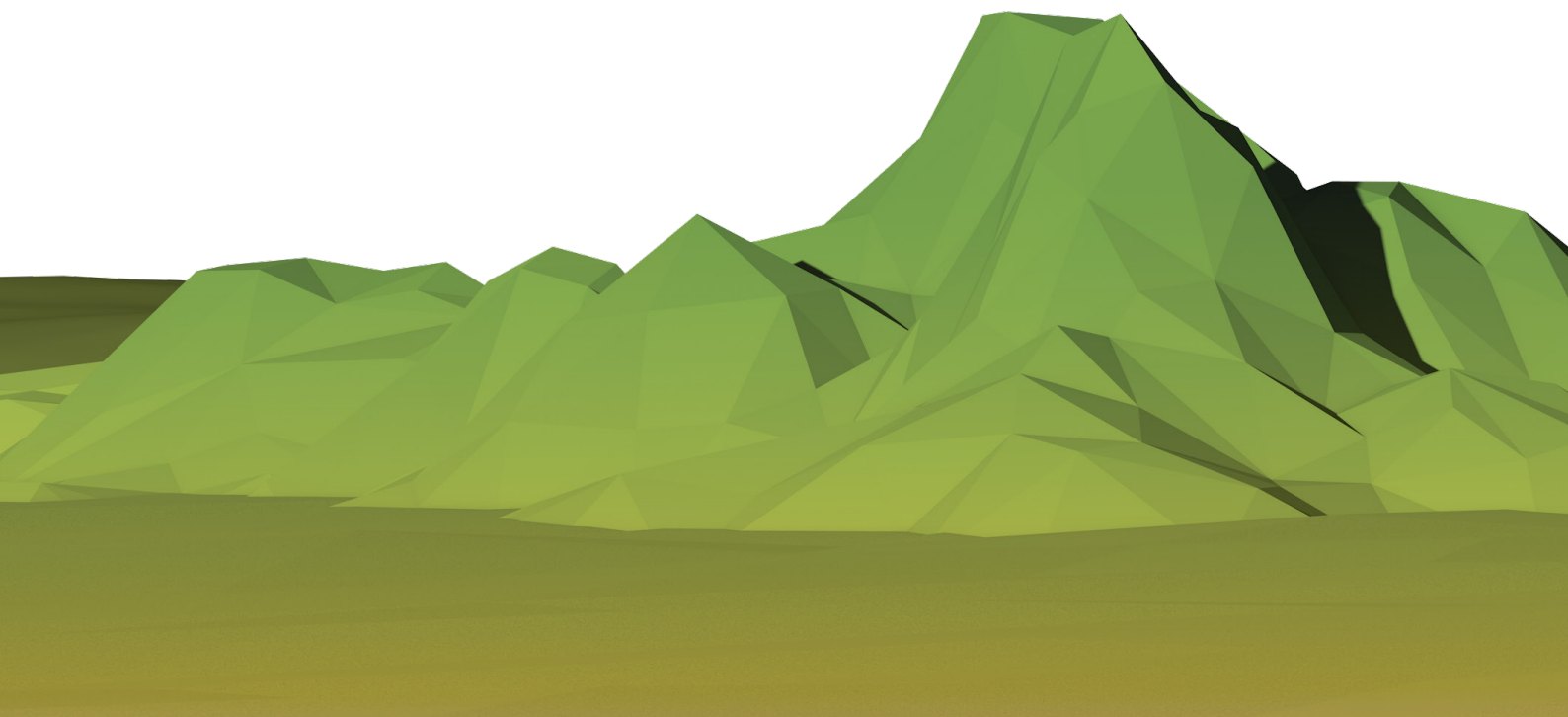
NDVI BASED AGRICULTURE INSURANCE

ENABLING SMALL HOLDER FARMERS COPE WITH AND MANAGE WEATHER RELATED RISK



SMALL-HOLDER AGRICULTURE

There are **15 million** small-holder farmers engaged in subsistence agriculture

Subsistence crop production is traditional and **rain fed** with very limited areas under irrigation.

Agriculture in Ethiopia is challenged by **natural disasters,** especially droughts (other: floods, excessive rain, pests etc)

The estimated loss due to disasters in the last decade is approximately **2.5 billion birr.**

Small-holder farmers have few options for coping with significant losses arising due to weather related risks, and in order to reduce their exposure to risk, they often forgo opportunities to increase their productivity.

When a crisis occurs, farmers often cope by either depleting their savings, sacrifice other household expenditures, sell productive assets or go into adverse shock.

Conventional approaches to mitigating weather risk – including financial bailouts, debt forgiveness and emergency relief – concentrate on the consequences of crises. While emergency relief is critical in saving lives, it does not always effectively protect livelihoods.

WORKING TOWARDS AGRICULTURE INSURANCE

HOW CAN CROP INSURANCE HELP SMALL-HOLDER FARMERS

RESILIENCE

In the event of a major weather shock, agriculture insurance can protect against the loss of their investment or consumption losses. This enables households to **avoid selling livelihood assets** or drawing on savings to tide over the disaster.

ENCOURAGES INVESTMENT AND PRODUCTIVITY

Agriculture insurance gives the farmer the confidence to access new technologies by improving their ability invest, either their own resources or to borrow, enabling them to increase their productivity.

CURRENT CHALLENGES IN OFFERING AGRICULTURE INSURANCE

Lack of a suitable and affordable **comprehensive agriculture insurance product**

Challenge for farmers to access insurance in **remote areas**

High cost of delivery

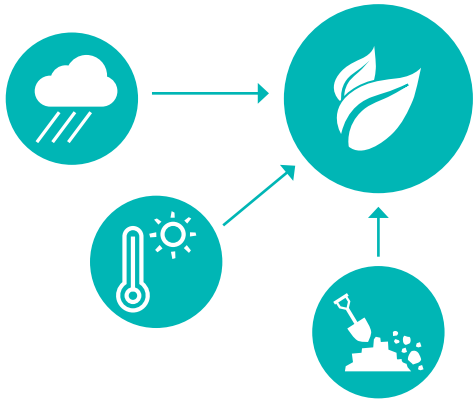
Lack of awareness about insurance

WHAT IS INDEX INSURANCE

Index insurance is an innovative approach to insurance provision that **pays out benefits on the basis of a predetermined index** (eg. NDVI) for loss of assets and/or investments without requiring the traditional services of on-site loss assessment, making claim settlement quicker and more objective.

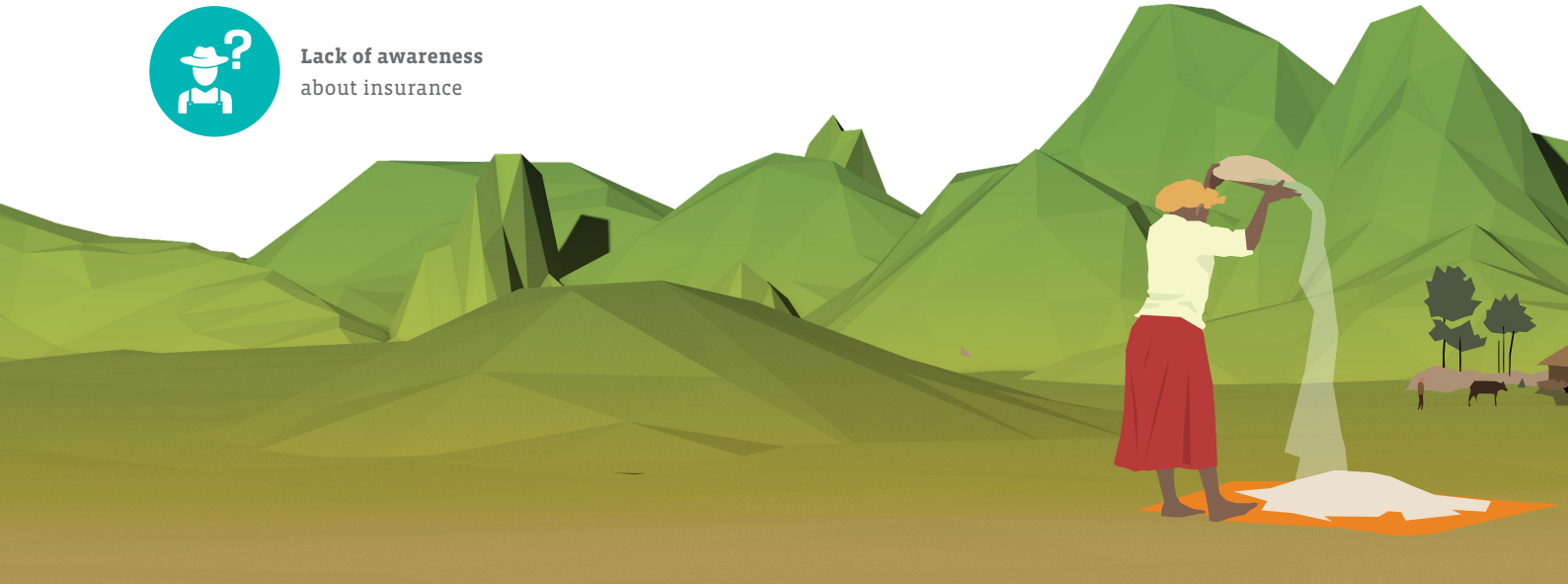
NDVI

NDVI (Normalized Difference Vegetation Index) is an efficient index for agriculture insurance. It is an index derived from satellite imagery, making it a **scalable** option. It is an "output" index measuring the vegetation "greenness" which is an **output of all parameters**.

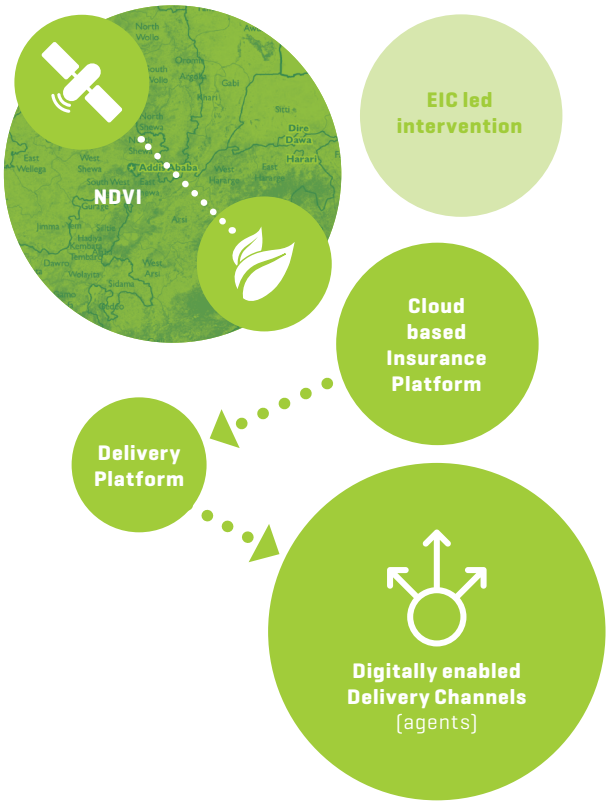


LIMITATIONS OF PREVIOUS PILOT PROJECTS

- Product design
- Insurance companies not the main implementers
- High cost of delivery
- Lack of local capacity



INSURANCE LED SOLUTION



ADVANTAGES OF NDVI AS AN INSURANCE INDEX: SCALABILITY

No need for loss evaluation = quick payout

Objective index (farmers or insurers can not influence).

Sustainable and easily **scalable**

ADVANTAGES OF A CLOUD BASED PLATFORM: REDUCED COST

Minimum **paperwork**

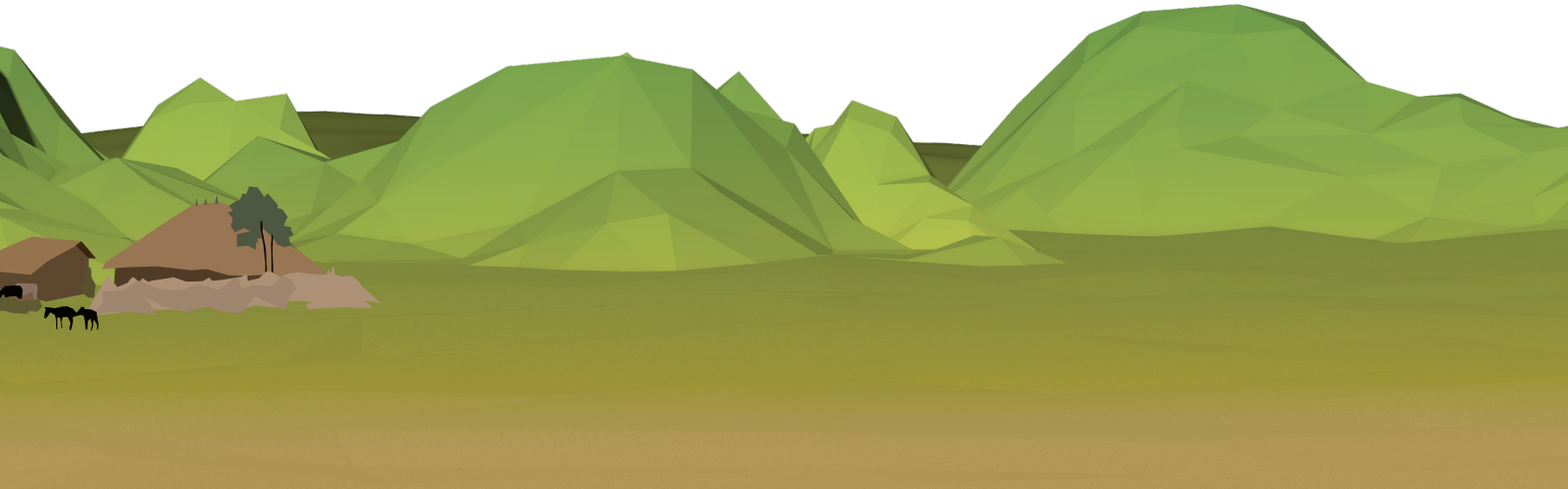
Accessible from **anywhere**

Simplified pay out process

ADVANTAGES OF DFS INFRASTRUCTURE-ENABLED AGENCY CHANNELS:

- **Convenient** and **quick** enrollment of the farmers
- Premium collection **simplified**
- **Direct access to information** available for farmers

ATA'S RURAL FINANCIAL SERVICES (RFS) PROGRAMME aims to address the critical gaps in financial offerings to small-holder farmers by ensuring access to flexible credit, incentivising savings and improving delivery. NDVI agriculture insurance, to be made available as part of the RFS programme adds better risk management to its offerings for the farmer. The NDVI agriculture insurance product will be offered in tandem with the RFS's voucher/e-voucher programme.



THE USE OF SATELLITE DATA TO PROCESS NORMALIZED DIFFERENCE VEGETATION INDEX

THE NATIONAL METEOROLOGY AGENCY (NMA)

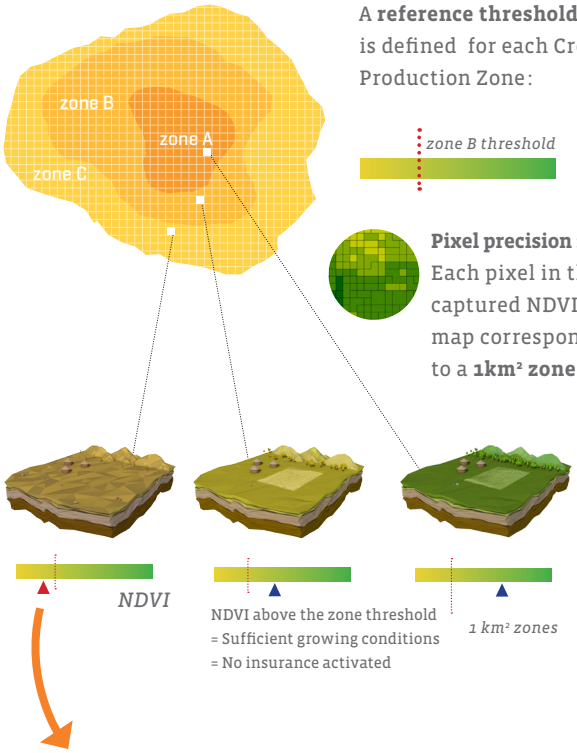
In collaboration with ITC and Kifiya, capacity and capability was built to enable NMA process satellite data to NDVI index.

DETERMINING CROP PRODUCTION ZONES AND THRESHOLDS

Mapping agricultural lands into homogeneous **Crop Production Zones** based on **16 years of NDVI data**

Map of Crop Production Zones

TRIGGERING THE INSURANCE PROCESS



A **reference threshold** is defined for each Crop Production Zone:

Pixel precision : Each pixel in the captured NDVI map correspond to a **1km² zone**

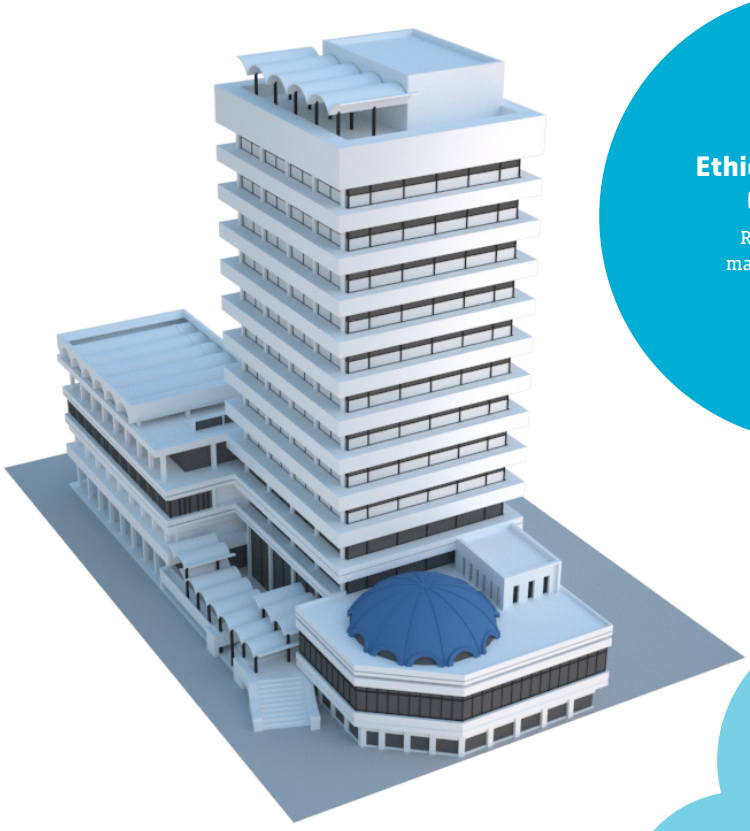
Trigger:

NDVI index lower than the zone threshold:

= Insufficient conditions for normal crops growth

= Claims process is automatically activated

MICROINSURANCE CLOUD PLATFORM



Reinsurance company

Ethiopian Insurance Corporation

Role: underwriting, management of claims and policies

Product Configuration Module

Cloud based Insurance Platform

NDVI data Analytics Module

Policy Administration Module

Claims Management Module

Risk model

National Meteorology Agency

Role: provides NDVI data

University of Twente / ITC

Role: develops risk management algorithm

EIC'S DELIVERY OF MICROINSURANCE PRODUCTS TO THE SMALL-HOLDER FARMERS

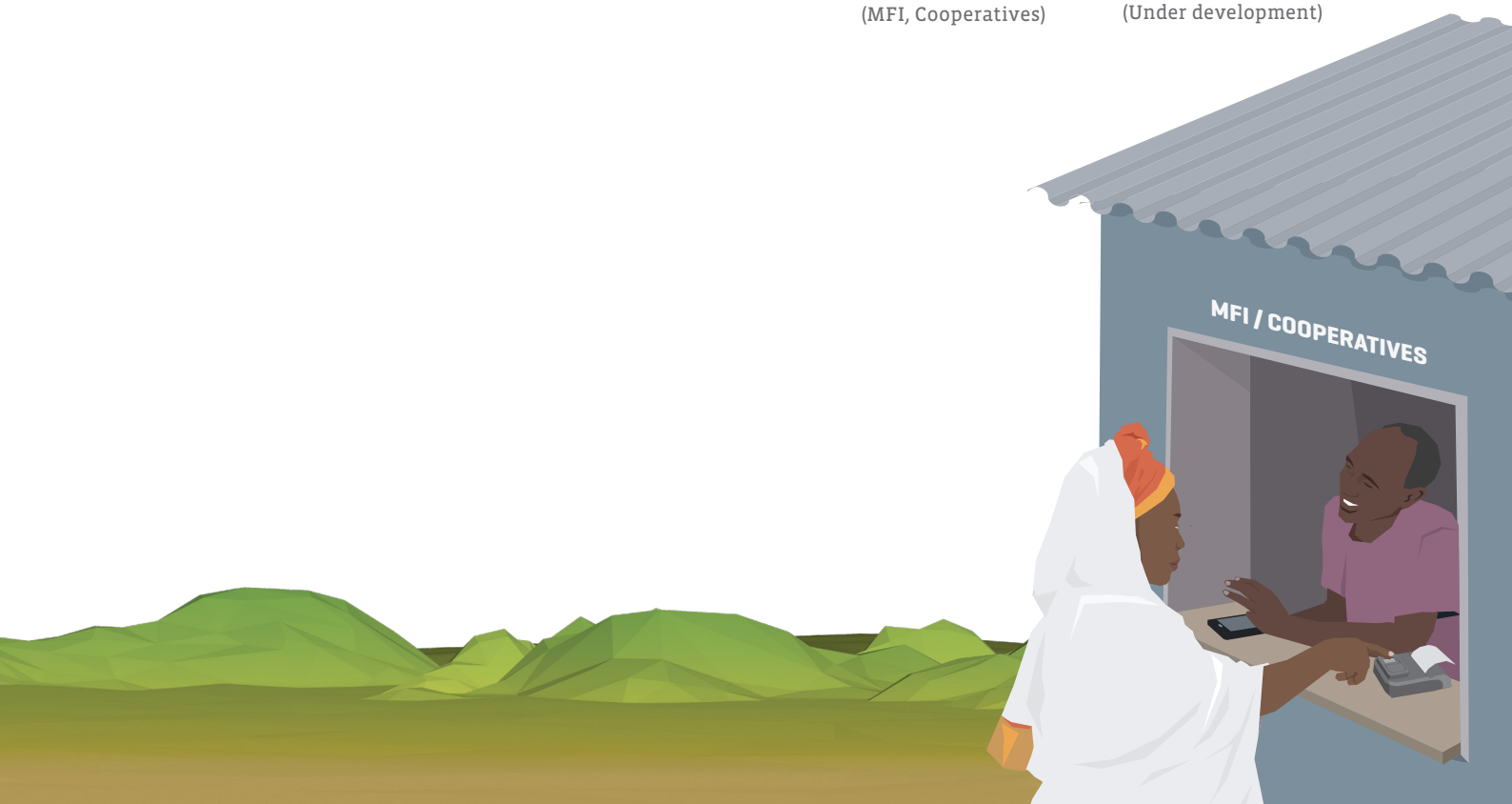
Digital Financial Services Platform
Subscription • Premium Pay In
Claims Pay Out • Information

DIGITAL FINANCIAL SERVICES INFRASTRUCTURE- ENABLED DELIVERY CHANNELS

ATA's RFS Voucher sale/redemption points also to be the farmers access points for NDVI based agriculture insurance product

Agent based
(MFI, Cooperatives)

User based
(Under development)



PUBLIC-PRIVATE PARTNERSHIP

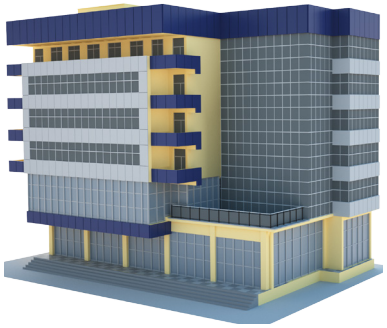
ETHIOPIAN INSURANCE CORPORATION (EIC)

Ethiopian Insurance Corporation (EIC) was established in 1976 by proclamation number 68/1975. The corporation came into existence by taking over all the assets and liabilities of the thirteen nationalized private insurance companies, with Birr 11 million (USD 1.29 million) paid up capital. EIC provides Long term, Property and Liability Insurance covers.

The Ethiopian Insurance Corporation (EIC), given its mandate of servicing the people of Ethiopia, has been very aware of the vulnerability of the small-holder farmers to the shocks of the weather. As part of its efforts to provide a suitable and accessible agricultural insurance product for more than 15 million Ethiopian Smallholders, EIC has taken the leadership in joining hands with the Public Finances Enterprises Agency, the Agricultural Transformation Agency, the National Meteorological Agency and Kifiya Financial Technology to introduce an unique Vegetation Index Crop Insurance (VICI) product for the Ethiopian small-holders.

PUBLIC FINANCIAL ENTERPRISE AGENCY (PFEA)

Public Finance and Enterprises Agency works towards institutional capacity building and strengthening of core competencies of the Public Financial Institutions in Ethiopia so that they can deliver upon the development objectives of the country. Driven by this vision PFEA, together with EIC, has been the engine behind this project to offer agricultural microinsurance to the small holders of Ethiopia. PFEA has been the key conceptualizer of this PPP and has led the working group on this project and its strategy which has manifested itself in the NDVI based crop agriculture insurance.



AGRICULTURAL TRANSFORMATION AGENCY (ATA):

The Agricultural Transformation Agency (ATA) is a results-driven organization within the Government of Ethiopia (GoE) that reports to a Transformation Council chaired by the Prime Minister and vice-chaired by the Minister of Agriculture. The ATA seeks to accelerate the transformation of the agricultural sector so that it substantially contributes to the goal of Ethiopia achieving middle-income status by 2025. Accordingly, as per the discussions made with representatives, the role of ATA in upholding rural insurance, among others, is summarized as follows:

- Developing rural coping strategies to promote rural development;
- Establishing systematic risk management program addressing rural community
  to transform agriculture
- Lead and provide programmatic support to the micro insurance initiative

NMA

NATIONAL METEOROLOGY AGENCY (NMA)

The National Meteorology Agency of Ethiopia is dedicated to providing quality meteorological services to the user community. The products it renders to the public consist of rainfall, temperature, humidity, wind, sunshine hours, hail, thunderstorm, air pressure, cloud coverage, cloud type, forecasts and climatologically maps, among others.

In collaboration with ITC, an investment in technology was made in NMA by Kifiya. This technology comprises of GeoNetCAST system and its processing servers along with capacity building and training by ITC. This enables NMA to provide NDVI data and maps on 10 day intervals for the product and makes NMA the index announcement authority of the project.

kifiya

KIFIYA FINANCIAL TECHNOLOGIES (KFT)

Kifiya's mission is to build financial services & delivery infrastructure to make financial and non-financial transactions simple, secure, affordable and within reach. In urban areas Kifiya is focusing on simplifying payments and in rural areas, working on enabling development of new products and building financial services infrastructure to enhance access.

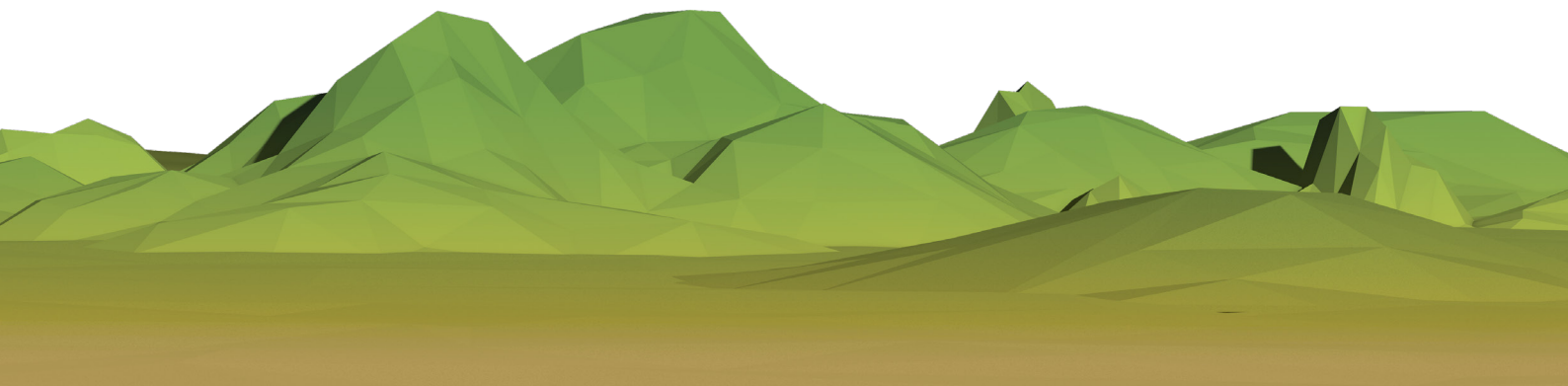
ITC

UNIVERSITY OF TWENTE.

ITC - UNIVERSITY OF TWENTE

University of Twente (Dutch: Universiteit Twente) is a university located in Enschede, Netherlands. Established in 1961, it offers research and degree programmes in the social and behavioral sciences and in engineering. In keeping with its entrepreneurial spirit, the University is committed to making economic and social contribution to the region of the Netherlands where it is based and to bring the benefits of its research to other parts of the world.

Dr. C.A.J.M. de Bie, a leading researcher at the University, has undertaken the research and developed the risk model on which the Vegetation Index Crop Index product is based.

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