



# **MASTER PLAN**

## **WATER MANAGEMENT IN THESSALY IN THE WAKE OF STORM DANIEL**

How to Address Thessaly's Water-Related Agricultural Challenges

### **VOLUME V: SOCIOLOGICAL CHALLENGES**

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Thessaly's agricultural sector is an ingrained part of the region's social and cultural identity. Hence, unless the agricultural sector thrives, the socio-economic stability of the entire region will be at risk. Reducing agriculture by 50% so as to be in line with the available resources would therefore be devastating. Farming is their way of life, and most families and businesses / services are dependent either directly or indirectly on crop cultivation and livestock and dairy production, as farmers, processors, workers, transporters and service providers.

### **Psychosociological Features in Need of Remolding**

In order for Thessaly to successfully "*Build Back Better*", changes to the psychosociological mindset of farmers need to take place over the next few years. Like many traditional farmers around the world, Thessalian farmers tend to stick to tried-and-true techniques. This must change. Whereas many farmers in Thessaly have adopted drip irrigation, studies have shown that they are resistant even to relatively minor changes such as adopting new, proven precision irrigation to reduce water usage in cotton cultivation even though water scarcity is a very serious issue. Hence, there will likely be resistance and apprehension among the Thessalian farmers when it comes to larger changes such as switching to other, less water-intensive crops, venturing into greenhouse horticultural production, transforming arable farming areas into orchards and conducting more open-field horticulture, which are all highly advised in order for the region to thrive.

Studies have demonstrated (Kalaitzandonakes, 2018) that if a society in this modern age is to meet the food security and environmental challenges of the future, it must adopt long-term approaches to building and maintaining systems that nurture innovation. Time and time again it has been demonstrated that agricultural innovation and technology transfer will produce food in unprecedented quantities and of improved quality, which in turn enhances economic security. These studies have also shown that such agricultural innovation systems need to be in a constant state of flux, with adjustments, supplemental investments and new discoveries fueling an ongoing, never-ending transformation.

## Leapfrogging

Even though Thessaly is lagging behind when it comes to innovative agricultural practices and technology, it can not only very quickly but in fact “leapfrog” past other, more advanced countries by leveraging the “Leapfrog Principle”. This principle stipulates that societies that are lagging behind do not need to go through the whole process that other countries that have pioneered the technology have gone through and are therefore less encumbered. A society with no telephones or electricity can for example skip directly to smart phones, mobile banking and renewable energy. Likewise, farmers in Thessaly can skip straight to the very latest best practices and bypass the decades of research and development and trial-and-error. They can adopt the advanced technologies and methodologies directly and quickly transition from being at the back of the pack to the front. They can “leap forward” and enhance their economic prowess so rapidly that they can possibly become even more efficient and provide better quality produce at lower cost than the nations that actually developed these practices, innovations and know-how.

## Reshaping mindsets

In order for Thessaly’s agricultural sector to be reshaped, one of the cornerstones is for its farmers to adopt an attitude of collaboration and solidarity. Cooperation has been proven to be the key element to achieving radical success in agriculture and there is no other conceivable way for Thessaly to become a guaranteed sustainable, prosperous and thriving region.

There are two psychosociological features in particular that need to be remolded in order for the Thessalian farming community to be able to “Build Back Better”. Firstly, they must develop a mentality of solidarity and compliance, focusing on what is best for the greater, collective good and secondly, they must foster a strong spirit of cooperation, sharing and willingness to adapt and innovate.

Whereas the people of Thessaly do have strong social cohesion and well-knit communities, there is currently not a strong tradition among farmers to cooperate with another in the sector to the degree that can be seen in, for example, the Netherlands. Thessalian farmers think more in terms of each farm and municipality dealing with its issues and challenges

independently and this mindset must be transcended seeing as river basins, groundwater tables and medicanes transcend man-made borders.

The adversary that Thessaly is facing is a formidable one. During Storm Daniel, 3.5 billion tons of water inundated its agricultural plains, destroying the farms in its path. By likening the event to a massive invading army it is easier to grasp the futility of each town and village trying to assemble its own militia to protect itself. The only reliable way to defeat such a foe is by collaborating and forming one immense, consolidated army. This is the psychological mindset that needs to be adopted when it comes to battling the climate change-induced floods and water scarcity problem in Thessaly and achieving a powerful and globally competitive agricultural sector.

The second issue deals with fortifying the willingness of all farmers to toe the line and abide by new policies and regulations for the sake of the common good. Some farmers in the region have an attitude of non-compliance, which adversely impacts all the other farmers.

In order to “Build Back Better”, it is important that all farmers abide by policies and regulations and refrain from constructing illegal dams or setting up facilities or farms too close to the rivers or pump large amounts of groundwater.

## Solidarity and Compliance

### **Change #1: Getting Stakeholders to Act in the Interest of the Greater, Collective Good**

There is likely no magic bullet to make farmers in Thessaly immediately grasp on a deep level that cooperation is crucial to their survival, but by examining the success stories of other countries in Europe, one can observe an interesting phenomenon: The mentality in the Netherlands not only successfully shifted to one of cooperation and solidarity but became the cornerstone of their incredible success in the agricultural sector, transforming the Netherlands from a country that was de facto starving<sup>1</sup> to becoming the 2<sup>nd</sup> largest exporter of agricultural produce in the world, second only the United States, whose population is 20 times that of the Netherlands. Dutch farmers had joined hands and collaborated to overcome

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<sup>1</sup> The Dutch Famine of 1944-1945, also known as the Hunger Winter, was a famine that took place during World War II.

the challenges they faced and in so doing began to freely share their insights and innovations with one another. They focused on achieving a mutual goal and that resulted in everyone benefiting and creating an unparalleled success story. This was not based on an ideology that what is good for the whole would be good for the individual. The farmers were forced to cooperate due to enormous challenges: the country was under threat of being swallowed up by the sea, and the collaborative effort they undertook to prevent that from happening, all acting together to defeat a mutual threat, the seemingly unbeatable force of the ocean, is what made them cooperate and freely share with one another how farming techniques and innovations they had implemented worked. Dutch farmers became so used to collaborating on flood mitigation that they collaborated on everything, from research and renewable energy to logistics and input sourcing through cooperatives. This positive spiral of cooperation and solidarity led to the Dutch agricultural marvel where this small, once starving country to compete far more aggressively on the global agricultural market. As a result, all players in the Dutch agricultural sector gained from the collective force that had been generated. As a result, the country as a whole was catapulted into far greater economic prosperity than they could even have imagined given how dire their circumstances once were.

Seeing as the farmers of Thessaly now face a common enemy and must join hands and fight climate change and an acute water scarcity crisis, it is an opportune time to emulate the “Dutch Model” and initiate a paradigm shift in the psychosocial mindset of Thessalian farmers that will help catapult Thessaly into a leading agricultural producer in Europe.

Merely informing the stakeholders in Thessaly of infrastructural interventions, strategies and measures that they need to make and instructing them to try to be more cooperative and engage in knowledge sharing will likely fall on deaf ears. A sense of shared responsibility and acting for the best of the collective good is something that must be cultivated actively by adopting specific interventional measures. This will help stakeholders fully comprehend the need and profound benefits of compliance as well as the potentially very dire consequences of individualism and non-compliance / non-cooperation.

Before presenting the interventional measures to bring about a change in the mindset of stakeholders, it is important to analyze how the acute water scarcity situation and poor flood resilience arose. Whereas lax oversight and lax maintenance of waterways were culprits, there was a collective mindset that ignored the warning signs. This often arises and is caused by the following psychological phenomena:

- **Temporal discounting:** This occurs when individuals prioritize short-term gains over long-term consequences. This cognitive bias makes it challenging for individuals to see the gradual, cumulative effects of their actions and they prioritize immediate benefits over future consequences, essentially burying their heads in the proverbial sand as a problem goes from bad to worse.
- **Tragedy of the commons** is a phenomenon that occurs when it comes to shared resources. The resource (groundwater in this case) gets overused and depleted because individuals act in their own self-interest rather than for the collective good. Tragedy of the commons is essentially a lack of a sense of cooperation and shared responsibility.
- **Cognitive dissonance** can take place between acknowledging a problem and taking action. Farmers may have seen clear indications that groundwater was nearing depletion and the likelihood and severity of floods increasing but rationalized their inaction due to factors such as denial, optimism bias, and a belief that someone else will address the issue. This avoidance of confronting uncomfortable truths results in procrastination in implementing necessary measures. Eventually the denial of the problem becomes normalized in the collective psyche of the community.

It is crucial that Thessaly's leadership address these cognitive biases and foster a sense of shared responsibility and cooperation both to help mitigate this issue and ensure that similar such problems do not arise in the future.

Remedying these decision-making tendencies in Thessalian society is a complex process that will require a combination of policy, education, and incentives as well as involving the community in the decision-making process. Collaboration among government agencies, NGOs, research institutions and the Thessalian farming community is crucial if the solutions presented in this Master Plan are to be implemented successfully and long-term success can be assured.

While there are no quick fixes to remedying the poor decision-making tendencies that led to the impending water scarcity crisis and flood-prone river basin, there is an antidote: a multifaceted approach that combines education, awareness-building, incentives, and community engagement.

1. **Education and Awareness:** The minority of farmers who are known to be non-compliant need to be educated and informed about the long-term consequences of non-compliance, via workshops, seminars and informational campaigns that raise awareness and how compliance will impact their livelihoods positively and non-compliance will exacerbate the problem for everyone.
2. **Payoff:** It helps if farmers are told that there is a quantifiable payoff and not just beneficial in general. This way, each farmer will better grasp both the individual and collective benefits of cooperation.
3. **Data and Monitoring:** Providing transparent, real-time information about the severity and status of an issue helps people understand the reality and adopt responsible behaviors.
4. **Incentives:** In order to adopt sustainable practices, government subsidies and grants are often very useful to motivate changes in behavior.
5. **Community Collaboration:** A sense of community responsibility is best achieved by establishing local groups where farmers are encouraged to work together to address various issues collectively.
6. **Regulations and Enforcement:** When issues such as groundwater usage and extraction need to be curtailed, clear quotas must be allocated and those who exceed the quotas must face tangible penalties and/or restrictions. Consistent enforcement sends a clear message about the seriousness of the issue and in publicizing some names of repeat offenders as a deterrent is not an unthinkable measure that can be implemented.
7. **Financial Support:** Access should be provided to low-interest loans or grants for farmers to invest in technologies that would enable them to better comply with new policies that are for the benefit of the common good.
8. **Community Outreach and Engagement:** Local leaders, agricultural extension services, and community organizations need to be actively involved and promote sustainable practices, engaging with farmers through regular meetings, dialogues, and discussions to address their concerns and gather input and feedback so as to be proactive and address any resistance to new policies as early as possible.

9. **Public Awareness Campaigns:** Such campaigns should target consumers and farmers alike so that a culture of sustainability and responsibility is fostered throughout the region.
10. **Evaluation and Adaptation:** The impact of implemented strategies should be assessed regularly and adapted or adjusted as needed, based on the feedback received in the above-mentioned community outreach programs.
11. **Communication:** Communication needs to be facilitated in order for people to make informed choices and rational decisions.

## Cooperation Mindset

### **Change #2: Forging a Stronger Spirit of Solidarity and Cooperation among Thessalian Farmers**

Farming communities and civilizations have survived for millennia thanks to a deep-rooted sense of doing what is best for the collective good, but in modern times there has been a shift toward individualism. There needs to be a return to the spirit of solidarity and cooperation in Thessaly in order for the region to get through this crisis and in doing so it will help the entire region thrive for decades to come.

Achieving a more cooperative mindset and spirit of solidarity among farmers and other stakeholders will require a combination of strategies. These consist of a mix of incentives, adopting new regulations and changing social norms that will encourage farmers to share with one another (see itemized list of measures below).

In order for the farmers in Thessaly to improve their competitiveness in the global agricultural market, it is important that they excel in terms of quality of their products and achieve as low production costs as possible without comprising said quality. They need to grasp that they must not compete against one another but against producers in the open global market, to see countries as competitors, not other producers in the region.

In the Dutch Model, one of the keys to their stellar success was to make a strong cooperative effort in regard to innovative practices and sharing those discoveries with one another rather than being tight-lipped and playing one's card close to the vest.

When post-WWII agricultural reforms were undertaken in the Netherlands, farmers liberally shared their experiences with innovative techniques with one another, rather than guarding them as proprietary secrets. This resulted in much faster adoption of innovative techniques throughout the country. There was no mindset of keeping their discoveries to themselves. Any success with a new cultivar hybrid or fertilizer or pesticide or technology was freely shared.

Farmers in Thessaly need to develop a similar open culture where spreading best practices and innovations is regarded as a highly beneficial practice that will pay off. Since agriculture is highly vulnerable to weather and volatile markets, farmers tend to be risk averse. There is a strong culture of sticking to old, proven, tried-and-true practices. This holds true also for

Thessaly, where recent studies (Kakkavou, 2024) have shown adoption of relatively minor changes such as precision irrigation technologies for cotton production was low and slow.

Aversion to adopting new or innovative practices is a big mistake. While the rest of the world is innovating, the farmers in Thessaly will be left behind if they do not follow suit. In order to not lose out, farmers in Thessaly need to be competitive, and that means being willing to innovate.

Fortunately, there is a sense of trust among farmers. Should the farmers in Thessaly see and hear how other farmers in the region are engaging in innovative applications, they will be far more likely to give it a try. Hence, innovation is a collaborative effort and that develops into a self-feeding positive spiral. It works exponentially better the more farmers engage in it. Therefore, by forming numerous small study groups, and arranging for farmers to visit one another on a regular basis and discuss new techniques they have tried out, share which innovations have worked for them, and what results this garnered, will result in best practices being adopted to a much greater extent by all farmers and a spirit of constantly improving, which will lead to far greater quality and lower costs, and greater cooperation throughout the supply chain.

It should be noted that whereas many scholarly papers and reports claim that Thessalian farmers are skeptical of adopting innovative practices such as drip irrigation, the prevalence of drip irrigation was observed to be quite high in the region. This indicates that Thessalian farmers are aware that water is scarce, and that drip irrigation is more efficient than rain guns. Hence, there is a willingness to adopt technology appropriate to their situation at least.

When it comes to production costs, achieving economies of scale is very important. For that reason, it is advantageous when farmers produce large quantities of the same crop. The higher the production intensity in an area, the lower the unit costs of inputs can be, and the higher volumes of produce can be offered on the international market.

Even though the quality of the food products cultivated and processed in Thessaly may be very good, there is always room for improvement. Many innovations are constantly taking place in terms of inputs, such as new crop varieties and new pesticides, but also in production equipment, production processes, harvesting technology, storage, packaging, transportation, and so on. There is ample evidence that agricultural regions where

innovations are readily adopted at an early stage manage to improve the quality of their products and become favored in the market.

Thessalian farmers need to be educated about the relevance of innovation and the need to cooperate on this so that they participate in workshops and online trainings, read industry publications and participate in outreach programs. The government can facilitate and accelerate agricultural innovation capacity in several ways and must ensure that the following stakeholders are included in the process:

- Farmer associations
  - the agroindustry
  - HAO Demeter
  - the University of Thessaly's Department of Agriculture
  - the Ministries dealing with agriculture, environment, infrastructure and economy
  - financial institutions such as the Cooperative Bank of Thessaly
  - and any other stakeholders willing to contribute to this process.
1. **Payoff Matrix:** The positive outcomes (payoff) need to be clarified and, if possible, quantified so that each farmer can grasp that there are not just collective benefits to cooperation but also greater individual benefits.
  2. **Collaborative Projects:** Similar to team building exercises in a corporation, collaborative projects need to be initiated to help the process along, including involving farmers in the planning of water resource management and the restructuring of crop cultivation and water retention areas.
  3. **Cooperatives:** More and/or bigger agricultural cooperatives need to be established.
  4. **"All for one and one for all":** It is also important that everyone pitches in. It can cause irritation if austerity measures or changes to crop selection are mandated for some farmers and not others. If, for example, farmers are to replace cotton cultivation with more labor-intensive sesame or potato farming, it is important that the farmers collaborate by taking turns growing the new crops and share the implements. That way, all farmers will end up pitching in and a spirit of solidarity grows. When all contribute and participate, sharing the workload and making a sacrifice, there will be far less resistance.

5. **Cultivate a sense of brother- and sisterhood:** The sacrifices that farmers will need to be make can be framed in a fashion similar to how one views compulsory military service: this is a battle and the farmers are in a fight for their survival, protecting their farms, legacy and families from a menacing, exterior threat and they need to all contribute to the good fight.
6. **Mediation:** Should conflicts arise between municipalities or farmers, third-party mediation / arbitration will help find common ground and facilitate finding resolutions.

In addition to cooperating in agricultural production and innovation, the citizens of Thessaly need to practice cooperating on disaster response, i.e., practicing evacuations of people, livestock and assets; preparing stockpiles; and assigning roles and responsibilities. This will forge a stronger bond in the community and a sense of unity and brotherhood, that all are fighting side by side, battling a common enemy.

It would be advisable to undertake a media campaign that makes solidarity and unity fashionable. Seeing as Greece is the birthplace of democracy, that the Ancient Greeks pioneered the very ideals of civic engagement and acting for the common good, Thessalians should be made to feel proud of doing what is best for the greater, common good, leading the way for other regions in Greece as well as the European Union. One could also appeal to the legacy of the ancient Greek philosophers who emphasized cooperation for the greater good and the well-being of the many: Pythagoras, Aristotle and Zeno all advocated cooperation with others in order to build a civilized society.

### **Public Awareness and Branding Efforts**

In order to enhance the drive to improve quality, a study should be conducted into how one can best rekindle people's sense of pride for the Thessaly region, for example initiating a "Made in Thessaly" branding campaign to strengthen their identity. Perhaps multiple advertising firms can be tasked with putting together competing branding campaigns and the winner announced publicly.

A campaign geared toward fostering a stronger sense that what is good for the many will be good for the individual should also be considered. John F. Kennedy once famously appealed to his countrymen by stating: "Ask not what your country can do for you... Ask what you can

do for your country.” Adopting a similar slogan would help galvanize the citizens of Thessaly to toe the line and comply with the measures and policies that are created.

Examples of potential slogans, credos and mottos:

- All for one, and one for all
- In unity, there is strength
- Together we stand, divided we fall
- United we shall conquer
- We are all in this together
- All together now
- United we will thrive
- Collective effort yields success
- A shared purpose unites us
- There is strength in numbers (700,000 strong)

A media campaign with strong messages of encouragement for the entire region, such as “We are building back better!” posted on billboards and appealing to how Thessalian farmers are doing battle against climate change and leading the way, on the frontlines, showing Europe how to become climate resilient through solidarity and cooperation, will likely generate a strong sense of pride and purpose. This will strengthen their resolve and willingness to comply with and participate in a transformational process.

The objectives of such a study or analysis would be to ascertain what type of public awareness campaign will be the most effective.

## Quality improvement

Getting the agricultural sector of Thessaly to significantly improve the quality of its goods requires a coordinated effort that will involve not only farmers and agricultural processors but the entire supply chain as well as all farm and factory workers, several vocational and research institutions, government agencies and marketing experts. Thessaly's success will depend on the dedication and engagement of all parties.

There should be a vision of getting Thessalian food products to achieve a superior level of quality to such a degree that the area becomes renowned for quality. This was achieved by several industries in Japan after WWII by studying and dedicating themselves to learning rigorous quality control methodology from Franklin W. Deming. This catapulted Japan to massive economic prosperity even though the country had been destroyed. If Japan could achieve a turn-around after more than 50% of the country had been destroyed, surely Thessaly can achieve a turn-around.

The following measures need to be implemented in order to achieve quality improvement in Thessaly's agricultural sector:

- **Assessment and Awareness:** Quality deficiencies and areas that require improvement need to be identified
- **Training Programs in Best Practices:** Workers, producers and entrepreneurs need to be educated on quality management principles and best practices. Technical skill sets also need to be improved in conjunction with educational institutions.
- **Certifications:** Industry-specific quality standards and certifications need to be developed that align with international benchmarks and producers need to be encouraged, incentivized and assisted in the certification process
- **Research & Development:** Innovation in cultivation technologies or manufacturing processes (in agro-industry) so as to create high-quality goods needs to be promoted.
- **Investment:** Facilities need to be modernized with advanced machinery and automation so as to improve precision and consistency as well as better and more appealing packaging, branding and marketing.

- **Supply Chain Management:** Timely and cost-efficient delivery of quality produce requires streamlining supply chain processes and reduction of waste
- **Quality Control and Assurance:** Robust quality control systems and methodologies that monitor and inspect goods at various stages of production are imperative, as well as encouraging farmers and agricultural processors to establish quality assurance teams that ensure and constantly improve product quality
- **Collaboration and Networking:** Knowledge sharing, collaboration and sharing of resources among businesses, agricultural associations, research institutions and government agencies needs to be fostered by organizing networking events, trade shows and industry conferences where best practices and innovation is showcased and promoted.
- **Financial Support and Incentives:** Financial incentives, such as grants, and low-interest loans should be offered to businesses willing to invest in quality improvement initiatives. Reward programs should be established to recognize and incentivize outstanding quality performance.
- **Consumer Education and Awareness:** Marketing campaigns and labeling of products that meet high-quality standards needs to be undertaken so as to educate consumers about the importance of quality (better taste, for example)
- **Regulatory Framework:** Regulations and policies should be reviewed and revised to align with quality-driven practices and quality improvement goals in the agricultural sector and not impede such efforts.
- **Continuous Improvement:** A culture of continuous improvement should be established, where farmers and processors are encouraged to constantly seek enhancements in quality by adjusting their strategies and programs based on consumer feedback and sales figures.
  - **Monitoring and Evaluation:** Metrics and KPIs (Key Performance Indicators) should be implemented to measure the impact of quality improvement initiatives. Regular assessments should be conducted to gauge progress and identify areas that can be enhanced further.

## Staving off population decline

The population decline in Thessaly is a threat to building back better, but this appears to be a problem all over Greece. There has been a 0.3% decline in the country's population in the past 10 years, the main reasons being the very low fertility rate (1.3 births per woman), the financial crisis in the country in the aftermath of the 2007-08 Global Financial Crisis, emigration, and an aging population.<sup>2</sup>

Nevertheless, an important goal needs to be to stave off the trend of urbanization and get the younger generation interested in agripreneurship. The means to do this is by strengthening the adoption of innovation and collaboration.

Thessaly has a population of around 732,000<sup>3</sup> people, with a total population in Greece of 10.48 million, 6.5% live in Thessaly. The region's population density is approximately 59 people per square kilometer, highlighting the mix of urban centers and expansive rural landscapes. Thessaly, covering an area of about 13,590 square kilometers, constitutes a significant portion of Greece, accounting for approximately 13% of the country's total land area.

The demographic composition of Thessaly reflects a diverse populace, with a blend of urban and rural communities. Cities like Larissa, with a population of around 150,000, and Volos, with approximately 144,000 residents, serve as economic and cultural anchors. The region's population is characterized by a harmonious coexistence of traditional Greek customs and modern influences, contributing to a unique cultural identity.

The youth unemployment rate in Thessaly, encompassing persons aged 15 to 29, currently stands at a concerning 39.8%<sup>4</sup>, positioning it as the second-highest region within the European Union. This percentage contrasts sharply with the EU's average youth

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<sup>2</sup> Studies have shown, however, that whereas fertility rates are often affected by economic downturns due to a reduction of job opportunities, there has been a trend in Europe in the past decade that even with an economic upswing fertility rates have remained very low.

<sup>3</sup> <https://ec.europa.eu/eurostat/cache/digpub/regions/#population-change>

<sup>4</sup> [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Unemployment\\_statistics\\_at\\_regional\\_level&oldid=616427#:~:text=In%202022%2C%20the%20highest%20youth,Central%20Greece%20\(36.5%20%25\).](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Unemployment_statistics_at_regional_level&oldid=616427#:~:text=In%202022%2C%20the%20highest%20youth,Central%20Greece%20(36.5%20%25).)

unemployment rate of 11.3%, underscoring the significant economic challenges faced by the younger population in Thessaly.

Seeing as it is seldom easy to teach old dogs new tricks, it would be advisable to stave off urbanization and reduce youth unemployment by encouraging them to become farmers. In many parts of the world, agripreneurship has seen a significant upswing in recent years. The following strategies would help foster a supportive environment to help attract and retain young talent, ensuring the future sustainability of Thessaly's agricultural sector.

### **1. Education and Training**

- a) Agriculture-related educational programs and courses tailored to the needs and interest of young people need to be developed.
- b) Specialized courses in agripreneurship should be offered at agricultural colleges
- c) Workshops, seminars and training sessions to teach essential skills such as farming practices, financial management and marketing should be organized.

### **2. Experiential Learning**

- a) Internship and apprenticeship opportunities on farms or with agripreneurs in Greece or abroad should be arranged so as to provide hands-on experience.
- b) Agricultural incubators or co-working spaces where young people can experiment with new farming ideas and techniques should be established.

### **3. Mentorship and Networking**

- a) Young aspiring agripreneurs should be connected with experienced mentors who can provide guidance, share knowledge, and offer support.
- b) Networking events and conferences where young agripreneurs can meet potential business partners, investors, and customers should be hosted on a regular basis.

### **4. Financial Support**

- a) Grants, subsidies, or low-interest loans specifically targeted at young agripreneurs to help them start or expand their agricultural ventures should be offered.
- b) Access to EU funding opportunities and similar programs aimed at supporting rural development and agripreneurship should be facilitated.

## **5. Technology Adoption**

- a) The use of modern agricultural technologies, such as precision farming, IoT devices, and data analytics should be promoted, so as to make farming more attractive to tech-savvy youths.
- b) The development of agtech startups should be encouraged by providing incentives for their growth

## **6. Market Access**

- a) Help with accessing international markets should be provided by providing market research, facilitating connections with buyers, and supporting export initiatives
- b) The use of e-commerce platforms and online marketing should be promoted so as to reach a wider customer base.

## **7. Innovation**

- a) Hackathons, innovation challenges, and competitions focused on agriculture-related problems should be arranged and encouraged.

## **8. Public Awareness Campaigns**

- a) Campaigns that highlight the potential benefits of agripreneurship should be launched, focusing on job creation, economic development, and preserving traditional farming practices integrated with modern tech.
- b) Success stories of young agripreneurs should be showcased so as to inspire others.

## **9. Policy support**

- a) A supportive ecosystem should be created for young agripreneurs by collaborating with local governments and advocating for policies that promote agripreneurship, such as facilitating land access, simplifying regulations and offering tax incentives.

## **10. Cultural shift**

- a) The perception of agriculture as an outdated or undesirable or risky profession should be changed by showcasing its importance in addressing food security, sustainable development, and rural revitalization.
- b) A culture of entrepreneurship and pioneering spirit should be fostered by celebrating agripreneurs and their achievements.

## Transitioning from older to younger farmers

The average age of farmers in Greece is around 55, years whereas as the average age is 44 years. The same holds true for farmers in Thessaly, where the average farmer is 58 years. Also, as in much of the world, Greek farmers tend to never retire. This poses a problem as they are often set in their ways and need to make way for younger farmers who will more readily adopt the necessary changes to farming practices that will ensure the survival of Thessaly's agricultural sector.

Whereas many people at retirement age tend to struggle with leaving the work force, farmers are especially reluctant for a number of reasons. First and foremost, they often have a deep passion for agriculture and find fulfillment in the lifestyle as it involves having deep connections to the local community and a sense of purpose and pride derived from providing food and sustenance. Many farmers continue for financial reasons: like many self-employed individuals, farmers tend to lack adequate retirement savings, making it difficult for them to retire comfortably.

In some European countries, governments have resorted to creating programs where aging farmers are bought out, especially those who resist change and rely on outdated farming practices that pollute excessively, with the requirement that they cease farming permanently.

There is a need for effective intergenerational farm succession and land mobility strategies to ensure the future viability of Thessaly's agricultural sector and long-term sustainability of food production systems. However, the mental health and well-being of the farmers must be taken into consideration as they often have a strong sense of attachment to their occupation and land, which forms a core aspect of their identity and social belonging. The prospect of relinquishing control of a farm and retiring can be very daunting. Researchers have proposed that initiatives such as a social organization for older farmers would help provide a sense of purpose and social connectedness for older farmers, easing anxieties associated with intergenerational farm succession and retiring from the trade. Such an organization would also provide peer-to-peer support, facilitating the exchange of agricultural knowledge between generations. Whereas social inclusion and meaningful activities are important for all individuals, farmers in rural areas are especially vulnerable.

In order to facilitate successful farm succession, policy-makers need to be sensitive to the social and emotional significance of farming and see to the well-being and social inclusion of older farmers, not just focusing on the younger generation.

Transitioning from older farmers using outdated techniques to younger farmers embracing more sustainable practices will not be easy. The following interventions will likely help:

- **Financial Incentives:** The government can offer financial incentives or subsidies for older farmers to retire or transition their farms to younger farmers who are willing to adopt more sustainable practices. This could include tax breaks, retirement packages, or grants for farm succession planning.
- **Peer-to-Peer Learning:** Establishing peer-to-peer learning networks where older and younger farmers can exchange knowledge and experiences can help bridge the gap between generations and encourage older farmers to hand over the reins to a successor.
- **Community Engagement:** Arranging discussions in the local community and/or media about the importance of sustainable agriculture and the benefits of transitioning to newer practices can help build support for change and encourage older farmers to consider retiring.
- **Policy Support:** Policies can be implemented that promote sustainable agriculture and provide support for farmers who are willing to transition or hand over the reins to younger successors who are more open to adopting modern techniques and practices that will conserve water and promote the resilience of the Thessalian agricultural sector. The policies ought to include regulations on water usage, crop types and glass greenhouse cultivation.
- **Succession Planning:** Older farmers can be encouraged to develop succession plans for their farms that involve transitioning ownership to younger farmers who are committed to sustainable practices. This can take the form of providing free or subsidized legal advisory services.

## Mitigating populist uprisings

While many members of the community are traumatized, there has been significant discontent and disapproval of government. There is a substantial risk that discontent can deteriorate and turn into a Farmer's Revolt. Such a revolt is currently spreading in Europe, with farmers in several countries angrily protesting the removal of fuel subsidies and tax exemptions as well as the influx of cheap labor and grains from Ukraine. Convoys with up to 10,000 farmers have been marching and blocking roads in protest of government measures such as removal of fuel subsidies and tax exemptions.



*Figure 1: Recent farmer protest all over Europe*

Fringe and extremist political parties are also actively infiltrating such protests and there is growing concern that the revolts can become violent and/or be used to the advantage of extremist political parties. The vice chancellor of Germany was in January close to being attacked by hundreds of angry farmers protesting the government's plan to cut fuel subsidies. Far right parties in both Germany, the Netherlands, Italy, France and Spain are actively urging its members to infiltrate the farmer protests. While the most forceful protests have taken place in Germany, farming associations in Spain are currently urging their members to emulate the German farmers and drive their tractors to Madrid in late February to protest.

In Eastern Europe, the farmers' protests are focused more on the consequences of the War against Ukraine due to the EU having granted Ukraine temporary dispensation to export and sell their agricultural products duty free throughout the European Union. This is resulting in very significant financial losses among Eastern European farmers as price dumping on grains is hurting their bottom line, at least temporarily.

Romanian farmers and truckers have been protesting in Bucharest and even trying to stop Ukrainian trucks from entering Romania. Farmers are demanding faster payouts of compensation needed to counterbalance the influx of cheap Ukrainian grain and the truckers are upset that Ukrainian truckers fleeing their war-torn country are taking jobs at lower wages. Romanian farmers are also upset that they are not eligible for bank loans due to challenging times of late and claim to have been inspired by the German farmer protests.

Farmers differ from other industries in that they are at the mercy of weather and climate. The challenges they are currently facing, compounded by anxiety over water scarcity and having had two cyclones destroy their livelihoods in just 3 years' time, can lead to a breaking point. In order to prevent farmers' grievances from deteriorating into a revolt or farmers succumbing to opportunistic extremists or fringe political parties, it is advisable to take a proactive approach and implement the following measures:

1. **Regular dialogue:** Channels of communication need to be fortified between government authorities, agricultural organizations, and farmers. By holding regular meetings and consultations, issues can be identified early and mutually acceptable solutions found.
2. **Income support**
3. **Access to credit and subsidies:** in particular to facilitate invest in more modern farming equipment as this will improve farm productivity and thereby income which in turn will generate more tax revenues.
4. **Value addition:** By providing support for value addition through processing and branding, farmers will be able to access higher-value markets and reduce their income volatility.
5. **Infrastructure improvement:** Reforms to agriculture-related infrastructure, in particular maintenance of irrigation canals, dykes and streams, need to be implemented.

6. **Insurance:** Agricultural insurance programs that protect farmers from weather-related risks need to be developed so as to provide a safety net in times of disaster or adversity.
7. **Support to young farmers:** See measures listed above.
8. **Regulatory reforms:** Bureaucratic hurdles need to be reduced (see below) and new policies need to be farmer-friendly and conducive to innovation.
9. **Expansion of extension services**
10. **Social safety nets:** Assistance needs to be provided during periods of hardship or economic downturns or climate change-induced disasters.
11. **Conflict resolution:** Effective mechanisms need to be established for resolving disputes between farmers and other stakeholders, including government agencies, processors, and retailers, to prevent conflicts from escalating.

## Reducing bureaucratic hurdles

Greece has a historically complex and bureaucratic system, which has contributed to challenges in business operations and economic development. Efforts to reform bureaucracy have been ongoing, but if Thessaly is to Build Back Better, this would be an opportune time to reform the red tape mentality.

Addressing excessive bureaucratic red tape is a complex and multifaceted challenge. It is a long-term endeavor, and the progress may have to be gradual, requiring a combination of legislative changes, administrative actions, and a commitment to ongoing improvement. It is crucial to strike a balance between regulation and protection of public interests to ensure that regulatory reforms do not compromise safety, health or environmental standards.

The following is a list of means by which one would go about reducing bureaucratic red tape:

1. Regulatory Reform:
  - a. Existing regulations must be reviewed thoroughly so that unnecessary, redundant or overly burdensome regulations are identified and remedied.
  - b. Regulations need to be simplified and streamlined where possible, reducing the number of bureaucratic steps required for compliance.
  - c. Establish clear, objective criteria for regulations, ensuring that they are based on sound evidence and risk assessment.
2. Digitalization and Automation
  - a. Bureaucratic processes need to be automated by implementing digital platforms and technology, thereby reducing paperwork and administrative bottlenecks.
  - b. User-friendly online systems need to be developed and citizens trained in using them to submit applications, interact with agencies and access information
3. Regulatory Impact Assessments
  - a. Assessments that evaluate the economic, social and environmental impacts of proposed regulations should be made mandatory and also made publicly available for scrutiny and input from affected stakeholders.

4. Transparency and Public Engagement
5. Accountability
  - a. Mechanisms that hold government agencies accountable for excessive red tape and bureaucratic delays need to be established.
  - b. Performance metrics and targets need to be implemented to measure the efficiency and effectiveness of regulatory agencies.
6. Regulatory flexibility
  - a. Regulations need to be tailored to the size of the business or industry in question.
  - b. Exemptions or simplified compliance requirements should be provided for small businesses and startups so as to reduce their regulatory burden.
7. Interagency coordination
  - a. Better coordination and communication between different government agencies reduces duplication and conflicting regulations.
  - b. Mechanisms for resolving interagency disputes and conflicts need to be established.
8. Political will and Leadership
  - a) Strong political leadership and will is essential when engaging in regulatory reform. Political leaders must be willing to prioritize the reduction of bureaucratic red tape and provide the resources and support to carry out reform initiatives.
9. International Best Practices
  - a. Best practices from European countries that have successfully reduced bureaucratic red tape should be studied and adopted.
10. Monitoring and Evaluation
  - a. Feedback from businesses, citizens and experts should be sought so as to gauge the effectiveness of the reforms and make adjustments as needed

## **Agricultural Associations**

History has proven that when farmers belong to a strong Agricultural Association, it strengthens them in a number of ways. Greece does not have a nationwide agricultural association, as is common in other European countries. Instead, there are a number of local and regional agricultural organizations, cooperatives and associations representing different sectors of agriculture.

Strong agricultural associations in other European countries promote cohesion and financial strength. This has enabled them to establish a number of subsidiaries that provide services such as the following:

- consultancies that provide advice and bookkeeping services for farmers
- quality certification
- insurance
- collective purchasing
- processing and marketing of produce
- strategy development
- publishing (both print and online media)

A strengthening of the agricultural associations in Greece and ensuring that they embrace the concepts of innovation adoption, cooperation and compliance will likely be a powerful means by which to get farmers in Thessaly to embrace these changes.

## **Sociological study**

Seeing as the people of Thessaly need to be involved to a considerable extent in numerous facets of the remediation of the area, a comprehensive sociological study needs to be conducted in conjunction with the planning of the works so as to ensure their full cooperation and ability to adapt to the new situation and put their hearts and souls into transforming Thessaly and reviving its agronomical sector.

The Terms of Reference for such a study will primarily be to map out the motivations and interests of all key stakeholders, not just individual farmers and agri-businesses, but also

agricultural cooperatives, government agencies and local communities, and subsequently ascertain how to best get them to embrace compliance, cooperation, intergenerational succession and innovation adoption.

### **Additional Recommendations**

It would be advisable for the General Secretariat of Civil Protection to be instructed to press charges against officials who neglect to perform their duties in regard to management of waterways or who fail to follow orders in times of emergency.

Funds should also be allocated for the policing of rivers, streams and canals to ensure that people are not erecting illegal dams, as well as the policing of farmlands to ascertain that illegal boreholes are not being drilled.