



國泰金控

Cathay Financial Holdings

Role of inclusive financial solutions and the growing use of ESG/CSR

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Innovative & Inclusive solutions for food security

- ❑ Corporate Responsibility: environment, social and governance (ESG)
- ❑ Food Security is complicated systemic risk
- ❑ Global Efforts on fighting food security
- ❑ Resilience of Agriculture: empower farmers and the food system
- ❑ Chinese Taipei efforts on the resilience of Agriculture
- ❑ Cathay Financial Holdings: Inclusive solutions

Corporates aim to support society's needs

❑ Corporates' core value

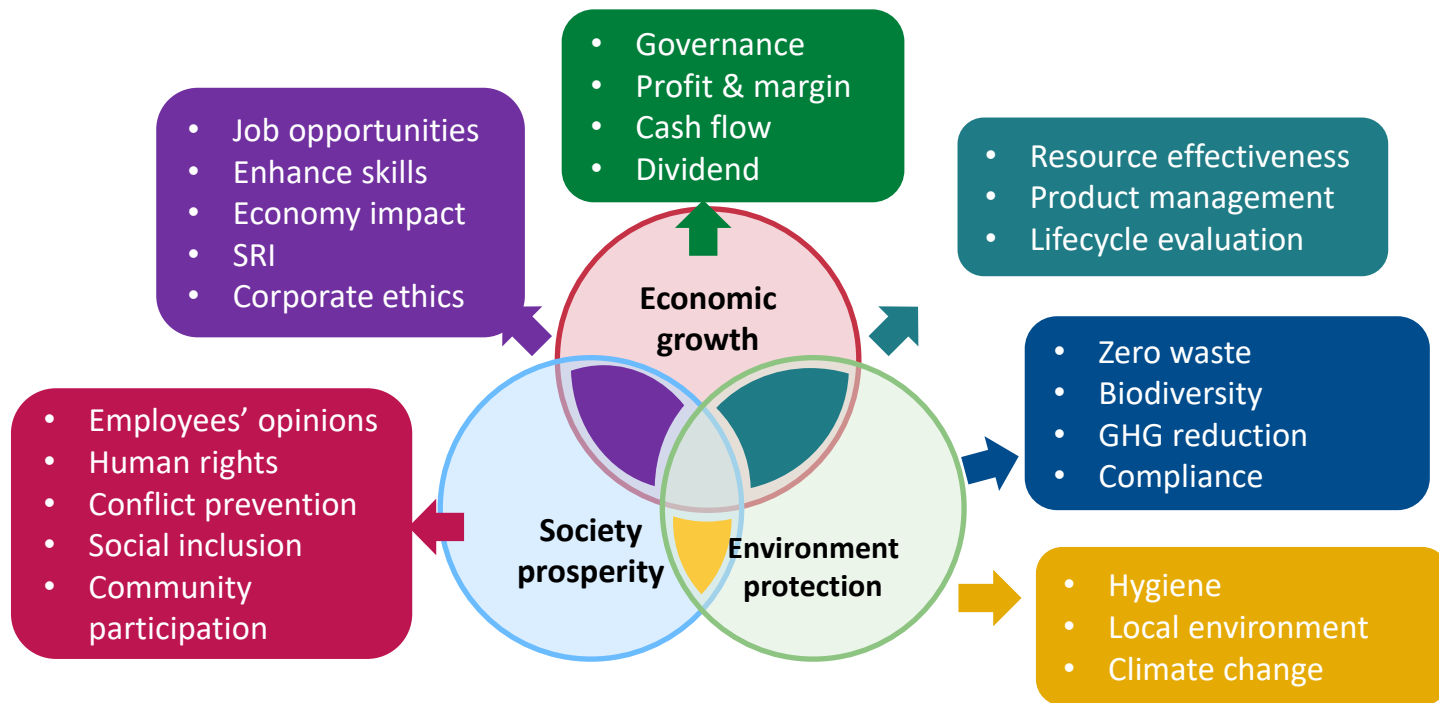


❑ How to define corporates success?

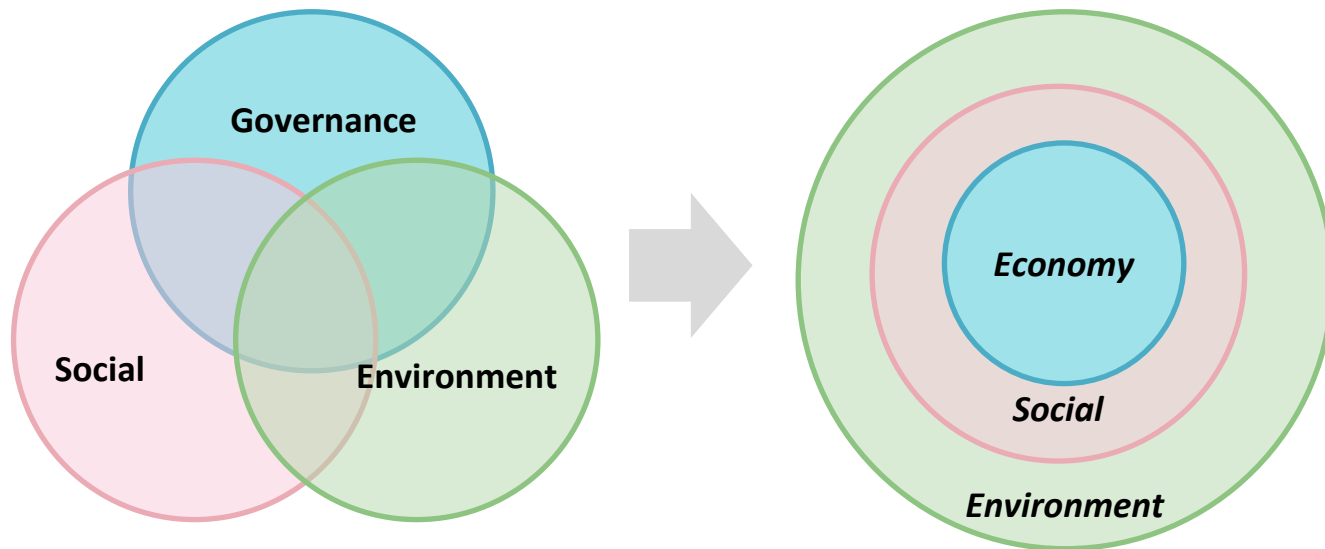
- Profit performance: Margin, RoE & Share price
- Corporate sustainability: Corporate governance & social responsibility
- Contributing to the society, and bring wellbeing to the society
- Lead the society to prosperity and sustainability

CSR ≠ Charity

- ❑ Corporates need to take responsibilities to all stakeholders, including employees, suppliers, customers and community.



The focus of corporate sustainability has been evolving

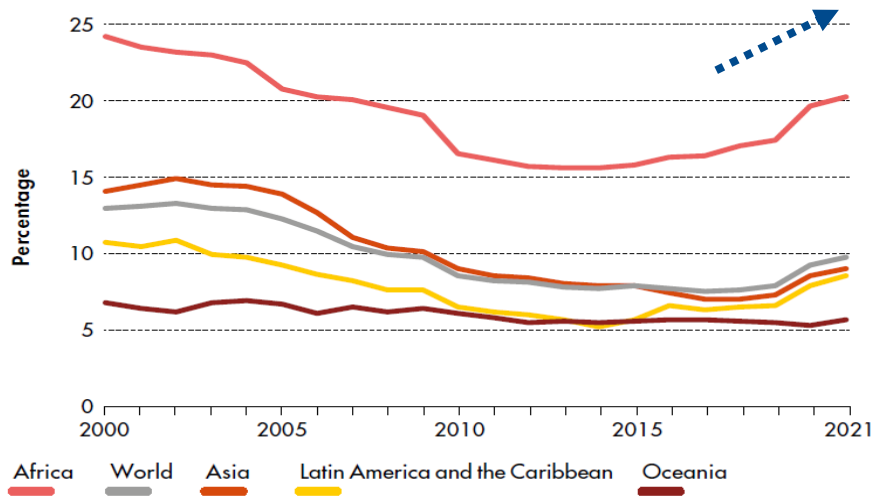


Food security is a systemic risk

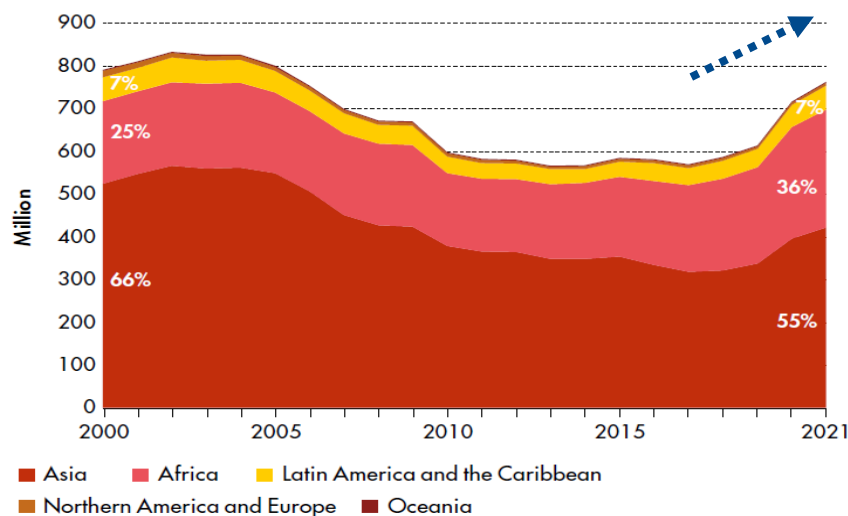
Number of hungry people rose since 2019

- Global level of hunger (Prevalence of Undernourishment, PoU) has increased: **nearly 10 % of the world population suffered from hunger in 2021**
- The world's goal of zero hunger (SDG2) remains challenging due to a series of **conflict, climate change, disasters and structural poverty and inequality**.

PREVALENCE OF UNDERNOURISHMENT BY REGION

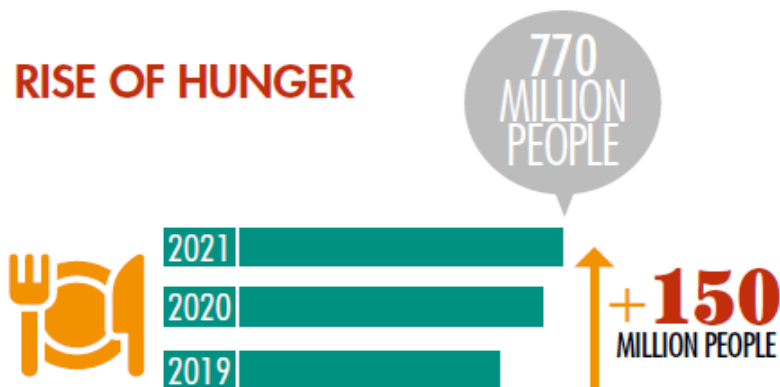


NUMBER OF PEOPLE UNDERNOURISHED BY REGION



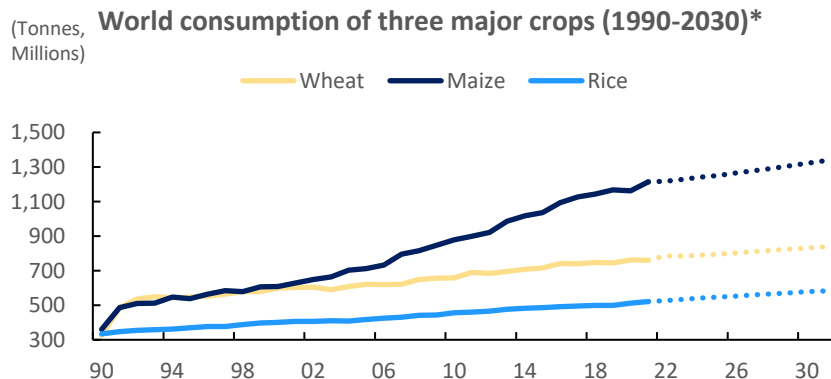
Asia is home to most hungry people

- ❑ **Hunger is still on the rise: almost 770 million people suffered from hunger in 2021**, 46 million more than in 2020 and 150 million more than in 2019
- ❑ **Asia is home to the majority of the world's hungry people (55%):** India and Pakistan are the two economies with the largest number of hungry people in Asia
- ❑ While most of the undernourished people live in Asia, **Africa has the highest prevalence of undernourishment (20% in 2020)**

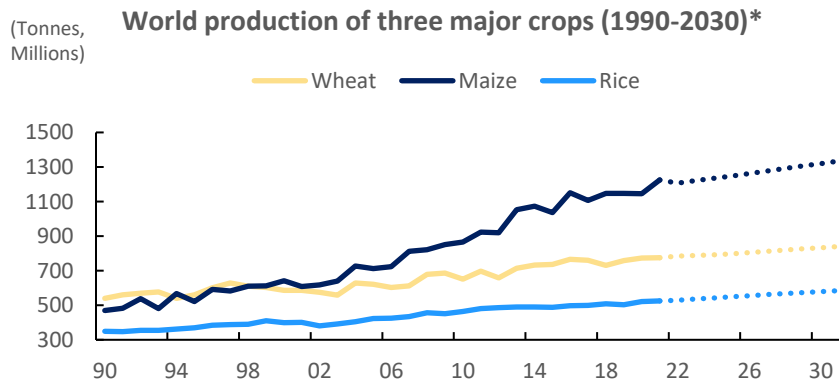


Supply of crops: Maize demand and supply have grown the fastest

- Both the **consumption and production of three major crops in the world have been rising steadily** in the past four decades and are forecasted to grow at a similar pace in the next decade.
- In particular, **Maize consumption and production have grown the fastest in the past 15 years mainly under soaring demand for biofuel use.**



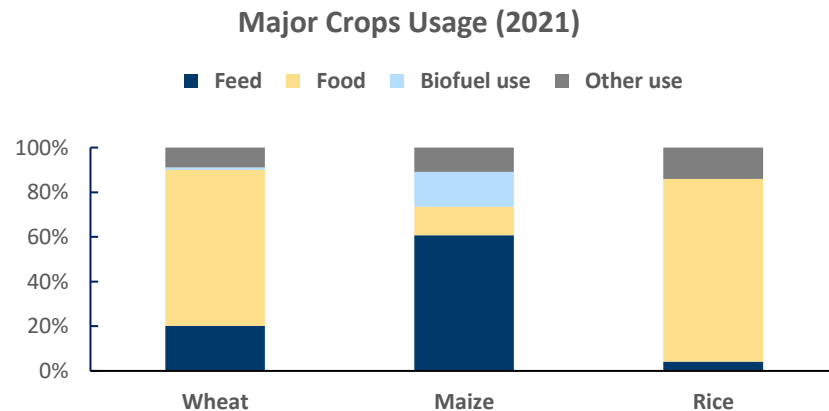
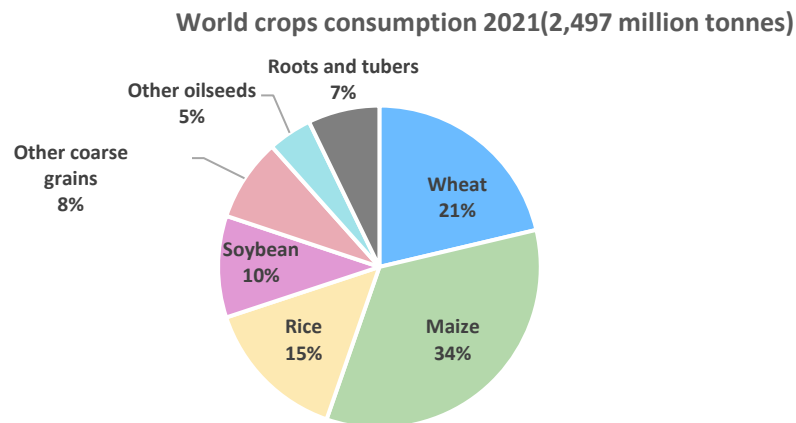
*Dotted lines are OECD forecasts



Source: OECD

Wheat, maize, and rice are the world's three major crops

- ❑ OECD estimated that **wheat, maize, and rice account for 70% of the total consumption**, making them the three major crops.
- ❑ **Maize is more commonly used for animal feed and biofuel while wheat and rice are main sources for food.**



Source: OECD

Extreme Weather and Agricultural losses

With the impact of natural disaster, “**Agricultural Losses**” has become one of the major problems today, especially in insurance industry .

Worldwide

Hurricane Ian (In Florida)
affected nearly **5 million acres** of
agricultural land and caused **\$1.56
billion losses**.

Heavy rainfall (In Pakistan)
had damaged more than **8 million acres** of
crops and inflicted losses of over **\$1.34
billion**.

The drought (In the Horn of Africa)
caused one of the **most extreme food
crises**, which killed 2,500 people in
Uganda and affected 8 million in Ethiopia.

Agricultural Damage in 2022



Torrential rainfall (Hsinchu)
damaged watermelon, melon,
and cantaloupe at least **52
hectares**.

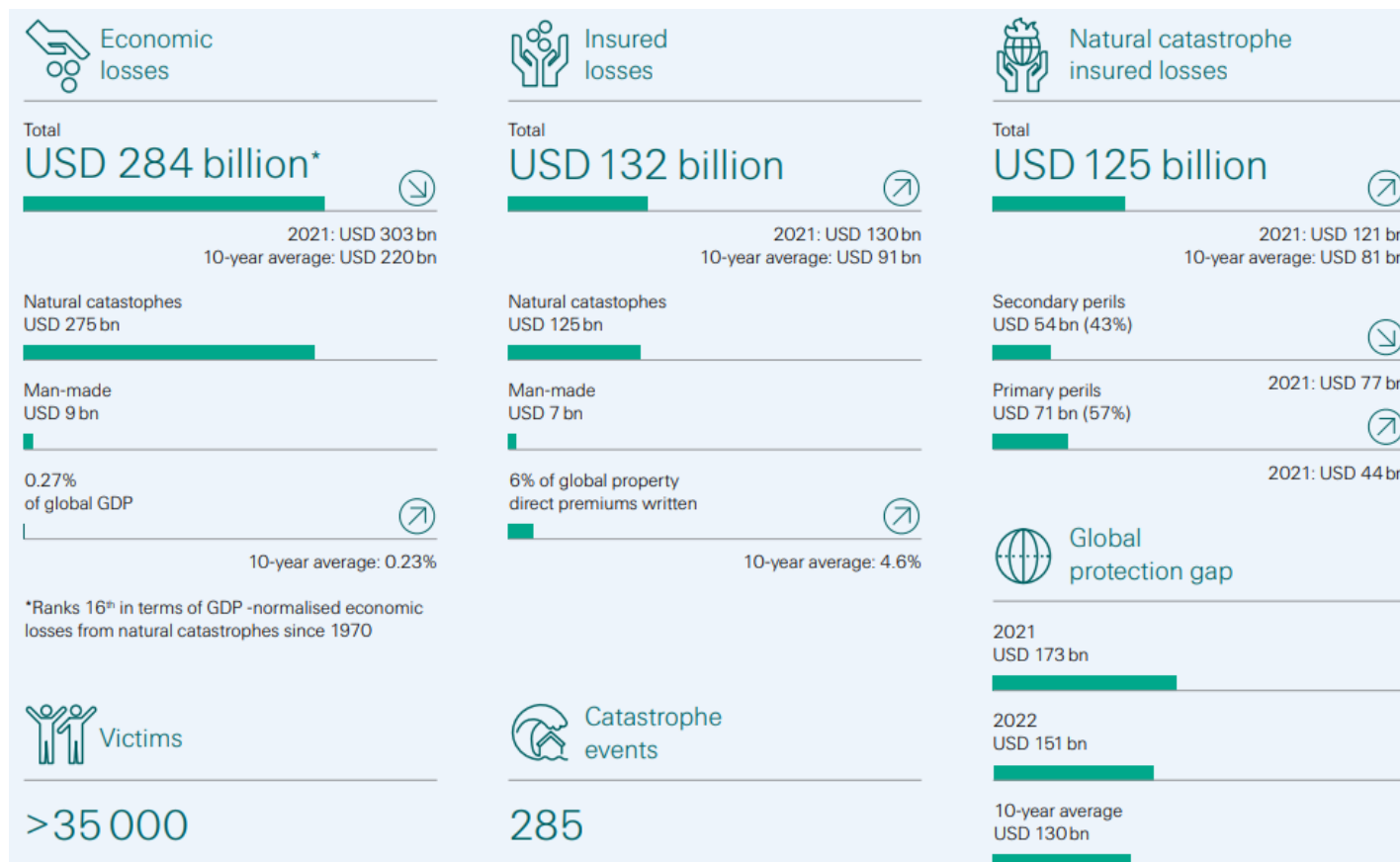
Cold wave (Pingtung)
made **over 389 hectares** of
mangoes, strawberries, and pears,
with total losses estimated to be
\$5.7 million.

Strange weather (Kaohsiung)
with the persistent rainfall caused
**over 40% of mango produce in
damage**.

Chinese Taipei



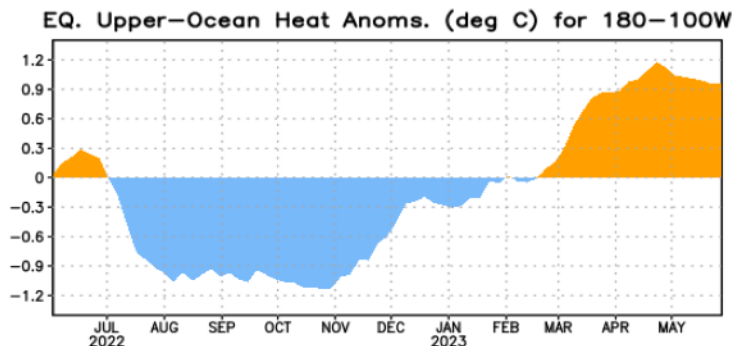
Swiss Re estimates 2022 economic losses of USD284bn



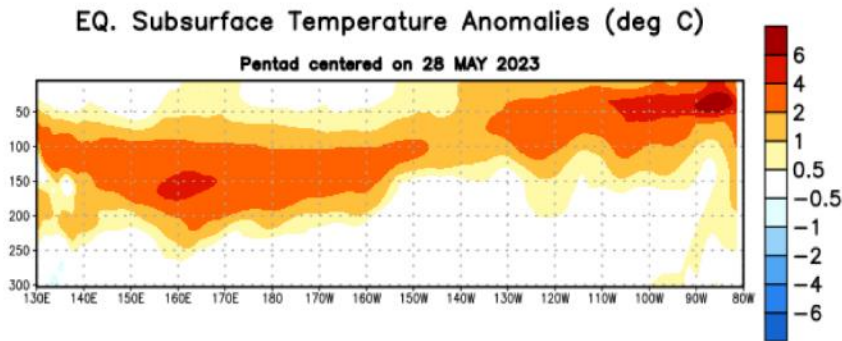
El Niño could bring extreme weather by winter of 2023

- ❑ NOAA expects **84% chance of an El Niño with a greater than moderate strength and a 56% chance of a strong El Niño developing by the winter. El Niño conditions are present and are expected to gradually strengthen in winter 2023-24.** Historically, El Niño brought extreme weather and temperature records
- ❑ Above-average rainfall: East Africa, Horn of Africa (Somali Peninsula)
- ❑ Below-average rainfall: Central America, West Africa and the Sahel, Southern Africa

Area-averaged upper-ocean heat anomaly (°C) in the equatorial Pacific (5°N-5°S, 180°-100°W).



Depth-longitude section of equatorial Pacific upper-ocean (0-300m) temperature anomalies (°C) around 28 May 2023



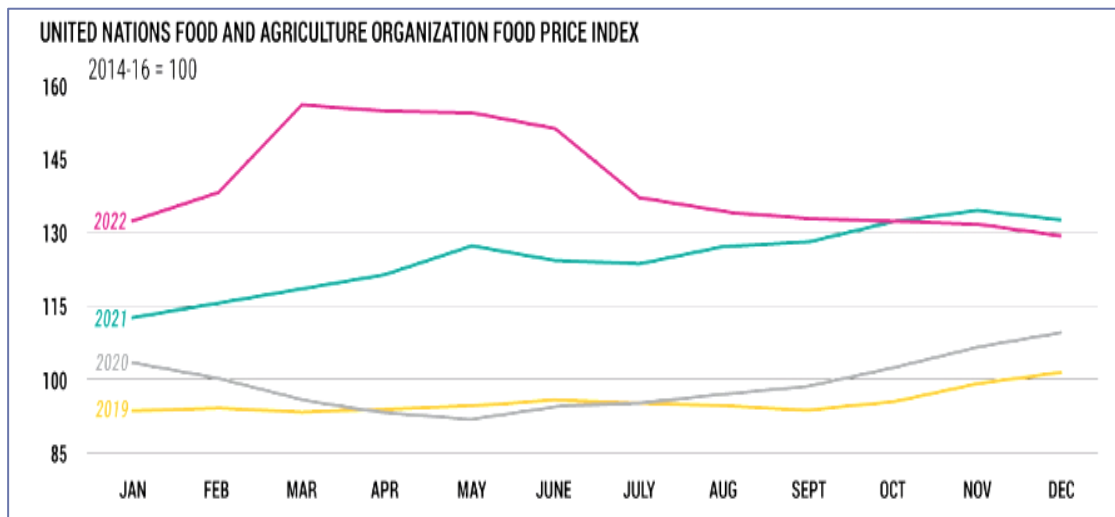
Russia-Ukraine War added threat to rising food prices

- ❑ Ukraine and the Russia are **large producers and exporters of key food commodities, fertilizer, minerals and energy**. At least 50 economies import 30% or more of their wheat from these two economies, with **many African and least developed economies importing more than 50%**.
- ❑ In 2020, about 47% economies were affected by soaring food prices, and there will be more economies affected under Russia-Ukraine War
- ❑ **Coordinated activities and policy solutions are urgently needed to avert food shortages for the world's poorest people and to reduce the impact of the conflict**



Surge of food prices affected the poorest

- ❑ Food price soared when Russia-Ukraine War first broke out on March of 2022
- ❑ When COVID restrictions were eased in 2H20, the **proportion of economies affected by high food prices increased sharply.**
- ❑ **Situation remains uncertain:** fertilizer supplies remain tight and the **war in Ukraine continues to disrupt grain markets.** There are also concerns over poultry supplies as corn prices continue to surge and the bird flu hits farms across the world.



Source: GPF, The Global Goals

Global Efforts on fighting food security

- ❑ Global efforts (UN, APEC, U.S., EU, and Japan)
- ❑ Key policies and efforts of Chinese Taipei and COA

Global initiatives on food system



Public-Private Partnership for Food Security

Leveraging the public – private sector partnership to achieve food security in the APEC region



Japan: Green Food System Strategy



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Chinese Taipei actively participates in APEC's food security planning

2nd APEC Ministerial Meeting on Food Security (Russia, 2012)

- **Proposed "Strengthening Public- Private Partnership Reduce Food Losses in the Supply Chain."**
- This became the first ever multi-year agricultural project adopted by APEC.

3rd APEC Ministerial Meeting on Food Security (Beijing, 2014)

- **Ministers from APEC member economies were positive at the meeting about Chinese Taipei's project**
- It was incorporated it into the Beijing Declaration on APEC Food Security.

7th APEC Food Security Ministerial Meeting (Thailand, 2022)

- **Shared Chinese Taipei's experiences on building a food security digital platform.**
 - Ensure the stability of domestic food system through real-time monitoring of information
 - Proposed a "zero-hunger" program

Resilience of Agriculture: empower farmers and the food system

- ❑ Enhance resilience
- ❑ Enable Digitalization
- ❑ Inclusive financial solutions

Empower farmers and local communities: multiple approaches

Help farmer with
AI & Finance

Impact Terra
Dragon digital farm

Image by Văn Long Bùi from Pixabay

Increase
income sources

HANBO Farm

Photo by Ivan Bandura on Unsplash

Strengthen
farmer resilience

Root Capital

Photo by ThisisEngineering RAEng on Unsplash

Empower
local communities
and farmers

Jollibee Group
Foundation
Greenvines



Impact Terra's Golden Paddy digital platform in Myanmar

Help farmer with
AI & Finance

Background

- **Agricultural populations accounts two-third of Myanmar total population**, and most of them are small holders.
- **Poverty** is one of the Myanmar agriculture problem.
- **Mobile phone penetration in Myanmar is one of the highest of all developing economies**, reaching around 80% of the population, including an estimated 70% of smallholder farmers.



Key role of Impact Terra

- Impact Terra **leverages technology through its Golden Paddy digital platform** to provide value-added services to farmers.
- The platform — consisting of a mobile application, web application and a Facebook platform — aims to **enhance smallholder farmers' crop productivity by providing real-time, tailored agronomic advice, weather and pest alerts, better market connections and access to improved financial opportunities.**



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Impact Terra's Golden Paddy digital platform in Myanmar

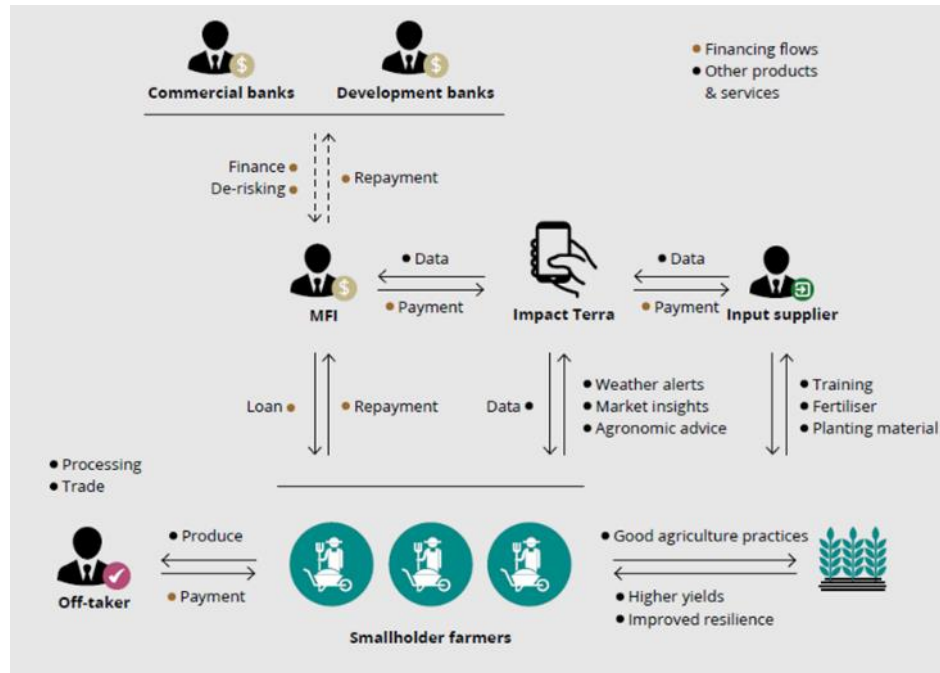
Help farmer with
AI & Finance

Mechanism

- **Tailored advice for smallholders:** Impact Terra's Golden Paddy App is designed to provide tailored agronomic support services to smallholders, leveraging big-data analytics, remote sensing data and crop prediction models.
- **Connect MFI to increase cash flow to smallholders:** The data that Impact Terra generates allows the microfinance institutions to rethink their approach to evaluating the credit risk of rural borrowers, and focus the evaluation of the repayment capacity of farmers more fundamentally on the underlying cash flows of funded investments.
- **Empower financial institution:** By providing financiers with big data insights and educating bank staff on how to use the data to evaluate smallholder cash flows.

Impact

- **Registered over 60,000 farmers** to the platform
- Contributed to **yield increases of between 10-15% for maize farmers**, compared to peers not using Golden Paddy



Resource: WWF

Background

- **An outbreak of La Roya — the coffee leaf rust disease** — spread through Central America in 2012 and devastated vast areas of coffee plantations.
- **This leads to sharp production decline:** 25% cut in Honduras, Guatemala and Nicaragua.

Coffee Farmer Resilience Initiative (CFRI)

- Root Capital(a non-profit impact investor) established the Coffee Farmer Resilience Initiative (CFRI) **with development institutions, private corporations and foundations to deploy capital and technical** support to counter La Roya's spread, and help rehabilitate and renovate affected farms.

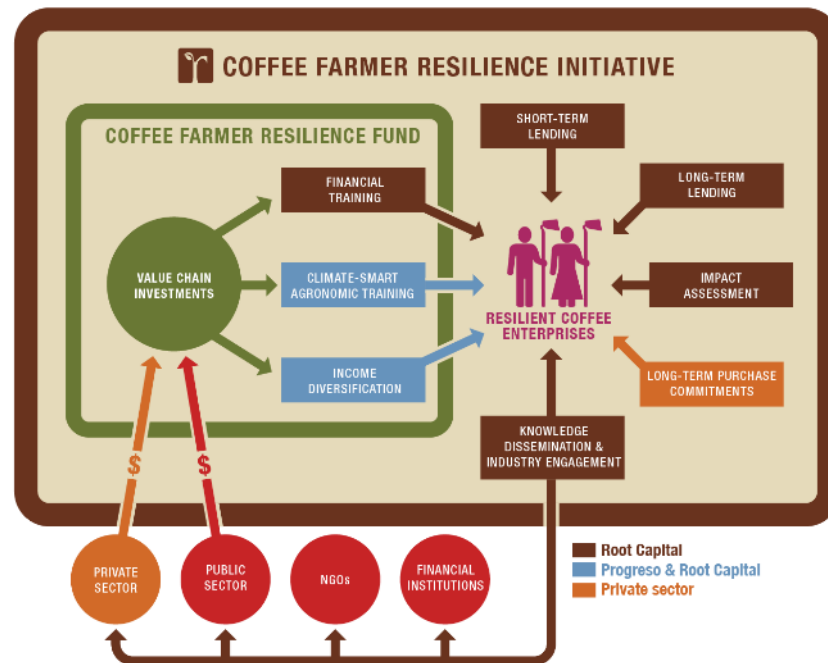


Mechanism

- The **CFRI** used their internal credit funds to **on-lend the Root Capital loans to individual farmer members**
- **Support local coffee cooperatives with financial management training, agronomic training and grants**
- Root Capital also provides donation to fund the technical support programs of local coffee cooperatives.
- **Blended finance**: Root Capital **mobilized private and public financiers** to catalyze its newly formed Coffee Farmer Resilience Fund

Impact

- The fund approved USD 9 million in loans to nine local enterprises in two years
- **These loans helped 1,335 smallholders to renovate 3,500 hectares of land across Honduras, Mexico, Nicaragua and Peru.**



Resource: rootcapital.org

Support farmers in Philippines and strengthen the supply chain

Empower local
communities and farmers

Background

- **Smallholder farmers in Philippines** rely on multiple layers of intermediaries to consolidate and transport their products to market
- Many farmers **lack the knowledge and capacity to make their products market ready to reach end consumers**

Farmer Entrepreneurship Program(FEP)

- Jollibee Group is one of the fastest growing restaurant companies in the world. Jollibee Group Foundation initiated the Farmer Entrepreneurship Program (FEP).
- **The FEP offers interventions that directly responds to the immediate and long-term needs of smallholder farmers.** It eases economic challenges by empowering smallholder farmers and transforming them to become entrepreneurs more than being producers.



Support farmers in Philippines and strengthen the supply chain

Empower local
communities and farmers

Rationale

- Supporting farmers with the right access to training, capacity development, and linkage to institutional markets can help them become entrepreneurs.
- Directly sourcing products from smallholder farmers makes a strong business case for food companies.**

Mechanism

- The FEP includes
 1. capacity building and development
 2. production financing
 3. market linkage (institutional buyers)
 4. technology inputs
 5. logistics support
 6. access to post-harvest facilities.

Impact

- 3,000 farmers have been trained on the agroenterprise clustering approach. Among these, over 700 farmers deliver directly to Jollibee Group.**



Resource: Jollibee Group

Chinese Taipei efforts on the resilience of Agriculture

- ❑ Enhance resilience
- ❑ Enable Digitalization
- ❑ Inclusive financial solutions

NDF (Development Fund)

- NDF can directly inject funds into new ventures, or **induce private venture capital or angel investors** to participate through cooperative investment
- As of the end of Dec 2022, the NDF has invested in 13 agricultural-related businesses, with an **investment amount of NT\$178 million**



Agricultural Bank

- It's a **domestic licensed financial institution integrating agricultural professional banks and commercial banks**. Its key tasks are "counseling the business development of credit departments of agricultural and fishery associations", "stabilizing agricultural finance" and "handling financing for agriculture, forestry, fishery, and animal husbandry". Cooperate with the implementation of various agricultural financial policies.



Agricultural loans for young and middle-aged farmers

- On February 14, 2019, the Council of Agriculture released the policy of "Six Advanced Actions for Young Farmers' Loans", and Agricultural Bank cooperated with the "Agricultural Loans for Young and Middle-aged Farmers".
- In 2021, the Agricultural Treasury and the Ministry of Credit will **assist 3,625 young people to obtain agricultural entrepreneurship funds, totaling about NT\$ 5.1 billion**.

Agricultural loans for young adults in 2018-2021

(cases; NT\$m)

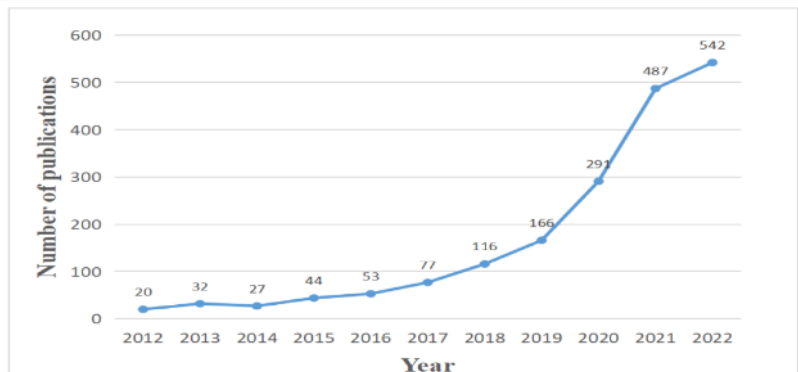
		2018	2019	2020	2021
Agricultural Bank	Number	32	214	205	175
	Amount	38.9	225	300.3	324.5
Farmers' associations & fishermen's associations	Number	1,039	1,468	6,712	3,450
	Amount	1,398.1	1,908.2	7,429.8	4,799.9
Totals	Number	1,071	1,682	6,917	3,625
	Amount	1,437	2,133.3	7,730.1	5,124.3

Topic 1. How could AI strengthen or transform food security ?

- ❑ AI can positively impact food growing process - explosive interest in this subject
 - Identifying weeds
 - Finding new locations to plant crops
 - Identifying plants dying of disease.
- ❑ More applications are being employed to predict crop yields, control food quality, and reduce foodborne illness



Figure AI-related publications on food safety from 2012 to 2022.



Source: MDPI, Appen

Council of Agriculture encourages smart farming, food production and safety

- Helping veterinary drug manufacturers to voluntarily achieve global standards
- Strengthening management of **high-risk agricultural pesticides**
- Promoting the extension of **authorization of agricultural pesticides** in crops
- **Promoting eco-friendly and smart fishing methods**
- Strict precautions against **invasive diseases and pests**
- **Promoting smart fertilizing solutions**

Smart net cage aquaculture monitoring system equipment and App interface



The fertilization recommendation system for lettuce can reduce fertilizer use by over 50% compared to traditional top dressing methods



COA advocates traceability of food and local consumption

- Promoting green energy in combination with rural industries
- "Local production, local consumption" strategies
 - ◆ Promoting **high-quality rice and diversified rice-flour products**
 - ◆ The "**place-of-origin**" labeling system
- Strengthening **safety management of agricultural products**
 - ◆ The **domestic beef traceability system**
 - ◆ **Tracking agricultural products**

The installation of rooftop photovoltaic cells and biogas power generation facilities at pig farms



© Promotion of the "Three Labels and One QR Code" ensures the use of domestic agriproducts in nutritious school lunches.

Source: COA, Chinese Taipei

COA boosts food exports safety and organic agriculture

- ❑ Establishing the **CAS certification system**
- ❑ **Monitoring for agricultural pesticide residues** and veterinary drug residues
- ❑ Promoting global food security through **exports safety management**
- ❑ Promoting **organic agriculture**
- ❑ Policies dealing with **animal and plant health**
 - Effective stabilization and control of the **rabies outbreak**
 - Effective prevention of **foot- and-mouth disease**



◎ Chinese Taipei's management system for fruit for export.



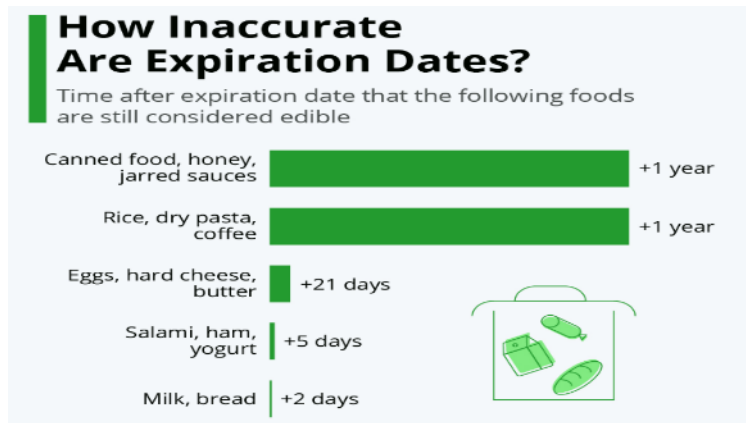
A press conference to promote marketing of organic agriproducts from Chinese Taipei to global markets



Source: COA, Chinese Taipei

Topic 2. Could the “best-before” concept help reduce food waste?

- ❑ Best before date vs. use-by date: indicating **quality of the food vs safety**
- ❑ UNEP report estimates that around 931 million tonnes of food waste was generated in 2019 (61% from households, 26% from food service and 13% from retail)
- ❑ Not all wasted food is considered inedible. **Average expiration date for some products may be too conservative**, with foods such as pasta and rice often edible for a year after the date on the package.



Great efforts from Chinese Taipei to the reduction of food loss



 豐食公益飲食文化教育基金會



主婦聯盟環境保護基金會
Homemakers United Foundation

green
monday



致理未來超市



明日惜食主廚



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AI technology to adjust the harvesting season of dragon fruit

Help farmer with
AI & Finance

Background

- Pingtung County is the main producing area of dragon fruit in domestic, but **due to the oversupply in summer, the price is unstable**
- Pingtung County Government cooperated with the Industry Bureau and Tsinghua University to introduce AI technology

Dragon digital farm : AI implementation

- **Dragon digital farm** is the largest single-area dragon fruit production and produces dragon fruit in winter.
- **Adopt AI technology: light control, flower thinning and pollination and image analysis to adjust dragon fruit production from summer to winter**
- QR code to monitor the dragon fruit planting process, farm, data, grading and logistics
- Use big data to accurately plant, fertilize, harvest and assist in the classification of packaging and shipments. This saves ~30% of electricity costs



Increase income through biogas power generation

Increase income
sources

HANBO Farm biogas power generation

- Changhua County: eleven farms have built biogas power generation. The largest pig farm HANBO Farm, which was the first to put into biogas power generation
- HANBO Farm has to process 1,810 cubic meters of water and fertilizer a day, and **the annual renewable energy power generation can reach 3.84 million kWh, which is equivalent to supplying the annual electricity consumption of 950 households**

Carbon trading certification

- Hanbo Farm **applied to the Environmental Protection Agency for a carbon offset project and passed the review.** It is the only pig farm in Changhua that has obtained carbon trading certification



Support moringa farmers in Africa and strengthen the supply

Empower local communities and farmers



Greenvines



- **"Best for the World" environment-oriented award for five consecutive years**
- It has developed skin care products with more than 98% natural ingredients and live sprouts with 100% phytochemicals: healthy and sustainable green life

Support moringa farmers in Africa

- Greenvines has **collaborated with Moringa Connect and contributed to the creation of Africa's largest organic Moringa ecosystem through pre-finance and fair trade.**



Provide pre-finance and procurement promise to support farmers.



Invest local farmers with partial moringa revenues to build more sustainable supply chain



Helped over 5,000 out of poverty, with an average tenfold increase in income and the planting of over 2 million Moringa trees.

Cathay Financial Holdings: Inclusive solutions

Cathay FHC Sustainability Strategy and Focus

Climate

Low-Carbon Economy

Sustainable Environment

Health

Health Promotion

Financial Health

Empowerment

Workplace Empowerment

Social Empowerment



Financial Inclusion: demands of underrepresented groups

Microinsurance

- **First** in Chinese Taipei to introduce microinsurance.
- **Work with governments and social welfare groups** to provide basic insurance coverage through microinsurance to vulnerable groups.
- In 2022, Cathay Life **won the “First Place” and “Business Performance Award”** in the microinsurance competition organized by FSC for the third consecutive year.

People insured
313k

Insured amount
NT\$106bn

Received financial reimbursement
1,321 families

Inclusive whole-life insurance

- **First** in Chinese Taipei.
- Insurance **for those who are often denied coverage due to age or poor physical health**. The lower enrollment barrier and low premium make basic coverage available to the public.

Active policies
258k

Insured amount
NT\$83bn

For small investors

- **First** in Chinese Taipei.
- Allow small investors to invest with as little as NT\$1,000 per month. Additionally, only a NT\$1 brokerage fee is required for any investment purchase of less than NT\$10,000. This approach **significantly lowers the investment threshold for small investors**.

Customers
230k

Contribution amount
NT\$23bn

CUB Preferential loans for social enterprises

Help farmer with
AI & Finance



CUB Preferential loans for social enterprises

Cathay United Bank(CUB)



SME Credit
Guarantee Fund

Taipei City
Government



Cumulative loan
balance
NT\$25million



Support social
enterprises
9 in total

Case: Beehive Data Technology



Agri-Weatherbox
Agri-Field Sensor
IoT



Data Science



Visualize
Agri-APP



Improve quality
and quantity

Cathay Life Mailiao Tienji Solar Power Plant

Cathay Life collaborated with solar energy providers to support solar clusters development, and directing renewable energy infrastructure investment with the objective of increasing energy safety and farm land activation.



The environment and social impact



The farm land was declared not suitable for agriculture by the government because of land subsidence.

The farm land has been activated

The land's owner: New income sources

Solar power:
385MW invested.
32MW operating.
(as of Apr, 2023)

Environmental and Social Value via Fishery and Solar Power Symbiosis

Increase income
sources

Fishery and Solar Power Symbiosis

We have limited land resources. We need to avoid affecting the original use of agricultural land and the maintenance of food security, while developing solar power.

CUB's Sustainable Financing

- Solar power shall not conflict with the aquaculture production.
- The development shall consider the impact to environment and ecosystem .
- The long-term safety of solar installations shall be considered.

The environment and social impact



Competition
between
energy policy
and agricultural
development

The land's owner:
New income sources
Fish farmer:
Lower rental cost

Fish farm:
• **wind shielding in winter**
• **shade in summer**

Climate:
Renewable energy development

Agricultural insurances in Chinese Taipei

There are 5 main types of agricultural insurance in Chinese Taipei and comes to 17¹ different products.

Parametric Insurance

Risk(5)

Crop(11)

Wind speed of a typhoon
Rainfall
Heavy rain
Rainless
Temperature

Watermelon Jujube
Red Beans Tankan
Pomelo Lychee
Papaya Pear
Persimmon Guava
Wax Apple

Regional Crop Yield Insurance

Risk(4)

Crop(3)

Typhoon Pest
Rainfall Temperature

Rice
Pineapple
Mango

Disaster Relief Linked Insurance

Risk(3)

Crop(2)

Wind speed of a typhoon
Rainfall
Temperature

Mango
Pear

Crop Revenue Insurance

Risk(2)

Crop(4)

Natural disaster
Lower price

Sugar Apple
Banana
Rice
Sorghum

First Loss Insurance

Risk(3)

Crop(2)

Typhoon
Rainfall

Banana
Pear



Agricultural Insurance Strengthen farmer's resilience

Strengthen farmer
resilience

Social need X Core competence

Develop agricultural insurance products with different policy types according to different regions and products to help farmers transfer various risks arising from climate change.

Insurance Products



Guava Insurance



Parametric Insurance



Mango Insurance



Regional Crop Yield Insurance



Disaster Relief Linked Insurance



Strengthen the Resilience



Subsidy

Farmers can receive **the subsidy for 50% of premiums** by the government.



Claims Settlement

By using the automatic comparison system with the weather observatory, we can **inform customer immediately and initiatively**.

- The maximum gust of wind is above 10 level and accumulated precipitation is above 300mm for five consecutive days for guava insurance.
- Over 20% damage losses for mango insurance.



Impact

Sum insured NT\$ 18 million for benefited farmers in 2022.

A panoramic view of Taipei, Taiwan, taken from a high vantage point. The Taipei 101 skyscraper is the central focus, standing tall among other city buildings. The sun is setting on the left, creating a warm, golden glow over the city and the surrounding mountains. The sky is filled with scattered clouds, and the foreground shows lush green vegetation and some dry grasses.

*Best **In** the world*

*Best **For** the world*

Thank you!

