

# EXPLORING THE RESPONSE TO CLIMATE CHANGE THROUGH THE REGIONAL CLIMATE CHANGE ADAPTATION PLANS OF FOUR GREEK REGIONS: NORTH AEGEAN, CENTRAL MACEDONIA, THESSALY & WESTERN GREECE

FINAL CONCLUSIONS



GREEN EUROPEAN  
FOUNDATION



FEBRUARY 2023



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# **EXPLORING THE RESPONSE TO CLIMATE CHANGE THROUGH THE REGIONAL CLIMATE CHANGE ADAPTATION PLANS OF FOUR GREEK REGIONS: NORTH AEGEAN, CENTRAL MACEDONIA, THESSALY & WESTERN GREECE**

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**F I N A L   C O N C L U S I O N S**

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**GREEN EUROPEAN  
FOUNDATION**

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## The Regional Climate Change Adaptation Plans<sup>1</sup>: a necessary but not sufficient measure.

The Green European Foundation (GEF) project 'Regional Adaptations to Climate Change', implemented by the Green Institute, involved the examination of the response to Climate Change of four Greek regions, based on the projections contained in their Regional Climate Change Adaptation Plans.

Four conference events took place in the four regions depicted in Figure 1: Northern Aegean (1), Central Macedonia (2), Thessaly (3) and Western Greece (4); the overall findings of these events is presented in this booklet.

The analysis and proposals for action are tied to the regional use of European Union funding and are expected to contribute to the EU-level. They are combined with the corresponding reflections being developed within the EU on climate change adaptation and/or resilience strategies.



Figure 1.  
The 4 Regions examined for their Regional Climate Change Adaptation Plans

The conclusions and findings contained in this paper are considered to be important to the European responses to climate change and will be disseminated to the EU Committee of the Regions, MEPs and of course on the GEF website and within the GEF network. They will also be disseminated to the public and to the Union of Greek Regions, the Central Union of Municipalities of Greece and the Ministries of Environment and Agriculture.

We believe that the critical evaluation of the Regional Climate Change Adaptation Plans also contributes to increasing the effectiveness of these plans and consequently, the efficiency of European funding. The Green Institute of Greece, as an implementing partner for GEF, has sought to give space and be a platform for positions that rarely manage to emerge in the mainstream debate, but that are critical to the course of action necessary to tackle Climate Change at the European and national level.

1 In academic contexts, it is customary to translate the word for 'adaptation' as 'adaptability' as it describes a dynamic capacity. However, this term has become prevalent as 'adaptation' in management texts.

## Introduction

In April 2016, the Ministry of the Environment, in implementation of the European Union Strategy on Adaptation to Climate Change (COM (2013) 216), defined the National Strategy for Adaptation to Climate Change, on which the respective Regional Plans were based (see Annex. 5). Based on this National Strategy, the **Sectoral Adaptation Policies** were defined as follows:

- 4.1 Agriculture and livestock farming
- 4.2 Forestry
- 4.3 Biodiversity and ecosystems
- 4.4 Fisheries
- 4.5 Aquaculture
- 4.6 Water resources
- 4.7 Coastal zones
- 4.8 Tourism
- 4.9 Energy
- 4.10 Infrastructure and Transport
- 4.11 Health
- 4.12 The Built Environment
- 4.13 Mining and quarrying
- 4.14 Cultural Heritage
- 4.15 Insurance industry

After this, **Adaptation in Practice** was determined as follows:

- 5.1 Priority and assessment of adaptation measures
- 5.2 Specificities and types of adaptation investments
- 5.3 Methods for evaluating and ranking investments
- 5.4 Integrating adaptation policies into broader policies
- 5.5 The international (cross-border) dimensions of adaptation
- 5.6 Adaptation capacity building: research, training and awareness raising
- 5.7 Consultation with social partners on adaptation
- 5.8 Risk prevention and management
- 5.9 European-wide efforts to adapt to climate change
- 5.10 Climate change adaptation and international security

With realistic sincerity, the experts in 2016 made a distinction between 'sectoral adaptation' and 'adaptation in practice'. However, from 2018 onwards, the implementation of the Regional Climate Change Adaptation Plans took on a 'procedural' institutional character, as we will explore here. The experts also ranked the highest level of stakeholders' and citizens' alertness as being a first step in mitigating any residual impacts caused by the sectoral approach. This alertness of stakeholders as well as citizens has actually degenerated into simple participation in the consultation of the Regional Climate Change Adaptation Plans and a few sporadic information events. It is noteworthy that experts believe that the National Climate Change Adaptation Plan will contribute to the country's **resilience**<sup>2</sup> against climate impacts.

The present project aimed to strengthen and promote the debate about climate change at the regional level, bringing together EU experts such as Panagiotis Panagos, JRC-Research Officer at the European Commission, Stavros Solomos, International Expert in Planetary Changes, Demosthenes Sarigiannis, from the EU Joint Research Centre, as well as experts who have served as scientific collaborators of MEPs and MPs (Rigas Tsiakiris, Panagiotis Vouros, Ilias Gianniris), academics, regional advisors, activists and policy makers. The project was designed to involve all stakeholders in the evaluation and critique of each Regional Plan. Each conference event included a round table discussion. The conclusions and elaboration of the findings of the four events are presented in this report.

The analysis and proposals for action are expected to contribute to the EU level, providing solid material for the discussion and assessments on the use of EU funding, as well the importance of the regional dimension in the debate around the EU's wider adaptation to climate change strategies, policies and reflection.

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2 The term 'resilience' is used in many senses. In this report the term is used as 'climate change resilience' or 'resilience to the impacts of climate change' or even 'climate resilience'. The reader should not confuse it with other similar uses of the term such as 'resilience to natural disasters'. The term is also found in other considerations such as 'resilience to economic crises' and so on, so it is advisable to identify which 'resilience' one is referring to.

## General evaluation of the project:

The 4 interdisciplinary and intersectoral events that took place resulted in the following:

- Supporting the transition of Climate Change Adaptation Plans from national (NUTS II) to regional (NUTS III) level<sup>3</sup>.
- Contributing to the promotion and publicity both of the existence and importance of the Regional Climate Change Adaptation Plans to the general public, which is not duly informed despite more than 4 years of regional planning and involvement having already passed.
- Identifying the need for the active participation of the lower levels of public administration, municipalities, local actors, stakeholders and the local population in the Regional Plans, beyond the simple information provision which the Regional Climate Change Adaptation Plans include.
- Drawing conclusions useful for all administration levels (EU, national, regional, local).
- A critical review of the concepts of 'adaptation' and 'resilience' in the Strategy for Climate Change adaptations, as a contribution to the EU-wide policy-making.

The 4 regions whose plans and strategies were examined were selected by the Green Institute of Greece based on the following criteria:

- The greatest possible coverage of the country's climatic diversity
  - High geographical diversification (lowland, semi-mountainous, mountainous and island regions, in line with EU policy on disadvantaged areas)
  - The specificities of each region (apart from climatic, economic, productive, developmental, technological, etc.).
1. The first event (North Aegean) focused on island conditions, terracing and erosion-desertification, as well as the importance of local, high-quality products.
  2. The second event (Central Macedonia) focused on the management of river systems, the restructuring of agriculture in mainly lowland conditions, groundwater recharge and the special role of agroforestry.

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3 The NUTS II spatial category is for the Member State and NUTS III for the regional level.



3. The third event (Thessaly) focused on appropriate adaptations to address desertification and the importance of water balance in each catchment basin as an adequate measure of adaptation to Climate Change.
4. The fourth event (Western Greece) focused on the importance of appropriate adaptations to prevent flooding and coastal erosion and the proper management of protected areas.



Figure 2.  
*Climate zones of  
Greece*

Twenty four renowned scientists from all levels (European to local), experts, academics, EU officials, Regional Planning Authorities, NGOs, activists, regional consultants and stakeholders participated in at least one of the four events, reviewed the Regional Climate Change Adaptation Plans of each Region detail and participated in the round tables at the end of each event. The total number of hours was 14 and the presenters participated for the entire duration of each event (3:30 hours).

**List of participants, (in brackets the number of events attended)**

1. Panagiotis Panagos, JRC-Research Officer at the European Commission, (3)
2. Stavros Solomos, Researcher 3, Centre for Atmospheric Physics and Climatology, Academy of Athens, Director Christos Zerefos, National Representative for Climate Change (4)
3. Michalis Bakas, Environmental Scientist, MDE Environ. Policy and Management, former Regional Counsellor of the North Aegean, EGP representative on migration issues (1)
4. Eleni Briassouli-Kaptanaki, Professor Emeritus, Department of Geography, University of the Aegean, President of the National Committee to Combat Desertification, (1)
5. George Plakotaris, Regional Management Directorate of North Aegean, (1)
6. Theodora Petanidou, Professor, Department of Geography, Laboratory of Biogeography & Ecology, Mediterranean Ecogeography, University of the Aegean, (1)
7. Athanasios Kizos, Professor of “Geography of the Countryside”, Chairman of the Department of Geography, University of the Aegean, (1)
8. Philippos Ganoulis, designer, implementation of Greek and European Programmes, Regional Councillor of Central Macedonia, (1)
9. Argyris Ginoudis, veterinarian, youth activism coordinator, assistant adviser to local councilor on education (1)
10. Ilias Gianniris, scientific advisor to ex MEP Al. Alavanos, to ex MP J. Dragasakis, to ex MP and ex deputy minister J. Tsironis, Professor of the Technical University of Crete, former Regional Councillor of the North Aegean, President of the Green Institute, (4)
11. Demosthenes Sarigiannis, Professor, Aristotle University of Thessaloniki, Department of Chemical and Environmental Engineering, IUSS Institute of Advanced Studies - Pavia 27100, Italy, EU Joint Research Centre (2000-2009) (1)
12. Xenophon Zisis, regional activist of Central Macedonia, energy systems expert, author (1)
13. Nikos Poutsiakas, Sociologist, 2 postgraduate degrees, member of the network of green municipalities, former Regional Councillor of Thessaly, (1)

14. Nikitas Mylopoulos, Professor, Director of the Laboratory of Hydrology and Water Resources, Department of Civil Engineering Resources, University of Thessaly, expert in, water scarcity under climate change, extreme events and climate change, member of EWRA, IWRA, IAHR, IAHS (1)
15. Antonis Skouloudis, Assistant Professor, Centre for Environmental Policy & Environment, Department of Environment, University of the Aegean (1)
16. Konstantinos Vlahopoulos, Environmental Scientist, MSc, PhD Candidate in Population Ecology, University of Thessaly, (1)
17. Argyropoulos Zisis, Chemistry - Environmental Scientist, author of the book "Climate Change: Preparing Thessaly" (1)
18. Vouros Panagiotis, Environmental Scientist, Regional Director of Thessaly, scientific advisor of ex MEP Mr. Kriton Arsenis (1)
19. Kyriakos Galanis, Regional Councillor of Western Greece, Former N.I.C. at UN Peace Keeping Operation (1)
20. Rigas Tsiakiris, PhD in forestry, specialist in sustainable management of the rural Mediterranean landscape, specialist in Nature 2000 areas (4)
21. Antonis Sakalis, Environmental Scientist MSc, Researcher ENVIROPLAN S.A., Environment, Climate Change and Waste Management Consultant, member of the International Solid Waste Association (ISWA) (1)
22. Kostas Papakonstantinou, environmental activist/member of environmental organisations working on environmental education and political ecology, former Regional Councillor of Western Greece (1)
23. Vassilis Aivalis, President of the Technical Chamber of Western Greece, Deputy Director of the European Programmes Management for Western Greece, Peloponnese, Epirus and the Ionian Islands (1)
24. Giorgos Kanellis, teacher, activist, NGO Ecological Movement of Patras, former Regional Councillor of Western Greece (1).

**The following points were raised/discussed at the events:**

- The European framework for Climate Change Adaptation Plans was presented as well as expected climate changes in each Region for the next decades. The need for new valid data and new approaches was documented, one that would be more demanding than the current planning framework in which the Climate Change Adaptation Plans were designed and implemented.
- The binding importance that spatial planning must have in order to combat land degradation and desertification
- It was pointed out that the National Action Plan for Combating Desertification is not currently active and is also not specific to each region, in order to help determine the appropriate implementation measures.
- The value of the new EU Common Agricultural Policy (CAP) in maintaining land in good agricultural, pastoral and environmental condition, whether this is under private ownership or is public or common land. The Climate Change Adaptation Plans should implement the CAP to include measures for soils, because they are a horizontal issue under the European Green Deal. There should be particular measures in the Plans to deal specifically with soil erosion, since the rate of erosion is on average twice the rate of soil formation.
- It was recognized that the problem of tackling climate change is complex, multi-dimensional, multi-level and should not only be seen as a perfunctory obligation: a task to be carried out in conditions of poor monitoring and lack of time, data, expertise and people.
- The need for dynamic planning, through reviews and feedbacks, was recognized, to ensure that the Climate Change Adaptation Plans address the various aspects of climate change in a combined way, actively involving local actors, so that implementation measures can be adapted accordingly.
- It was pointed out that the objectives of the EU Biodiversity Strategy 2030, which underline the effective protection of protected areas, the need to achieve the target of planting 3 billion trees in the EU, the increase of organic farming and the reduction of chemical and pesticide use, should be included as measures in the Climate Change Adaptation Plans. The role of afforestation, forestry and especially the potential of agroforestry in the fight against climate change was particularly highlighted.
- The need to define specific adaptation measures for semi-mountainous soils of moderate or low productivity, in

line with the specifications of the EU's mountainous and disadvantaged areas, especially for the North Aegean, but also for semi-mountainous areas of Central Macedonia (Halkidiki), Thessaly and Western Greece, was underlined, with the objectives of preserving terraces, appropriate water management, the need for immediate intervention in burnt forests after fires (erosion control measures, restoration with appropriate species), emphasis on agroforestry systems and linking support to farmers with soil protection and carbon sequestration measures.

- The need for different planning that includes prevention rather than ex-post provision of civil protection was underlined. The example of providing for flood relief basins instead of narrowing the beds of streams and rivers, as is currently the case (see Annex 1) was mentioned.
- It was pointed out that the Climate Change Adaptation Plans should be based on the priority of increasing resilience to Climate Change by identifying and locating productive reforestation, water retention dams, agroforestry systems and identifying the required kilometres of maintenance of terraces required to be functional (i.e. preferably cultivated with tree species), measures that increase resilience to Climate Change such as flood reduction, drought and waterlogging, while contributing to increasing the local productive base. It should also be a priority not just to inform citizens and local institutions and actors, but to support the involvement of local actors and civil society in good environmental practices at the local level (see Annex 2).
- The need to change the vision and priorities that exist and to substantially revise the Climate Change Adaptation Plans was expressed. This also implies changes to the EU-wide strategic planning and policy-making, to take into account the findings of regionally-focused projects such as this.
- The value of the rational construction of settlements in addressing climate change in the built environment and the care that must be taken to ensure that planning is not simply outsourced by regional administrations to contractors but that it implements measures at the local level, with the participation of stakeholders, economic actors and citizens was also highlighted.

## Top points in favour of the revision of the Climate Change Adaptation Plans

Figure 3.  
Slide from the presentation of EU expert Panos Panagos

### 1. The value of soil as a new EU policy



### 2. The value of regional water supply and demand balances in the country's basins and aquatic compartments

Figure 4.  
Slide from the presentation of Professor Nikitas Mylopoulos

Growth and consumption is a dead end. Today, the continuous demand for water supplies must be replaced by achieving a balance between water supply and demand, by maintaining the big water consumption to the levels of natural deposits.

The solution is not in planning big water plans of carrying water from distant areas, but in coordinated interventions to adjust "development" to the carrying capacity of ecosystems

### 3. The value of terraces as green infrastructure

Figure 5.  
Slide from the presentation of Professor Theodora Petanidou

**Συμπέρασμα – Δράσεις με προτεραιότητα για το Β. Αιγαίο**

Λειτουργική αποκατάσταση αναβαθμίδων (πράσινη υποδομή και όχι μόνο) που λύνουν προβλήματα:

- Διαχείρισης νερού (διάβρωσης – πλημμυρών, ξηρασίας)
- Επισιτισμού (σημαντικό, ολοένα και περισσότερο)
- Βιοποικιλότητας !

Συμβουλές:

- Λειτουργική αποκατάσταση
- Επιστάσια γης
- Ενίσχυση δενδρωδών καλλιιεργειών



4. The value of Land Stewardship Organisations for the implementation of the new CAP

Δράσεις-κλειδιά για την επίτευξη των στόχων

- Σύσταση Οργανισμού Επιστασίας Γης
- Καλλιέργεια & παραγωγή **κλιματικά-έξυπνων προϊόντων με υψηλή προστιθέμενη αξία**, με συμμετοχή ντόπιων αγροτών και για επίτευξη της βιωσιμότητας & συνέχισης του εγχειρήματος
- Δημιουργία **ετικέτας πιστοποίησης** για προϊόντα αναβαθμίδων παραγμένα με κλιματικά έξυπνες πρακτικές
- Επικοινωνία με **τοπικές ομάδες άλλων νησιών του Αιγαίου** για επέκταση της βιώσιμης βιώσιμης προσέγγισης

Figure 6. Slide from the presentation of Professor Theodora Petanidou

5. The value of ranking multiple plans according to set of criteria

Απαιτήσεις & προκλήσεις χωρικού/χωροταξικού σχεδιασμού για την καταπολέμηση της υποβάθμισης της γης

Ορισμός του αντικειμένου του σχεδιασμού και στοχοθεσία

**Στόχοι του σχεδιασμού**  
 Απορρέουν από τον ορισμό του αντικειμένου...  
 Διαμορφώνονται είτε κεντρικά, ή/και συμμετοχικά  
 Περιλαμβάνονται γενικοί εθνικοί στόχοι και διεθνείς υποχρεώσεις  
 Προτεραιότητες και αντισταθμίσεις μεταξύ στόχων  
**Στρατηγικοί στόχοι:** Τυπική υποχρέωση ή/και 'παράδοση';

**Κρίσιμες επιρροές στη στοχοθεσία**  
**Κοινό όραμα** για την περιοχή; Κοινές επιδιώξεις;  
 Συγκρούσεις απόψεων και επιδιώξεων;  
 Προωθείται κυρίαρχη άποψη για το αναπτυξιακό μέλλον, συνεπώς, και για τις χρήσεις γης της περιοχής;

Οι προκλήσεις του χωρικού/χωροταξικού σχεδιασμού για την καταπολέμηση της υποβάθμισης της γης και της εφαρμογής της

Figure 7. Slide from the presentation of Professor Eleni Briassoulis

6. The value of forests and afforestation in the new CAP and a critique of the allocation of the actions of the Regional Plans.

✓ Η κλιματική αλλαγή χρειάζεται ενέργειες: Ας πάμε κατευθείαν στις δράσεις!

Πίνακας 5-8: Προκαταλογιστές δράσεων και μέτρων ΠΣΤΚΑ 7ης ενότητας

ΤΟΜΕΑΣ	ΑΡΙΘΜΟΣ ΜΕΤΡΩΝ	ΒΙΩΣΙΜΟ ΣΑΛ ΜΕΤΡΟ	ΚΑΤΑΒΟΛΗ ΚΟΣΤΟΥΣ
ΟΡΓΑΝΙΚΑ ΜΕΤΡΑ		9.900.000,00	4,14%
ΕΡΓΑ	26	26.590.000,00	10,7%
ΔΑΦΝ	7	4.300.000,00	1,76%
ΑΝΑΒΑΘΜΙΣΤΕΣ ΚΤΑΦΟΡΕΣ	4	2.480.000,00	1,0%
ΒΙΟΠΟΝΕΥΜΑΤΑ - ΟΙΚΟΣΥΣΤΗΜΑΤΑ	18	9.350.000,00	3,8%
ΑΓΡΟΑ - ΚΑΤΟΙΚΙΑΚΑ ΣΥΣΤΗΜΑΤΑ	12	9.990.000,00	4,0%
ΚΑΤΑΝΟΜΗ ΠΟΡΩΝ	17	33.260.000,00	13,2%
ΠΑΡΑΚΤΙΑ ΣΠΙΝΕΣ	12	25.790.000,00	10,3%
ΤΟΥΡΝΑΜΑ	13	45.700.000,00	18,3%
ΜΙΚΡΟΚΛΙΜΑΤΙΚΕΣ ΤΕΧΝΙΚΕΣ	3	350.000,00	0,14%
ΦΕΡΩΝΕΣ ΤΟΡΦΙΜΩΣΕ	11	9.900.000,00	2,0%
ΔΡΗΚΗ (ΝΕΡΤΣΙΕΣ)	9	5.430.000,00	2,1%
ΥΠΟΛΟΜΕΣ ΜΕΤΑΦΟΡΩΝ	6	15.550.000,00	6,0%
ΥΔΡΑ	8	480.000,00	0,2%
ΔΟΜΗΜΕΝΕΣ ΠΕΡΙΒΑΛΛΟΝ	14	6.900.000,00	2,7%
ΠΟΝΤΙΝΙΚΗ ΚΑΘΗΜΕΡΙΑ	8	1.375.000,00	0,5%
	185	193.095.000,00	76,0%

✓ Πρωτογενής τομέας 20%  
 4 Εθνικά Πάρκα, 34+7 Ν. 200

✓ Τεχνικά έργα ~100 εκατ. σε ποτάμια, ακτές, υδατινούς πόρους

Σημείωση: Το Ταμείο Μολυβιάτη = 215 εκατ. Ευρώ!

Figure 8. Slide from the presentation of Dr. Rigas Tsiakiris - Analysis of the funding of the Regional Plan for Western Greece and critique of the low funding for forests and reforested areas.

For example, the Climate Change Adaptation Plan of Western Greece allocates only 2.3% of the budget for forests and for reforested areas only 1.4% (7.000.000 €) while for technical projects related to water resources, flood control works in rivers and coastal uses it allocates 54% (over 100.000.000 €).

An important factor that does not facilitate the adoption of agroforestry projects and the increase of trees is the non-activation by national policies of sub-measure 8.2 of the Rural Development Program in all programming periods between 2007-2027 for the installation and maintenance of agroforestry systems, which is considered an urgent and necessary measure for the qualitative transformation of the countryside (Article 23 of EU Regulation 1305/2013).



Figure 9.  
The activation of sub-measure 8.2. of the CAP in various European countries;

- The value of including measures for the active participation of farmers/producers, citizens and local stakeholders.

## Τι μπορούμε να κάνουμε;;;;;

Τι μπορούμε να κάνουμε στον αγρό μας ή στην περιοχή μας;

- Να αλλάξουμε καλλιέργεια...
- Να προσαρμόσουμε πρακτικές για να μειώσουμε το στρες σε φυτά και καρπούς (και από εχθρούς)
- Να χρησιμοποιήσουμε τεχνολογία για παρακολούθηση και αύξηση αποτελεσματικότητας πρακτικών και επεμβάσεων (ψεκασμών, λιπάνσεων, κτλ.)

**Η φύση είναι ή μπορεί να είναι σύμμαχος**

Figure 10.  
Slide from the presentation of Professor Athanasios Kizos



## Conclusions

- The Climate Change Adaptation Plans are an essential Roadmap that implements EU policy at regional level. The fact that the relevant 'baseline' studies have already been completed is an important step.
- Applying EU standards transposed on the Greek context, the first sections of the Plans make extensive reference to reforestation, to water management projects (surface and underground), point out the need for better management of irrigation networks and irrigation water and the need to limit irrigation in relation to the selection of suitable crops. They also refer to the need to rehabilitate and protect areas at risk of flooding, to flood relief dams, to small water retention dams and to Ecological Corridors.
- These reports in the analytical part of the Plans are not accompanied by the corresponding measures. There is a major mismatch between the estimates and forecasts in the analytical part of the Climate Change Adaptation Plans and the measures that the implementation and synthesis parts should entail, with the result that the expected outcomes from EU policies are not produced. One such example of appropriate projects required for flood management is presented in Annex 1.
- Finally, the Climate Change Adaptation Plans place too much emphasis on measures for e.g. large impervious reservoir projects initiated in previous periods, which do not enrich the groundwater aquifer, have high evaporation rates and are likely to be empty at the time when irrigation is needed, as has been the case in several similar projects implemented in the past. They also place too much emphasis on a few large impervious dams that are too costly relative to the benefits, rather than many small containment dams that enrich the aquifer, preserve biodiversity, facilitate revegetation of surrounding land, and reduce risk in the event of dam failure. In the past, similar plans have created significant points of friction between Greece and the EU, such as the diversion of the waters of the Acheloos River from the Region of Western Greece to the Region of Thessaly, the Tsiknia dam in Lesvos, the Kore's Bridge dam and the Kataris Dam in Chios, the old large dam at Lake Pinios in the Peloponnese. The implementation of the Regional Plans does not exclude, and concludes by proposing the funding of such similar projects, which in the past have had a negative environmental footprint.
- The way in which the Plans attempt to address the issue of Climate Change through a technocratic lens, by adding more innovation and technology to solve the problem, hoping that they can fix both the earth and the climate, is akin to treating

this issue like a broken 'machine' with faulty parts, rather than a complex and complicated issue, as it really is.

- Related to the above is that the Plans, as adaptation plans, do not include ecosystemic solutions as much as they should but instead, treat ecosystems as threatened areas that are suffering the impacts of Climate Change and should only be preserved. These areas are not treated as functional aspects in enhancing ecosystems (forests, wetlands, coasts, etc.) as means of protection against climate change, which would change the priorities of proposed actions.
- Following in the same logic, all stakeholders and citizens mentioned in the Climate Change Adaptation Plans, citizen farmers, livestock farmers, businesses, municipalities and others are considered as recipients of information on the impacts and adaptation measures, as interested parties who should adapt to the proposed technical measures of each Climate Change Adaptation Plan. On the contrary, it is also known from EU-wide approaches such as the new Green Deal that for measures to be effective, they should be oriented towards and provide for the parallel active participation of citizen actors in local actions and projects that address all aspects of climate change management that increases resilience and/or mitigates the impacts of climate change and not just 'technical' adaptation measures. An example is presented in Annex 2.
- Such a wider parallel view would lead to a coherent plan to address climate change as a whole, not just adaptation, and would include, for example, quantified measures for:
  - Sustainable use of forests and woodlands which would help reduce flammable matter and at the same time contribute to the production of agro-food, forest and non-wood forest products
  - Targeted afforestation with suitably adapted local species that can produce both forest and non-wood forest products
  - Changing irrigation systems to be more efficient
  - Restoration of terraces and creation of containment dams
  - Local land use management actions
- This kind of integrated approach would include measurable and costed results and an assessment of the expected climate change mitigation effects. It would result in practical measures and measurable outcomes such as 'this number of areas suitable for reforestation', 'these many kilometres of terrace restoration', 'this many small dry stone dams upstream of streams to prevent downstream flooding', etc.

- These kinds of proposals do not exist in the Regional Climate Change Adaptation Plans, although EU policy guidelines do lead to such proposals. Assessments of effectiveness in relation to Climate Change are limited to an assessment of the proposed Adaptation Measures, which are often accepted by the EU monitoring mechanisms. There are no assessments of the effectiveness of local-level measures that increase the resilience of regions and mitigate the impacts of climate change, which also have no provision for a positive economic impact on local communities. There is no mechanism which requests that these assessments be produced.
- Such an incomplete approach allows for the inclusion of 'business-as-usual' measures and projects that have been receiving approval for some time and have been ultimately carried out at a regional level. The cumulative effect of such projects bears some of the responsibility for reducing the resilience of entire regions and increasing the impacts of climate change.
- The absence of an effective mechanism for the management of the Regional Climate Change Adaptation Plans (Monitoring - Updates - Improvements) can cause a divergence between planning and implementation, which can go as far as implementation effectively negating the initial strategic planning. To this end, the EU has set up the Mission Adaptation to Climate Change, created to support at least 150 European regions and communities towards climate resilience by 2030 (see Annex 4).
- The Regional Climate Change Adaptation Plans implement a series of EU policies that were transposed into the Greek institutional framework. They were designed for strategic sectoral actions related to water, coast, agriculture and urban planning using existing strategic plans for river basins, risk management, spatial planning frameworks, water (of local Public Water Companies), and specific measures, actions and projects. However, there is currently no criterion or feedback processes to assess the effectiveness of the measures taken in relation to the initial objectives of each Plan, nor a multi-sectoral combination of actions with mutual benefits (e.g. agriculture-livestock-water and forests). The actions and measures seem to be completely disjointed and fragmented. This planning and implementation culture needs to change in order to avoid multiple costs being later paid by the economy and society as a whole; instead, necessary adjustments to planning and implementation need to happen today.

**Adaptation,  
resilience,  
mitigation:  
A growing need  
for clarification  
between  
adaptation and  
resilience**

In 2013, the original EU policy (COM (2013) 216) was called 'Adapting to the impacts of Climate Change'. This has determined the course of policies at national and regional level to date. Both the national and the Regional Plans in Greece were designed based on a focus on Adaptation rather than on improving Resilience to Climate Change. Climate Change Adaptation can be made to mean the promotion of more new and bigger technical projects and technical solutions at national and regional level, related to Sectoral Adaptation, and less on improving Resilience, which would mean more action at a local level to mitigate impacts sustainably and for the long-term.

An example of mitigating the impact of Climate Change is reforestation, as proposed by the UN and the EU, which is also very high on the agenda of addressing Climate Change and could mean an improvement in Climate Change Resilience if it leads to more durable agricultural and forest ecosystems. This allocation and specificity of each reforestation at the local level should be what is determined by each Regional Plan. However, in the reviewed Plans, the provisions for afforestation and agroforestry systems are meager, and proposed only indicatively, without a systematic description of the areas where it could be implemented, and without an assessment of the increase in overall resilience<sup>4</sup>.

All top-down planning follows this familiar path and leads to policies that have increased the impacts of climate change and reduced the resilience of many areas. These impacts at the local level are now increasingly visible (industrial crops, collapse of terraces, disappearance of wetlands and flood relief and flood protection zones, urbanization, increased vulnerability in rural and urban areas from the dispersion of off-site building, etc.)

Now more than ever, it is necessary to complement existing plans but also to create bottom-up plans in order to have a solid basis that fosters the participation of stakeholders and citizens, leading to a two-way relationship which feeds and revises regional and national plans, and identifies more precisely the possibilities for improving Climate Change Resilience and specialized local planning. An exemplary project that should be included and funded by the Regional Climate Change Adaptation Plan for Attica, but which is not currently a part of it, is presented in Annex 2.

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4 It is worth noting that among the actions of the Green Institute in the period 2020-2021 was the organization of 4 more workshops on productive reforestation with clear conclusions and proposals for productive reforestation and agroforestry ecosystems, which were forwarded to the Ministry of Environment and the Ministry of Agriculture and Forestry and the publication of a book entitled '*Productive reforestation for living rural landscapes*'.

## The weaknesses at the national level

It has already been pointed out that the original EU policy in 2013 (COM (2013) 216) referred to Climate Change Adaptation and this has determined the course of plans and policies at national and regional level so far.

It has also been pointed out that, in the implementation of the CAP, there has been no activation by national policies of sub-measure 8.2. of the Agricultural Development Program in all programming periods between 2007-2023, which involved the installation and maintenance of new agroforestry systems, which would further increase the current 32% of the current agroforestry areas in the country. The non-activation of this measure is a factor that does not facilitate the adoption of agroforestry projects and a subsequent significant increase in trees, alongside the increase that can be achieved through reforestation on public and municipal land.

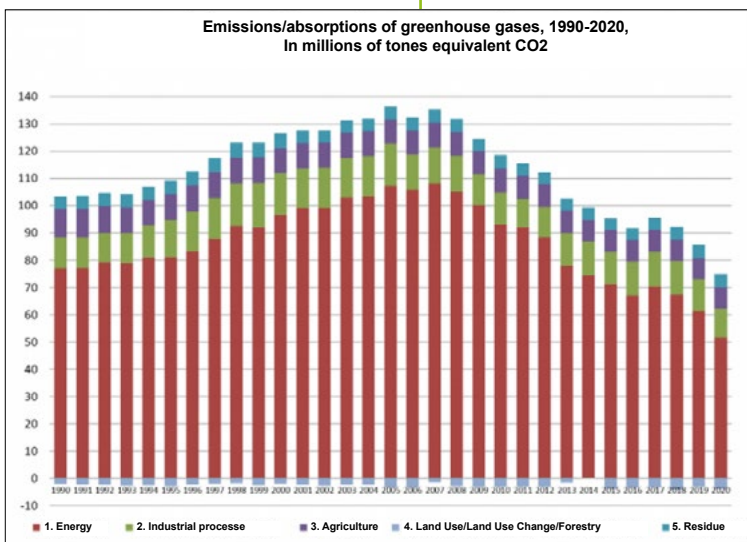


Figure 11.

*Evolution of national emissions/absorptions of greenhouse gases. The 30 year negative and increasing contribution of “Land Use/Land Use Change/Forestry” in absorptions must be reversed*

The evidence in favour of promoting agroforestry and reforestation is overwhelming for Greece. In the graph of the Ministry of the Environment for greenhouse gas emissions by use category, the contribution of the 4<sup>th</sup> category ‘Land Use - Land Use Change – Forestry’ to greenhouse gas emissions has been consistently negative for thirty years and even increasing<sup>7</sup> since it is below zero on the longitudinal axis of the graph. The current picture must be reversed and the most appropriate measures to do this are extensive reforestation and the contribution of agroforestry.

The number and types of trees needed to increase Climate Change Resilience should be set as a national target and placed in a timetable within the Climate Change Adaptation Plans.

There are extensive social and economic costs to be borne if the necessary measures are not put into place.

Finally, a key weakness at the national level is the absence within the planning and implementation measures of policies that provide for the parallel active participation of citizen actors in local projects that address aspects of local management which increase resilience, stimulate local and regional activities and reduce the impacts of Climate Change and are not simply adaptation measures with questionable economic and social benefits for local communities.

These should be elements to monitor the implementation of EU policies at national and regional level and should at the very least lead to real recommendations and calls for good practice.

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7 (source: <https://ypen.gov.gr/perivallon/klimatiki-allagi/ektheseis-kai-yfistameni-katastasi/>)



## The weaknesses at international level

The need to change planning priorities in Greece and see the revision and readjustment of the Climate Change Adaptation Plans raises the issues of global developments and the EU itself as a whole. How are problems arising from a narrow perspective of simple Climate Change Adaptation addressed and how are policies broadened to include planning issues for increasing Climate Change Resilience and Mitigation? Annex 4 attempts to provide an EU-level answer to these questions.

Of interest is the 2023 World Economic Forum's<sup>8</sup> assessment of the severity of global risks in 2 years, followed 10 years in the areas of Economy, Society, Geopolitics, Environment and Technology. As shown in Figure 12, in ten years, all the risks are associate with the environment. This includes forced migration which mainly involved environmental refugees.

### Global risks ranked by severity over the short and long term

*\*Please estimate the likely impact (severity) of the following risks over a 2-year and 10-year period\**



Figure 12.

Ranking by severity of Global Risks in the short and long term - World Economic Forum 2023

8 World Economic Forum, Global Risks Report 2023 <https://www.weforum.org/reports/globalrisks-report-2023/>

Ranking of Global Risks in 10 years (in brackets the ranking in 2 years).

1. Failure to limit climate change (from 4<sup>th</sup>)
2. Failure to adapt to climate change (from 7<sup>th</sup>)
3. Natural disasters and extreme weather events (from 2<sup>nd</sup>)
4. Biodiversity and ecosystem collapse (under 10th place)
5. Large-scale forced migration (from 10<sup>th</sup>)
6. Natural resource crisis (from 9th)

The fact that Adaptation and Mitigation Failure are separate categories implies that Resilience (increase or decrease) is related to Mitigation Failure, i.e. the decrease in Climate Change Resilience. It is mentioned on page 8 of the report that:

*'Climate and environmental risks are at the heart of perceptions of global risks over the next decade - and they are the risks for which we are perceived to be least prepared. Because of the lack of integrated and coordinated progress, climate targets have revealed the divergence between what is scientifically necessary to achieve zero impact and what is politically feasible. Increasing demands on public and private sector resources from other critical sectors will reduce the speed and scale of mitigation over the next two years, alongside insufficient progress towards the required adaptation support in those communities and countries that will increasingly be affected by the impacts of climate change.'*

The distinction between Adaptation and Climate Change Resilience made by the World Economic Forum is clear.

## Epilogue

The GEF 22-23 Regional Responses to Climate Change 2022 project, implemented by the Green Institute of Greece, leads to a number of policy proposals that have a high added value to policies related to climate change. An initial policy proposal is linked to the European level. The European Union should orient its climate change policy towards a policy mix that includes both Adaptation and Resilience to Climate Change. The former implies a more passive and reactive approach to mitigating the effects of Climate Change, while the latter indicates an active mitigation response.

A second policy suggestion is that the EU should, during the period of planning assessment, identify at the European level those Member States using Climate Change Adaptation policy to justify funding measures mainly involving infrastructure construction projects similar to those of the past, many of which are responsible for reducing resilience in many regions.

A third policy proposal is that the EU should establish a binding framework and clear standards for the implementation of Climate Change Action Plans in order to review existing plans at national and regional levels across the EU, with a new policy mix that blends



Adaptation and Climate Change Resilience measures as the main direction. Finally, it is clear that the more planning starts at the local level and promoted the effort to improve local climate change resilience, the more effective it will be in *mitigating*, rather than simply responding to, climate change. Conversely, the longer we remain in sectoral cost-sharing rationales and top-down adaptation planning, the less effective these plans will be in mitigating climate change, while wasting valuable time and precious funds needed for many other urgent actions, such as food security, the protection of primary sector activities and populations, infrastructure and cultural heritage, as well as the sustainable use of natural resources and the conservation of biodiversity in the new climate context.

Citizens, producers, farmers, entrepreneurs, municipalities can all play a decisive role and should not just be the recipients of information on already pre-decided projects that come from planning from above or distant bureaucratic centers. Better management practices are needed for soil, water, biotic factors and other natural elements directly or indirectly involved in production.

The current division of competences between the EU and the Member States may leave the Member States with the competence for urban and spatial planning as a national rather than a community policy. The EU can intervene up to the NUTS III, namely, the regional level. But this does not mean that community instruments reaching the local level are absent. The CAP is increasingly penetrating into issues of good practice at local level and the corresponding direction of funding. The establishment of NATURA 2000 sites and the management plans and bodies that must be in place is another penetration at local level. The growing importance of the role of biodiversity in the fight against climate change is leading to policies to protect ecosystem functions beyond NATURA 2000 sites and is increasingly linked to the CAP and protected areas. The long-awaited new Soil Directive and its important ecosystem role in tackling Climate Change, which will come into force in 2023, also calls for local action.

National and Regional Plans should become a 'Climate Change Response' instead of 'Climate Change Adaptation' so that together with Adaptation, Resilience is included in the Climate Change Plans. The new CAP and all the other EU policies mentioned above should be integrated into the Plans.

The conclusion that increasing Resilience to Climate Change as an important Programmatic-Planning Principle should be included in the Climate Change Response Plans because it involves actions and measures that relate to both the enhancement of natural biosphere processes and ecosystem services, and the adaptation of local human activities to climate change, is perhaps the most important contribution of the GEF 22-23 Regional Responses to Climate Change 2022 project, implemented by the Green Institute of Greece.

## Annexes

1. An example of the appropriate works needed to deal with flooding
2. An example of a local action for reforestation that should be implemented by the Regional Plan in Attica
3. Desertification
4. European Union Strategy for Adaptation to Climate Change
5. National Strategy for Adaptation to Climate Change
6. Disadvantages of the sectoral analysis of Climate Change Adaptation Plans

### 1. An example of the appropriate projects needed to deal with flooding

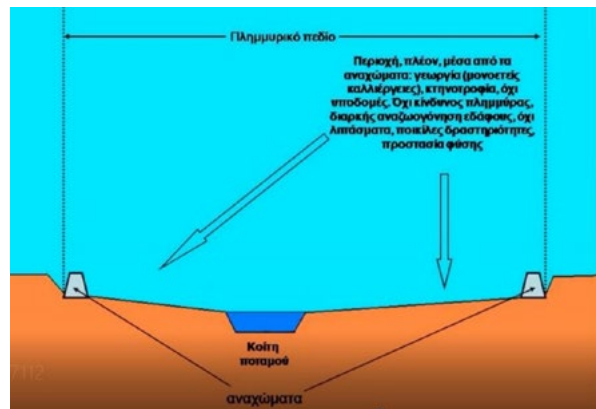
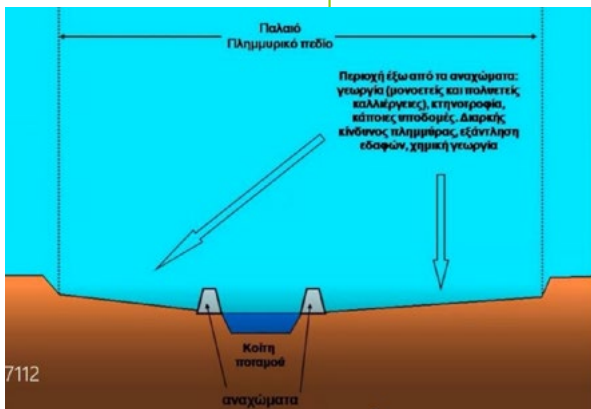
The figure on the left shows the extent of the old floodplain and the current location of the flood control levees. The area is exposed to a constant risk of flooding and when it floods it causes significant damage. The figure on the right shows what the Climate Change Adaptation Plans should have provided for: relocation of the levees to the boundaries of the old floodplain and appropriate land uses to make the impacts manageable. Simple Climate Change Adaptation would mean raising the levees depicted on the left, whereas increasing Climate Change Resilience would mean moving the levees (or lack thereof) to the locations shown on the right.

The cost of the projects can be much lower if land use management is in place in the floodplain and much smaller levees are built.

Unfortunately, the Climate Change Adaptation Plans are not governed by such a logic as the one in the picture on the right and provide for flood protection works at the locations of the embankments in the left picture.

It is worth noting the value of keeping floodplains such as the one shown on the right is high, especially in coastal zones, because this creates a water zone (lake, lagoon, marsh, etc.) that protects upstream crops from waterlogging. Therefore, increasing the Resilience of an area can mean much lower costs for dealing with Climate Change than narrow adaptation with infrastructure projects.

*The figures are from the presentation of Mr Papaconstantinou at the conference event in Western Greece.*



2.  
An example of a local action for reforestation that should have been implemented by the Regional Climate Change Adaptation Plan of Attica

01.02.2023

Volunteers and WWF [gave life](#) to the forest of Sounion with 15,000 new plants.

This action was implemented with the support of the A.G. Leventis Foundation, as well as supporters and friends of WWF Greece. For the action:

- A reforestation study was carried out by the Forestry Department of Lavrio, with the participation of scientists from the Institute of Mediterranean Forest Ecosystems (IMDO) and WWF Greece, which recommended the appropriate species that were eventually planted in the area.
- An innovative planting approach was applied, with a mixture of coniferous and broad-leaved species that were already present in the area (e.g. oaks, carob trees, rhododendrons). The variety/mixture of these different species is expected to lead not only to an improvement in biodiversity and the enhancement of the aesthetic functions of the new forest, but also to make the forest more resistant to fire, reducing both its intensity and transmission.

These actions are carried out in collaboration with the Institute of Mediterranean Forest Ecosystems of ELGO DIMITRA and the Forestry Department of Lavrio, which has taken on the responsibility for the entire project. Effective cooperation and coordination has been ensured between different competent bodies, such as the Lavrio Forestry Department, the Directorate of Forestry Projects & Infrastructures of the Ministry of Environment, the Institute of Mediterranean Forest Ecosystems, the Ephorate of Antiquities of Eastern Attica, Road Transport S.A., and the Red Cross.

During the next phase of the project, plant maintenance activities will be carried out, always with the help of volunteers, who will be invited in spring and summer to help in the shaping of the pits, fertilizing, weeding and watering the plants. This is a three-year project which aims to ensure the sustainability of the plants. A total of 15,000 plants had been planted by the end of December 2022. The ecosystem restoration was carried out by reforestation in a 200-acre forest area above the village of Agios Konstantinos, which was burned twice in just 10 years (2012 and 2021), and can therefore no longer regenerate naturally.

The aim is to save the area from desertification and actively contribute to the restoration and creation of a new fire-resistant forest that will also significantly improve the biodiversity of the local ecosystem.

Of the 14 different species of trees and shrubs that were planted, 70% were broad-leaved (tame oak, downy oak, holm oak, carob

tree, hickory, nettle tree, laurel, etc.) and 30% conifers (Scots pine and cypress). This innovative approach of mixing different species is expected to improve the biodiversity in this area and contribute significantly to the fire resistance of the resulting new forest.

Projects such as this should be planned in and implemented by the Climate Change Adaptation Plan of Attica, which should identify not only all the areas in need of reforestation in Attica, but also a timetable with the number and types of trees to be planted by 2030 and 2050. It also shows the power of citizen participation in such actions, and how the cost of restorative actions can be reduced.

### 3. Desertification

There is currently no mention of desertification and the National Commission for Combating Desertification on the website of the Ministry of the Environment. It is possible that this issue is assumed to be the responsibility of the Ministry of Agricultural Development and Food.

The absence of the National Commission for Combating Desertification was pointed out on 25/03/2021 at an interdisciplinary and cross-university workshop organised by the Green Institute on the role of productive reforestation in combating desertification and erosion. At the workshop, it was requested that:

- Greece is reconnected, after 20 years of absence, to the UN for the implementation of the Convention on Desertification.
- The National Commission on Desertification is reconstituted.

On 29 March 2021<sup>8</sup>, the Minister of Rural Development and Food, Mr. Spilios Livanos, gave an answer to the topical question from the SYRIZA MP, Mr. Vasilios Kokkalis, on the topic 'Combating the phenomenon of desertification and its consequences'. The Minister's response was as follows:

*Unfortunately, since 2001, when the 1st National Action Plan against desertification was drawn up, the response to the phenomenon of desertification, in the context of our country's participation in the United Nations Convention to Combat Desertification (UNCCD), has not been supported, except in a fragmentary manner".*

*The Minister of Rural Development and Food underlined the Ministry's will to change this fact, and in view of the revision of the Convention, he stressed that the substantial and active*

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<sup>8</sup> Published on <https://dasarxeio.com/2021/03/25/95164/>

*participation of Greece in the actions of the International Convention is a key priority.*

*“To this end,” he said, “we are taking a number of actions.”*

*“First, the reconstitution of the National Committee for Combating Desertification, which will update the National Action Plan (NAP) against desertification, in order to reflect the current situation and the extent of the phenomenon, as well as the relevant actions for its containment. This Commission will be composed of eminent scientists.”*

After almost twenty years, on 4<sup>th</sup> June 2021, the National Committee against Desertification was established for one year, following the decision of the Minister of Rural Development, Mr. Livanos. On 29<sup>th</sup> June 2022, the interim report of the National Commission for Combating Desertification (NCCD) was presented.

For the preparation of the Strategic Plan for the new CAP, it was proposed:

1. to add soil protection to the strategic objectives of the Strategic Plan.
2. to provide for the integration of the National Action Plan for Combating Desertification in national, regional and local development plans as well as in the National Spatial Plan, Special Spatial Plans and Regional Spatial Plans.

According to the Report, CAP policy measures for the period 2023-2027 should aim at (a) protecting non-degraded land (low/very low risk of desertification), (b) restoring degraded land (moderate risk of desertification) and (c) recovering degraded land (high risk of desertification), as indicated by the United Nations Convention to Combat Desertification, in order to avoid a deterioration of the current situation and to increase the chances of achieving the goal of zero land degradation after 2030.

**In order to achieve the objectives of the Strategic Plan, it is proposed to:**

- Adopting a holistic, multi-sectoral, spatial approach to rural development
- Ensuring the socio-ecological resilience of rural areas
- Managing land resources to maintain and improve soil ecosystem services to maximise the value added to the products and services produced, while preserving and protecting high productivity land for agriculture.

After the one-year term of the Commission, the Ministry of Rural Development did not address the issue of desertification again and the Commission practically no longer exists.

#### 4. European Union Strategy for Adaptation to Climate Change

*The Strategy refers exclusively to Adaptation. However, the 'Mission Adaptation to Climate Change' clearly refers to Climate Resilience down to the local level. This shows the unclear picture of policies that should probably evolve towards resilience.*

The European Commission adopted the EU Strategy for Adaptation to Climate Change in April 2013 ([COM\(2013\) 216](#)). The EU Strategy aims to encourage action by Member States, to ensure that policy and decision making is based on better evidence and information, and to integrate climate change adaptation considerations into all relevant policy areas. These three objectives of the EU strategy will be implemented through concrete actions:

- Promoting action by Member States:
  - encouraging Member States to move towards adopting national climate change adaptation strategies,
  - funding through the LIFE programme to build capacity and accelerate action on climate change adaptation (2013-2020),
  - incorporating the adaptation to the Covenant of Mayors (2013/2014).
- Making decisions based on more complete information:
  - filling the knowledge gaps on adaptation to climate change,
  - further development of the Climate-ADAPT web platform to become a central point of information on climate change adaptation.
- Action to shield the EU against climate change: integrating climate change adaptation provisions into key high vulnerability sectors:
  - Shielding the Common Agricultural Policy (CAP), Cohesion Policy and the Common Fisheries Policy (CFP) against climate change,
  - shielding infrastructure against climate change,
  - promoting insurance schemes and other financial products for climate-resilient investment and business decisions.
- Evaluation of the European Union Strategy for Adaptation to Climate Change

In 2016, the European Commission launched a process to assess the EU's climate adaptation strategy in terms of its implementation and effectiveness. The evaluation was completed at the end of 2018.



## Mission Adaptation to Climate Change<sup>9</sup>

The main objective of the Adaptation to Climate Change Mission is to support at least 150 European regions and communities in their climate resilience by

2030. Because climate change affects different regions, sectors of the economy and members of society in different ways, the mission will work with the widest range of regional and local EU actors.



Figure 13.

*The first page of the Adaptation to Climate Change Mission also refers to resilience.*

The mission will promote the development of innovative solutions for climate change adaptation and encourage regions, cities and communities to lead social transformation. The mission can support regions and municipalities on their journey towards climate resilience by:

- Providing data and methodologies to support decision making due to insufficient knowledge and awareness on Adaptation, Risk, Vulnerability and Resilience to climate change
- Accelerating the pace of public and private sector investment and raising awareness and implementing cost-effective solutions
- Support for planning, monitoring, reporting and evaluations of climate change adaptation, especially regarding local adaptation strategies.

In particular, the mission will help regions to focus on climate resilience and help accelerate the development of new and existing solutions.

The involvement of Member States, regions and cities will be crucial for the implementation of the mission, as they are key change agents in developing new technologies, experimenting with innovative solutions that respond to local needs and guiding different stakeholders towards the green transition. The mission will also work with citizens by funding projects that facilitate their participation.

<sup>9</sup> [https://climate.ec.europa.eu/eu-action/adaptation-climate-change\\_en](https://climate.ec.europa.eu/eu-action/adaptation-climate-change_en)

## 5. National Strategy for Adaptation to Climate Change

The **highlighted points** show the theoretical intentions of politicians which are not translated into appropriate measures by the Climate Change Adaptation Plans.

- The primary objective is to strengthen the country's climate resilience.
- The plans will reach down to the local level.
- There will be a continuous and flexible process of planning and implementing the necessary adaptation measures at national, regional and local level.

In December 2014, the Ministry of Environment, Energy and Climate Change (now the Ministry of Environment and Energy / YPEN), the Institute of Medical Biological Research of the Academy of Athens and the Bank of Greece (BoG), signed a Memorandum of Understanding (MoU), which included the drafting of the National Strategy for Adaptation to Climate Change. Thus, the Bank of Greece's Climate Change Impact Study Committee, with the support of the Bank of Greece and the contribution in principle of the Climate Change and Atmospheric Quality Directorate of the Ministry of Environment, prepared a draft National Strategy, which was put out to public consultation (from 24/11/2015 to 08/12/2015), the results of which were assessed by an informal group including members of the EMECA, the BoE and staff of the Climate Change and Atmosphere Quality Directorate.

### National Strategy for Adaptation to Climate Change

The primary purpose of the National Strategy for Adaptation to Climate Change is to contribute to **strengthening the country's resilience** to the impacts of climate change and to create the conditions for informed and long-term decisions, addressing the risks and opportunities arising from climate change. The National Strategy for Adaptation to Climate Change provides an initial five-year horizon for developing adaptation capacity and for prioritising and implementing a first set of actions. The considerable uncertainty associated with climate change and its impacts, the abundance of new information and developments, where relevant, update views on the appropriate way to promote adaptation and require continuous assessment, learning and specialised analysis. In this context, the first Climatic Change National Adaptation Plan is an opportunity to formulate a strategic approach to climate change adaptation, setting in motion a continuous process of reviewing, updating and realigning the strategy.

### **The main objectives of the National Climate Change Adaptation Plan are:**

1. improving the decision-making process by obtaining more complete information and scientific data on adaptation



2. promoting the development and implementation of regional/local action plans in line with this strategy
3. promoting adaptation actions and policies in all sectors, with a focus on the most vulnerable
4. the establishment of a mechanism to monitor and evaluate adaptation actions and policies
5. informing and raising awareness in society

It is noted that this National Strategy for Adaptation to Climate Change is the first step in a continuous and flexible process of planning and implementing the necessary adaptation measures at national, regional and local level.

The National Climate Change Adaptation Plan, sets the general objectives, guiding principles and means of implementation of a modern, effective and developmental adaptation strategy in the framework defined by the United Nations Convention on Climate Change, the European Union Strategy for Adaptation to Climate Change, the European Directives and international experience and aspires to be the lever for mobilizing the potential of the Greek state, economy and society at large to address the impacts of climate change.

The next step is the preparation of the Climate Change Adaptation Plans, which, based on the climate conditions and the vulnerability of each region, will precisely define the policy areas and priority geographical units for measures to be taken, while highlighting the specificity of these measures, as well as the financial means for the implementation of the measures, the implementing agencies, the stakeholders, etc.

Articles 42-45 of Law 4414/2016 (A'149), established the procedures for the preparation and approval of the National Climate Change Adaptation Plan and the Regional Climate Change Adaptation Plans, the procedures for their revision/modification and their minimum contents. It is noted that the Regional Plans have been initiated and are being prepared by the Regions. In addition, the 1st National Climate Change Adaptation Plan was adopted and the National Council for Climate Change Adaptation was established.

The content of the Regional Climate Change Adaptation Plans was specified by Ministerial Decision 11258/2017 (Government Gazette B 873).

The National Council for Adaptation to Climate Change was established by Ministerial Decision 34768/2017 (Government Gazette B 3246).

**6. Disadvantages of the sectoral analysis of the Regional Climatic Change Adaptation Plans**

Figure 14  
*Vulnerability by region and sector of economic activity. The higher the number, the higher the vulnerability of each sector.*

**The ambiguity of dealing with climate change**

The state is ambiguous in the handling of Climate Change. Initially Climate Change was placed under the Ministry of the Environment, Energy & Climate Change (23/01/2013). In this Ministry which traditionally handles issues related to the natural and built environment and forests, planning and measures to deal with Climate Change could move from Adaptation to Resilience.

With the creation of the Ministry of Climate Crisis and Civil Protection (6/9/2021), planning and measures for Adaptation seem to be strengthened. Civil Protection focuses on Xenocratis-type planning, which are mechanisms for dealing with emergencies and natural disaster situations.

The Bank of Greece presented the following vulnerability table for each Region of Greece<sup>10</sup>:

A lot of misgivings have been expressed about this evaluation. The case for addressing the local impact of specific conditions and specificities is not made visible by the sectoral logic of the Re-

2. BREAKDOWN OF VULNERABILITY BY REGION AND ECONOMIC SECTOR									
Geographical region	Agriculture	Forestry	Fisheries	Mining and quarrying	Water supply	Built environment	Transportation	Tourism	Health
EASTERN MACEDONIA AND THRACE	9	9	9	4	10	5	6	4	8
CENTRAL MACEDONIA	13	13	13	8	12	12	12	12	12
WESTERN MACEDONIA	4	4	4	11	4	3	1	2	3
EPIRUS	6	6	6	2	5	4	4	3	5
THESSALY	10	10	10	3	11	10	7	7	10
IONIAN ISLANDS	3	3	3	1	1	2	3	5	1
WESTERN GREECE	11	11	11	1	6	9	11	8	11
CENTRAL GREECE	7	7	7	10	8	6	9	9	4
ATTICA	5	5	5	9	13	13	13	13	13
PELOPONNESE	12	12	12	7	3	8	8	6	7
NORTHERN AEGEAN	1	1	1	1	2	1	2	1	2
SOUTHERN AEGEAN	2	2	2	6	9	7	5	10	6
CRETE	8	8	8	5	7	11	10	11	9

gional Climate Change Adaptation Plans. Two examples will be given: The first concerns viticulture and the second goat farming, both of which are traditional, ancient activities in the Mediterranean area. There is a third example, that of insularity, which will not be discussed here.

10 Source: [https://www.bankofgreece.gr/RelatedDocuments/National\\_Adaptation\\_Strategy\\_Excerpts.pdf](https://www.bankofgreece.gr/RelatedDocuments/National_Adaptation_Strategy_Excerpts.pdf)

## First Example: viticulture

Mountainous and semi-mountainous vineyards constitute almost all of the Greek wine-producing regions with a designation of origin (PDO wines),

sometimes on smooth terrain (plateaus) and sometimes on sloping soils. In the first case, the vineyards are located on deep soils of alluvial origin, while in the second case they are located on surface soils with low fertility.

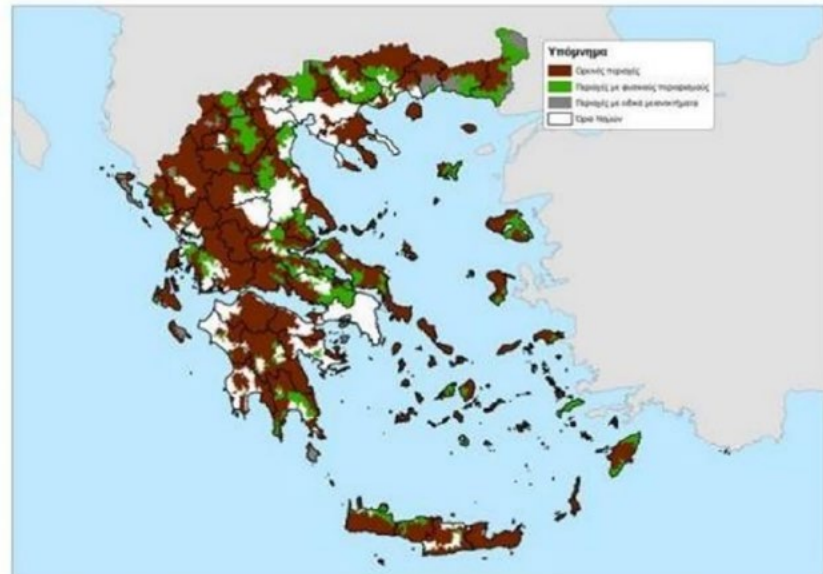


Figure 15  
*The map of the Dis-  
advantaged Areas of  
Greece*

In Greece, and in the Mediterranean in general, the prevalent semi-mountainous terrain does not allow for high production from the land, as it is not lowland like many other countries, especially in Northern Europe. In such environments with semi-mountainous and mountainous terrain, production is usually small and of low quality. This production has always

dominated and today there should be specific support measures to ensure that mountain and semi- mountain populations are rewarded for, among other things, performing important ecosystem management roles.

The Regional Climate Change Adaptation Plans should include specific measures and actions for viticulture and other productive activities that support local production and the populations living there. The EU has adopted specific measures for mountain and island regions and many of the measures in the PSPF should be along these lines.

## Example two: Goat farming

The example of the type of livestock farming practised in certain areas and the need for specific measures is illustrated here by looking at goat farming. Extensive goat farming concerns semi-mountainous and mountainous areas because goats are a bush and forest species and not a grassland one. Grassland areas that form the habitat of sheep are found in lowland areas and subalpine grasslands.

**Figure 3.2.2: Livestock population, EU-28, 2010-2018**  
(index 2010=100 based on heads)

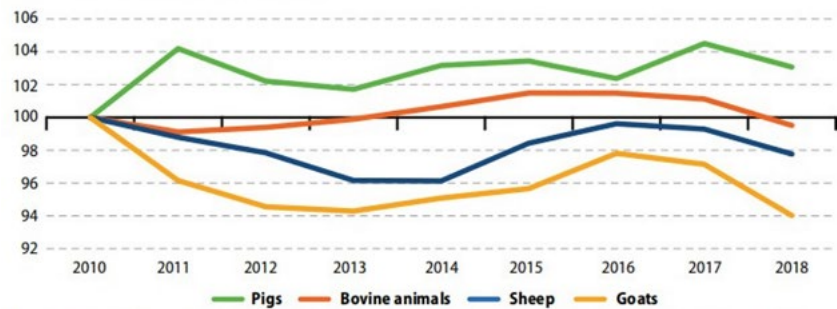


Figure 16  
Livestock population in  
the EU-28 2010-2018

Note: The EU-28 aggregates for goats correspond to the sum of the available data from Member States, which covers all the Member States with a significant number of goats.

Source: Eurostat (online data codes: apro\_mt\_lscat1, apro\_mt\_lspig, apro\_mt\_lsheep, apro\_mt\_lsgoat)

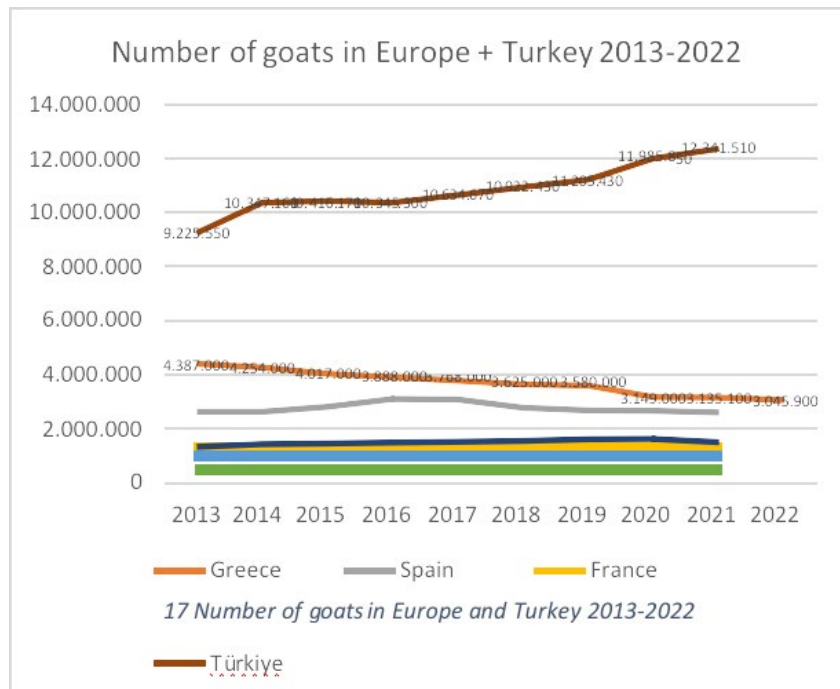
There is, therefore, a distinction between these two livestock activities that is related to land use and the natural vegetation itself. The question is whether a Regional Climate Change Adaptation Plan using a sectoral approach can specialize to such an extent in the agricultural sector in relation to Climate Change.

Goats are found in non-agricultural scrubland, and are particularly prevalent on islands. The goat population in the EU shows a slight decline in the last decade of 6%. If we look at which EU countries are involved in goat farming, we see that Greece is the leader.

The largest numbers of goats are found in Greece and Spain, with 31 % and 20 % of the EU total, respectively. The Greek regions are among those with the highest density of goat flocks in the EU. The goat population in Greece shows a large decline of 30% in the last decade, which is the largest among EU countries.

The fact that almost all regions of Greece have the highest number of goats per square kilometre in Europe is related to the geomorphology of the country. Goat rearing is mainly carried out in disadvantaged agricultural areas, where grazing animals on pastures is often the only way to add economic value and avoid abandoning areas where other types of agricultural activity would be impractical. It is common practice to graze goats on common land, especially in some areas. These animals graze on natural vegetation in marginal areas. These activities can easily be classified as organic farming.

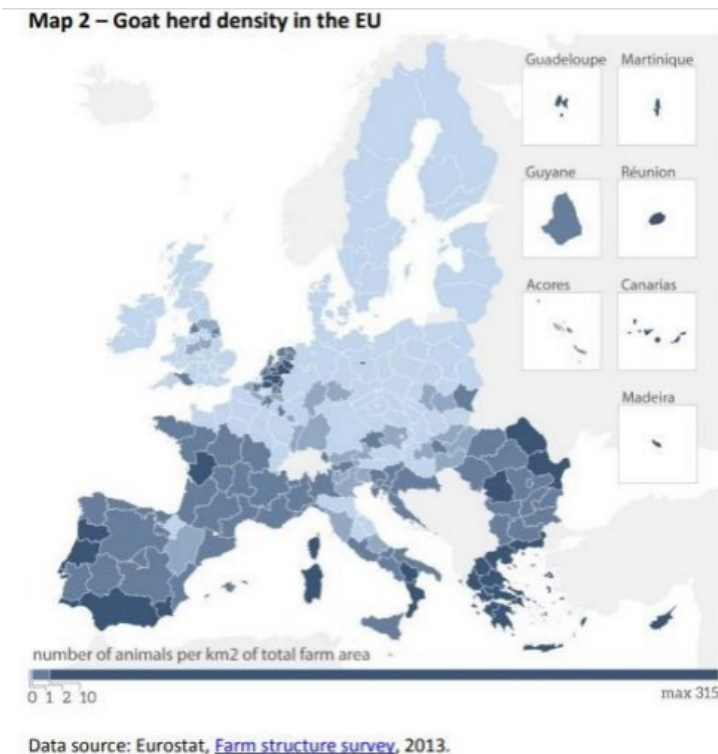
Figure 17  
Number of goats in Europe and Turkey 2013-2022



The Plan should include measures and actions that address the disadvantages of the

country's regions as defined by EU policies, and this should be a starting point. Moreover, the North Aegean Regional Climate Change Adaptation Plan should have specific measures for this main livestock activity. But it does not.

Figure 18  
Goat density in the EU.



Let's follow two scenarios to see the significance of this omission.

In the first scenario, human abandonment of the semi-mountainous and mountainous areas leads to an uncontrolled increase of the number of semi-feral goats which prey on the adjacent vineyards and olive groves, just as is currently the case with the uncontrolled boar populations in central Greece or rabbits in Lemnos.

Of course, the overgrazing of natural vegetation, which in some islands such as Samothrace, Ikaria, Crete and elsewhere is extremely destructive, will expand and cause major problems of erosion and desertification. The reduction in the climate resilience



of many regions is expected to increase their vulnerability to climate change.

**Figure 3 – Average farm income per annual labour unit in selected EU countries (average for the 2013-2015 period, in euros)**

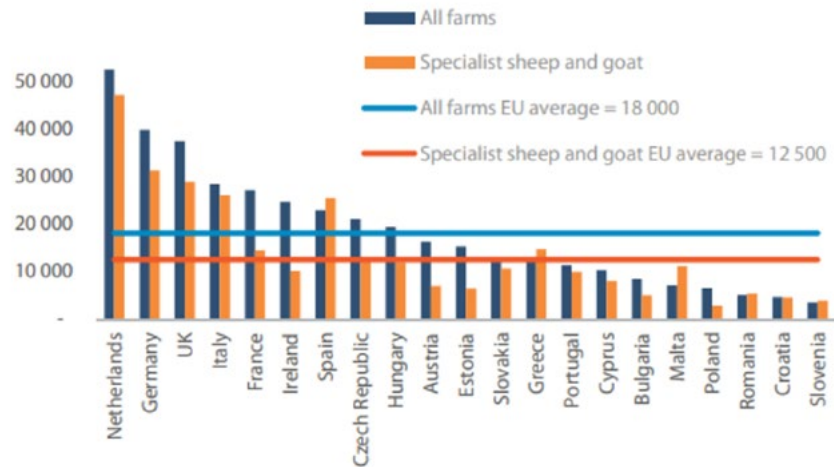


Figure 19  
Average annual farm income in the EU and in sheep and goat farming in selected countries.

Data source: [Farm Accountancy Data Network](#), 2013-2015 (2015 data provisional).

In the second scenario, the support of local populations, the implementation of grazing management plans, the increasing demand for goat products (milk, PDO cheese, meat) leads to the control of goat populations and contributes to the local economy, opening important opportunities not only in the market but also in agrotourism and hiking tourism. Income is projected to increase from around €14,000 and potentially reach €18,000 which is the average rural income.

**Figure 3.3.4: Milk from animals other than cows, 2018**  
(% share of total milk delivered to dairies)

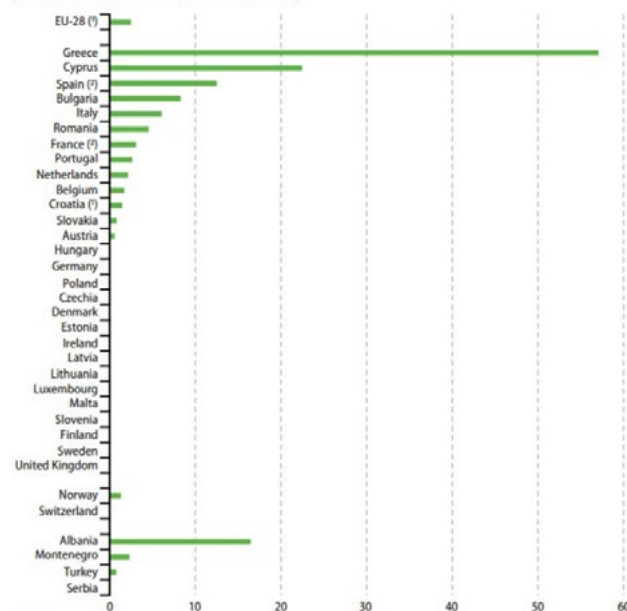


Figure 20  
Milk from animals other than cows

In fact, Greece is the leader by far in milk from animals other than cows.

All this is not unknown. The findings of a special survey on sheep and goat farming in Greece<sup>11</sup> highlight a number of issues, such as low levels of modernization; infrastructure weaknesses; lack of information, training or commercialization strategies; and older farmers with no one to pass on their knowledge to. Animal diseases as well as structural and policy changes have accelerated the decline in the sheep and goat population in recent years, while EU consumption of sheep and goats remains at levels that do not support the development of the sector. Any increase in domestic supply would have to face international competition from imports produced at lower costs.

On these issues, the Regional Climate Change Adaptation Plan of the North Aegean could propose measures but it does not because the sectoral approach does not allow it.

However, it concludes with the overall assessment that climate change will not have a significant impact on agriculture in the North Aegean. Thus the Regional Climate Change Adaptation Plan follows the vulnerability assessment of the original Vulnerability Table (Figure 14), where agriculture and forests show a vulnerability of 1 in the North Aegean, incorrectly in our view.

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11 EPRS The sheep and goat sector in the EU [https://www.europarl.europa.eu/RegData/etudes/BRIE/2017/608663/EPRS\\_BRI\(2017\)608663\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2017/608663/EPRS_BRI(2017)608663_EN.pdf)

This book gives to the reader the opportunity to obtain a Regional Climate Change Planning perspective through the example of four Greek Regions. Contemporary issues, such as Adaptation, Resilience, Mitigation, are examined through the Climate Change Adaptation Plans of the Regions of North Aegean, Central Macedonia, Thessaly and Western Greece. The reader will find in these pages simple, understandable and applicable proposals to address significant productive deadlocks and problems of the post-war period, while tackling climate change. So far Adaptation Planning leads to sectoral policies and to measures of simply informing the citizens. Planning Adaptations at a Regional level may lead to technical measures which often mean “business as usual” and “greenwashing”.

It is pointed out that these plans must become more specialized in order to comprise measures to increase Resilience by involving (not simply informing) all local actors. Planning must be preoccupied with the increase of regional resilience to Climate Change. New opportunities are given by the newly revised Common Agricultural Policy and the Climate Change Recovery and Resilience Plan 2021-2027. EU must move faster to this resilience orientation of policies. The EU Committee of Regions and Cities must undertake action for promoting new directions to Regional Climate Change Planning.

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