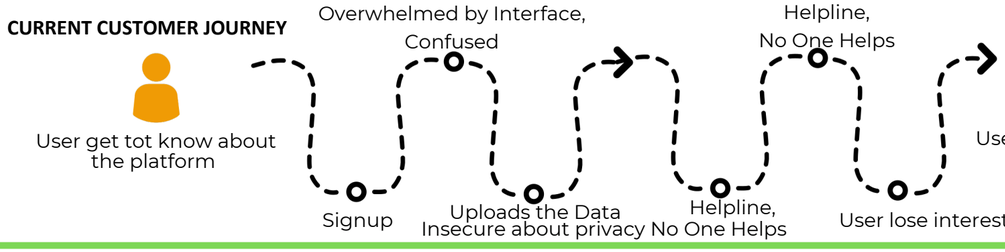
**5**

**< 12 %**

- Survey results suggest that fewer than 12 percent of farmers globally strongly prefer to buy products online.

- When asked about what makes them hesitant to shop online, farmers indicate that online storefronts do not provide a satisfactory customer experience or offer customized recommendations

**CURRENT CUSTOMER JOURNEY**



# COMPETITORS ANALYSIS

Key Competitors in the AgriTech Market

## TERRA's MAIN COMPETITORS

### rikolto

- An NGO focused on regenerative agriculture, farmer organization development, and value chain inclusion using the LINK methodology. Emphasizes sustainability over tech platforms.
- Operates across 16 countries with 144 partner orgs (62% farmer-based); impacts 22,419 farmers and 1M+ consumers.
- Business Model: Works with cooperatives and agencies in sustainable rice, cocoa, and coffee chains emphasizing collective action.
- Strengths: Leverages 50+ years of community-led value chain development with deep-rooted sustainability focus.

### SATSURE

- Satsure uses 22 deep learning models and satellite imagery via its SAGE platform to enable farm-level crop risk assessment for financial institutions.
- It had $21.1M revenue in 2024 (85.6% YoY growth); raised $15M Series A led by Baring PE.
- Business Model: B2B focus on banks, insurers, and lenders aiming to improve smallholder farmer financial inclusion.
- Strengths: Differentiates through satellite-based agri-risk tools and enabling faster insurance claims for 400K+ farmers via bank partnerships.

### FarmERP

- It has comprehensive agri-ERP with 23 modules and 600+ screens, integrating AI, IoT, and ML for climate-smart farming and pest/disease detection..
- It manages 1M+ acres, 650+ deployments in 30+ countries; funded by Technogen (2019); 20K+ users.
- Business Model: Targets mid- to large-sized agribusinesses (1,000–100,000 ha) needing end-to-end digitization.
- Strengths: Differentiated by ERP maturity, ISO 27001 certification, and 20+ years' experience—trusted by enterprises needing secure, end-to-end solutions.

### Cropin

- World's first agriculture industry cloud. Processes 12.2M+ new datasets/month, with 22 AI models. Its new GenAI-powered Sage, built on Google Gemini, enables real-time agri-intelligence.
- Digitized over 16 million acres, with 250+ B2B clients globally.
- Business Model: Serves a broad B2B ecosystem including agribusinesses, governments, development agencies, and food processors.
- Strengths : Holds the world's largest agri dataset (388+ crops, 9,500+ varieties in 52 countries) and leads in real-time AI-based agri-intelligence.

# PROBLEM ANALYSIS

Indonesia’sricesectorfacesclimateshocks,croplosses, rising imports, and urgent need for real-time insights.

*Indonesia’s rice sector has faced severe disruptions in recent years*

**2023**
**El Niñoinduceddrought & Planting Delays**

- **Shrinking Cultivation Area & Output**

  Rice planting area in Q4 2023 fell to 2.91 million hectares, below the 3.53 million hectare target, says Farm Ministry.

- **Soaring Imports & Consumer Pressure**

  January 2024 rice prices averaged Rp 14,763/kg, marking a 15.6% increase from the previous year

- **Delayed Rain and Planting Disruption**

  Planting delayed by 2–3 months due to severe drought, with key rice areas in Java only planting starting January

**2025**
**Widespreadflooding**

- **Impact on Rice Prices & Food Security**

  Domesticriceprices surgedmedium-grade rice reached Rp 12,300–12,400/kg, exceeding regulated retail price caps

- **Imports were Increased**

  Rice imports surged, increased to 3.06 M till year end (vs. 0.29 M tons previous year)

- **Military-Assisted Planting**

  President Joko Widodo deployed military personnel to support rice planting during the limited rainfall window

**2024**
**Delayed rainfall**

- **Floods in Rice-Growing Regions**

  Heavy rains from Jan–Mar 2025 caused floods in key rice areas like Lampung, Central Java, South Sulawesi, and West Java.

- **Crop Losses & Harvest Disruptions**

  Out of the affected land, 5,248.5 ha faced total crop loss, with Lampung worst hit at 4,391.8 ha.

**Total Rice Production (Jan-Apr) 2018-2025 (million tons)**


*~Source-BPS*

*“The potential for production of rice for the entire period of January–April 2025 is expected to be the highest in the last 7 years or since January-April 2019”*

*Info:*

- *Jan 2025 rice output is provisional, based on actual harvested area and 2022–2024 average yield.*
- *Feb–Apr 2025 output is projected, using forecasted area and past average yield.*

Farmers do not have access to localized, real-time data to make decisions about planting, irrigating, or harvesting.

Crop cycles were severely disrupted by drought (2023) and flooding (existing years).

**Unpredictable weather demands real-time climate intelligence**

More than 5,000 hectares of crops were lost due to flooding in 2025, and 1.2 million tonnes were lost to drought in 2023.

Farmers experienced planting delays of up to 3 months in 2024, and total land cultivated is decreasing each year.

**Shrinking farmland and delayed planting need smart planning**

Farmers require support in maximizing smaller areas of cultivation space, and from the climate, which varieties to plant.

**Speed & Scale Meant for Monitoring Crop Damage**

Government assistance arrives slowly due to manual assessments of crop damage.

PROBLEM HIGHLIGHTS

Farmers receive aid through various streams: seed, fertilizer, tractors, insurances - all processed manually, leading to multiple loopholes.

**Disparate Relief and Insurance needs a centralized platform**

Many eligible farmers are uninformed or unaware of their rights to compensation and therefore uninsured.

**Food price volatility demands transparency in the supply chain**

Govt, wholesalers, and consumers lacked timely data on harvests and demand.

Prices skyrocketed by 25–45%, leading to panic buying & market disruption.

# REAL SOLUTIONS TO REAL PROBLEMS

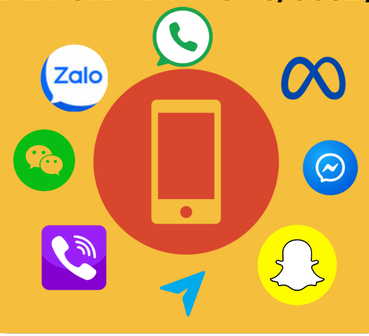
Solving not just a single problem but providing a ecosystem catered to their needs

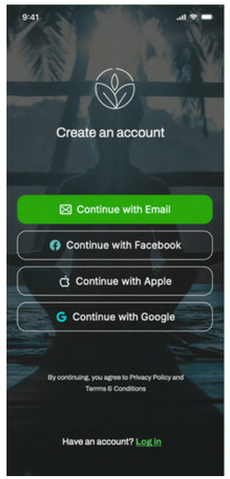
## MOBILE APP

- Multilingual and Local Language Support
- Icon-Based Navigation
- Training and Help Center
- Buy/Sell Marketplace
- Crop and Soil Health Monitoring
- Offline Functionality
- Minimalist Home Dashboard
- Voice-Activated Assistance
- Real-Time Weather & Market Updates
- Location-Based Services

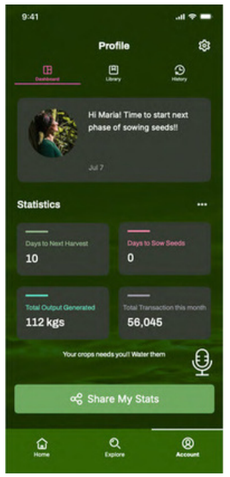
## ECOSYSTEM

**DEVELOPA MOBILE-FIRST PLATFORMS (ANDROID APP + SMS/USSD/IVR)**

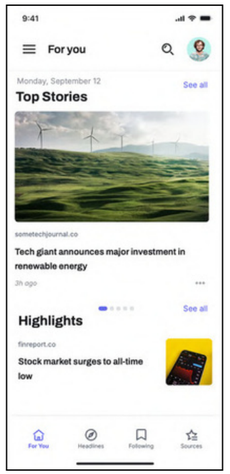


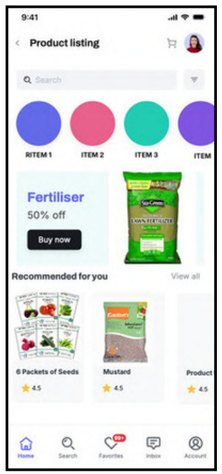

SIGNUP PAGE WITH ICONS




HOMEPAGE WITH INFO




REAL TIME MARKET UPDATES




MARKETPLACE


CHATBOT

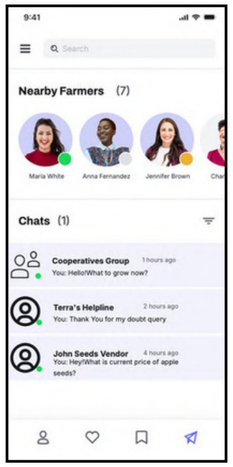
- The redesigned mobile app interface enhances user experience by prioritizing intuitive navigation, improved accessibility, and visually engaging elements.
- These changes are strategically aimed at boosting user engagement, increasing reachability across diverse user groups, and delivering a seamless, more satisfying interaction that aligns with modern user expectations.

## ALTERNATIVE CHANNELS

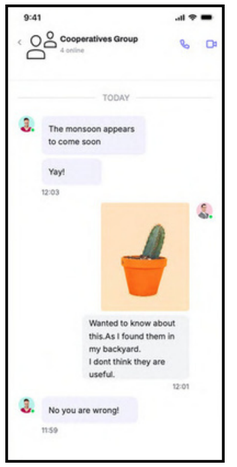
**Essential Features for Reaching Less Educated Farmers via Local Communication Apps**

- Create Discussion Groups
- Multilingual Support
- Market Access and Price Updates
- Local Events and Training Announcements

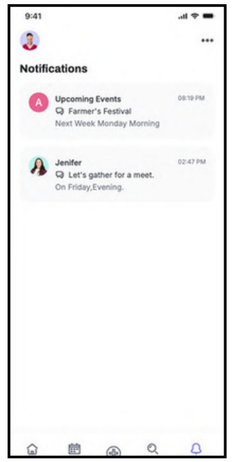
- Facilitate group chats where farmers can ask questions and share experiences with each other.
- Provide all content in major regional languages, both as text and audio. Avoid technical jargons.
- Send daily or weekly market price updates for key crops as simple text or audio messages.
- Share info about upcoming training sessions, field days, or community meetings through group messages or broadcast lists.




CHATS BASED ON DIFFERENT APPS




GROUP DISCUSSIONS




EVENTS AND TRAINING

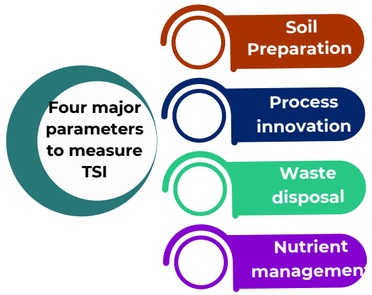
Expanding communication channels beyond the Terra app enables us to reach users who are currently unengaged or unaware of our offerings.

# THE NEW WAY FORWARD

Intrducing New Parameter Scale to help Customers

## INTRODUCING TSI (TERRA SUSTAINABILITY INDEX)

- TSI is a **sustainability score** that takes into account multiple parameters to give a singular number that can be used to compare the sustainability level of rice harvests.




It is proposed that the TSI score be used as a **metric** to measure the sustainability efforts of smallholders, who comprise **90% of the Indonesian rice farmers**

This will lead to a **clear comparison** of rice harvests and give a **standardised** measure of sustainable cropping

Giving policymakers **ease in managing** and improving regional green farming

## HOW TSI WILL BE CALCULATED? SCORE BASED SYSTEM

### Soil Preparation Practices ($P_1$)

Assign

- 0 → No tillage, no burning, minimal disturbance
- 0.5 → Occasional tilling or minimal burning
- 1 → Frequent tilling,land burning or draining soils(org)

Wewillassignweight($W_1$)as 0.35

### Industrial Practices (Machinery) ($P_2$)

Assign

- 0 → Electric or new fuel-efficient equipment
- 0.5 → Moderate machine use,some older equipment
- 1 → Frequent use of old diesel machinery

We will assign weight ($W_2$) as 0.15

### Waste Disposal ($P_3$)

Assign

- 0 → All waste is composted or reused.
- 0.5 → Some burning or landfill dumping
- 1 → All waste is burned or disposed improperly

We will assign weight ($W_3$) as 0.25

### Chemical and Manure Use ($P_4$)

Assign

- 0→ Organic farming, balanced manure use, minimal input
- 0.5 → Moderate chemical use, some planning
- 1 → Heavy chemical use, no planning

We will assign weight ($W_4$) as 0.25


**FORMULA**

**TSI= P1.W1 + P2.W2 + P3.W3 + P4.W4**

Could **misrepresent priorities** e.g. a farm where machinery emissions dominate could still result in a relatively low TSI that is affected by weighting bias.

TSI is **one-dimensional,** having no nuance for frequencys, intensity or scale, which results in recognisably less accurate results.

## DRAWBACKS OF TSI

TSI **doesn't capture total emissions**, particularly for rice that is predominantly methane sourcing.

TSI is **environmentally narrow** and risks ignoring full sustainability.

## WHY TSI STILL MATTERS ? - DESPITE ITS LIMITATIONS

### OFFERS A PRACTICAL ENTRY POINT

- Great for smallholder farmers, who may have little access to more sophisticated instruments.
- Makes sustainability into measurable actions instead of an overwhelming amount of measurements.

### STANDARDIZES SUSTAINABILITY EVALUATION

- Offers a common scale to quantify and compare farms and regions.
- Helps policymakers and cooperatives to indicate areas for support or improvement.

### MOTIVATES ACTIONABLE CHANGE

- Addresses the dominant farm practices(i.e. tillage, waste, input use) where farmers can improve.
- Encourages behavior change even if not addressing emissions or not every climate factor.

### FACILITATES GRADUAL POLICY DEVELOPMENT

- Policymakers get a usable, field level measurement that they can design subsidies or programs around. It can also be refined to
- include frequency or intensity or even methane in future versions.

### PROVIDES A BASE FOR FUTURE IMPROVEMENT

- While it is currently narrow, TSI serves as a system that can be expanded on.
- Future versions could be multiple dimensional indices with technology integration (e.g. satellite data, IoT data).

# DELIVERING RESULTS

To improve Market Reach

**PARTNERING WITHAPUBLIC–PRIVATE COMPANY**

## PISAgro

### WHY?

Understanding the condition of farmers of Indonesia-
Survey suggests that most farmers of Indonesia have taken basic elementary education

- Basic education equips them with foundational communication and implementation skills, making them receptive to structured support.
- Field evidence shows that even low-literacy farmers adopt new practices when taught through visual, local, and hands-on methods.

**There are five main sources of information on new agricultural technologies available to farmers-**

| | |
|---|---|
| ★★★★ Government Agricultural Extension | Farmers perception about them<br>• Government extensions are **highly trusted** for its service quality & accessibility<br>• Private extensions are **positively viewed**, though slightly less than government one<br>• Self-subsistent extensions trusted locally but lacks broader resources or reach.<br>• Middlemen are seen as biased and often acting in self-interest.<br>• Cyber & Non-Cyber information's perception is low due to **limited digital skills** & feels impersonal and **lacks interactivity**. |
| ★★★ Private Agricultural Extension | |
| ★★★ Middlemen Agricultural Extension | |
| ★★ Self Help Agricultural Extension | |
| ★★ Information through Cyber & Non Cyber Media | |

### WHY PISAgro ?

PISAgro (**Partnership for Indonesia's Sustainable Agriculture**) is a **multi-stakeholder platform** which was founded as part of the **World Economic Forum's New Vision** for Agriculture initiative in Indonesia.

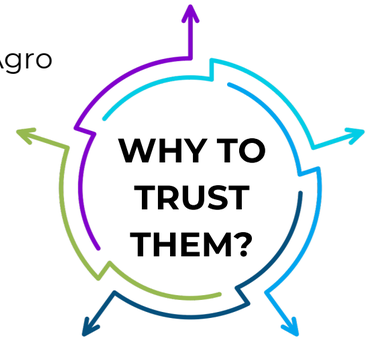

It has a strong presence across Indonesia, supported by
a well-established network and a team of experienced, professionally trained personnel.

### National Reach Across Indonesia

- PISAgro operates across key agricultural regions in Indonesia.
- Decentralized model ensures local impact aligned with national goals.

### Position on the Board of PISAgro

- Enhances Terra's visibility, trust, and strategic influence in agri-policy circles.
- Opens doors to regional and cross-border partnerships across Southeast Asia.




### Existing Partnerships with Well-Known Companies

- Collaborates with top agribusinesses, financial institutions, and development agencies.
- Leverages shared platforms and resources to drive scalable innovation.

### Collaboration with Key Stakeholders

- Access to NGOs, government bodies, and private players for grassroots execution.
- Supports farmer onboarding, awareness, and digital training efforts.

### Joint Leadership for Terra in Working Groups

- As a Partner Member, Terra can co-lead working groups on agri-tech, sustainability, and digital farming.
- Enables agenda-setting and promotion of farmer-centric solutions.

**Founders Committee Members:**

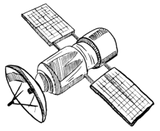
- Vice Minister of Agriculture
- Vice Minister of Trade
- Bayer Indofood McKinsey
- Nestlé Sinar Mas Syngenta
- Unilever

**Advisors:**

Experts who guide PISAgro's strategic alignment and policy linkage. They ensure coordination with ministries, resource prioritization, and connections between government and PISAgro leadership.
Members:

- Coordinating Minister of Economic Affairs
- Ministry of Agriculture
- Ministry of Trade
- Ministry of Foreign Affairs
- Ministry of National Development and Planning

# TECHNOLOGICAL CHANGES THAT TERRA MUST UNDERTAKE FOR DATA ACQUISTION AS WELL AS SERVICES REACHABILITY



## CHANGES IN SATELLITE IMAGERY

**Utilize Free & Open Satellite Data:**
UseSentinel-2(10m,5-dayrevisit)andLandsat (30 m, 16-day revisit) for historical agri-analysis.

- **AI-Driven Feature Extraction:**

Apply AI to extract key indices (e.g., NDVI, moisture) to cut down data volume and processing costs.

- **On-Ground IoT Calibration:**

Deploy low-cost soil moisture and pH sensors in nearby fields to calibrate satellite insights.

- **Data Fusion for Accuracy:**

Combine satellite, weather station, and IoT data for more reliable, high-precision outputs.

## CHANGES IN CLIMATE MODELING

- **Use Regional Climate Models (RCMs)**:

Gethigh-resolutionforecastsfortemperature,rainfall, soil moisture, and more.

- **Integrate with Crop Simulation Models**:

Link RCM output with models like DSSAT, APSIM, or AquaCrop to simulate crop yields.

- **Assess Land Suitability & Changes**:

Model future land usability under changing rainfall and temperature conditions.

- **Forecast Drought & Pest Risks**:

Use climate anomaly data (e.g., El Niño) to predict droughts and related pests.

## CHANGES IN AI ANALYTICS

- **Yield Prediction Models**:

Trainmachinelearningmodels(e.g., LSTM, Random Forest) using historical weather, soil, and crop data.

- **Soil & Weather Data Analysis**:

Use sensor data and AI algorithms to monitor soil moisture, temperature, and rainfall.

- **Harvest Scheduling & Logistics Optimization**:

Predict optimal harvest windows using AI forecasts to avoid losses due to rain or over-ripening.

- **Decision Support Systems (DSS)**:

Provide actionable insights: crop choice, resource allocation, input usage, and risk management.

## CHANGES IN IOT & SENSORS

- **Real-Time Field Monitoring**:

Deploysoilmoisture,temperature,and humidity sensors for continuous, accurate data from the field.

- **Precision Irrigation Systems:**

Integrate IoT with smart irrigation to automate water delivery based on actual crop need.

- **Climate-Aware Crop Planning:**

Combine local sensor data with weather APIs to plan planting/harvesting aligned with climatic conditions.

- **Automated Alerts & Threshold Triggers:**

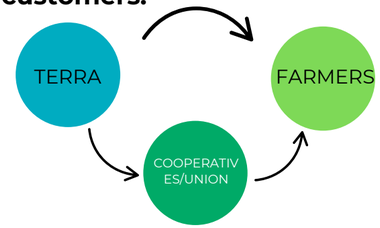
Use IoT platforms to set critical thresholds (e.g., low soil moisture, high leaf temperature).

# GO-TO-MARKET STARTEGY & RISK MITIGATION

*Objective: Reach customers, expand markets, and deliver agri-tech services*

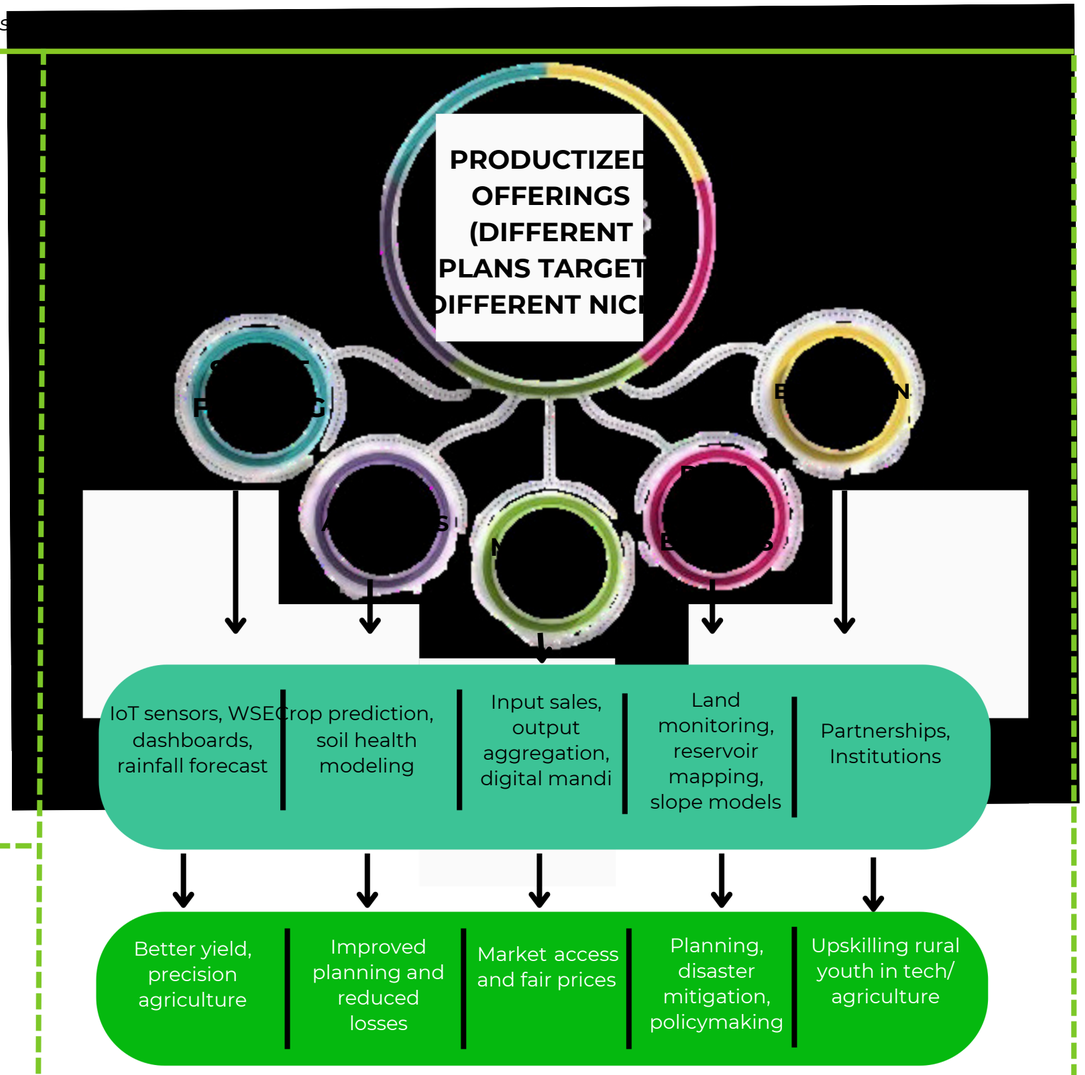
**Terra needs to reposition the way it reaches to its customers.**

For Reaching the Farmers,Terra should use the Cooperatives/Farmer's Union.




For Reaching out to NGOs,Terra should first let them get premium accesses of the services for f ree.


For Reaching out to Government,Terra should leverage Public Private Partnerships.


## EXECUTION ROADMAP

### Year 1: Foundation & Setup (Months 1-12)

- Q1-Q2: Establish data pipelines for free satellite sources and integrate with Google Earth Engine .
- Q3: Develop AI models for feature extraction and anomaly detection to reduce data costs.
- Q4: Launch pilot with 500 farmers, deploying low-cost IoT sensors for ground-truth calibration .

### Year 2: Calibration & Initial Rollout (Months 13-24)

- Q1-Q2: Refine satellite data accuracy using IoT sensor feedback and local weather data.
- Q3: Roll out SMS/voice alert system for low-bandwidth delivery of actionable insights (e.g., irrigation alerts) to 5,000 farmers.
- Q4: Introduce freemium pricing model (free basic reports, $0.50/acre/month for advanced analytics) and onboard first 1,000 paid users.

### Year 3: Scale & Monetization (Months 25-36)

- Q1-Q2: Expand to 20,000 farmers by integrating low-cost commercial imagery for premium users needing high-resolution data.
- Q3: Establish marketplace, selling trends to agribusinesses ($0.10/acre) to subsidize farmer costs.
- Q4: Enhance platform with offline functionality and multilingual voice support, targeting 50% adoption in pilot regions.

## RISK ANALYSIS

- **Low Digital Literacy :**
  - 70% of rural users rely on visuals or voice.
  - Use icons, IVR, WhatsApp audio in local languages
  - Train 1 Farmer Champion per 50 farmers
- **High IoT/Hardware Costs**

  IoT devices cost $100–$500/hectare, unaffordable for smallholders
  Use free satellite data (Sentinel-2, Landsat)
  Cut costs by 30–50% via NGO/co-op bulk par tnerships.
- **Data Fragmentation**
  - Multiple data sources create inefficiencies
  - Use open APIs and SRP-aligned data standards
  - Sync real-time data across 5–10 regional systems

## KPIS TO MENTOR

- **User Engagement**
  - Track Monthly Active Farmers (MAF) as a key adoption indicator.
  - Target: Reach 150,000 active farmers using Terra's platform monthly.
- **Adoption Efficiency**
  - Measure how many farmers continue using Terra after onboarding.
  - Target: Achieve a farmer retention rate of ≥70%.
- **Unit Economics**
  - Monitor the cost of delivering insights per hectare of farmland.
  - Target: Keep cost per hectare monitored at or below $4.5.
- **ESG Return on Investment:**
  - Quantify the environmental impact achieved per dollar spent.
  - Target: Reduce ≥0.5 tons of $CO_2$ emissions per dollar invested.

# FINANCES

Analysingcompany'sfinancial KPIs.

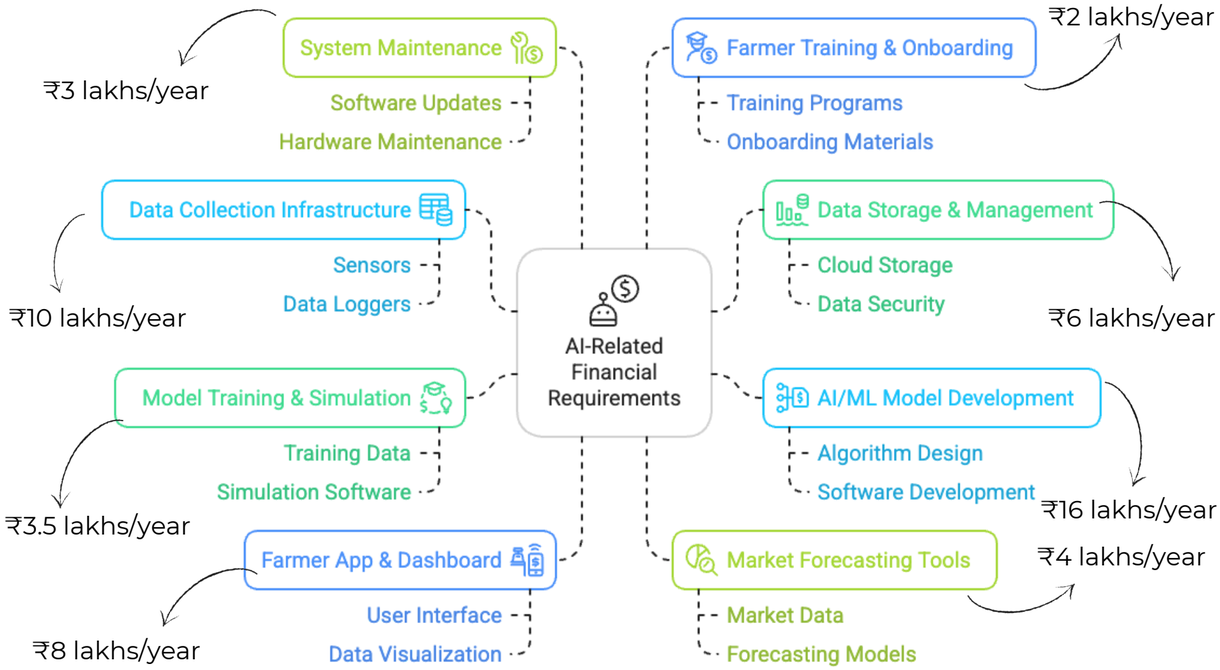
## Financial KPIs:

- **Client Impact**
  - Farmer ROI:
    - (Value of yield increase - Service cost) ÷ Service cost
    - Target: ≥200%
  - Agribusiness Profit Lift:
    - Avg. client net profit growth post-Terra adoption
    - *Target*: ≥10% annually
- **Environmental ROI**
  - Emission Reduction ROI
    $CO_2e$ saved ÷ Operational $ spent
    Target: ≥0.5 tons/$
  - Water Savings Efficiency
    - $ Value of water saved ÷ Tech investment
    - Target: ≥150%
- **Cost Efficiency**
  - Cost per Hectare Monitored:
    - Total operational cost ÷ Land area monitored
    - Target: ≤$5/hectare (aligned with Terra's case targets).
  - Data Acquisition Cost Ratio:
    - Satellite/data licensing cost ÷ Total revenue
    - Benchmark: Aim for <25% of COGS
- **Prof itability**
  - Gross Margin:
    - (Revenue - COGS) ÷ Revenue
    - Current: 38% (62% COGS) | Target: ≥45%
  - Operating Margin:
    - Operating income ÷ Revenue
    - Current: 2% | Target: ≥10%
- **Scalability & Adoption**
  - Farmer Retention Rate:
    - Retained smallholder users ÷ Total users
    - Target: ≥70% year-over-year.
  - Adoption Cost Efficiency:
    - Onboarding expense ÷ New users acquired
    - Target: Reduce by 30% via offline-capable mobile tools
- **Capital Efficiency**
  - Runway:
    - Cash reserves ÷ Monthly burn rate
    - Target: ≥18 months
  - LTV:CAC Ratio:
    - Lifetime customer value ÷ Acquisition cost
    - *Target*: 3:1

## Risks and Risk Mitigation Strategies

| Risks | Explaination | Mitigation Strategy |
|---|---|---|
| Low farmer literacy | Onboarding cost spike without proper support | Add voice based tools, regional language interfaces |
| Overdependence on satellite data | Cloudy Conditions, crop stage issues can reduce accuracy | Use hybrid data: field+satellite+IoT |
| Government funding delays | Bureaucracy and political changes can delay large contracts | Diversify into private agri-coops and agritech corporates |
| Data privacy and trust issues | Farmers may resist sharing data | Transparent data policy, opt-in choices and agritech corporates |

## AI-Related Financial Requirements for Agriculture




## FINANCES FOR SATELLITE IMAGERY

**LOW RESOLUTION**

- Sources: Sentinel-2, Landsat (public satellites)
- Cost: Free

**HIGH RESOLUTION**

- Providers: Maxar, Airbus
- Cost:Archived images: $10 – $25 per sq. km
  - New tasking: $30 – $60+ per sq. km
  - Monthly packages: Up to $25,000+

**MEDIUM RESOLUTION**

- Providers:Planet Labs, Satellogic
- Cost:Per sq. km: $0.5 – $2
  - Monthly packages: $500 – $3,000

# Appendix


AdoptionofAgriculturalTechnologyintheDevelopingWorld–Challenges and Barriers
https://agtech.folio3.com/blogs/agricultural-technology-adoption-barriers/

Agtech: Breaking down the farmer adoption dilemma
https://www.mckinsey.com/industries/agriculture/our-insights/agtech-breaking-down-the-farmer-adoption-dilemma#/

Indonesia’s January drought points to lower rice harvest, higher imports
https://theprint.in/environment/indonesias-january-drought-points-to-lower-rice-harvest-higher-imports/1949976/

The role of technology in small agricultural projects
https://journals.ekb.eg/article_304567_021e8e28aa53aa114727d6a75a2d14de.pdf

DigitalTechnologyAdoptionandPotential in Southeast Asian Agriculture
https://ajad.searca.org/article?p=2202

Floods Amidst “Green Light” for Agricultural Budget
https://www.kompas.id/artikel/en-banjir-di-tengah-lampu-hijau-anggaran-pertanian

Losses due to El nino
https://www.fertilizerdaily.com/20230901-indonesia-faces-loss-of-1-2-million-tons-of-rice-due-to-el-nino/

Key metrics to track sustainability progress
https://www.jll.com/en-us/guides/10-key-metrics-to-track-sustainability-progress

What5MetricsShouldAgricultureConsultingFirmsTrackandHowto Calculate Them?
https://businessplan-templates.com/blogs/metrics/agriculture-consulting-firm

# Appendix


White Paper on User Centred Design to Address Challenges in the Design and Creation of Agricultural Data Visualisation Interfaces
https://www.mdpi.com/2077-0472/14/10/1808

Digital platforms in the agricultural sector: Dynamics of oligopolistic platformisation
https://journals.sagepub.com/doi/10.1177/20539517241306365

Satellite Data Helping Farmers grow better crops
https://thebusinessdownload.com/satellite-data-helping-farmers-grow-better-crops/

Low-Cost Aerial Imaging for Small Holder Farmers
https://www.microsoft.com/en-us/research/wp-content/uploads/2019/07/TYE__A_Low_Cost__Long_Term_Aerial_Imaging_Platform-2.pdf

PisAgro: Partnership for Indonesia Sustainable culture
https://www.pisagro.org/members/list-members

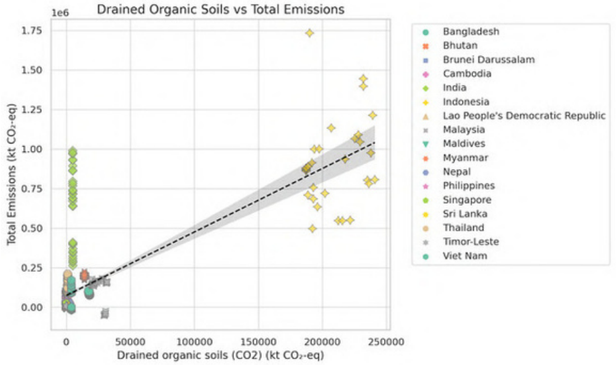
An insight into investments in Indonesia
https://www.indonesia-investments.com

Business Model Innovation in AgriTech Startups
https://viestories.com/business-model-innovation-agritech-startups/

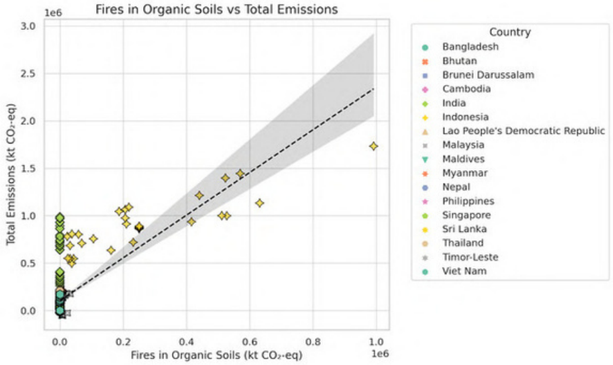
Rikolto for sustainable rice
https://drive.google.com/file/d/1FEGvHPp_41EqZkrAiO-V30pPIcfWPXut/view?usp=drivesdk

Everything about Cropin
https://cropin.com

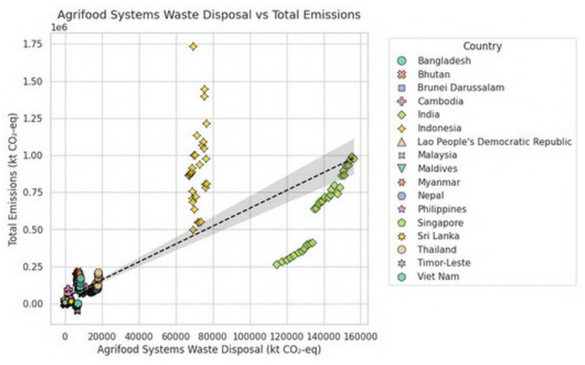
# Appendix



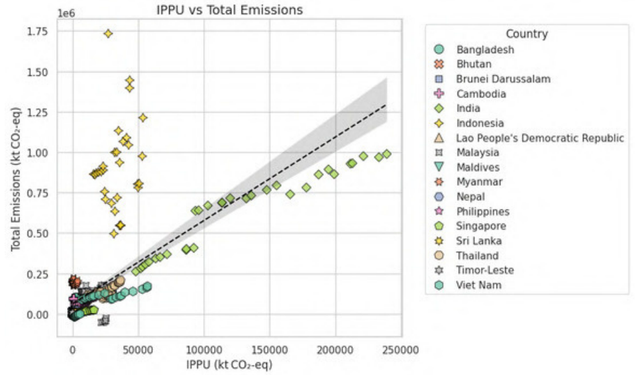

Drainage of Organic soils: 11.7% of the total emissions




Fires in Organic soils: 11.43% of the total emissions

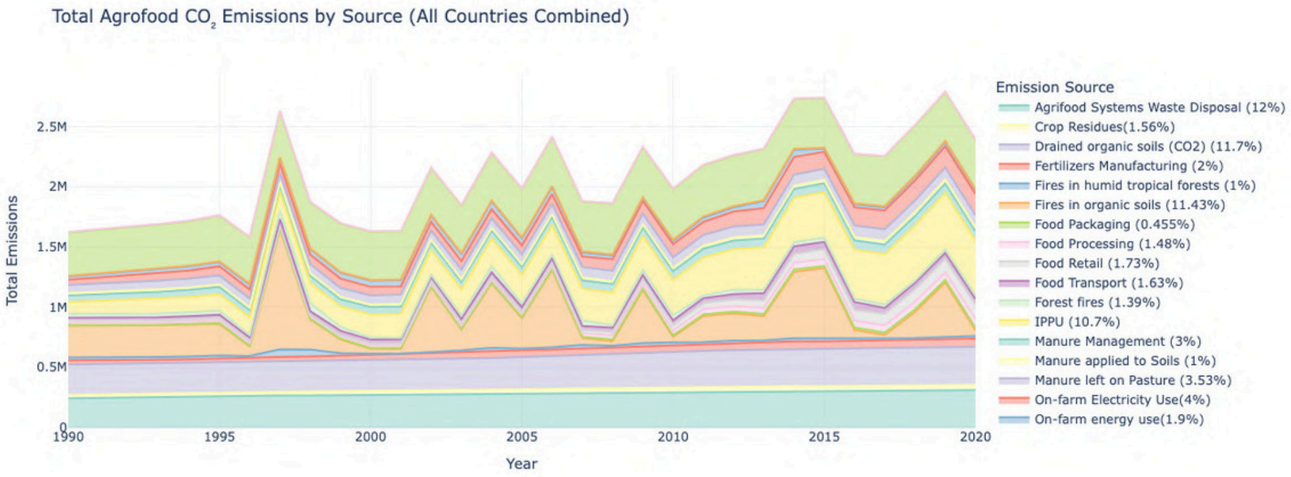


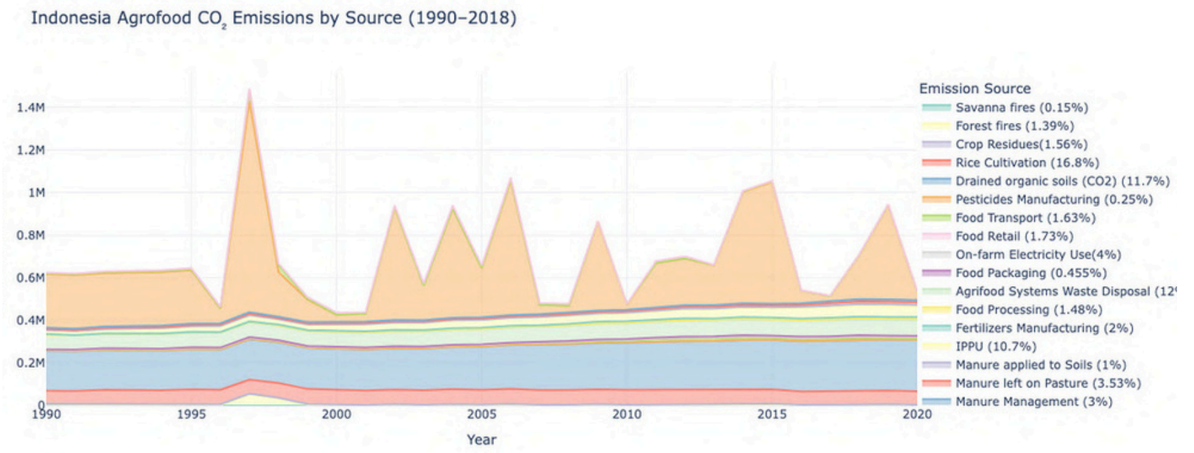

Agrifood Systems Waste Disposal: 12% of total emissions




IPPU related: 10.7% of total emissions

*all these graphs were generated ourselves using this dataset:
https://drive.google.com/file/d/1pWu_S_caJO0PCk8AKWDKqzM3BasN2A1q/view?usp=sharing




THANK YOU