

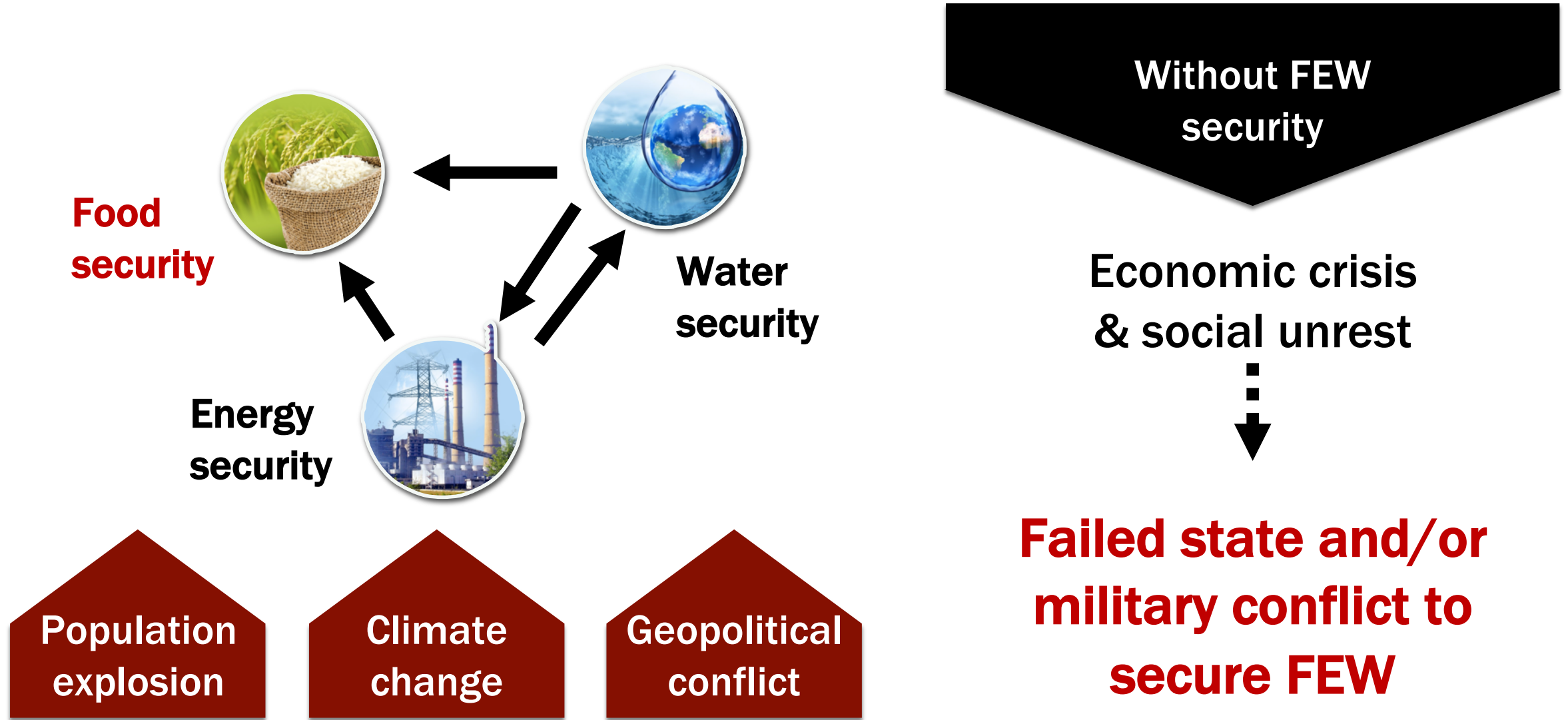


# **Indonesia Minister of Defense Keynote**

# **Global Food Security**

November 2022

# F.E.W. is our most important security challenge



# Food security vs food insecurity



**United, informed, far sighted political elites  
unshaken by interest of traders**



**Global / national  
food security**

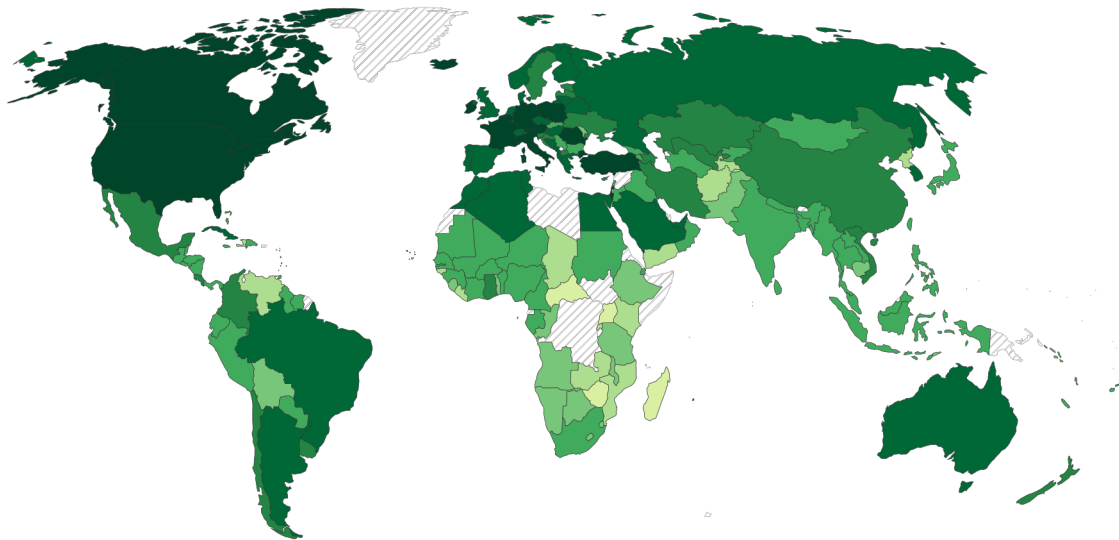
**Fragmented, uninformed, near sighted political  
elites corrupted by interest of traders**



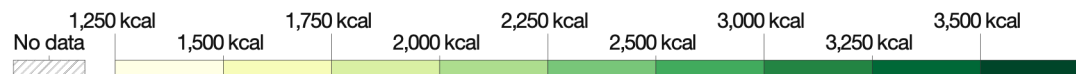
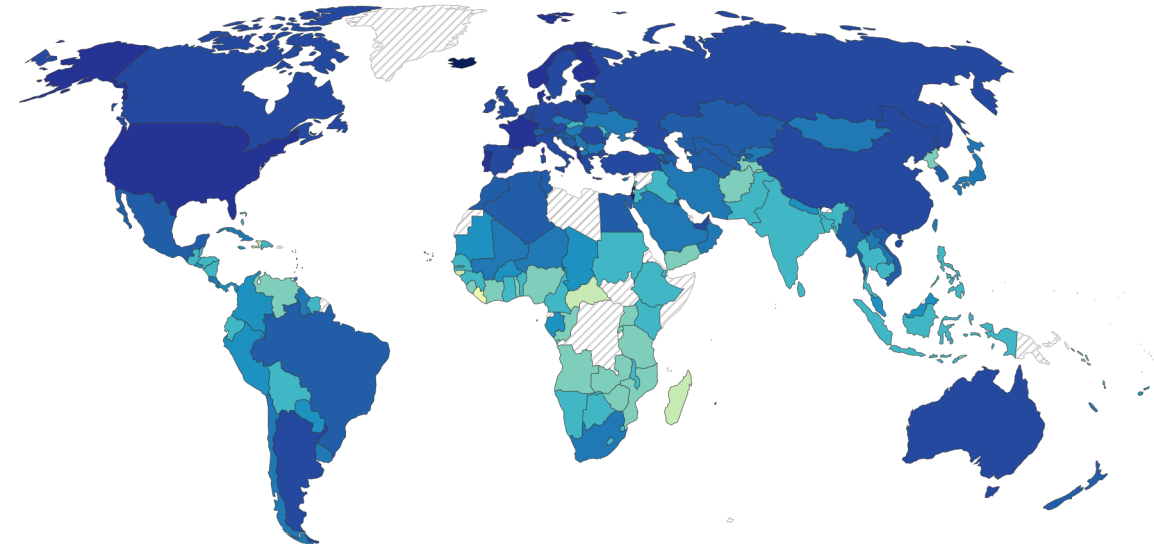
**Global / national  
food insecurity**

# Food security goal: Feeding 8 billion people

Calorie supply / day / capita



Protein supply / day / capita

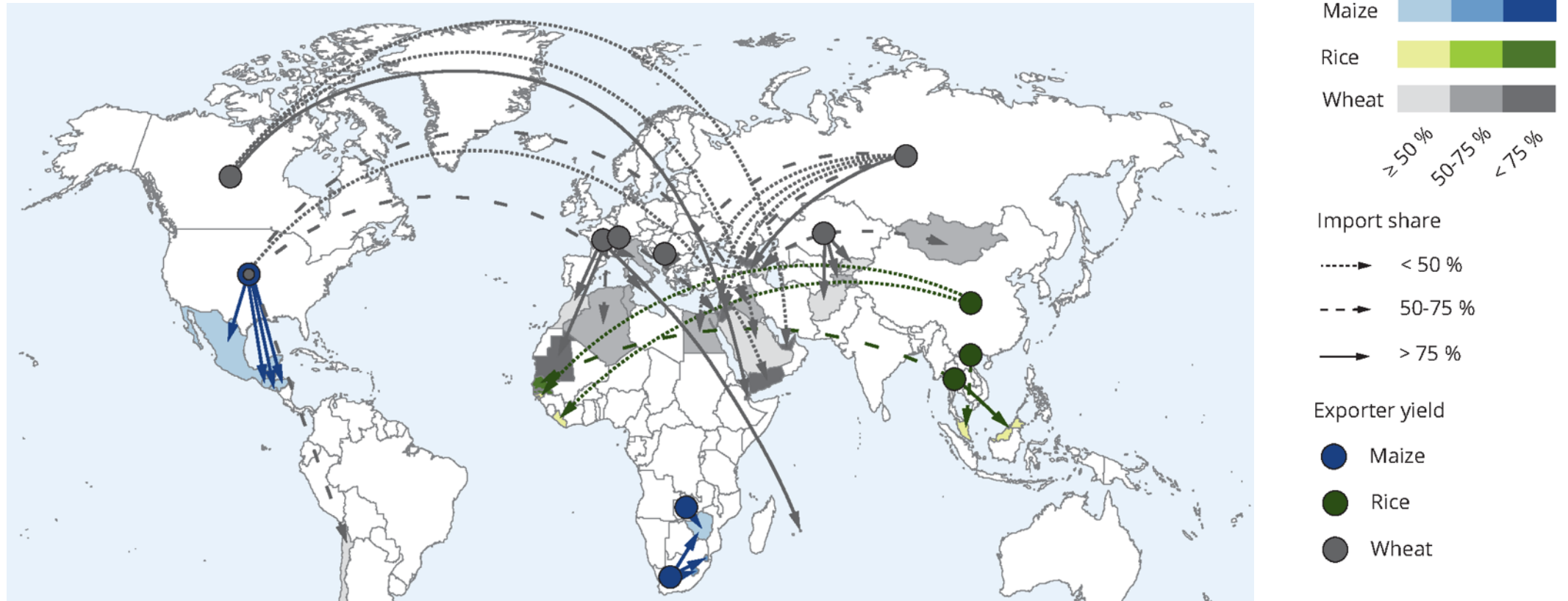


We need to ensure global food availability and affordability to reach zero hunger (SDG # 2)



# Food security essential: Food trade security

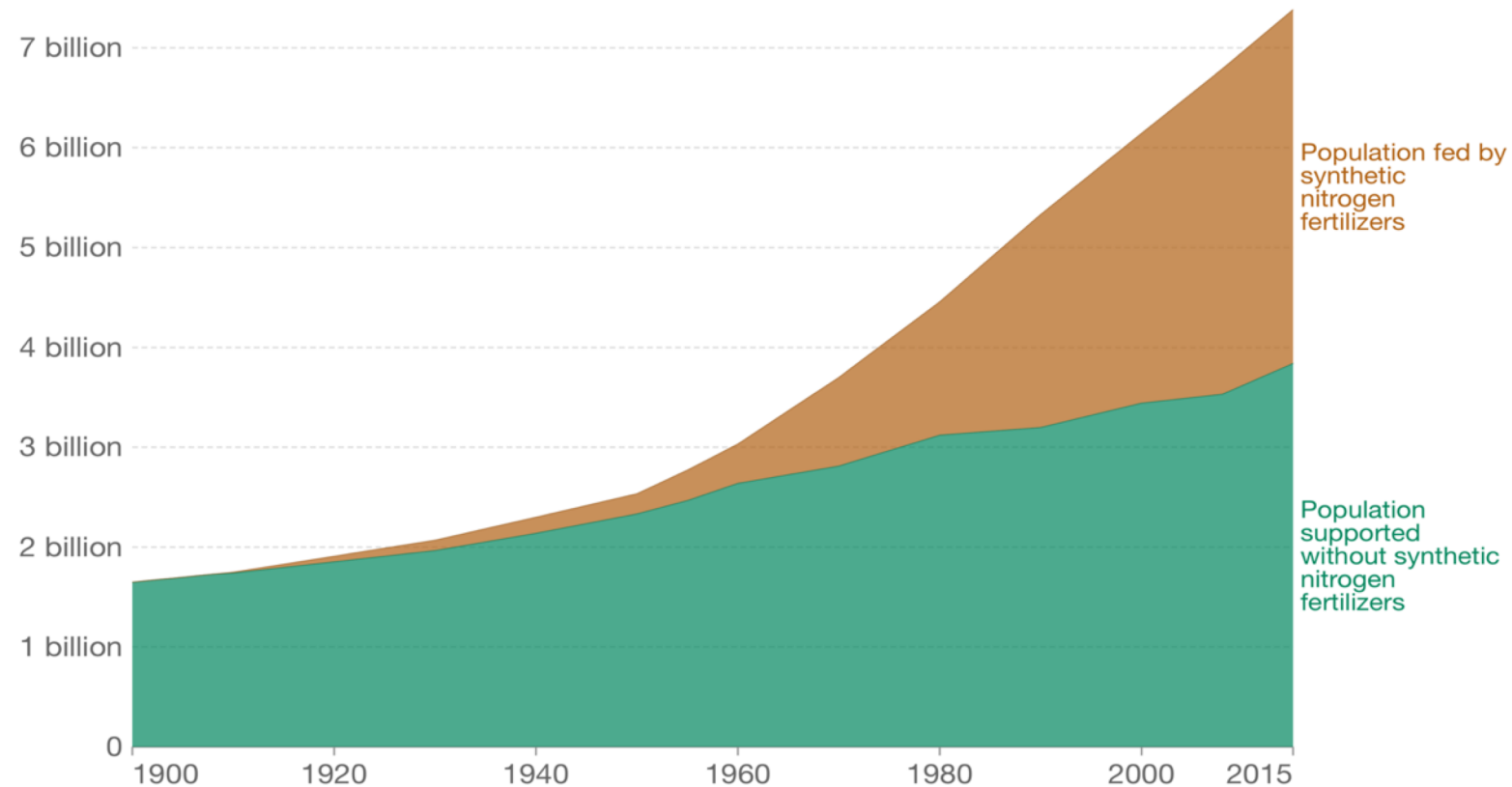
## Food trade map for countries reliant on calorie import



Disruption in food trade security is detrimental to countries dependent on calorie import

# Food security essential: Synthetic fertilizer

Share of synthetic fertilizer in world calorie production

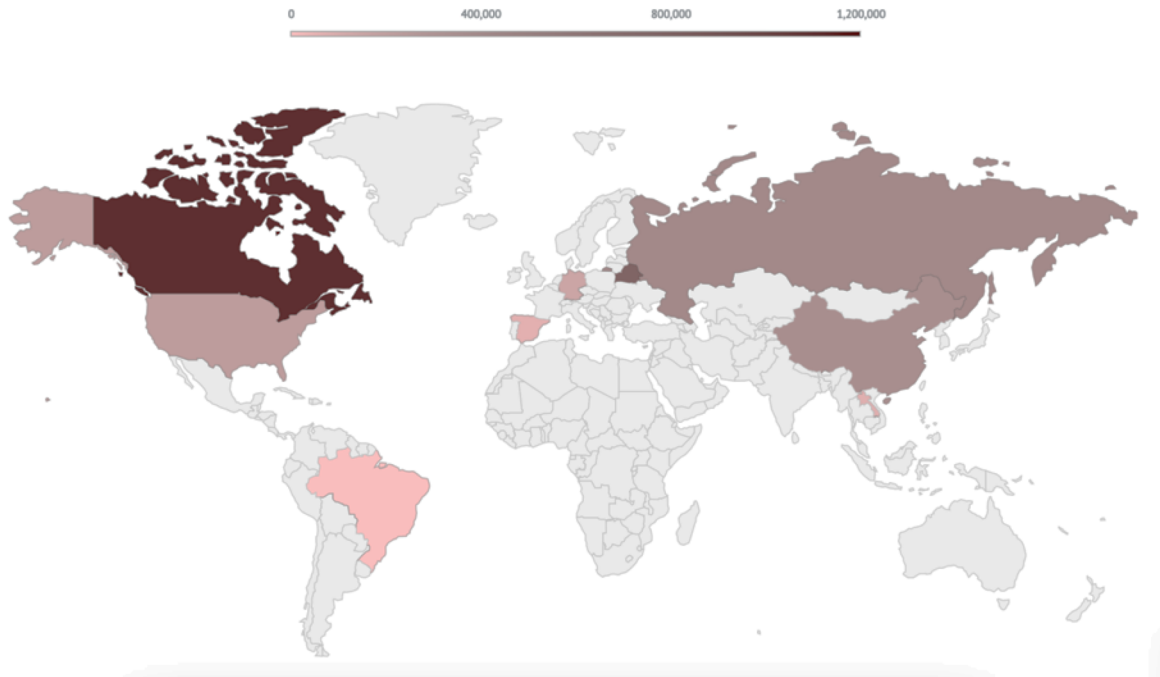


50% of world calorie production relies on availability and affordability of synthetic fertilizers

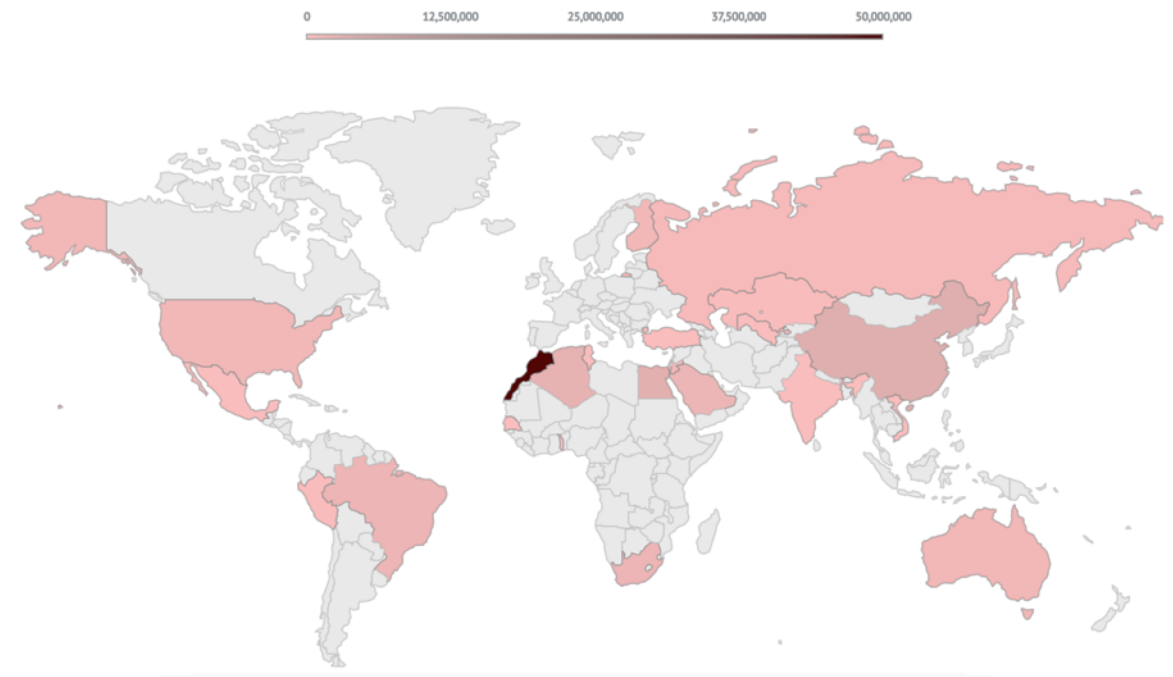
# Food security essential: Potash and phosphate



Recoverable potash reserve



Recoverable phosphate reserve

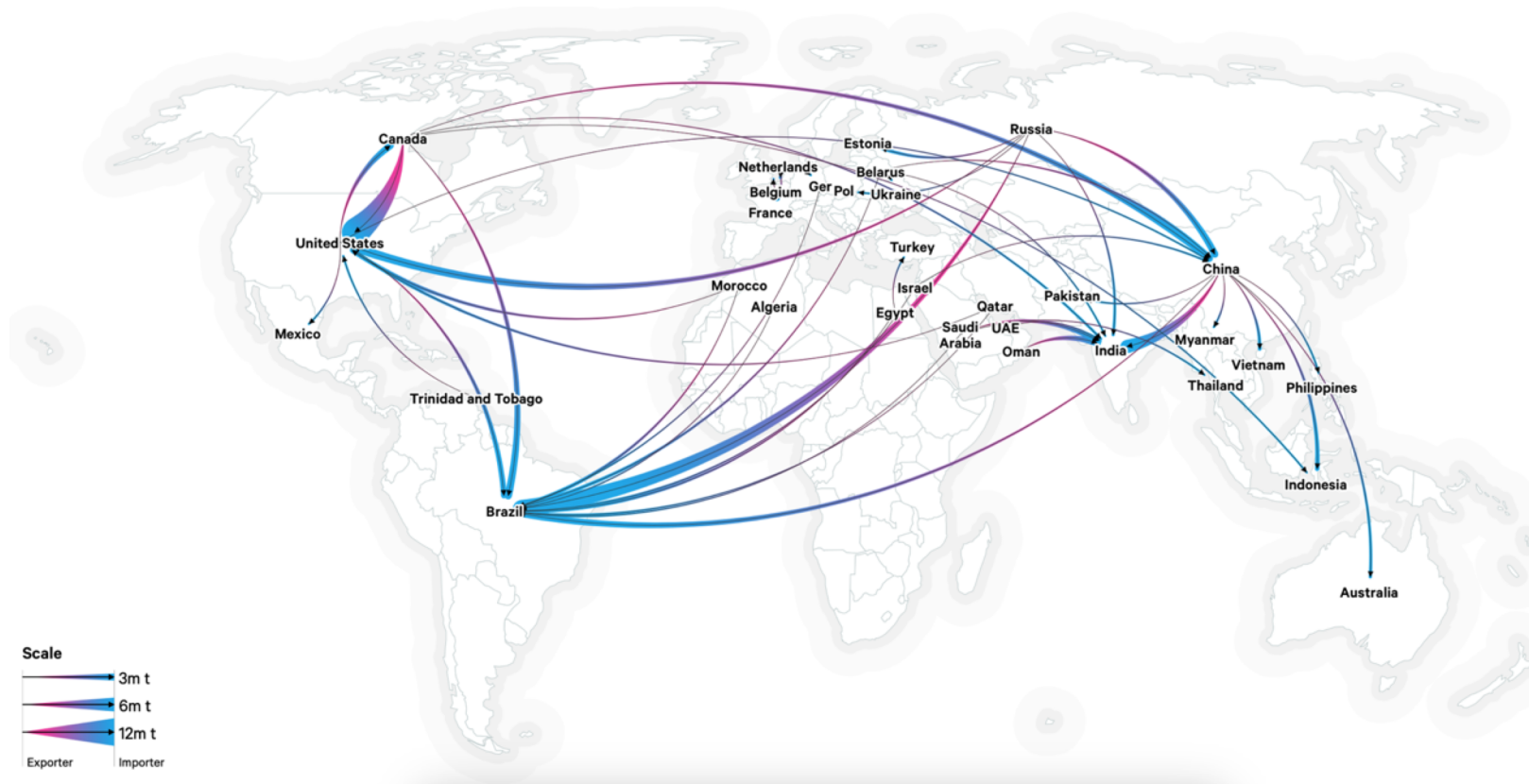


Unequal availability of potash and phosphate means some countries will always rely on imported fertilizer to sustain their in-country calorie production

# Food security essential: Fertilizer trade security



Key global fertilizer trade map

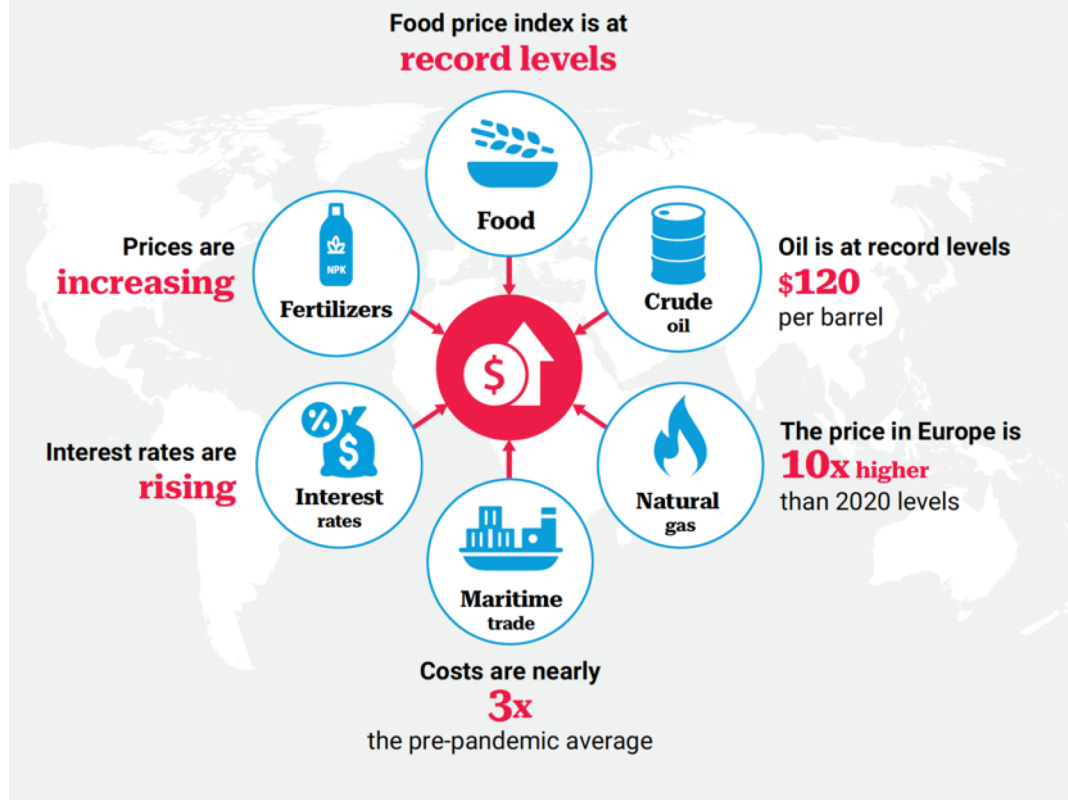


Disruption in food or fertilizer trade security is detrimental to global food security

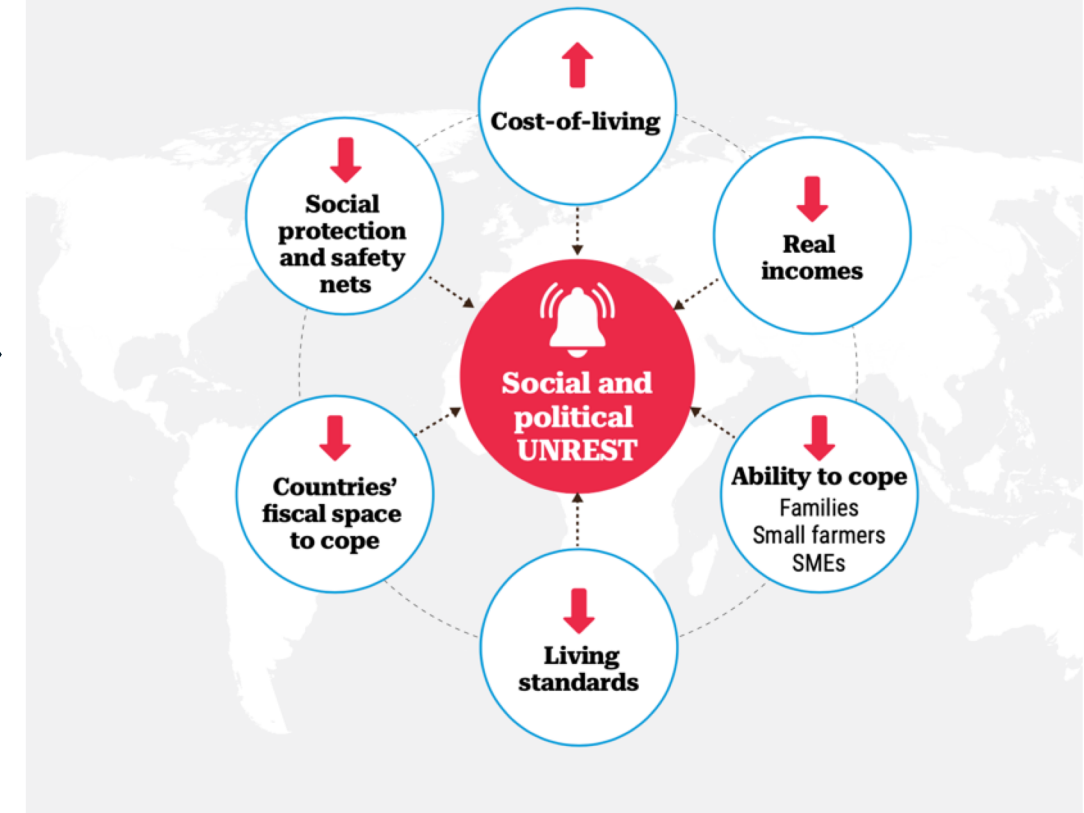


# Food security: Unprecedented global challenge

## Vicious cycles are emerging



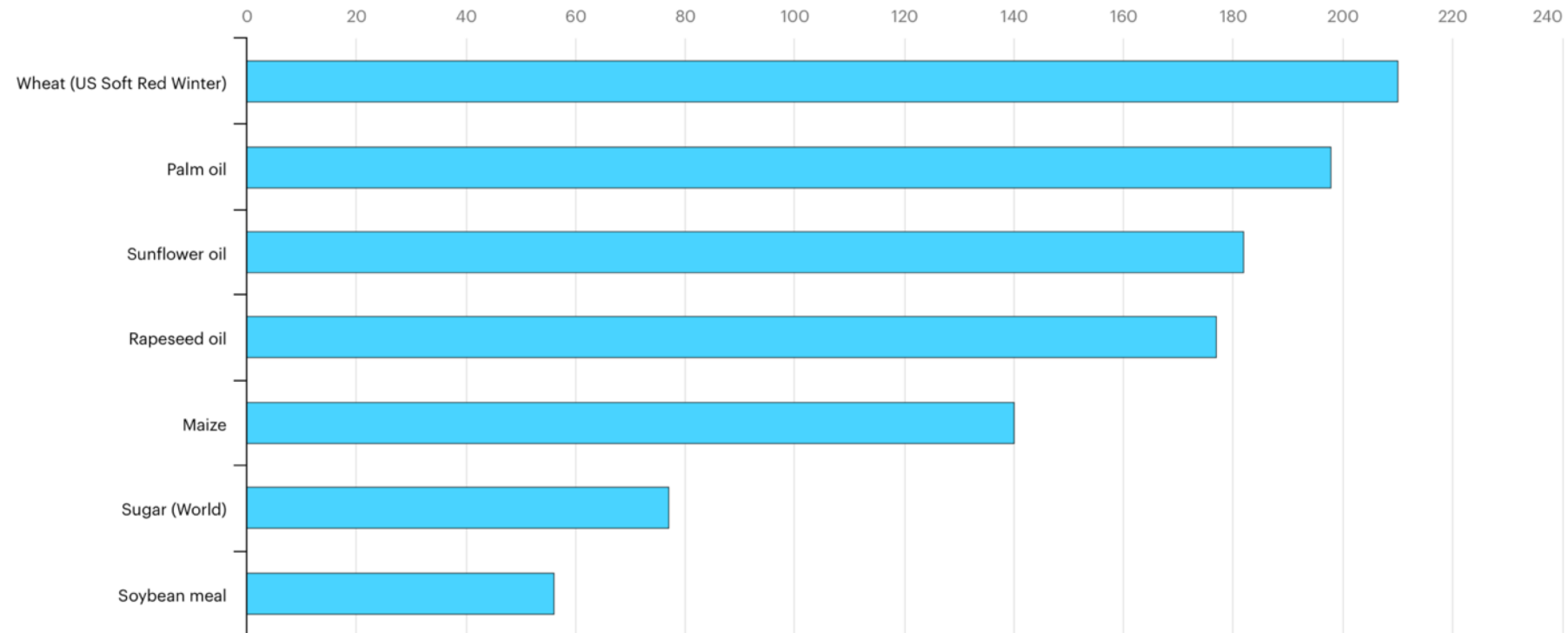
## Vicious cycles may trigger social and political unrest



**COVID 19 pandemic and War in Ukraine has severely impacted 107 countries & 1.7 billion people**

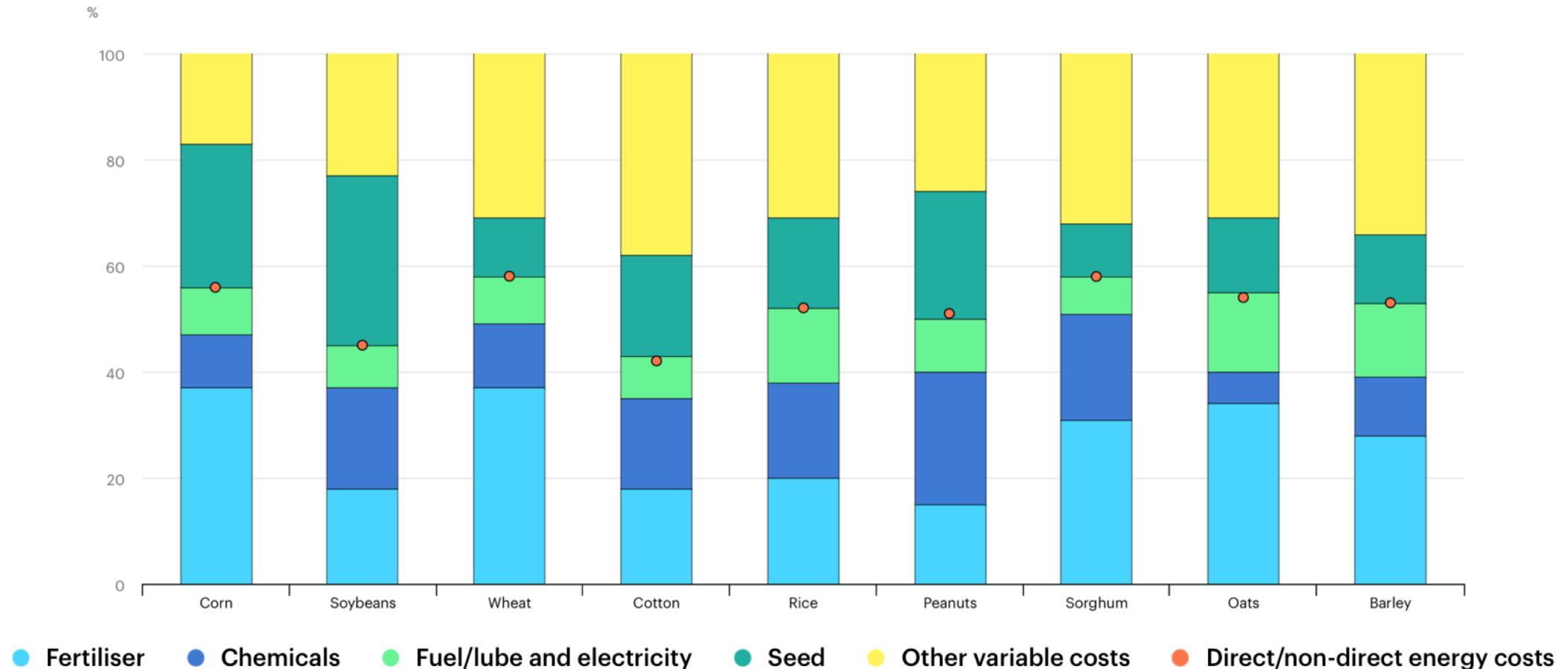
# Food security: Global affordability crisis

Percentage (%) rise in food prices, 2020 to 2022



**Price of food inflation has induced record-level inflation and affordability crisis.  
In Europe, combined with rising energy prices, some are forced to choose between “heat” or “eat”**

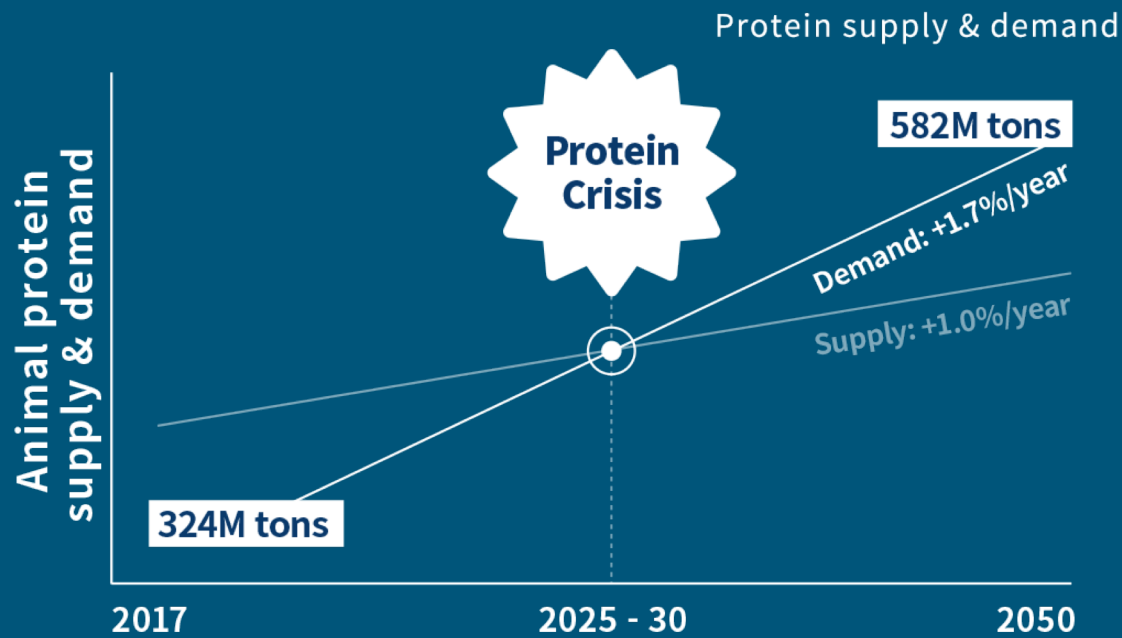
# Food security essential: Affordable energy



**Energy cost contributes 40 to 60% of costs associated with food production, hence ensuring availability and affordability of energy is essential to ensuring global food security**

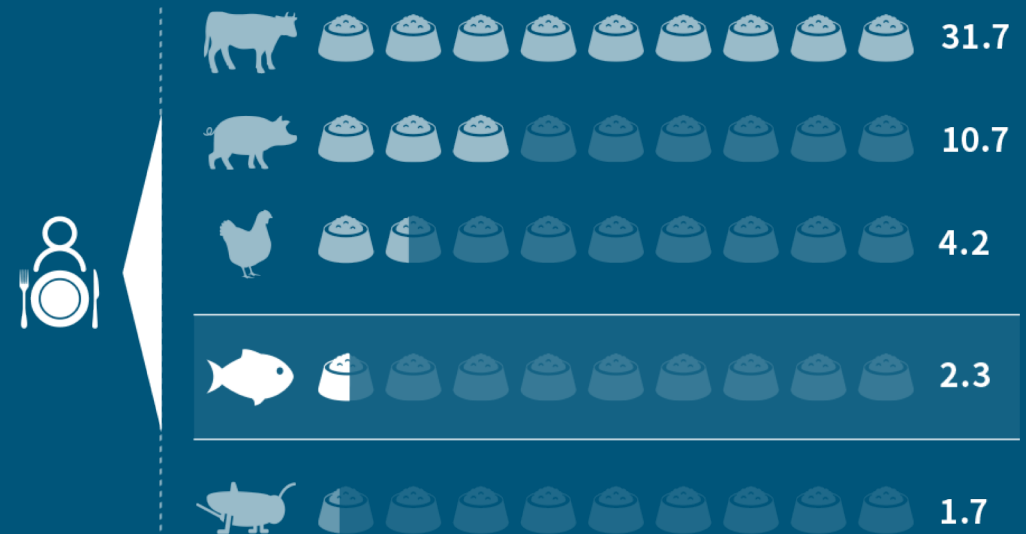
# Food security essential: Aquaculture

## Protein Crisis — protein demand exceeds supply



## Fish is a super-efficient protein source

Amount of feed required to gain 1kg bodyweight (kg)



Increasing world aquaculture output is essential to meeting protein demand & food security



# Food security: Indonesia's strategic position



**23 mn HA of arable  
land**

**120 mn HA of forest  
area**

**Stable climate and  
ability to grow all year  
round**

**325 mn HA of marine  
territory**

**23 mn HA of marine  
protected area,  
increasing to 30 mn HA**

**~60% of global trade  
pass thru Indonesia**

# Global food security: Indonesia's current role



**World no. 1 grower of palm oil:**

**~42 million MT / year**



**World no. 5 grower of cassava:**

**~18 million MT / year**



**World no. 2 producer of capture fisheries:**

**~7 million MT / year**



**Self sufficient in rice production:**

**~33 million MT / year**



**World discovery & patent for wheat flour equivalent (MOCAF) from cassava**



**World no. 1 grower of seaweed:**

**~10 million MT / year**



**Indonesia is Co-Chair of the United Nations Global Crisis Response Group on Food, Energy & Financial Security**



**Indonesia is President of G20 advocating for Global Food Security**

# Cassava: Bill Gates' favourite crop




Tweet



**Bill Gates** ✓  
@BillGates  
Official

Cassava is the most interesting vegetable in the world. Six reasons it's so fascinating:

Bill Gates has poured > USD 50 million in cassava research: Developing drought and disease resistance in addition to boosting vitamin content




SMART NEWS

Cool Finds

## How the Gates Foundation Is Making Cassava the Next Corn

Sophisticated plant breeding techniques (but no GMOs) and lots of money are aimed at improving this staple crop of the tropics

**Maris Fessenden**  
Former correspondent  
October 24, 2014



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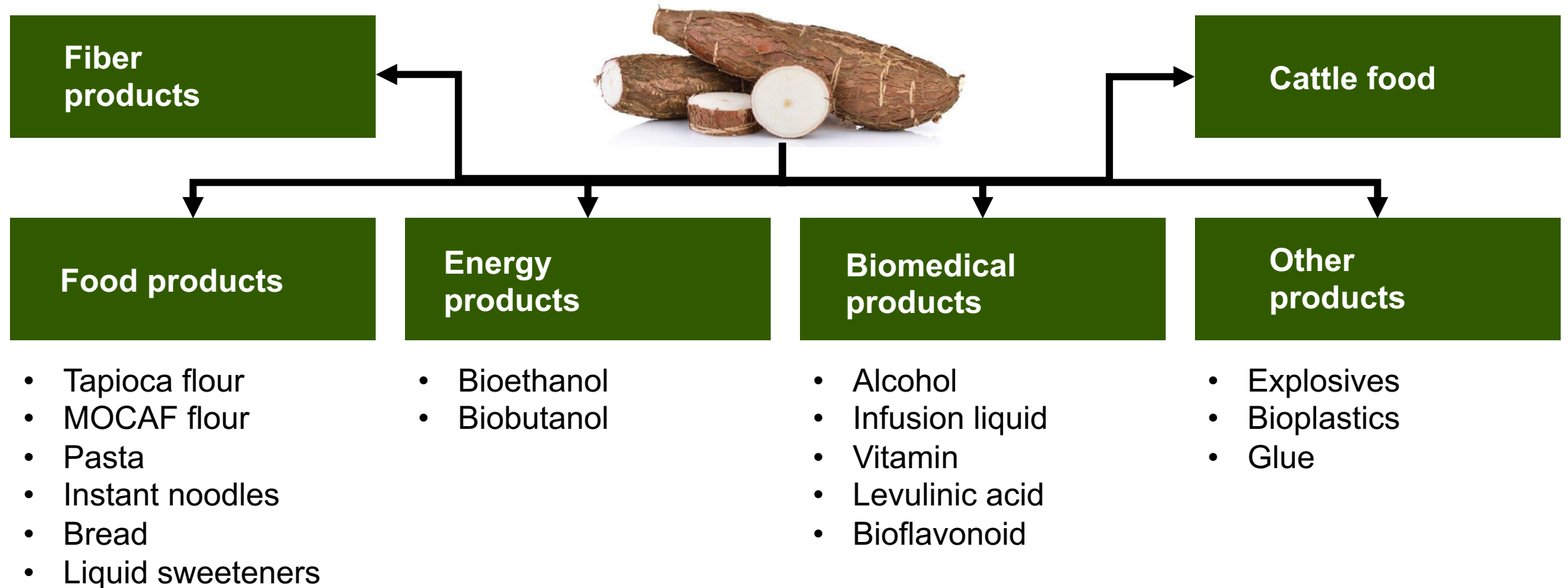
**Opinion**

## I used to take cassava for granted - but it could help to wean the world off wheat

Global development is supported by

**BILL & MELINDA GATES foundation**

# Cassava: A strategic food crop



In addition to food, cassava has multiple high value end products



# Cassava: Production efficiency vs other crops



	Unit	Cassava	Rice	Wheat	Maize / Corn
<b>Calorie production</b>	Calorie per hectares	<b>250.000</b>	176.000	111.000	200.000
<b>Water requirement</b>	m3 of water per metric ton	<b>65</b>	1.139	954	850
<b>Fertilizer requirement</b>	Kg per ha	<b>N = 55 P = 13 K = 112</b>	N = 60 P = 7,5 K = 13	N = 56 P = 12 K = 13	N = 96 P = 17 K = 26

**Cassava creates most calories per hectare and uses least water compared to other crops**

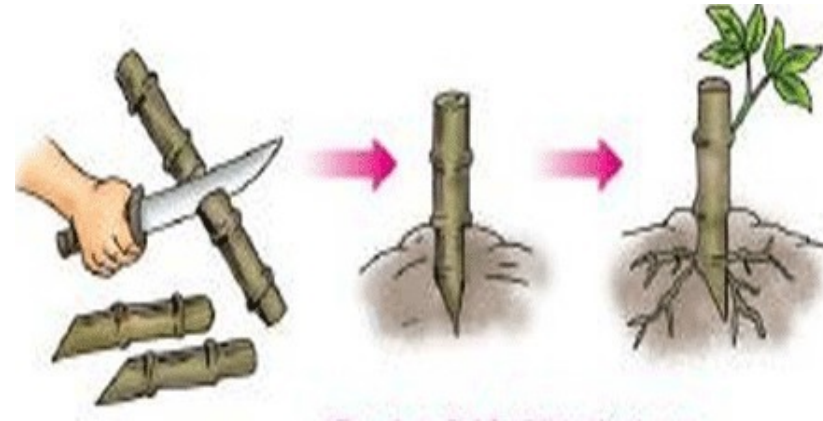
# Cassava: Health benefits and our advantage

## Cassava health benefits



- 1 100% Gluten free
- 2 Healthy source of fiber
- 3 Low glycaemic index
- 4 High in iron and calcium

## Cassava productivity in smallholder farms



- 1 Indonesia = 23 tons per ha
- 2 Thailand = 22 tons per ha
- 3 Vietnam = 16 tons per ha
- 4 China = 16 tons per ha

# Cassava: Best crop for climate change

## Cassava key to food security because of its climate change resilience

Cassava is a "survivor" crop, able to thrive in the expected higher temperatures caused by climate change. An alliance of scientists has recently been formed to help promote cassava cultivation. The 300 scientists attending the second *International Scientific Conference of the Global Cassava Partnership for the 21st Century*, held in Kampala Uganda presented a new initiative called *Global Cassava Modelling Consortium*. The Consortium aims to help researchers share information on this increasingly important crop, to better understand the physiology of the plant and to explore avenues for protecting it from attacks.

Keywords [Adaptation policies](#) [Cassava](#) [Hunger](#) [Resilience and vulnerability](#) [Sustainable food security](#)

The researchers showed how the tuber becomes even more productive in hotter temperatures and outperformed potatoes, maize, beans, bananas, millet and sorghum - some of Africa's main food crops. With cassava being the second most important source of carbohydrates in sub-Saharan African after maize its importance for food security was highlighted by researchers at the conference. They described how East Africa could increase the cassava production up to 10 percent if temperatures rise as predicted. Likewise production is likely to grow in Western Africa with a slightly smaller increase in production in Southern Africa.



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*Special Section: Agrarian transformation in Thailand - commodities, landscapes, and livelihoods*  
Research Article

## Cassava as an insurance crop in a changing climate: The changing role and potential applications of cassava for smallholder farmers in Northeastern Thailand

Anan Polthanee<sup>1,\*</sup>

<sup>1</sup> Program on System Approaches in Agriculture, Faculty of Agriculture, Khon Kaen University, Thailand.  
E-mail: panan@kku.ac.th

\* Corresponding author

**Abstract:** Approximately 80 percent of the 22 million people in Northeastern Thailand are engaged in agriculture, and the per capita income of the region is lower than in any other part of Thailand. The major constraint to crop production is rainfall. Although the region has an average annual rainfall greater than 1200 mm, the seasonal distribution of rainfall makes for challenging agricultural cultivation opportunities. The climate is characterized by rainy (May-October) and dry (November-April) seasons. Most (90%) farming is cultivated under rainfed conditions. In addition, most soils are characterized by a sandy texture, high acidity, low organic matter, low level of plant nutrients and low water holding capacity. Due to these conditions, and an increasingly unpredictable climate horizon, cassava has come to play an important economic role for smallholder farmers in the region. The inherent tolerance of cassava to stressful environments, requires minimal care, less investment, and provides greater flexibility in planting and harvesting. Although cassava is grown as a monoculture crop, it can also be grown profitably as a second crop in rice-based cropping systems without supplemental irrigation during the dry season, as well as intercropped in rubber plantations at early growth stages. Given the importance of cassava in farmer income, export values, marketing, and labor, this paper discusses the broader socio-economic and biophysical aspects of cassava due to its important role in future agrarian change for the region.

**Keywords:** Cassava; stakes-soaking; double-cropping; intercropping; socioeconomics of smallholders; agrarian change; climate change; Thailand

Experts conclude climate change will boost cassava production.  
Cassava plantation will also absorb 40 to 80 tons of carbon per hectare per annum.



# Cassava: Products in the Indonesian market



Cassava flour (MOCAF), tapioca flour, pasta, noodles, the bubble in bubble tea, etc





21



# Cassava: Industrial process in Indonesia



The inventor of MOCAF, Prof. Subagio and the leading innovator for cassava factory design and operations, Mr. Fidrianto are in the room with us today.



# Indonesia MOD: Strategic logistics reserve



**To boost food security, Indonesia MOD's Strategic Logistics Reserve unit manages food estates in strategic locations around Indonesia, pictured here in Cianjur, West Java**

# Global food security: Indonesia's future role

Land-based  
calorie  
production



World no. 1  
exporter of  
wheat flour  
equivalent  
(MOCAF)  
from cassava

Sea-based  
protein  
production



World no. 1  
exporter of  
sustainable  
marine  
aquaculture  
production



World no. 1  
exporter of  
sustainable  
shrimp  
aquaculture  
production



World no. 1  
exporter of  
sustainable  
lobster  
aquaculture  
production



# F.E.W. is our most important security challenge



**In conclusion**

**To successfully handle this challenge requires:**

- 1. Global peace**
- 2. Global partnership**

**We can't have global food security without global peace and partnership.**

