

Recommended Strategic Plan

For maintaining favourable conservation status of Natura 2000 areas in the Axios Delta in Greece (2009-2013)

July 2009



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Preface

The Axios Loudias Aliakmonas Estuaries Management Authority is responsible for sustainable management and conservation of the Axios Delta. This large area includes the lower reaches and estuaries of four main rivers (Gallikos, Axios, Loudias and Aliakmonas Rivers), the Kalohori lagoon and the Alyki Kitros salt marshes. This beautiful area has a remarkably interesting biodiversity. It is situated very close to Thessaloniki, one of Greece's main cities and hence faces severe development pressure. The area was declared a National Park just recently, May 14th 2009.

The importance to conserve this area has been recognised since the early 1970s, when it was designated as a Ramsar site. Currently, the area encompasses three Natura 2000 sites (two "Sites of Community Interest (SCIs)" under the Habitats Directive and one "Specially Protected Area (SPA)" under the Birds Directive).

At the start of 2008 and in preparation for the development of a full Management Plan for the Axios Delta, The Board of Directors of the Axios Loudias Aliakmonas Estuaries Management Authority called for the formulation of strategic recommendations that will allow for adaptive management of the area in the face of a changing climate and the highly dynamic socio-economic context.

Recommendations as described in this document have been developed using the Conservation Measures Partnership (CMP) Open Standards for the Practice of Conservation. The CMP Open Standards represent the collective experience of CMP member organisations in conservation project design, management, and monitoring and, as such, provide the steps and general guidance necessary for the successful implementation of conservation projects.

This methodology has helped the Axios Authority:

- Define biological targets, representing the taxonomic and functional biodiversity of the area;
- Define what reality looks like; understanding the cause – effect relationships in the area and thus assist communication with stakeholders, colleagues and funding organisations;
- Design strategies focusing on the abatement of prioritized threats;
- Prioritise among strategies and actions, such as building the capacity of stakeholders and securing finances for core operations of the protected area; and
- Identify alternative development opportunities for the Axios Delta.

Recommendations in this Strategic Plan provide a powerful and well-justified basis for a final and more elaborate Management Plan. This Management Plan will be finalised by a consultant in the course of 2010.

We wish this first application of the CMP Open Standards in Greece to be supported by the Department for the Management of the Natural Environment in the Ministry of Environment, Land Use Planning and Public Works. We also envision that this plan will inspire and encourage colleagues in the other 27 Management Authorities across Greece responsible for successful conservation of our unique Greek natural treasures.

The Board of Directors of the Axios Loudias Aliakmonas Estuaries-Management Authority would like to thank all the contributors and declare the Authority's commitment for the application of the project's results, in order to align current activities and start up new ones.

On behalf of the Board of Director

The President



Professor Themistoklis Kouimtzis

List of abbreviations and definitions

Axios Authority	Axios Loudias Aliakmonas Management Authority
Axios Delta	Area of responsibility for Axios Authority
Alyki Kitros Part	The southern and smaller area within the scope of this plan; comprising of the Alyki Kitros lagoon, and including the smaller part of the SPA GR1220010 and the whole SCI GR1250004
CMP	The Conservation Measures Partnership
DIPEHO	Regional Authority for the Environment and Land Use Planning
EKBY	Greek Biotope-Wetland Centre
FD	Forestry Department
FOS	Foundations of Success
GR1220010	DELTA AXIOU-LOUDIA-ALIAKMONA-ALYKI KITROUS (29551,00 ha)
GR1220002	DELTA AXIOU-LOUDIA-ALIAKMONA-EVRYTERI PERIOCHI-AXIOUPOLI (33676,35ha)
GR1250004	ALYKI KITROUS-EVRYTERI PERIOCHI (1440,56 ha)
HA	Hunters Association
Open Standards	The CMP Open Standards for the Practice of Conservation
PA	Protected Area
Park Area	The area of the proposed National Park
Rivers Part	The larger area within the scope of this plan: comprising four rivers and the Kalohori Lagoon, and including the bigger part of the SPA GR1220010 and the whole SCI GR1220002
SCI	Site of Community Interest under the Habitats Directive
SPA	Specially Protected Area under the Birds Directive
WFD	Water Framework Directive



Photo: Horses in Axios' fields - Lia Papadranga

Summary

The Area

The area includes the lower reaches of the Gallikos, Axios, Loudias and Aliakmonas Rivers, specifically their deltas and the lagoons, which contain the associated habitats and species protected under the Habitats and Birds Directives (Council Directive 92/43/EEC on the Conservation of natural habitats and of wild fauna and flora; and, Council Directive 79/409/EEC on the conservation of wild birds). These areas are part of the European Natura 2000 network.

International legal status

As all Member States of the European Union, Greece has legally binding obligations with regard to the conservation of Natura 2000 sites. Specifically, the obligations are: a) to avoid deterioration of habitats and disturbance of species (Article 6.2 and 7 of the Habitats Directive); b) to undertake surveillance of the conservation status of the natural habitats and species (Article 11 of Habitats Directive); and, c) in the light of that surveillance, to take measures to ensure that the species maintain a favourable conservation status.

National legal status

Most of the area has just been declared National Park, allowing certain activities in the "outer" zones, while putting areas of high natural value under stricter protection. The Park will therefore not fall strictly into one of the categories as defined by IUCN. Instead it combines characteristics of categories category II and III, IV and VI, with combined aims:

- Maintenance of environmental services
- Preservation of species and genetic diversity
- Sustainable use of resources from natural ecosystems
- Scientific research & education
- Tourism and recreation

Ecosystem services and conservation needs

The area includes ecosystems that play a key role for the area in terms of the ecosystem services it provides. These include water purification and groundwater recharge (Maragou & Mantziou, 2000); also, the area provides sources of food (mainly fish, mussels and waterfowl),

drinking water and water for irrigation (mainly for rice cultivation), as well as recreational opportunities. The area is unfortunately also used as a dumping ground for urban and construction-related waste.

Current levels and methods of use impinge upon the health of the area by reducing biodiversity, altering ecosystem functions, and increasing pollutant loads. Maintaining the ecological health of the Axios would increase its value to humans. A good example is the value that ecologically intact riverine systems in the Delta can have in absorbing excess nutrient loads and, hence, reducing adverse impacts on mussel aquaculture. The management challenge for the area is therefore to carefully balance uses in order to maintain the ecological integrity of the ecosystem.

Recommended Strategic Plan

This document contains recommended strategic actions for the conservation of the Axios Delta, guided by a long-term vision. It is developed as a precursor to the official Management Plan. It also underlines the importance for the Axios Authority to be properly mandated and equipped with sufficient capacity to implement the plan.

Scope and Biological Targets

The area consists of two physically distinct areas: the Rivers Part, which is characterised by the lower reaches of the Gallikos, Axios, Loudias and Aliakmonas Rivers; and the Alyki Kitros Part, which lies 10 kms south of the Rivers Part and contains the distinct salt marshes.

Biological targets serve to focus the strategy. Together, the biological targets represent the full array of biodiversity of the area. The biological targets for the Rivers Part are the coastal ecosystems, the rivers and other freshwater ecosystems, the protected freshwater fish species, the white tailed eagle, agricultural ecosystems and the Kalohori Lagoon. The targets for Alyki Kitros Part are defined as the coastal ecosystems, the sand dunes and the lagoon.

Direct threats and uses

Direct threats and uses, as well as contributing factors, are captured in an overall conceptual model. Direct threats are ranked according to their respective impact on biological targets.

Prioritised threats to the Rivers Part are: 1) Water pollution; 2) Intensive irrigation and dams; 3) Intensive hunting and poaching; 4) Overgrazing; 5) Landfill with construction waste; 6) Improperly conducted and illegal sand extraction; and, 7) Legal and illegal (potential) urban and commercial development.

Despite the fact that (8) Garbage is a lower ranked threat to the biological viability of the targets, it is still included in the model because the removal of garbage – and thus the aesthetic improvement of the area – is assumed to be crucial for increasing interest in the conservation of the area.

Direct threats to biological targets of the Alyki Kitros Part include both current and potential threats: 1) Current water pumping and drainage by the Salt Plant company; 2) the potential expansion of the salt plant operation; 3) the absence of an alternative water management regime in case the Salt Plant shuts down; and 4) the potential construction of holiday homes and associated infrastructure.

Important contributing factors for the situation in both areas include unclear distribution of responsibilities between authorities and the weak current mandate and capacity of the Axios Authority to define, enforce and implement management measures.

Strategies, main activities and measures of success

A full description of each strategy is provided, including the rationale (results chain), goals, objectives, indicators and activities. Preconditions in order for this strategic plan to work are identified and included in these recommendations.

Prioritised strategies for the Rivers Part are: 1) Improvement of the performance of agricultural practices, 2) Effective implementation of the Water Framework Directive, 3) Ensuring sustainable grazing, 4) Restoration of the Kalohori Lagoon, 5) Ensuring integrated land-use planning, 6) Reduction of hunting & poaching, 7) Sustainable sand extraction management, and 8) a Garbage clean-up campaign.

For the Alyki Kitros Part, two strategies are proposed: 1) Improving legislation and hydrological regulations, and 2) Creation of an alternative water management body.

In addition, there is also an overarching strategy targeting both the Rivers Part and the Alyki Kitros Parts: 9) Increasing tourism value and building constituency among citizens of the Thessaloniki region.

This document constitutes a powerful tool for planning and implementation, as it explicitly describes management strategies linked to clear conservation impacts in the Axios Delta, for which the Axios Authority – in close collaboration with stakeholders – can be held responsible. It clearly defines "success", how this is intended to be achieved and measured, and provides a strong basis for practicing adaptive management.

Table of Contents

Preface

Summary

1.	Introduction	7			
1.1.	Purpose of the document	7			
1.2.	Biological relevance of the Axios Delta	7			
1.3.	Legal Status and the Axios Authority	7			
1.3.1.	International legal status	8			
1.3.2.	National Legal status	8			
1.3.3.	The Role of the Axios Authority	8			
1.4.	Planning Process & Team	9			
1.4.1.	Main steps in the planning process	9			
1.4.2.	The Planning Team	9			
1.4.3.	Financial, in-kind and pro bono support	11			
1.4.4.	Structure of this report	11			
2.	Vision and Scope of the area	13			
2.1.	A Draft Vision	13			
2.2.	Scope	13			
3.	Recommended Strategic Plan for the Rivers Part	15			
3.1.	Biological Targets and Goals	15			
3.2.	Target Viability Assessment	18			
3.3.	Threats rating	18			
3.4.	Analysis of the present situation	19			
3.5.	Strategies	21			
3.5.1.	Ensuring Ecological Improvement of Agricultural Practices (AP)	22			
3.5.2.	Effective implementation of WFD (WFD)	24			
3.5.3.	Support land use planning for sustainable grazing (GR)	28			
3.5.4.	Kalohori Lagoon Restoration and Improvement (KL)	30			
3.5.5.	Integration and application of land use planning (LU)	32			
3.5.6.	Reduction of hunting pressure and poaching (HU)	34			
3.5.7.	Garbage campaign (GB)	36			
3.5.8.	Sustainable sand extraction management (SEM)	38			
4.	Recommended Strategic Plan for the Alyki Kitros Part	40			
4.1.	Introduction	40			
4.2.	Biological targets and goals	40			
4.3.	Target viability assessment	41			
4.4.	Treats ranking	41			
4.5.	Analysis of the present situation	41			
4.6.	Results chains and strategies	44			
4.6.1.	Strong legislation and hydrological regulation (LG)	44			
4.6.2.	Alternative water management body (WM)	46			
5.	Preconditions & overarching strategy for the Axios Delta	49			
5.1.	Preconditions for this strategic plan to work	49			
5.2.	Overall strategy for increasing tourism value and building constituency among the citizens of Thessaloniki	50			
6.	Recommendations for the development of the Management Plan	56			
	Literature	57			



Photo: Axios Delta - Giorgos Hatzispyrou

1. Introduction

1.1. Purpose of the document

The development of this Recommended Strategic Plan using the CMP Open Standards is based on the belief that practicing adaptive management is crucial for successful conservation of the Axios Delta. Not only the complexity of the socio-economic context, but also the lack of solid scientific data related to the ecology and biology of the area and the changes that are anticipated in the face of climate change warrant an adaptive approach that is based on explicit models, smart measures and clear strategies.

The official designation of the Axios Delta as National Park has seen various delays. Just recently however, in May 2009, most of the area is put under National National Park Legislation and this is of course crucial for any Management Plan to be effective in maintaining favourable conservation status of the area. Current direct threats need to be addressed urgently, and the impact of potential threats avoided. This document therefore provides an analysis of the threats impacting the site and recommends strategies to address these priority threats.

Practicing Adaptive Management in the Axios Delta is an ongoing, non-static process. The Recommended Strategic Plan is based on the best currently available information and the fullest insights of the core group of people involved in the planning process. As information, knowledge and wisdom grow over time – for example through new input by stakeholders or changing conditions – the Plan will require updating.

It is recommended that the final Management Plan be based on the recommendations as described in this plan, but that the content is refined and improved by seeking input from a wider platform of stakeholders. It is also recommended that a more detailed Activity Plan is developed with full participation of local stakeholders in order to create win-win solutions and work towards creating a balance between the various interests. Meanwhile, this Plan will guide actions of the Axios Authority.

This document serves multiple purposes. First of all, it serves to advise and give direction to the Management Plan for the Axios Delta National Park. Second, it will be used as basis for communications of the Axios Authority with local people and other stakeholders of the area.

Third, the plan will be used by the Axios Authority to raise funds. Fourth, it is hoped that through this pilot, adaptive management will become practiced more widely in other areas in Greece. As a first step, this document serves as an example for other Natura 2000 areas.

Finally, this plan serves as a pilot to Eurosite¹ and Foundations of Success (Europe). Both organisations have joined forces in a programme called "The European Platform for Adaptive Management (EPAM)" aiming to promote adaptive management of Natura 2000 sites across Europe.

1.2. Biological relevance of the Axios Delta

The outstanding biodiversity value of the Axios Delta was internationally recognised in the 1970's when it was declared a Ramsar site. In the context of the EU – the Axios Delta encompasses three Natura 2000 sites (1 SPA and 2 SCIs) and covers over 15 different habitat types listed in Annex I of the Habitats Directive; 2 mammal species, 6 amphibian and reptile species, 6 fish and 4 invertebrate species listed in Annex II of the Habitats Directive and 75 bird species listed in Annex I of the Birds Directive. A total of 124 migratory birds have been recorded in the Natura 2000 Standard Data Form. Local bird lists even include 277 species of birds (Maria Panayiotopoulou, unpublished data 2008).

Furthermore, the Axios Delta has key value for the region providing crucial ecosystem services and goods. The drinking water supply for the nearby city of Thessaloniki comes mainly from the catchment area of Aliakmonas River. The rice production of the area represents about 75% of total national production (Chamber of Commerce and Industry of Thessaloniki and Gecon consulting, 2007) and depends heavily on irrigation. The mussel industry constitutes about 80-85% of national production (oral communication, Fisheries Department of Prefecture of Thessaloniki, 2008). In addition, the estuaries are important spawning and nesting areas for fish and so they support the fisheries industry of Thermaikos Gulf. In addition, the wetlands offer important ecosystem services as water purification and groundwater recharge (Maragou & Mantziou, 2000).

¹ Eurosite is a Pan-European network of site management organisations. The Axios Authority is a member of Eurosite and the representative for Greece in the Council of Eurosite.

Wetlands are globally recognised as most valuable areas, coming second after wet tropic forests in terms of biodiversity and productivity (Pearce and Crivelli 1994, MEA 2005). In the Mediterranean, the most dominant wetland types are large river deltas and large areas of lagoons and salt marshes (Pearce and Crivelli 1994). Despite their apparent values, throughout the world wetlands are drained and converted to other land uses. Greece, within 40 years (1925–1965) dried out about 67% of its wetland area (Tsiouris and Gerakis, 1991) and similar losses have been observed in many other Mediterranean countries and globally (MEA 2005).

One could even make the case that – even though wetlands themselves assist the attenuation of weather phenomena – in particular Mediterranean wetlands are vulnerable to changes in climate. Our dependency on the Axios Delta for the provision of key ecosystem goods and services gives us an urgent reason to protect the area and hence invest in its resilience to the unknown consequences of the changing global systems.

The Axios Delta also offers a unique opportunity to > 1 million citizens of Thessaloniki as a haven to enjoy tranquillity and wildlife. Both the rivers and the adjacent Mediterranean Sea provide attractive areas for recreation. The biological characteristics make the area extremely suitable for the education of (school) children.

1.3. Legal Status and the Axios Authority

1.3.1. International legal status

Like all member states, Greece has legally binding obligations to maintain favourable condition of its Natura 2000 sites. In more detail, Greece is responsible: a) to avoid deterioration of habitats and disturbance of species (Article 6.2 and 7 of Habitats Directive), b) to undertake surveillance of the conservation status of the natural habitats and species (Article 11 of Habitats Directive) and c) on the light of the surveillance, to take measures to ensure that the species maintain a favourable conservation status.

1.3.2. National Legal status

1997 marked the completion of the first part of the Special Environmental Study for the area and this was anticipated to lead to the official declaration of the Axios Delta under National National Park Legislation. From 1998 to 2001, the Axios Delta was put under temporary

legislation. Today, after prolonged delays and extensive consultation with locals and approvals by the Ministry of Environment, the legislation has just been signed.

The National National Park Legislation clarifies which activities are allowed in which zones of the National Park. Zones A and B are designated as *natural areas* with a set of stricter use restrictions, whereas the C and D zones are *peripheral zones* where agriculture and other "soft" activities (with minimal environmental impact) are allowed.

The National National Park Legislation is the legal context in which the Management Plan is to be implemented and is thus crucial for the mandate and the work of the Axios Authority.

Another difficulty is that the National National Park Legislation covers only part of the Axios Delta, and perhaps more urgently it also covers only part of some of the Natura 2000 areas, i.e., roughly 2/3d of the Rivers Part and 85% of the Alyki Kitros Part.

In practice this would mean that for some Natura 2000 areas only part would fall under the protection of the National Park Legislation, however the mandate of the Axios Authority covers all of the Natura 2000 areas. The National National Park Legislation will thus not cover the entire scope of this recommended strategic plan. This is not only impractical, but it also jeopardises Greece's ability to meet international obligations to maintain favourable conservation status of the Natura 2000 sites in the Axios Delta.

Since Natura 2000 areas are designated on the basis of ecological coherence, protection calls for holistic measures –which in turn can only be achieved if the borders of the proposed National Park include the Natura 2000 sites in its totality.

1.3.3. The Role of the Axios Authority

The Axios Loudias Aliakmonas Management Authority was created at the end of 2003 (based on law 2742/1999 and law 3044/2002) as one of 28 Authorities responsible for the management of protected areas in Greece.

According to Greek legislation, the Axios Authority's main responsibility is the development and implementation of a Management Plan. The Development of the full Management Plan is assigned to external consultants, supervised by the Regional Authority for the Environment and Land Use Planning (DIPEHO).

The main problem for the Axios Authority is that its current operations are funded through the Operational Program for the Environment. The continuity of this programme and subsequent financing of operations are not secured. As a result, capacity is low and turnover of staff high. This situation puts the Authority in a weak position to lead participatory management approaches, as it is often regarded as an "unstable" partner for many stakeholders in the area. Continuity of sincere leadership is recommended to build up deeper understanding and stakeholder relations in the area. Continuity in core funding for the middle- and longer term is of course the basic precondition for this and it is therefore recommended that the Ministry review its process of funding allocation to the Authorities in Greece.

1.4. Planning Process & Team

Animated by a "Pilot Workshop on Adaptive Management" held in Savonlinna, Finland (26-30/11/2007) and organised by Eurosite, the Finnish Forest Conservation Agency (Metsähallitus) and FOS (Europe), the Axios Authority decided to apply the CMP Open Standards to develop a Recommended Strategic Plan.

The Conservation Measures Partnership (CMP) is a partnership of conservation NGOs that seeks better ways to design, manage, and measure the impacts of their conservation actions. The CMP Open Standards represent the collective experience of CMP member organisations in conservation project design, management, and monitoring and, as such, provide the steps and general guidance necessary for the successful implementation of conservation projects.

1.4.1. Main steps in the planning process

The planning process took place between January 2008 and August 2009 and entailed the following main steps

- Step 1** Preparatory work by 6 members of the Axios Authority staff over the course of two months, guided by FOS in weekly (online) sessions.
- Step 2** A four-day planning workshop with 14 participants, including regional authorities, academic experts and staff of the Axios Authority.
- Step 3** Development of the first Draft Recommended Strategic Plan, based on workshop results.
- Step 4** Various reviews, iterations and editing of the final version of the Recommended Strategic Plan and the translation in Greek.

1.4.2. The Planning Team

Core Planning Team :

- **Stella Vareltzidou**, Axios Authority, functioning as Team Leader.
- **Ilke Tilders**, Foundations of Success, providing Technical Assistance and Process Guidance and facilitating the workshop.
- **Lena Strixtner**, German professional in international forestry, providing assistance in writing up the draft version.

Workshop Participants from the Axios Authority

- **Themistoklis Kouimtzis**, Professor of Environmental Chemistry – President
- **Stella Vareltzidou**, Biologist-Environmental Science, Scientific Coordinator – Director
- **Maria Panagiotopoulou**, Forester-Ornithologist – Monitoring officer
- **Katerina Ioannidou**, Economist – Administration and financial officer
- **Eva Katrana**, Biologist – Ecotourism and environmental education officer,
- **Lia Papadranga**, Journalist – Awareness officer

External workshop participants:

- **Eleni Eleftheriadou**, Civil engineer, Hydrologist, Aristotle University of Thessaloniki, Department of Civil Engineering, Division of Hydraulics and Environmental Engineering
- **Christos Mamarikas**, Senior officer, Civil engineer, Strategic planning for Central Macedonia Region, MP supervisor, Regional Government, Authority for the Environment and land-use planning (DIPEHO)
- **Vicki Kleftoyanni**, Biologist, MSc, Phd candidate in Participatory Adaptive Management Aristotle University, School of Biology, Department of Ecology
- **Vassiliki Tsiaousi**, Biologist and Biodiversity expert , EKBY/Greek Biotope-Wetland Centre
- **Yannis Kazoglou**, Agronomist, Rangeland ecology expert
- **Tahtalidis Demosthenis**, Chemical engineer, Ministry of Macedonia and Thrace, Directorate of Protection and Development of Thermaikos Gulf,
- **Dimitra Bobori**, Lecturer in Ecology and Management of Inland Waters and Fish, School of Biology Aristotle University
- **Michael S. Vrahnakis**, Assistant Professor, School of Forestry and Management of the Natural Environment, Technological Educational Institute of Larissa, Branch of Karditsa



Photo: City of Thessaloniki from Axios Delta - Lia Papadranga

1.4.3. Financial, in-kind and pro bono support

- Eurosite provided financial support and help with securing additional support for the process. Neil McIntosh edited certain sections of the Plan. Intern Nico Boenisch from the Eberswalde University helped aligning the Miradi files. Gernant Magnin, reviewed critical strategies.
- Beelders, Bouwien Slooff took care of the final lay out of the document.
- The Greek Biotope Wetland Centre (EKBY) hosted the 4-day workshop at its premise and provided biodiversity expertise.
- The Ministry of Macedonia and Thrace provided financial support (as the Axios Delta falls under the competence of the Directorate of the Protection and Development of Thermaikos Gulf)
- Lena Strixner, a promising young professional, spent various weeks pro bono with the Axios Authority to assist with the writing up of the Recommended Strategic Plan.
- All the experts, public servants and workshop participants provided their knowledge, full attention and valuable time.
- Foundations of Success, Ilke Tilders and Marcia Brown helped out with process facilitation, editing and capacity building.

1.4.4. Structure of this report

This planning document has been prepared following a structure that includes graphs and tables to summarize and highlight key concepts. The document starts with a summary followed by an introductory section that describes the biological importance of the area, the legal context and the role of the Axios Authority. It also outlines the process leading up to this report and describes contributions and input by various people and organisations.

The following section describes the overall vision and the scope of the Recommended Strategic Plan. The area consists of two physically distinct areas: the Rivers Part and the Alyki Kitros Part. They are considered separately because they face different challenges and require a separate analysis and planning process in order to make sensible and specific strategic management recommendations. Chapter 3 deals with the Rivers Part and Chapter 4 with the Alyki Kitros Part.

Both chapters include:

- Biological targets and associated goals and indicators;
- Ranked main direct threats impacting the biological targets;
- A Conceptual Model that provides an analysis of the current situation including identification of the main threats to the conservation targets and cause-effect relationships of contributing factors
- Recommended strategies and associated objectives, indicators and activities.

Chapter 5 is concerned with the preconditions necessary for the Recommended Strategic Plan to be effective and an overarching strategy supporting both the Rivers Part and the Alyki Kytros Part. Finally, Chapter 6 provides some recommendations for the development of the Management Plan. Please note that a more complete monitoring plan, the planning of operational aspects and finances should be developed as part of the 5-year Management Plan.



Photo: Illegal sewage dumping - Dimitris Baltakis



Legend





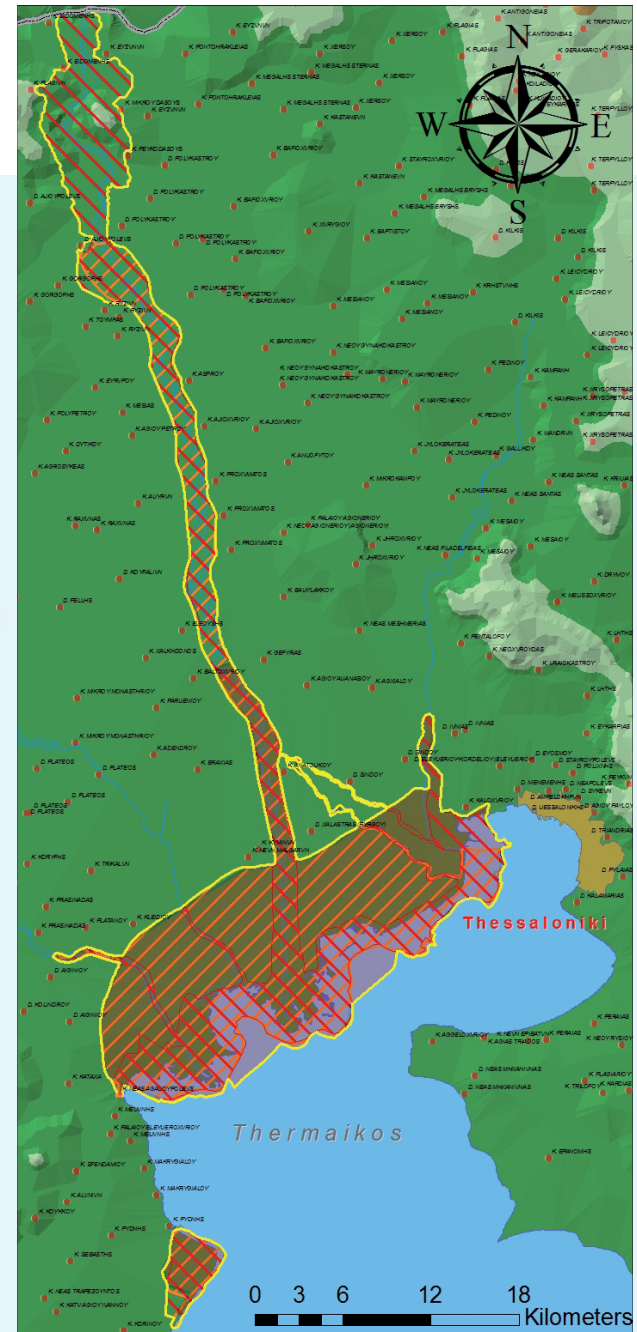
-  Axios Authority
-  National Park
-  SPA
-  SCI



figure 1 Satellite Image of the Rivers Part and the Alyki Kitros Part (source: Google Earth)



2. Vision and Scope of the area

2.1. A Draft Vision

This draft vision of the Axios Delta was developed by the Axios Authority and participants of the workshop. We suggest that it be revisited in a multi-stakeholder forum to ensure buy-in at the local level.

The Axios Delta is characterized by high diversity and abundance of flora and fauna, making Greek people proud of its natural beauty, while providing them a sustained supply of ecosystem goods and services.

2.2. Scope

The Axios Authority is presently responsible for an area estimated at 46.800 ha. The area includes the lower reaches of four rivers and their estuaries (Gallikos, Axios, Loudias and Aliakmonas), the upper stream of Axios river, the Kalohori lagoon and the salt marshes of Alyki Kitros.

The scope of this Recommended Strategic Plan is defined by the outermost boundaries of the Natura 2000 sites (SPA and SCI) that are touched by the Axios Authority sphere of responsibility including the entire National Park. Please note that this plan recommends increasing the National Park to include all of the Natura 2000 sites. This would extend the northern boundaries to include the upper stream of Axios river - the SCI until Axioupoli village and the SPA until the Greek border with the Former Yugoslav Republic of Macedonia.

There are various reasons for this recommendation. First, without clear management responsibilities it is impossible to meet Greece's legal international obligations to avoid deterioration of habitats and significant disturbance of species related to the integrity of Natura 2000 sites. Second, because part of the Natura 2000 sites fall within the National Park, extending this national protection status seems effective and logical. Third, maintaining the ecological integrity of Natura 2000 sites requires an integrated approach to site planning and management. Finally, a strong reason to include the upstream part into the scope of this Management Plan is that there are no plans for better management of those regions in the pipeline at this time. This region is, however, strongly influencing the sites downstream.

This document contains site-specific recommendations for the two physically unconnected areas: The Rivers Part and the Alyki Kitros Part.

The Rivers Part is an extensive coastal zone formed by sediments carried by the rivers Axios and Aliakmonas. It includes the lower reaches of Gallikos, Axios, Loudias and Aliakmonas rivers and their estuaries, with predominant salt marshes and extensive mudflats as well as agricultural land (former wetland areas transformed to rice fields) and the upper stream of Axios river until the Greek border.

The Alyki Kitros Part is situated 10 km southwest of the Rivers Part following the coastline. It is a shallow lagoon that is separated from the sea by a sand dune-covered strip of land.



Photo: Mussel production - Agorastos Papatsanis

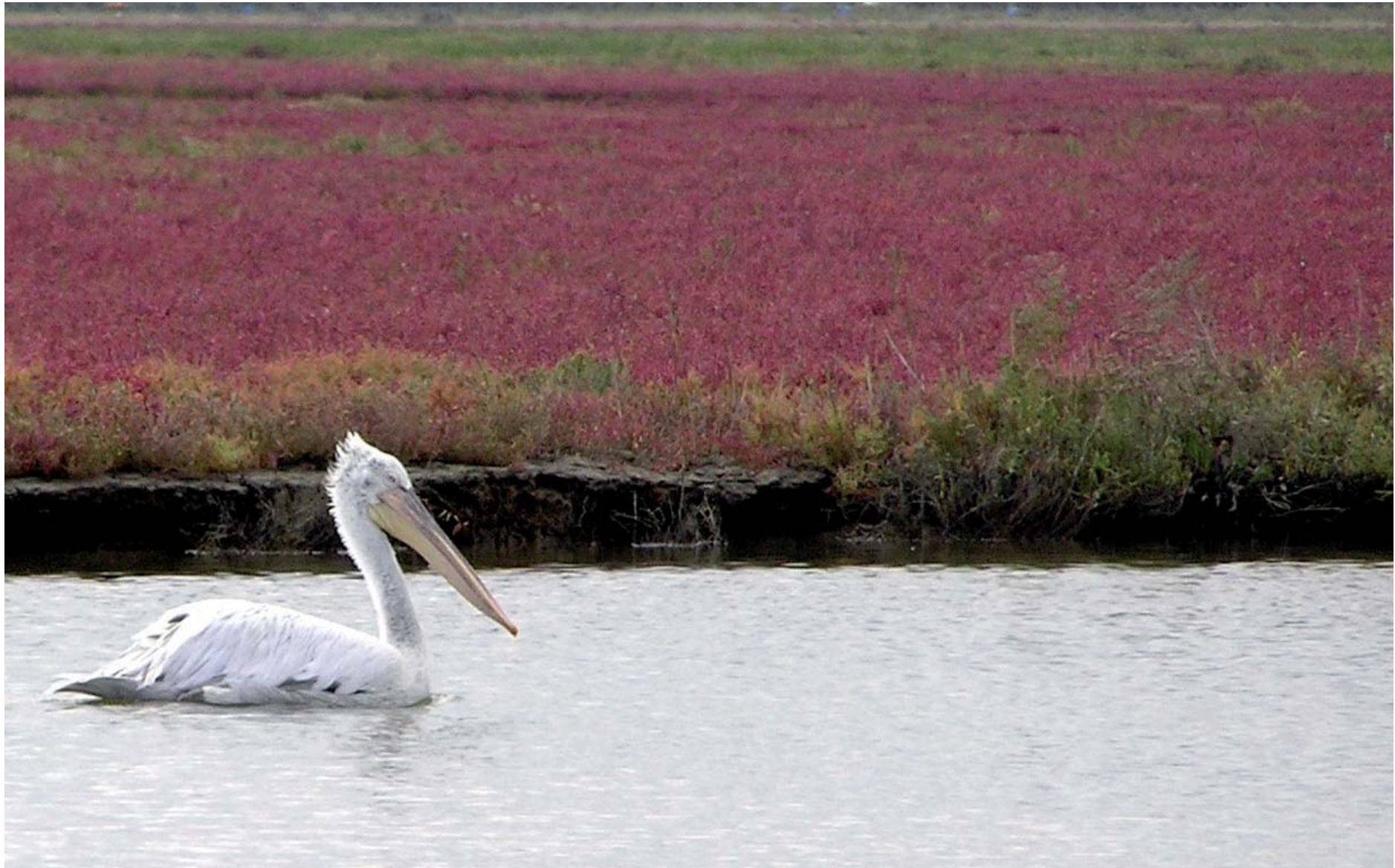


Photo: Dalmatian pelican by salicornia vegetation - Lia Papadranga

3. Recommended Strategic Plan for the Rivers Part

3.1. Biological Targets and Goals

Biological targets are defined as the habitats, ecological processes and species in the area that need to be conserved. Together they represent and encompass all of the biological diversity of the area.

The biological targets of the main part include: Coastal ecosystems, River and other freshwater ecosystems, Freshwater fish, White-tailed Eagle, Kalohori lagoon and Agricultural ecosystems.

The targets in this strategic plan are mainly characteristic ecosystems, which offer important habitat for bird and fish species (including many Annex II species of the EU Habitats Directive and Annex I species of the EU Birds Directive), as well as habitats and species that are currently under strong pressure from human activities. The agricultural ecosystem is also captured as a biological target, because it covers a significant proportion of the area and represents an important landscape value, with its openness being a characteristic feature of the region. Furthermore, the rice fields included in this target significantly increase the freshwater habitat in the area, especially in summer, and are therefore useful as additional breeding and feeding grounds for many birds.



figure 2 Satellite Image of the Rivers Part clearly showing rice fields (source: Google Earth)

Target 1: Coastal ecosystem

Goal 1a

By 2025, the coastal ecosystem structure will consist of specified annex I habitat types (1310, 1410, 1420, 1130, 1160, 1210) in favourable conservation status, i.e. the surface area of the habitats will be stable or increasing in relation to that of the mapping in 2001, the typical plant and animal species of the habitats are present and in favourable condition.

Indicators

- Total surface of Annex 1 habitat types 1310, 1410, 1420, 1130, 1160, 1210 compared to the mapping of 2001
- % bare soil cover
- Species types conservation status (presence and abundance) as indicated in the most recent standard data form

Target 2: Rivers and other freshwater ecosystems

Goal 2a

By 2025, the riverine habitat types as listed in Annex 1 (3150, 72A0, 92A0, 92D0, 3280) will be in favourable conservation status, i.e. the surface area of the habitats will be stable or increasing in relation to that of the mapping in 2001, the typical plant and animal species of the habitats are present and in favourable condition.

Indicators

- Total surface of Annex 1 habitat types 3150, 72A0, 92A0, 92D0, 3280 compared to the mapping of 2001
- % of bare soil cover
- Species conservation status (presence and abundance) as indicated in the most recent standard data form

Goal 2b

The area covered by riverine forest (including natural regeneration areas e.g. on small river islands) is enlarged by 5%, by 2015.

Indicator

- % of the area covered by riverine forest in comparison to the area covered by riverine forests mapped (2001)

Goal 2c

By 2015, the water quality status (ecological status and chemical status) of all water bodies in the project area is characterized as "good," according to the Water Framework Directive.

Indicator

- # of water bodies that are characterized by "good status" according to the WFD-indicators

Goal 2d

By 2012, the water quantity carried by the rivers is sufficient to guarantee the maintenance of dependent ecosystems.

Indicators

- % of surface water monitoring samples with values above the minimal ecological water flow (m²/sec)
(NB: according to National National Park Legislation, at least 90% of the surface water monitoring samples should be > minimal ecological water flow)
- # of negative occurrences of the water balance per year
- Signs of drought and rising salinity levels indicated by riverine ecosystem plants, coastal ecosystem plants

Target 3: Protected freshwater fish

Goal 3a

By 2018 all protected freshwater fish species are present and meet at least the respective minimum viable population size in the freshwater ecosystems of the area.

Indicator

- presence and abundance of the respective protected fish species (Sabanejewia aurata, Cobitis taenia, Zingel streber, Aphanius fasciatus, Gobio uranoscorus and Rhodeus sericeus amarus)

Target 4: White tailed-Eagle

Goal 4a

By 2012 the same number (as 2008) of individuals are present and more are breeding successfully in the area

Indicators

- # of fledglings/ 2 years
- # of nesting pairs
- Nesting habitat maintained (i.e. 2008 condition=reference year) or improved compared with 2008 conditions (e.g. forest/ strictly protected area increased compared to 2008 area)

Target 5: Agricultural ecosystems

Goal 5a

By 2018 the agricultural ecosystem shows the same surface area and mosaic pattern (quantitatively, the same land-use and crop types) as in 2008, but is ecologically healthier; enumberiched by structural elements (like bushes and trees) and offers better feeding ground for birds

Indicators

- % of the respective land use/ crop type cover compared to the whole agricultural area
- % of the agricultural ecosystems enumberiched by structural elements (like bushes, trees...)
- % of the surface that is cultivated in a more ecological way (need to specific indicators for water use, pesticides and herbicides)

Target 6: Kalohori Lagoon

Goal 6a

By 2018, the surface of the lagoon and reed beds are maintained and offer habitat and feeding ground for abundant bird species (number of species and individuals need to be determined!)

Indicators

- Surface area mapped and compared to 2006 mapping for lagoon and reed beds
- # of waders and ducks/month
- # of waders and duck species/month
- average annual sea level

Rivers Part

Target	Coastal ecosystems	River and other freshwater ecosystems	Agricultural ecosystems	Kalohori Lagoon
"Nested" Natura 2000 Habitats	1310 Salicornia and other annuals colonising mud and sand	3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition -type vegetation	6420 Mediterranean tall humid grasslands of the Molinio-Holoschoenion	1150* Coastal lagoons
	1410 Mediterranean salt meadows (Juncetalia maritimi)	72A0 Reed thickets		
	1420 Mediterranean and thermo-Atlantic halophilous scrubs (Sarcocornietea fruticosi)	92A0 Salix alba and Populus alba galleries		
	1130 Estuaries	92D0 Southern riparian galleries and thickets (Nerio-Tamaricetea and Securinegion tinctoriae)		
	1160 Large shallow inlets and bays	3280 Constantly flowing Mediterranean rivers with Paspalo-Agrostidion species and hanging curtains of Salix and Populus alba		
	1210 Annual vegetation of drift lines			
Important Nested Non-Natura 2000 Habitats		Freshwater marshes, Wet grasslands, Wet shrublands	Rice fields, Agricultural fields Abandoned fields, Grasslands	Salt marshes

Targets and the included Annex I-habitats of the Habitats Directive and other important nested habitats

3.2. Target Viability Assessment

Using the indicators mentioned above and available (sometimes limited) data and best knowledge, the status of each target was assessed. The viability assessment methodology uses available information to produce a summary rating of the health of the biological targets along a 4-point, qualitative scale (very good, good, fair and poor). Results of this viability analysis indicate that all targets are in a fair condition, with the exception of the agricultural ecosystems that is in good condition. A "fair" rating means that the target is outside of its naturally occurring, acceptable range of ecological variation and that conservation of the target requires human intervention by active and effective site management.

3.3. Threats rating

The threats to each of the biological targets were identified and each threat-target combination rated according to scope², severity³ and irreversibility⁴. The threat-rating table below summarizes the results.

# Threats / # Targets =>	Agricultural ec...	Coastal ecosyst...	Kalochori Lagoon	Protected Fresh...	River and other ...	White-tailed eagle	Summary Threat Rating
Overgrazing		Medium			Medium		Medium
Landfill with construction waste			High				Medium
Water pollution		Very High			High		High
Garbage	Low	Low	Low		Low		Low
Garbage dumping by municipalities		Low	Low		Low		Low
Improperly conducted and illegal sand extraction					High		Medium
Intense hunting - poaching	Low	Low	Low		Low	Very High	High
Illegal fishing				Low			Low
Intensive irrigation and dams		Very High			High		High
Fires to riparian habitats and reed beds					Low		Low
Existing illegal buildings, arbitrary and legal building &	Medium	Medium	Medium		Medium		Medium
Disturbance by birdwatchers						Low	Low
Industrial water consumption			Medium				Low
Summary Target Ratings:	Low	Very High	Medium	Low	High	High	Overall Project Rating: High

Threat ranking table

"Water pollution" and "Intensive irrigation and dams" have a very high impact on the Coastal ecosystem and a high impact on the River and other freshwater ecosystems. "Intensive hunting – poaching" is ranked high –mainly due to its impact on the White tailed eagle target. "Overgrazing" affects significantly both the Coastal ecosystems and the River and other freshwater ecosystems. "Landfill with construction waste" was rated high because of its very high impact on Kalochori lagoon and so was "Improperly conducted and illegal sand extraction" because of the very high impact on "River and other freshwater ecosystems". Another important threat is "Existing illegal buildings, arbitrary and legal" because of the large scope.

The summary threat rating helps determine where to strategically focus management action. Therefore, all threats with a summary rating of "high" and "medium" were selected for more detailed analysis of root causes of the threat. In addition, it was decided to also include the lower ranked threat "Garbage" because it does harm to the image of the area and it is assumed that if there would be no more "Garbage" lying around, the people (locals and Thessaloniki citizens) consider this area of high value rather than derelict land. The Axios Authority must play a leading role in efforts to clean up the protected area.

Sea level rise and increase of drought frequency and duration as consequences of climate change are expected to have severe impact on the hydrology of the area, habitat types and species composition in the medium to long-term. It is recommended that in the Management Plan, climate sensitive species, processes and habitats be identified to serve as indicators for all targets and hence inform management decisions. Examples of climate sensitive indicators related to sea level rise (indicator: sea level in Kalochori lagoon) and drought (indicators: water flow of rivers) are included in the targets.

² Scope - Most commonly defined spatially as the proportion of the target that can reasonably be expected to be affected by the threat within ten years given the continuation of current circumstances and trends. For ecosystems and ecological communities, measured as the proportion of the target's occurrence. For species, measured as the proportion of the target's population.

³ Severity - Within the scope, the level of damage to the target from the threat that can reasonably be expected given the continuation of current circumstances and trends. For ecosystems and ecological communities, typically measured as the degree of destruction or degradation of the target within the scope. For species, usually measured as the degree of reduction of the target population within the scope.

⁴ Irreversibility (Permanence) - The degree to which the effects of a threat can be reversed and the target affected by the threat restored.

The threat rating also shows that the most threatened targets are the Coastal ecosystems, the River and other freshwater ecosystems and the White-tailed Eagle. The target Protected freshwater fish is additionally affected by the deterioration of Rivers and other freshwater ecosystems and should therefore not be seen as only facing a low level of threat.

3.4. Analysis of the present situation

Before deciding what actions to take to protect biodiversity at a site, it is important to have a clear understanding of what is happening there. Having identified the biological targets and the direct threats to those targets, the planning team then identified factors (social, cultural, economic, political, institutional factors) that contribute to or "drive" those threats and used these factors to build a conceptual model of the site.

The conceptual model visually depicts the current situation in the site, according to those consulted during the planning process. It explains in the form of a diagram a set of causal relationships between factors believed to drive the main threats that impact on the target's condition. Please refer to Figure 3 on the next page for the full conceptual model. The conceptual model shows all of the biological targets (described in chapter 3.1), the direct threats to the targets (described in chapter 3.3), the indirect threats and other factors contributing to these direct threats, and proposed conservation strategies. Threat ratings are indicated in the upper left corner of each direct threat box. The conservation status of each biological target is shown in the green target ovals.

The conceptual model focuses on the seven main direct threats (ranked high or medium). It also includes the threat of "garbage," because it contributes very much to the impression of the site.

Summary of contributing factors (indirect threats and opportunities)

Insufficient law enforcement allows the discharge of untreated or inadequately treated industrial and urban sewage to the River and other freshwater ecosystems. Furthermore weak law enforcement enhances illegal activities such as garbage dumping, poaching and improperly conducted or illegal sand extraction.

Weak or absent policies, in particular those related to land use planning, result in poor implementation of the EU-Water Framework Directive, unregulated grazing, illegal construction of buildings, intense hunting and waste mismanagement. In addition, low water prices facilitate wasteful irrigation practices. The excessive use of fertilizers and pesticides in the Protected Area and upstream of the rivers are caused by a wide set of factors.

Inadequate action by the Axios Authority due to the lack of capacity, funding and mandate, is not helping to avoid ongoing construction of buildings in the area, improperly conducted and illegal sand extraction, landfill with construction waste and overgrazing.

Lack of awareness and knowledge of locals, farmers and other stakeholder groups related to the values of the protected area and to the responsibilities and opportunities for primary producers, leads ecologically damaging farming practices, overgrazing, landfill, garbage dumping and hunting/poaching.

Low sense of responsibility of local people to take care of the area, the **low accountability** of municipality leaders and the fact that waste management ranks **low on the political agenda** is leading to a heavily devaluated landscape with garbage and waste lying around.

Mentality issues regarding the illegal construction of buildings, in combination with **infrastructural requirements of livestock husbandry, fishermen and aquaculture people, the lack of law enforcement and the demand for commercial development** along the national road and unclear legislation is leading to landscape degradation and habitat loss.

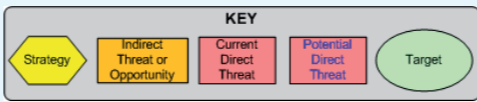
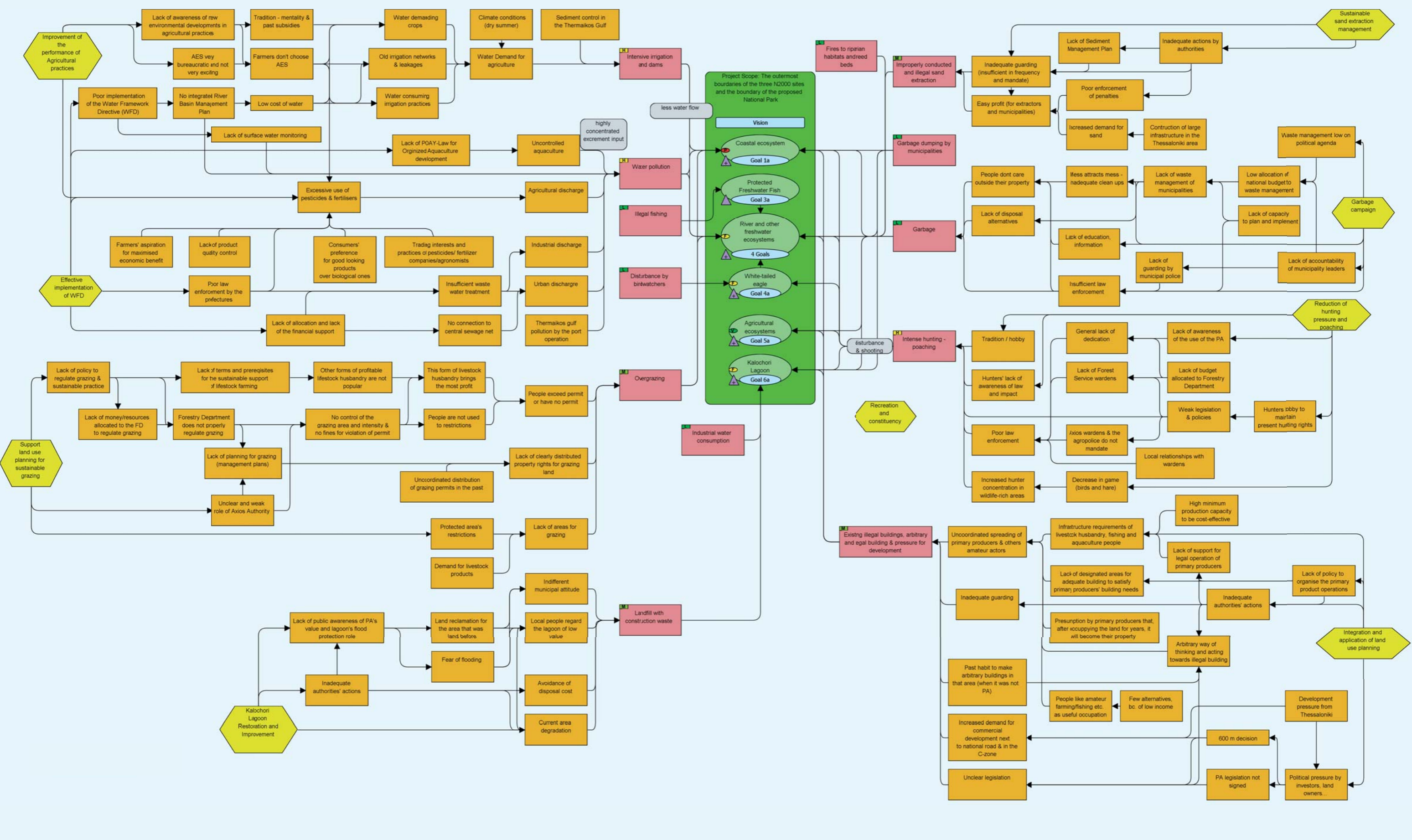
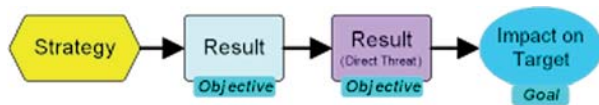


Figure 3: Conceptual Model of the Situation in the Rivers Part of the Axios Delta

3.5. Strategies

In this section, we describe the eight conservation strategies proposed for the Rivers Part of the Axios Delta. For each of the strategies described below, we include a results chain. A results chain is a tool that shows how a project team believes a particular strategy it implements will lead to desired results. A results chain explicitly lays out a team's underlying assumptions about how project or program strategies will contribute to reducing important threats, leading to the conservation of priority targets. In essence, results chains are diagrams that map out a series of causal statements that link short-, medium-, and long-term results in an "if...then" fashion.

The Basic Components of a Results Chain



As shown in the figure above, there are three basic components of a results chain: a strategy, expected results, and desired impact. Using these components, a project team can then go on to define objectives and goals that describe desired future outcomes and impacts, respectively.

The strategies are:

- Ensuring ecological improvement of agricultural practices (AP)
- Effective implementation of the Water Framework Directive (WFD)
- Supporting land use planning for sustainable grazing (GR)
- Kalohori lagoon restoration and improvement (KL)
- Integration and application of land use planning (LU)
- Reducing hunting pressure and poaching (HU)
- A garbage campaign (GB)
- Sustainable sand extraction management (SEM)

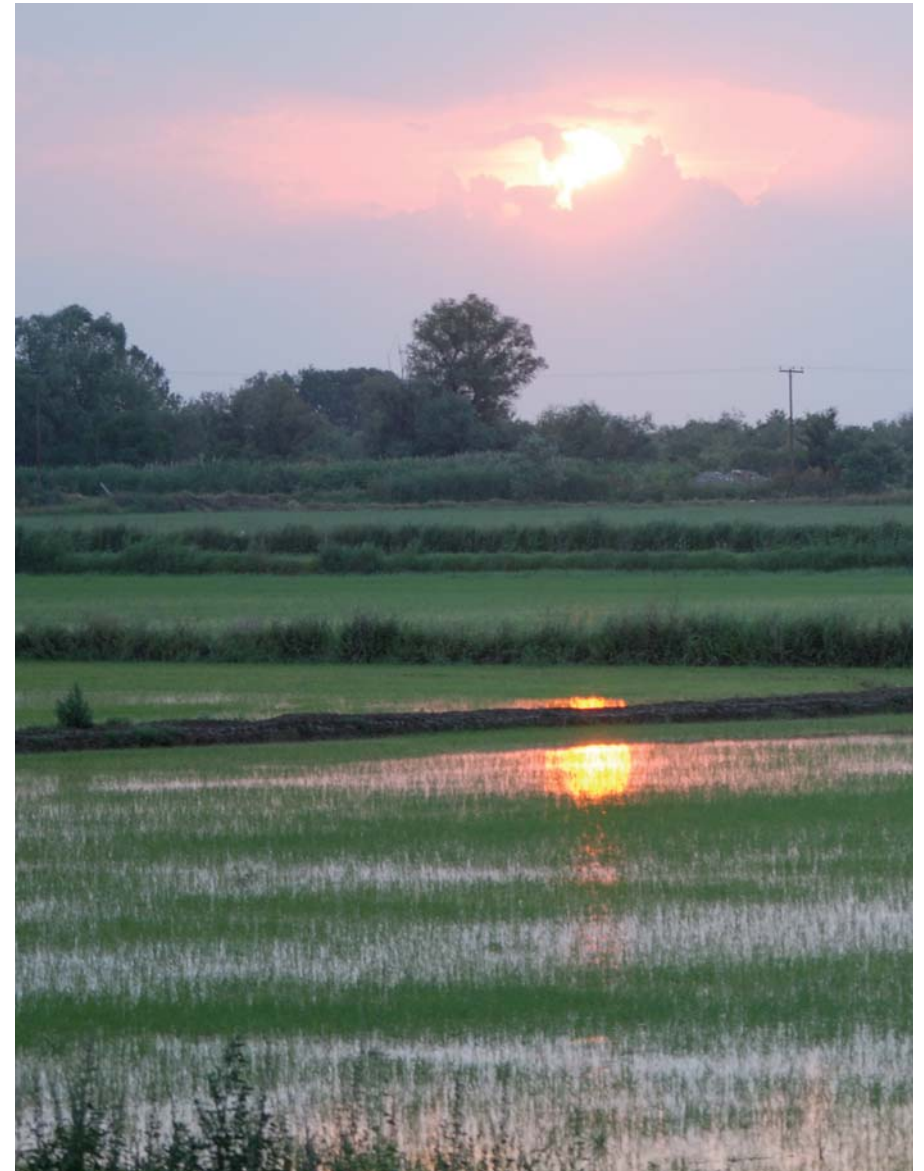


Photo: Rice fields at sunset – Lia Papadranga

3.5.1. Ensuring Ecological Improvement of Agricultural Practices (AP)

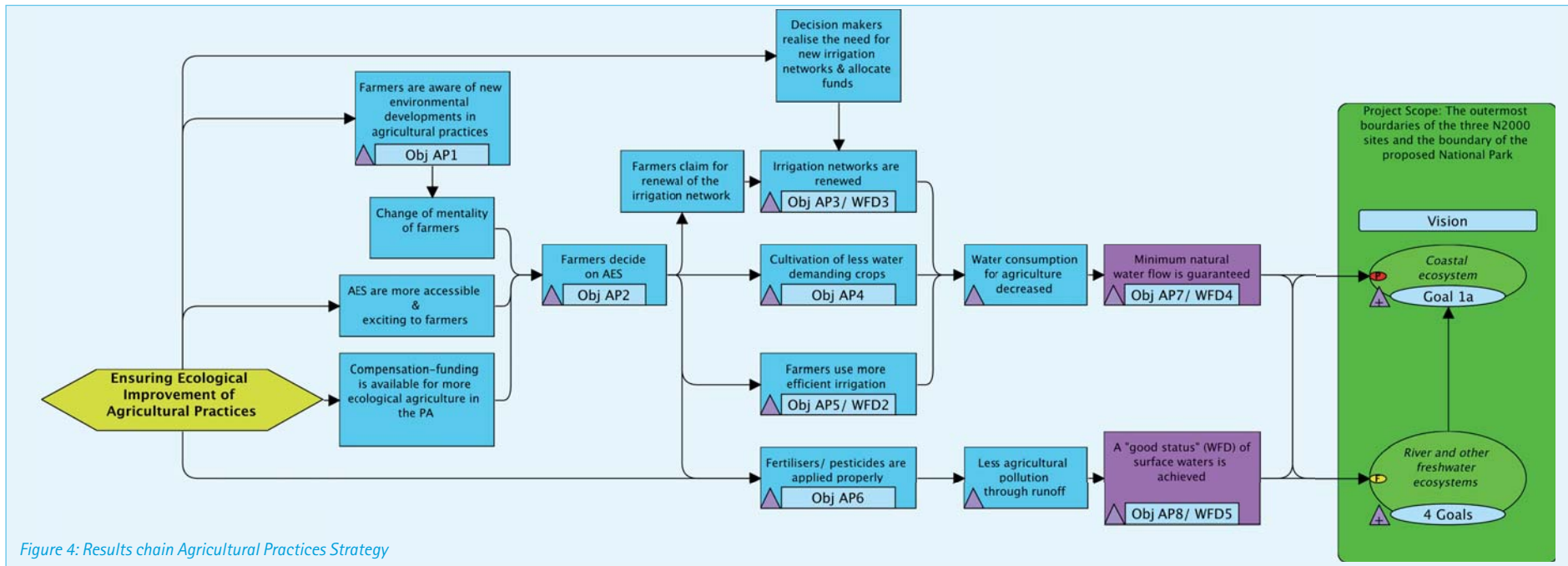


Figure 4: Results chain Agricultural Practices Strategy

The use of herbicides and pesticides, together with intensive irrigation of crops are among the most important threats to the ecosystems of the area. The agricultural practices inside the National Park and upstream of the rivers contribute to a great extent to the fair conservation status of the freshwater and coastal ecosystems in terms of water quality and quantity. Therefore a strategy to improve the performance of agricultural practices is necessary.

The strategy aims to increase the awareness of farmers in the region about the latest developments in ecologically responsible agricultural practices. It will promote agri-environmental schemes (AES) and seek additional funds for compensation to farmers practicing eco-agriculture (i.e., reduce water loss, reduce pesticides and herbicides) in the protected area. Renewed irrigation networks will lead to more effective irrigation practices and the cultivation of less

water demanding crops upstream of the rivers will also reduce water consumption. So the minimum natural water flow -even during summer- can be guaranteed, provided that there is no increase in water extraction for other purposes like industrial use. In addition, the strategy will improve water quality, because of proper use of pesticides and fertilizers.

This strategy can be applied partly by Axios Authority assisted by additional irrigation expertise and only as a joint project in cooperation with other relevant authorities such as the Regional Water Authority Service, Regional Department of Agriculture, the Irrigation and Land Reclamation Services (TOEB and TOEB), the Prefecture's Department of Environment and the 7 municipalities. It is recommended that additional research is done on current agricultural practices, yield, pricing, water usage and economics.

Long term Objectives	Indicators	Activities
Objective AP7/ WFD4: The minimum natural water flow in the rivers is guaranteed by 2015	river flow m3/sec at 3 points	
Objective AP8/ WFD5: A "Good status" (WFD) of surface waters is achieved by 2025	% of surface water bodies with at least "good status"	
Short term Objectives	Indicators	Activities
Objective AP1: All the farmers in the PA and 40% of the farmers upstream of the PA are aware of water depletion and consequences of pesticides' and fertilizers' overuse by 2010	% of farmers trained in the municipalities upstream of the PA and in the protected area have understood the necessity of reducing water demand, pesticides and fertilizers	<ul style="list-style-type: none"> • Information / education activities for farmers on Agri-Environmental schemes • Environmental Education to schools • Education on law requirements (CAP, Codes of contact) • Contact upstream municipalities via farmers associations and inform them through leaflets about AES • Provide the information material for farmers on Agri-Environmental schemes to the municipalities upstream of the PA
Objective AP2: 10% of agricultural land in the PA and 20% of the cultivated land upstream of the PA is cultivated as part of AES by 2012	% crop area cultivated due to Agri-Environmental Schemes	<ul style="list-style-type: none"> • Lobby to apply Agri-Environmental Schemes to contribute to a good status of the PA, which stabilizes conditions for agriculture and can bring additional income through tourism in the future • Lobby for additional funds for compensation to farmers that apply more ecological agriculture in the protected area. • Offer consulting service to the farmers interested in AES and support them with bureaucratic problems • Contact upstream municipalities via farmers associations and inform them through meetings about AES • Conduct training for consulting service multipliers in the municipalities in order to support the farmers interested in AES and support them to cope with bureaucratic problems • Collaboration with NGO's working with agricultural issues to promote less water demanding agricultural practices
Objective AP3/ WFD3: 30% of the crop area within the Protected Area (PA) has renewed irrigation networks by 2012	% crop area with renewed irrigation networks in the Protected Area	<ul style="list-style-type: none"> • Lobby for the renewal of the irrigation networks inside the PA
Objective AP4: By 2011 20% of the farmers upstream of the PA cultivate less water demanding crops	% area upstream of the PA cultivated with water demanding crops	<ul style="list-style-type: none"> • Promote the cultivation of less water demanding crops upstream of the PA
Objective AP5/ WFD2: 30% of the irrigated crop area inside and upstream of the protected area show efficient irrigation practices by 2012	% of irrigated crop area upstream and within the PA with efficient irrigation practices	<ul style="list-style-type: none"> • Review the current irrigation practices • Define desired alternative practices • Promote/facilitate more efficient irrigation practices upstream and in the PA
Objective AP6: By 2011 only admitted fertilizers & pesticides are applied in proper quantities	Number & type of substances in the agricultural	<ul style="list-style-type: none"> • Offer consulting service and training to farmers to calculate with them the quantity and type of pesticides and fertilizers they are allowed to apply within the AES in a certain timeframe and to a certain surface

3.5.2. Effective implementation of WFD (WFD)

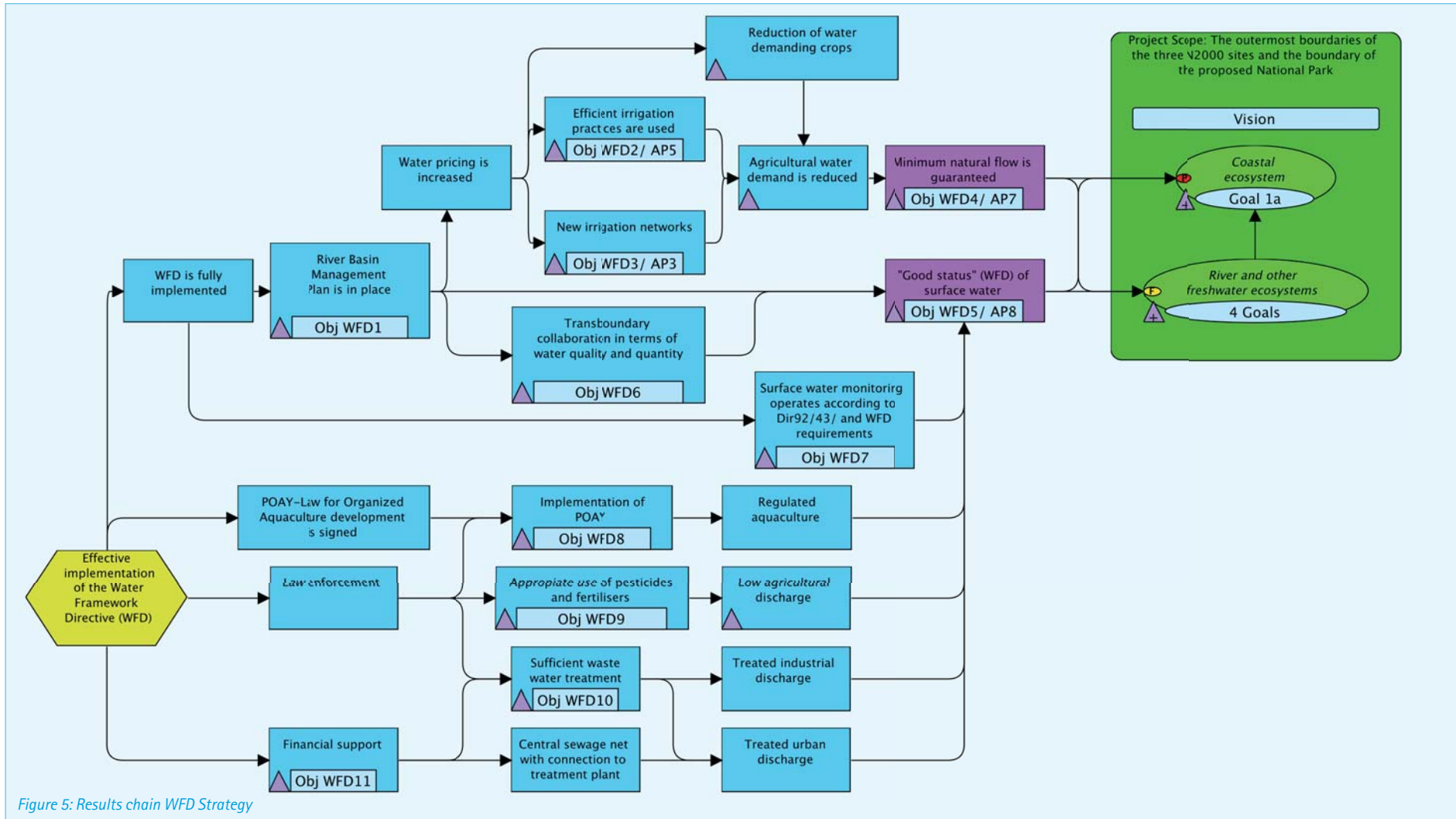


Figure 5: Results chain WFD Strategy

Long term Objectives	Indicators	Activities
Objective WFD4/ AP7: The minimum natural water flow of the rivers is guaranteed by 2015	river flow m3/sec at 3 points	
Objective WFD5/ AP8: A "Good status" (WFD) of surface water is achieved by 2025	% of surface water bodies with at least "good status"	
Short term Objectives	Indicators	Activities
Objective WFD1: By 2010 River Basin Management Plan in place	date of publication in the official journal	<ul style="list-style-type: none"> • Support the Water Directory of the Region to prepare a River Basin Management Plan
Objective WFD2/ AP5: 30% of the irrigated crop area upstream the rivers and inside the Protected Area shows efficient irrigation practices by 2012	% of irrigated crop area upstream and within the PA with efficient irrigation practices Number of points of illegal pumping of water from the rivers (proxy)	<ul style="list-style-type: none"> • Review the current irrigation practices • Define desired alternative practices • Promote/facilitate more efficient irrigation practices upstream the rivers and in the PA • Submit a project proposal in order to be able to offer advice and scientific support to change irrigation practices • Lobby for financial support to replace irrigation practices
Objective WFD3/ AP3: 30% of the crop area within the Protected Area has renewed irrigation networks by 2012	% crop area with renewed irrigation networks	<ul style="list-style-type: none"> • Lobby for financial support to renew irrigation networks
Objective WFD6: By 2011 at least one transboundary project is set up with the FYROM to improve water quality & quantity	Agreement paper for collaboration on a project	<ul style="list-style-type: none"> • Pilot application of a transboundary project • Lobbying for transboundary projects of the Water Department and NGOs and support with knowledge
Objective WFD7: By 2012 regular surface water monitoring is operating according to the WFD requirements	availability of regular data sets about surface water	<ul style="list-style-type: none"> • Establishment of monitoring stations related to N2000 species and habitats (quality and quantity) • Undertake an ichthyologic study for the rivers • Support the monitoring in terms of requirements of WFD for PA
Objective WFD8: By 2012 the POAY is implemented and measures are taken to regulate and improve mussel production	Number meetings with aquaculture stakeholders held in order to regulate	<ul style="list-style-type: none"> • Lobby the signing of the POAY Law • Promote projects to improve product quality and increase income of the mussel producers • Promote projects to reduce water pollution in Thermaikos Gulf and thus help improve quality of mussels produced
Objective WFD9: By 2011 regular control of the use of pesticides & fertilizers (type and quantity) takes place	Amount of pesticides & fertilizers used	<ul style="list-style-type: none"> • Lobby for the regular control of pesticides & fertilizer use • Support control authorities by collecting samples for them
Objective WFD10: By 2012 at least 70% of the wastewater is sufficiently treated	Number & type of substances after the punctual discharge of treatment plants and industrial installations that are above the limits of the WFD	<ul style="list-style-type: none"> • Review the current wastewater treatments and identify the level of deficiencies • Monitor results of discharges • Lobby on the basis of monitoring results for wastewater treatment • Lobby on the basis of monitoring results the Prefectural Services to control industrial and urban effluents
Objective WFD11: By 2010 the municipalities have received financial support for better wastewater treatment	budget for wastewater treatment	<ul style="list-style-type: none"> • Lobby the government for financial support for wastewater treatment (introducing as an argument also the harmful impact to the conservation status of the Protected Area)

Intensive irrigation and water pollution have a significant harmful impact on the River and other freshwater ecosystems and as a result also influence negatively the coastal ecosystems. One example of the impact of poor water quality is demonstrated by recent toxic blooms affecting mussels. The majority of Greek mussels are produced in this area. During the past decade, bacterial contamination due to untreated runoff from livestock have led to a ban on mussel sales for months at a time (the maximum period was 5.5 months, from December 2007 to June 2008). A strategy for the effective implementation of the Water Framework Directive (WFD) is urgently needed to address both water quality and water quantity –related to irrigation practices.

The strategy for the effective implementation of the Water Framework Directive (WFD) is designed to support the respective authorities responsible for water issues in effectively carrying out their duties. As shown in the results chain below, the strategy will stress the full implementation of the WFD including installation of a surface water monitoring system and to development and implementation of a River Basin Management Plan. This plan will encompass the whole river catchment area, addressing transboundary issues. It aims to increase water pricing, which will contribute to more efficient irrigation practices and a reduction in water-demanding crops, leading to reduced agricultural water demand. This will ultimately enable minimum natural river flow throughout the year.

The strategy will also include several actions designed to improve water quality in the river and coastal ecosystems. It will strengthen regulation of aquaculture (specifically, mussel production) by supporting the signing of the POAY Law for Organized Aquaculture, which will reduce pollutant levels in aquaculture. In addition it will enhance law enforcement of the respective authorities to implement the POAY and to control the use of pesticides and fertilizers in agriculture. This enforcement together with the strategy to improve the performance of the agricultural practices will significantly reduce the agricultural runoff. Finally, by strengthening law enforcement and increasing financial support, the strategy will also guarantee sufficient urban and industrial wastewater treatment.

The mussel producers support this strategy since they obviously will benefit from the improvement of water quality and the quantity of river water coming into the Gulf.

In cooperation, with the Ministry of Macedonia and Thrace, Directorate of Protection and Development of Thermaikos Gulf, common projects should work toward to the cleaning of the bay as part of the Horizon 2020 initiative of the EU.



Photo: Mussel producers' huts in Axios coastal zone - Agorastos Papatsanis

3.5.3. Support land use planning for sustainable grazing (GR)

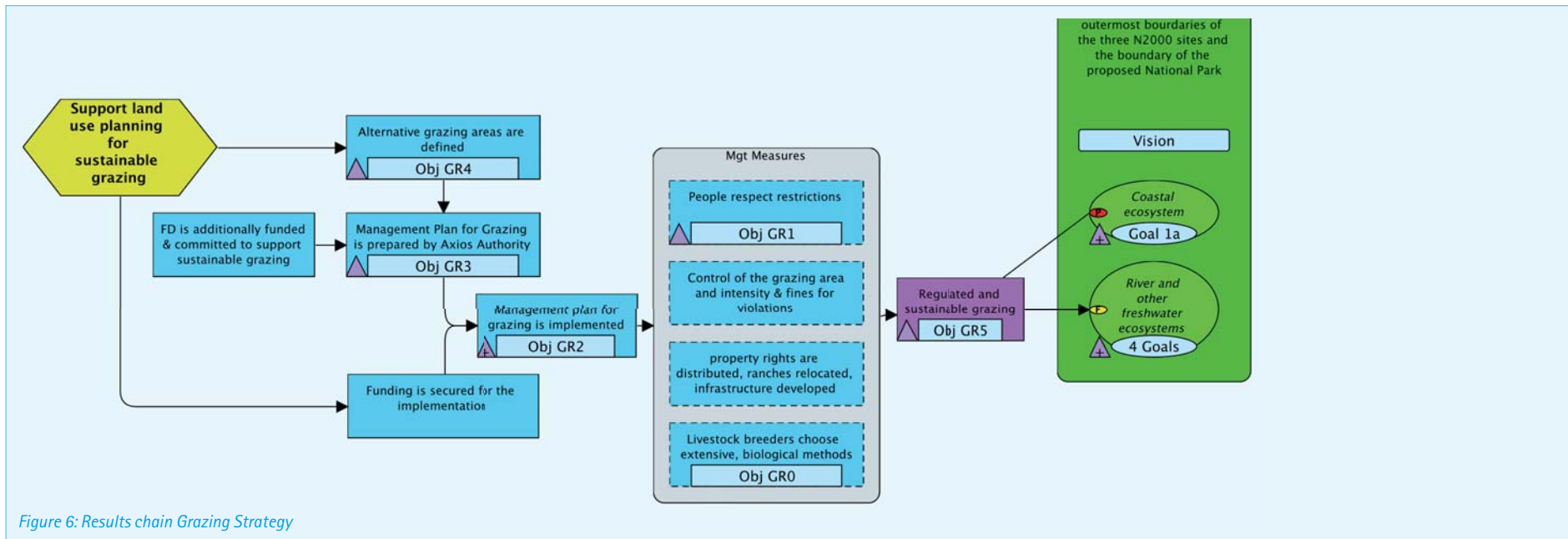


Figure 6: Results chain Grazing Strategy

Overgrazing is recognized as a medium-ranked threat. The National Park Legislation requires preparation of a Management Plan for grazing with the aim of regulating grazing, reducing it to a level that it is sustainable, and identifying areas in the C zone to relocate the existing livestock husbandry from the A and B zones. The proposed focuses on these points, and also supports cooperation with the Forestry Department to fully implement the Management Plan for grazing, so that alternative areas are identified and grazing is applied in a regulated and sustainable way.

This strategy aims to work closely with livestock breeders to identify and promote economically and ecologically sustainable alternatives. It is assumed that by promoting biological and ecological standards and improving the quality, it is possible to tap into markets for environmentally friendly products, selling for higher prices per unit. The strategy will also raise the understanding of the effects of overgrazing and the need for regulation and it aims to raise funding for the compensation of farmers adopting better practices.

Long term Objectives	Indicators	Activities
Objective GR5: By 2013 grazing is regulated and takes place in a sustainable way	% of the grazing area with serious signs of overgrazing Number of animals/ha	
Short term Objectives	Indicators	Activities
Objective GR0: By 2012, at least 3 livestock husbandry operations apply biological methods	Number of livestock husbandry operations which apply biological methods	<ul style="list-style-type: none"> • Lobby for policy to regulate grazing & sustainable practice • Meetings and active debate with livestock breeders in order to identify win-win solutions
Objective GR1: By 2012, relevant livestock farmers in the protected area respect the restrictions	% of livestock breeders that respect the maximum livestock units/ha	<ul style="list-style-type: none"> • Trainings to enhance understanding of the effects of overgrazing and necessity of regulation • Meetings and active debate with livestock breeders in order to identify win-win solutions
Objective GR2: By 2012 the Management Plan for Grazing is implemented	Availability of a map with grazing property rights Number of property rights for grazing clearly defined and distributed to the livestock breeders by the municipalities	<ul style="list-style-type: none"> • Support the allocation of grazing rights by the municipality • Submit a project proposal for funding the implementation of the Management Plan for grazing • Search for funding possibilities for the compensation of farmers and the cost of ranch relocation • Development of ranges via rangeland management activities • Support the relocation of ranches and the construction of infrastructure required (e.g. for watering the animals etc)
Objective GR3: By the end of 2010 the Management Plan for Grazing is developed up by the Axios Authority	Availability of the Management Plan for Grazing at the Axios Authority office	<ul style="list-style-type: none"> • Determination of rangeland units • Prepare the Management Plan for Grazing
Objective GR4: By 2010 alternative grazing areas are defined by the Axios Authority	Map with designated compensatory grazing areas available at the Axios Authority office	<ul style="list-style-type: none"> • Search for compensatory lands for grazing

3.5.4. Kalohori Lagoon Restoration and Improvement (KL)

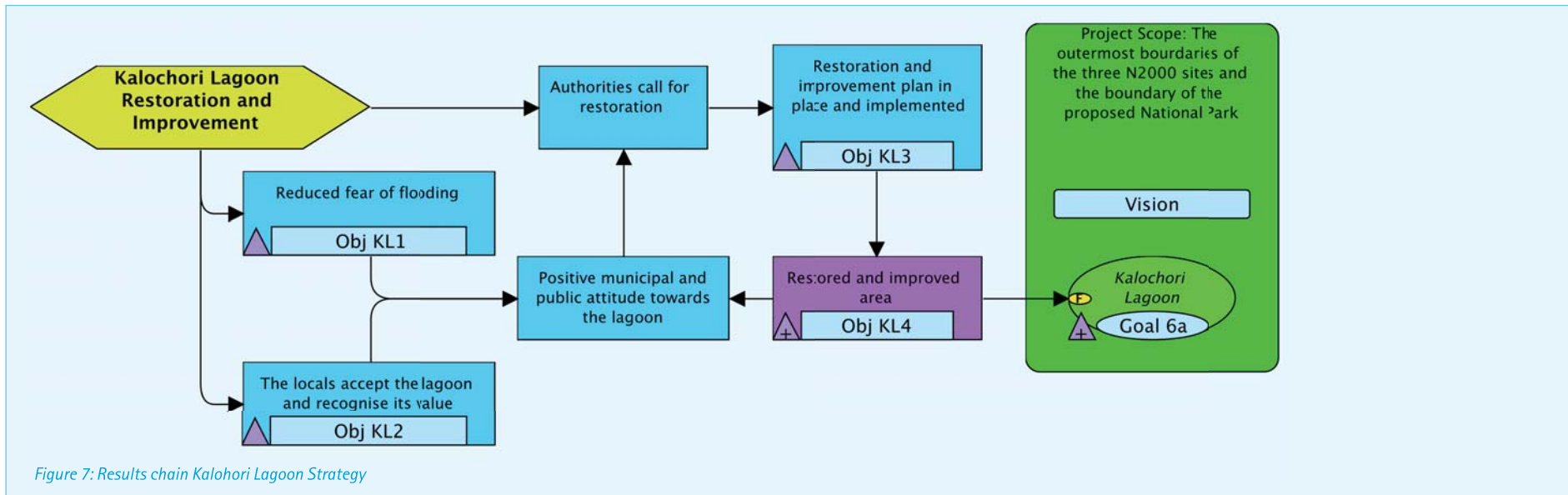


Figure 7: Results chain Kalohori Lagoon Strategy

The main threat to the Kalohori Lagoon is past and ongoing land filling with construction waste. The Kalohori Lagoon is an area previously used as a waste dumping place for the city of Thessaloniki and more recently also for the village of Kalohori. So it is considered to have low aesthetic value. Additionally, there is a perception that if the area is land filled, the risk of flooding to the village will be reduced.

The restoration and conservation of Kalohori lagoon was studied by the Organisation for the Planning and Environmental Protection of Thessalonica and the Municipality of Echedoros (Greek Biotope Wetland Centre and Development Company of Thessaloniki, 2002). This strategy aims to update the mentioned study for the restoration and improvement of the Kalohori lagoon and consequently implement the recommendations in cooperation with relevant authorities.

In parallel, this strategy aims to work with local people via environmental education, information and awareness activities in order to inform and educate them on the values of the

protected area, on the flood control role of the lagoon and additional measures, and on the restoration and improvement plans. It is assumed that by raising awareness, the local people and the municipality will be more supportive of the conservation of the lagoon and hence contribute to guarding the protected area.

Cooperation between Axios Authority and the Municipality of Echedoros, for the operation of the infrastructure for visitors in Gallikos River, will contribute to local understanding of the value of alternative development of the area. The coordinated actions of all relevant authorities are needed to achieve a restored and improved area.

Long term Objectives	Indicators	Activities
Objective KL4: By 2013, the area around the lagoon is cleaned up and no more landfill takes place	number of locations and m2 for each location covered by landfill Amount of trash around the lagoon	
Short term Objectives	Indicators	Activities
Objective KL1: By 2011, 80% of local people understand that the landfill does not protect them against flood risks	% of local people who understand that the landfill does not protect them against flood risks (pretest/posttest)	<ul style="list-style-type: none"> • Public awareness campaign • Environmental Education about the protective ecosystem services of the lagoon • Information about possible solutions & actions for flood protection
Objective KL2: By 2011, 80% of local people accept and value the lagoon	% of locals who accept and value the lagoon	<ul style="list-style-type: none"> • Public awareness campaign • Environmental Education about the protective ecosystem services of the lagoon • Promote clean-ups by the municipality • Set up cooperation with Echedoros Municipality to operate the Gallikos infrastructure for visitors
Objective KL3: By 2011, the Restoration and Improvement Plan is approved by the Ministry of Environment and implemented	Availability of the approved Restoration and Improvement Plan in the Axios Authority's office	<ul style="list-style-type: none"> • Activate authorities' actions • Develop the Restoration and Improvement Plan • Promote and support the implementation of the Restoration and Improvement Plan

3.5.5. Integration and application of land use planning (LU)

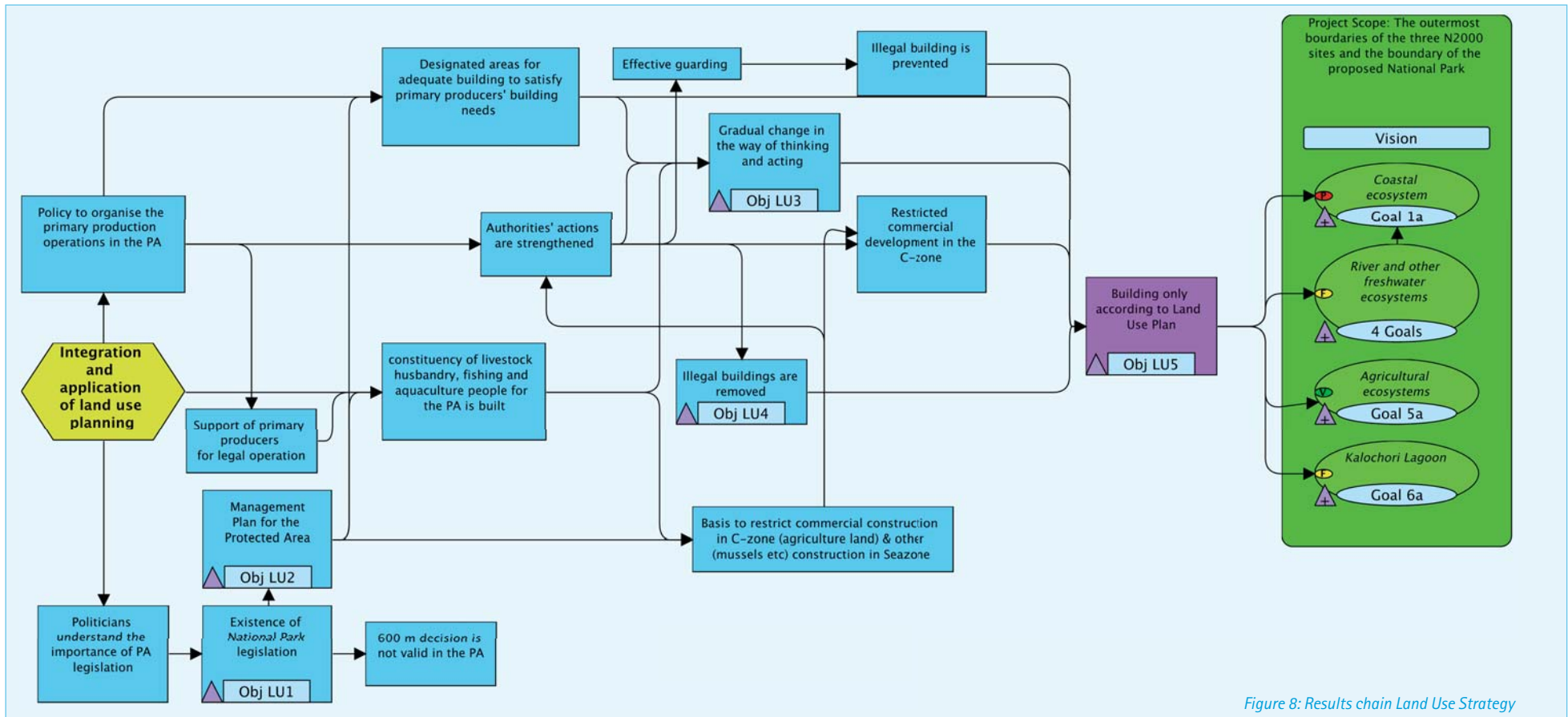


Figure 8: Results chain Land Use Strategy

Probably the most pressing threat to the Rivers area is the construction and existence of (il)legal buildings fed by the expanding neighbouring city of Thessaloniki. The application of land use planning in the protected area depends to a certain extent on the available budget and the continued operations of the Axios Authority. The 5-year Management Plan will propose specific areas and terms for legal buildings. Having the basis for legal buildings, the strategy

will include activities to strengthen enforcement and punishment mechanisms for illegal buildings, including the removal of all illegal buildings in cooperation with relevant authorities, as the National Park Legislation demands. In addition, the strategy aims to open discussions with relevant stakeholder groups to discuss necessary physical constructions (buildings) for their sustained operations. The strategy aims to develop alternative and well coordinated construction plans for certain uses –under strict control.

Long term Objectives	Indicators	Activities
Objective LU5: By 2013, all buildings in the area are in agreement with the Land-use Plan	Number of illegal buildings in the Protected Area	
Short term Objectives	Indicators	Activities
Objective LU1: National National Park Legislation is signed and published by May 2008	National Park Legislation document published	<ul style="list-style-type: none"> • Public Done in May 09
Objective LU2: Management Plan for the Protected Area is finished by mid 2010, and signed by the end of 2010	Existence of signed Protected Area Management Plan document	<ul style="list-style-type: none"> • Give contract for preparation of the Protected Area Management Plan and strategic recommendations from the Axios Authority to a consultant
Objective LU3: By 2011, 80% of locals understand the values of the Protected Area (PA)	% of local people that appear to have positive attitude and behavior towards the PA	<ul style="list-style-type: none"> • Meetings with local stakeholders to learn about their needs (mussel producers- fishermen, cattle breeders, farmers to find sustainable solutions to problems (permits, waste management, alternative income)) • Organize mediation/conflict resolution activities • Promote ecotourism and agro tourism opportunities and inform the locals for them • Lobby for "compensation for nature" • Raise awareness of the area and attract more day tourism from Thessaloniki
Objective LU4: By 2012 all illegal buildings in the PA are removed	Analogy of the Land-use Plan and aerial photograph or field check	<ul style="list-style-type: none"> • Promote the removal of illegal buildings/sheds • Submit a proposal for the cleaning of the area and alternative, well coordinated constructions

3.5.6. Reduction of hunting pressure and poaching (HU)

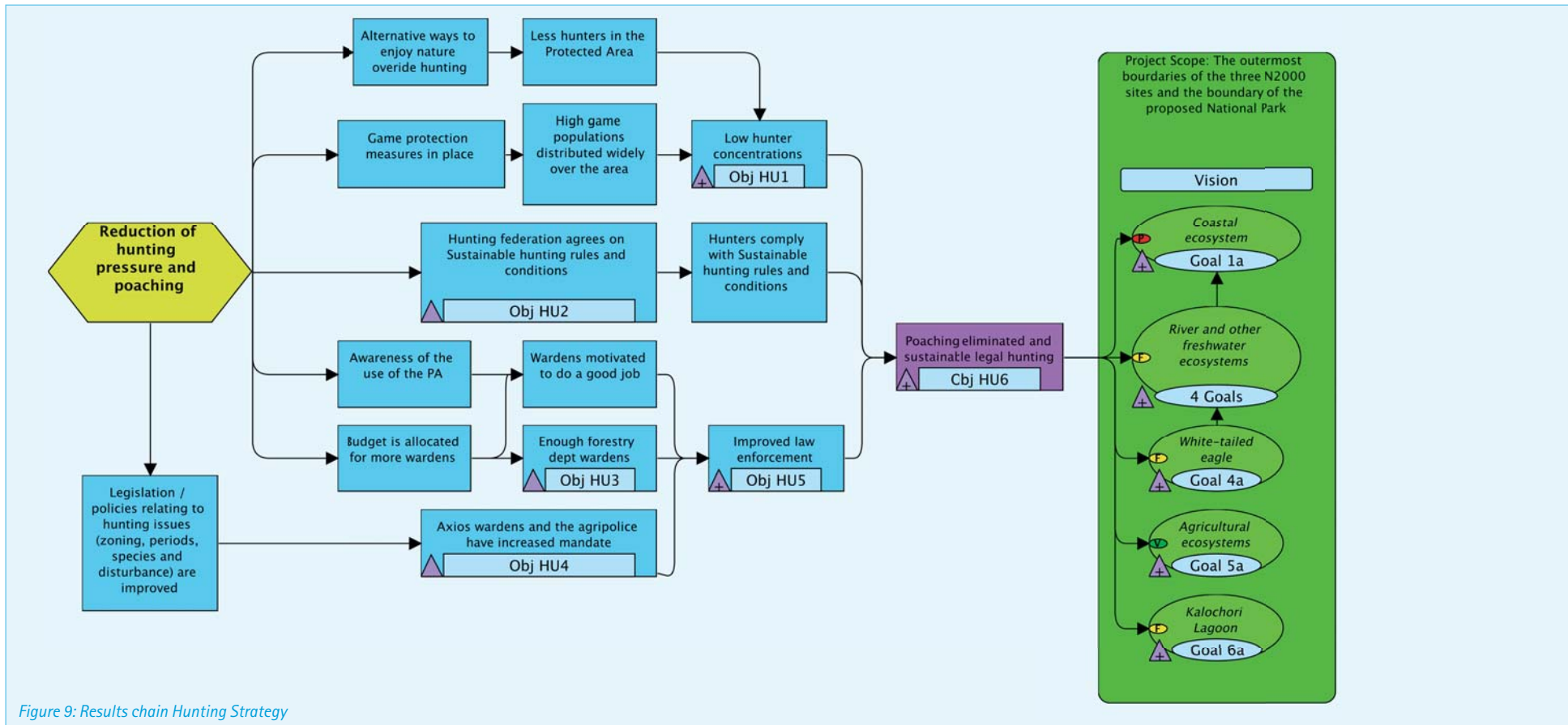


Figure 9: Results chain Hunting Strategy

Hunting pressure and poaching is a potent threat to many birds in the area for different reasons. First, too many individuals and protected species are shot; second, all birds are disturbed; and third, raptors are affected by lead accumulation through feeding on shot birds. In addition, disturbance and accidental shooting significantly affect the White-tailed Eagle.

This strategy aims to preserve the exceptional wildlife of the area by reducing hunting pressure and poaching and making hunting more sustainable. It seeks the cooperation of the hunters, a large local stakeholder group represented by the Hunting Federation of Macedonia and Thrace. The strategy involves working with the Hunters Association to increase its members' understanding and compliance with sustainable hunting rules and conditions based on a study to be conducted for the specific condition of the protected area.

To strengthen the enforcement of hunting laws, the strategy will raise awareness about the use of the protected area and lobby for stronger legislation and policies to increase the budget allocated for Forestry Department wardens and to increase the mandate of the Axios Authority and agripolice wardens. The strategy will promote alternative ways to enjoy nature and work to reduce hunter density at certain points.

Long term Objectives	Indicators	Activities
Objective HU6: By 2013 at least 50% of the area is declared and respected as no-hunting and low-hunting areas.	Declaration and signage of no-hunting areas and low-hunting areas Number of illegal hunting incidents recorded by wardens or other people	
Short term Objectives	Indicators	Activities
Objective HU1: By 2012 Sustainable hunting rules and conditions are obeyed by the members of the Hunters Association (HA)	Number of birds and species present Number of hunters that have signed the Sustainable hunting rules and conditions agreement	<ul style="list-style-type: none"> • Designation of low-hunting and no-hunting areas in cooperation with HA • Cooperation with Hunters Association (HA) • Communicate alternative ways to enjoy nature
Objective HU2: By 2011 the Hunting Federation agrees on Sustainable hunting rules and conditions	Number of hunting incidents in not allowed areas/on protected species by HA members recorded by the wardens	<ul style="list-style-type: none"> • Awareness raising to hunters and public about endangered species • Support HA to counter illegal hunting • Raising awareness on legal issues hunters and authorities • A study produced by neutral scientists stating the number of hunters allowed per hunting area, to increase acceptance of sustainable hunting rules by the HA
Objective HU3: By 2012 the FD has at least 5 wardens doing regular control	Number of wardens	<ul style="list-style-type: none"> • Lobby for more wardens support from the Forestry Department
Objective HU4: By 2010 Axios Authority wardens and the agripolice have mandate to give fines based on improved institutional framework	Legal mandate for wardens to issue a fine	<ul style="list-style-type: none"> • Call for increased mandate of the Axios Authority and agripolice wardens • Cooperation with NGOs / other authorities to influence government policies • Preparation of policy proposals to mandate for fines
Objective HU5: By 2011 all illegal hunting incidents are punished	% of incidents taken to court in relation to incidents recorded by the wardens and calls severity of punishment	<ul style="list-style-type: none"> • Cooperation with environmental police (forestry, agripolice) • Lobby law enforcement with adequate penalties not depending on having connections

3.5.7. Garbage campaign (GB)

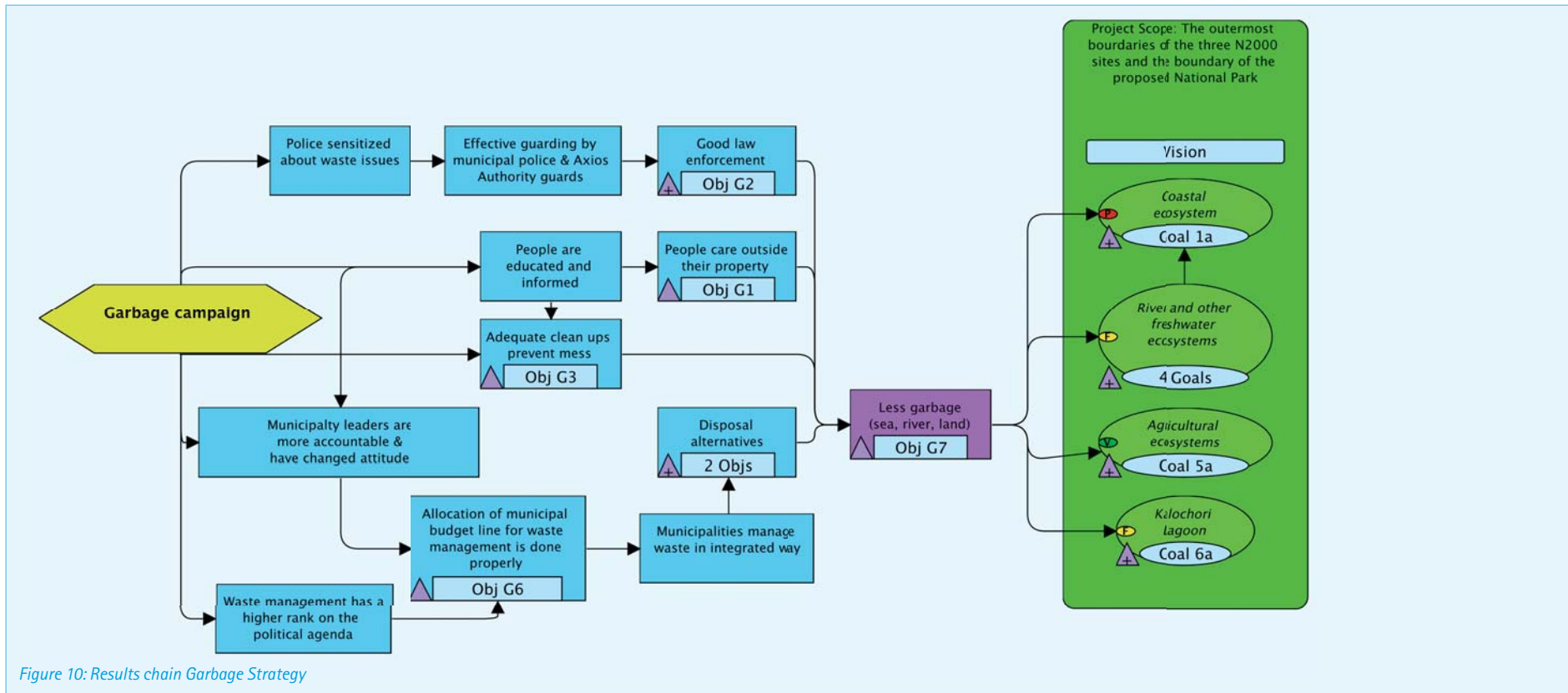


Figure 10: Results chain Garbage Strategy

Garbage is a threat that influences very negatively the perception and appreciation of the Protected Area. The Garbage Campaign is designed to raise awareness of the garbage problem and to put waste management higher on the political agenda. This is assumed to lead to higher investments in integrated waste management including disposal alternatives, adequate clean-ups and stronger law enforcement.

By the end of 2009, all garbage-dumping places (one for each municipality and several of them inside the protected area) will be shut and household garbage will go to the Landfill site

in Mavrorahi, east of Thessaloniki. To the extent possible, dumping grounds will be cleaned up and converted back to their natural state.

Note that this campaign treats only the problem of normal domestic waste but the possibility of toxic waste depositions (e.g. paints, medicinal substances, solvents, etc.) to be found in the PA cannot be excluded. A preliminary study undertaken by the Axios Authority staff (Panagiotopoulou and Eleftheriadou, 2008 unpublished data) highlighted: a) the possibility of

toxic waste dumped in the PA, b) the lack of alternative disposal sites for some materials (e.g., construction waste, some of them with asbestos cement), c) the possibility of huge pressure for the PA if there are no alternatives by the beginning of 2009. Thus a detailed investigation and study is needed in order to determine the actual size of the problem and its trends.

Long term Objectives	Indicators	Activities
Objective G6: By 2012 the area is relatively clean	amount of trash lying around	
Short term Objectives	Indicators	Activities
Objective G1: By 2009 people care about land beyond their own property and do not throw trash into nature	Number of incidents reported by wardens	<ul style="list-style-type: none"> • Include garbage/recycle issues in the environmental education programs of Axios Authority • Information and awareness to sensitize • Place signs not to throw trash everywhere • Lobby for proper waste management through the mass media
Objective G2: By 2011 people are punished adequately if they throw their trash into nature	Annual number of fines for littering inside the park Annual average amount of money per fine	<ul style="list-style-type: none"> • Promote mandate for the Axios Authority wardens to put fines
Objective G3: By 2011 adequate clean-ups are conducted to prevent the problem that "mess attracts mess"	Clean-up actions	<ul style="list-style-type: none"> • Call for clean-ups conducted by municipalities • Organize and carry out additional clean ups with volunteers • Submit proposal for funding a study to assess and record the garbage problem of the PA
Objective G4: By 2009 enough bins are placed and emptied in a regular basis	Regularly emptied bins	<ul style="list-style-type: none"> • Promote regular bins collection by municipalities • Promote the placement of bins by the municipality • Set up collaboration with fishermen and Technical University to find a solution for the mussel shell waste
Objective G5: By 2011 all municipalities offer transfer stations and recycling collection points	Clearly officially assigned transfer stations and recycling collection points in every municipality	<ul style="list-style-type: none"> • Promote the offer of transfer stations and recycling collection points by the municipalities • Consulting municipalities about disposal alternatives
Objective G6: By 2013 at least 15% of the total municipality budget allocated for waste management	Annual % increase or decline of municipality budget spent on waste management per citizen (2009 baseline)	<ul style="list-style-type: none"> • Inform municipalities about allocation of funds for waste management / recycling • Lobby for proper waste management through the mass media

3.5.8. Sustainable sand extraction management (SEM)

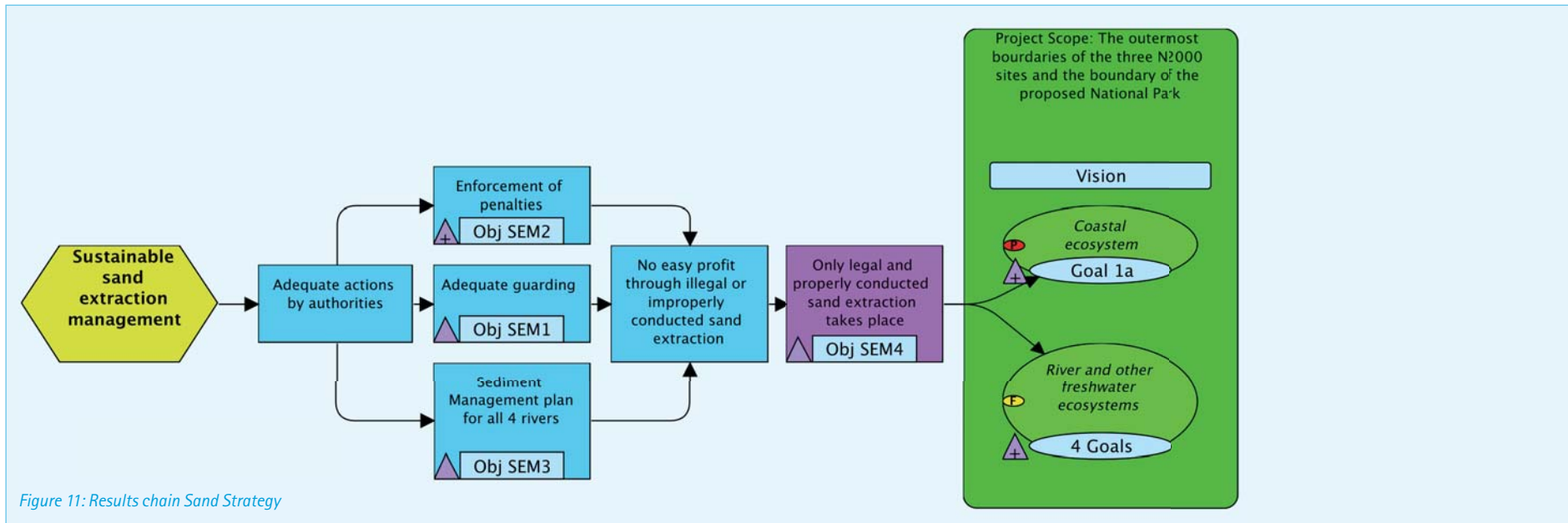


Figure 11: Results chain Sand Strategy

Improperly conducted and illegal sand extraction is a major threat to the river ecosystem. The strategy for a "Sustainable sand extraction management" aims to support, enhance and coordinate the relevant authorities' actions. It will involve producing Management Plans for sand extraction on all 4 rivers and strengthening enforcement. This way the sand extraction operations will be legal and properly conducted in order to eliminate the possibility of flooding of the nearby villages. Ongoing monitoring will be an integral part of ensuring sustainability of sand extraction operations and safety.

Long term Objectives	Indicators	Activities
Objective SEM4: By 2015, all sand extraction in the Park is conducted legally and according to the Sediment Management Plans	Number of illegal and improperly conducted sand extraction incidents recorded by the wardens, municipalities...	
Short term Objectives	Indicators	Activities
Objective SEM1: By 2011 river banks are visited by the guards on a weekly basis	weekly comment on the observations in the guarding records	<ul style="list-style-type: none"> Regular guarding of the rivers by the Axios Authority staff
Objective SEM2: By 2011 all illegal and not properly conducted sand extraction actions are punished with a fine that is higher than the profit from the sand	Number of punished sand extraction activities/Number of recorded ones Amount of money per fine/profit by selling sand	<ul style="list-style-type: none"> Activate other authorities Forward observed illegal and improperly conducted sand extraction incidents to the Water Department of the region Promote adequate punishment for illegal and improperly conducted sand extraction
Objective SEM3: By 2011, the Sediment Management Plans for all 4 rivers are approved by the Ministry of Environment, Land Use Planning and Public Works	Documentation of approval is available	<ul style="list-style-type: none"> Prepare a study about the effects of sand extraction (illegal and not properly conducted) Development and approval of a Sediment Management Plan for all 4 rivers Ensure the implementation of that plan

4. Recommended Strategic Plan for the Alyki Kitros Part

4.1. Introduction

This chapter focuses on the Alyki Kitros Part only. Please refer to the same sections in Chapter 3 for an explanation of terms used and elaboration of analysis done. Also, please note that the vision for the Axios Delta as described in 3.1 encompasses both the Rivers Part and the Alyki Kitros Part and therefore guides strategic recommendations in this chapter.

4.2. Biological targets and goals

The biological targets implying the whole biodiversity of Alyki Kitros are: Sand dunes, Coastal ecosystems and the Lagoon. The respective Annex I-habitats from the EU Habitats Directive included in the biological targets can be seen above in Table below.

Target	Sand dunes	Coastal ecosystems	Lagoon
"Nested" Natura 2000 Habitats	2110 Embryonic shifting dunes	1310 Salicornia and other annuals colonising mud and sand	1150* Coastal lagoons
	2120 Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ('white dunes')	1410 Mediterranean salt meadows (<i>Juncetalia maritimi</i>)	
	2130* Fixed coastal dunes with herbaceous vegetation (grey dunes)	1420 Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornietea fruticosi</i>)	
	2195 Dune-slack reedbeds and sedgebeds	6220* Pseudo-steppe with grasses and annuals of the Thero-Brachypodietea	
	2220 Dunes with <i>Euphorbia terracina</i>		

Targets and the included Annex I-habitats of the Habitats Directive and other important nested habitats

The goals for the biological targets are the following:

Target 1AK: Sand dunes

Goal 1AK

By 2012, the structure of the sand dunes will consist of specified annex I habitat types (2110, 2120, 2130, 2195, 2220) in favourable conservation status, i.e. the surface area of the habitats will be stable or increasing in relation to that of the mapping in 2001, the typical plant and animal species of the habitats are present and in favourable condition.

Indicators:

- Total surface of Annex 1 habitat types 2110, 2120, 2130, 2195, 2220 compared to the mapping of 2001
- Species conservation status (presence and abundance) as indicated in the most recent standard data form
- Turtle populations

Target 2AK: Coastal ecosystems

Goal 2AK

By 2012, the coastal ecosystems' structure will consist of specified annex I habitat types (1310, 1410, 1420, 6220) in favourable conservation status, i.e. the surface area of the habitats will be stable or increasing in relation to that of the mapping in 2001, the typical plant and animal species of the habitats are present and in favourable condition.

Indicators:

- Total surface of Annex 1 habitat types 1310, 1410, 1420, 6220 compared to the mapping of 2001
- Species conservation status (presence and abundance) as indicated in the most recent standard data form

Target 3AK: Lagoon

Goal 3AK

By 2012 the Lagoon is conserved covering the same area as 2001 and showing a good conservation status and Annex 1 habitat type 1150 is in favourable conservation status, i.e. the surface area of the habitat will be stable or increasing in relation to that of the mapping in 2001, the typical plant and animal species of the habitats are present and in favourable condition.

Indicators:

- % of water surface mapped in 2001 / Total surface of Annex 1 habitat type 1150 compared to the mapping of 2001
- Species conservation status (presence and abundance) as indicated in the most recent standard data form

4.3. Target viability assessment

The viability of all three biological targets in Alyki Kitros is good. This means that their current conservation status is within the acceptable range of variation and minor management intervention is required for their maintenance.

4.4. Treats ranking

The threats in Alyki Kitros can be divided into current threats and potential future threats.

The analysis (see the threat ranking table on the next page) shows that most current threats have a minor impact on the biodiversity of the site (pesticides, invasive species, hunting & poaching and 4x4 cars). The exception is Water pumping and drainage by the Salt Plant Company, which is rated as having a medium impact. Potential expansion or closure of the salt plant could exacerbate this problem, as the water level in the lagoon is fully dependent on pumping practices.

The potential future threats could seriously impact on the targets and as a consequence reduce their viability. The following future potential threats are ranked as "medium":

- Expansion of the operation of the Salt Production Plant
- No water management in case of shut down of the Salt Plant Company
- Construction of (holiday) homes within the site

These potential threats are not imaginary. Certain real claims and trends, e.g. for the expansion of the salt production in the area or for the increasing nearby tourism development of Korinos,

demand the inclusion of these potential threats in the analysis.

This Recommended Strategic Plan therefore focuses on proactive risk management strategies in order to prevent serious harm to the biological targets of Alyki Kitros

#Threats# / =>Targets=>	Coastal ecosyst...	Lagoon KITROS	Sand dunes KIT...	Summary Threat ...
Hunting/poaching	Low	Low		Low
(Summer) house building within the site	Medium		Medium	Medium
Unsustainable summer tourism and recreational activities	Low		Medium	Low
Invasive species			Low	Low
Pesticides coming with freshwater from outside	Low	Low		Low
Destructive car activities	Low		Low	Low
Expansion of the operation of Salt Production Plant		High		Medium
Water pumping and drainage by the Salt Plant company	High	Low		Medium
No water management in case of shut down of the Salt Plant company	Medium	Medium		Medium
Summary Target Ratings:	Medium	Medium	Medium	Overall Project Rating High

4.5. Analysis of the present situation

The conceptual model for Alyki Kitros as shown on the next page, includes the current and future potential threats and their driving factors. In summary these are:

- The current National National Park Legislation (including zoning) leads to a set of unclear circumstances. For example, it is not clear if –and under what circumstances the Salt production plant will be allowed to expand and if the construction of summer-houses will be allowed in Alyki Kitros.
- This is closely related with the capacity of the Axios Authority to monitor the use of 4x4 cars and other recreational activities in the dunes.
- Low economic viability of the Salt production plant may lead either to future shut down and thus lack of water management with unknown consequences, or to pressure for expansion and thus habitat loss.
- General lack of interest and respect for the area by visitors and locals.

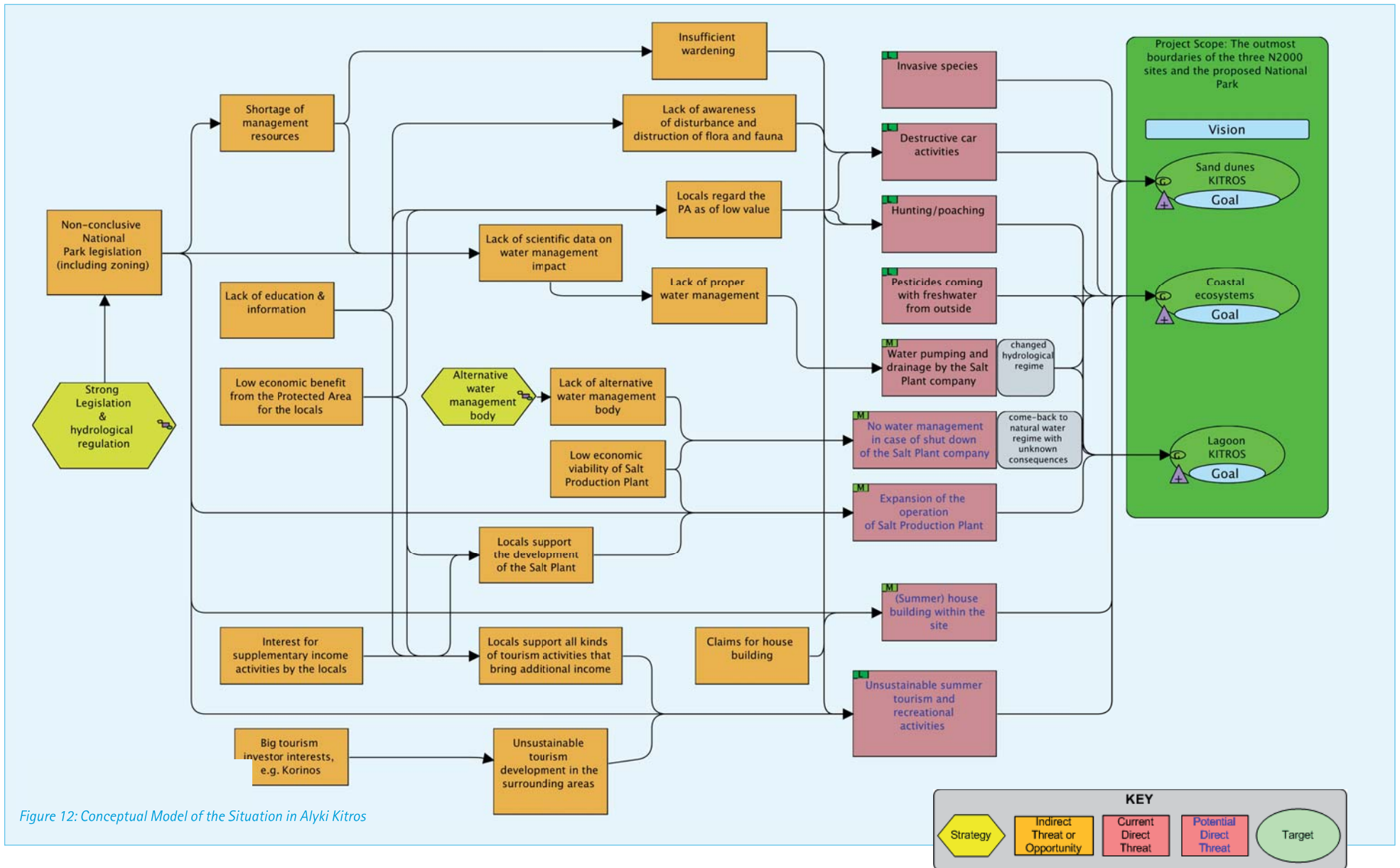




Photo: Dragon fly - Lia Papadranga

4.6. Results chains and strategies

4.6.1. Strong legislation and hydrological regulation (LG)

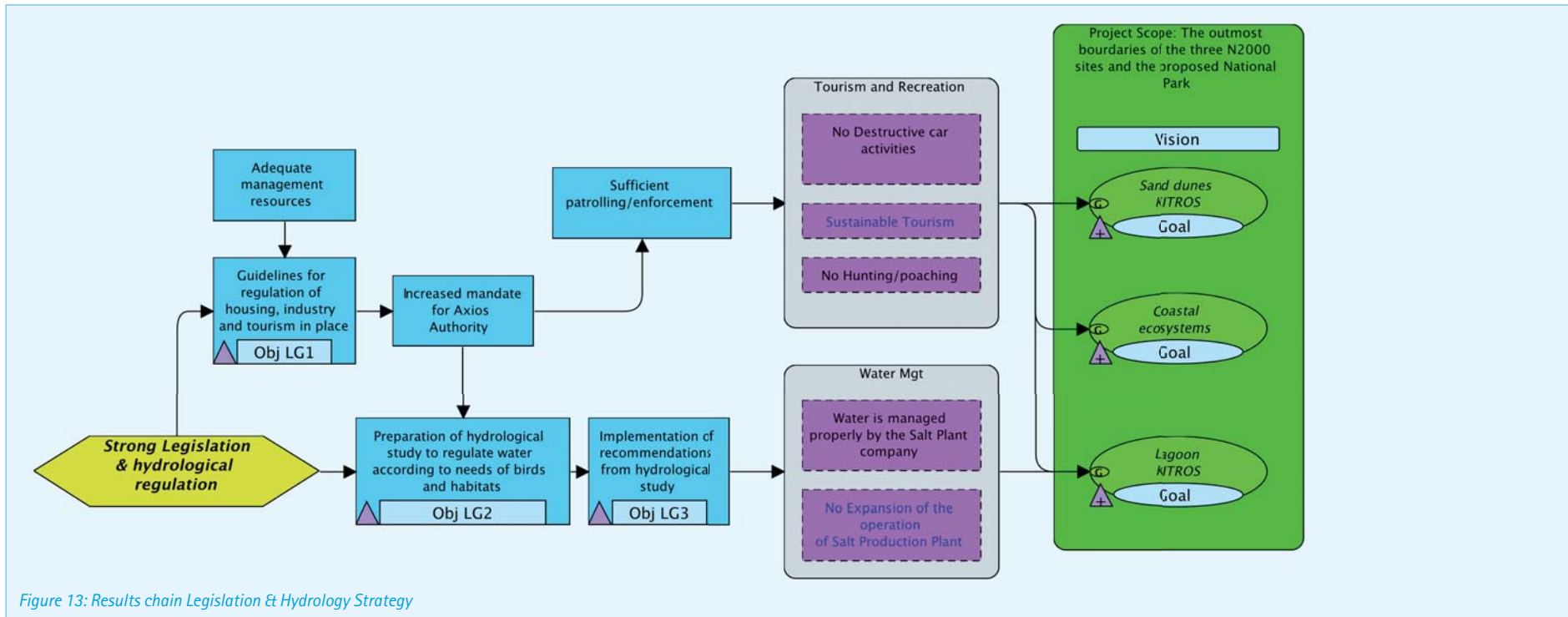
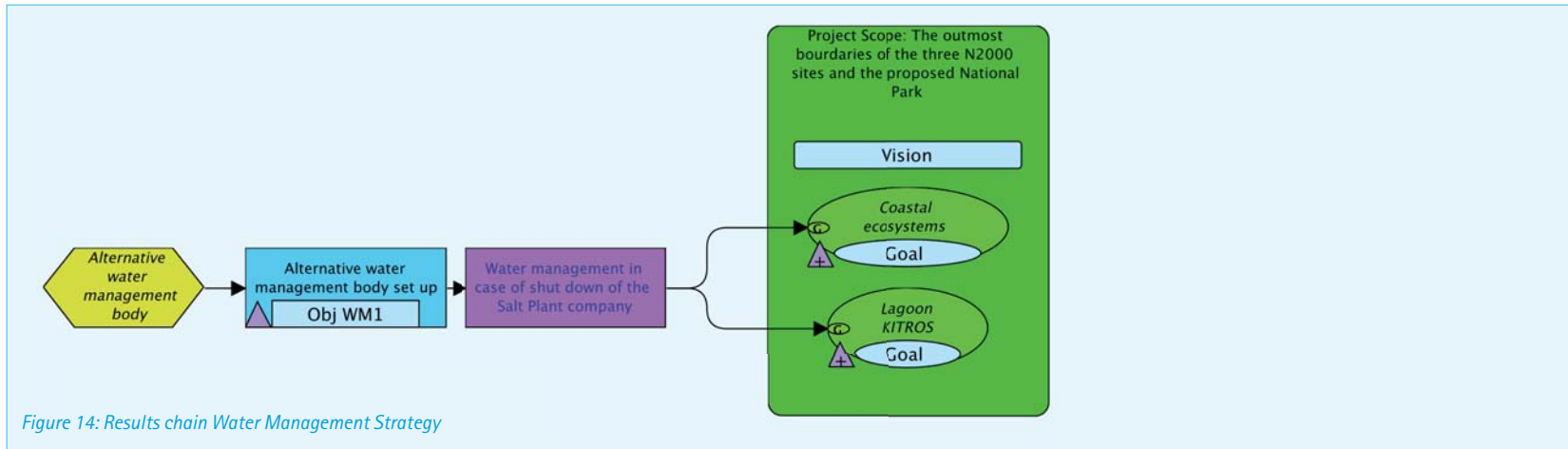


Figure 13: Results chain Legislation & Hydrology Strategy

The current threats to Alyki Kitros can be largely addressed by more conclusive guidelines in tandem with the National Park Legislation to regulate tourism pressures and enforce the law. In addition, optimal water management regimes need to be determined in order to manage water levels in the lagoon ecologically sustainable. Ideally this part of the strategy be carried out in partnership between the Axios Authority and the Salt Production Company.

Short and long term Objectives	Indicators	Activities
Objective LG1: By 2010 conclusive guidelines on tourism and construction of holiday homes is included in the Management Plan	the publication of the legislation in the official journal	<ul style="list-style-type: none"> • Lobby for legislation to secure the site
Objective LG2: By 2010, hydrological study completed and approved	Approval document	<ul style="list-style-type: none"> • Meeting with the Salt production Company for agreements and co-operation • Secure funding for hydrological study • Hydrological requirements for birds and habitats determined • Project proposal submitted to fund the implementation of the study
Objective LG3: By 2011, proper water management is implemented for birds and nature.	bird populations optimal water levels	<ul style="list-style-type: none"> • Hydrological management for birds and habitats is implemented

4.6.2. Alternative water management body (WM)



Currently, the operation of the Salt Production Company brings about a changed hydrological regime due to its water pumping and drainage activities. This implies water pumping e.g. to the Lagoon of Alyki Kitros. It is not known what would happen if this water pumping were to stop abruptly. In the case that there are negative influences by the failure of water pumping the organization of an alternative management body to ensure an alternative way of keeping water levels optimal is necessary.

Objective	Indicator	Activities
Objective WM1: By 2010 an alternative water body for the water management of Alyki Kitros is set up by Axios Authority	Availability of agreement with other actors in water issues that regulates emergency responsibilities	<ul style="list-style-type: none"> • Identification of authorities and other stakeholders related to water issues in this area • Participatory planning with these stakeholders to clarify capacities, wishes and composition of the alternative water management body (Waters of Alyki (WoA))



Photo: Alyki Kitros - Anestis Samourkasidis



Photo: Observatory in Gallikos estuaries - Lia Papadranga

5. Preconditions & overarching strategy for the Axios Delta

5.1. Preconditions for this strategic plan to work

Widen the Scope of the National Park

There are serious limitations in the current delineation of the National Park. To ensure proper management of all Natura 2000 areas it therefore recommended that the area be expanded to include the scope as proposed in section 3.2. It is recommended that this process is initiated by the Board of the Axios Authority as soon as possible.

Strengthen Nature Conservation Legislation

The Axios Authority has a general mandate to manage the area, but does not have the authority to fine people for breaking the law, not even inside the National Park for which it is directly responsible. The complicated and often lengthy legal procedure to formally punish someone for acts as poaching and dumping garbage, is crippling the Authority's ability to enforce the law. It is recommended that –not only for Axios, but for Greece as a country– management Authorities are allowed to fine people within the borders of the National Park.

Securing minimal Operational Resources

Management team & Finances

The legislation that deals with the establishment of management authorities states that in order for the authority to be effective, up to 27 permanent staff can be employed. Given the current financial situation in Greece however, this is unlikely to happen. Nevertheless, the Axios Authority does need a stable core of professionals, including secured and stable leadership in order to succeed with the wise management of the area. It is recommended to allocate a budget for permanent employment of a core team of around 10 staff (or the equivalent of 10 FTE's). This secured core funding is necessary to ensure continuation in multi-stakeholder processes and implementation of longer-term strategies.

Additional funding can be raised for specific projects from various Greek, European and international funds. It is also recommended to review the Authorities' current financial by-laws and consider allowing the Authority to generate income (for example from the sales of educational and recreational materials) in order to finance specific events (such as campaigns).

Team composition and skills

In order for this team to be effective, it is recommended to carry out a capacity needs analysis as part of the development of the full Management Plan. Knowledge and skills should include leadership, communications, biologist & ecologist, legal and fundraising skills, as well as skills to manage complex multi-stakeholder processes. It is also recommended for the Management Plan to contain a clear organisational structure of the Authority and describe performance indicators.

Transfer of Infrastructure

There are various physical structures such as the guardhouses and the visitors' centre, some of which are poorly maintained, hardly used and rapidly deteriorating. Different government agencies legally own this infrastructure, developed in the past for the then to be established Authority. Now that the Authority is established, it would make sense to actually transfer this property to the Axios Authority, which would allow them to be maintained, put in use and would help the Authority to implement its strategies. It is therefore recommended that ownership of this property be transferred to the Authority, but only in the assumption that core staff and operations of the Authority are secured.

Clarifications of mandate of Authorities with overlapping responsibilities

Good cooperation with relevant authorities, especially those responsible for issues (such as agricultural issues, implementation of the WFD and waste management) directly affecting the Axios Delta is absolutely crucial. It is also of paramount importance to clarify mandate of authorities with overlapping responsibilities and assess the willingness of upstream authorities (on both sides of the border) to collaborate on the conservation of the area. It is recommended that the full Management Plan include an elaborate mapping of stakeholders, including authorities and screening of initial viewpoints. This screening should also include potential issues that the Axios Authority should somehow be involved in. For example, in August 2008, plans to develop and expand the Port of Thessaloniki were announced by the Minister of Transport. If this development proceeds, it will have a major impact on the protected area. Therefore the Axios Authority should be involved in the environmental impact assessment of the port enlargement.

5.2. Overall strategy for increasing tourism value and building constituency among the citizens of Thessaloniki

One of the root causes to all direct threats that the area faces, is the lack of appreciation for the area by local people. In general, the area is seen as a dumping ground and as waste land. In fact, the Axios Delta is located west of the fast growing city of Thessaloniki and very near the industrial area in the Municipality of Echedoros. These urban areas are considered the most degraded parts of Thessaloniki and this attitude is spilling over to the Axios Delta.

It could well be possible –with the right mind set- that the National Park provides the perfect “facelift” to the region, providing people access to a beautiful, good quality recreational area: an area to be proud of. The people of Thessaloniki and even more those of the western part could definitely benefit from this.

This overarching strategy (for both the Rivers and the Alyki Kitros Parts) is designed to increase public support among the people of Thessaloniki for the National Park. Specifically, the strategy aims to help local people and political leaders realise the value of the area not only for nature conservation but also in terms of the ecosystem goods and services that it provides them and their children. Constituency building and tourism development could prove the most effective and powerful strategy against most of the threats the area faces today. It is assumed that if people value the Axios Delta, that they will then respect the management rules and collaborate in conserving the area.

The strategy specifically aims to:

- Raise awareness of general public on values of the Natural Park
- Improve visitor information about the National Park & Infrastructure
- Use the National Park for the education of schoolchildren (biology lab)
- Raise awareness of general public and politicians on the ecosystem services (water purification, groundwater recharge) and goods (drinking water, water for irrigation, rice, mussels, fish) that the National Park provides.
- Attract visitors from the Thessaloniki area and Greek and European tourists



Photo: Bird watching day in Nea Agathoupoli - Lia Papadranga

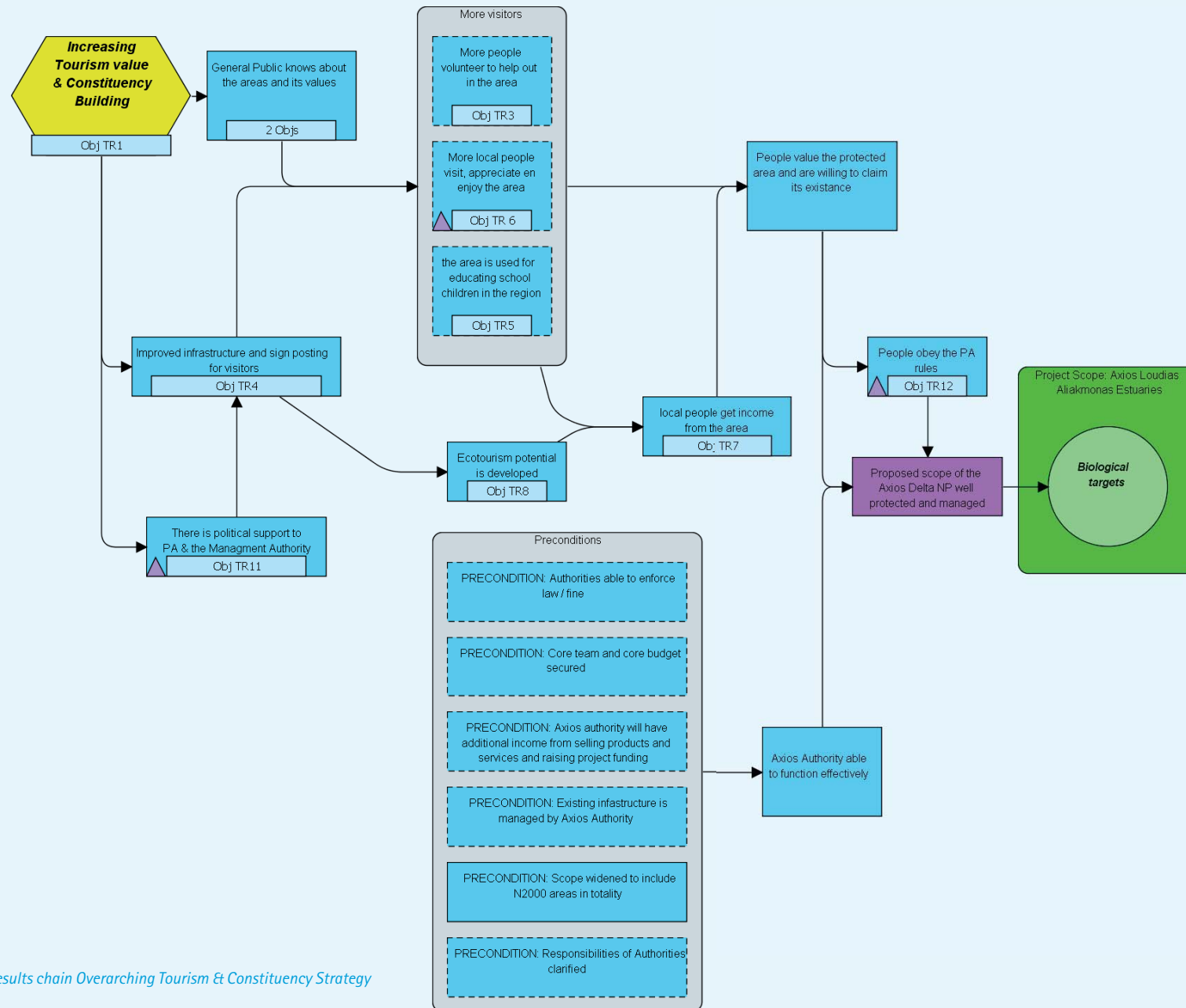


Figure 15: Results chain Overarching Tourism & Constituency Strategy

Long term Objectives	Indicators	Activities
Objective TR10: By 2015, over 100.000 people are aware of the values, goods and services it provides of the National Park	Number of people aware	
Objective TR11: By 2011, politicians from major political parties support the PA	Number of support statements or actions	
Objective TR12: By 2015, there is no more illegal dumping, poaching, grazing and infrastructural development	Number of illegal incidents in the PA	

Short term Objectives	Indicators	Activities
Objective TR1: By the end of 2009, over 10 major awareness events are organized by the Axios Authority	Number of people participating/event	<ul style="list-style-type: none"> • Conferences • Photograph competitions • Bird, wetlands, celebrations, • International meetings • Meetings with stakeholders • Scientific meetings
Objective TR2: By end 2009, a major awareness campaign has reached 30.000 people	Number of people reached by awareness campaign	<ul style="list-style-type: none"> • Public awareness campaign "a hidden treasurer – the biggest natural park of Central Macedonia • Lobby for the significance of conserving this protected area, explaining negative impacts • Present existing activities of primary producers and their relationship with the PA • Promote sustainable tourism • Present the management measures that should be taken to conserve this PA e.g. proper water management, role of effective guarding
Objective TR3: By 2010, over 100 volunteers contribute to the PA	Number of volunteers	<ul style="list-style-type: none"> • Call for volunteers to participate in monitoring, clean-up, awareness and other activities • Project proposals for EVS • Participation from people of the city and locals, create volunteer working groups
Objective TR4: By 2010, infrastructure for visitors and signboards for better information and direction are in place	Number of signs, kiosks, observatories etc Number of taverns or resting areas	<ul style="list-style-type: none"> • Submit proposal for the construction of adequate infrastructure for visitors • Put up adequate signs for visitors • Investigate possible locations for taverns
Objective TR5: By 2010, a minimum of 50 schools per year participate in site visits and educational programs	Number of schools	<ul style="list-style-type: none"> • Develop environmental education programmes • Activate co-operations with Aristotle University of Thessaloniki, Technological Educational School of Thessaloniki, and other institutions in Greece or abroad
Objective TR6: By 2011, 50% of the people that visit or use the area are informed about its significance for biodiversity and its ecosystem goods and services	% of the people that visit or use the area and know about the importance of the PA	<ul style="list-style-type: none"> • Presentations and discussions with locals • Awareness events • Informative guided tours • Leaflet distribution • Eco-tours, etc
Objective TR7: By 2011, considerable supplementary income is gained by the locals through the Protected Area	Number of people offering supplementary activities	<ul style="list-style-type: none"> • Promote certified environmentally friendly produced products from the Protected Area • Support locals to organize and offer salt mud baths, horseback rides, bicycle rides • Prepare project proposals for Alyki Kitros • Complete the current Interreg III Project "Axios Ecotour" to promote ecotourism in the area and implement its findings • Involve municipalities and local people to be a part of the park's activities
Objective TR8: By 2011, alternative ecotourism activities have been developed	Number of staff for alternative activities	<ul style="list-style-type: none"> • Investigate costs and benefits of restoring the old railway • Development of ecotourism • Support ecotourism to describe salt production



Photo: Gallikos Estuaries - Nontas Stylianidis

6. Recommendations for the development of the Management Plan

This Recommended Strategic Plan was carefully prepared by the core group as a solid base for the development of the Management Plan. We strongly recommend building on the initial result chains by refining each strategy with input of a wider stakeholder group and so refining assumptions, objectives, activities and the final monitoring plan.

For the development of a detailed work plan and budget it is recommended to stick to strategy specific and objectives oriented planning and thus not break the link between strategy and operations.

It is therefore recommended that the consultant responsible for the development of the Management Plan invests in mastering the CMP Open Standards and the use of the supporting software (Miradi) in order to guarantee the continuation of the logic and use of the methodology. In addition, it is advised to work closely with the actual team of the Management Authority to build partnerships and constituency during the further development.

Lastly, it is strongly advised to seek peer review input from other authorities and/or organisations in Greece or the Mediterranean that are responsible for similar biological targets, facing comparable threats and/or implementing similar strategies.



Photo: Pygmy cormorant - Agorastos Papatsanis

Literature:

Babalonas D. (Scientific coordinator) (2001) Vegetation – Habitat types in [Identification and description of the habitat types in Sites of Community Interest for nature conservation](#) Study 1 Anagnostopoulos N. (Consultant) Ministry of Environment Land Use Planning and Public Works, Athens.

Chamber of Commerce and Industry of Thessaloniki and Gecon consulting (2007) [Marketing Plan Study](#) for the European project «Terres d' Eau» INTERREG III B MEDOCC, Thessaloniki.

European Commission (2006) [Nature and Biodiversity Ruling of the European Court of Justice](#). Luxembourg

Greek Biotope – Wetland Centre, Development Company of Thessaloniki prefecture (2002) [Restoration – Conservation of the Kalohori Lagoon](#) Organisation Planning and Environmental Protection of Thessalonica & Municipality of Echedoros

KEPAME, Diamadopoulos and partners, Economou, Apostolodis, Mpotsoglou, Perleros, Papagrighoriou, ENVECO A.E. (1999) [Program for the encounter of specific environmental problems and the operational and management system of the protected area of the estuaries of the rivers Gallikos, Axios, Loudias, Aliakmonas, Alyki Kitros and Kalohori lagoon and their greater areas](#). Specific Environmental Study. 4 volumes. Ministry of Environment Land use Planning and Public Works, Athens.

Maragou, P., Mantziou, D. (2000): [Assessment of Greek Ramsar Wetlands](#) – Answered questionnaires. WWF-Greece, Athens

Millennium Ecosystem Assessment. 2005. [ECOSYSTEMS AND HUMAN WELL-BEING: WETLANDS AND WATER Synthesis](#). World Resources Institute, Washington, DC.

Pearce F. and Crivelli A. J (1994) [Characteristics of Mediterranean Wetlands](#), Tour du Valat, MedWet.

Salafsky N., Margoluis R. and Redford K. (2001) [ADAPTIVE MANAGEMENT: A Tool for Conservation Practitioners](#). Biodiversity Support Program. Washington DC, USA

Tsiouris, S.E. and P.A. Gerakis (1991) [Wetlands of Greece: values, alterations, conservation](#). WWF, Laboratory of Ecology and Environmental Protection of Faculty of Agriculture of Aristotelian University of Thessaloniki, IUCN. Thessaloniki.



Axios Authority is one of the 28 Management Authorities for Protected areas in Greece under the Ministry of Environment, Land Use Planning and Public Works
▶ www.axiosdelta.gr



Foundations of Success is a small non-profit organization dedicated to conserving the world's biodiversity through improving the practice of conservation.
▶ www.FOSonline.org.