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# AGRIBUSINESS FORUM

INTERNATIONAL EDITION

The Agri & Food Sector in the  
New Geopolitical Environment

18 - 19 March 2026

Sarogleion Megaron Athens

REPORTS EN

## Foreword

We are experiencing a period where geopolitics has once again moved to the center of economic and international relations. The agrifood sector stands at the heart of this evolving landscape, as food security, trade dynamics, energy transition, and climate change shape a world marked by heightened uncertainty.

Recent years have confirmed that agrifood systems are far more than economic activities. They represent a strategic pillar of national security, social stability, and international cooperation. Geopolitical tensions, conflicts, trade restrictions, and disruptions in global supply chains directly affect the production, distribution, and accessibility of food.

In the broader Eastern Mediterranean region in particular, where diverse geopolitical interests intersect, agrifood systems are increasingly linked to geo-economic strategies, energy policies, and sustainable development. Diversifying trade relations, strengthening regional cooperation, and building resilient agrifood systems are therefore becoming critical priorities.

At the same time, technological innovation is reshaping the way food is produced, managed, and distributed. Artificial intelligence, big data, and digital platforms offer new opportunities to increase productivity, improve traceability across value chains, and better anticipate economic or environmental shocks. Yet, technological progress must be supported from policies that ensure access, education, and a fair transition for farmers and rural communities.

Equally important are the pressures stemming from climate change and the global energy transition. Agriculture must adapt to new environmental realities while contributing to decarbonization and sustainable resource management. Climate-smart agriculture, circular bioeconomy models, and innovative partnerships between academia, business, farming sector, and public institutions will play a decisive role in shaping the future of food systems.

In this context, international cooperation becomes more essential than ever. Knowledge exchange, coordinated policies, and innovation-driven collaboration can transform today's challenges into opportunities for sustainable growth.

The agrifood sector is not merely an economic activity. It is a cornerstone of resilience, development, and stability. In an increasingly uncertain geopolitical environment, investing in resilient and sustainable agrifood systems ultimately means investing in the future of our societies.

Giannis Balakakis  
Chair, AgriBusiness Forum

## 1. Strategic Landscape: The Transition from Globalization to Fragmentation

The global strategic landscape is currently defined by a "poly-crisis"—a convergence of pandemic recovery, climate instability, and high-intensity conflicts in Ukraine and the Middle East. AgriBusiness Forum observes a fundamental paradigm shift: “we are moving from a world where economics defined everything to a New World Order where geopolitics defines economics”.

The "geopolitical pendulum" is swinging away from the era of hyper-globalization toward a period of intense fragmentation. This transition is projected to endure for at least 15 years, as global trade routes have shifted from reliable infrastructure to contested Strategic Assets.

### Critical Choke Points and Agrifood Transit Impacts

Choke Point	Strategic Significance and Impact on Agrifood
Straits of Hormuz	Critical for energy flows; most importantly, it is a primary exit point for fertilizer exports, a global vulnerability.
Red Sea / Bab al-Mandab	Disrupted by Houthi activity since late 2023; forced rerouting around Africa has increased logistics costs and spoilage risks for perishables.
Bosphorus - Turkish Straits	The primary conduit for Black Sea wheat; its stability is essential to preventing food price shocks in the Global South.
Panama Canal	Subject to extreme climate-induced capacity limits and the shifting influence of United States regional control in a fragmented trade environment.
Danube Corridor	A vital inland artery carrying approximately 23% of regional agricultural products; increasingly targeted as a strategic alternative to maritime routes.

## 2. The Middle Corridor and Regional Connectivity

The Balkans, Black Sea, and Eastern Mediterranean now function as a Strategic Hinge, a critical junction between global production zones and consumption markets. Stability in this region is no longer a localized concern but a prerequisite for international trade diversification and "Agro-diplomacy."

The conflict in Ukraine has fundamentally altered the wheat trade, shifting the Global South's perception of Western geopolitics. African and Mediterranean nations increasingly view themselves as the unintended casualties of European conflicts, driving an urgent strategic pivot toward Food Sovereignty and reduced import dependency.

## 3. Economic Analysis: The \$10 Trillion 'Hidden Costs' of Food Systems

According to FAO analyses, the current agrifood value chain produces between \$10 trillion and \$11 trillion in annual externalities. These "hidden costs" represent a massive economic distortion that is not reflected in market pricing but is absorbed by national budgets.

### Categories of Externalities

1. Health Costs: Economic morbidity linked to unhealthy diets, obesity, and the resulting multi-billion-dollar strain on national healthcare systems.
2. Environmental Costs: Carbon emissions, biodiversity loss, and the long-term degradation of soil and water resources.

3. Social Costs: Deepening inequalities and the vulnerability of rural populations who produce food but cannot afford high-quality nutrition.

### **The Value Chain Distortion**

The current economic distribution within the agrifood sector represents a National Strategic Risk:

#### 1. Retail and Logistics Capture:

- \* The retail sector captures 45-50% of total value.
- \* Logistics and intermediaries capture 10-12%.

#### 2. Primary Producer Vulnerability:

- \* Farmers capture a mere 5-10% of the final value.
- \* Strategic Insight: This 5-10% frequently includes Common Agricultural Policy (CAP) subsidies.

Without these interventions, the market-driven return to the producer is effectively negligible, leading to the catastrophic abandonment of the primary sector.

## 4. The Mediterranean Water-Energy Nexus and Scarcity Risks

Water has transitioned from a basic resource to a Strategic Asset essential for national resilience. The Mediterranean is currently experiencing structural scarcity that requires a high-intensity technological response.

### **Comparative Strategic Models**

- The Israeli "Multiplier" Model: Compensates for resource scarcity through technology. Includes desalination, 90% water recycling (sewage and brackish), and precision irrigation.
- The Greek and Cypriot Challenge: Characterized by aquifer degradation from deep-well drilling, high energy pumping costs, and a lack of billing discipline that converts water debt into a socialized public liability.

### **Climate-Induced Strategic Risks**

Prognostic models at a 1.0 km detailed scale identify the following risks for the Mediterranean over the next 20 years:

- Permanent Soil Humidity Loss: Driven by rising temperatures and high evaporation rates.
- Wildfire and Flammable Material Risks: A direct sequel to prolonged drought, threatening both crops and infrastructure.
- In-Situ Analytical Requirements: The disaster at the Harkovo (Kakhovka) barrier highlights the need for mobile analytical tools to detect drugs, pesticides, and explosives in flood-damaged agrifood products.

## 5. Technological Sovereignty and AI Strategy

Digital Sovereignty is now a core component of state resilience. National security in the agrifood sector depends on a state's ability to manage its data ecosystems as effectively as its land and water.

The "AI-Ready" Data Ecosystem

### Actionable intelligence requires three pillars:

1. AI-Ready Data: Harmonized, structured, and "noise-free" data.
2. Trustworthy Ecosystems: Secured platforms like the Agri-Food AI Data Hub at the Agricultural University of Athens for controlled data sharing.
3. Prognostic Experience: Shifting from reactive management to predictive modeling (e.g., identifying ground stress before crop failure).

### Adversarial AI and PDO Vulnerability

A critical strategic vulnerability is data contamination in adversarial environments. "Fake News" or tampered data in training algorithms can lead to the misidentification of fraudulent vendors or the failure to protect Protected Designation of Origin (PDO) products like Feta. To counter this, goods must possess a "Digital Passport" that combines chemical and DNA fingerprinting with metadata.

## 6. Institutional Frameworks: The "Triple Helix" and Financial Instruments

Resilience requires the Triple Helix model: the synchronized operation of Academia, Industry, and Finance to commercialize R&D and scale innovation.

### Strategic Financial Benchmarks

- \* The Italian Model: Bonifiche Ferraresi serves as a benchmark for state-supported agribusiness, investing in foreign production (Libya, Ethiopia) to secure national supply chains.
- \* Green Financing: The transition from a subsidy-dependent CAP to Carbon Markets (scheduled for 2028). High-emitting industries will buy credits from farmers who sequester carbon, turning sustainability into a revenue stream.

### National Strategic Requirements for Greece and the Mediterranean

To secure agrifood systems against geopolitical shocks, the following four requirements are mandatory:

1. National Authenticity Centers: To defend high-value exports (Olive oil, Feta, honey) against global fraud through advanced chemical profiling.
2. Transition to "Smart Greenhouses": Moving from wooden structures to climate-controlled, high-intensity technology to ensure production stability.
3. Interoperable Traceability Networks: The implementation of "Digital Passports" to verify every stage of the value chain.
4. Financial Literacy & Independent Agricultural Chambers: An independent Agricultural Chamber is required to address the financial illiteracy of an aging producer base and to coordinate national agrifood strategy effectively.

## Executive Summary

The global agrifood system is currently at a **historical crossroads**, facing a "poly-crisis" defined by geopolitical fragmentation, climate emergency, and rapid technological disruption. The forum established that food security is no longer merely a technical or agricultural issue but a **core pillar of national security, social stability, and strategic readiness**. To ensure future resilience, international organizations must shift from traditional subsidy-based models to **innovation-driven, fair-value ecosystems**.

“

να γινόμαστε όλο και καλύτεροι  
αυτό θέλουμε, ένα καλύτερο αύριο

για εμάς και τα παιδιά μας  
να είμαστε πιο ασφαλείς  
πιο προστατευμένοι, πιο έτοιμοι  
κάθε μέρα, κάθε στιγμή

γι' αυτό προσπαθούμε, γι' αυτό μαχθούμε  
με δύσκολους καιρούς, ακραίες θερμοκρασίες

γι' αυτό δίνουμε στη γη αυτό που χρειάζεται  
δίνουμε στην φύση αυτό που πρέπει, όπως πρέπει  
σεβόμαστε το χώμα που μας θρέφει, που μας μεγαλώνει,  
εδώ και 60 χρόνια!

3 γενιές, γνώσης, έρευνας, καινοτομίας  
γι' αυτό και ξέρουμε πως να ετοιμαστούμε για το μέλλον

”

**ΜΑΖΙ  
ΣΤΟ ΑΥΡΙΟ.  
ΣΗΜΕΡΑ.**



**Dekagro**

Nutrition Intelligence



# Analysis by Chapter

**Day 1: Wednesday, March 18, 2026**

**Understanding the Agri-Food Geopolitical Landscape**



The world has entered a period of systemic transition, moving away from a decade-long era of globalization and free trade toward a period of fragmentation and protectionism. **Food security is identified as the most significant geopolitical factor in history**, acting as both a catalyst for societal revolution and a casualty of regional conflict. As the "pendulum" of global order swings from economic rationalism toward security-centric policies, nations are increasingly prioritizing resource accumulation over market efficiency. Key risks include the vulnerability of maritime "choke points" and the obsolescence of post-WWII international institutions. The next 4 to 15 years are projected to be a period of significant instability as **the world reorganizes into regional continental systems driven by national identity rather than economic logic**.

### 1. The Geopolitical Dimension of Food Security

Food security is characterized not merely as a matter of trade, but as a fundamental driver of geopolitical stability and change.

#### Food as a Catalyst and Consequence

The relationship between food and stability is cyclical:

- **Cause of Instability:** Historical precedents, such as the French Revolution, demonstrate that famines and food scarcity can trigger massive societal shifts and the overthrow of existing orders.
- **Consequence of Conflict:** Geopolitical tensions in the 20th century resulted in staggering death tolls due to manufactured or conflict-induced food insecurity.
  - **Ukraine (Holodomor, 1932–33):** 3 to 7 million deaths.
  - **China (1959–1961):** 15 to 40 million deaths.
  - **Ethiopia (1983–1985):** Approximately 1 million deaths.
  - **North Korea (1995–1998):** Approximately 1 million deaths.

#### Food as a Diplomatic Tool

Strategic exports have historically served as a mechanism for de-escalation. A notable example is the 1972 U.S. export of wheat to the Soviet Union, a gesture that influenced more peaceful relations between the two superpowers during the Cold War.

## 2. The Transition from Globalization to Fragmentation

The global order is currently shifting from a system of integration to one of fragmentation, a process referred to as a "poly-crisis."

- **The End of Economic Rationalism:** For decades, organizations like the OECD promoted free trade under the assumption of geopolitical stability guaranteed by U.S. naval and political hegemony. This "policing" function ensured a global community where economic benefit was the primary driver.
- **The Swing Toward Security:** Following the COVID-19 pandemic and the Russian invasion of Ukraine, the focus has shifted. Nations have realized that relying on "just-in-time" global supply chains for essential goods (such as medicines and food) creates dangerous vulnerabilities.
- **Resource Accumulation:** Modern state behavior—notably in China—now emphasizes the accumulation of food and raw materials to survive potential crises, even when such accumulation defies economic efficiency.
- **The Transitional Period:** The world is entering an "in-between" period of 4 to 15 years characterized by trouble and instability as a new world order takes shape.

## 3. Maritime Vulnerabilities and "Choke Points"

Because maritime transport is the least expensive means of moving agricultural commodities, the control of sea routes has become a primary geopolitical objective.

Choke Point Region	Strategic Importance	Current Risk Factor
Strait of Hormuz	Controls transit for Persian Gulf production.	Tensions involving Iran; disruption of energy and fertilizer exports.
Red Sea / Yemen	Vital link for trade between Asia and Europe.	Regional warfare and attacks on shipping.
Malacca Straits	Key transit point for Asian trade.	Vulnerability to regional maritime blockades.
Panama Canal	Essential for Western hemispheric trade.	Shift toward U.S. efforts to unify control over the American continent.
Black Sea	Export route for Ukrainian and Russian wheat.	War-related inability to export, impacting the Global South.

The withdrawal of the American superpower from its role as the guarantor of "freedom of navigation" has left these points vulnerable, leading to a "return to the Monroe Principle" in some regions as powers seek to secure their immediate vicinities.

#### 4. Institutional Crisis and New Architectures

Existing international frameworks are increasingly viewed as ill-equipped to handle the current era of fragmentation.

- **Obsolescence of the Post-WWII Order:** The UN Security Council and other international architectures reflect a balance of power from the 1940s and 50s. They do not account for the rise of Asia or the current economic reality.
- **The Crisis of Multilateralism:** While organizations like the OECD provide useful frameworks, their core doctrine of free trade is failing because it requires geopolitical stability that no longer exists.
- **The Rise of Bilateralism:** As large-scale multilateral agreements (like the EU-Mercosur agreement) face stagnation and delays, nations are turning to bilateral and trilateral "niche" agreements. These smaller alliances are becoming the new mechanism for ensuring trade and security.
- **Continental Systems:** The world may eventually settle into regional "multiple globalizations." Potential systems include:
  - A unified American system (North and South).
  - A Chinese-led system.
  - A potential future European-Russian system (contingent on the conclusion of the Ukraine war).

#### 5. The Emergence of Identity in Geoeconomics

A critical shift in modern geopolitics is the superseding of "geoeconomics" by "identity."

Traditional models of international relations often rely on "rationalism"—the idea that states will act in their own economic best interests. However, current trends suggest that cultural passions and national identities are now driving state behaviors that defy economic logic. This "cultural dimension" makes future global stability and food security harder to predict, as identity-driven motives often prioritize sovereignty and cultural preservation over profitable trade.

#### 6. Conclusion: Impact on the Global South

*The fragmentation of trade and the disruption of maritime routes have disproportionate effects on the Global South, particularly Africa. While the West focuses on regional security and internal stability, African nations pay the highest price through food shortages and price spikes. This creates a secondary geopolitical risk: growing resentment toward Western powers, which further complicates the transition to a new global security architecture.*



#### Discussants:

- Dr. Georges Prevelakis, Em. Professor of Geography & Geopolitics, Panthéon-Sorbonne University Paris-1
- Dr. Marios Efthymiopoulos, Director, Strategy International





**OATH**  
BIOME

## Αποκατάσταση της υγείας του εδάφους

Μικροβιακά συστήματα που αναπληρώνουν  
το μικροβίωμα του εδάφους.



Υψηλότερη ποιότητα,  
πιο ομοιόμορφες  
αποδόσεις



Αυξημένη  
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## Chapter-1: The agri-food geopolitics in the Balkans, Black Sea, and the Eastern Mediterranean

The panel analyzed the shifting role of the agri-food sector within a volatile global landscape. The central theme established was the transition of agriculture from a production-focused industry to a central pillar of national and regional security. The regions of the Balkans, the Black Sea, and the Eastern Mediterranean were identified as a "strategic hinge" between production zones and global markets. Critical maritime "choke points," such as the Turkish Straits, and vital inland arteries, like the Danube Corridor—which facilitates 23% of the region's agricultural trade—are now subject to intense geopolitical pressure. The session underscored that **food security** in this geography is no longer **defined** by supply alone, but **by political capacity, infrastructure, and climate adaptation**.

### 1. National and Institutional Perspectives

#### 1.1 Albania: Integration and Modernization

Ambassador Hajdaraga characterized agriculture as the "way of life" for Albania, noting its significant socio-economic weight: it contributes 20% to the national GDP and supports the livelihoods of 40% of the population. The "National Strategy for Agriculture, Rural Development and Fishery 2021-2027" serves as the country's modernization framework.

- **Leveraging EU Alignment:** Albania is synchronizing domestic policy with the European Green Deal and the "farm-to-fork" strategy to enhance food safety and integrate into European value chains.
- **Expanding Export Potential:** With a target of €1 billion in exports by 2030, the Ambassador highlighted a tripling of exports to Greece in early 2024.
- **Regional Hub Initiative:** the Ambassador announced Tirana as the host city for the annual Western Balkans AgriBusiness Forum to foster regional innovation and agri-tourism.

#### 1.2 European Environmental Agency (EEA): Climate as a Geopolitical Driver

Dr. Bengü Özge Şerifoğlu posited that traditional diplomacy is being overtaken by "climate stress," where water scarcity and supply chain fragility are the primary strategic risks.

- **Quantifying Economic Impact:** Cross-border climate impacts are projected to cost Europe €10 billion annually under a 2°C warming scenario (noting a secondary speaker figure of €27 million per year for a 3°C scenario).
- **Social and Nutritional Stakes:** Within the EU, food security is a matter of social justice; 33 million citizens currently cannot afford a high-quality meal every second day.
- **Strategic Adaptation:** Resilience must be viewed as a strategic capability, with required adaptation investments in agriculture estimated at €10 billion per year through 2050.

### 1.3 Israel: Security and Technological Innovation (Ambassador Galit Peleg)

Ambassador Katz detailed a fundamental shift in national philosophy, evidenced by the renaming of the "Ministry of Agriculture" to the "Ministry of Agriculture and Food Security."

- **Securing Calories vs. Product Defence:** The state is moving away from the traditional defence of specific agricultural products toward a strategic focus on "securing calories" for the population.
- **R&D as a Resource Multiplier:** Facing extreme resource scarcity, Israel utilizes precision irrigation and wastewater recycling (90% reuse rate) as essential tools.
- **Industrial Food Solutions:** To meet 2050 benchmarks, Israel is scaling biotechnology, including the commercial introduction of "artificial milk" and lab-grown meat to reduce reliance on vulnerable supply chains like the Red Sea.

### 1.4 FAO: Regional Resilience and Stability

Mr. Nabil Gangi, Regional Representative for Europe & Central Asia, addressed the "multifaceted challenges" of conflict, energy prices, and malnutrition.

- **Alarming Nutritional Data:** In the region, 25.7 million people are unable to afford a healthy diet. Malnutrition remains high, with a 7.1% overweight rate in children under five and 25% adult obesity.
- **Stabilizing Global Flows:** The FAO emphasized the necessity of the "Black Sea Grain Initiative" and "EU-Ukraine Solidarity Lanes" to maintain fertilizer and grain exports amidst the Russian-Ukrainian conflict.
- **The Enabler of Progress:** Gangi concluded that technical interventions are "in vain" without peace, urging a shift toward "pragmatic partnerships" over the "arrogance of power."

### 2.5 Cyprus: Regional Solidarity and Infrastructure

Ambassador Avgustides focused on the vulnerabilities of the Eastern Mediterranean, particularly during Cyprus's EU Presidency.

- **Transboundary Health Threats:** He identified "Sun Fever" (West Nile Virus) as a critical agricultural and public health risk requiring synchronized regional surveillance.
- **Shipping and Logistics:** As a global shipping power, Cyprus highlighted the instability caused by rising logistics costs and geopolitical disruptions in maritime routes.
- **Synchronized Policy:** The Ambassador called for regional solidarity to address water scarcity, noting that no single nation can manage these unforeseen challenges in isolation.

### 2. Strategic Thematic Synthesis

- **Food Security:** There is a transition from "food sovereignty" toward a model of "availability and accessibility." Geopolitical stability now hinges on a state's ability to secure nutritional calories rather than mere self-sufficiency.
- **Climate Resilience:** Water scarcity is the defining structural constraint. The consensus demands a shift from reactive "firefighting" to "nature-based and scientific solutions" to preserve the "breadbasket" regions of Southern Europe.
- **Leveraging Digital Architecture for Market Resilience:** Key technological multipliers include Precision Irrigation, Biotechnology (alternative proteins), and the digitalization of farm-level data to mitigate market shocks.
- **Regional Cooperation:** Stability requires "pragmatic partnerships" that prioritize shared innovation and the right to food over the "arrogance of power." Synchronized agricultural standards are essential for the viability of regional trade.

### 3. Conclusion and Outlook

The final message is that resilience must move to the center of the geopolitical arena. **Food security** is no longer a localized production issue; it is a **complex intersection of political capacity, water infrastructure, and regional stability**. For the Balkans and the Eastern Mediterranean, the strategic direction requires moving beyond isolated national policies toward a synchronized regional framework that secures both farmer viability and consumer affordability.



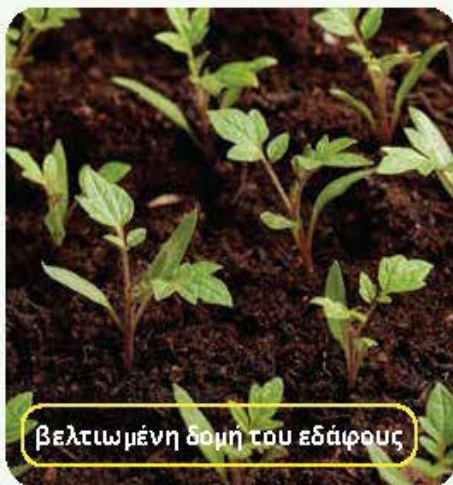
**Discussants:** Mr. Nabil Gangi, FAO Dpt. Regional Representative for Europe and Central Asia, Mr. Noam Katz, Ambassador of Israel to Greece, Ms. Luela Hajdaraga, Ambassador of Albania to Greece, Mr. Stavros Avgroustides, Ambassador of Cyprus to Greece, Dr. Bengü Şerifoğlu, Expert on Climate Change Risks-Adaptation, European Environment Agency \* **Moderators:** Mr. Xenophon Kappas, General Director, Captain V. & C. Constantakopoulos Foundation, Dr. Marios Efthymiopoulos, Director, Strategy International



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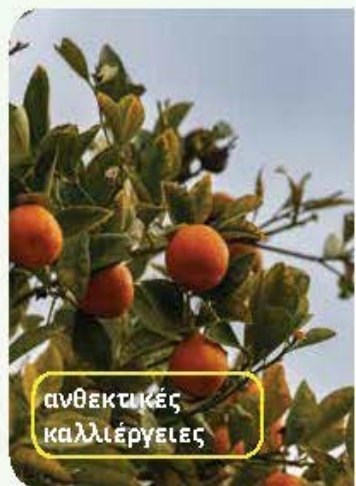
βελτιωμένη δομή του εδάφους



υψηλότερη ποιότητα καλλιέργειας



επιωφελή μικροβιακά δίκτυα



ανθεκτικές καλλιέργειες

At the recent AgriBusiness Forum, an assembly of high-level diplomats and food systems strategists gathered to address a sobering reality: the end of "business as usual" for global food. The forum made it clear that food has transitioned from a simple economic commodity into a vital tool of national security. In the words of the attending experts, logistics is the new geography of power, and food is the ultimate non-kinetic weapon. The central consensus is that **food has moved from a mere economic commodity to a critical strategic asset**, comparable in importance to energy and critical minerals.

### 1. Critical Takeaways

- **Geopolitical Conflict and Hunger:** Approximately 70% of the world's 437 million people suffering from hunger reside in conflict-affected areas. Recent turmoil in Ukraine and the Middle East has underscored the vulnerability of global supply chains.
- **Strategic Asset Paradigm:** Food security is now inextricably linked to energy security, maritime safety, and transport corridors. The volatility of global food markets is driven by geopolitical tools and supply chain disruptions.
- **Efficiency vs. Effectiveness:** While global food systems are highly "efficient" (producing 2,900 calories per person daily—well above the 2,200 required), they are "ineffective" because 800 million people remain hungry while 3 billion face food insecurity due to lack of affordability.
- **Connectivity and Corridors:** Nations are increasingly prioritizing "Food Diplomacy" and strategic diversification of supply routes, specifically focusing on the "Middle Corridor" (linking Asia to Europe via Central Asia) to bypass volatile northern and southern routes.
- **National Sovereignty and Resilience:** Major producers (Australia, Kazakhstan, Indonesia) and consumers (EU) are shifting toward policies that favor domestic resilience, localized production, and rules-based trade to mitigate the risks of global volatility.

### 2. Food as a Strategic and Geopolitical Asset

Modern food systems are no longer governed solely by market economics but are increasingly influenced by geopolitical tensions.

- **Strategic Parity:** Food is now regarded with the same strategic weight as energy and critical minerals. Who manages the supply chains and dictates the rules of agri-food commodities is a matter of national security.
- **Value Chain Imbalances:** In the global food value chain, profit distribution is highly skewed. Approximately 45% of value goes to retail, while farmers in developed countries receive only 12–15%. In the Global South, farmers may receive as little as 5%.

- **Geopolitics of Inflation:** Conflicts disrupt supply chains and increase energy and transport costs, which ultimately inflate food prices. This "cascading effect" compromises the sovereignty of nations dependent on imported inputs like fertilizers.

**Key Quote:** *"Food is not more an economic commodity but is increasingly becoming a strategic asset... at the same level as energy and critical minerals."* — Director, FAO

### 3. Impact of Conflict on Global Food Logistics

The document highlights how specific regional conflicts have redefined global trade routes and necessitated international intervention to prevent catastrophic food shortages.

- **The Black Sea Grain Initiative:** Following the war in Ukraine, the European Union funded initiatives to secure sea and land routes for grain and fertilizer exports. This was essential not only for food supply but also for stabilizing international market prices.
- **Maritime Security:** Current turmoil in the Middle East—specifically in the Red Sea and the Strait of Hormuz—threatens the freedom of circulation. Protecting these "super tanker" routes is now central to food security.
- **The Peace-Security Link:** The normalization of relations between Azerbaijan and Armenia is cited as a practical example of how peace facilitates food security. By opening trade routes, essential products like wheat and fuel become more available and affordable, directly impacting the local economy and food prices.

### 4. The Shift Toward "Food Diplomacy"

Traditional ministries of agriculture are increasingly collaborating with or being superseded by ministries of foreign affairs in the realm of food security.

- **Definition of Food Diplomacy:** This involves the strategic use of dialogue, cooperation, and policy coordination to ensure fair food systems. It is distinct from culinary diplomacy, focusing instead on logistics and international cooperation.
- **Multilateral Cooperation:** With the fragmentation of global cooperation following COVID-19, platforms that facilitate dialogue between governments, the private sector, and international organizations are deemed essential to solve systemic risks.
- **Sovereignty vs. Trade:** There is an inherent tension between food security, food sovereignty, and global trade. Experts suggest that nations should not be "trapped" in a narrative of exporting food just to gain currency to buy other imports; instead, they should prioritize effective systems that solve local nutrition and poverty issues.

## 5. Regional Strategic Perspectives

### A. The European Union and France

- **Sovereignty and Standards:** The EU is focusing on "farm to fork" initiatives to favour local producers and sustainable economies.
- **Environmental Ambition:** Trade agreements (like Mercosur) face opposition when environmental and sanitary standards are not aligned, as this creates unfair competition for European farmers.
- **Humanitarian Role:** France and the EU continue to lead initiatives such as the School Meals Coalition to improve nutrition and support local food systems in vulnerable regions like Lebanon and Sudan.

### B. Indonesia and Southeast Asia

- **Self-Sufficiency Goals:** With a population of 280 million, Indonesia aims for "national resilience" and self-sufficiency by its centennial in 2045.
- **"Food Estates":** Indonesia is mapping major islands to develop food estates, ensuring each region can meet its own nutritional needs.
- **Logistical Hubs:** Indonesia views Greece as a critical gateway or "hub" for connecting Far East supply chains to Europe via more efficient land and sea routes.

### C. Central Asia (Kazakhstan and Azerbaijan)

- **The Breadbasket of Eurasia:** Kazakhstan produces five to six times more grain than it consumes, making it a top 10 global producer.
- **The Middle Corridor:** As the northern route (Russia) and southern route (Middle East) face security issues, the "Middle Corridor" (Asia-Caspian Sea-Azerbaijan-Georgia-Europe) has become a vital, stable alternative for grain and energy transport.
- **Water Security:** Central Asia identifies water security as a direct factor in food production, proposing an international water organization under the UN.

### D. Australia

- **Rules-Based Trade:** Australia advocates for a predictable, rules-based global trading system to prevent "localized poor harvests" from becoming "permanent global catastrophes."
- **Anti-Protectionism:** The Australian perspective warns against export restrictions and trade-distorting subsidies, arguing that protectionism is a "false sanctuary" that inflates prices for the poorest nations.
- **Biosecurity Resilience:** Australia's policy has shifted from reactive disaster recovery to proactive resilience, focusing on high biosecurity standards and risk forecasting.

#### 6. Statistical Overview of Global Food Insecurity

Metric	Value	Context
Global Calorie Production	2,900 / person / day	Theoretical sufficiency (needs ~2,200)
Hunger - Malnutrition	800 Million people	Suffer from chronic hunger
Food Insecurity	3 Billion people	Face moderate to severe insecurity
Conflict Correlation	70%	Proportion of hungry people in conflict zones
Retail Profit Share	45%	Percentage of food value captured by retailers
Farmer Profit Share (West)	12% - 15%	Percentage of food value captured by farmers

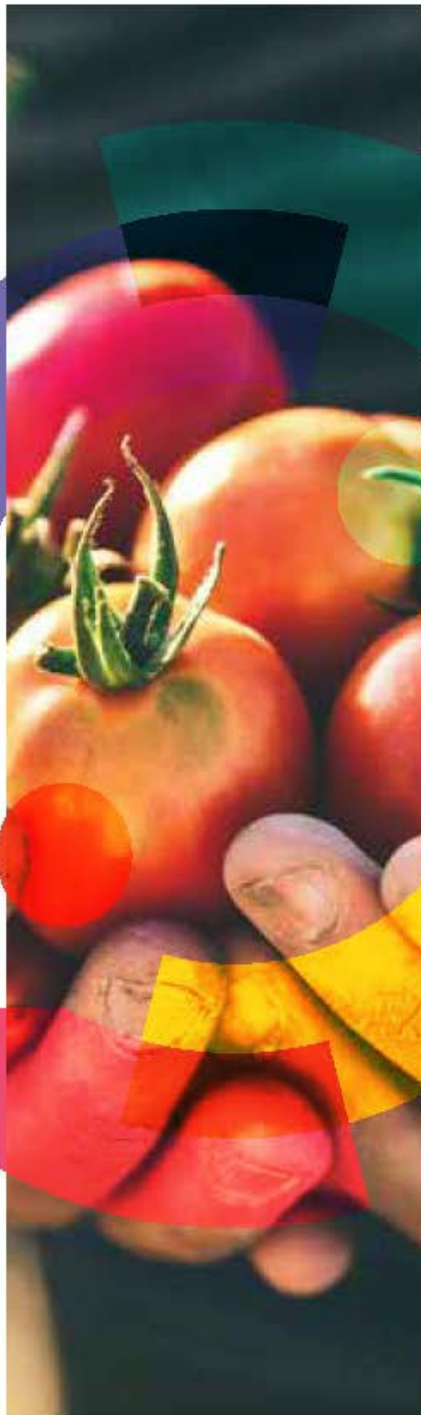
#### 7. Conclusion and Future Outlook

The transition of food into a strategic asset requires a new form of international engagement, being:

- 1. Diversification:** Reducing dependency on single import sources or specific transport bottlenecks (e.g., the Strait of Hormuz).
- 2. Infrastructure Investment:** Developing resilient corridors like the Middle Corridor and IMEC (India-Middle East-Europe Corridor).
- 3. Policy Coordination:** Integrating trade, climate, biosecurity, and health policies into a unified national food security strategy.
- 4. Effective Distribution:** Shifting the focus from merely increasing production (efficiency) to ensuring economic access and affordability (effectiveness).



**Discussants:** Dr. Stefanos Fotiou, SDGs Director FAO HQ, Mr. Arif Mammadov, Ambassador of Azerbaijan, Ms. Laurence AUER, Ambassador of France, Dr. Bebeb Nugraha Djundjuna, Ambassador of Indonesia, Mr. Timur Sultangozhin, Ambassador of Kazakhstan, Ms. Alison Duncan, Ambassador of Australia \* **Moderators:** Dr. Marios Efthymiopoulos, Director, Strategy International, Mr. Giannis Balakakis, Chair Agribusiness Forum



**SMART**  
**AGRO**  
**HUB**  
Cultivating Innovation

## Chapter-3: AI, Data, Digital Transformation of the agrifood value chain

Here the document synthesizes key insights from the "AgriBusiness Forum" panel discussion regarding the intersection of food security, artificial intelligence (AI), and digital transformation. The central takeaway is that **AI and data management** have moved beyond simple tools for productivity; they **are now strategic assets essential for national resilience and geopolitical standing**. While the sector is inundated with data, the primary challenge remains the conversion of this "raw" data into "actionable intelligence" and "AI-ready" structures. Key themes include the necessity of "digital passports" for food authenticity, the risks of "adversarial" data manipulation in supply chains, and the urgent need for a modernized legal and institutional framework that can keep pace with rapid technological acceleration.

### 1. The Technological Paradigm Shift

The agrifood sector is witnessing a transition from traditional digital tools to an era of high-intensity computing and predictive intelligence.

- **Beyond Binary Computing:** Emerging technologies, specifically quantum computing (notably IBM's progress in multi-dimensional computing as seen at the Mobile World Congress), are set to drastically increase the computational power available for AI.
- **Data as a Strategic Resource:** Data is now categorized alongside water, soil, and seeds as a critical asset for the agrifood chain. Digital sovereignty—the ability of a state or organization to manage its own data—is increasingly linked to national security and democratic values.

### 2. From Data Collection to Actionable Intelligence

The consensus among experts is that the volume of data is no longer the bottleneck; rather, it is the capacity to synthesize heterogeneous data into meaningful knowledge.

- **Actionable Intelligence:** AI's primary role is to integrate disparate sources—satellite observations, field sensors, and meteorological models—to identify risks before they become crises.
- **Predictive Agriculture:** AI-driven models are currently being developed to predict wildfire severity and crop stress. This proactive approach aims to build "resilience" in a world of climate and geopolitical uncertainty.
- **The "AI-Ready" Challenge:** Much of current agricultural data is unstructured or "noisy." To be effective, data must be structured, interoperable, and reliable. Initiatives like the "AgriFood AI Datahub" at the Agricultural University of Athens aim to create ecosystems where researchers, farmers, and policymakers can safely exchange information.

### 3. Food Security, Fraud, and Authenticity

Food fraud (adulteration and mislabelling) represents a significant economic and health risk, with the EU losing tens of billions of euros annually, particularly in the oil and fats sector.

- **Vulnerability of National Products:** Key Greek products—such as olive oil, feta cheese, honey, and wine—are frequent targets of fraud. For example, adulterating feta with cow's milk is a common illicit practice.
- **The Digital Passport:** To protect consumers and producers, experts propose a "digital passport" for food products. This involves combining molecular DNA analysis and chemical "fingerprinting" (using techniques like mass spectrometry) with production metadata to create a verifiable history from the field to the shelf.
- **The Netherlands as a Hub:** Interestingly, the Netherlands is cited as a primary location for food fraud occurrences not necessarily because of its own production, but because it serves as a massive logistical hub for the distribution of goods.

### 4. Cybersecurity and Supply Chain Risks

As supply chains become more digitized, they become vulnerable to new forms of "cyber-adversarial" attacks.

- **Adversarial Environments:** In machine learning, bad actors can "poison" or manipulate data during the training phase of an algorithm. This can result in a system that incorrectly identifies a low-quality or fraudulent supplier as a "good" one.
- **Blockchain and Trust:** Technologies like blockchain are being utilized to ensure that information recorded at various stages of the supply chain (e.g., pH levels or temperature of milk) remains immutable and cannot be tampered with to deceive the end consumer.

### 5. Legal Frameworks and Policy Challenges

Technology is currently "galloping" ahead of the legal systems meant to regulate it.

- **Legislative Lag:** While the EU's "AI Act" and GDPR provide some structure, global cybercrime requires a unified international response that is currently fragmented across nearly 200 different legal jurisdictions.
- **Institutional Shielding:** There is a call for "National Authenticity Centers" that would host digital databases of reliable analytical data for priority products.
- **The Subsidy Paradox:** Concerns were raised regarding the Common Agricultural Policy (CAP). In some views, the focus on subsidies has inadvertently led to an "addicted" economy where production is secondary to the management of aid, potentially stifling the competitive drive needed for real innovation.

## 6. Practical Barriers to Adoption

Despite the availability of technology, widespread adoption by producers remains slow.

- **Local Adaptation:** Agricultural technology is not "one size fits all." Tools developed in the US or Israel must be adapted to the specific Mediterranean climate and soil conditions.
- **The Economic Gap:** There is a stark disparity in the value chain. For instance, a product may be sold for €0.04 at the farm level but retail for €4.00. Institutional intervention is required to use traceability tools to redistribute value more fairly to the farmer, who is currently the "weak link."

## 7. Strategic Recommendations for Future Action

The panel concluded by proposing immediate actions to fortify the agrifood sector:

Category	Proposed Action
Policy	Establish a National Authenticity Center with a robust database for priority products (oil, feta, honey).
Data	Create a functional framework for Safe Agricultural Data Exchange to turn data into a strategic asset.
Logistics	Develop a National Traceability System (similar to pharmaceutical tracking) to monitor products from origin to consumption.
Regulation	Strengthen existing Certification Structures to protect the integrity of national products.
Monitoring	Implement a National Price and Education Observatory to leverage AI in tracking market trends and training producers.

## 8. Critical Quotes

- ✓ "The future of agriculture will not depend on how much data we collect, but on how smartly we can utilize it." — *Dr. Konstantinos Demestichas*
- ✓ "AI is no longer just about efficiency; it is a matter of strategic capability... and a form of geopolitical power." — *Manolis Panagiotopoulos*
- ✓ "Technology is galloping, and we are running behind it to see how we can deal with it." — *Dr. Spyridon Flogaitis*
- ✓ "The consumer asks: 'Is what the label says correct?' The digital transformation eventually helps the consumer by ensuring the traceability of that information." — *Dr. Nikolaos Thomaïdis*
- ✓ "The farmer is currently the weak link in the supply chain... We need to see how policy makers can use these tools to redistribute value fairly." — *Fotis Chatzipapadopoulos*



**Discussants:** Dr. Spyridon Flogaitis, Director General, European Public Law Organization, Dr. Pantelis Lappas, AI Solutions Architect, Netcompany-Intrasoft International, Dr. Nicolaos Thomaidis, Professor & VP Admin. Council, National & Kapodistrian University, Dr. Konstantinos Demestichas, Professor, Agricultural University of Athens, Mr. Fotis Chatzipapadopoulos, CEO, Smart Agro Hub \* **Moderators:** Mr. Manolis Panagiotopoulos, Unit & CFS Lead, BAYER Crop Science Division, Mr. Panos Opolopoulos, Journalist, Athens–Macedonian News Agency





# EURASEAN FORUM

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# Analysis by Chapter

**Day 2: Thursday, March 19, 2026**

**Building Resilient & Sustainable agrifood futures**



The global agrifood system currently operates within a paradox: while it generates approximately **11 trillion in annual value**, it incurs roughly **\*\*10 trillion in hidden costs\*\*** related to health, environmental degradation, and social inequality. This briefing examines the transition toward responsible production and consumption, highlighting the structural imbalances within current value chains and the strategic necessity of transparency, traceability, and collaborative governance.

### 1. Key takeaways

- **Economic Imbalance:** A significant disparity exists in value distribution, with retail and processing capturing the majority of revenue, while primary producers (farmers) receive a maximum of 15% in developed nations.
- **Corporate Concentration:** A small number of "Mega-Corporations" dominate the global market, with as few as five to ten companies controlling 65% to 85% of specific sectors like seeds, pesticides, and processed foods.
- **The Transition Mandate:** Moving toward "green" and sustainable production is economically viable in the long term, but requires a strategic framework to manage the "cost of transition" and ensure a more equitable distribution of responsibility.
- **Consumer Power:** The concept that "the consumer votes with their fork" is central to driving demand for transparency, though this requires significant advances in education and digital tools like traceability (QR codes).

## 2. The Economic Structure of Agrifood Value Chains

### A. Hidden Costs and "Externalities"

The agrifood system is under intense pressure to account for its total impact. Research indicates that for every dollar of value produced, nearly an equivalent dollar is lost to externalized costs. These costs manifest in three primary areas:

1. **Health:** Costs associated with malnutrition and diseases related to highly processed foods.
2. **Environment:** Degradation resulting from intensive agricultural practices.
3. **Social/Income Inequality:** Particularly acute in the Global South, where primary producers remain economically marginalized.

## B. Value Distribution Model

The distribution of value across the chain remains heavily skewed toward the final stages of the process

Segment	Estimated Value Share
Retail (Supermarkets)	~45%
Processing/Manufacturing	25% – 30%
Farmers/Producers	Max 15% (including subsidies)
Distribution/Logistics	10% – 12%

*Note: From a retail perspective, Greek supermarket representatives argue that net profitability is low (approximately 1.65%), suggesting that the high final price is driven by operational costs and preceding links in the chain rather than pure profit at the shelf.*

## C. Global Market Concentration

A defining characteristic of modern agrifood systems is the dominance of a limited number of "Mega-Corporations." This concentration creates a "bottleneck" between millions of small-scale producers and billions of consumers.

- **Cereals:** Five companies control 80% of the global market.
- **Seeds and Pesticides:** Five major entities control 65% of the market.
- **Processed Foods:** Ten corporations control 85% of all labels found in supermarkets.
- **Retail:** Five to seven multinational chains control 65% of the global retail market.

This concentration has led to the commodification of agricultural inputs (such as sterile seeds) and the proliferation of "local labels" that are actually owned by a handful of global conglomerates.

### 3. Regional Perspectives: Greece and Bangladesh

#### A. Bangladesh: Climate Resilience and Smallholdings

Agriculture serves as the backbone of the Bangladeshi economy, contributing 11% to the GDP. The sector faces unique structural and environmental challenges:

- **Land Fragmentation:** Small landholdings are passed down through generations, making economies of scale via large-scale mechanization difficult.
- **Climate Crisis:** Agriculture is threatened by salinity in coastal areas, cyclones, monsoons leading to unpredictable flooding, and extended periods of drought.
- **Innovation:** The government is shifting toward "Smart Agriculture," utilizing AI and the Internet of Things (IoT) to manage resources and improve market access.

## B. Greece: Heritage and Strategic Gaps

Greece possesses a strong cultural foundation for responsible consumption via the Mediterranean Diet, yet faces modern administrative hurdles:

- **The 1948 Rockefeller Study:** Historically, Crete was identified as having a model diet that respected the environment and biodiversity.
- **Lack of National CSR Strategy:** Greece is noted as the only EU member state without a formal national strategy for Corporate Social Responsibility (CSR).
- **Data Deficit:** There is a significant lack of current, representative data on Greek nutritional habits; the last comprehensive food survey was conducted in 2014.
- **Success Stories:** Cooperatives in the poultry sector (e.g., Pindos) and fruit production (e.g., Velventos) demonstrate that strong producer organizations can ensure fair prices and high quality.

## 4. Strategic Pillars for Responsible Systems

### A. Transparency and Traceability

The transition to responsible systems depends on "traceability of price" as much as "traceability of product."

- **Digital Tools:** QR codes are highlighted as a vital tool for providing consumers with data on seed origin, pesticide use, transport methods, and nutritional value.
- **Consumer Education:** For technology to be effective, consumers must be "educated voters" who understand the difference between high-quality local products and ultra-processed goods.

### B. Corporate Social Responsibility (CSR) as Strategy

CSR should no longer be viewed as philanthropy but as a core business strategy and a "rule of continuity."

- **Collaborative Governance:** A "common framework of shared responsibility" is required between large corporations and the small-to-medium enterprises (SMEs) that make up 92% of the Greek business landscape.
- **The "Polluter Pays" Principle:** There is a growing argument that costs associated with environmental and health externalities should be borne by the entities responsible for the degradation or the production of harmful products.

## C. The Role of Policy

Value chains often dictate policy rather than the other way around. Policies are frequently "reactive," responding to the realities established by market actors on the ground. To be effective, future policies must:

- Incentivize local production and consumption (e.g., "local markets").
- Simplify regulatory requirements for SMEs while maintaining high ESG (Environmental, Social, and Governance) standards.
- Support the "cost of transition" for farmers moving toward green practices.

## 5. Notable Quotes

- ✓ "The consumer votes with their fork." — Dr. Antonia Trichopoulou
- ✓ "Policies are reactive to value chains... it is the value chains that essentially determine the policies, strategies, and plans at a later stage." — Dr. Stefanos Fotiou
- ✓ "A responsible chain does not just engage in a narrative... it shows in practice how it organizes transparency, traceability, and relations with producers." — Alexandra Palli Giannakopoulou
- ✓ "The existence of companies in the agrifood sector depends purely on the environmental, social, and health costs... there is a greater pressure for accountability today." — Dr. Stefanos Fotiou



**Discussants:** Dr. Stefanos Fotiou, SDGs Director, FAO HQ, Ms. Alexandra Palli-Giannakopoulou, Chair of the Board, CSR Hellas, Dr. Antonia Trichopoulou, Academician, Adjunct Professor, School of Public Health YALE, Ms. Nahida Rahman Shumona, Ambassador of Bangladesh, Mr. Kostas Avramis, Designated Representative of the Association of Supermarkets in Greece \* **Moderators:** Mr. Alex Athanassoulas, CEO Stirixis Group, President SBC Greece, Dr. Dimitrios Skuras, Professor of Economics, University of Patras



**GEOROUTES**  
ECO TOURISM & CULTURAL EXPEDITIONS

discoveries across the cultural heritage  
of **Greece**

**Geo Routes** and **Aegean Routes** eco & cultural heritage journeys that held under the auspices of the HNC for UNESCO are made for experienced voyagers willing to explore, experience and be a part of the cultural heritage of Greece. Geo Routes aims at highlighting the legends of Greece, facilitating to the intercultural dialogue and contributing to the sustainable development of the local societies by cultural, environmental, educational and experiential activities.



#### Geo Routes off the beaten track journeys highlighting:

- **Athens** (11 trips: The Engineering of the Parthenon, The Battle of Marathon, Dining at Home, The Mines of Lavrion, The Underground Treasures of Athens, Byzantine Iconography, In the footsteps of Socrates, Secrets of Athens, Sailing to Aegina Island, Wine Tasting in Ancient Nemea, Dafni Monastery).
- **Mountain Routes** (10 trips: Nauplia – Ancient Epidaurus, Mountainous Corinthia "the 6th labor of Hercules", Mount Pelion "The Centaurs Mountain", Mt. Olympus "Feast with Gods", Karpenisi "The Invasion of Gauls", Olympic Heritage, Arcadian Legacy, West Macedonia Panorama, Serres "The Land of Alexander the Great", Spartans Legacy) and the
- **Greek Islands** (4 trips: Amorgos island "Deep Blue", Mysteries of Kythera, Hiking in West Crete, Sailing in North Cyclades).



The Quiet Revolution in the Field. The intersection of climate volatility and food security is traditionally framed as a zero-sum game: we must either protect the planet or feed it, but rarely both. However, the discourse emerging from the recent Agribusiness Forum suggests that this tension is fueling a fundamental redesign of the global economy. What we are witnessing is not merely a shift in policy, but a systemic re-indexing of agriculture from a climate liability to a carbon asset. To navigate this transition, we must look past the headlines and examine the ground-level paradoxes—from microbial science to the emergence of carbon liquidity—that are turning traditional farming on its head.

### 1. Key takeaways

- **Systematic Climate Risk:** Climate change is no longer a future threat but a measurable, systematic risk. Areas like the Thessalian plain face acute threats from drought and flooding, requiring "transformational" rather than merely "responsive" adaptation strategies.
- **Energy Hub Ambitions:** Greece is positioning itself as a regional energy hub through natural gas infrastructure and an ambitious target of 80% renewable energy production by 2030. However, the stability of this transition depends heavily on the rapid deployment of energy storage (batteries).
- **The 2028 Carbon Market:** A new EU regulatory framework (Soil Monitoring Law) and the launch of a voluntary carbon market in 2028 will fundamentally change the economic value of land, shifting the focus to soil health and carbon sequestration.
- **Structural Barriers:** Innovation often fails in the "Death Valley" between the laboratory and the field, not due to a lack of capital, but because it fails to communicate in the "language of the producer." Furthermore, a lack of unified governance between ministries (Energy vs. Agriculture) creates legal uncertainty for investors.

## 2. Climate Change Impact and Adaptation Strategies

The scientific community emphasizes that climate risk is systematic and measurable through real data, dismissing "alarmism" in favour of rigorous modelling.

- **Mapping Vulnerability:** Researchers are mapping Greece at a 1x1 km scale to identify risks over the next 20 years. Key threats include drought, heatwaves (thermal conditions), and flooding.
- **Regional Focus:** Areas south of the Thessalian plain are projected to face significant rainfall deficits and increased soil moisture evaporation.
- **Levels of Adaptation:**
  - **Responsive:** Immediate, short-sighted measures (e.g., digging trenches after a flood).
  - **Incremental:** Medium-term measures that build defensive adequacy.
  - **Transformational:** Radical changes, such as altering crop types, banning new boreholes in exhausted aquifers, and repurposing lakes (e.g., Lake Karla) as flood reserves.

## 3. Energy Transition and Grid Stability

Greece is pursuing a dual-track energy policy that seeks to balance "green" transitions with regional energy security.

- **Strategic Natural Gas:** Greece aims to serve as a "Vertical Corridor" for supplying natural gas to the Balkans and Central Europe, viewing gas as a necessary bridge for system flexibility.
- **Renewable Energy Sources (RES):** The national goal is for 80% of electricity generation to come from renewables by 2030.
- **The Storage Challenge:** The current lag between RES penetration and battery storage deployment has led to energy curtailments and economic viability issues for investors.
  - **Current Status:** 700 MW of storage is expected by June 2026.
  - **Future Pipeline:** Applications for 4 GW of storage projects are currently under evaluation.
- **Agrivoltaics:** To resolve the conflict between energy production and food security, the state is promoting "Agrivoltaics"—high-mounted solar panels that allow for dual land use (farming and energy generation) while reducing soil evaporation.

## 4. Innovation, Soil Health, and Carbon Sequestration

A significant shift in agricultural science is moving from chemistry & seeds toward the "microbiome" of the soil.

- **Microbial Innovation:** New technologies focus on multiplying natural microbes to restore "tired" or "dead" soil, enhancing its ability to sequester carbon and improve biodiversity.
- **Capital and Startups:** Contrary to common belief, capital is available for good ideas. The primary reason for startup failure is the inability to translate laboratory innovation into practical tools that fit the farmer's daily operations (e.g., compatibility with sprayers).

- **Public Benefit Investment:** High-profile private equity and "public benefit" companies are increasingly investing in technologies for underserved regions like Sub-Saharan Africa, focusing on soil resilience in non-irrigated, non-fertilized environments.

### 5. Regulatory Evolution and the "Carbon Market"

Significant legislative changes at the EU level are poised to redefine the agricultural economy by 2028.

- **Soil Monitoring Law:** Effective as of October 2025, this directive requires the integration of soil health into national law, treating soil as a strategic asset.
- **Voluntary Carbon Market (2028):** By January 1, 2028, the EU will launch its first voluntary carbon stock market. This will allow farmers who reduce emissions to sell "carbon credits" to industrial emitters (e.g., food processing or heavy industry).
- **Clustering Models:** To achieve the "critical mass" required for carbon monitoring and economic viability, the traditional cooperative model must evolve into "clustering," with a recommended minimum scale of 50,000 acres (approx. 20,000 hectares).

### 6. Governance and Legal Challenges

The panel identified significant friction within the administrative framework that hinders progress.

- **Administrative Dissonance:** There is a perceived lack of a "unified narrative" between the Ministry of Environment and Energy and the Ministry of Rural Development. This results in conflicting signals regarding land use (e.g., solar panels on high-productivity land).
- **Legal Uncertainty:** Investors face "legal insecurity" where legislative frameworks may change abruptly, rendering small, innovative investments vulnerable.
- **Land Use Policy:** There is an urgent need to decouple land ownership from land use. Greece's small average plot size (roughly 10 acres/4 hectares) compared to the EU average (100 acres/40 hectares) prevents economies of scale and complicates the adoption of green technologies.

### 7. Notable Industrial Case Study: Fertilizer Production

The industry is adapting to the "green transition" through specific technological interventions.

Process Component	Sustainability Initiative
Nitric Acid Production	Achieving the lowest nitrous oxide emissions globally.
Ammonia Production	Reduced specific consumption of natural gas, leading to a 30% reduction in total carbon footprint over the last decade.
Energy Neutrality	Using the sulfuric acid production process to generate electricity, making factories energy-neutral.
Bio-inhibitors	Integrating bio-stimulants and inhibitors into fertilizers to help plants absorb nutrients more efficiently, reducing field-level greenhouse gas emissions

## 8. Notable Quotes

- ✓ "The most important, simple question from a farmer—'Can I put this in the sprayer?'—can kill years of research and millions of invested capital." — Dimitrios Drisyis
- ✓ "Sahara we will not become... but the pressures are real and they impose the need for proactive adaptation plans." — Dr. Konstantinos Kartalis
- ✓ "The agriculture of the future is not an isolated silo; it is a nexus of food, water, and energy security." — Dr. George Zalidis
- ✓ "Energy is the invisible but decisive pillar in the production of food, from farm to fork." — Despina Paliarouta



**Discussants:** Ms. Despina Paliarouta, Secretary General for Energy & Mineral Resources, Dr. Constantinos Cartalis, Professor Env. & Climate Physics, National/Kapodistrian University, Dr. Dimitrios Drisyis, Senior Advisor Europe, OATH BIOME, Ms. Theodora Kouloura, COO, Dekagro Group of Companies, Dr. George Zalidis, Professor Em. Aristotle University & Scientific Director i-BEC \* **Moderators:** Mr. Sotiris Polyzos, General Manager, TRT News, Mr. Giannis Balakakis, Chair AgriBusiness Forum

The Greek agrifood sector stands at a critical juncture, facing deep structural challenges, demographic decline, and the urgent pressures of climate change. This briefing document synthesizes key insights from the 8th International Agribusiness Forum, focusing on the "Triple Helix" model—a strategic synergy between research institutions, the private/financial sector, and government/end-users.

The central conclusion is that **the traditional model of agricultural production, characterized by high input use and fragmentation, is no longer viable**. To survive, the sector must transition toward a "Value Chain" approach powered by digitalization (AI, robotics, blockchain) and smart financing. However, this transition is hindered by a 90% financial and digital illiteracy rate among the farming population, an average land plot size of just 5.4 hectares, and a significant aging population (over 60% of farmers are over the age of 60). Success requires moving beyond "horizontal" subsidies toward targeted, cluster-based investments, such as the landmark greenhouse development programs currently being implemented.

### 1. The Triple Helix Framework and Synergy

The "Triple Helix" represents a necessary evolution in the agrifood sector, moving from isolated efforts to a collaborative ecosystem.

- **Core Components:** The model facilitates interaction between:
  - **Academic/Research Institutions:** Generating innovation (startups, spin-offs).
  - **Industry and Financial Institutions:** Providing capital and market-ready technology.
  - **Government and End-Users:** Formulating policy and implementing technology on the ground.
- **The "One-Way Street":** Panelists emphasized that synergy is the only way to address contemporary problems. While Greece excels in *producing* innovation (first pillar), it fails in *adopting* (second pillar) and *utilizing* (third pillar) that innovation.
- **Case Study: GreenHub:** A practical application of the Triple Helix where Piraeus Bank, two major universities (Agricultural University of Athens and University of Thessaly), and technology providers collaborate to support high-tech greenhouse investments.

## 2. Technological Innovation and Digital Transformation

Innovation is the backbone of the new agricultural model, shifting focus from "maximizing production" to "maximizing profit through process optimization."

### Key Digital Tools

- **Precision Agriculture:** Utilizing sensors, satellite imagery (e.g., Sentinel), and AI to manage inputs (water, fertilizer, pesticides) at the precise time and quantity needed.
- **Robotics:** Primarily used in processing and packing, robotics are increasingly seen as a solution to the acute shortage of manual labor in Greece.
- **Blockchain and Traceability:** Essential for building trust with consumers and markets by providing transparent data on the production process.
- **AI and Modelling:** Used for predictive analytics regarding crop yields and climate risk management.

### Barriers to Adoption

- **Fear and Literacy:** There is an "inherent fear" among the older agricultural population regarding new technology.
- **Financial Illiteracy:** It is estimated that 90-99% of the agricultural population lacks basic financial literacy (understanding risk vs. return), making it difficult for them to engage with complex investment tools.

## 3. Structural and Demographic Challenges

The Greek agricultural sector faces unique "distortions" that impede modernization:

Challenge	Impact on the Sector
Land Fragmentation	Average plot size is 5.4 hectares (roughly 1/3 of the European average), making large-scale mechanization difficult.
Aging Population	Over 60% of farmers and cooperative members are over 60 years old. Short-term thinking prevents long-term technological investment.
Labor Shortage	Severe lack of manual labor; wages have spiked (e.g., €50-€80/day), significantly increasing production costs.
Financial Access	Only a small fraction (approx. 9,000–10,000) of the 640,000 farmers utilize formal contract farming tools. Many rely on high-interest credit from pesticide/fertilizer suppliers.

#### 4. Financing and Economic Strategy

The discussion highlighted a shift from "following the money" to "directing the money" toward sustainable outcomes.

- **Strategic Role of Piraeus Bank:** As the only Greek bank with a dedicated agricultural division, it focuses on tailoring financing to specific technological needs, rather than providing generic loans.
- **Greenhouse Development Program:** A landmark sectoral program that received over 900 applications, representing €500 million in potential investments. This move toward "controlled environment" agriculture provides climate resilience and year-round production.
- **The CAP Paradigm Shift:** The Common Agricultural Policy (CAP) is transitioning. Future funding will likely be integrated into broader "Cohesion Funds," meaning individual states must actively choose to prioritize agriculture over other sectors.
- **Carbon Credits:** The Ministry of Environment is developing a voluntary carbon credit market for tree crops, allowing farmers to draw private funding by acting as carbon sinks.

#### 5. Environmental Sustainability and Resource Management

Environment and agriculture are "inextricably linked," with water management being the most critical interface.

- **Water as a Risk Factor:** Water is no longer just an environmental issue but a "basic production cost and investment risk."
- **Pollution Issues:** Intensive agriculture contributes to nitrate pollution and soil contamination from greenhouse plastics.
- **The Cost of Pumping:** Much of Greece's irrigation relies on underground boreholes. Over-pumping leads to a falling water table and rising energy costs, which are often deferred as debt, eventually burdening society at large.
- **Circular Economy:** Emphasis on reusing treated wastewater, though adoption is low because farmers often perceive "free" water from traditional sources (like the Aliacmon river) as more attractive.

#### 6. Cooperatives and Market Position

Greek producers face an "oligopolistic" retail market where supermarkets hold significant power.

- **Fragmentation of Power:** In Greece, 50 entities trade kiwifruit, whereas New Zealand manages 600,000 tons through a single entity (Zespri). This allows Zespri to command prices of €5-6/kg at the shelf, while Greek producers struggle at €1/kg.
- **Need for Scale:** Of the 1,200 cooperatives in Greece, 600 have a turnover of less than €200,000, making them economically "insignificant."
- **Proposal for an Agricultural Chamber:** A call was made for a self-funded, independent "Agricultural Chamber" to provide unified representation, education, and strategic direction, moving away from "trailers in the street" as a form of policy-making.

#### 7. Notable Quotes

- ✓ "Money is what moves everything; ideas are good, but to implement them, they need funds."
- ✓ "We are one of the three EU countries without a national soil policy... this is a major challenge because it touches many different subjects." — Petros Varelidis
- ✓ "Risk is nothing more than the difference between what you expect and what actually happens. To manage it, you need two things: very good data and very good algorithms." — Dr. Aristides Samitas
- ✓ "We must move to a different model of agricultural production that does not focus on maximizing production, but on maximizing profit through optimization." — Dr. Thomas Bartzanas
- ✓ "Innovation is a change of culture, which obviously requires the integration of technology for better and more sustainable production systems." — Dr. Thomas Bartzanas
- ✓ "If we do not move to create large commercial schemes that negotiate with retailers, we are lost, even if the EU passes regulations to help us." — Christos Giannakakis



**Discussants:** Dr. Petros Varelidis, Secretary General for Natural Environment and Waters, Dr. Thomas Bartzanas, Professor & Vice-Rector, Agricultural University of Athens, Dr. Aristeidis Samitas, Professor & Vice-Recor, National & Kapodistrian University, Mr. Thanasis Dedousis, Director Agri Food Center of Excellence, Piraeus, Mr. Christos Yiannakakis, Vice President, National Union of Agricultural Cooperatives \* **Moderators:** Dr. Konstantinos Aliferis, Professor Metabolomics & Plant protection, Agricultural University of Athens, Ms. Yioula Zachioti, Journalist, Huffington Post



# Concluding remarks



**Delivered by:**  
*Dr. Thomas Bartzanas, Professor & Vice-Rector, Agricultural University of Athens*  
*Mr. Giannis Balakakis, Chair AgriBusiness Forum*



## 10 Billion Mouths, Zero Margin for Error: Navigating the New Geopolitics of Food

Agriculture is the largest footprint humanity has ever pressed into the soil. It occupies 40% of the Earth's terrain, consumes 70% of our potable water, and accounts for 30% of global CO2 emissions. It is a sector that generates a staggering \$11 trillion in annual turnover and sustains 40% of the global workforce. Yet, as Dr. Spiridon Kintzios, Rector of the Agricultural University of Athens, observed at the 8th International AgriBusiness Forum, this massive engine of survival has reached a "historical crossroads."

The math of the 21<sup>st</sup> century is unforgiving. In 1800, the Earth supported one billion people. Today, we are 9 billion. By 2050, we will be 10 billion. This demographic surge is colliding with a deepening climate crisis and a volatile geopolitical landscape, particularly in the Mediterranean and the Balkans. We have entered an era where the margin for error has evaporated, and the systems we once took for granted are revealing their profound fragility.

### The Weaponization of the Breadbasket

For decades, the global North viewed food as a mere commodity—a line item in a trade agreement. That era is over. As Giannis Balakakis, Chair of the AgriBusiness Forum, argues, food has transitioned into a "strategic material," a pillar of national security and social stability held in the same regard as energy or rare earth minerals.

This shift is fuelled by what experts call a "scary equation" of regional instability. Ioannis Andrianos, Greece's Deputy Minister of Rural Development and Food, points to the current maps of aerial and maritime traffic as a chilling diagnostic of our times. The closure of Ukrainian and Iranian airspace has not merely inconvenienced travellers; it has forcibly diverted the flow of energy, raw materials, and agricultural inputs. When Greece finds itself physically proximal to these conflict zones, the disruption of supply chains becomes a direct threat to the table. In this new reality, food security is no longer a technical niche; it is the bedrock of strategic readiness.

"Food security should not be seen as a technique or as an issue of a certain domain. It is an issue of stability, social cohesion, and strategic readiness." — *Giannis Balakakis*

### The Boomerang Effect: Plastics, Fish, and the End of Ocean Viability

The threats to our survival are not only geopolitical; they are biological and self-inflicted. Journalist Youla Zachioti presented a haunting projection for 2050: a world where the weight of plastics in our oceans—950 million tons—will officially surpass the weight of the fish that inhabit them.

This is the "boomerang effect" of human overexploitation. We have treated the seas as both an infinite larder and a bottomless landfill, and the consequences are now returning to poison the source. The viability of maritime production is being systematically dismantled by the very waste our consumption generates. To counter this, Dr. Kintzios advocates for a "Unified Health" (One Health) model—a preventative strategy that recognizes the health of humans, animals, and the environment as a single, indivisible chain. If the environment is sick, the food system cannot be healthy.

## The \$1 Trillion Waste Paradox

Perhaps the most glaring indictment of our current global architecture is the malnutrition-waste paradox. Currently, 30% of all food produced never reaches a human stomach; it rots in landfills, costing the global economy \$1 trillion annually. Simultaneously, 10% of the world's population suffers from chronic malnutrition.

In a system this inefficient, sustainability is not "complimentary" or a corporate social responsibility checkbox. It is a survival mandate. A model that allows a trillion dollars of value to vanish while millions go hungry is inherently unfair, inaccessible, and strategically dangerous. Transitioning to "responsible consumption" is no longer an ethical luxury—it is a logistical necessity to ensure that a population of 10 billion does not collapse under the weight of its own waste.

## The Triple Helix: Bridging the Digital Literacy Gap

To solve these systemic failures, the AgriBusiness Forum highlighted the "Triple Helix"—a model of radical collaboration between academia, industry, and policy-makers. However, innovation faces a stubborn bottleneck: the human capital gap. Dr. Emmanouil Fletmetakis, Vice Rector of the Agricultural University of Athens, notes that the most advanced AI and precision agriculture tools are useless if the primary producer lacks the education to use them.

In Greece, and much of the Mediterranean, agricultural education has been historically fragmented and lacks certification. The result is a disconnect where high-level research remains trapped in university labs while the farmer in the field remains a traditional labourer rather than an educated entrepreneur. The solution lies in "experimental farms" and "live hubs"—platforms where research is translated into practical results in real-time.

True sustainability also requires a shift in scale. Dr. Fletmetakis points to a sobering benchmark: for a collaborative, tech-driven farm to be truly viable and cost-effective in the modern market, it often needs to reach a threshold of 50,000 acres. In a landscape of fragmented, small-scale plots, the only path forward is the aggressive modernization of the cooperative model.

## Greece's National Choice: Agriculture as "Heavy Industry"

For Greece, the agri-food sector is at a point of reckoning. Despite its "comparative advantages"—the prestige of the Mediterranean diet, high-quality local products, and an intrinsic link to the tourism sector—it suffers from structural neglect. Currently, the cooperative participation rate among Greek farmers sits between a dismal 10% and 23%, a figure that persists even as recent strikes and protests signal deep-seated rural discontent.

The consensus from the forum is clear: Agriculture must be treated as a "National Choice." It should be positioned as the country's second "heavy industry" behind tourism. To achieve this, the sector requires more than just subsidies; it needs a strategic merger of energy policy and environmental management. Strengthening regional cooperation within the Balkans and the Mediterranean is the only way to build a buffer against global shocks and instabilities.



**From "What" to "How"**

The transition to a sustainable food model requires us to move past "wishful thinking" and toward "coordinated action." We have identified the "what": climate change, geopolitical weaponization of food, and systemic waste. The challenge now is the "how."

How do we bridge the gap between science and the field? How do we enforce transparency in a value chain where the producer currently receives the smallest share of the profit? And how do we ensure that the transition to high-tech farming remains fair and accessible to all, rather than a privilege of the few?

As we look toward 2050, the stability of our societies will depend on our ability to prioritize regional cooperation over national isolation and responsible consumption over reckless waste. The margin for error is gone.

"We must collaborate to create food systems that are more productive, but also more sustainable, durable, and fair." — *Dr. Spiridon Kintzios*

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