

MINISTRY OF NATIONAL
ECONOMY

HELLENIC AGENCY FOR LOCAL DEVELOPMENT
AND LOCAL GOVERNMENT S.A.

S. No A50

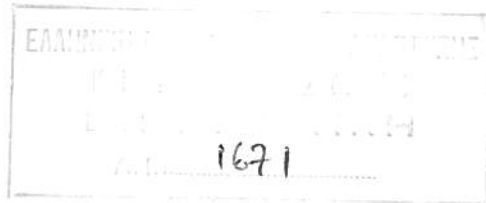
**CONTRACTUAL POLICIES FOR THE DEVELOPMENT
OF AGRICULTURAL AREAS**

**THE PLANNING CONTRACT
OF AMVRAKIKOS**

OECD CONFERENCE
2-5 MAY 1988
ATHENS - PREVEZA

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INTRODUCTION

GOALS AND PROSPECTS FOR A JOINT OECD/GREECE MEETING ON THE IMPLEMENTATION OF A DEVELOPMENT POLICY FOR RURAL AREAS

The OECD has been working on the process of formulating and implementing a policy for the integrated development of rural areas for the last four years. As the work of this international organisation has progressed, certain basic innovatory policy axes, which also express new orientations at a national level, have become clear.

To begin with, the aim is to bring about the multi-faceted development of the economic base of the regions over and above the narrow traditional framework of farming. New economic activities are being promoted, exploiting the comparative advantages of each areas, so that rural areas will enter a process of multi-dimensional development in both the economic and the social fields.

The new policy being formulated concerns areas geographically determined in such a way as to allow the horizontal co-ordination and mutual support of sectoral policies. We are gradually moving away from the concept of sectoral regional development in the national territory and towards an “integrated local” development policy which will link the various individual policies in an overall network both at the formulation level and at the stage of implementation.

The fundamental elements in this new approach are vertical co-ordination of all the levels of administration (central, regional, prefectural, local) and co-operation between the public and private sectors, including all the mixed forms which fall in between (e.g. the social sector).

The OECD group of Management of Rural Areas is at present looking into the various forms of institutional co-operation between the different administrative levels and between the public and private sectors with the aim of achieving integrated local development.

For Greece, these issues are of particular interest, given that the new basic policy axes have already been investigated and adopted to a large extent. The programme contract policy has already been inaugurated, with the Amvrakikos Gulf Programme Contract as a pilot. Other OECD member-states have studied and implemented similar policies, although of course there are considerable differences which depend on political goals, the funds available and the statutory patterns used.

The presentation and analysis of specific cases of institutional co-operation in the direction of the integrated development of rural areas has been seen as a most appropriate method for exchanging information and experience. This process will be of real assistance both to the OECD and to each member-state in improving policies to make better use of state funds and to mobilise private initiative at a local level.

Greece is willing to present its policy to the OECD group, focusing particularly on the Ambracian Gulf Programme Contract, so as to contribute to the work of the group and at the same time benefit from the experiences of other member-states. The development process is a continuous one and thus interventions to promote it can and must develop and be improved. In that spirit, the continuous exchange of experience at an international level can play an important role.

V. Sotiriadou
Economic Office of the
Prime Minister

THE AMVRAKIKOS GULF

Morphological, Social and Historical Features

Kostas Arvanitis
Chemical Engineer

I. LOCATION AND BOUNDARIES

The Amvrakikos Gulf area, as that is defined in the Programme Contract, lies in Western Greece and includes parts of the Prefectures of Arta, Preveza and Aitoloakarnania. These three Prefectures surround the Amvrakikos Gulf, which itself forms the southern boundary of Epirus.

Administratively, the Amvrakikos Gulf area belongs, apart from the three Prefectures mentioned above, to two different regions: Epirus and Western Greece. A more general definition of the “Amvrakikos Gulf area” might include all three of the Prefectures which surround the Gulf.

The land area of the Gulf, as defined by the Programme Contract, totals approximately 1,780 square kilometres.

II. MORPHOLOGICAL FEATURES OF THE AREA

1. The marine area

The Amvrakikos Gulf is an almost landlocked sea basin with a surface area of 350 square kilometres and a depth of between 18 and 60 metres.

The Preveza channel is the only “mouth” opening into the Ionian Sea and because it is so narrow replacement of the water takes place extremely slowly. The minimum width of the channel is 600 metres and its maximum depth 10 metres.

On the northern shore of the Gulf, the estuaries of the rivers Louros and Arachthos (and to a less extent of the Vovos) have created a wide variety of

land formations and the Gulf itself is shallow, while the southern shore has sloping rocky banks and greater water depths.

In the south east extremity of the Gulf there is a narrow closed strip of sea — the Bay of Amfilochia. The shape of this strip and its distance from the mouth of the Gulf mean that the Bay is particularly sensitive to heavy loads of nutritive and other pollutants from the Amfilochia urban zone.

From the point of view of resources of nutrients, investigation of the phytoplankton and zooplankton of the area has shown that the Amvrakokos basin is quantitatively richer but qualitatively poorer than other similar areas in Greece.

The salinity of the Gulf is relatively lower than that of the Ionian Sea, varying between 27-36‰ with stratification from the point of view of depth.

Naturally enough, salinity is considerably lower round the river estuaries (as little as 13‰), and the high concentrations of nutrients in these areas have helped create large populations.

2. Lagoons – wetlands

On the northern side of the Gulf in particular the alluvial action of the two large rivers, the Louros and the Arachthos, has created extensive areas of shallow coastline, large numbers of lagoons, bogs with halophilic vegetation, marshes with reedbeds, mudpools and, in general, a variety of formations in which land and sea are constantly interchanging. This variety of formations has in turn allowed the growth of a wide range of halophilic or land plants and acts as a refuge for a large number of birds, many of them rare. Worthy of special mention is the fact that the Tsoukalio lagoon has one of the last pure colonies of silver pelicans in Europe.

The largest lagoons lie between the estuaries of the Louros and the Arachthos and are Tsoukalio, Rodia and Logarou, Tsoukalio and Rodia each have areas of 32,000 stremmas (4 stremmas = 1 acre) and Logarou has an area of 28,000 stremmas. Only Rodia has a depth of more than 1,5-2 metres.

There are quite a number of smaller lagoons in all three Prefectures. The Prefecture of Arta has Agrilos, Koftra and Paliobouka, the Prefecture of Preveza has Tsopeli, Mazoma, Pogonitsa and Vathi and the Prefecture of Aitoloakarnania has Katafourko and the Vonitsa lagoon. Aitoloakarnania also has two lakes, Saltini and Voukaria, of which the second is more important: its water is slightly brackish since in previous times it was a lagoon and communicated with the Ionian Sea.

The lagoons are natural fish farms and the state rents them to fishing co-operatives, which work them. Their yield per stremma varies between 3 and

15 kilos per annum. The lagoons of the Prefecture of Preveza have the highest yields.

Around the lagoons on the northern shore of the Gulf and between the estuaries of the Louros and the Arachthos there are extensive flooded areas (marshes) with halophilic vegetation and reedbeds.

The rarity of the formations and fauna encountered make the wetlands of the Amvrakikos Gulf area perhaps the most important of the eleven Greek habitats protected by the Ramsar international convention.

The formations with the greatest ecological interest are:

- the double delta of the Louros and Arachthos rivers, a rare formation;
- the long spits which separate the lagoons from the Gulf proper and are unique geomorphological formations. Their subsoil, for instance, consists almost entirely of lamellibranch shell fragments.
- the remains of riverside avenue forests of moisture-loving deciduous trees, one of the very few surviving examples in the Mediterranean.

3. Plains

On the eastern and southern sides of the Amvrakikos Gulf there are only a few low-lying areas, which were created by the alluvial action of seasonal torrents given that there are no rivers on these sides of the Gulf.

On the northern side, by way of contrast, the action of the two large rivers has created one of the most fertile plains in Greece. The plains of Arta, of Peta/Komboti and of Lamari and Elaionas (Preveza) are particularly rich. About 42% of the communities in the Ambracian Gulf area are in low-lying areas.

From the hydrogeological point of view, the northern side of the Gulf contains two main drainage basins for the rivers Louros and Arachthos, with areas of 820 square kilometres and 1905 square kilometres respectively.

4. Hills and mountains

The semi-mountainous area which surrounds the Amvrakikos Gulf varies in altitude between 40 m and 1150 m. On the south and southeastern sides the mountainous zone runs down to the shore, forming small valleys, while on the north it surrounds the extensive plains.

Of the Amvrakikos Gulf communities, 17% are semi-mountainous and 41% mountainous.

5. *Coastline*

Apart from the coast of the Amvrakikos Gulf itself, the area in question also contains shores which are washed by the Ionian Sea. There are indeed some exceptionally beautiful areas of coastline (for example, the Monolithio beach) and attractive coastal villages (e.g. Palarios in Aitoloakarnania) but in general these areas have been little exploited for tourism.

III. SOCIO – ECONOMIC FEATURES

1. *Population*

The total population of the area is approximately 100,000, out of a total population of 365,000 for the three Prefectures (1981 census). More specifically, the Amvrakikos Gulf area contains 60% of the population of the Prefecture of Arta, 52% of the population of the Prefecture of Preveza and 10% of the population of the Prefecture of Aitoloakarnania.

This population rose slightly during the decade 1971-81 (1,6%) as against an overall drop in the population of the three Prefectures. The difference is explained by the fact that the area contains the urban and semi-urban centres of the Prefectures of Arta and Preveza; the decade 1971-81 was one of internal migration and an increase of urban population.

The area has a total of two urban centres (Arta and Preveza), four semi-urban centres (Filippiada, Vonitsa, Amfilochia and Katouna) and 15 “townships” (rural centres with more than 1,000 inhabitants). The remainder of the population live in 74 communities.

The age pyramid for the Amvrakikos Gulf area is similar to that for the whole of Greece, with a slightly higher proportion of younger age groups but a more rapidly ageing population.

The cities of Preveza and Arta are the principal centres for administrative, economic and social facilities on the northern shore, while the southern side is served by the semi-urban centres of Amfilochia and Vonitsa and the urban centres of Aitoloakarnania, chiefly Agrinio.

The most dynamic towns and villages from the point of view of population growth are the city of Preveza, the community Louros, the city of Arta and the communities of Grammenitsa, Kostakioi, Kalamia and Halkiades, and the communities of Menidi and Krikelo in Aitoloakarnania.

2. Structure of production and employment

The statistical data available are not adapted to the parts of the Prefectures which make up the Amvrakikos Gulf area and for that reason it is not possible to calculate the exact structure of production per sector. The table which follows thus gives the percentage composition of Gross National Product (GDP) and employment for the three Prefectures as a whole.

TABLE 1

	Gross National Product			Employment		
	Arta	Preveza	Aitolook.	Arta	Preveza	Aitolook.
Primary sector	26	31	41	56	51	51
Secondary sector	27	27	21	19	19	19
Tertiary sector	47	42	38	25	30	30
TOTAL	100	100	100	100	100	100

Source: Papayannis study.

In the case of the Amvrakikos Gulf area in particular, it could be said that for the Prefectures of Arta and Preveza the figures for the secondary and tertiary sectors must be higher than those for the Prefectures as a whole, given that the urban centres are within the area. On the other hand, the secondary and tertiary sectors are of negligible importance in the part of Aitolookarnania in the Amvrakikos Gulf area, since the chief employment of the inhabitants is farming and stock-breeding.

3. Economic activity

Most of the economic activity of the area is in its northern part, where there are traditional sources of income (plains, fish farms, etc.) round the urban centres of Arta and Preveza and the semi-urban centres of Filippiada and Louros. The southern part of the area has remained a semi-mountainous farming district without any particular relationship with the Amvrakikos Gulf over and above the fishing and commercial activities of the coastal towns of Amfilochia and Vonitsa.

IV. HISTORICAL BACKGROUND – MONUMENTS

The Amvrakikos Gulf has important archaeological and historical monuments. Traces of human presence in the area can be dated back to the Neolithic age (there is a Neolithic cave at Asprohaliko near Filippiada) and there are significant remains from both the pre-Christian era (the Acheron river area, with the Oracle of the Dead, ancient Cassope, Thyreio, etc.) and more recent times (the Zalongo memorial at Kamarina). However, little has been done to exploit the various sites and monuments, the most important of which are as follows:

Nicopolis

Nicopolis was built in 31 AD by Octavian to celebrate his victory over Anthony and Cleopatra at the Battle of Actium. There are remains both of the ancient Roman city and from the subsequent Byzantine period.



Ancient theatre of Nikopolis

Cassope

A late Classical and Hellenistic city, founded in the mid-4th century BC. It lies to the north of the village of Kamarina.



Rums of the ancient town Kassopia

Rogoi

Near Nea Kerasounda are the acropolis and castle of Rogoi. The castle is Hellenistic (it was called Bouchetion and was an Eleian colony) and there are Roman and Byzantine buildings.

The Roman Aqueduct at Nicopolis

The aqueduct starts at the source of the Louros (Ayios Yeorgios). It has arches and tunnels through hills (with ventilation shafts at intervals) and surviving sections can be seen all the way to Nicopolis.

Ancient Thyreio

The archeological site of Thyreio, with parts of an ancient wall and an acropolis, is in Aitoloakarnania. The city had one of the first mints of the ancient era, making the coins for the Acarnanians.

Othe ancient and Byzantine monuments in Aitoloakarnania

Numerous interesting archaeological sites are to be found all over Aitoloakarnania:

- the walls and acropolis at Amfilochia (Limnaia)
- the Pavliani archaeological site (ancient walls)
- the ancient walls of Amphiloichikon Argos (Ambelaki)
- the archaeological site of Paliambela (Vonitsa)
- Vonitsa castle
- the sunken ancient road at Aktio
- early Christian churches at Drymos.

In addition, there are many monuments from the Byzantine period, such as the church of the Pantocrator at Monastiraki and the Byzantine churches of Vonitsa.

Ancient and Byzantine monuments in the Prefecture of Arta

The ancient monuments to be seen in the Prefecture of Arta include:

- the Ammotopos archaeological site with ancient walls and an acropolis
- the Fidokastro (Aneza) acropolis
- the Roman baths at Strongyli.

There are also important Byzantine monuments:

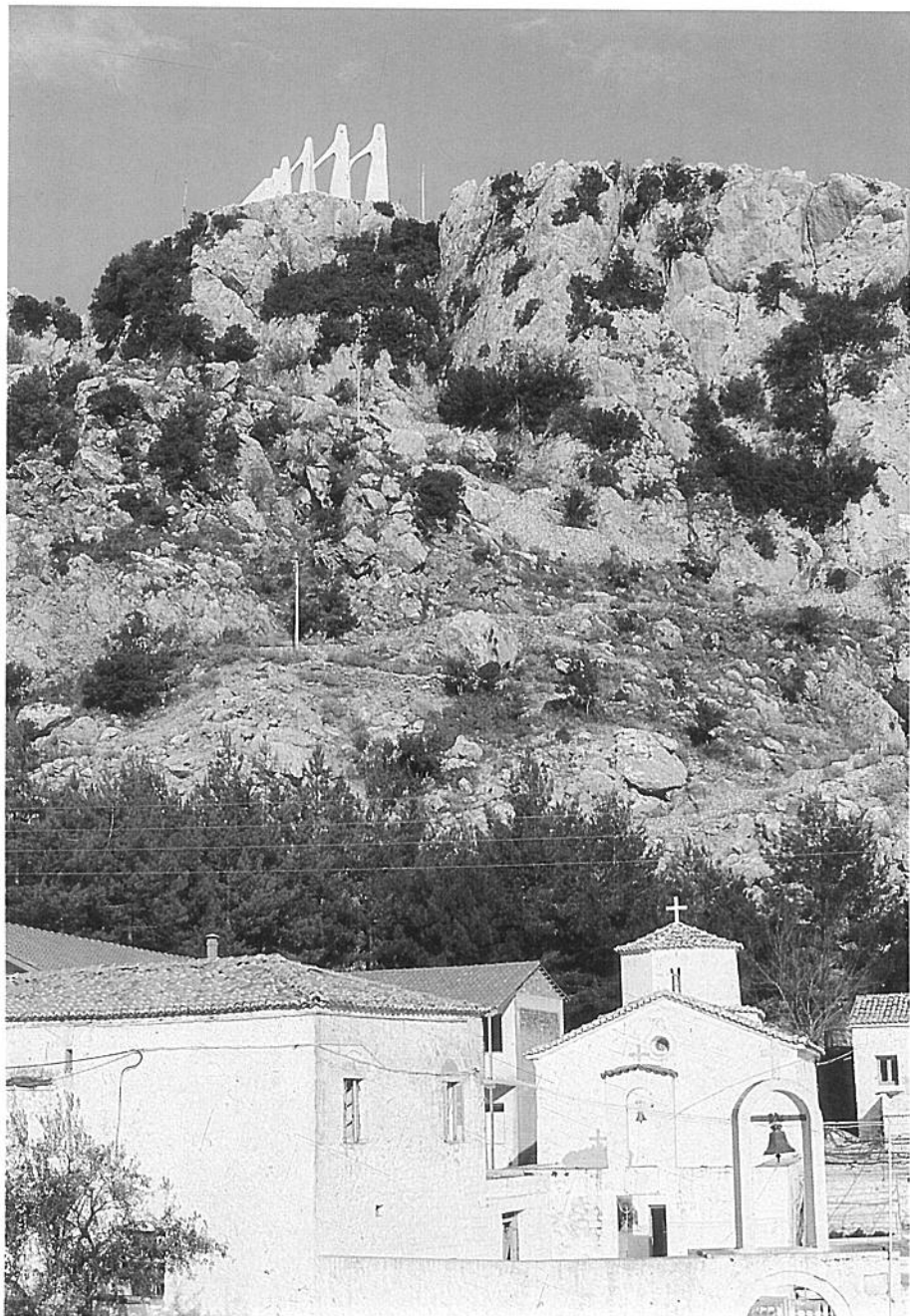
- the church of Our Lady the Comforter, with outstanding mosaics and murals and an area with monastic cells
- the Rodia monastery
- the kato Panayia monastery
- Byzantine churches, among them the Pantanassa.

More recent historical monuments

The area also has interesting monuments dating from more recent times, such as the bridge at Arta (into the foundations of which, according to legend, the chief mason was built alive so that the bridge would not fall down) and the cliff at Zalongo, from which the Souliot women flung themselves rather than submit to the Turks (community of Kamarina, Preveza).

BIBLIOGRAPHY (in Greek)

- T. Papayannis and associates: *The Amvrakikos Gulf – Development of Resources and Environmental Protection*. Ministry of the Environment, Ecistics and Housing, Athens June 1985.
- KEPE Amvrakikos Gulf group: *Five-Year Plan for the Amvrakikos Gulf*, Athens 1987.
- EETAA: *ETANAM Feasibility and Organisation Study*, Athens August 1986.
- Prefecture of Preveza: *Report on the Existing Situation in the Prefecture of Preveza*, Preveza, May 1987.
- Programme Contract for the Amvrakikos Gulf, March 1985.



The historical clift at Zalongo



The Amvrakikos Gulf

THE PROGRAMME CONTRACT FOR THE DEVELOPMENT AND PROTECTION OF THE AMVRAKIKOS GULF

**Theodora Xythali-Kerkyra
Lawyer, Regional Development Expert**

1. Any reference to the Programme Contract for the Amvrakikos Gulf makes necessary a broader reference to the institution of programme contracts, which were introduced in Greece by Lay 1416/84.

Programme contracts are contracts drawn up between local government authorities and public sector institutions for the performance of development programmes and projects and the provision of services. Such contracts may also involve professional associations, federations of LGAs enterprises, Chambers and cooperatives.

It is essential that programme contracts record the rights and obligations of each contracting party, the funds to be provided, the sums in financing and the time schedule for performance of the works or programmes. The contracts also provides for the agency to which the management, exploitation and maintenance of the works may be assigned after completion and determine the manner in which any disputes which may arise between the contracting parties during the course of performance of the contract will be resolved.

Introduction of the institution of programme contracts was the result of current socio-economic conditions and of the political options of the Government. The new socio-economic conditions which have been created by the evolution of the industrial society, the progress of technology, the concept of "base development" and approaches to the complex problems generated by development today (such as ecological problems), gave rise to an urgent need for local government to participate in the development process and in the decision-making process. In addition, the establishment of democratic pro-

cedures in planning, the concept that local government is not merely an administrative institution but contains a sociopolitical dynamic which may lead to a new type of social organisation, and the need to transfer responsibilities from the State to the regions, led to the working out of new ways of managing local affairs and of organising co-operation between central and local government.

Through the programme contracts LGAs can co-ordinate their activities with those of central government and of other LGAs institutions in order to rationalise the planning of productive activities. In this way the following goals will be achieved:

1. The optimum utilisation of local natural and human resources.
2. The guaranteeing of financing for works and programmes being carried out.
3. The more efficient exercises of power by local authorities and provision of services for the citizen.
4. Promotion of co-operation amongst LGAs, strengthening of popular participation and the ensuring of social consensus in the planning process.

II. THE PROGRAMME CONTRACT OF THE AMVRAKIKOS GULF

1. Contracting parties

The contracting parties to the Contract for the development and environmental protection of the Amvrakikos Gulf area are the Greek State, public sector institutions, local government authorities, chambers and local co-operatives.

2. Objectives

The central objective of the Contract is to utilise the sources of wealth in the whole of the Amvrakikos Gulf area, which has considerable potential for development, and to manage and protect the Gulf, which is one of the most important habitats in Greece and is protected by the Ramsar agreement, on a rational basis.

3. Works – investments – policy measures

In order to attain these objectives, specific works, investments and policy measures are provided for in all sectors (primary, secondary and tertiary) so as to promote the integrated development of the area. Thus, apart from the fundamental productive works provision has also been made for technical and

social infrastructure construction work and for works and projects to support the activities undertaken.

The most important features of this Programme Contract are as follows: a) the Greek State's commitment to provide financial and technical support to implement the Contract and guarantee financing of the works (provision for the sums necessary for each project, and sources of financing) and compliance with the time schedule for completion; b) the obligation undertaken by those responsible for each project under the programme to draw up a study of the project's environmental effects.

The Programme Contract provides for the foundation of an Amvrakikos Gulf Development Agency to act as a consultant during the execution of the works and the drawing up of the corresponding plans, the formation of a body to co-ordinate and supervise the whole programme (General Assembly), and the setting up of a committee (the Joint Committee) to monitor and supervise the Programme Contract.

THE AMVRAKIKOS GULF PROGRAMME: A PIONNERING EXPERIMENT IN RURAL MANAGEMENT

**Calliopi Pachaki M.Sc.,
Economist**

I. INTRODUCTION

The Amvrakikos Gulf programme is, for Greece, a pioneering experiment in the field of regional development and rural management. It is pioneering because it is the first project (initiated even before IMPs) to involve the planning of the integrated development of such a large area. It is an experiment because developing is being promoted with the introduction of new institutions such as programme contracts, development liaison experts, development agencies, etc.

II. PROGRAMME DESIGN

The Amvrakikos Gulf programme has evolved through time as follows:

The first stage was the signing of a Programme Contract (PC) by the main central and local institutions (Ministries, Prefectures, local government, co-operatives, chambers of commerce), by which agreement was reached on the following:

- the main guidelines for the development of the area
- the branches whose development would be most actively promoted
- the main infrastructure projects which were seen as capable of setting up the conditions for accelerating development
- the authorities which would monitor the progress of the programme and resolve any disputes.

The PC was based on the policy which had already been formulated for the area as a whole and on the proposals of the various institutions which were already being promoted through the national Five Year Plan. In other words,

it did not contain either new proposals or a separate evaluation of each project proposed. Its importance lay chiefly in the fact that it contained an express statement of a framework of commonly accepted principles and a methodology for development at a more rapid rate than which would be possible through the national Plan.

The second stage, for which provision was made in the Programme Contract, was the drawing up by the Centre for Planning and Economic Research (KEPE) of a detailed five-year development plan for the region. This plan:

- made the guidelines of the PC more specific;
- gave detailed policies for each of the branches to which special attention was to be given;
- provided an outline of policy for the remaining major sectors of economic activity.

The plan relied on analysis of the data and special features of the area and was thus able to justify and provide evidence for the selection of projects which had been made by the PC. (In some case reservations were expressed and it was recommended that the feasibility or some other characteristics of certain projects, such as size, location, etc., should be re-examined).

The Plan was backed up by a series of technical and economic studies designed to facilitate the implementation of certain projects which the Planning Group considered to be of key importance for the activation of investment initiatives (such as the pilot aquaculture units).

The third stage — that which we are currently in — consists of the founding of ETANAM, the Amvrakikos Gulf Development Agency, whose purpose is to support those investment initiatives which promote the goals of the programme and to seek out and publicise investment opportunities. ETANAM, with the Programme Contract and the KEPE five-year Plan as its basic criteria, is expected to act as an agency in promoting mobilisation of investment initiatives. In particular, it is anticipated that it will act as a catalyst in the undertaking of development activities by local social institutions which up till now have played no active part in the process of development.

III. THE CONTENT OF THE PROGRAMME

The outline of the programme as described above has taken on the following more specific form:

1. Basic development guidelines

- a) Development of farming, stock-breeding and fishing with minimisation of

effects on the gulf and the wetlands. For this reason the opportunities provided by biological cultivation and exploitation of the biomass will be maximised.

- b) Modernisation of the industrial infrastructure and its expansion in the direction of the production of inflow for the branches being promoted and utilisation of the products of the primary sector (including fishery products).
- c) Development of the tertiary sector with the servicing of the promoted branches as a criterion, and creation of the national road axis from Igoumenitsa to Mesolongi via Preveza.

2. High priority pranches

- a) Fishing and fish-farming infrastructure.
- b) Soft tourist development along ecological, scientific and cultural lines.
- c) Action to protect the environment and particularly the wetlands.
- d) Social and cultural development and improvement of standards of living.

3. Programme authorities

- The General Assembly of the PC institutions (28 members, 14 central and 14 local).
- The Joint Committee of PC institutions (9 members, 7 local and 2 central).
- ETANAM, a municipal and co-operative agency in which the State holds a minority share through the development banks.

Two further authorities have been created informally and in practice:

- Meetings of the central institutions (Ministries, etc.), with the participation of the Prefectures. These meetings are for the purpose of information exchange, co-ordination and speeding up of procedures.
- The role played by KEPE. Since from the start KEPE has been responsible for designing the programme it has come to have a de facto role as a link between the various institutions in order to spread information and programme guidelines.

4. Major infrastructure projects

The most important projects for which provision is made in the PC are in the following areas:

- land improvement
- communications

- infrastructure for the marketing of agricultural produce
- industrial infrastructure
- tourism and cultural infrastructure
- fish-breeding station and pilot aquaculture units
- environmental studies of the gulf and the wetlands
- a system for the monitoring of the environmental quality indices on a permanent basis.

Provision for these projects in the PC is not in the sense of their immediate execution but of their promotion as rapidly as possible. These means that if the further planning stages for the projects (for example, technical and financial application studies) lead to doubts about their degree of priority or even their feasibility it is not impossible that they may be postponed or that the initial decision to carry them out may be reviewed. This ensures the programme of flexibility and protects the development process from errors in the planning mechanism. In a programme as broad as this one, the PC is more an expression of political will for overall activation than a contractual commitment to the execution of a series of specific projects. The projects are more by way of indication of the type of infrastructure which it is considered will give the development process a fresh boost.

5. Other projects

The programme relies on the constant promotion of projects and action to advance its goals, on the initiative and responsibility of the institutions which are of their nature most appropriate. The KEPE five-year Plan indicates the type of project and measure which it considers important in every branch, and in the case of some of these projects provides specialised technical studies intended to promote them more rapidly. Over and above this, however, the Plan is aimed to encourage initiatives on the part of all the institutions in the public, socialised and private sectors for the productive exploitation of the opportunities created by the infrastructure projects and the general development atmosphere being cultivated in the area.

IV. GOALS OF THE PROGRAMME

The planning framework described above is intended to achieve the following basic goals:

1. Methodological goals

- a) The building of links between central and local institutions and amongst the central institutions — through the PC authorities — in inter-sectoral co-operation which, it is hoped, will transcend the narrowly departmental relationships that connect central government agencies with those in the regions. The purpose of this co-operation is the exchange of information and the co-ordination of the action being taken by the institutions. The informal bodies which have grown up during the implementation of the programme have proved to be as important in this procedure as the institutionalised authorities.
- b) The building of links between agencies of productive activity with administrative institutions, once more through the PC authorities. The purpose of these links is to ensure that policy guidelines are disseminated among investors and that information capable of facilitating investments is exchanged.

2. Material goals

- a) A combination of development and environmental protection.
- b) Expansion and upgrading of the production base of the local economy.
- c) An improvement in living standards to avert depopulation.
- d) Extension of development into more isolated areas.
 - The first of these goals will be achieved by:
 - Incorporating concern for protection into all the development activities.
 - Giving protection of the environment an economic interest (development of eco-tourism as a high-priority sector).
 - The second goal will be achieved by:
 - Promoting the new branch of aquaculture, with all its support activities (training of staff, research, production of inflow, processing of products).
 - Raising environmental protection to the status of an activity with scientific interest which will be a pole of attraction for research work and experimental applications (exploitation of the biomass, management of wetlands, etc.).
 - The third goal will be achieved by:
 - Choosing cultural and scientific activity as one of the high-priority branches.
 - Promoting cultural infrastructure projects and plans to improve living standards on the same priority basis as the production infrastructure (improving

the appearance of urban centres, swimming and sports installations, health centres, etc.).

- Encouraging cultural initiatives of all kinds.

The fourth goal will be achieved by:

- Promoting communications infrastructure projects to put an end to the relative isolation of the southern and eastern parts of the area.
- Highlighting new resources in areas outside the main axes of economic activity (eco-tourism, archaeological sites).
- Introducing new activities which make use of traditional resources (aquaculture on pathogenous ground).

V. POSTSCRIPT

With the planning methodology described above, which is flexible but at the same time provides guidelines, it is hoped to achieve the overall mobilisation of the state, social and private sectors in order to attain the goals which have been agreed upon. It is believed that this overall mobilisation around common goals — with procedures for the resolution of disputes and disagreements as these may present themselves in practice — is the most effective way to initiate a self-supporting process of development.

AMVRAKIKOS DEVELOPMENT AGENCY*

Ion Kechayoglou
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I. OBSERVATIONS RELATING TO THE NEED FOR THE PROMOTION OF THIS DEVELOPMENT

- (a) The area has considerable margin for development using local natural resources. Utilisation of these natural resources should be accompanied by the parallel social and cultural development of the area, in conjunction with the need for protection of its habitats. Promotion of this multiple form of development is, in the long term, the only guarantee that economic development in the area will continue to rely on the potential of the area itself.
- (b) Promotion of the overall process of development appears at present to be taking place with central rather than local (regional) initiatives. This is only to be expected, since for the time being the ability of local forces to undertake the organisation and promotion of development activities is limited. In the long term, however, any continuation of co-ordination and promotion of development initiatives by the Centre will create difficulties both in speeding up the development campaign and in establishing a proper development atmosphere and mentality among local residents and local institutions.
- (c) The central initiative in promoting the integrated development of the area is expressed in the signing of the Programme Contract for the development and protection of the Amvrakikos Gulf area. Already, since the signing of the Contract, it has been acknowledged that there is a need for uniform

* From ETANAM project.

planning of the development activities in the area and that there is at present no co-ordinating body to monitor the way in which those activities are carried out. This need can be seen in practice from the fact that today promotion of most of the development activities in the area is encountering delays which are not always due to shortages of financing or holdups in providing the money. It is obvious that it is not enough simply to express a desire to undertake activities, particularly when many of those activities depend on the harmonious and parallel relevant activation of a number of public institutions. Given the problem of distribution of responsibilities when more than one public institution is involved and the familiar procedural difficulties which give rise to delays, a methodology should be found for improved co-ordination in performing all the activities related to the development of the area in order to accelerate the rate at which that development is promoted.

- (d) Regardless of the shortcomings which the current central approach to the question of accelerating the rate of promotion of development of the Amvrakikos Gulf area may present, the local environment is not at present capable of undertaking independent planning or of putting development initiatives into practice. The weaknesses of the local environment are summarised in the paragraphs which follow.
- (e) Parts of the Amvrakikos Gulf area belong administratively to three different Prefectures (Preveza, Arta and Aitolokarnania). This makes it difficult to undertake and implement co-ordinating activities to promote the development of wider parts of the area.
- (f) The conditions do not at present exist for the drawing up of a special development programme using the potential of the area itself and adapted to local needs and peculiarities. More specifically, there is not today a local agency to undertake the drawing up of the programme and the monitoring of its stages of implementation, there are shortages of staff to man it and there is no development atmosphere in the area.
- (g) The local residents, local government authorities and mass institutions are not in possession of sufficient information concerning the opportunities that exist for real participation on their part in the process of development and in decisions which affect their environment. As a result, there is no development mentality and the whole area is in a state of inertia.
- (h) The opportunities for ordinary citizens, local government authorities and local institutions in general to obtain specialised information about the undertaking, promoting and implementing of productive initiatives are highly restricted. It is very difficult for local agencies to gain access to information about know-how, methods of financing, organisation, marketing,

etc. The area also lacks any real potential for training services to be provided.

- (i) The number of independent experts and researchers working locally is very small and those who do work locally lack the level of experience necessary to provide individuals, local collective institutions and local government with guidance in the rational planning of development initiatives to utilise the resources of the area.

The need for ETANAM

These observations lead to the following conclusions:

- a) It will not be possible for the integrated development of the Amvrakikos Gulf area to be promoted at faster rates when the programmes are drawn up and their implementation monitored by central agencies, even with the participation of their local representatives. This does not mean that some specific parts of the Special Development Programme for the area could not be made part of National or Regional Development Programmes, using democratic planning procedures.
- b) The Special Development Programme for the Amvrakikos Gulf area must emerge from a local development process and its implementation must be monitored and co-ordinated by a local agency. This Special Development Programme must be linked to the Local Development Programmes for the area.
- c) The fact that parts of the Amvrakikos Gulf area belong to three different Prefectures makes it essential that a single agency to gather and process data, formulate and propose the development programmes for the area and then monitor and co-ordinate their implementation.
- d) Given the weaknesses and special features of the area, the development programmes for it should not only include specific activities to develop productive investments and create the necessary technical infrastructure. They should also include action and activities which will tend to bring about the conditions for the autonomous development of the area. The creation of such conditions will involve:
 - support for local researchers and experts, regardless of the agency sector to which they belong (local public institutions or public sector institutions, local government, local government enterprises, associations and federations of local government authorities. Local Unions of Municipalities and Communities, co-operative organisations, private firms) so as to set up the conditions for local rational planning of development efforts.
 - improvement of the level of information of residents and local agencies

on the opportunities existing for development and the procedures necessary for promotion of development.

- an improved flow of specialised information of all kinds relating to the undertaking, planning, promoting and implementing of local productive initiatives.
- e) The Special Development Programme for the Amvrakikos Gulf area as a whole should not consist solely of a list of activities whose duration, cost and agency of implementation have been determined. It should also contain the guidelines for undertaking development action (revolving around and giving special prominence to productive activities) so as to encourage new activities, in whatever quarter they may originate, in sectors whose feasibility for the promotion of local interests has already been studied.
- f) The two fundamental co-ordinates of the Special Development Programme for the area are as follows:
 1. Activities in the area of implementation of productive investments (principally in the sense of Law 1262/82) and the corresponding action to improve the technical infrastructure, etc., of the area.
 2. Activities in the area of setting up the conditions for the development of the area to be promoted by local potential.

The activities noted under (2) above are particularly essential both for the rational compilation and constant review of the Special Development Programme for the area and of the individual Local Programmes and for the provision of the support necessary to ensure that the activities under (1) above are carried out successfully and in good time. Given that the area has the shortcomings noted by the study, one should obviously not expect the activities under (2) to operate with a satisfactory degree of efficiency if they are assigned to or undertaken by agencies in the area. The need, therefore, arises for the creation of a special local agency (ETANAM) to undertake these activities with the purpose of accelerating multi-faceted local development and using the Special Development Programme as a tool. ETANAM will support in every way possible the individual activities initiated under the Programme.

II. PURPOSE AND GENERAL OBJECTIVES OF ETANAM

1. Purpose of ETANAM

The purpose which the foundation and activation of ETANAM is designed to serve could be formulated as follows:

- a) To promote the economic and social development of the Amvrakikos Gulf area at a rate more rapid than that of the present and to guarantee, in every

way, that all the parts of the area will have a minimum desirable level of development.

- b) To create the conditions for the constant development of the Amvrakikos Gulf area, relying on local potential and on the basis of decisions of proposals which will emerge from on-the-spot procedures.

The activation of ETANAM, within the framework of its Purpose as above and in accordance with its individual objectives, will be expressed with:

- The planning, monitoring, co-ordination and constant updating of the Special Development Programmes for the area.
- The provision of support to local agencies during the formulation and implementation of Local Development Programmes.
- The provision of technical (in the broadest sense of the word) support of all kinds for development initiatives in the area. Such support will be available to local agencies of any kind and non-local agencies interested in developing activities in the area.

2. General objectives of ETANAM

A close examination of the purpose of ETANAM will reveal certain specific general objectives or aims towards which its individual activities should tend. These general objectives are cumulative, and the sum total of them constitutes the purpose of ETANAM.

The general objectives could be summarised as follows:

Objective 1: Creation of the conditions for new rational productive initiatives in the area

This will entail ensuring that agencies of all kinds receive the necessary support to create the conditions for intensification of local development efforts and that these agencies take well-grounded decisions concerning the undertaking of specific new productive initiatives.

Objective 2: Rational implementation of new productive activities in the area

This will involve provision of the necessary support for any local or non-local agency interested in developing productive activities in the area concerning the design, planning and implementation of activities to utilise the resources of the area (in the branches of fishing, farming, stock-breeding, forestry, industry, craft industry, tourism and services).

Objective 3: Improvement of the efficiency of the productive units in the area

Here it will be necessary to support the productive units in the area in their efforts to improve their capacity and efficiency and so further their production targets in the best possible way.

Objective 4: Improvement of the efficiency of local agencies which are not directly productive

This will entail providing the agencies of the Amvrakikos Gulf area which are not directly productive but which are nonetheless involved in multi-faceted development with the support necessary to improve their capacity and efficiency and thus further their particular targets in the most effective manner.

Objective 5: Improvement/extension of the technical infrastructure of the area

Here ETANAM will co-ordinate procedures and ensure support for the appropriate agencies in designing, planning and implementing projects to improve and expand the technical infrastructure of the Amvrakikos Gulf area (infrastructure construction projects in the sectors of communications, water supply, sewage and drainage, fishing, farming, forestry, stock-breeding, industry, craft industry and tourism) and particularly the infrastructure which is connected with productive activities.

Objective 6: Improvement/extension of the social and cultural infrastructure of the area

This will involve co-ordination and ensuring of support for the appropriate agencies in designing, planning and implementing projects to improve and expand the social and cultural infrastructure of the Ambracian Gulf area (infrastructure construction projects in the sectors of health, education and sport and in the cultural sector).

Objective 7: Creation of the conditions for the autonomous development of the area

Here ETANAM will attempt to create the conditions for promotion of the development process in the area to be based on mobilisation of local potential.

Objective 8: Promotion of local development in parallel with environmental protection

It will be necessary to create the conditions for effective environmental protection in the area, without impeding its development.

THE ECONOMY OF THE AMVRAKIKOS GULF

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The Amvrakikos Gulf area is a typical example of a rural area whose isolation has been the cause of economic backwardness despite its considerable resources. For many years, economic activity in the area relied on a rudimentary infrastructure, narrow market boundaries and traditional practices. Most of the population was employed in the primary sector, which held the largest share of the gross regional product, was the reason for which the area was brought under the rolling public investment programme, which was the only source of investments, though they were in infrastructure rather than production.

New concepts of rural management takes the regions out of the sphere of random magnitudes and promotes the supplementary action in the various sectors and branches of the local economy. Its ultimate goal is the incorporation of productive activities into a harmonious whole so as, on the one hand, to increase the generative effects of public and private sector intervention and, on the other, to allow suitable planning with feasible targets.

The economy of the Amvrakikos Gulf area is an example in progress of this new concept in regional policy. As would be expected, the primary sector is dominant, with the secondary sector making only a minor contribution to employment and regional product. The tertiary sector is confined to small-scale tourism.

More specifically, the primary sector employs some 59% of the total economically active population of the three Prefectures in the area and produces 36% of gross regional product. The contributions made by farming, stock-breeding, fishing and forestry are 55%, 37%, 6% and 2% respectively. During the period 1971-81 the gross farming product of the area and productivity rose at average annual rates higher than those for Greece as a whole.

Despite this, income per person employed in the sector remains relatively low. The secondary sector employs only about 17% of the active population, and produces 23,5% of the gross regional product. Most of the units are small and widely-scattered. In the particular case of manufacturing, the number of units has shown a tendency to fall and there have been slight rises in installed horsepower and employment. Approximately 78% of all the units employ an average of two persons and 91,4% employ less than 5 persons. Some 3% of the units employ between 10 and 49 persons, and the proportion of units employing over 50 persons is less than 1%. The most important branches of manufacturing are connected with primary production, being involved, in other words, in the processing of agricultural products. Other branches include textiles and mining.

The general features of the secondary sector are a low level of technology and skilled labour, a low level of value added and poor linkage between the branches.

Despite this, the area is considered to have certain inherent comparative advantages: firstly, in the area of fishing and fish-farming (a strategic sector for the national economy), secondly in the exploitation of its ecological resources (for tourism and research), thirdly in improving the yield of farming and manufacturing and fourthly in “widely-defined” tourism combining holidays and recreation.

Naturally enough, in order for a flexible and efficient investment and activation scheme to take shape it was necessary for there to be an institutional framework and for specific policies to be implemented with a ranking of priorities.

The Programme Contract provided the institutional framework required and the policy measures to be taken were determined at the same time. Thus the annual public investment programme gave priority to infrastructure investments of a strategic nature (in the sector of transportation with improved communications, in crop yield with land improvement and irrigation works, etc.). Particular attention was paid to completion of the industrial zone, with the marking out and concentration of sites so as to minimise the cost of supplying units with services such as electricity, drainage and biological treatment, warehouse space, etc. Emphasis was also placed on recording areas of various degrees of ecological interest and protecting them, in conjunction always with fishing and fish-farming activities. For that reason, priority was given to setting up a fish breeding station and improving the yield of all the fish-farms in the area, with efforts to introduce new technology and know-how.

This complex of economic activities was rounded off with efforts to improve the quality of the services provided to tourists and promote the archaeological

and historical wealth of the area. The aim here is to avoid the prospect of the overconcentration of hotel units and draw up careful plans for “tourist areas” so as to maintain the character of the area and create special profiles to attract groups of visitors with specialist interests.

Lastly, it should be borne in mind that the generative effects of these actions will not be apparent at once or to their full extent. According to the priorities of the programme, the Amvrakikos Development Agency will be the organisation which monitors and supports all the measures taken, contributing to ensuring that the public and private sectors act in a complementary fashion.

THE STRUCTURE AND FUNCTION OF THE NATURAL ECOSYSTEMS OF THE AMVRAKIKOS GULF: RELATIONS WITH HUMAN SYSTEMS

**Anna Gatzelia D.E.A.
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The Amvrakikos Gulf area, with its combination of a rare physical environment, a rich cultural heritage and a wealth of natural resources, could constitute the nucleus of a model for rural management, giving new answers to the problem of development and adopted an endogenous integrated form of development in which the imagination, new ideas and solutions proposed by the local population will be combined with the introduction of new technologies.

II. NATURAL SYSTEMS

The functioning of ecosystems relies on a network of nutritive processes which develop amongst the various organisms. A general model for the food web would include the producers, which are plants (phytoplankton, macrophytes, seaweed), the first order of consumers, which are herbivorous (zooplankton, herbivorous fish) and the second order of consumers, which are carnivorous (zooplankton, fish, birds). A significant role in the cycle of material is played by the saprophytes, organisms which feed on decaying matter, and the bacteria which help the decomposition of dead organic matter and convert it into nutrients. This model gives us a framework for the functioning of the ecosystem, which, however, is much more complex in reality because the consumers are almost never exclusively carnivorous: they may be herbivorous or saprophagous depending on the availability of food in the ecosystem. The nutrient network is thus a variable in the ecosystem which may change according to external influences of internal needs.

The Amvrakikos Gulf is an almost landlocked area of sea which communicates with the Ionian Sea through a narrow channel (width 700 metres), is relatively shallow (average depth 18 metres) and has a low level of salinity by comparison with the open sea, which is largely the result of the fresh water poured into the Gulf by the Louros and Arachthos rivers.

The ecosystem of the Amvrakikos Gulf has a food web in which the producers are phytoplankton and phytobenthos and the consumers are zooplankton, zoobenthos, molluscs, fish, turtles and birds (terns, etc.).

The areas around the deltas of the two rivers consist of extensive wetlands, lagoons, shallow coastlines, bogs etc.

The **halophilic vegetation** begins immediately after the coastal zone of salt or brackish water and covers an area of 43 km². The most typical halophilic species in the coastal flood zone is *salicornia europea*. In the areas which are not flooded various species of tamarisk are encountered, while reeds of a number of kinds and other nitrophilous species grow in the transitional zone between the coastal areas and cultivated ground.

The halophilic vegetation area has a food web in which the producers are the *salicornia europea*, the tamarisks and the reeds and the consumers are molluscs, insects, arachnids and birds (black-winged stilts, carkes, pratincoles, short-toed larks, yellow wagtails, herons, etc.).

The **hydrophilic vegetation** of the eastern part of the Louros delta has an area of 27 km² and most of it is covered with reedbeds. Various species of reeds grow in each part of this area, depending on the NaCl content of the soil. Areas which are rarely flooded are ideal for various types of rushes and dock.

The area of hydrophilic vegetation contains a group of producers, of which the most important are reeds, rushes and dock, and numerous consumers including lizards, frogs, insects, molluscs and birds (herons, pelicans, ducks, birds of prey, etc.).

The **lagoons** are shallow coastal areas with peculiar hydrodynamic and soil conditions which are separated from the sea by spits of land. Thus, more or less isolated from the sea, the lagoons may be brackish or salty. The salinity of their waters, which is a fundamental criterion for the presence or otherwise of living organisms, is a function of the degree to which their waters communicate with the sea and of climatic conditions.

The shallow depth of the lagoons and the fact that they are continuously being supplied with salt because of the interaction of dry land, fresh water and the sea, contribute to the very high primary production levels, which are of the order of 10,000-35,000 kcal/m³ per year, a level which theoretically could support an average of 22,5 kcal/m², or 150 kg/ha of marketable fish.

The functioning of the lagoon ecosystem relies on a food web in which the producers are macrophytes and the seaweed of the plankton and benthos and the consumers are zooplankton, zoobenthos, amphibians, lizards, insects, arachnids, fish and birds. There are also large quantities of decomposers and bacteria. The reason for this is that there are more large phytoplankton species and macrophytes than the herbivorous species can consume and so when they die they are decomposed by the saprophagous species and bacteria. In this way the decomposition process in such ecosystems becomes of enormous importance. As a result of the above process, large quantities of biomass accumulate on the sea bottom and are used as food by the organisms of the nekton, such as fish.

Apart from their value for fish-farming, the lagoons are rare formations on the planet, with a total area throughout the world, with marshes, of 2×10^6 km², a small area by comparison with other natural ecosystems. There are 4,000 km² of lagoons in Greece, of which 64 km² are in the Amvrakikos Gulf area.

The **spits of land** consist of the remains and broken shells of elasmobranchs piled up by the action of wind and waves and subsequently bonded together into a mass. This mass is often covered by a little earth, which enables the spits to be colonised by plants typical of coastal vegetation, in characteristic zones. At a distance of 0,50-1,50 m from the sea grow the nitrophilic and salt-resistant species, then the Papilionaceae and the halophilic plants (tamarisks, reeds, etc.) and lastly sand grasses, poppies, *dorycnium pentaphyllum* and macchie where the subsoil becomes more stable on the lagoon side.

The food web on the landspits consists of the above species, as producers, and molluscs, lizards, frogs and birds (terns and Kentish plover) as consumers.

The population of organisms living in the biocommunity is linked together by feeding relationships which play a central part in the cohesion of the community. All these relationships together form the food web and safeguard the circulation of matter and the transfer of energy amongst the various organisms in the ecosystem.

The complex structure of the food web ensures that organic material will be transferred from the producers to the consumers and balances off the inevitable losses to saprophagous organisms and bacteria. Thus within the food web energy is converted as it passes from one form to another but is neither lost nor created.

Natural systems usually consist of a large number of species, and this variety ensures them of a considerable degree of stability. The diversity of the species is an expression of the complexity of the food web and is analogous to the ratio between biomass and production.

Birds can belong to the ecosystem at various nutrition levels, beginning with the herbivorous species (Amatidae) and reaching the higher nutrition levels with the carnivorous birds (pelicans, herons, storks, etc.), which are important indications that the ecosystem is functioning properly. The presence of carnivorous birds depends on the existence of adequate breeding grounds and sufficient food (fish, amphibians, lizards and insects).

Fish, too, are mixed from the point of view of nutrition, in the sense that they can be either herbivorous or carnivorous. The use by fish of the net production of zooplankton varies between 7% and 80%.

In the same way as different organisms in the same ecosystem are closely linked by food relationship, so the various ecosystems are linked to each other and their features alter through time and space.

The interaction of ecosystems takes place either with the circulation of abiotic elements such as water and salt, solid remains of organic matter and nutrients, or with the circulation of biotic agents such as the various animals. Fish, for example, move from the Gulf to the lagoons and rivers and vice versa, and birds may feed in one ecosystem and breed and nest in another. Thus animal life, by its constant circulation, causes a flow of material and energy amongst the various ecosystems.

II. HUMAN SYSTEM

The variety of ecosystems is the result of varying natural conditions such as climate, temperature, rainfall, the subsoil and the relief of the landscape.

Human disturbance of the ecosystems may be deliberate, with the purpose of increasing plant or animal production, or fortuitous, as in the case of fires and the pollution caused by the uncontrolled production of liquid and solid waste. Among the human activities which disturb the functioning of natural ecosystems are cultivation, over-grazing, erosion, metal-mining and intervention in the form of dams, harbours, and irrigation projects.

The unrestricted spread, of single-crop farming and the development of industrialised stock-breeding, which relies on a small number of domesticated breeds, have led humanity to a reduction in genetic diversity. It is essential that this diversity be maintained in order to improve the quality of the crops grown or the animals bred.

In the Amvrakikos Gulf area, the high productivity of the soil, the mild climate, the large number of hours of sunshine, the high relative humidity and the existence of considerable water resources are all factors which favour the growth of farm production. The crops which are being developed include maize, cotton, citrus fruit, olives, vegetables and tobacco.



Spits of land of Tsoukalio lagoon - Typical vegetation



Beds of broken elasmobranch of tlaspit of land

In **crops**, man is interested in the production of profitable commodities, such as seeds, roots and fruit, and not in the overall biological production. The time for planting, watering and harvesting the land suitable for farming, which is controlled by man and irregular, is characteristic of the flow of energy into that land, since there are periods of intense primary production and also "rest periods". Another feature of the growing of crops is the channeling of energy into the production of useful commodities, with the elimination of all unwelcome competitors such as pests and harmful parasites.

Crop production is directly connected with the mechanical treatment of the soil and the use of fertilizer and pesticides which are a significant contribution of energy. It should be borne in mind that the energy produced is used for food, while that which we put into the system originates largely in petroleum. Reserves of energy are running out, however, and it is essential that renewable sources of energy be discovered.

The replacement of mature ecosystems with new systems so as to increase production is possible to the extent that the availability of water and nutrition and the suitability of the soil have not been damaged. Soil erosion makes it impossible to increase production, and so the problem lies in how to maintain the soil and the climate in good condition. This is frequently impossible in Mediterranean conditions.

Stock-breeding is of increasing importance in the Amvrakikos Gulf area. The main branches of this sector are the breeding of sheep, goats and cattle, with pig and poultry breeding as business-orientated activities.

In order to increase animal production, man selects the breeds of animal with the greatest interest for economic development and feeds them on increased quantities of improved-quality foodstuffs. As a result, the animals become more susceptible to disease and this must be countered with more delicate treatment.

Consequently, man's action with regard to consumer animals may be indirect and take with the conversion of the plant world into grazing land, in which case changes in the wild fauna will come about as it tries to adapt to the new conditions. The changes which may come about in the wild fauna are impossible to predict, but the sudden appearance of a harmful species is highly likely. Thus increased animal production is associated with qualitative and quantitative changes in the wild fauna. Direct human action on consumers takes the form of fishing and hunting, which focus on the large and long-lived — and therefore most sensitive — species of the fauna. Disappearance of these species is beneficial for the smaller species, which reproduce quickly, and this results in production which is the same quantitatively but not qualitatively. Increases in the number of small rodents (mice) and locusts are due to this process.

III. INTERACTION BETWEEN NATURAL AND HUMAN SYSTEMS

The natural and human systems are in constant interaction because of the exchange between them of biotic and abiotic elements.

Nutrients derived from the use of, for instance, fertilizers pass from the fields through running water into the lakes and seas, initially causing increased production but later leading to anoxia harmful to the ecosystem where the source of pollution is constant and uncontrolled.

Man's selection of suitable genetic varieties from among the species of plants in order to enrich his crops is another form of biotic effect which a natural ecosystem may have on a human system.

The sole crop cultivations which man creates, chiefly in order to bring about economic development, are systems of a limited number of species and are vulnerable to disease; they have much to gain if they are adjacent to natural ecosystems rich in species which, for example, feed on pests and parasites.

To summarise, we could conclude that man's objective is extensive production with a relatively small biomass, as is the case with crops which are short-lived systems, while nature has a tendency to create ecosystems with a greater biomass and maturity.

Through the flow of matter and energy between natural and human systems the mature natural ecosystems can provide the fragile human systems with the diversity and consequently the stability which they lack, thus making a contribution on the levels of aesthetics, the climate (by lessening climatic fluctuations) and geology (the water cycle, protection against flooding, regulation of the water table).

It will thus be seen that conservation of the natural ecosystems of the Amvrakikos Gulf is essential, firstly because these ecosystems contain valuable material for research, education and recreation, and secondly because they are nuclei rich in energy and diversity capable of enriching man's more impoverished systems.

In order to achieve this goal we have begun to implement a series of measures: the marking out of boundaries for protected areas, determination of land uses, management of water resources and allocation of the quantity of water necessary for each use, control of the pollution caused by fertilizers, plant pharmaceuticals and urban waste, and improvement of the production of the lagoons, all of which will improve the quality of life of a considerable number of people, will create new jobs and will utilise endogenous natural resources. Among other measures designed to bring about lasting and controll-

ed development is promotion of the cultural heritage of the area through preservation and mild forms of tourism.

BIBLIOGRAPHY

- Ecocet F. 1982 Environmental study for agricultural and aquacultural programmes Amvrakikos.
- Gatzelia A. 1985 Réseaux trophiques des eaux continentales, Stage E.N.S.
- Lamotte M. 1981 Les flux d' énergie dans les écosystèmes naturels et humains.
- Lassere G. 1979 Les lagunes côtières Nat. Res. V XV no. 41979.
- Moraitou et al
1982 Preliminary study of the biological conditions of the Ambracian Gulf and determination of capacity for aquaculture (in Greek).
- Ramade F. 1981 Ecologie des ressources naturelles Masson.
- Szjjj 1982 Ecological Assessment of Delta Area of the Rivers Louros and Arachthos at the Gulf of Amvrakia. University of Essen and IUCN, Tome 1, 2.
- UNESCO 1982 Environment et ressources naturelles: plan des six ans Nature et Ressources V XVIII no, 4 1982.
- Ministry of the
Environment 1986 Programme for Marking out Wetlands Boundaries under the Ramsar agreement – Ambracian Gulf Wetland (in Greek).

THE AMVRAKIKOS GULF: FISHING AND FISH – FARMING DEVELOPMENT THROUGH A NEW MODEL FOR RURAL MANAGEMENT

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I. THE PROGRAMME CONTRACT AND FISHING AND FISH – FARMING DEVELOPMENT

In 1985, 28 central and local institutions signed the Amvrakikos Gulf Programme Contract (AGPC), which has a term of five years. The Contract laid down the new directions for development in the area.

One of the basic objectives of the programme was that the Amvrakikos Gulf area should acquire a greater share of economic development and of the utilisation of its own natural resources and infrastructure.

What was being initiated was a new model for regional development in which the AGPC functioned as a highly important tool, providing a suitable institutional framework for new types of development intervention and contributing to a breakout from the classic forms of development.

As part of this new development model, a considerable number of projects dealt with the fishing and fish-farming sector. These projects were seen as prerequisites, since they would lay the foundations for further investment activity by both the social and private sectors.

The principal idea of the model was, on the one hand, to confine the intervention of the central authorities effectively to infrastructure projects (catch landing points, pilot units) and, on the other hand, to provide the incentives and stimuli necessary for undertaking of the investment initiatives referred to above. At the same time, the old development plan, by which productive units were established in the regions but run from the centre, is not regarded as capable today of contributing anything to local development since while it

makes use, to some extent, of local labour resources, it rarely reinvests its profits in the area in question.

Today, larger and larger numbers of farmers and fishermen from among the rural population are developing into “businessmen” who wish to modernise their production, making use of the most recent advances in technology, and to respond to the current requirements of the international market. As a result, the former type of information flow from the centre to the regions is no longer adequate. It is this gap that the setting up of information centres in the regions is designed to fill.

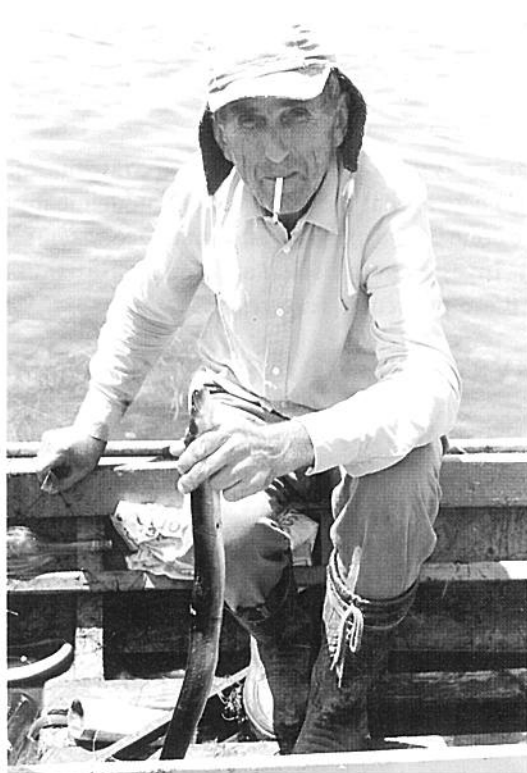
The inclusion of fishing works in the list of Article 8 of the AGPC forms part of this rationale of constant information supply in order to modernise the process of production (within the confines laid down by environmental protection) and movement of the product. That list contains three groups of project:

1. Those designed to safeguard production and move the product properly: central catch landing-point and an eel grading station.
2. Those designed to modernise management of the lagoons: management studies, improvement works and small pilot plans.
3. Those designed to develop fish-farming:
 - a) pilot units for marine aquaculture (floating fish — and mollusc — farming systems and fattening tanks and/or closed systems for prawn-farming) and aquaculture in fresh or brackish water (fattening tanks for eels, grey mullet, carp etc. in intensive and/or semi-intensive systems).
 - b) stations:
 - for the collection, advance fattening and disposal of elvers
 - for the artificial reproduction and fry disposal of euryhaline fish (bream, bass and sole) and crustaceans (prawns).

The above works also include research and planning departments and laboratories for the constant monitoring of the water quality of the Amvrakikos Gulf.

In accordance with the spirit of the AGPC, the fishing projects will be implemented by the central authorities through the Public Investments Programme, but their management and exploitation will be undertaken by local agencies in the form of joint enterprises or municipal-co-operative companies.

It is believed that when the local population make use of the above works as nuclei for fishing development they will also be in a position to exploit the particular features of the area in such a way that the increase in per capita income will go hand-in-hand with maintenance of the desired quality of life. If this is to be done, exploitation of the fish population and the natural resources of the Amvrakikos Gulf must take place within its conservation



A local fisherman



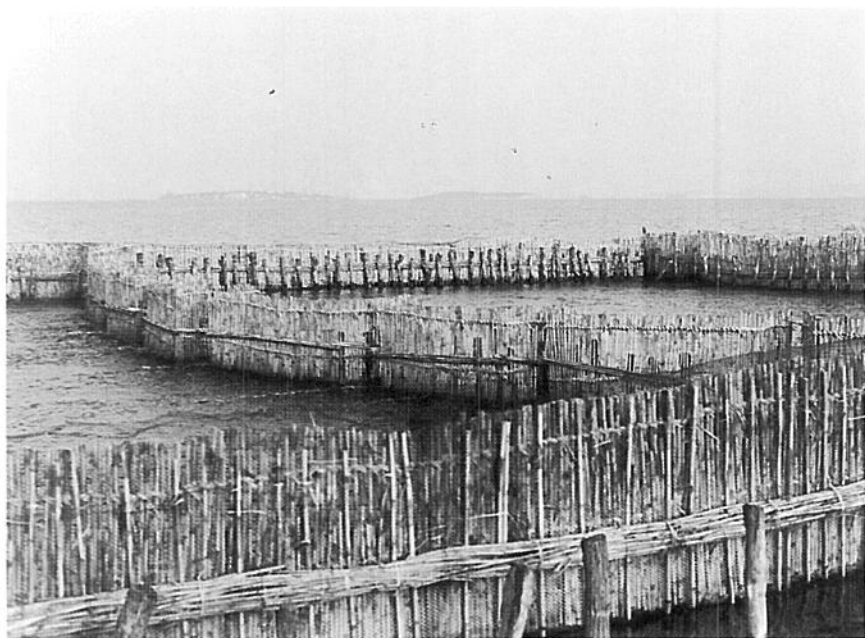
Louros delta

limits. This is precisely where the really original contribution of the new institution (the AGPC) lies: in that the development guideline it provides fits in with the protection of one of Europe's rarest marine ecosystems and simultaneously springs from it. Investment in fishing and aquaculture thus comes as a natural conclusion to these particular features.

II. THE AMVRAKIKOS GULF: THE HISTORY OF AN AREA

The human population of the Amvrakikos Gulf area lived, in the past, in a state of dynamic equilibrium with the water. The local people exploited the fish produced by the Gulf, the lagoons and the fresh water areas, relying on the knowledge they had acquired from daily observation of nature as an inseparable part of it.

Thus the local fishermen invented a number of techniques which were adapted to the geomorphological features of the lagoons and the reproductive behaviour of the fish population. In this way they were able to make the most of the fish populations while at the same time facilitating breeding routes and



Traditional fishtraps in the Amvrakikos lagoons

maintaining and protecting the rare structure of the lagoon ecosystem from the harmful effects of natural phenomena (high waves, flooding, etc.).

The general development model for rural areas which was dominant after the Second World War (that is, the creation of urban centres and the development of farming and stock-breeding) was implemented at the expense of the Gulf and its marine habitats (drainage, dams, pollution, plant pharmaceuticals, fertilizers, etc.). Through this new rationale of regional development awareness grew of the possibility of intervening in ecosystems in a more intensive way with the use of technology. Man's bonds with and dependence on his environment slackened, and his initial sensitivity to the ecosystem, which was made essential by his need to survive in it, became dulled. The result of this process was the downgrading of the Amvrakikos Gulf and its wetlands.

Today, now that we have all realised what has been lost, a gradual process of returning the Amvrakikos Gulf area to its former state has begun. The application of modern technology to fishing management and management of the lagoons and aquaculture now seeks to offset those losses either by re-establishing or improving the initial structure of the lagoons or by solving the problem of the constantly dropping fry recruitment of the Amvrakikos Gulf. Under the terms of the AGPC, any such application of technology must be preceded by: a) an environmental effects study, and b) a time schedule and plan of implementation so as to minimise such effects and not take them past the point of no return.

III. PROPOSED GOALS FOR FISHING AND FISH – FARMING DEVELOPMENT

According to the rationale of the new model for rural management, as expressed at previous OECD meetings, guidelines for investment (especially in fish-farming) should give priority to the breeding of local species which are directly associated with the particular morphological and climatic conditions in the area (for example, molluscs, eels, prawns and grey mullet). In addition, there is already a network for placing these products on markets in Greece and abroad.

In brief and taking the following into account, it is proposed that the following branches of aquaculture be promoted in the Amvrakikos Gulf:

a. Shellfish farming

Favourable factors: – abundant fry, low investment cost by comparison with yield (product per unit of sea surface employed).
– can be sold on overseas markets, Greek market developing.

Environmental effects: minimal, if the stocking capacity of each unit of sea surface is estimated correctly.

b. Eel-farming:

Favourable factors: – abundance of artesian water with a stable temperature of 18° C and areas for elver recruitment.
– an export commodity with potential on international markets, where Amvrakikos Gulf eels already enjoy a good name. The yield of intensive eel-farming varies between 25 and 80 kg/m³ of water.

Environmental effects: care needs to be taken in estimating the limits for the consumption of artesian water and elver fishing. The use of a simple biological filter in the intensive units will keep organic pollution of the environment to a minimum.

c. Prawn-farming

This is a very promising branch of aquaculture. It is proposed that farming be extended to include a related species to the local one (*Penaeus kerathurus*), with experimental semi-intensive and intensive breeding units in an initial stage.

Favourable factors: – good temperature and geomorphological conditions
– ideal market conditions.

Environmental effects: as above.

d. Breeding of grey mullet in semi-intensive systems

Favourable factors: – abundance of brackish water rich in natural nutrients
– good temperature conditions
– ideal conditions in the fishroe market.

Yield: 4-6 kg/m².

Environmental effects: minimal, if the earth basins are constructed outside the high protection zone.

Lastly, reports from all the parts of Greece in which floating systems for the fattening of euralyne fish (bass and bream) have been installed speak of yields far in excess of even the most optimistic projections. This specific form of investment in aquaculture is thus independent of the particular features of the area.

Naturally, the development of aquaculture in the Amvrakikos Gulf area will create a need of verticalisation of production with the setting up of processing

units, foodstuff production units and dealers in mechanical and other equipment.

The above plan for the development of fish-farming will only produce results if it is implemented on the basis of a time schedule and provided that there is complete knowledge of the market and the margins of resistance of the ecosystem, in terms both of the supply of fry (where technical reproduction is impossible) and of disturbance of the physical and chemical parameters of the waters of the Gulf.

In the case of the fishing sector, a development plan has already been drawn up for the whole of Greece and the Amvrakikos Gulf forms part of it. This plan includes:

- studies of fish population management in the Greek seas
- incentives for modernising the fishing fleet and its equipment
- construction of fishing refuges
- establishment of central landing points in areas where there is considerable movement of fish.

Implementation of the above plan in the Amvrakikos Gulf should give priority to studies for the assessment and management of the fish populations, with emphasis on control of fry catching. Here the landing point may make a contribution and, by broadening its aims and adapting them to the particular problems of the Amvrakikos Gulf, may act as an important data bank and sampling centre.

To conclude, we believe that in accordance with the above goals the fishing projects planned under the AGPC are sufficient to promote the proposed development guidelines for fish-farming and fishing as long as they are linked functionally into three large centres:

- fish product selection and marketing centre
 - marine aquaculture centre
 - fresh and brackish water aquaculture centre,
- which, apart from their role as business agencies, consultancy centres and research stations, should also have responsibility for:
- management of fish populations
 - control of fry catching to supply fish-farming units
 - monitoring of water quality
 - all intervention in lagoon ecosystems and the marine habitats of the Amvrakikos Gulf in general, and
 - limitation of the number of fish-farming investment units established in the Gulf.

DRAFT PROGRAMME FOR ALTERNATIVE FORMS OF TOURISM IN THE NORTH AMVRAKIKOS GULF AREA

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I. THEORETICAL APPROACH

1. Introduction

The dominant tourism model formulated in the early 1960s relied on total faith in the unconditional growth of tourism. However, the anarchic and unplanned nature of this growth, without any attempt to provide parallel organic or functional links with other sectors of the economy, did not always produce the results anticipated while at the same time doing considerable damage to the physical and human environment.

The energy crisis and economic stagnation of the early 1970s, the growth of the ecology movement, the intensification of action by international organisations to deal with the adverse effects of mass tourism on the environment all led to the formulation of new consumer models and values based on a concept of careful consumption and resource management, and, in the end, contributed to the formulation of a new type of tourist development.

Awareness grew of the need for the planning of tourist development to incorporate ecological parameters so as to respect the functioning of physical systems and it was also seen as essential that the form and scale of tourism be monitored so as to limit the adverse effects on the environment in the wider sense of the word.

As a continuation of the above, recent years have seen fundamental differences in the demand and supply of tourism, and as a result the formation and composition of the tourism "product" has come to be associated more

and more with the protection and utilisation of the physical and human environment (traditions, language, customs etc.).

To conclude, over the last twenty years we have gone from a point of conflict between tourism and preservation to one of **recognition of the crucial and active role which tourism plays in regional protection and development policies and of acceptance of it as a factor for change and progress.**

2. Features of alternative tourism

The general features of alternative tourism are as follows:

- it is “soft”, does not involve expensive installations and large-scale interventions in the environment and is generally closer to nature and traditional ways of life.
- it is not mass-orientated and alienating and it favours the growth of friendship, understanding and respect between people of different nationalities, cultures and occupations.
- it does not lead to tourism as an area’s sole product, since development for tourism forms part of a structure in which all the other branches of the economy are also promoted.
- tourist interest is directed towards the natural, social and cultural features of the particular area, and there is scope for academic curiosity, research and learning.

It has been realised that the small-scale alternative tourism experiments which have been developed following this rationale can respect and effectively utilise the social and cultural parameters of the local societies while at the same time protecting the physical environment. It has also been accepted that such enterprises have direct financial benefits for the local population in terms of income and employment, chiefly because they are strongly linked to the local economy.

3. Fundamental principles of a programme to develop alternative forms of tourism

- a) The relationship between tourism and the environment is an extremely complex one and tourism is potentially capable of having a wide range of environmental effects which may be financial, ecological, aesthetic or cultural. Here there are two important points:
 - environmental parameters should be incorporated into tourism development policy right from the start, and an ex-post examination of the im-

- pact of each tourism activity on the environment is not sufficient.
- tourist development policies should be conservative so as to take account of effects on the environment, and controlled in the sense of that the development goals set must be complied with.
- b) It is essential that the effective protection of nature and the environment be guaranteed. The setting up of Nature Parks is one effective type of protection. In addition, it is essential for an effective protection policy that the park be managed in a uniform and integrated manner and that there be constant co-operation between all the agencies involved.
 - c) The consent and active participation of the local population must be ensured and is a sine qua non for the success of any programme to develop alternative forms of tourism. (As conditions for this participation one could point to a share of the benefits and protection of local ownership rights).
 - d) Tourism development must operate as part of a structure in which the development of the other sectors is, at the least, being promoted.
 - e) Lastly, the intervention of the state is both crucial and necessary for the creation of a suitable statutory and management framework, formulation of the overall tourism product, securing of the funds required, general land use planning and the settlement of questions of ownership, etc.

II. THE DEVELOPMENT OF ALTERNATIVE FORMS OF TOURISM IN THE AMVRAKIKOS GULF

The Programme Contract for the Amvrakikos Gulf singles out alternative tourism as an area for special development. This meets the aim of utilising the particular resources of the area (marine habitats, lagoons, land-spits, double delta, riverbank forests, rare fauna, sites of historical, folklore and culture interest, villages, individual buildings, etc.) and is based on the conviction that tourism of this kind not only pre-supposes but can contribute to environmental protection and the utilisation of the natural and cultural features of the area and, of course, to its broader economic and social development.

1. Rationale behind formulation of the boundaries of the study zone

Since the necessary infrastructure for an effective system of conservation and protection (including the marking out and legalisation of zones of differing degrees of protection, management of the water balance, operation of a system for the constant monitoring of surface water, the taking of measures to restrict water pollution and hunting, the formation of a management agency with a consultative and, later, an executive role, etc.) has never existed, the



Lake and settlement of Koprena

preliminary programme confined itself to proposals for intervention in zones B and C under the Ramsar agreement (1986).

Selection of the boundaries for the study was made on the basis of proximity to the ecological units of zone A., which contains the locations of particular interest for tourism. The boundaries of the study also included locations with particularly interesting cultural features while excluding spatial units which could develop according to classical models.

III. FORMULATION OF THE PROGRAMME

The goals, forms, scale and content of an alternative tourism development programme for the North Amvrakikos Gulf area were defined on the basis of the principles which should govern any such programme and the general and specific features of the physical and human environment of the area.

1. Goals

The general goal was to formulate a preliminary alternative tourism development programme for the North Ambracian Gulf area in which the development and improvement of the living standards and welfare of the population will be accompanied by the protection, conservation and utilisation of the environment.

The more particular goals of the study were:

- to formulate the basic principles which should govern such a programme.
- to investigate and assess the physical and human environment; e.g., by identifying communities and locations which are adjacent to the marine habitats.
- to describe and formulate the tourism product.
- to make proposals for possible financing and management patterns.
- to draw up a plan of action.

2. Forms and scale

It was agreed that, in an initial phase at least, the area is most suitable for walks and excursions of ecological and environmental (in the broadest sense of the word) interest on the part of Greek or foreign visitors who would be staying chiefly in Arta and Preveza and who would be diverted into the area by the supply of the appropriate information (eco-tourism), as well as for field observation by scientists and special interest groups (scientific tourism).

On a secondary level, an agro-tourism development programme could be proposed for a small number of carefully selected communities. It was also agreed that *extremely carefully selected* intervention could be made to create the necessary unfrustrated infrastructure in key sectors (hostels, scientific laboratory, rented rooms, landscaping, signposting, tourist kiosks, restoration of buildings, etc.) without large investments or extensive financing and with systematic efforts to avoid setting up unrealistically ambitious expectations, in such a way as to allow the programme to gradually pick up its own momentum and self-propulsion within a framework of discrete but decisive central control and management, without adverse effects on the environment.

3. Content of the programme

- (1) Design of the statutory and institutional framework
 - a) Planning and control of land use with clarification of the ownership status and design of a general land use plan as principal axes.

- b) Careful planning and control of tourism, with studies of special concern, to determine the load capacity of the area and gain complete control of tourist movement inside and outside zones B and C.
 - c) Proposals for a single agency to manage and administer tourism and conservation.
 - d) Proposals for the supply of information to the local population and the training of expert staff.
- (2) Planning of services to be offered.

- a) Reception centres: it is proposed that two tourist reception offices be opened, one in Preveza and one in Arta, and that two reception centres be set up inside the study area, at Salaora and Kopraina.

The reception centre for ordinary and special-interest visitors in Salaora will contain a lecture hall, a scientific laboratory, a “get to know the Amvrakikos” room and a small hostel with 10-15 beds. The Kopraina centre will have a museum-type room with exhibits showing the history of the port, a physical environment information centre and a small hostel.

- b) Accommodation: Most visitors will stay overnight in Arta or Preveza. Inside the area and apart from the Salaora and Kopraina hostels, it is possible to stay at Koronisia, where there are rooms to rent. In future it may be possible to have rooms to rent in Flamboura, Psathotope and Kommeno.
- c) Restoration: Initially, it is anticipated that the Customs House at Kopraina, formerly the port for Arta, will be restored. Specific proposals are being made concerning the agency to operate the building, what it should contain and what role it could play. Provision has also been made for the restoration of churches and the marking and maintenance of monuments.
- d) Outdoor recreation areas: viewpoints, boat trips and walks along tracks and footpaths will be signposted.
- e) Traditional occupations: the traditional occupations still surviving in the area, such as fishing with traditional methods, and the making of fishroe will be demonstrated.
- f) Cultural events relating to folklore: announcements.
- g) Signposting: detailed instructions for the organisation and construction of signposts will be given.
- h) Ornithological observation posts: initial instructions for construction will be provided.

(3) Promotion and publicity, financing, time schedule

This is an introductory and general text fixing the main axes around which the strategy for promoting and publicising the programme should revolve and proposing some innovative ideas.

The possible sources of financing for the programme are stated and briefly described.

Lastly, a realistic time schedule is given for possible implementation of the programme for the development of alternative tourism in the North Amvrakikos Gulf area.

