The Impact of the Information Society on the Territorial Planning of the Less Favoured Regions
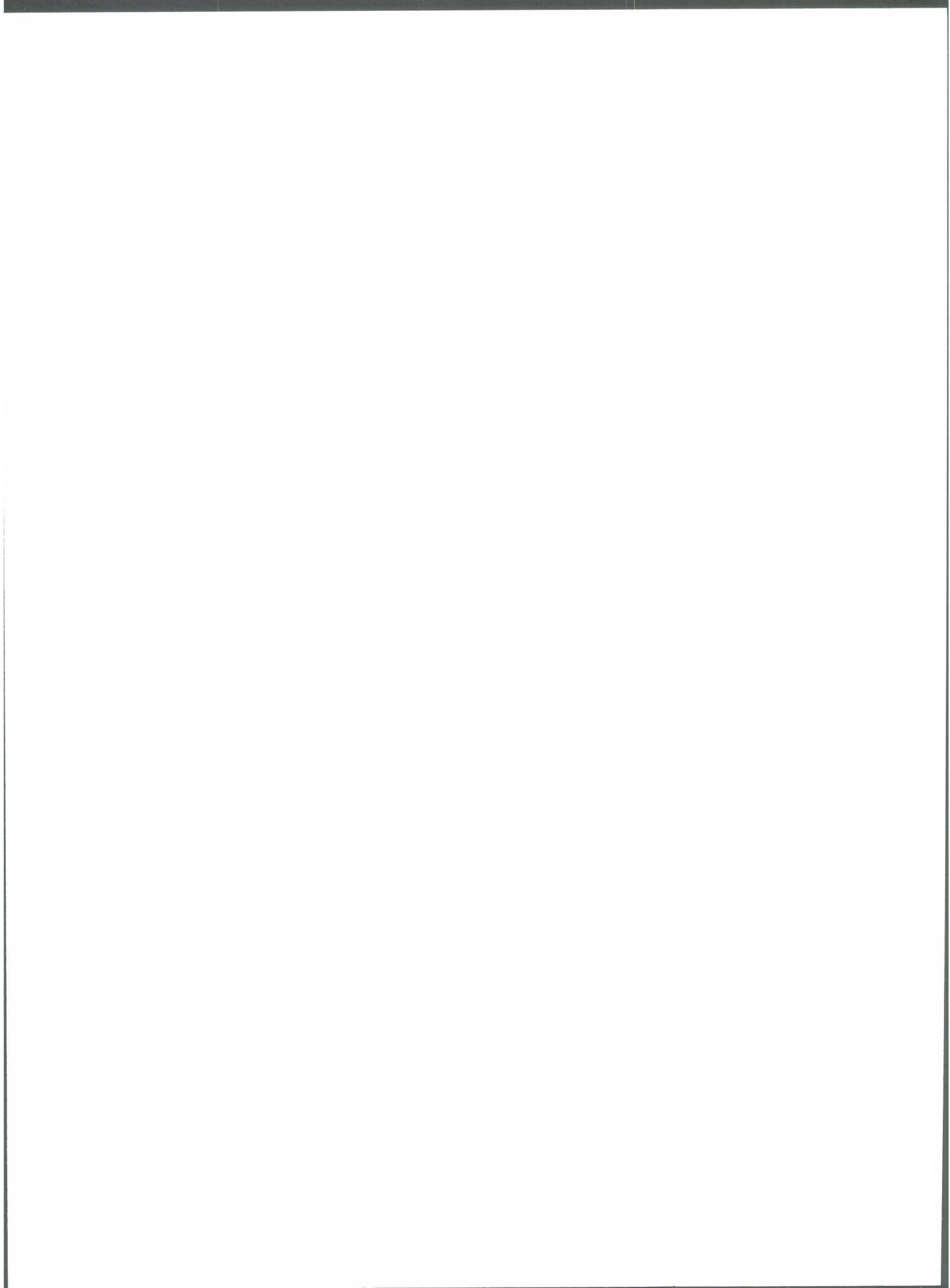
A report to the European Commission

from

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CONTENTS

1.1 Executive summary

The purpose of the study is to examine how information society services and applications (ISSA) may best contribute to territorial planning in the less favoured regions, and in what ways this process may best be supported at a European level.

The core of the work is a set of six case studies carried out in three member states. Case studies were carried out in Greece (Central Macedonia and Thrace), Portugal (Centro and a horizontal case study on GIS), and Scotland (Glasgow and Highlands & Islands).

The case studies are designed to illuminate various aspects of territorial planning, and to provide examples of different kinds of region, different kinds of planning environment and different approaches to the information society.

The emphasis of the case studies is based on an overview of thinking in the field. The conduct of the case studies within a conceptual framework allows key issues to be identified and discussed. The direction of current thinking within the EU is described, and a number of policy considerations are proposed.

Key issues identified in the work include :

• infrastructure is specified by operators, not planners. There is little co-ordination between development planning and infrastructure planning.

This is not a new situation. However, two important changes mean that this method of planning must be looked at carefully. The first change is to the role of telecommunications in economic development. Telecommunications is now much more than telephony. The potential which telecoms services offer to create new types of business in new places, working in new ways, fundamentally alters the relationship between telecoms and development. In short, the notion of *how* telecoms is used becomes a significant issue - it is no longer sufficient to know availability and volume. Planning for advanced applications needs to consider what kinds of users are likely to use what kinds of services and in what ways, and this indicates the need for infrastructure and territorial planning to become more rather than less integrated.

We must qualify these comments by noting that all of the case studies were carried out in countries where the planning structure is centralised, and it is possible that the conclusions drawn from our case studies may be different in a federal environment.

The second area of change is that the market for telecoms is liberalising. The pressures of competition and commercial discipline drive investment towards the
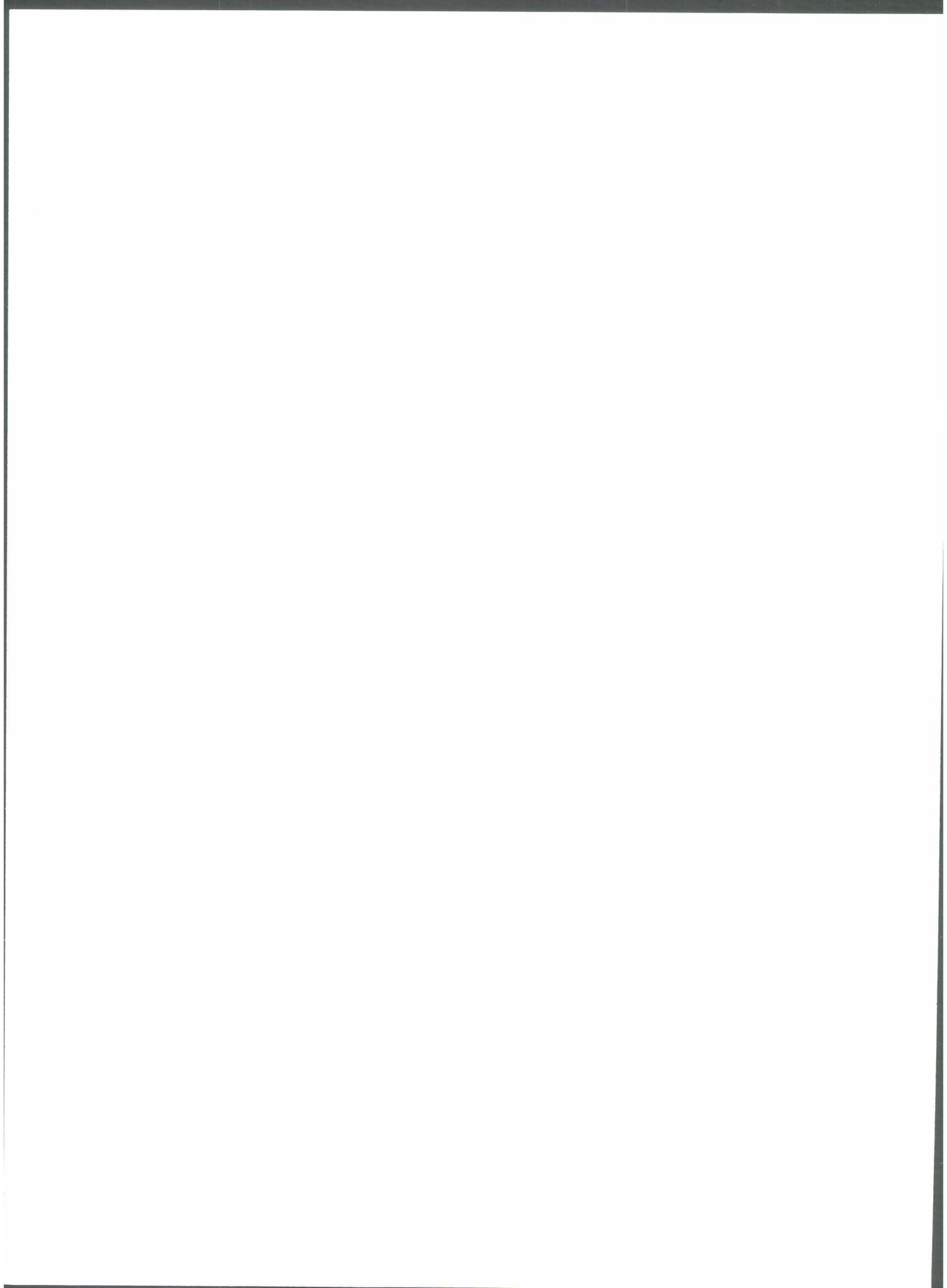
areas which offer the greatest return on investment, and this is the case for the incumbent operator and for new market entrants. The issue for territorial planners depends on the stage of liberalisation. For Greece and Portugal, for example, the concern is with coverage and access. For Scotland, while there is little concern over universal service at present, there is no guarantee that this situation will continue. Debate over the geographical deaveraging of tariffs, for example, must be set in the context of a territorial planning strategy which set out to attract telecoms intensive industries, precisely because they did not face higher tariffs.

- the approach to ISSA is technology-led. The emphasis tends to be on physical infrastructure, with little grasp of the range of requirements needed to develop, implement and use applications. There is little consideration of the human skills and expertise required.

  The main reason for this is the stage of development of information society measures in the field. There is a lack of evidence of the impact which may result from the introduction of new services and applications. It is easier for agencies to cope with a tangible physical infrastructure, and to cope with the already high levels of technical expertise, than it is to cope with a somewhat amorphous discussion of potential applications, or even more, with the human resources dimension.

  We have a very good example of this process in our case study of the Highlands & Islands in Scotland. The infrastructural investment began in 1989, but it is only recently that serious attention has been paid to the development of services and applications which will use the infrastructure. This gives a good indication of the length of the learning curve experienced in the region, and it can be argued that the process has been necessarily lengthy. However, from our point of view in this study, the significant thing would be to use the Highlands & Islands experience as a means of shortening the learning curve for other regions.

- we can find evidence of ISSA aiding the centralisation of economic and social domains, and evidence of the potential to decentralise. It is therefore a strategic choice facing the planning authorities in the regions.

  During the conduct of the case studies, we looked for examples of the possible centralising or decentralising effect of ISSA. It is clear that a good telecoms infrastructure can be an important factor in attracting inward investment, although it is unlikely to be the single determining factor.

  Both Scottish case studies provide evidence of the positive benefits of attracting telecoms intensive industries. Glasgow, for example, targeted call centre operations, and two of the early companies locating in the city account between them for 500 new jobs. In the Highlands & Islands, jobs associated with the Telecoms Initiative had reached 654 by 1995, against a target of 500 by 1999.

Jobs locating to Glasgow may represent a decentralisation from the South East of England, but within Scotland, may represent a further concentration of economic power in the central belt. Similarly, jobs locating to Inverness represent decentralisation within Scotland, but centralisation within the Highland & Island region.

- in all cases considered, the least favoured tend to lose out. This applies to the least favoured geographical areas - the most remote- and the least favoured economically - the poorest.

  For the most part, we did not find examples of ISSA being used to help the least favoured. While it could be argued that some level of trickle down is expected, and that the least favoured will eventually benefit, we have no idea from the case studies that this is the strategy which is being adopted. The evidence suggests that ISSA is not seen as something for the least favoured. For example, the jobs which are being created in Glasgow in new technology intensive industries are not jobs for the city's long term unemployed. Thus, while in statistical terms we can see jobs being "replaced", the new types of industry do not, in general, employ the people who worked in the old industries.

  When we look at planning in Thrace, the approach is geared towards poles of development. This is reasonable, given the scale of the issues to be addressed, and the scarcity of resources. However, again there is no strategy linking the most remote areas and ISSA.

  In the Portuguese case study, we noted that pilot projects in Mangualde included some social applications, for instance, projects designed to reduce the social isolation of elderly people. However, while the projects were deemed to be successful by participants, they are not being taken forward, due to lack of resources.

  Our conclusion is that, while we can see great potential in using ISSA as a means of addressing social issues as well as economic issues, this is not shared by most of the planning agencies. For them, ISSA is primarily an economic tool, and is directed towards areas which are likely to achieve the greatest economic benefit. This means that the least favoured lose out, and the price of focusing on the economic aspects is social exclusion.

- the implementation of ISSA tends to be considered as a project in its own right. Territorial planning has not yet moved to the point where ISSA is seen as a facilitator of a wide range of economic and social measures.

  One of the key attractions of ISSA as an economic and social driver is its potential to generate benefits which are diffused across economic sectors and through social relationships. Implementation would therefore involve the application of ISSA to overall development and planning goals. ISSA would not be an item in its own right, but would be embedded within planning and development. Information society
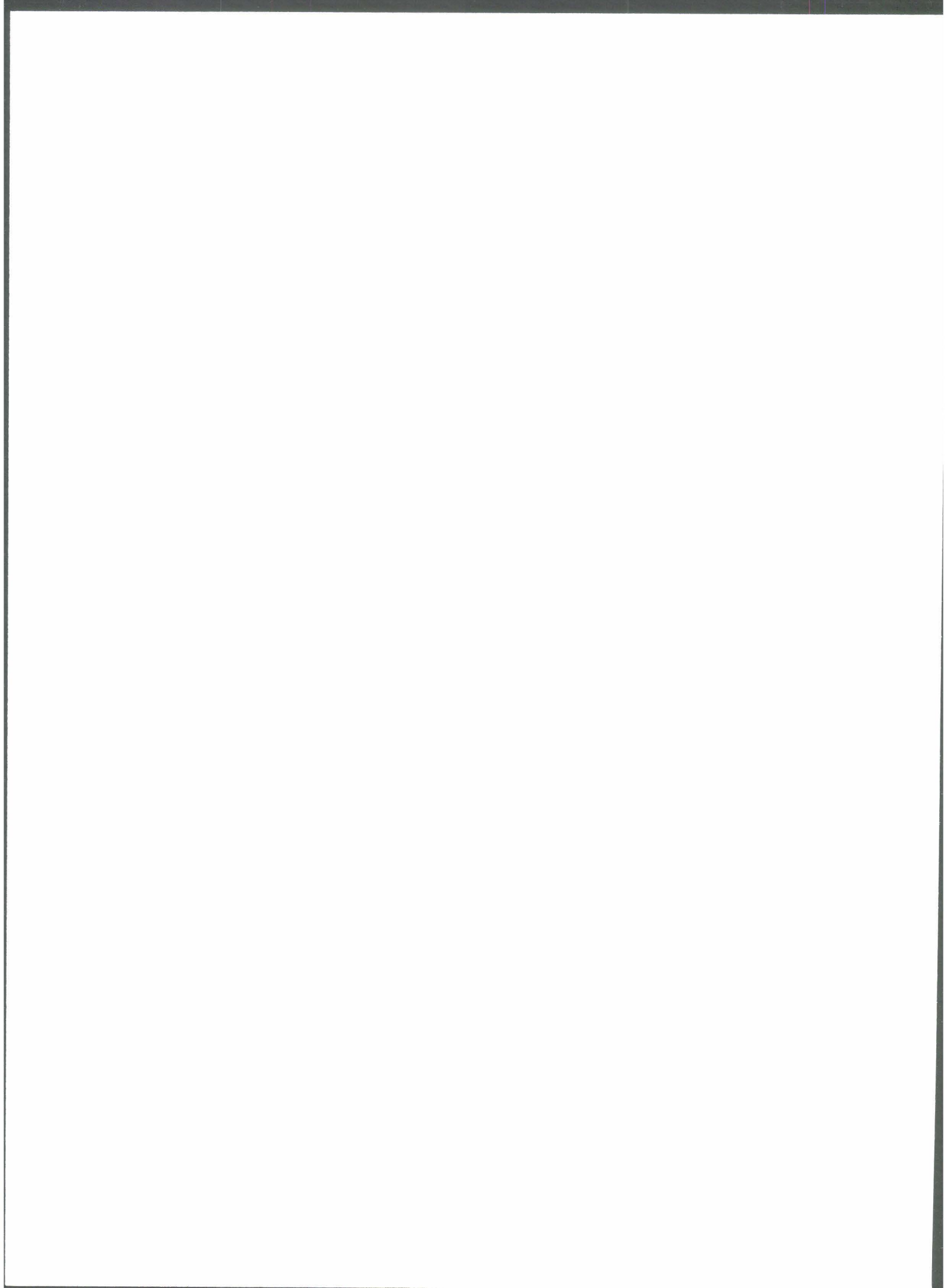
measures would be an integral part of all types of planning, and would be considered, for example, in the way in which finance or evaluation is considered, as an element of all projects and proposals.

Amongst our case studies, no region was operating at this level. At best, a region would have an item with some information society label in its planning, but none had moved to consider ISSA as a broad facilitator which could be an element of all projects. This is significant for two reasons. First of all, it indicates that even in the more advanced (in terms of their use of information society measures) regions, the approach is still mechanical. Secondly, it inevitably reinforces the technical orientation of projects and programmes.

- while project level people in the regions are generally extremely good and highly motivated, there is still a lack of senior champions as decision makers.

Our case studies were unanimous in suggesting that basic awareness of the potential offered by ISSA is not an issue. In all case studies, we encountered officers who were talented and committed, and most of the agencies had explicit policies to do with encouraging the use of ISSA.

However, the whole concept of territorial planning was imposed by us - none of our interviews used such a classification. Implicit in the notion of territorial planning is an integration of planning across various domains, and our case study regions shared a lack of integration. The responsibility for identifying projects may be devolved to a regional or local level, but the authority to decide strategy and commit budgets is highly centralised. Our case study regions shared a centralisation of power, coupled with a decentralisation of responsibility.

We noted very few senior level champions of ISSA in the planning agencies. The lack of support at a senior level is linked to the lack of hard evidence about the benefits of information society measures, and is directly connected to our point about moving from treating ISSA as a project, to treating ISSA as an integral part of every project.

The conclusions we draw are that, in general, agencies know what ISSA is. They know it is important, and well understand the potential. However, even those who are relatively advanced in their thinking are at the beginning of the learning curve when it comes to implementation, and even more importantly, when it comes to the widest potential offered by ISSA, to the ability to facilitate all types of economic and social relationship, and the ability to offer new types of human as well as economic development.

Based on this analysis, we note the following **policy considerations** :

The need for a regional strategy
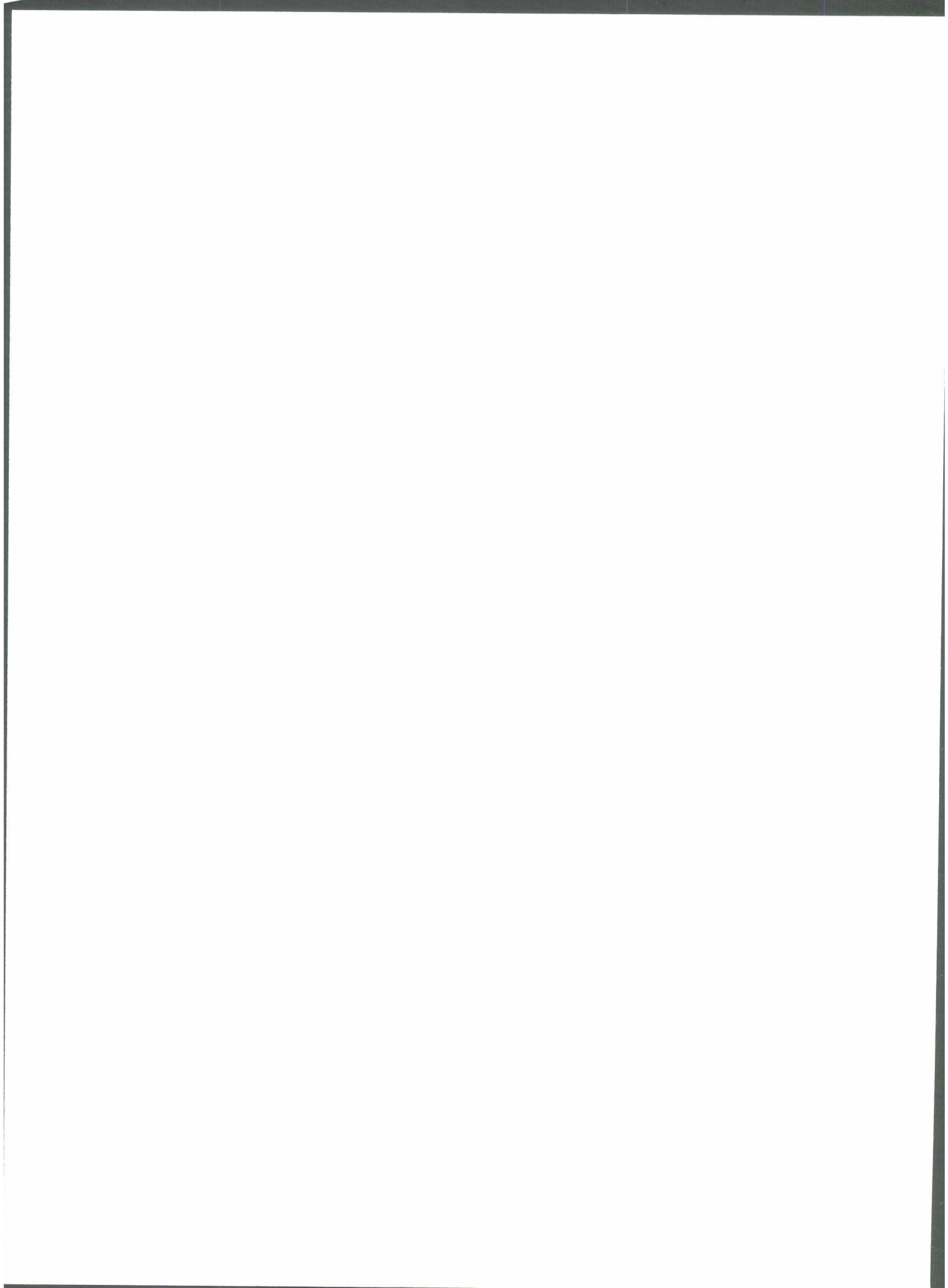
For ISSA to best contribute to territorial planning, there needs to be an integrated approach which incorporates development aims and regional aims, which recognises the benefits and costs associated with ISSA, and which considers how these aims can be implemented and achieved.

Our case study regions included authorities with different levels of power and responsibility, and with different relationships between the regional and national authorities. However, in all cases, the regional authorities considered themselves to be responsible for initiating information society programmes, and all had some kind of explicit policy for the promotion of ISSA.

Policy could focus on two main areas. First, the support for an integrated approach to planning, which would relieve some of the current inefficiency caused by fragmentation. An integrated approach would address also the tension between central and regional authorities. Second, the promotion of a regional strategy could be used as a means of integrating ISSA into the planning process, so that information society concerns are seen as a constituent part of all projects and programmes.

The case studies provide ample evidence of the need to learn from other regions, and of the benefits of a co-operative approach to the implementation of ISSA. Policy should actively promote and support this approach.

Express clearly the link between ISSA and territorial planning

In all of our case studies, we have clear examples of how well regional authorities understand the physical infrastructural requirements of information society measures. However, the link is normally expressed in terms of potential benefits and costs, rather than with reference to a reality.

There is no clarity on the broader requirements such as education, training, business development or any measure associated with social cohesion.

Policy development could advance thinking in this area, by considering ways of defining and identifying the broader requirements of ISSA, and then integrating this within an overall regional strategy. We are aware that work on this dimension is being carried out at a European level, but it is a stream of thinking which is not at all evident in the field, and it does not seem to be related to the practical side of regional implementation.

Develop local demonstrators

Despite more than a decade of investment in projects designed to link information society and economic development, there is still a lack of hard evidence of the associated costs and benefits. This means that requests for investment are frequently made on the basis of faith rather than fact, and is a direct cause of the difficulty noted by project officers of securing support for information society initiatives.
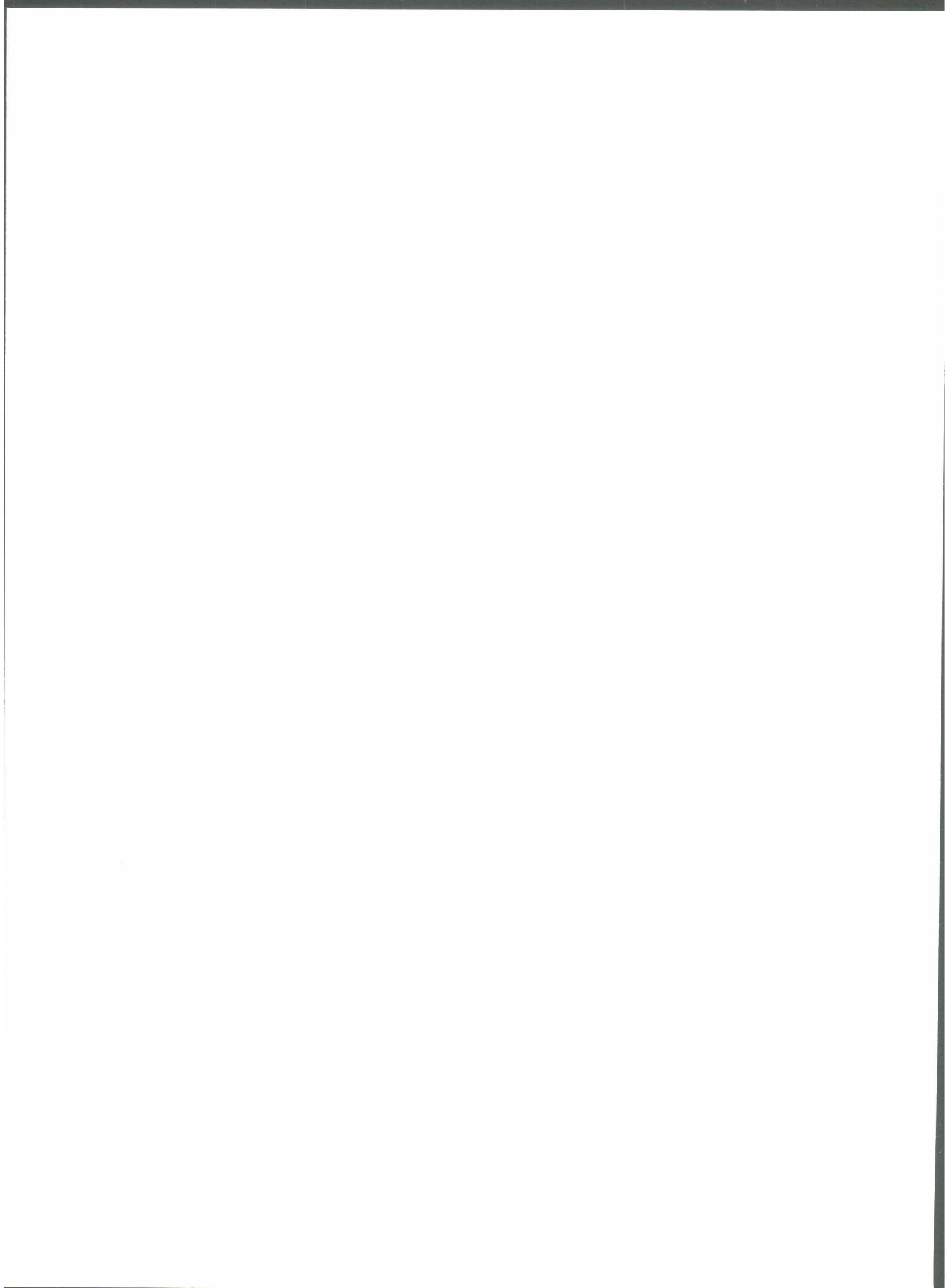
Local demonstrators fulfil three important functions. First, they can involve the local community directly and practically in the application of ISSA. This can spin off other applications. Second, they can provide hard evidence of costs and benefits, and as we noted, this evidence is still in short supply. Third, they can speed up the learning curve for regions seeking to use ISSA for territorial planning.

A policy initiative could consider how best it can support local demonstrators, whether at a practical level in supporting the establishment of demonstration projects, or in the dissemination of information and results. We can note also in this context that the whole debate about territorial planning and ISSA needs to shift from the academic to the practical. Part of this process is thinking about how to involve a wider selection of actors, particularly on the commercial side, and how to address the social as well as the economic side of the information society.

Promote a learning society

The use of ISSA to access learning opportunities is a positive endeavour in its own right, and also addresses the need to think more broadly about the kinds of conditions which are a necessary prerequisite of successful implementation.

We see the notion of the learning society as a way of addressing some of the most important issues identified in our work.

The idea works at a number of levels. First of all, ISSA can provide learning opportunities for regions by overcoming distance and time barriers. People could have access to learning opportunities which could significantly affect career options and quality of life. Technological improvement alone cannot bring about major change in the economic potential of a region. The development of the population through education and re-education is needed to provide the necessary elements for the exploitation of information society measures.

We noted in the case studies that, even when the employment statistics look favourable, structural imbalances may remain. The more valuable jobs which are being created are for educated people.

Second, a learning society could be a means of helping people to stay in their region. Some of our case studies noted the emphasis on education in the region, but the lack of any continuum between education and retaining qualified and skilled people. It is still the case that education is frequently seen as an escape route from a region, rather than a step in building a region. The idea of a learning society extends the notion of education as something which goes beyond a proscribed period in an institution.

Policy considerations would include the definition of requirements, both in terms of physical infrastructure, and in terms of human resources and capabilities, and would also
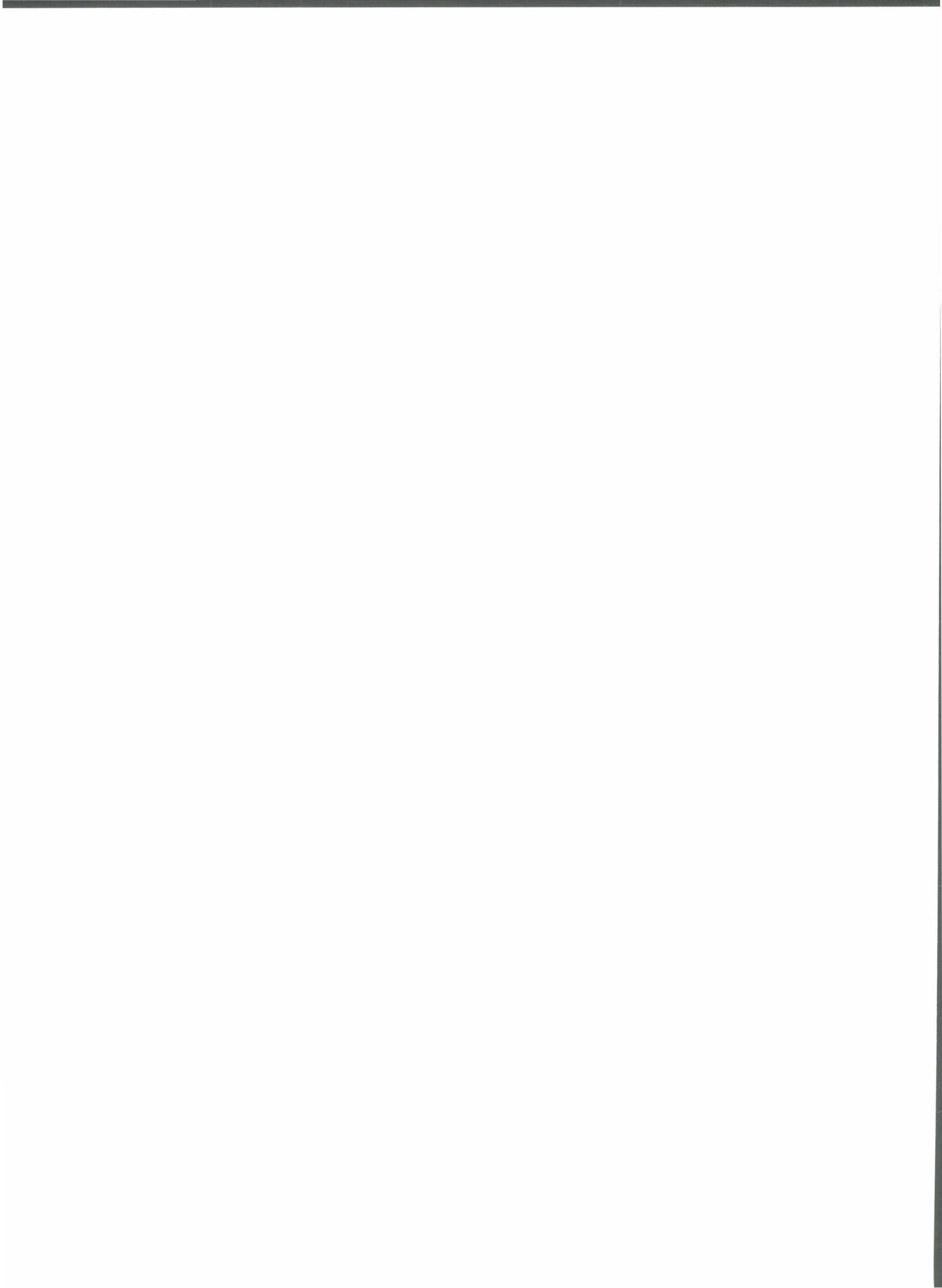
include   an   analysis   of   the   actual   learning   which   is   needed.
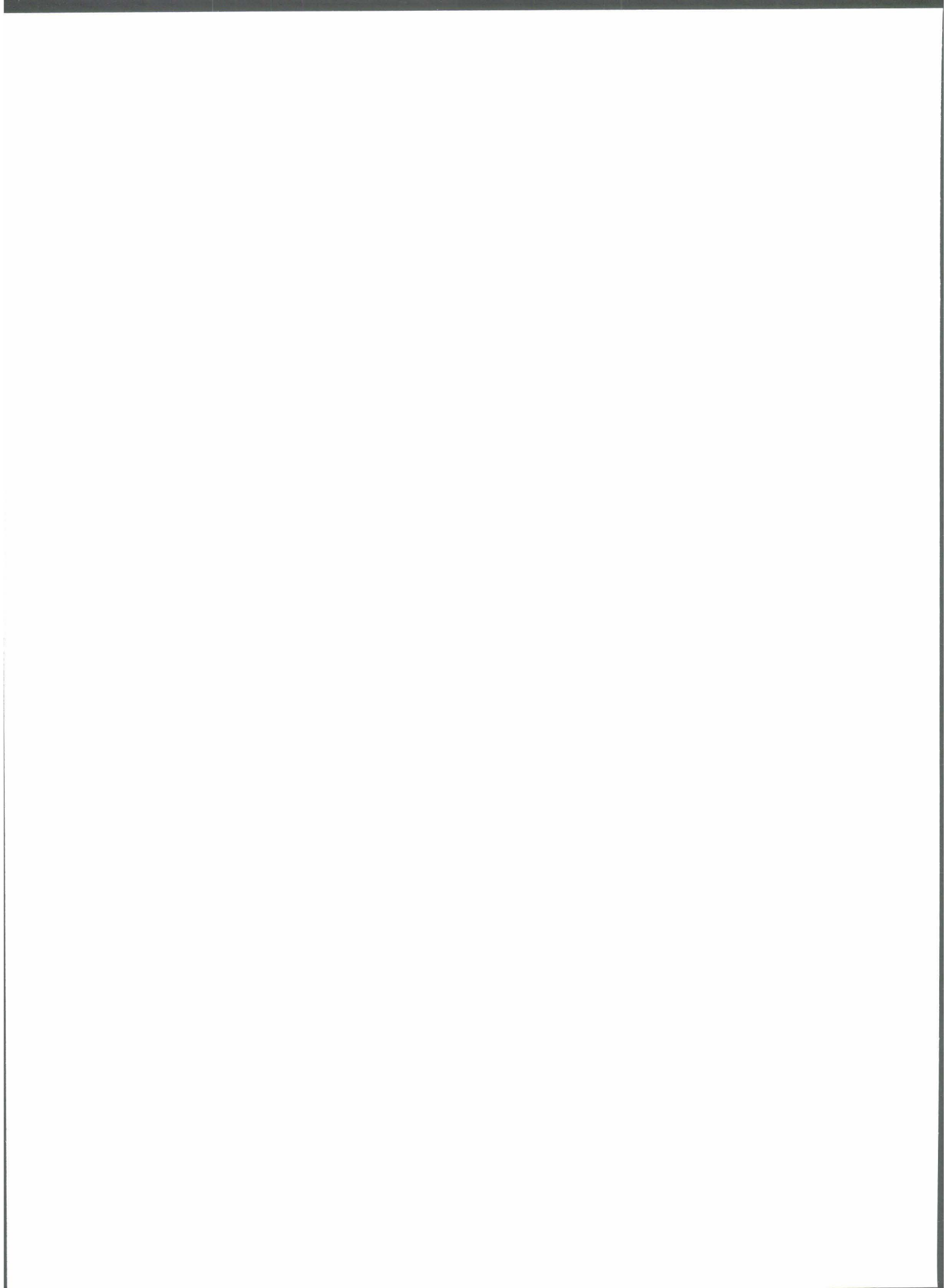
2. Introduction

This is the final report for the study titled:

The impact of the information society on the territorial planning

of the less favoured regions

The study was carried out by a consortium of the Policy Studies Institute (UK); City Liberal Studies (Greece); and Instituto Nacional de Engenharia e Tecnologia Industrial (Portugal).

The overall objectives of the work are to answer the following questions :

- How can information society services best contribute to territorial planning?

- How can the European Commission (EC) best support this process?

The study is therefore concerned first of all with how territorial planning is carried out, and in what ways ISSA may be used to assist in its best practice. For territorial planning, ISSA is one tool amongst many. We are concerned with why ISSA may be used (or not used), as well as how it may be used. Secondly, we are concerned with the European Union (EU) dimension. It is our intention that the study should reflect on EU initiatives such as the work on *Europe 2000+,* and the Regional Information Society Initiative, and should build trends in EU thinking into our conceptual framework.

The method used for the study divides the work into three stages :

- Stage 1 is concerned with the construction of a conceptual framework. This has involved the consideration of research on theoretical aspects of territorial planning and on previous ISSA and territorial planning initiatives. From this we have identified the issues arising in territorial planning which can be addressed by ISSA. The work undertaken in Stage 1provides an analytical context for the rest of the project.

- Stage 2 consists of a set of six case studies. These were identified at the proposal stage, and each has been analysed using a standard format. The case studies are in Scotland, Greece and Portugal.

- Stage 3 of the project is concerned with the analysis of the research results, and the identification of policy considerations for the Commission.

The final report is structured as follows :

- Chapter 3 presents the results of a review of research in the area of territorial planning and ISSA. It describes current thinking in this area and develops a conceptual framework for the study as a whole.

- Chapter 4 summarises the main points of the six case studies. Full case study reports are included as Annexes A, B, and C.

- Chapter 5 identifies and analyses key issues arising from the background work and the case studies

- Chapter 6 discusses European policy to date, and identifies areas for further consideration.
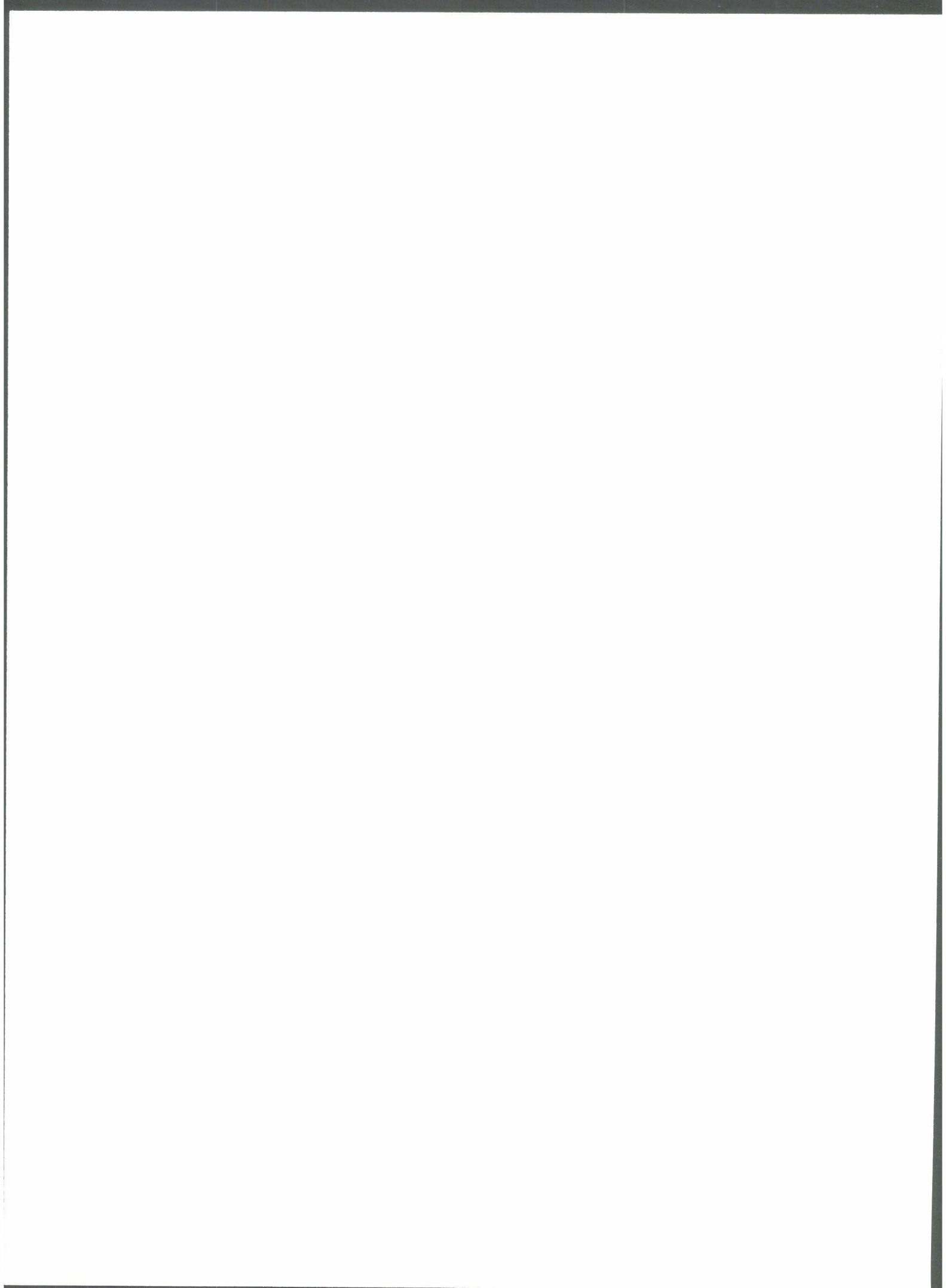
3. The conceptual framework

The information society is high on the policy agenda of most Western societies. Information society services and applications (ISSA) are seen to hold the key to future economic development and social cohesion, and many countries have developed policies to exploit their potential (Melody, 1996). Their impact is increasingly being felt at the regional level, and territorial planning agencies throughout Europe are also preparing strategies to apply the new technologies to planning objectives.

However, the territorial impact of ISSA are far from clear. This literature review sets out current thinking on the links between the new technologies and territorial planning. It considers the potential benefits offered by ISSA, as well as their threats.

3.1 What is territorial planning?

It is difficult to find a concise definition of territorial planning. Relevant literature (eg EC 1994a; Williams 1996) refers to a wide range of activities, including regional planning and development, and spatial planning. Although different in name, these activities share a concern with the management of people, resources and activities in space. This provides an indication of the nature of the territorial planning process.

In practice, territorial planning usually seeks to promote the decentralisation of people, economic activity, investment, decision-making and power. Key features of the territorial planning approach are that it demands a broad analysis of a region and its position in relation to other regions both nationally and internationally. It also involves a vision of the ways in which a region can develop.

The themes of economic development, population planning and environmental management are central to the practice of territorial planning (Figure 1). They are closely interlinked. For example, the availability of jobs in a region may attract inward population flows, increasing demand for development land and public services.

Instruments at the disposal of territorial planners vary from country to country. However, most planning systems include:

- Some degree of control over land use (planning control) and the physical infrastructure.

- A certain amount of financial autonomy and the ability to offer grants and fiscal incentives in order to attract investment and encourage indigenous development.
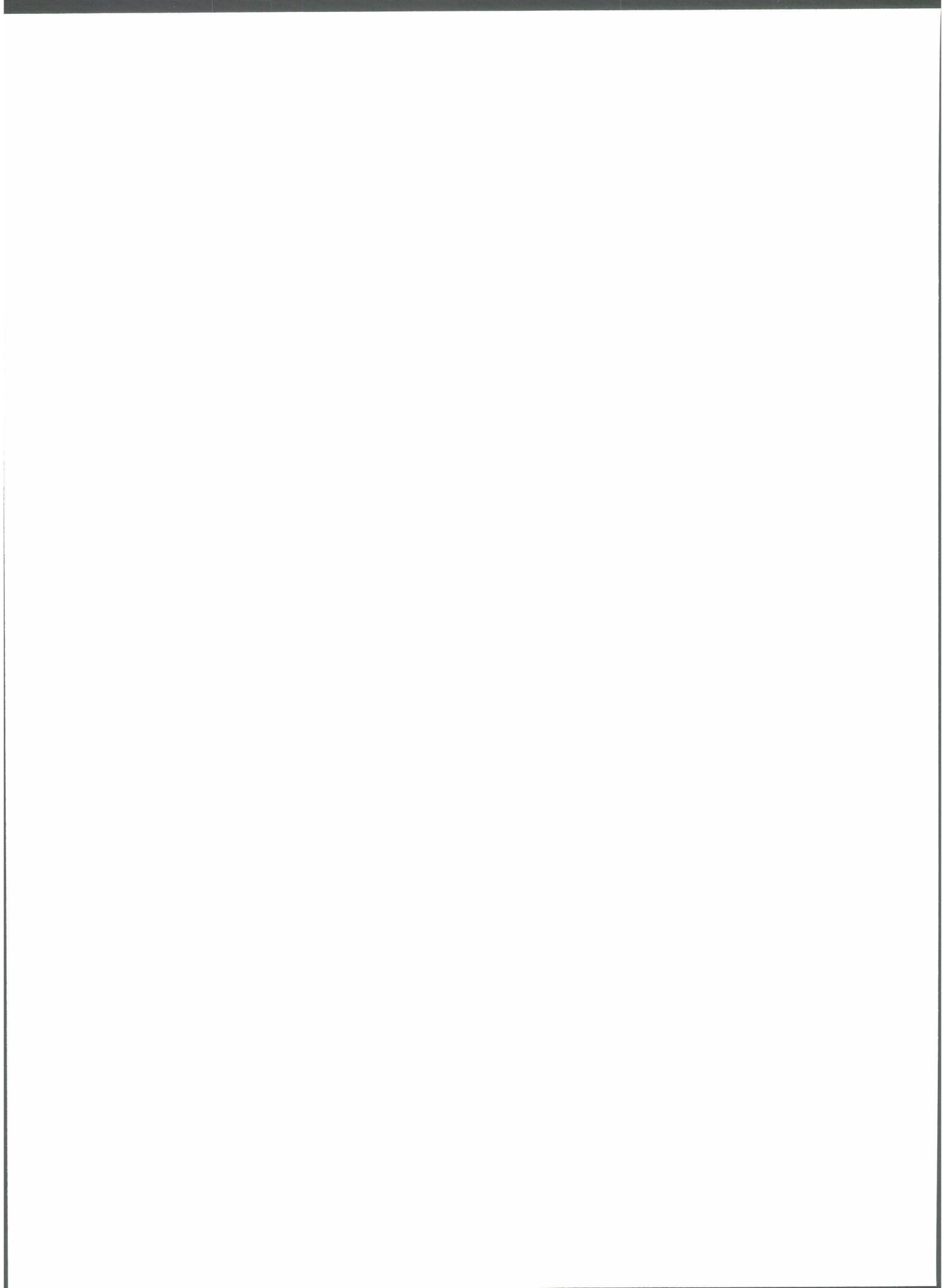
- A level of operational autonomy (particularly. the ability to devise and implement regional development strategies).

Many planning authorities are also responsible for the delivery of social services, such as education and healthcare.

Figure 1: What is territorial planning?

inward investment
job creation
skills and training

Economic
development

**TERRITORIAL
PLANNING**

| Population planning | Environmental management |

quality of life
public services
citizenship information

physical infrastructure
land-use planning
sustainable development
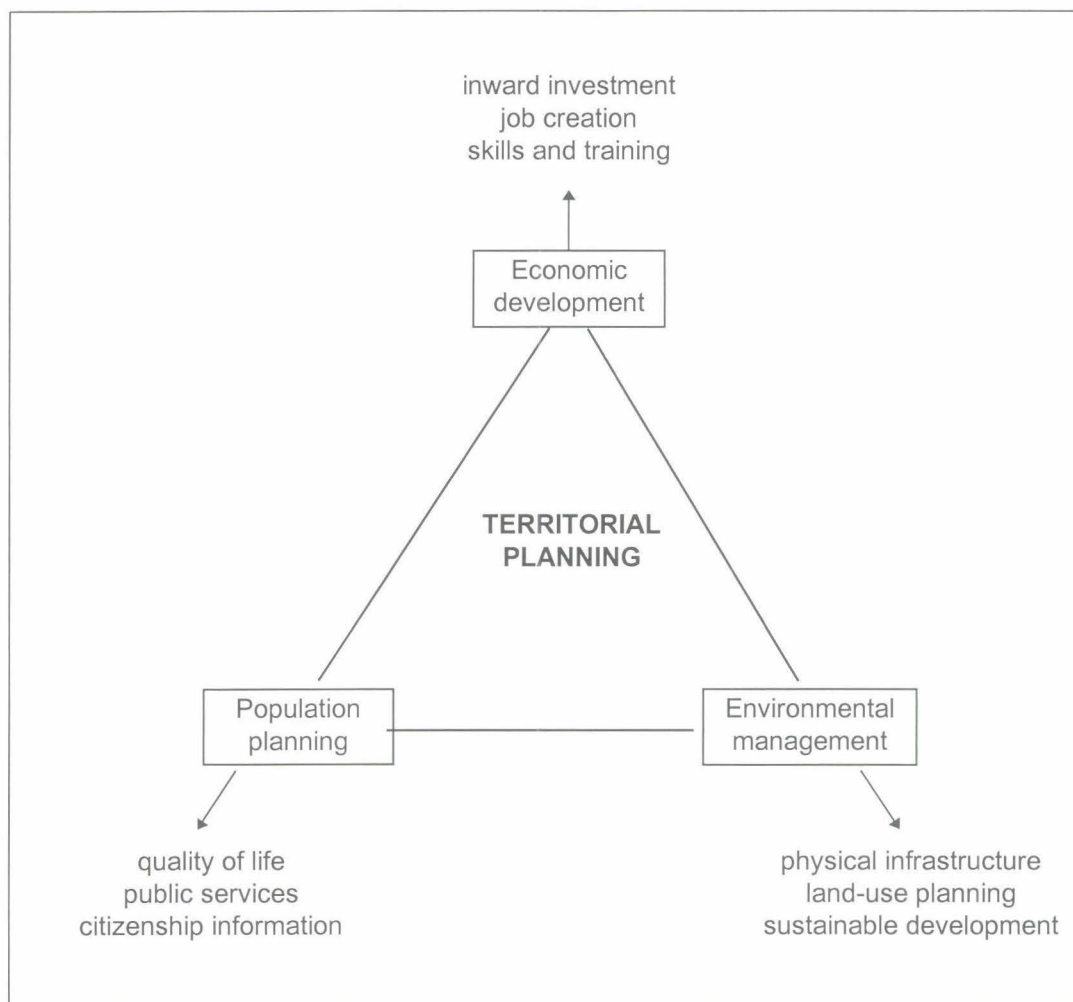
The precise responsibilities of planning authorities vary from country to country. A recent study by the European Commission (EC, 1994a) suggests that the form which national planning systems take will be determined by five factors:

- History, geography and cultural traditions, which may influence attitudes towards urban or rural life.

- The state of economic or urban development within a region.
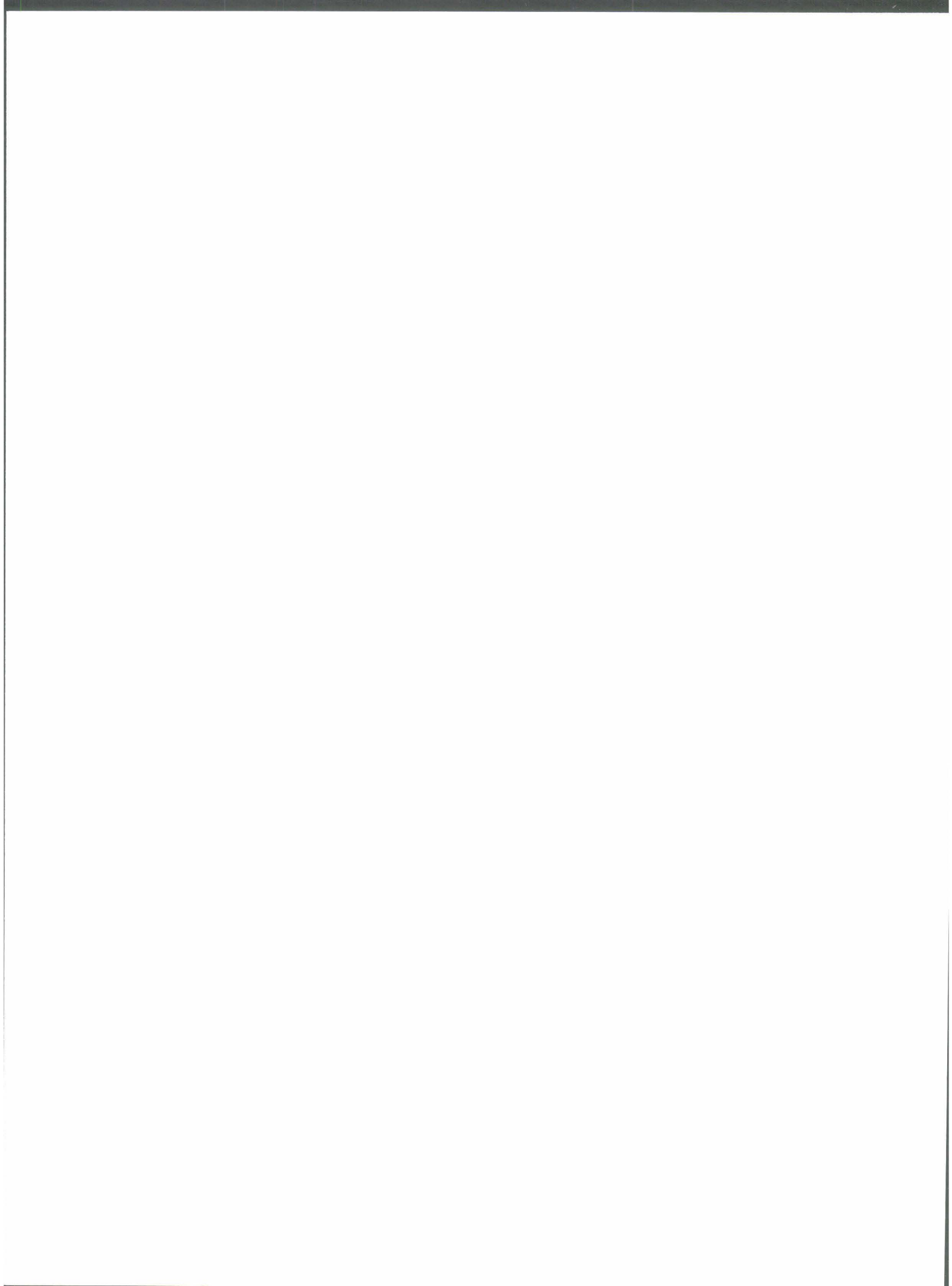
- The political orientation and prevailing ideology, such as attitudes relating to decentralisation or deregulation.

- The conception of land ownership and development rights.

- The constitutional structure, in particular whether the state is unitary or federal.

Very often, a number of agencies will be responsible for the elements of the territorial planning system. These may include economic development agencies as well as various tiers of local and regional government. Within the European Union, planning agencies' areas of responsibility differ quite significantly, as does the extent to which agencies integrate their respective planning activities. In France, for example, municipal, departmental and regional planning authorities coordinate their various activities via 'state planning contracts', which are prepared in consultation with national government and the industrial development office (French Ministry of Foreign Affairs, 1995). This system involves a considerable degree of regional autonomy, coupled with extensive consultation and coordination between the various agencies. By contrast, the UK system is more centralised, with less devolution of responsibility to the regional level:

> [In the UK] there is no real equivalent to the concept which has been used in France for several decades, which looks at the issue from a more global and strategic viewpoint embracing both national and regional levels, socioeconomic development, transport policy and local and urban planning, as well as environmental protection.
>
> In Great Britain there is no link between, on the one hand, regional and local economic development and, on the other, land use and environmental protection, not to mention road, rail, waterborne and air transport policies which suffer from the same lack of strategic vision.. these issues are not considered by the majority of public authorities as an integral part of regional development. [Breuillard, 1995]

3.2 Planning in a changing environment

This suggests that France has undertaken territorial planning for some time. Most European countries have practised some form of territorial planning since at least the 1960s (EC, 1994a). Until relatively recently, the basic assumptions about the aims of territorial planning, such as deconcentration of population and economic activity, and the means by which such aims may be achieved, have remained broadly the same.

Within the past few years, however, considerable changes have taken place within the planners' environment:
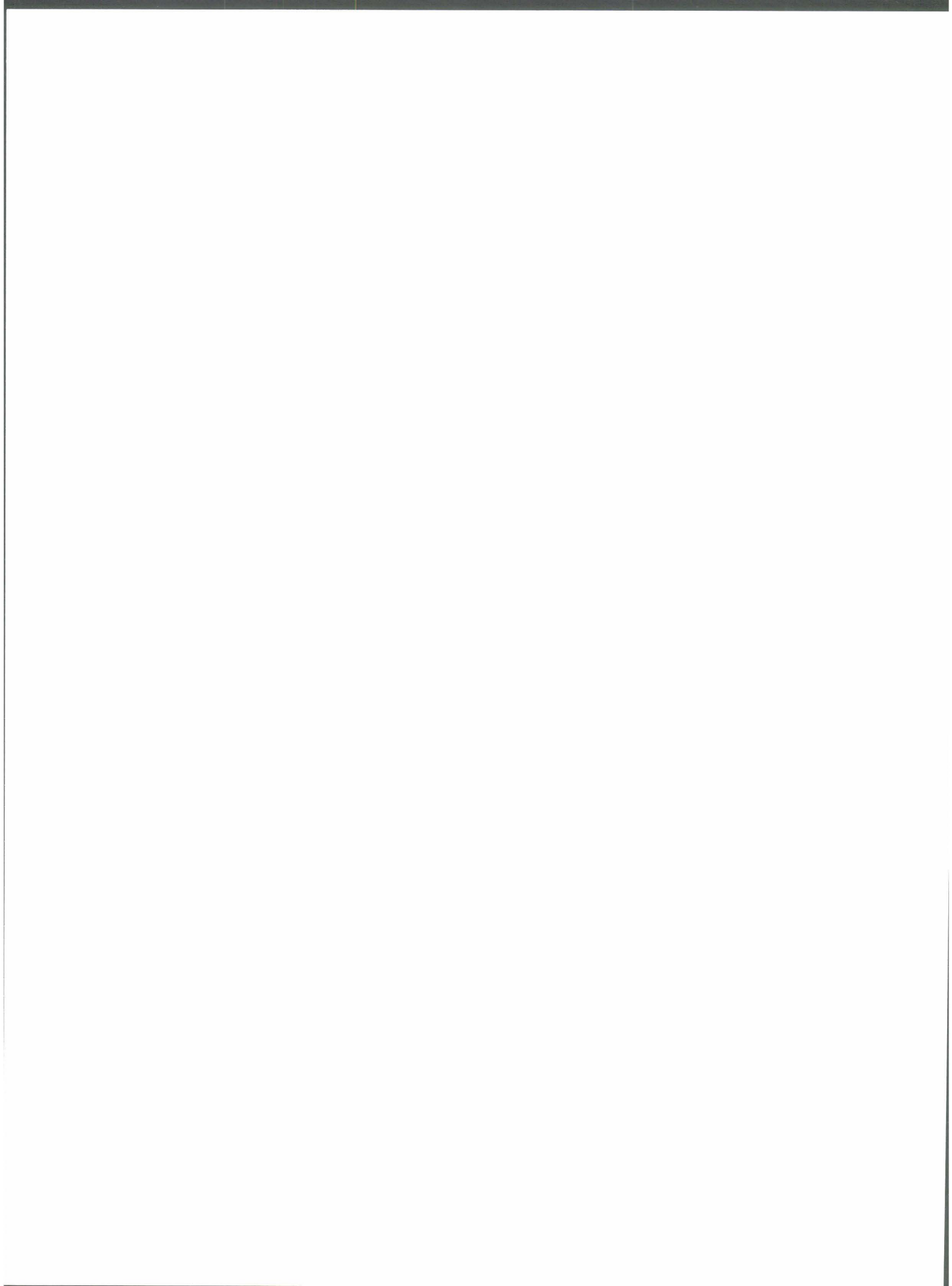
As we approach the verge of a new millenium, old ideas and assumptions about the development, planning and management of the modern industrial city seem less and less useful. Accepted notions about the nature of space, time, distance and the processes of urban life are similarly under question. [Graham and Marvin, 1996]

Graham and Marvin refer to cities, although their observations apply equally to regions as a whole. Many of the developments influencing the direction of territorial planning in the 1990s are economic. The last two decades have seen considerable integration of global economic systems. National markets have been opened to international competition under supranational agreements such as the General Agreement on Tariffs and Trade. Capital, money, goods and services have become increasingly mobile, roaming the globe in search of better returns and new markets. As part of this economic globalisation, Western manufacturing jobs have been relocated to low labour cost markets in newly developed countries. The loss of manufacturing jobs has been associated with the rise of unemployment in many Western industrial cities. In this sense, planners' horizons have become wider: although their focus remains on their physical territory, they are increasingly affected by economic trends occuring on a global scale (Moss, 1991).

Decline in manufacturing employment has been accompanied by growth in service sector employment (Illeris, 1996), particularly in jobs concerned with the manipulation or processing of information. The increasing numbers of 'knowledge workers' reflects a structural shift away from an economy based upon the production of material goods to one based on the consumption and circulation of symbolic or information goods (Lash and Urry 1994). It also indicates the increasing importance of coordination and communication in modern organisations. A recent study suggests that as much as 51 per cent of labour activity in the United States is generated by interactions - 'the searching, coordinating and monitoring that people and firms do when they exchange goods, services or ideas' (Butler et al, 1997). The report's authors go on to suggest that our capacity to interact will increase by a factor of two to five in the next decade.

Attitudes towards, and awareness of, the environment have also changed remarkably in the past two decades. Planning policy is increasingly concerned with the legacies of the industrial era such as pollution, dereliction and congestion:

For most of the present century priority has been given to the achievement of economic growth, irrespective of the resulting environmental or spatial consequences. Such an approach has led to an inefficient use of resources and has caused considerable spatial and social problems. [Roberts, 1996]
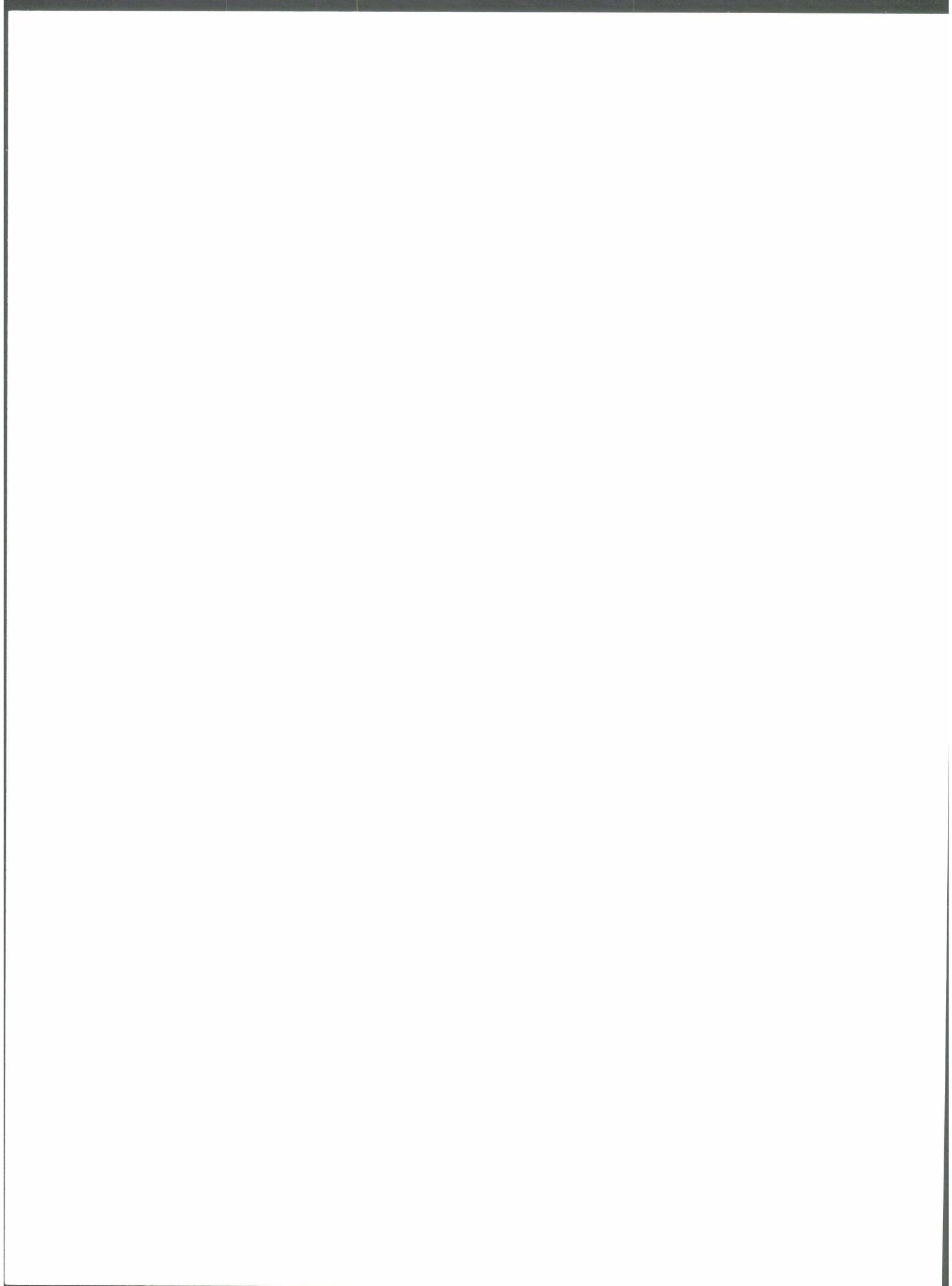
Planning policies are increasingly concerned with sustainable development - the 'prudent management of natural resources to ensure their renewal and availability for future generations and the preservation of the environment and biodiversity' (EC, 1994a).

Other shifts have occurred within the political and regulatory realm. The 1980s and 1990s have seen a movement towards deregulation and free-market policies in many Western societies. The liberalisation of industries previously considered the natural preserve of the public sector - utilties, telecoms, healthcare - have considerably altered the relationship between public and private sector. The role of planners has changed, with local authorities acting as 'urban entrepreneurs', working in partnership with the private sector (Harvey 1989).

| Socio-economic changes affecting territorial planning activity |
| --- |
| • globalisation |
| • increased service sector employment |
| • decline in manufacturing employment |
| • growing importance of environmental issues |
| • deregulation and free market policies |

3.3 Information society services and applications

Underpinning many of these trends are developments in information and communication technologies. The last two decades have seen rapid growth in the processing power of computers, and in the capacity of telecommunication networks. The convergence of the two sectors with the 'content' or information production sector has considerably increased our ability to send, receive and process information.

New 'telematic' services and applications are the product of this convergence. Telematic services facilitate access to information such as online databases, the communication of information through Electronic Data Interchange and e-mail, and the exchange of information in real time through services such as video telephony. Telematic applications involve the use of these services to mediate or deliver any information-based activities. Examples include tele-medicine, tele-administration, tele-working and distance learning.

For planners, one of the most profound implications of these information society services and applications is their ability to compress time and space. By permitting the exchange of vast amounts of information, in 'real time', over enormous distance, ISSA effectively remove the 'friction of distance', overcoming the disadvantages associated with physical peripherality. At the same time, the deregulation of telecommunications markets has driven down the cost of telecommunications, making the tele-integration of global business activity a realistic option:
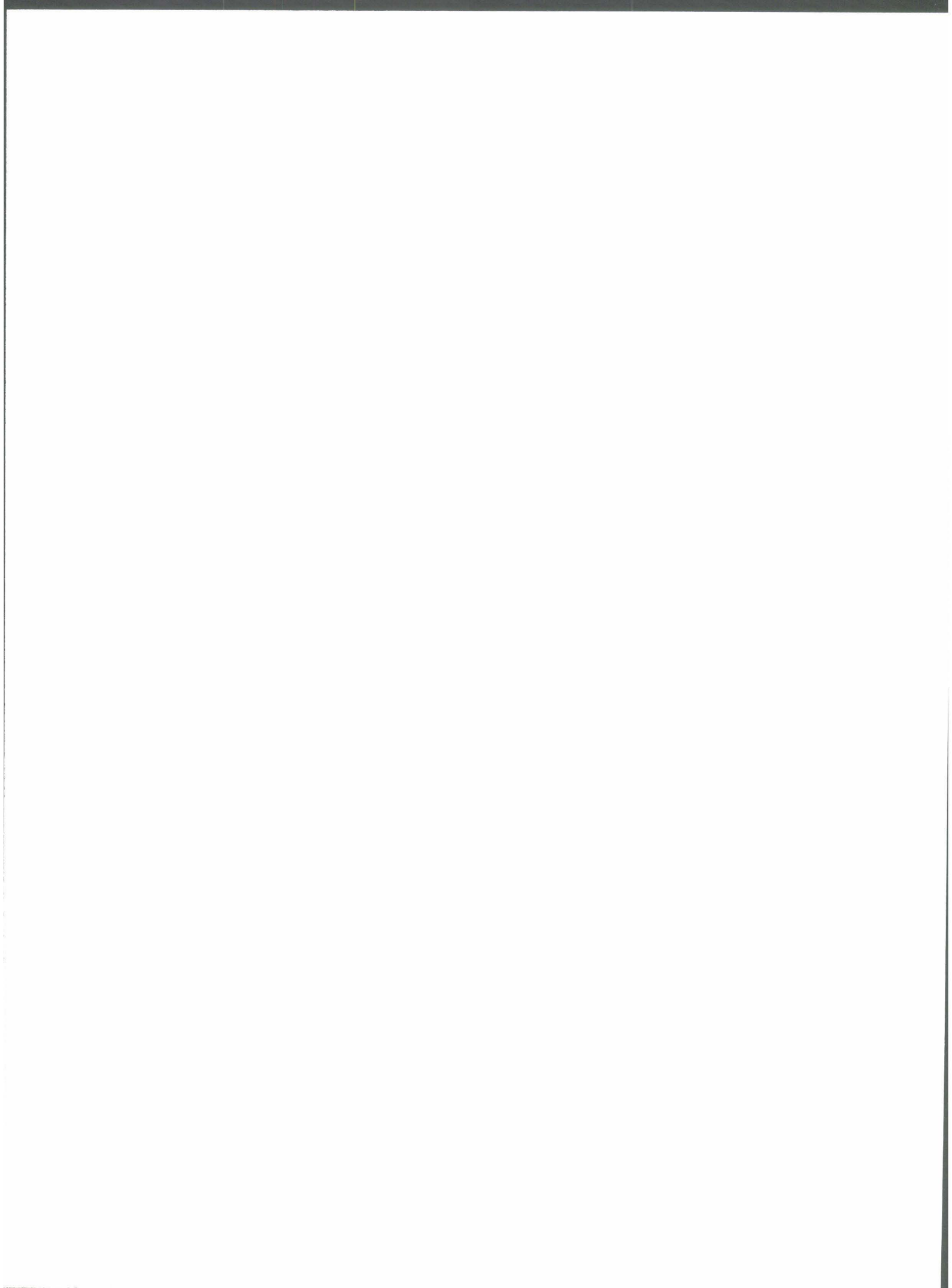
The death of distance as a determinant of the cost of communications will probably be the single most important economic force shaping society in the the first half of the next century. It will alter, in ways that are only dimly imaginable, decisions about where people live and work; concepts of national borders; patterns of international trade. Its effects will be as pervasive as those of the discovery of electricity. [*The Economist,* September 30 1995, p39]

Using ISSA, virtually any activity which relies on a screen or a telephone, may be carried out from anywhere in the world. As *The Economist* observes, 'Services as diverse as designing an engine, monitoring a security camera, selling insurance or running a secretarial paging service will become as easily exportable as car parts or refrigerators'. Examples of this phenomenon are already evident. Many companies have taken advantage of low labour costs to relocate activities to developing countries. India, for example, has a flourishing software industry, attracting design, administrative and clerical work from companies around the world.

Accompanying changes in the organisation of economic activity are other developments with important territorial implications. For example, trends in population movement are closely linked to the availability of jobs and services. If jobs can be located virtually anywhere, so too can people. And many of the services they require, (eg shopping, banking) may be delivered to their 'decentralised' homes by ISSA. For planners in Western countries, this raises the possibility that a century of urban concentration may be reversed, with economic activity and populations dispersing into suburban and rural areas. Furthermore, if information products and services can be delivered on electronic rather than physical highways, does this mean that problems of traffic congestion and pollution may be alleviated by ISSA?
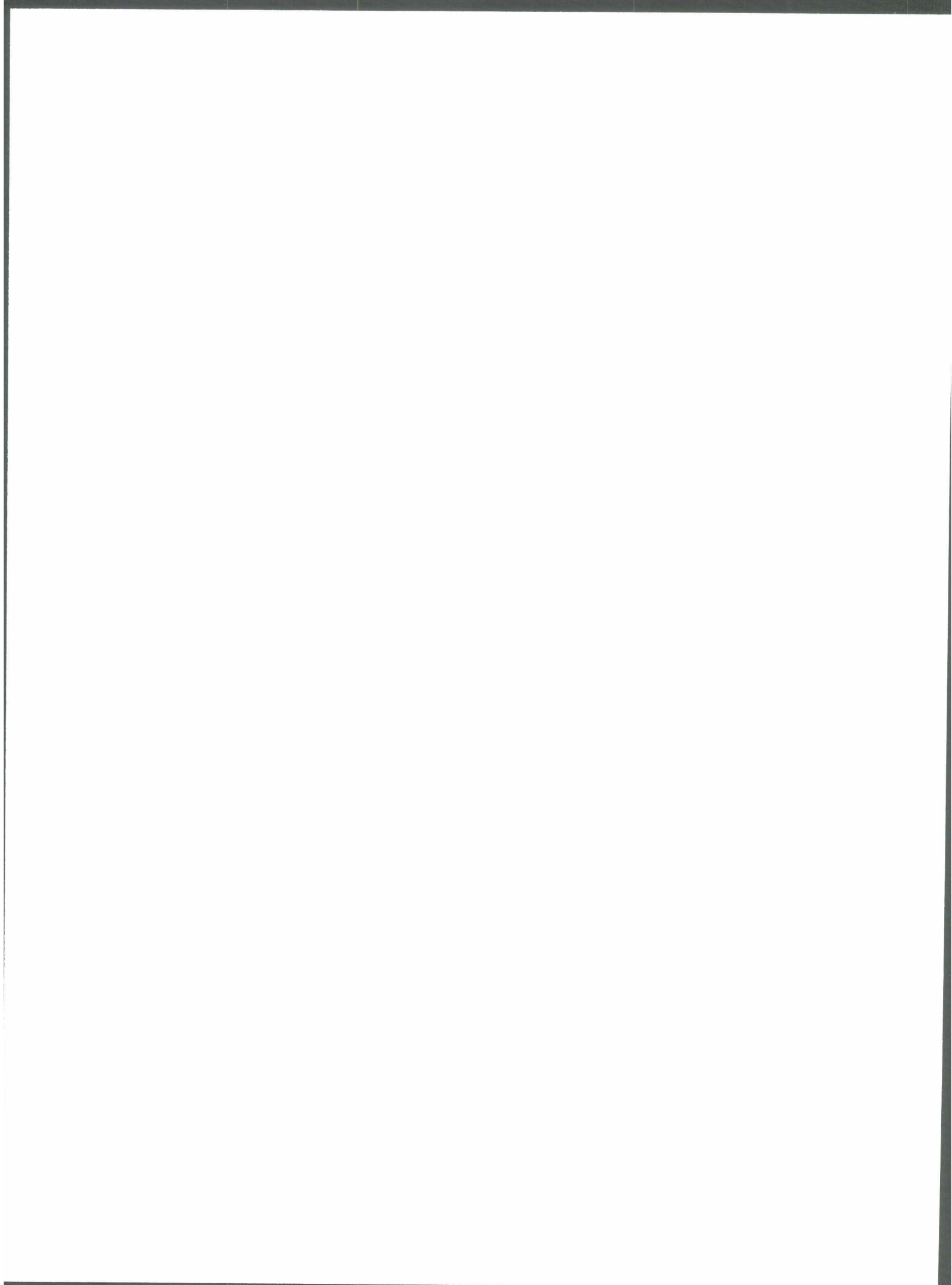
3.4 Perspectives on the impact of ISSA

It is important that territorial planners find answers to this type of question. But attempts to predict the precise effects of new technology are fraught with difficulty. and strategies for planning with ISSA may have unforeseen side-effects. Policies to reduce environmental pollution by encouraging teleworking, for example, might increase the consumption of energy in the home as the need for heating and lighting is increased. The following paragraphs considers some broad theoretical approaches to the relationship between ISSA and society, and discuss some recent attempts to apply econometric modelling techniques to analyse the potential impact of ISSA.

Theoretical perspectives on the impact of ISSA

Drawing upon analysis developed by Graham and Marvin (1996) it is possible to divide theoretical perspectives on the impact of new technology into three basic groups which are shown in Figure 2.

Figure 2: Theoretical approaches to the relationship between technology and society

Futurists/utopianists:	Political economy approach:	Social construction of technology approach:
• technological determinist • technology as panacea for social and economic problems	• 'socio-economic determinist' • technology reinforces socio-eonomic structures of capitalism, exacerbates inequality	• non-deterministic • technology 'constructed' via interaction between social groups

• technology is not 'uncaused'
• application of ISSA can be directed
• impact can be positive as well as negative
• planners have a role in managing the relationship between ISSA and society

In the first group are those theorists who see new technology as a 'quick fix' solution to many of society's problems. These are usually termed the 'futurists' or 'utopianists'. Examples include Toffler (Toffler, 1981) and Microsoft chairman Bill Gates (Gates, 1996). Futurists tend to adopt a deterministic view on new technology, in that they assume that technology impacts upon society in a linear and relatively uncomplicated fashion with direct and usually positive effects. The futurist view has been criticised for its neglect of the role of social processes in determining access to new technologies and its assumption that infrastructure, equipment and services will be universally available.

Critics of the futurist perspective include Andy Gillespie, who adopts a 'political economy' approach to the analysis of technology-society relations. This second perspective considers that the interaction between technology and society can only be properly understood in the context of wider political and economic relations. Gillespie highlights the ways in which the development of advanced telecommunications networks tends to serve the needs of dominant groups such as transnational corporations. According to the political-economy perspective, networks are first and foremost instruments for control of organisations, labour forces, markets and suppliers (Gillespie 1991). Access to the networks is jealously guarded, and thus they indirectly exacerbate social and economic polarisation.

Finally, there is a theoretical middle ground, which tends to avoid such social or technological 'deterministic' viewpoints. Examples of this perspective include the 'social
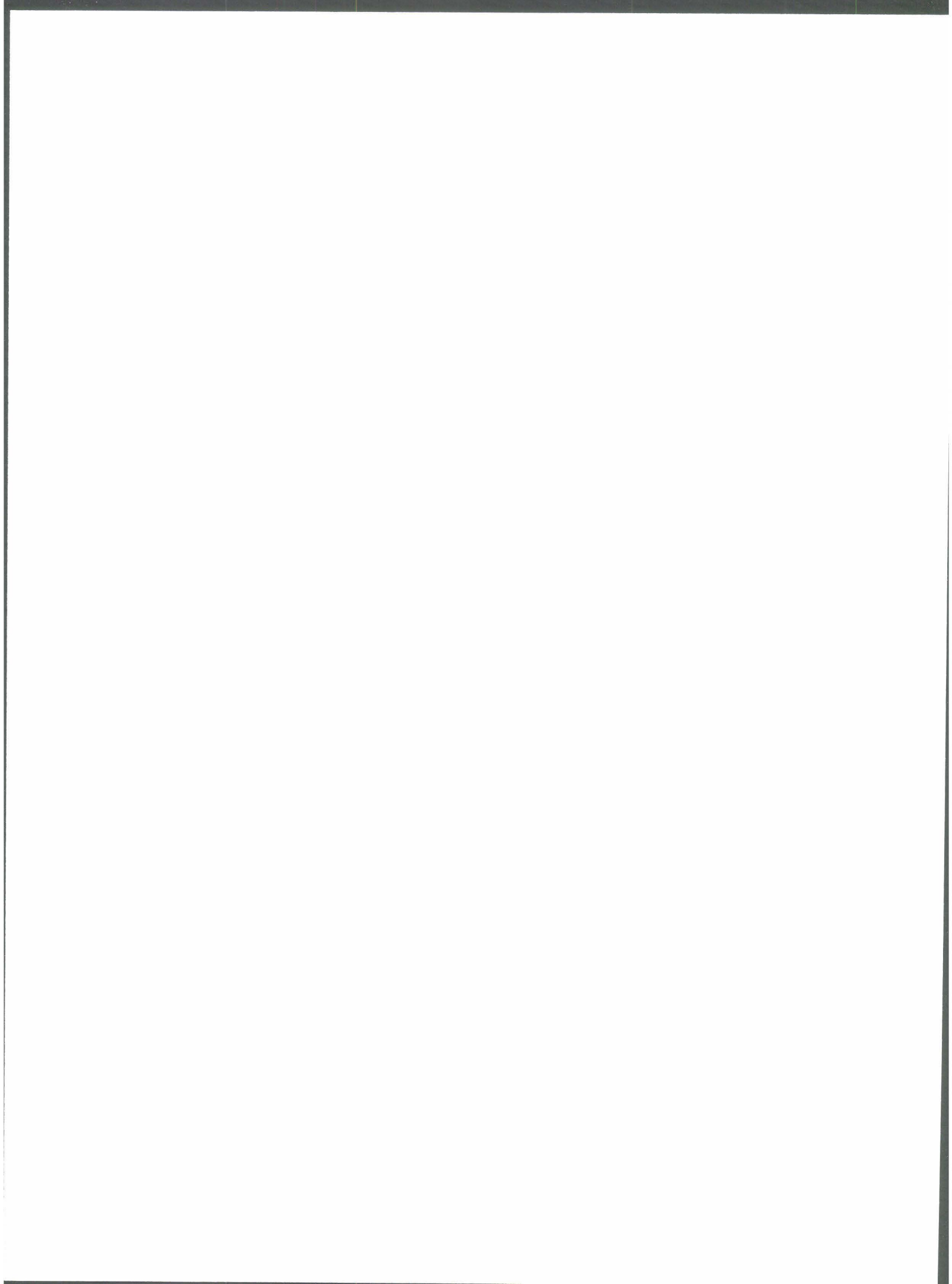
construction of technology' approach which emphasises the importance of social processes in determining the impact of new technologies (eg Law and Bijker 1992).

It is outside the scope of this report to review these theoretical perspectives in great detail; they are discussed at length elsewhere (see Graham and Marvin, 1996). But from this overview it is possible to observe that

- the effects of the application of technology can be good as well as bad, and

- technology is not 'uncaused'; it is shaped by political, social and economic processes. The development of the 'information society' is as much a social phenomenon as a technological one.

Modelling the potential impact of ISSA

A number of European research projects have attempted to predict the economic effects of investment in ISSA and telecommunications, using econometric modelling techniques.

Research in this area has focused in particular upon the likely economic impact of ISSA on rural areas. An example is the schema developed as part of the EC's ORA TYPORA project (Millard et al, 1992). This research produced a typology of rural areas, analysing regions' amenability to telecommunications investment by reference to their physical accessibility, settlement patterns, population density, socio-economic profile and levels of telecommunications network development.

A similar exercise was undertaken as part of the REVOLVE project of the EC RACE Programme (O Siochru, 1991 quoted in Gillespie et al, 1994). The project developed a series of indicators to assess the likely economic impact of broadband networks upon rural areas. It concluded that those regions most likely to benefit have high population density and easy terrain, a high proportion of information intensive industries and large companies, high GDP, an effective marketing network to inform service users, and good educational and training facilities.

More recently a study by the Centre for Urban and Regional Development Studies (CURDS) at Newcastle University in the UK analysed analysed a number of regions in the Scottish Highlands and Islands (Gillespie et al, 1994). The research considered a total of 47 factors likely to influence the benefits which might be gained from telecommunications investment. These included entrepreneurial potential, qualification levels, the net balance of migration within areas, lifestyle indicators (such as average monthly pay) and various geographical attributes such as accessibility to urban functions.

The projects' results were often inconclusive and some experienced difficulties due to a lack of necessary data (particularly telecommunications usage figures). However, they represent a valuable guide to the variables which are likely to be most important in
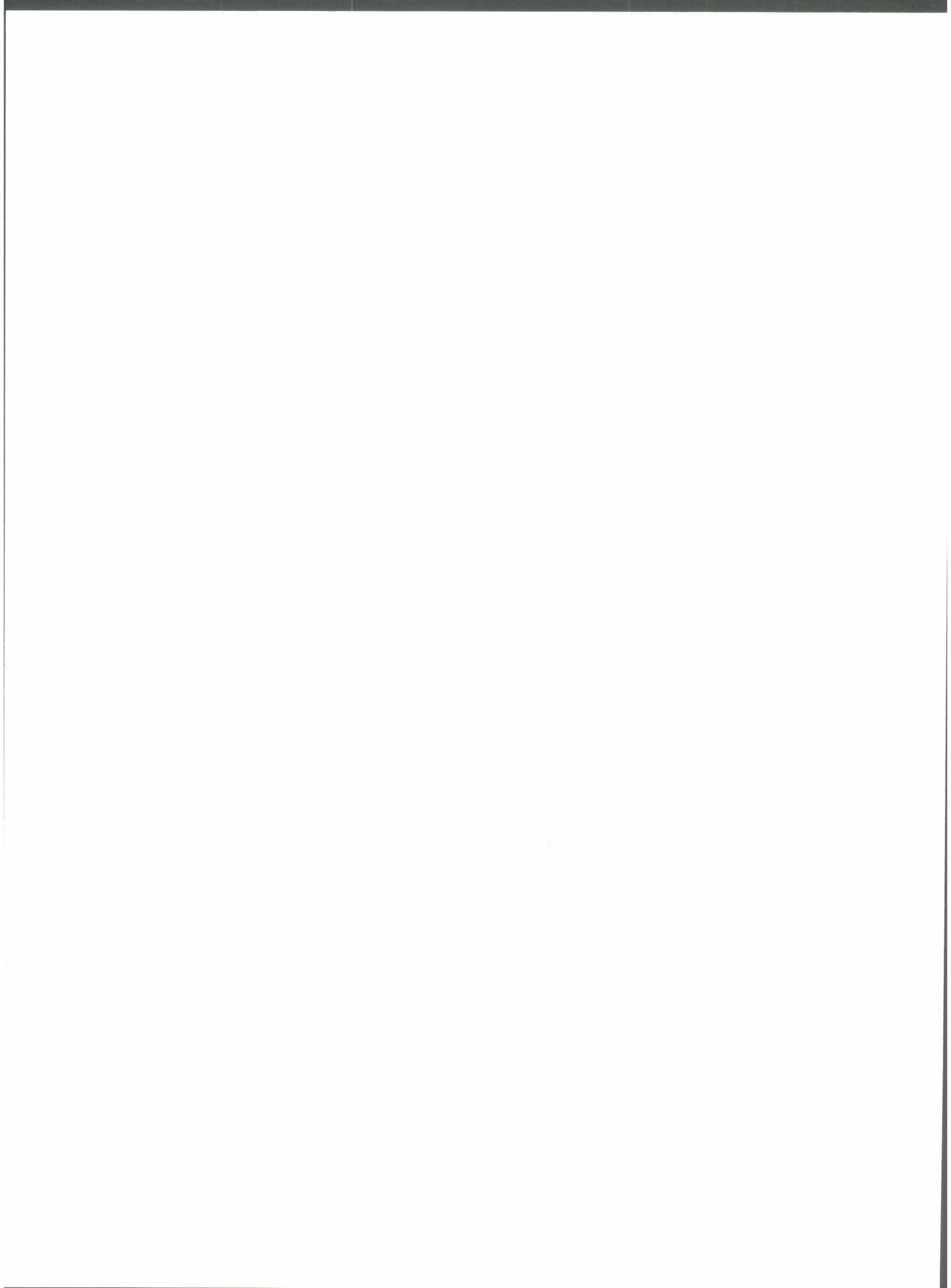
determining the benefits to be derived from investment in ISSA. The CURDS study, for example, identified three factors as particularly important in Scotland's rural areas: levels of 'rural entrepreneurship' (indicated by new firm formation, for example); the density of 'information professionals'; and the degree of inter-connectivity between local areas and the major metropolitan centres ('metropolitan connectivity').

In principle, analysis of regions using these criteria should allow territorial planners and telecommunications operators to predict with greater accuracy the impact of ISSA, at least in the area of economic development. For private telecommunications operators, the benefits of this type of analysis are obvious: the research allows investment to be directed to those areas which will deliver the highest returns on investment. For territorial planners, however, the implications are a little more complicated. If investment in ISSA is restricted to the areas most likely to benefit, some areas (ie those which are already comparatively underdeveloped) will inevitably be deprived of investment. In this way inequalities in levels of economic development may be reinforced. This is an important issue for territorial planners and one to which we shall return in Chapter 5.

The remainder of this chapter considers the use of ISSA as a planning instrument, and explores some of the potential opportunities and threats of ISSA as they relate to the three core areas of territorial planning: the economy, population distribution and the environment.

## 3.5 The impact of ISSA on territorial planning

ISSA as a planning instrument

Information is an essential input to the territorial planning process. Territorial planners must collect, process and analyse vast quantities of socioeconomic data and land, property and infrastructural information. The impact of planning decisions must be modelled, and changes must be monitored as they take place. The ability to handle and communicate this information is, therefore, critical to the success of the territorial planning process.
Geographical information systems (GIS) are increasingly used by public planning authorities to combine and manipulate territorial data. Defined as 'a technology for digital processing, spatial analysis and the presentation of information which is associated with a position on earth' (EC, undated), GIS are highly flexible, providing:

- Easy access to large volumes of data.
- The ability to select information on the basis of themes or locations.
- The provision of data in forms derived from processing the spatial component.

Interest in GIS for territorial planning is considerable yet its use amongst European planning authorities is uneven. The European Comission has launched various initiatives to encourage greater use of GIS. It was instrumental in the creation of the European
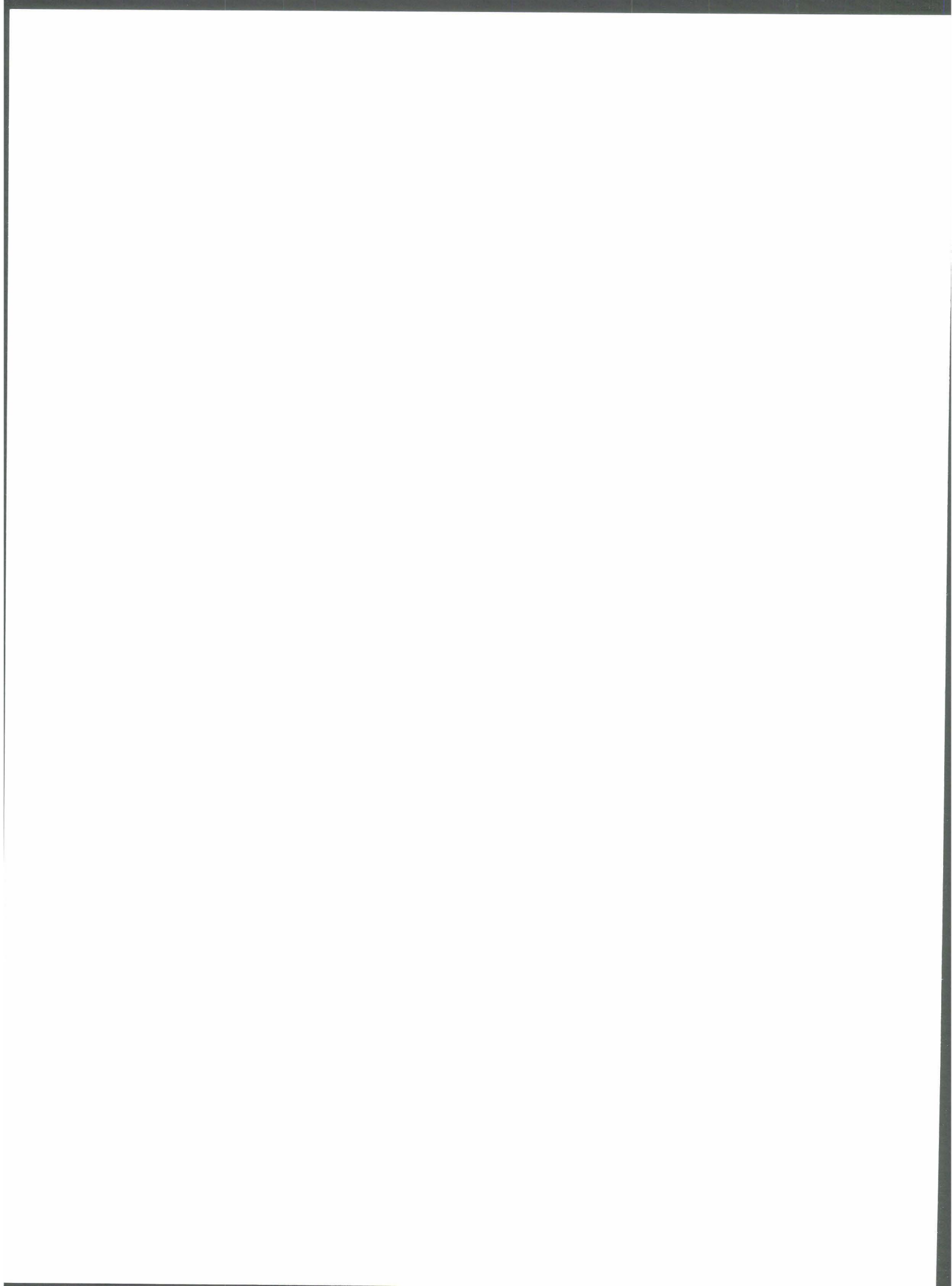
Umbrella Organisation for Geographic Information (EUROGI), for example, which aims to coordinate awareness-raising and development activities, and to promote common standards in the field of GIS (EUROGI can be accessed on the World Wide Web at www.frw.ruu.nl/eurogi/eurogi.html).

Issues facing those involved in the application of GIS as a territorial planning tool include:

- The need to design GIS in the context of the planning process they serve.
- Poor quality and lack of digitisation in the necessary datasets.
- The need to develop common standards and methods for planning with GIS.

The opportunities and threats of ISSA

The example of GIS shows how ISSA may facilitate more effective territorial planning practice. But it is important that planners are also aware of the ways in which ISSA may impact upon society at large. Figure 3 indicates some of the economic, demographic and environmental implications of the adoption of ISSA.

Figure 3: ISSA and territorial planning - opportunities and threats

	Opportunity	Threat
Economic development	• decentralisation and inward investment • indigenous development • increased competitiveness • telework	• greater external competition • recentralisation • delocalisation
Population planning	• enhance quality of life • more efficient delivery of public services • cohesion and integration of remote communities	• financial and technological barriers to uptake of ISSA • possibility of greater social polarisation • loss of services, lower quality of life
Environmental management	• physical flows substituted for electronic • less traffic congestion, pollution • more efficient use of resources	• enhancement - ISSA increase opportunities and reasons for travel • greater information flow generates greater flow of physical goods and traffic

Economic development with ISSA - opportunities

There are essentially two ways in which ISSA may contribute to economic development at the regional level. On the one hand, they may be instrumental in attracting inward investment to a region (exogenous development). On the other, they may facilitate indigenous development, helping local firms improve their competitiveness and expand their markets.
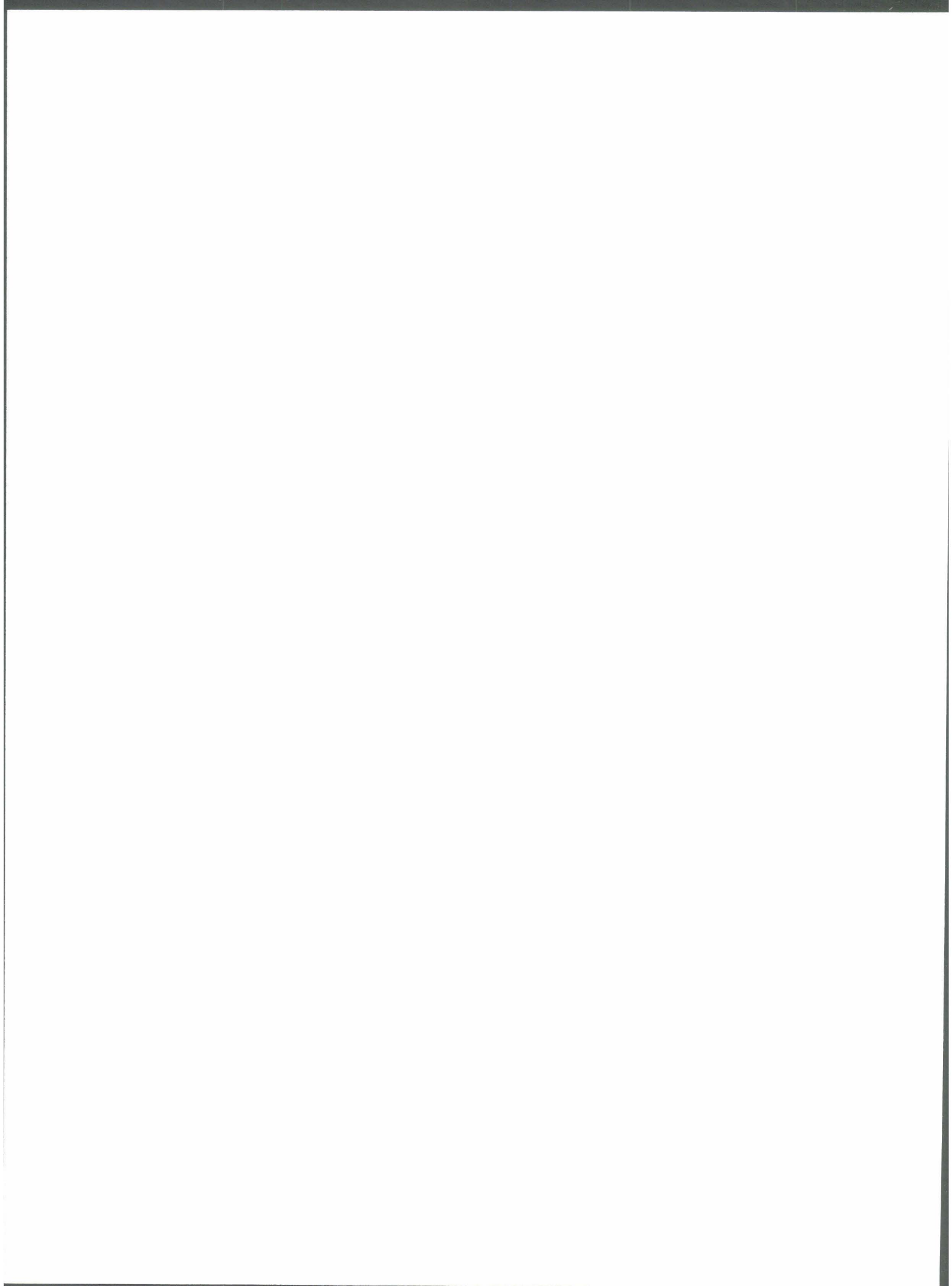
Inward investment

By removing the 'friction of distance', ISSA allow firms to integrate their activities over considerable distances. This has encouraged the tendency for organisations to 're-engineer' their business processes in search of greater efficiency. Examples include the outsourcing of non-core activities, such as computer support. For the firms involved, the benefits of re-engineering themselves in this way are numerous; a particular advantage is that production and service functions may be directed to those locations with the cheapest labour costs.

Many information intensive firms - such as those operating in the banking, insurance and airline industries - have taken advantage of the cost-savings associated with relocating 'back-office' activities such as help-desks and clerical operations (Richardson, 1994). For territorial planners in peripheral regions, these developments represent a major opportunity to attract service sector jobs. In Northern Ireland in 1991, for example, the construction of a fibre optic link with the UK mainland resulted in the attraction of 350 back office jobs (EC, 1994a) Some countries and regions have taken to actively promoting themselves as a back-office location or 'call centre'. An advanced telecommunications infrastructure is a vital prerequisite for such economic development and many regions have invested heavily. The creation of 'teleports' - high capacity cable and satellite communication links - is one approach adopted by some European cities with the aim of attracting international head offices and enhancing the global competitiveness of local financial industries (Hepworth, 1992a).

Indigenous development

In addition to attracting jobs to a region, ISSA also have the potential to improve the efficiency and effectiveness of local firms. There are two ways in which this might happen. First, ISSA may be used to enhance production processes. Developments such as Computer Aided Design/Computer Aided Manufacture enable manufacturing companies to integrate all stages of the production process, thereby greatly reducing the time and resources expended on development (Malecki, 1991). Secondly, ISSA may be employed by firms to penetrate other regions. Hepworth (1992a) describes companies' use of online services (eg marketing databases) as a means of expanding their geographical markets.

Telematic networks also offer the potential to enhance the competitiveness of a region's firms by encouraging technology transfer. In some cases planning agencies have attempted to encourage the development of high technology innovation centres, or 'technopoles'. Castells (1994) describes examples of national and regional technopole initiatives in the US, South East Asia and Europe.

Planning agencies have also been active in promoting technology transfer networks between higher education or research organisations and local companies. These networks may be regional, national or even international in orientation. The French Renater system is an example of a national initiative of this type. Renater (Academic Network for
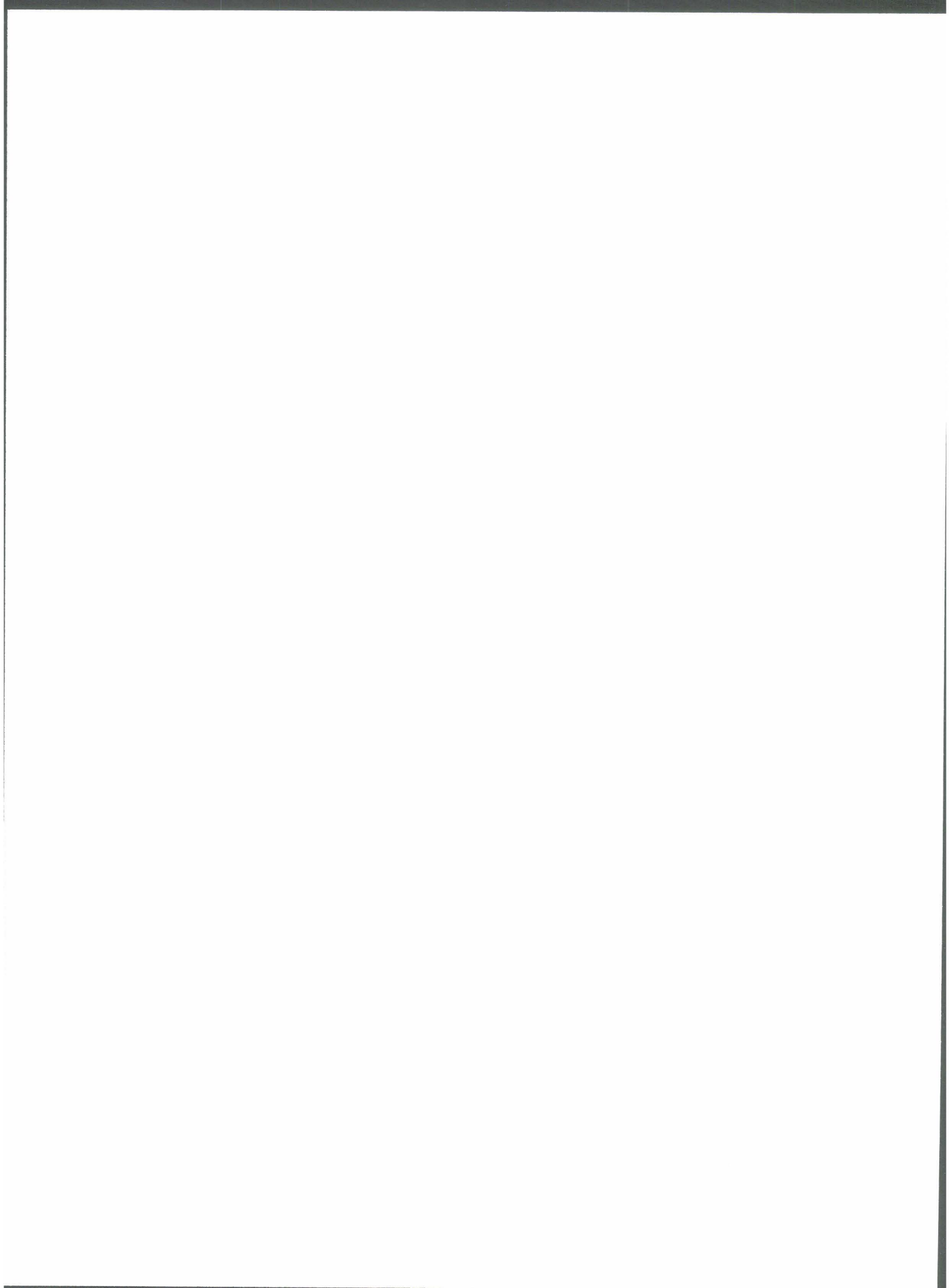
Universitites and Research Laboratories) links nearly 300 research centres, technopoles and major cities in France (Graham and Marvin, 1996).

A further form of economic activity which in some respects straddles the boundary between indigenous and exogenous development, is teleworking. Although most back-office operations tend to be carried out from dedicated premises linked to the organisations' headquarters by broadband networks. But some individuals and organisations have gone one step further by moving activity from the workplace into the home. This practice is particularly appealing for territorial planners within peripheral or remote regions since it has the potential to reduce depopulation by bringing jobs to individuals in very remote communities.

Teleworking has benefits for both employer (lower overheads, increased flexibility) and employee (reduced commuting, opportunities for carers and the disabled). The remote Highlands and Islands of Scotland were host to an early UK experiment in teleworking in 1991 in which British Telecommunications provided a small number of directory enquiry staff with a terminal and videophone link in their homes (British Telecommunications 1994). The French regional development agency DATAR has also been a particularly enthusiastic advocate of teleworking, funding some 225 projects throughout France as part of a national experiment (DATAR, 1995). Other forms of teleworking enable executives and operational staff - the so-called 'telexecutives' - to work from home. The results are similar although the impact has not been as great.

Economic development - threats

Just as ISSA offer economic potential to less favoured regions, they also present considerable threats. One possibility is that they will encourage the recentralisation of economic activity. Another concerns the increase in competition which regions may experience as external competitors use networks to penetrate new markets.

First, many commentators have observed the tendency for telematic networks to enhance the competitiveness of core regions at the expense of peripheral regions, contributing to a 'recentralisation' of certain activities. Large companies do not only use networks to relocate routine activities to low labour cost regions.Telematic networks are also used to control activities from a central location, usually a core region. In this way, the core regions' roles as 'command and control' centres is reinforced, with peripheral regions denied the higher order employment associated with such activities. This trend for control activity to be concentrated in core regions may accelerate the more ISSA are used to decentralise other activities; as Moss (1987) has observed, '.. the greater the extent of geographic decentralisation, the greater the need for centralisation of key control activities'.

In addition Graham and Marvin observe that the increased use of may also contribute to the recentralisation of certain manufacturing activities:
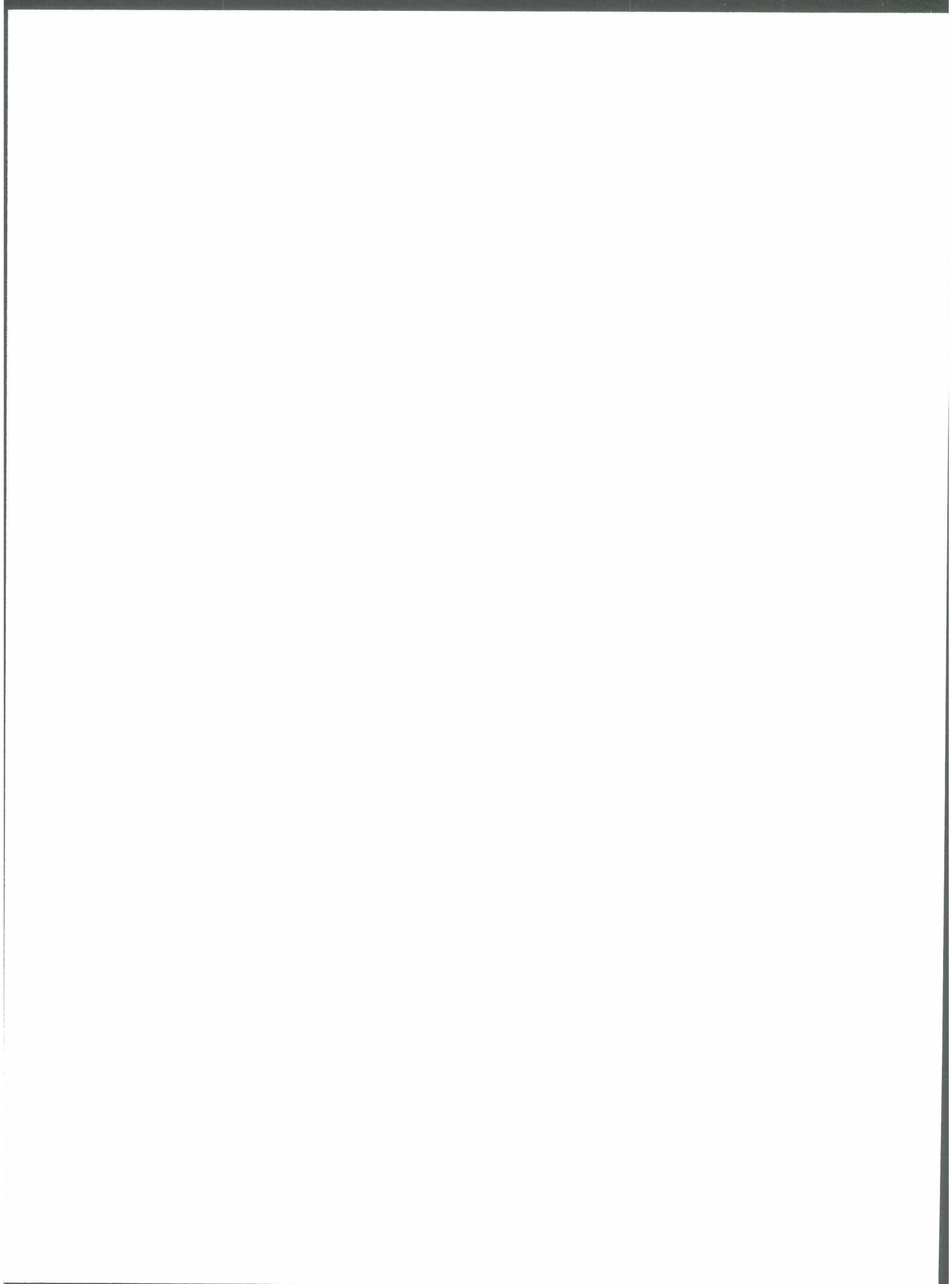
Evidence suggests that, because the infrastructure demands of JIT [Just In Time manufacturing] and flexible manufacturing are great, the transport and telecommunications advantages of cities means that they are reasserting themselves as dominant centres of innovation. [Graham and Marvin, 1996]

A variation on the recentralisation theme is that of 'delocalisation'. ISSA allow companies to deliver information intensive services, such as banking, remotely using the telephone or personal computer to connect to the customer. By launching such services, banks are able to reduce overheads by closing lesser-used local branches. Similar trends have been observed within local and central government, with the electronic delivery of information-based services (OECD, 1995). In both cases, the remote delivery of services may lead to job losses at the local level.

The tendency to recentralise or delocalise certain economic activity can have further knock-on effects in the area of telecommunications infrastructure provision. Research suggests that it is the larger cities which dominate infrastructure investment. Telecommunications companies (particularly those operating in deregulated markets) tend to choose the most profitable regions in which to invest, concentrating on those areas where the returns will be highest (Gillespie and Robins, 1991). The competition thus engendered can lower tariffs, further consolidating the dominance of the core regions, while peripheral regions become more disadvantaged. Unfortunately the ability of regional agencies to influence telecommunications provision within their regions is limited by the increasing deregulation of telecommunications markets. Regional agencies are rarely in a position to influence telecommunications regulation in their favour:

National [telecommunications] policies generally use an area-based approach to implement regulation, for example licences for new services can be for a particular region or require a service to be provided over a defined territory by a given date. However, with notable exceptions these regulatory requirements are not operated through local or regional authorities.. In general, local authorities lack the powers, resources and capacities to engage in the fast moving world of the global telecommunications industry. [OECD, 1995]

ISSA can also have adverse effects on regional economies by exposing them to greater competition. This can work in one of two ways. First, regions may find that they are experiencing greater competition in attracting service jobs. The very factors which facilitate the location of jobs in one particular region may also facilitate the relocation of those jobs to another region. Indeed, it has been observed that '.. tele-mediated job gains in one area are often associated with larger job losses elsewhere' (OECD 1995). Secondly, telematics networks may also work to the detriment of companies in peripheral regions by opening them up to greater competition from more efficient external competitors (Gillespie et al, 1994).
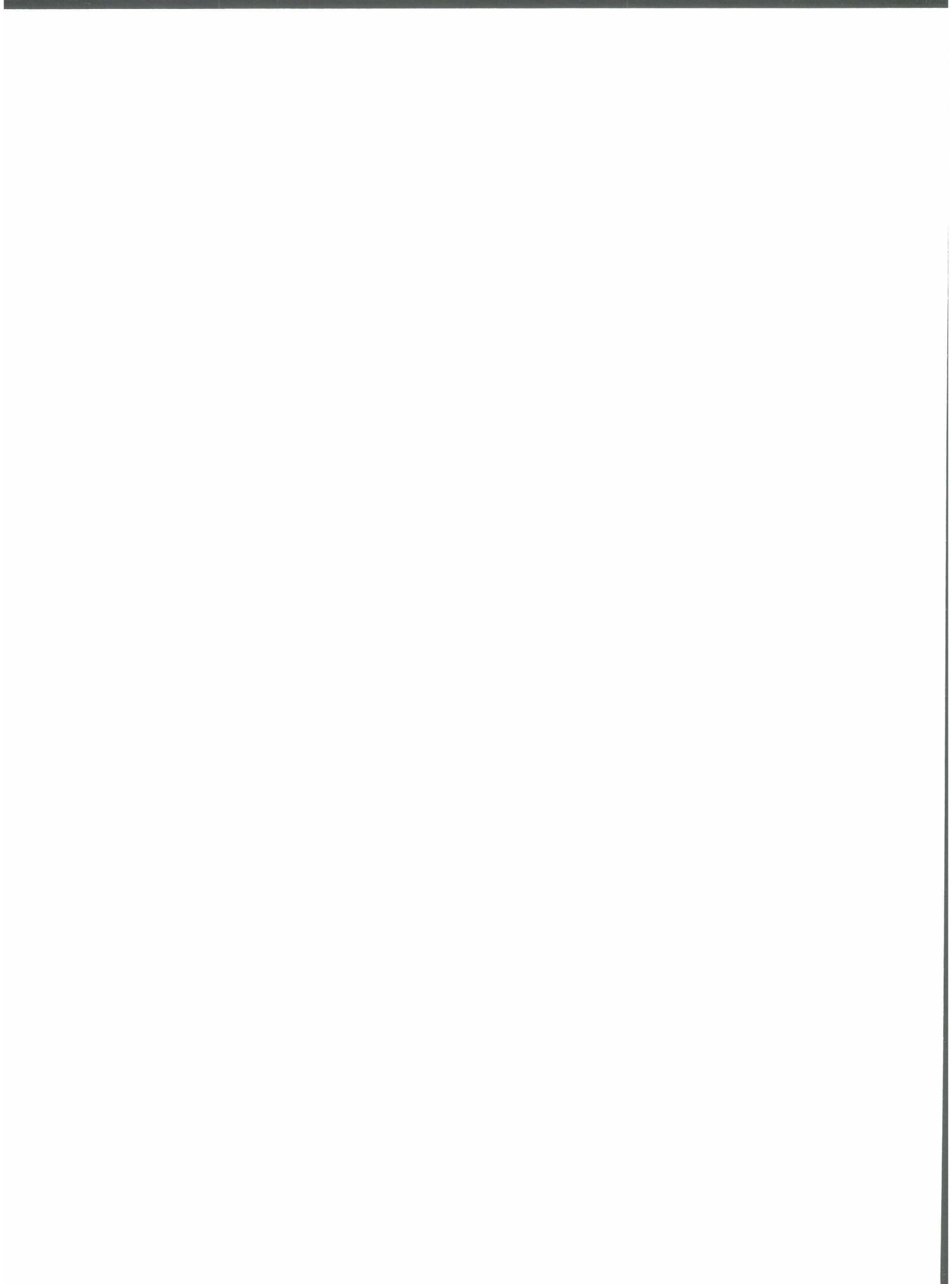
Population distribution and public services - opportunities

The discussion so far has indicated that telematic services and applications have considerable potential to influence the regional distribution of economic activity and employment. In this way, they may also influence population flows, as people move in search of jobs.

ISSA also have considerable potential to influence population movements by enhancing the quality of life in a particular region. Many of the problems associated with rural depopulation, or the depopulation of deprived inner cities, are related to their attractiveness to residents in terms of amenities. ISSA may be used to bring services to residents, meaning that they may be used as an instrument to influence population movement:

> National and regional planning has the task of ensuring that people and activities are spread around the country as evenly and as fairly as possible. This task is often perceived as an exhortation to give priority to locating production activities outside the metropolitan regions or to enlarge the market for existing activities. One forgets that it is also a matter of making areas sufficiently attractive for a threefold purpose: to preserve the resident population, to attract new residents and to encourage new employees, including highly qualified personnel, to accept jobs in areas in danger of becoming depopulated... it is imperative to make extreme efforts to provide an attractive environment and satisfactory living conditions. [DATAR, 1995]

There are two ways in which ISSA may enhance the quality of life in a particular region. First, they can be used to improve the delivery of services. The remote delivery of services such as telebanking, social services information and distance learning, has particular appeal for the residents of geographically remote regions or those who have difficulty in accessing services due to physical disability.

Public authorities' role in encouraging electronic service delivery has become increasingly prominent in recent years. Many regional authorities have launched projects that apply ISSA to their specific needs. The European Commission has given priority to the development of pilot telematic applications by regional authorities, arguing that

> It is necessary to involve local, metropolitan and regional administrations [in the development of telematic applications for public services]. Cities can have an extremely important role in generating early demand and also in promoting an awareness among their citizens of the advantages of new services. [EC, 1994b]

The TURA (Telematics for Urban and Rural Areas) programme is an example of a pan-European project supported by the EC. This encouraged a wide range of research and development activities in some 30 different regions. Pilot applications given a high priority by the EC include distance learning, healthcare networks, trans-European public
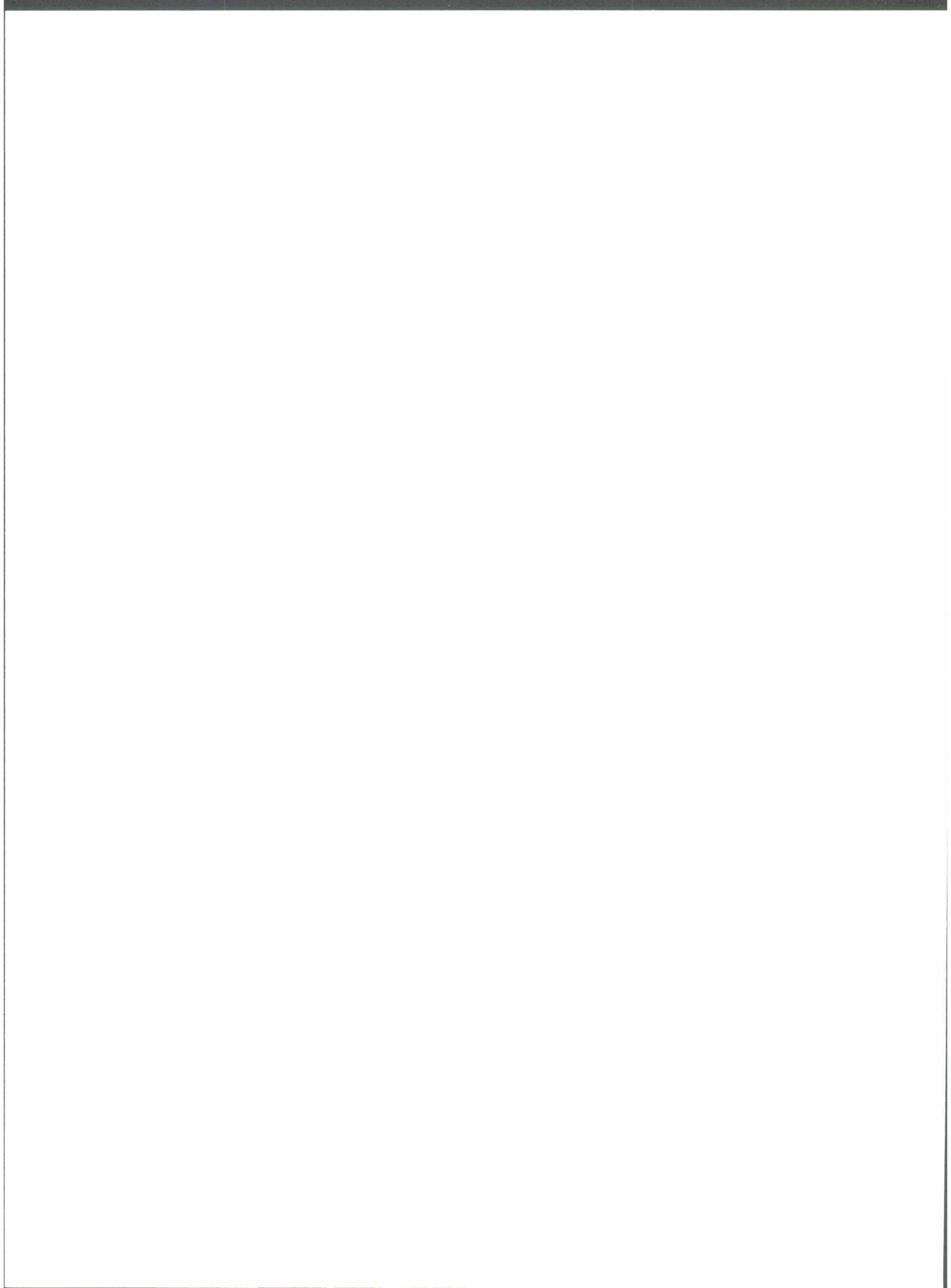
administration networks and 'city information highways' providing online information on a local, regional and national basis. Examples of projects supported by the EC may be found in many European regions (see for example the 'Telecities' World Wide Web site at http://www.edc.eu.int/telecities).

A second way in which ISSA may be used to enhance the attractiveness of a region is by improving the management of public service provision. Trends in telematics-based business process re-engineering are not exclusive to the private sector. Many regional authorities have used ISSA to adopt a more flexible approach to service delivery.

In some regions, this re-engineering has taken place as part of a wider trend towards competitive tendering and contracting out of services to the private sector, using ISSA to integrate and coordinate activity (Dutton et al, 1994). The European Commission has been an enthusiastic advocate of this trend

> .. certain services for which the State has been responsible hitherto, and which are subject to increasingly tight budget restrictions, could be transferred permanently to the market. There are many examples of such new services related to communications and social relations: education and training, culture, security etc. [EC, 1994c]

Population distribution and public services - threats

This vision of the impact of new technologies as an unqualified force for good is distinctly utopian in its orientation. Critics of this analysis argue that there are numerous ways in which in which ISSA may in fact reduce the quality of life and attractiveness of a region, by reducing the level of services or denying certain social groups access to them.

One striking weakness of the utopian approach in this area is its neglect of the technological barriers which stand between citizens and tele-services. A recent study found that seven per cent of UK households (equivalent to 1.58 million homes) are without a telephone (Callender, 1995). Telephone ownership tends to vary markedly with socioeconomic status and geographical location. The numbers of individuals without access to a personal computer, or the skills necessary to use one, are greater still.

The likelihood of citizens being able to access electronic services from their homes is limited by their ability to pay for and use the necessary technology. Paradoxically, ISSA may exacerbate such inequalities by promoting the tendency for information to become a commodity itself. As Graham and Marvin observe:

> Telematics and computing allow information to be controlled, processed and managed with unprecedented sophistication and precision. This means that highly individualistic market solutions become possible where previously services often had to be offered at generalised charges or as free public services... this has led to

a burgeoning economy in tradable information where firms process raw data and resell it in marketplaces for profit. [Graham and Marvin, 1996]

For public service providers, the concept of information as a commodity may offer attractive ways to supplement dwindling revenues. But such practices threaten to exclude those unable to pay for the services.

Each of these barriers - technological and financial - may serve to isolate certain social groups by denying them access to public services. This effect may be compounded by the substitution of a physical presence with a telemediated service. Within the financial sector, some banks have taken advantage of the cost savings associated with telebanking operations to close branches in remote or unprofitable areas - the so-called social dumping of marginal consumers (Christopherson, 1992). In a similar fashion, it is feasible for public authorities to close local offices, further isolating those who are unable to access their services electronically.

From a negative perspective, these developments point to the creation of a two-tier society. Certain social groups, through socioeconomic status and physical location, may able to lead rewarding, information intensive lives, while others are marginalised in information ghettos. For territorial planners, such developments suggest that the utilisation of ISSA for service delivery may accelerate the depopulation of remote regions and further reduce the quality of life in deprived inner city areas.

Environmental planning - opportunities

A third area of territorial planning in which telematic services and applications appear to have enormous potential is the management of the environment. Environmental issues have come to the fore in territorial planning in recent years as Western countries deal with the legacy of industrial development including problems such as pollution and urban congestion.

Information technology in general tends to have a positive environmental image. It is seen as environmentally benign, with few detrimental side-effects associated with its implementation. Indeed, it is suggested that information technology holds the key to many environmental problems. At the heart of such claims lies the belief that the electronic information flows of new technologies can substitute for flows of traffic and physical goods (Lee, 1991). This substitution thesis is neatly encapsulated by Nicholas Negroponte, who has observed that the information age is characterised by a substitution of atoms (ie physical goods) by bits (binary digits, the basic elements of computer code). It is easy to infer from this observation that physical flows, such as commuter traffic, may one day be replaced by the electronic flows of ISSA, with home-based workers using the computer, phone and modem instead of the company car. Applications of particular interest to territorial planners in this area include teleworking and transport telematics.
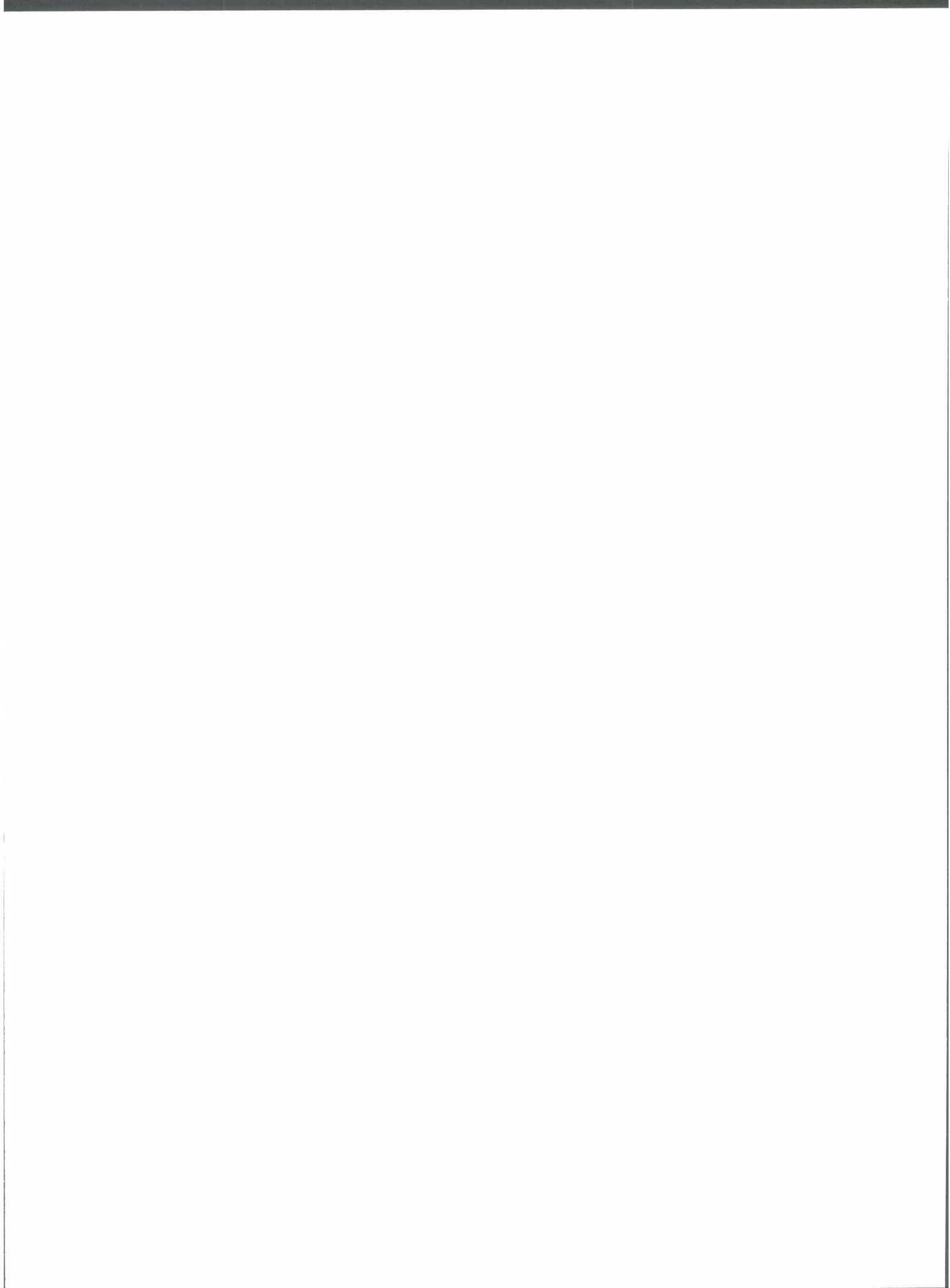
The environmental appeal of teleworking lies in its impact upon commuting. By using a computer attached to a modem or dedicated network, home-based workers can link to employers hundreds of miles away, reducing the need for travel. According to EC figures, approximately 500,000 people telework in the UK, and 215,000 in France (Information Society Project Office figures). The potential environmental benefits of teleworking and other teleservices such as teleshopping and telebanking are numerous: fewer trips are needed, reducing pollution and congestion on the roads, saving on transport costs and reducing energy consumption. A study of teleworking in the US (reported in Graham and Marvin, 1996) concluded that the use of teleservices and teleworking instead of approximately 10-20 per cent of transportation could eliminate six million daily commuter trips, three billion shopping trips per year and 13 billion business trips per year. The potential of telework is such that it was given priority status by the 'Bangeman Report' on the information society (EC 1994b). The report set a target of ten million teleworking jobs in Europe to be created by the year 2000.

In addition to reducing demand for road travel, ISSA can facilitate more effective management of transport networks. There are essentially two elements of transport telematic systems: the intelligent infrastructure (sensors and telematic networks on roads which interface with vehicles and control centres) and on-board telematic equipment which interface between the driver and the infrastructure. The perceived benefits of transport telematics are numerous. It is hoped that they will improve the efficiency of transport networks, enhance traffic safety and help to protect the environment. This latter claim is based upon the notion that demand for road space can be more effectively managed using transport telematics such as electronic tolling systems, reducing peak-time congestion and the consequent pollution. It is also envisaged that the intelligent infrastructure may be used to monitor and provide feedback on pollution levels (EC 1994d).

In addition to promoting more effective use of the road network by drivers themselves, it has also been suggested that ISSA may be used to regulate and promote public transport systems more effectively (Hepworth and Ducatel, 1992). Cable and Internet delivery systems may be used to deliver public transport information to citizens, for example, encouraging commuters back on to the bus, tram or metro.

Environmental planning - threats

Many European regional authorities are actively developing transport telematic strategies and the European Union itself continues to fund research and development in this area via programmes such as DRIVE and TABASCO. Apart from the environmental and infrastructural benefits to be gained by implementing transport telematics, this is a high-growth industry with considerable rewards awaiting those who develop mass market applications.

However, research in recent years has suggested that the environmental impacts of ISSA may not be as beneficial as their advocates would have us believe. Indeed, critics argue
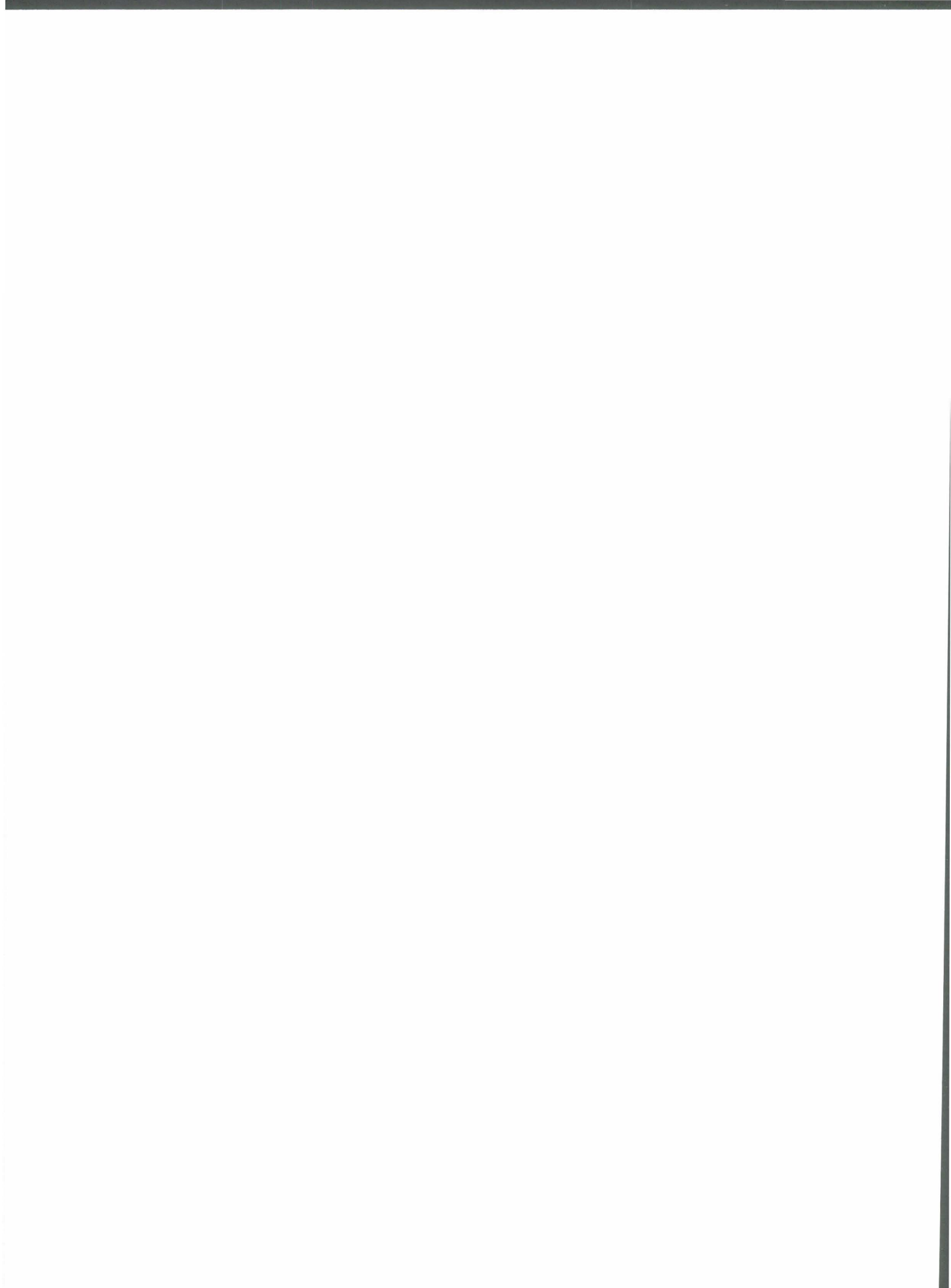
that they may in fact induce greater physical flows. For example, it has been suggested that by increasing the capacity of road networks, transport telematics also increase the attractiveness of road travel thus encouraging traffic back on to the roads (Hepworth and Ducatel, 1992). An example of this phenomenon is on-board route finders which allow car drivers to avoid congestion by finding alternative routes.

Teleworking is seen as a solution to congestion and overconcentration in cities. But the environmental benefits gained by dispersing work activity to rural or remote areas may be diminished by the longer trips which residents of these remote areas must make. Effectively, dispersed land-use patterns may increase fuel consumption (Breheny, 1992). Deconcentration of economic activity may also increase demand for 'greenfield' sites and contribute to urban sprawl.

A further environmental disadvantage of teleworking from the home is that the need for energy for heating and lighting is increased. Furthermore, although it saves on commuting time, teleworking may create the potential for other leisure or recreational trips around the home, again increasing fuel consumption.

The environmental impact of ISSA is far from straightforward. There are obvious benefits to be gained by applying ISSA to transport-related problems. But as the literature on the subject suggests, such solutions may in fact generate further environmental problems.

3.6 Conclusions

New information and communication technologies are contributing to profound changes in the environment within which territorial planners operate. In particular, the space-shrinking properties of ISSA are forcing planners to review their conceptions of physical space and the ways in which ISSA can influence the distribution of people and activity within it.

Much of the literature on the subject of information and communication technologies tends to take a utopian stance, describing a future in which technology will generate jobs and prosperity and enhance social cohesion. It is true that there are many ways in which ISSA may contribute to the aims of territorial planning. However, as this review has shown, the potential benefits are invariably accompanied by potential threats. ISSA can have a polarising as well as a cohesive effect; they can reduce the quality of life within a region as well as enhance it.

The task facing territorial planners as they seek to apply ISSA and to manage their effects, is a complex one. The remainder of this report considers ways in which planners have worked with information society service and applications in some of Europe's lesser-favoured regions. It highlights the issues which arise in this area of planning and discusses   the   implications   for   European   Union   policy.
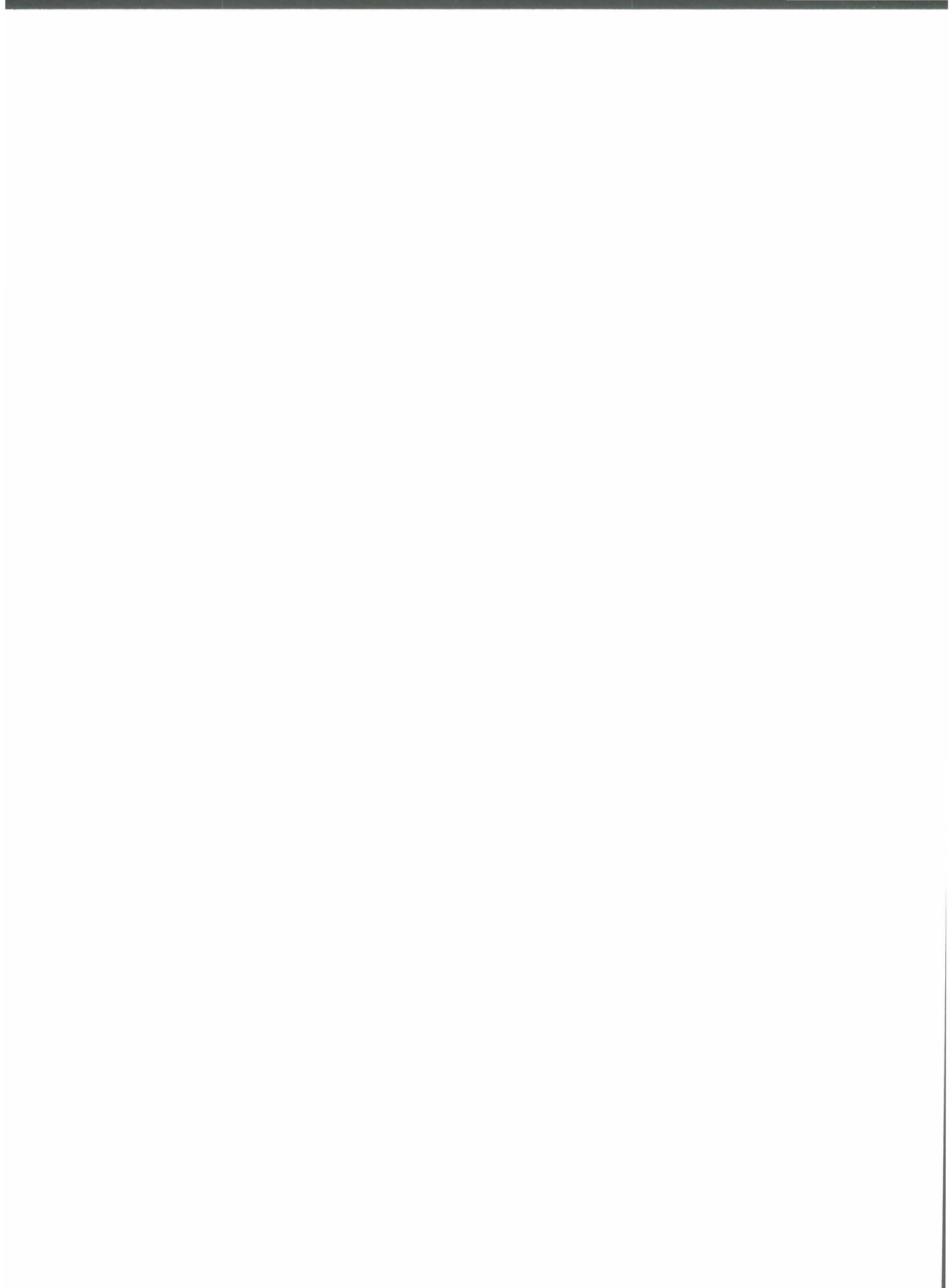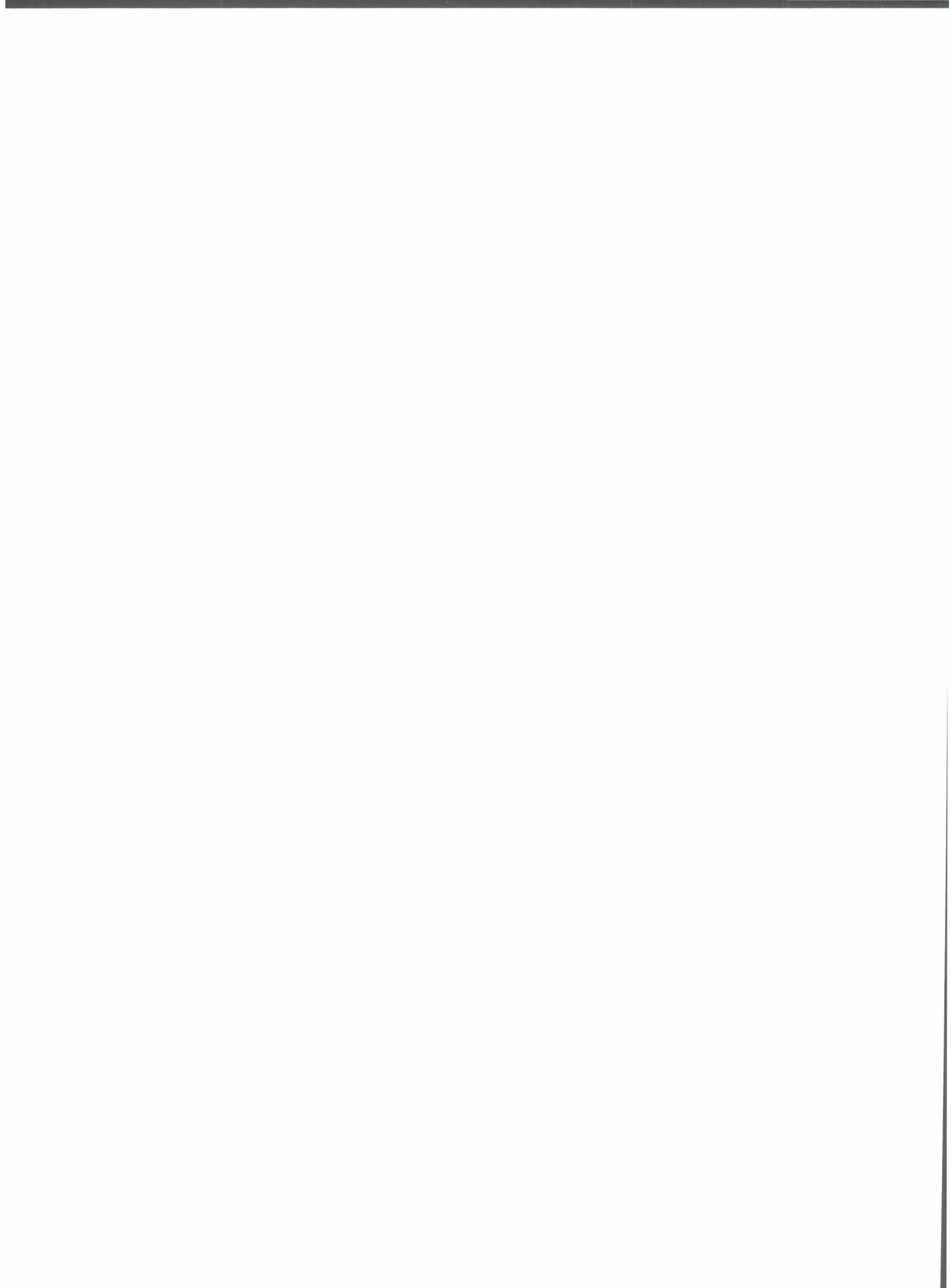
4. Overview of case studies

The case studies were identified at the proposal stage of the work. It was our intention that the case studies should illustrate how ISSA is actually being used in the territorial planning process. This means that each case study has to consider the way in which territorial planning is organised; the ways in which priorities are assigned; and the ways in which decisions are made and implemented, as well as considering specific examples of ISSA.

We therefore decided to concentrate on a small number of detailed cases, drawn from different types of region. We have not tried to construct anything which looks like a representative sample. Rather, we have sought regions which we knew would provide interesting examples of different types of planning, and which were different from each other in terms of economic and social profile and also level of general use of ISSA.
We have carried out two case studies in each of three countries.

Scotland	Glasgow
	Highlands & Islands
Greece	Central Macedonia
	Eastern Macedonia, Thrace
Portugal	Centro
	National GIS (horizontal case study).

It was essential for us that the case studies be carried out according to a common format. The format is presented in Annex D. The common approach to the cases means that we had consistency in the research, and were able also generalise to a greater extent. Since the case studies feed into the analysis of key issues, it was important that they were more than individual examples of specific instances.

Each case study involved background research and a number of face-to-face interviews. Our initial research phase confirmed the key factors which were likely to be of interest for this study. This includes the economic and social context of the region, existing policy on territorial planning; the current state of telecoms and information services; existing policy on telecoms and ISSA. Material was gathered under all of these headings.

The interviews followed the structure of the common format. Interviews were carried out with representatives of national, regional and local government (depending on how territorial planning was actually carried out in the region), and with some telecoms operators. It would certainly have been interesting to include interviews with users, but this was outside the scope of this particular study.
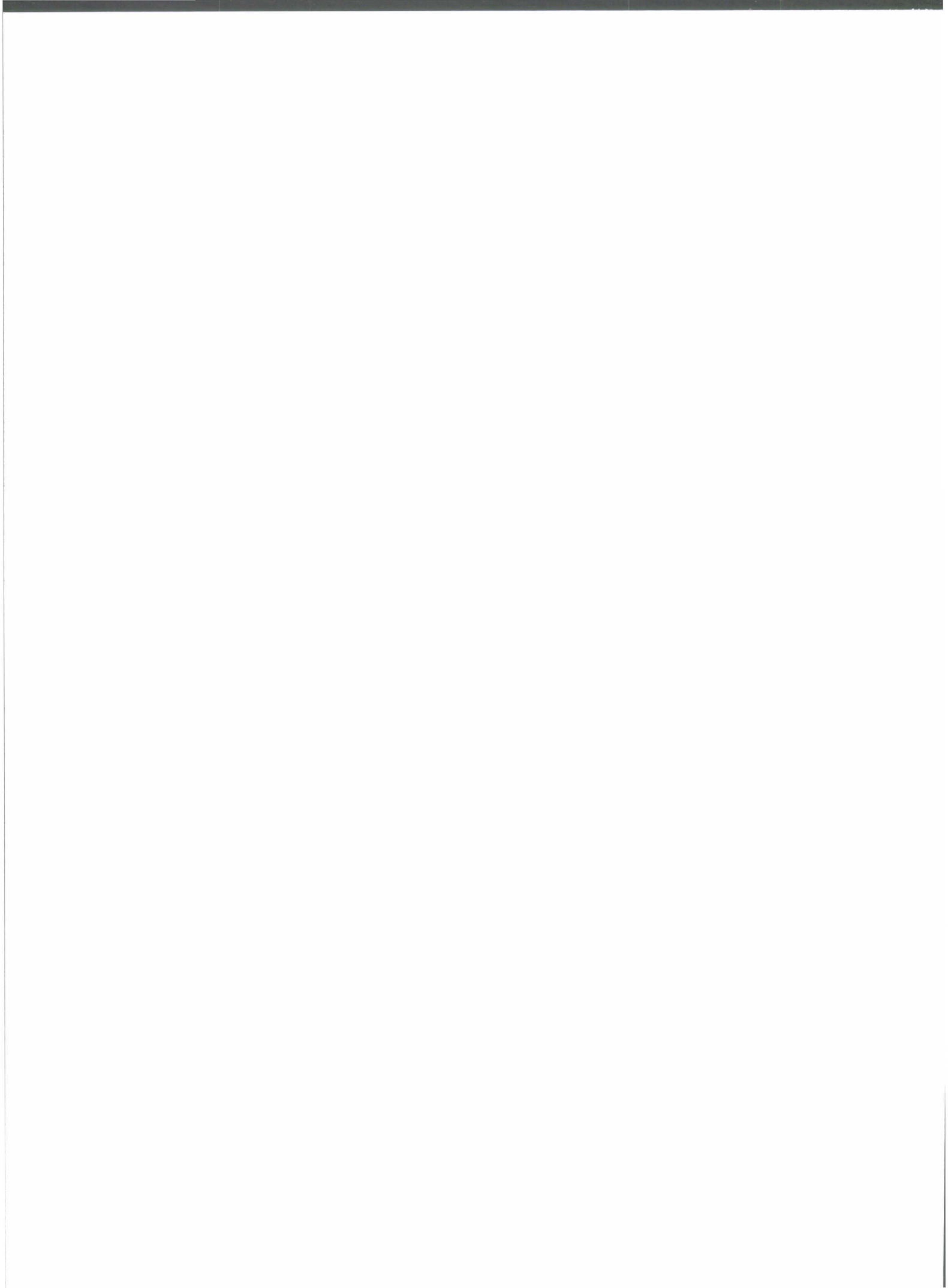
This chapter summarises the key elements of the six case studies. Full reports are provided in Annexes A, B and C.
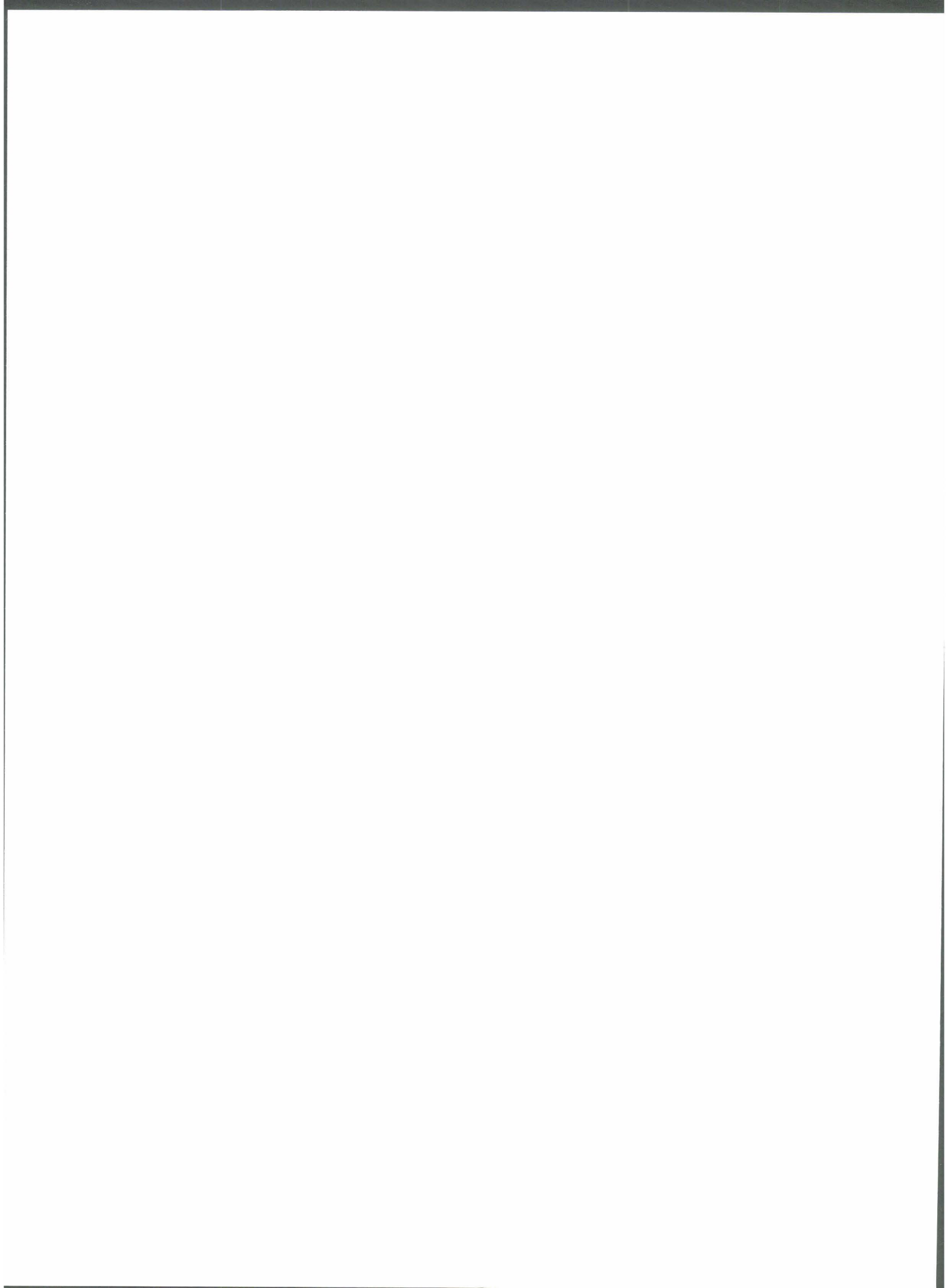
4.1 Scotland

The Scottish case study considered the large city of Glasgow, and the large, but remote region of the Scottish Highlands and Islands (see Figure 4).

Figure 4: Map of Scotland showing Glasgow and Highlands & Islands region

Glasgow

Economic and social profile

Glasgow is one of Scotland's major cities and home to some of the country's leading manufacturers, financial institutions and technology developers. Located in the industrialised central belt of the country, the city's growth was associated with the development of heavy industries such as shipbuilding during the nineteenth century. Approximately one million people now live in the Glasgow conurbation, equivalent to one-fifth of the entire Scottish population.

Heavy manufacturing activity peaked during the early years of the twentieth century and has been in decline ever since. This trend accelerated sharply during the economic restructuring of the 1960s and 1970s when the city's industrial base was decimated. Unemployment rose to 25 per cent of the local workforce, causing severe social deprivation in some areas of the city.

Unemployment currently stands at approximately 13 per cent, having fallen steadily since the early 1990s. The decline in unemployment has been accompanied by growth in service sector employment, particularly in the areas of healthcare and education.

Outward migration was a dominant feature of Glasgow's population movement for many years, encouraged by the construction of satellite towns and the development of surrounding rural areas. Recently, attempts have been made to reverse this trend with the launch of public-private sector partnerships to regenerate the inner city.

Telecommunications profile

The United Kingdom has one of the world's most competitive telecommunications markets. There are approximately 15 telecommunications companies operating in Scotland, with competition in services and infrastructure supply.

The effects of competition have been uneven within Scotland, with the greatest concentration of investment in the central belt. This has benefited Glasgow, which is well served in terms of infrastructure. Indeed, there are no significant differences in telecommunications provision between Glasgow and the UK core South East region.

Territorial planning

Territorial planning in the UK is relatively centralised. There are no regional planning authorities as such, and planning activity at the local level tends to be associated with control, such as operation of the land-use system, rather than development. Furthermore, the various activities involved in regional planning - economic development, land-use planning - tend to be undertaken by separate agencies. There is no tradition of integrated regional plans.

The Scottish Enterprise agencies represent an important difference between the English and Scottish territorial planning systems. These organisations - Scottish Enterprise and
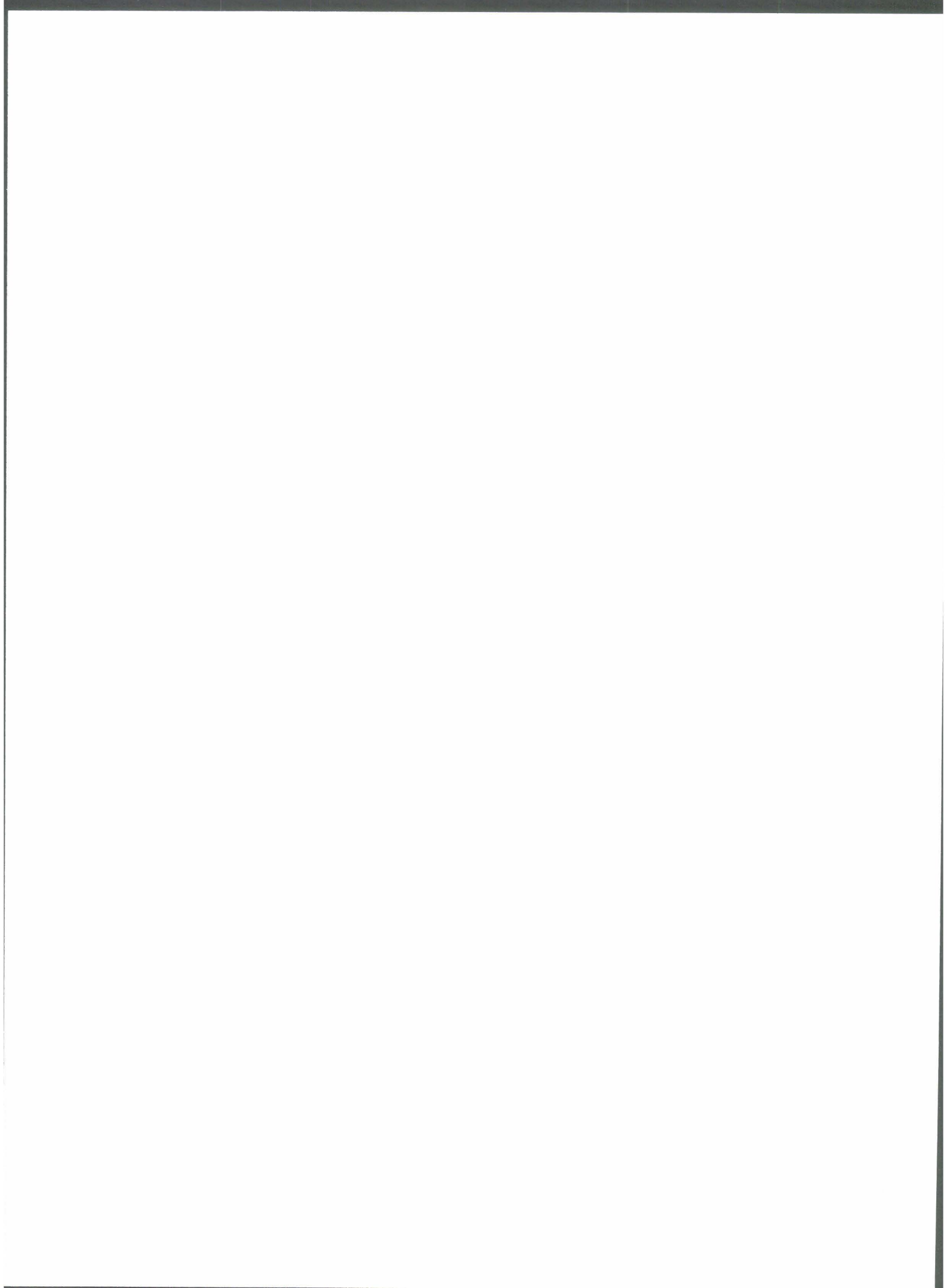
Highlands & Islands Enterprise - are considered to be models of good practice in regional economic development. They have been highly influential in shaping the economic development of their geographic areas (the lowlands and highlands of Scotland respectively), and have responsibility for promoting inward investment, for property development, vocational training and other forms of business support.

The Enterprise organisations carry out their work through networks of local enterprise companies (LECs). The enterprise company for the Glagow area is Glasgow Development Agency, operating as part of the Scottish Enterprise Network. Land-use planning and social services provision are the responsibility of Glasgow City Council.

Planning aims and objectives

Territorial planning issues within Glasgow include:

- The need to generate alternative employment for those affected by the decline in manufacturing.
- The need to develop high-growth, value-added industries to replace jobs lost from declining heavy industries.
- Repopulation of the city and a reversal of outward migration trends.
- Enhancing quality of life in the city's deprived areas.
- Reclamation of derelict industrial sites.

Planning examples

Glasgow Development Agency and its parent company, Scottish Enterprise, have actively promoted the use of ISSA in the Glasgow area. The city has been successful at attracting a range of back-office activities and now calls itself Call Centre UK. The development agencies have also attempted to develop a base in high technology development in an outlying area of Glasgow. This concentration of information technology companies, known as Silicon Glen, has considerably increased employment in IT manufacturing.

Three examples of territorial planning with ISSA were examined during the research.

Transport strategy

The City Council's transport strategy demonstrates the use of telematics to enhance the urban environment and improve the effectiveness of the city's transport infrastructure.

As part of an integrated city centre development plan, ISSA have been used:

- To improve traffic management within the city centre
- To deliver information about public transport facilitites, using telematic kiosks
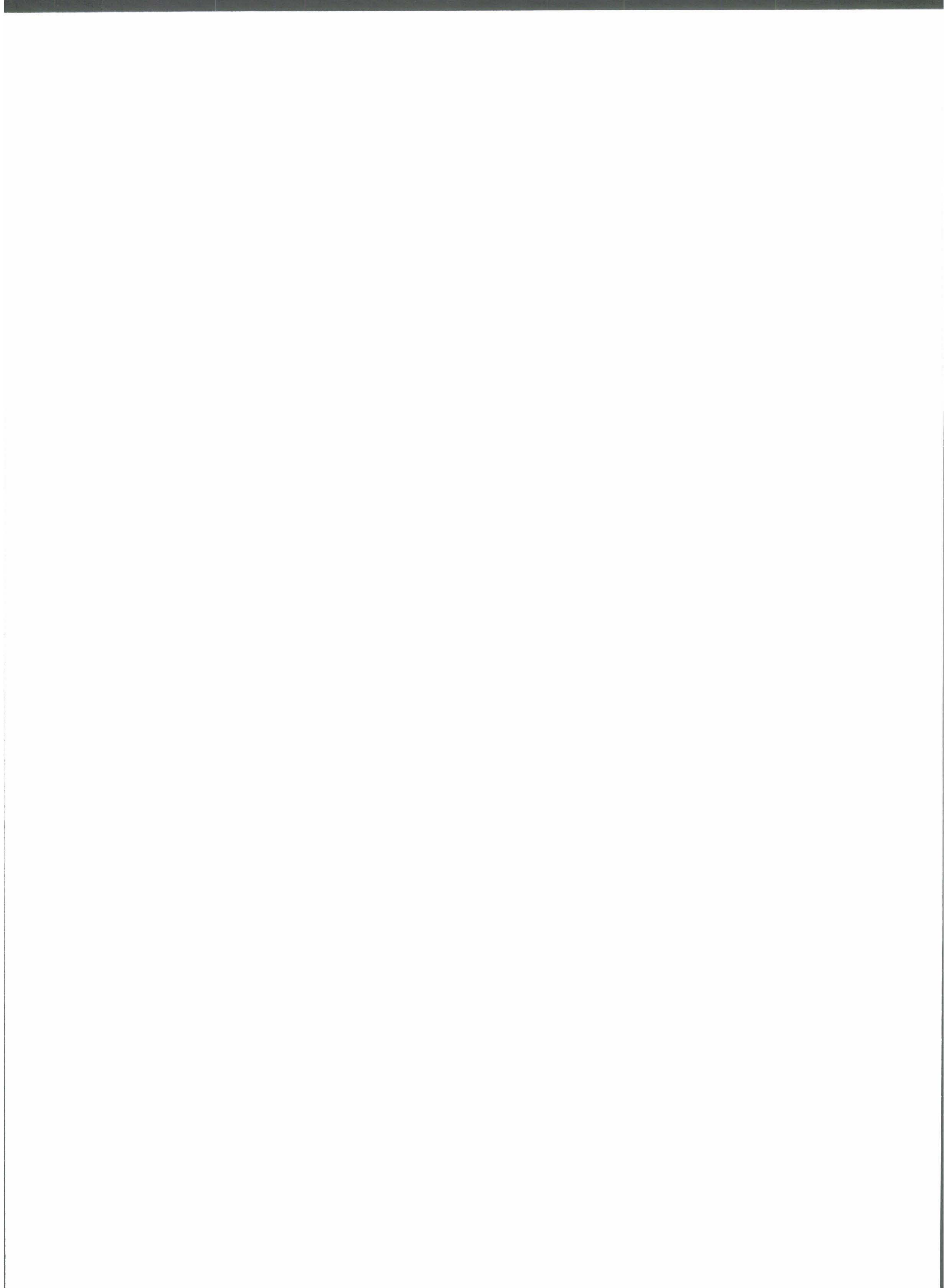
- To deliver driver information systems

The strategy aims to enhance the attractiveness of Glasgow city centre as a place to live, work and shop and to reduce the environmental problems associated with traffic congestion.

Broadband pilots

Glasgow Development Agency's broadband telematic pilots project was launched in order to stimulate uptake of ISSA by the city's businesses, as a means to increase productivity and competitiveness.

The project was initiated in 1990 to take advantage of a recently constructed Metropolitan Area Network linking Glasgow's universities. It provided support and advice to seven small and medium-sized enterprises. These developed telematics applications including remote working, multimedia databases, remote diagnostics and support and distance learning.

Support network for small businesses: SPAN

Scottish Enterprise's Smart Partnership Across Networks (SPAN) project promotes the use of ISSA by businesses throughout lowland Scotland. The network helps local enterprise companies to encourage the uptake of ISSA amongst local businesses. It has four activity areas: awareness raising, project development, technical guidance to local enterprise companies and advocacy for Scottish businesses.

Highlands and Islands Case Study

Economic and social profile

Scotland's Highlands and Islands region covers approximately one-sixth of the United Kingdom's land mass. However, it has a resident population of just 373,000, meaning that population density is very low and settlements highly dispersed.

The region's most important geographical characteristics are its peripherality and barrenness. Both make transport and communications problematic, and the region has seen little industrial development. Indeed, the Highlands and Islands is highly dependent upon primary industries: the numbers employed in fishing and farming are approximately twice the UK average. Some 75 per cent of the workforce is employed in the service sector while13 per cent work in industry.

Unemployment within the region is high by UK standards, at 13 per cent. It is particularly pronounced in the more peripheral parts of the region, and these areas have suffered most from depopulation as young people leave in search of jobs. Although the population of

the region has been rising steadily since the early 1990s the depopulation of remote areas continues.

Telecommunications profile

With a very low concentration of business users, the Highlands and Islands region has not attracted as many competing telecommunications providers as Glasgow. However, the region has a relatively advanced telecommunications infrastructure as a result of investment by British Telecommunications and the Highlands & Islands Development Board (precursor to Highlands and Islands Enterprise) during the early 1990s. An important feature of this investment was the construction of an ISDN network.

Territorial planning

As with Glasgow, territorial planning responsibilities are divided between local authorities (land use planning, social services) and the Enterprise network (Highlands & Islands Enterprise and its network of local enterprise companies). Both operate under the supervision of central government.

Territorial planning aims and objectives

Issues for the region's territorial planners include:

- The development of value-added employment and a reduction in the dependence on primary industries.
- Halting the depopulation of the more remote areas.
- Maintaining and enhancing the natural environment, central to the development of tourism in the region.

Planning examples

The construction of the Highlands & Islands ISDN network in the early 1990s was accompanied by a number of initiatives to promote teleworking. The region's planning agencies have also attempted to use ISSA to improve the delivery of public services to remote areas, and to increase the competitiveness of local businesses. Five planning examples were considered during the research.

British Telecommunications: Thurso help desk

The relocation of one of British Telecom's back-office operations to the Highlands and Islands region is a striking example of the use of a high quality telecommunications infrastructure to attract inward investment. With financial support from Highlands & Islands Enterprise, BT relocated one of three national help desks to the remote town of

Thurso. The operation, which provides computer support to BT staff throughout the UK, has generated 200 new jobs in the region. It is anticipated that by the end of 1997 as many as 300 will be employed in the operation.

Business Information Source

The Business Information Source initiative was developed to help local businesses improve their competitiveness through access to online databases. Launched in 1992 by Highlands & Islands Enterprise, the Highlands Regional Council and private sector organisations, the service provides a business library and online brokering service from satellite offices linked by e-mail and video telephony. Clients are able to pay for on-line searches and a service called 'Eurolert' whereby subscribing organisations are automatically e-mailed when relevant information is published.

Networked university for the Highlands & Islands (University of the Highlands and Islands)

The University of the Highlands & Islands (UHI) has enormous potential to enhance the quality of life and reduce depopulation in the region. Launched with backing from the UK Millenium Fund, the European Regional Development Fund, Highlands & Islands Enterprise, the private sector and local authorities, the initiative will deliver higher education to students throughout the region via ten local colleges linked by broadband networks. Students will live on or off ten small campuses and tuition, with lectures and seminars delivered to each campus using on-line services and video telephony.

Remote delivery of public services (The Highland Regional Council - Project LAMBDA)

Project LAMBDA is an example of the use of ISSA to deliver public information services to remote and peripheral regions. A pilot project, it was launched in 1994 under the RACE programme and funded by the European Union. Initiated by the Highlands Regional Council the project provided seven remote communities with networked access to public information services, via computer links and video telephony. The hardware was located within public areas such as community centres.

Teleworking from remote areas (Community Telecottage Centres)

The Community Telecottage Centre (CTCs) project, developed by Highlands & Islands Enterprise in the early 1990s, represented an attempt to develop telemediated economic activity within communities in some of the most remote islands and townships.

The aims of the project were to raise awareness of the availability of advanced telecommunications; to provide training for local people; to provide access to shared IT and telecommunications facilities and to provide a site for teleworking. The community-run projects were subsidised by Highlands & Islands Enterprise and BT for an initial three years, after which they became self-financing.
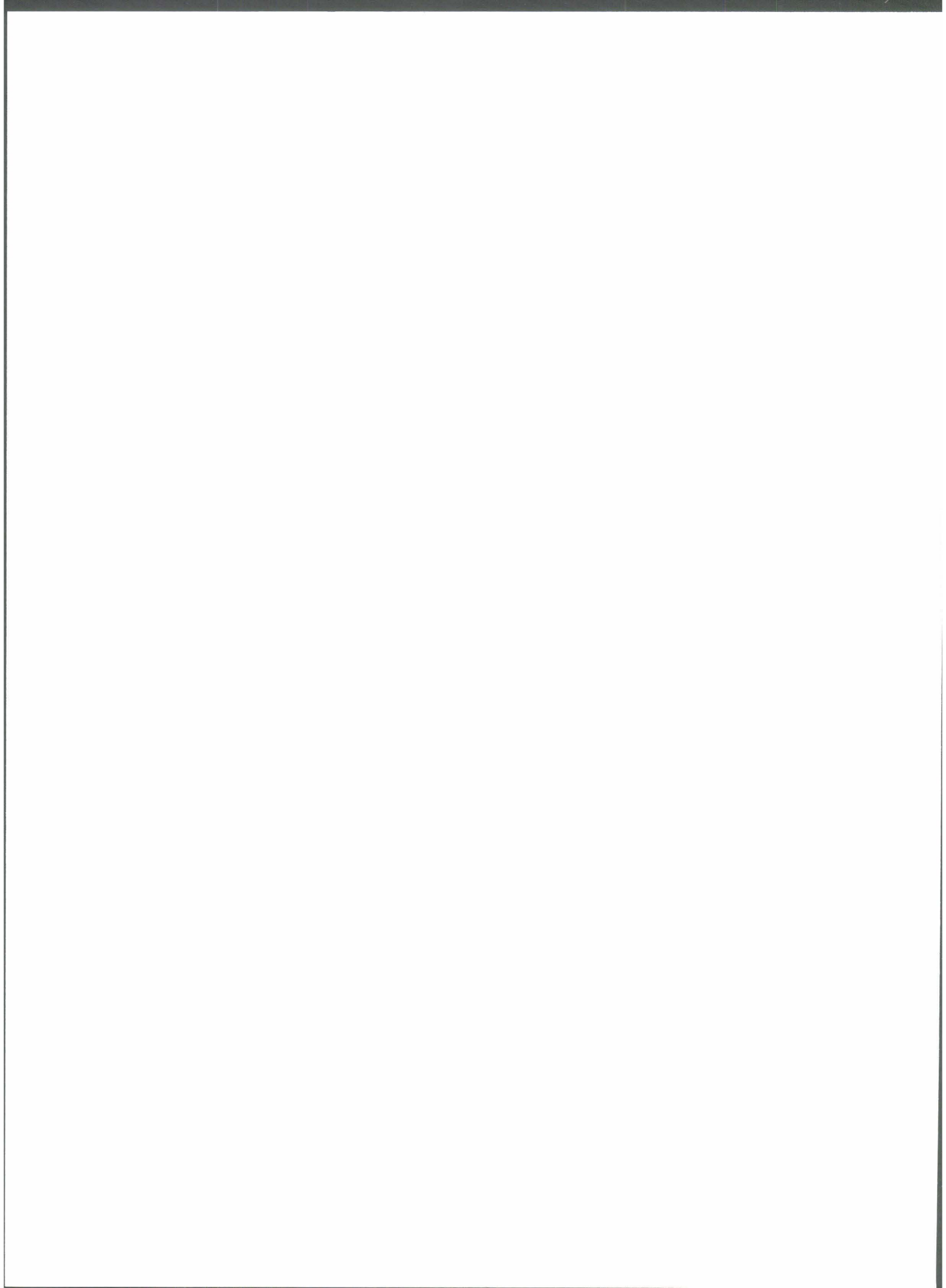
4.2 Portugal

The Portugese case studies looked at the Mangualde municipality, an area of the Centro region. A planning project to develop a national geographic information system was also examined.
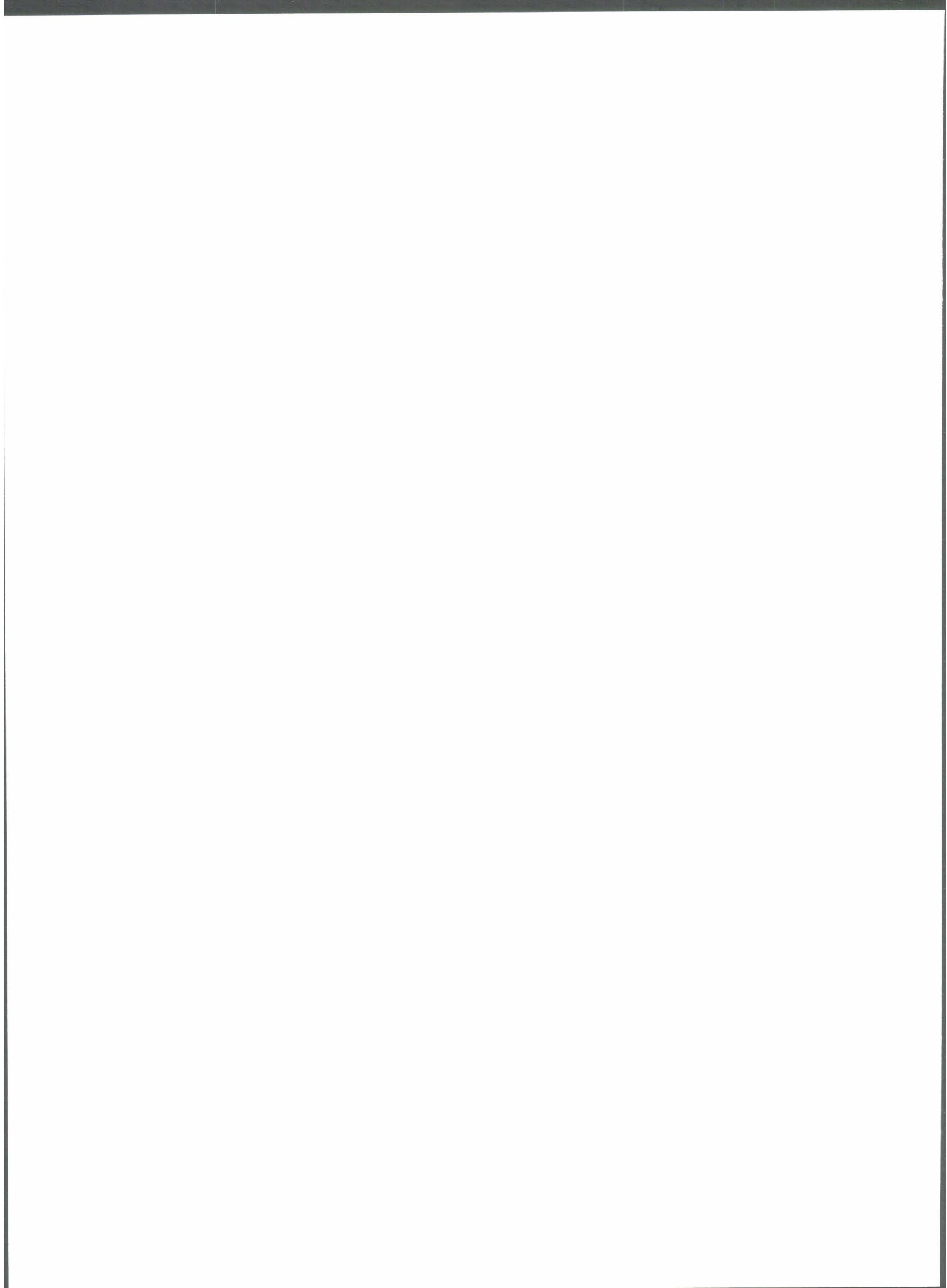
Centro Case Study

Economic and social profile

The Centro region is located halfway between Portugal's two main urban centres of Oporto and Lisbon (see Figure 5 over page). It occupies about one-quarter of the Portugese landmass and is home to roughly one-fifth of the Portugese population.

The region has two distinct geographies and economic profiles. The sparsely populated inland is distinguished by the large mountain range of Serra del Estrala. It is heavily forested and its economy is dominated by primary industrial activities such as forestry and farming. This rural area has a poor transport infrastructure. It also has a relatively low population density and has suffered from steady depopulation in recent years. Much of the population movement is from this rural inland area to the more developed coastal area. The coastal area is home to the region's main industrial zones. The main urban centres have grown in recent years following population migration from the interior.

Employment within the region is split approximately equally between agriculture, industry and services. The trend for agricultural employment is downward (from 46 per cent in 1970 to approximately 30 per cent in 1990) while service sector employment has grown steadily to its current level of 35 per cent.

Unemployment within the region has fallen dramatically in recent years following an increase in European Union funding. This has provided jobs for young people, which dominate the unemployment figures.

Figure 5: Map of Portgual showing Centro region

The Mangualde municipality

The Centro case study focused on the Mangualde municipality, an administrative unit with a population of 21,513. The municipality's economic and social profile is broadly similar to the profile of the region as a whole. However, industrial employment is slightly higher whilst agricultural employment is slightly lower.

Telecommunications profile

In the Mangualde region, as in the rest of Portugal, basic voice communications services are provided on a monopoly basis by the state controlled telecommunications company Portugal Telecom and the privately owned long-distance operator Companhia Portuguesa de Radio Marconi (CPRM). Limited cable television services are provided over networks owned by private companies. Portugal Telecom and CPRM are responsible for the construction, maintenance and operation of all public telecommunications networks in Portugal.

Data from the 1988-1992 European Community REVOLVE project (Regional Evolution Planning for IBC - Information Broadband Communications) showed that Mangualde had a telecommunications network covering 70 per cent of the municipality. Services available included basic voice telephony, telex, data service, Telepac and leased lines. The REVOLVE analysis suggested that the Mangualde municipality had considerable potential for broadband infrastructure investment.

Territorial planning
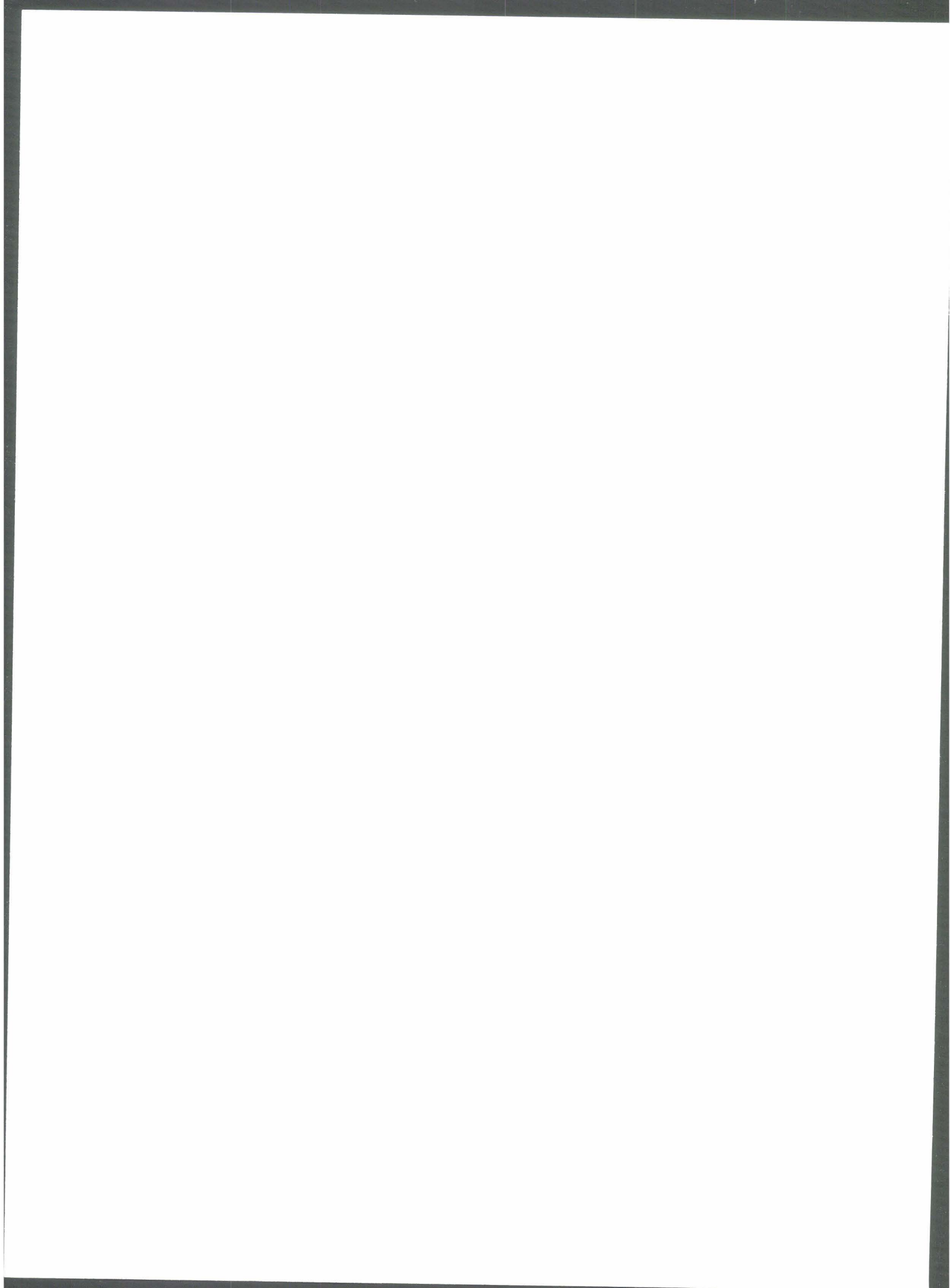
Territorial planning in Portugal is organised on three geographic levels: national, regional and municipal. The municipalities are responsible for public services, land-use planning and basic infrastructure. These activities are undertaken within the framework of a development strategy prepared by the regional authorities.

Territorial planning aims and objectives

Issues for territorial planners in the Mangualde area include:

- Reduction of the "interiority" factor by improving telecommunication infrastructures
- Promotion of the region's cultural heritage
- Reduction of the isolation of rural populations
- Creating job opportunities for youngsters

Evidence from this case-study shows that ISSA have had little impact on the territorial planning activity; the local planning agency (Municipality of Mangualde) does not have a strategy to integrate disperse initiatives. The municipality is aware of the importance of information and communication tecnologies for socio-economic development of the region, but the reason why the demonstrator Mangualde 2000 has not overcome the demonstration phase is said to be related with the scarce financial capacity of the municipality to create a structure to support the development of and integration of real life applications to serve the population as a whole.

The usefulness for real life applications in leisure, education, cultural and social events has been demonstrated by the Mangualde 2000 project but barriers such as the lack of legal framework for teleworking , have hampered the delivery of medical assistance, counseling and educational programs.

Planning example: Mangualde 2000

Mangualde 2000 is a demonstrator project, delivering advanced telecommunications services via fibre optic network to businesses and citizens in three 'centres of advanced telecommunications services' within the Mangualde area. The project was developed by the Mangualde municipality working in partnership with Portugal Telecom as part of the EC REVOLVE project. The network, which also extended into a small residential area of Mangualde city, offered a range of telematics services to businesses and citizens. Three advanced telecommunications centres were established within Mangualde city, Santiago de Cassurães and Cunha Baixa, offering public access computing equipment and videoconferencing services

Case Study: SIG national geographic information system
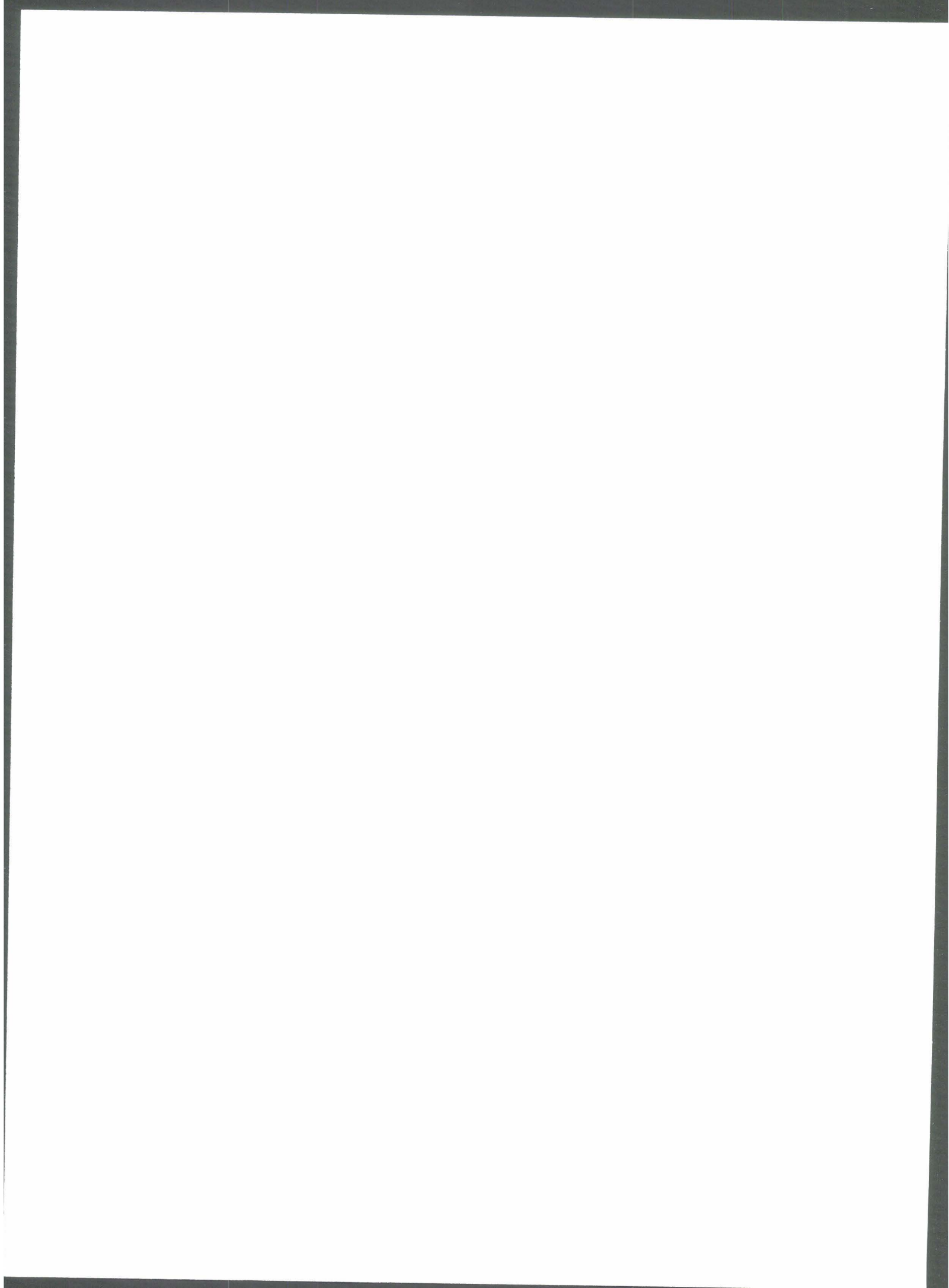
The second Portugese case study examined an initiative to encourage the use of ISSA by territorial planning agencies. The National Geographic Information System (SNIG) was created in 1990 as a network of local geographic information systems, with nodes at the municipal, regional and national levels. The system, which was formally launched in 1995, is the first of its kind in Europe. Supported by European funding, the state budget and earned income, its principal objective is to promote and guarantee the availability of data necessary for land use planning. The system consists of a national node, seven regional nodes and a number of local nodes containing municipal information. Accessible via the World Wide Web (www.helios.cnig.pt:8880) and dedicated terminals, it provides users (mainly land-use planning authorities) with access to various networked databases of territorial planning information.

4.3 Greece

The Greek case studies considered the adjacent regions of Central and Eastern Macedonia (see Figure 6). Despite their proximity, the two regions differ considerably in their levels of development and socio-economic profiles.

Figure 6: Map of Greece, showing regions of Central Macedonia and Eastern Macedonia, Thrace

Central Macedonia case study

Economic and social profile

The central Macedonia region is in the northern part of Greece, bounded by the former Yugoslavia and Bulgaria to the north and the Aegean to the south. As Greece's second most important region in socio-economic terms, it is home to the country's second city (Thessaloniki) and approximately 17 per cent of the population (1.8 million people, of which 800,000 live in Thessaloniki). Economic activity is relatively diverse, ranging from the manufacturing and commerce of the Thessaloniki conurbation to the agricultural areas of the west and the tourism of the coast. Over 40 per cent of the workforce are employed in the services sector, with agriculture and industry accounting for approximately 30 per cent each. In 1991, seven per cent of the region's workforce was unemployed.

For a number of decades the dominant population trend within the region has been one of inward migration. The development of industry and tourism has accelerated this trend.

Telecommunications profile

With the exception of cellular services, voice telephony services in Greece are the monopoly of the majority state-owned telecommunications operator, the Hellenic Telecommunications Organisation, SA (OTE). The company has the exclusive right to provide telecommunications infrastructure and is responsible for the maintenance, construction and operation of all public telecommunications networks in Greece. OTE also provides leased circuits over its networks. Limited cable services are provided over government-owned networks.

Despite the concentration of economic activity within the region, particularly within the Thessaloniki conurbation, the quality of the telecommunications infrastructure is low in comparison to European standards. Approximately 46 per cent of the region's network is digitised, compared with 60 per cent in Greece's core region of Attica.

Territorial planning

The Greek territorial planning system is comparatively centralised. Planning regulations are mainly the responsibility of national government operating through 54 local offices. Regional socio-economic planning is undertaken by planning authorities within 13 administrative regions. Municipalities represent a third tier after national and regional government, but their responsibilities are limited.

The chief planning agencies within the central Macedonia region are the regional council and municipalities.
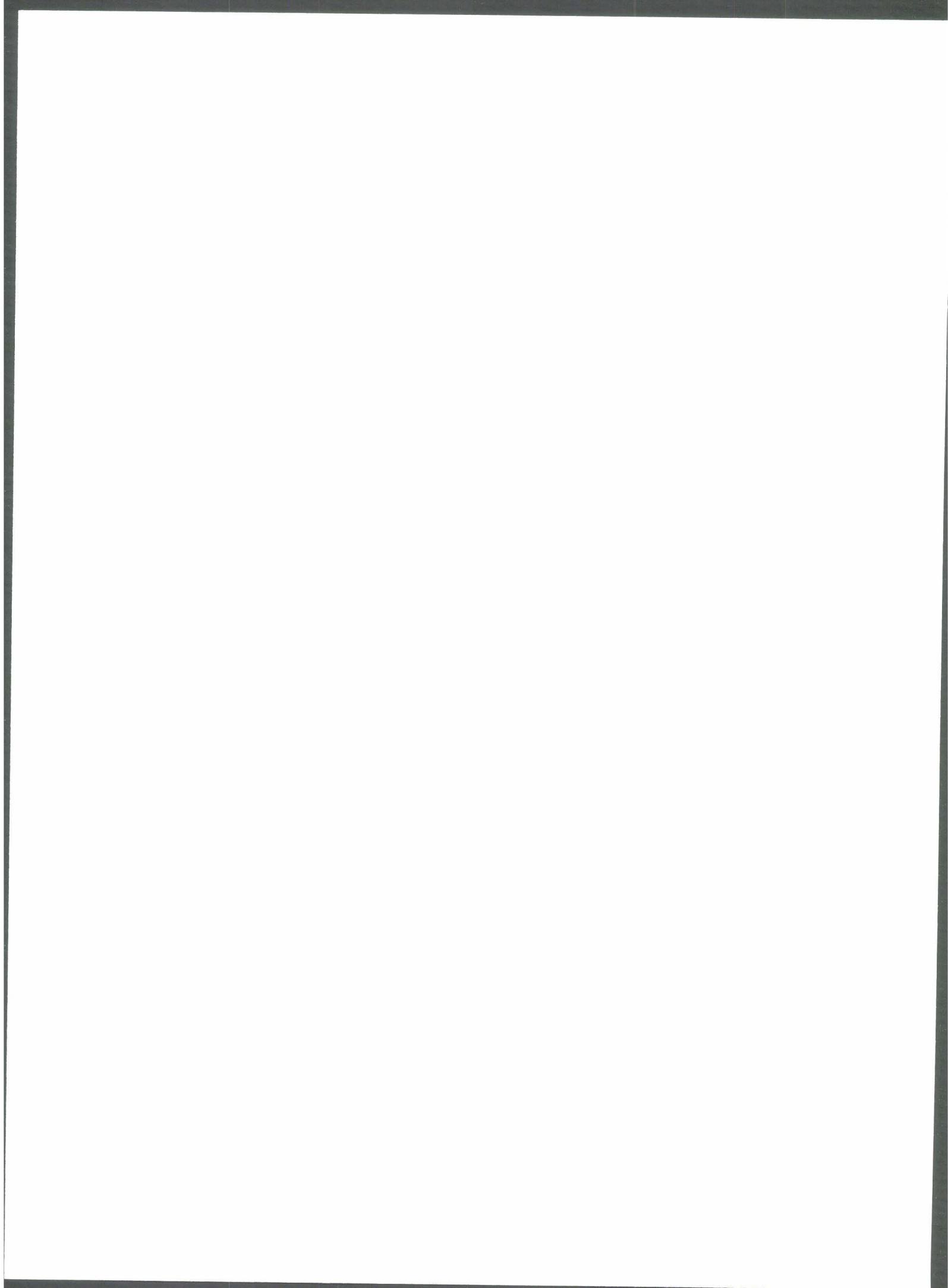
Territorial planning aims and objectives

Issues for the region's territorial planners include:

- Migration from rural areas and concentration in Thessaloniki and coastal areas.
- Environmental protection. The development of tourism has often taken place with little regard to the environment. In some cases this has had serious consequences. Environmental problems are also posed by severe pollution around the city of Thessaloniki.

Planning example

There are no examples of territorial planning using ISSA, but efforts to encourage the widespread adoption of ISSA constitute an important part of territorial planning activity. The research considered the central Macedonia Regional Technology Plan (RTP), a European Union-supported initiative to enhance synergy between research and technical development policy and economic development policy. The RTP represents an attempt by central Macedonia's planning authorities to stimulate the regional economy, using technology to:

- Encourage the endogenous technological development of the region.

- Improve the capability of local and regional actors to design policies which correspond to the real needs of the productive sector and the strengths of the local scientific community.

- Support local consensus among the public authorities, the private sector and the universities about the character of technological development of the region.

The outcomes of the RTP action in Central Macedonia include:

- The definition of a plan for technological development of the region, based on the agreement of the main actors of the public and private sector

- The organisation of a system for continuous monitoring and evaluation of technology issues and the needs of regional firms; and

- The participation of Central Macedonia in the network of the Community's regions developing RTPs, and in the related initiatives for technological exchange and development.

Eastern Macedonia, Thrace case study

Economic and social profile
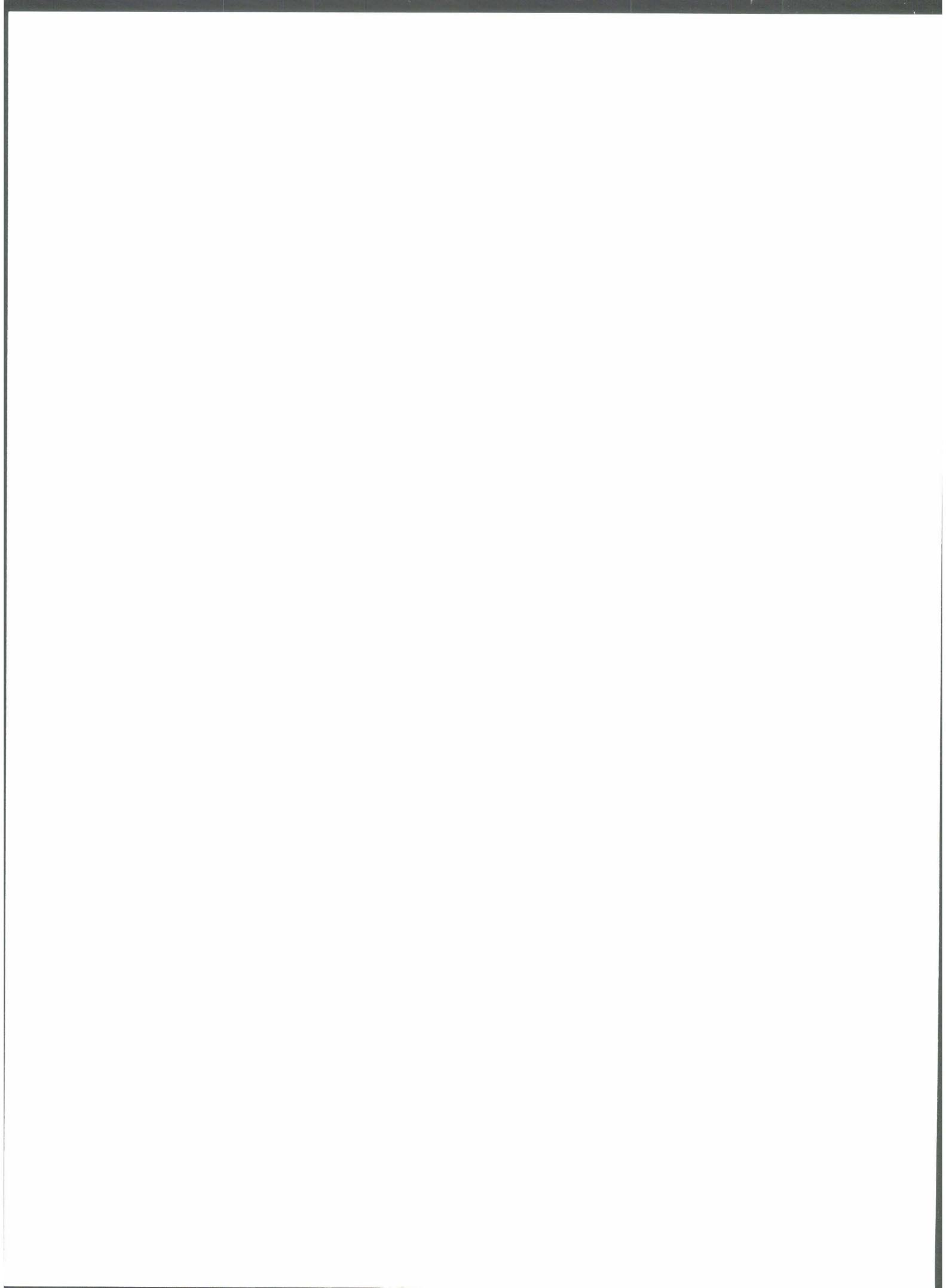
Eastern Macedonia/Thrace is one of Greece's less developed regions, and one of the most underdeveloped regions of the European Union. Situated in the north-east of the country adjacent to Turkey and Bulgaria, the region occupies 14,200 km2 and accounts for 11 per cent of Greece's land mass. With a resident population of 570,000 in 1991 (5.5 per cent of the national population), the region has a relatively low population density: 40 people per square kilometre, compared with 78/km2 for Greece as a whole.

Industrial development within eastern Macedonia/Thrace has been minimal, not least because of its peripherality and poor transport network. Development potential exists in mineral extraction and tourism. But agriculture remains the region's largest single employer, accounting for approximately 45 per cent of the workforce in 1991. Some 31 per cent of the workforce were employed in service sector jobs in 1991 while industry accounted for slightly over 20 per cent of the workforce. Unemployment stood at approximately six per cent and was particularly high amongst the under-25s.

The dominant population trend within the region has been one of internal migration from the inland areas to the coast and to the industrial centres of Kavala and Xanthi.

Telecommunications profile and territorial planning

The telecommunications profile and territorial planning process for eastern Macedonia/Thrace are broadly the same as those for central Macedonia.

Territorial planning aims and objectives

Issues for the area's territorial planners include:

- The depopulation of the mountainous inland areas
- The need to diversify manufacturing activity
- The need to reduce unemployment amongst the young
- The need to reduce dependency on low-growth economic sectors such as agriculture
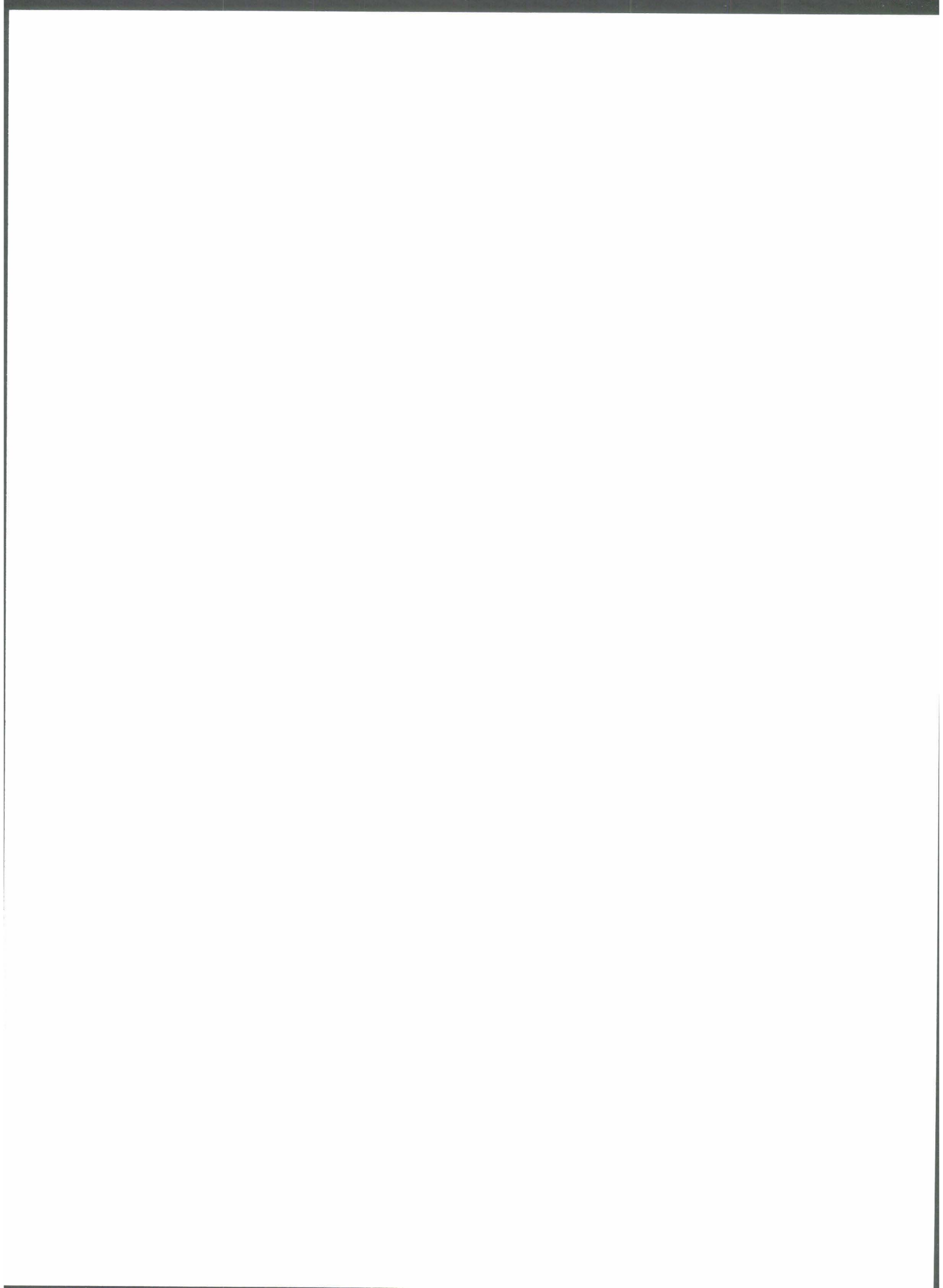
Planning examples

Development Prospects of the Eastern Macedonia-Thrace Region

This planning project was initiated by the Regional Council and the Ministry of Economic Affairs as a means to develop a framework for long-term regional planning. The analysis concluded that:

- The model of development applied until now seems to have reached its limits (traditional industrial activities based on the cheap labour and low processed agricultural goods).
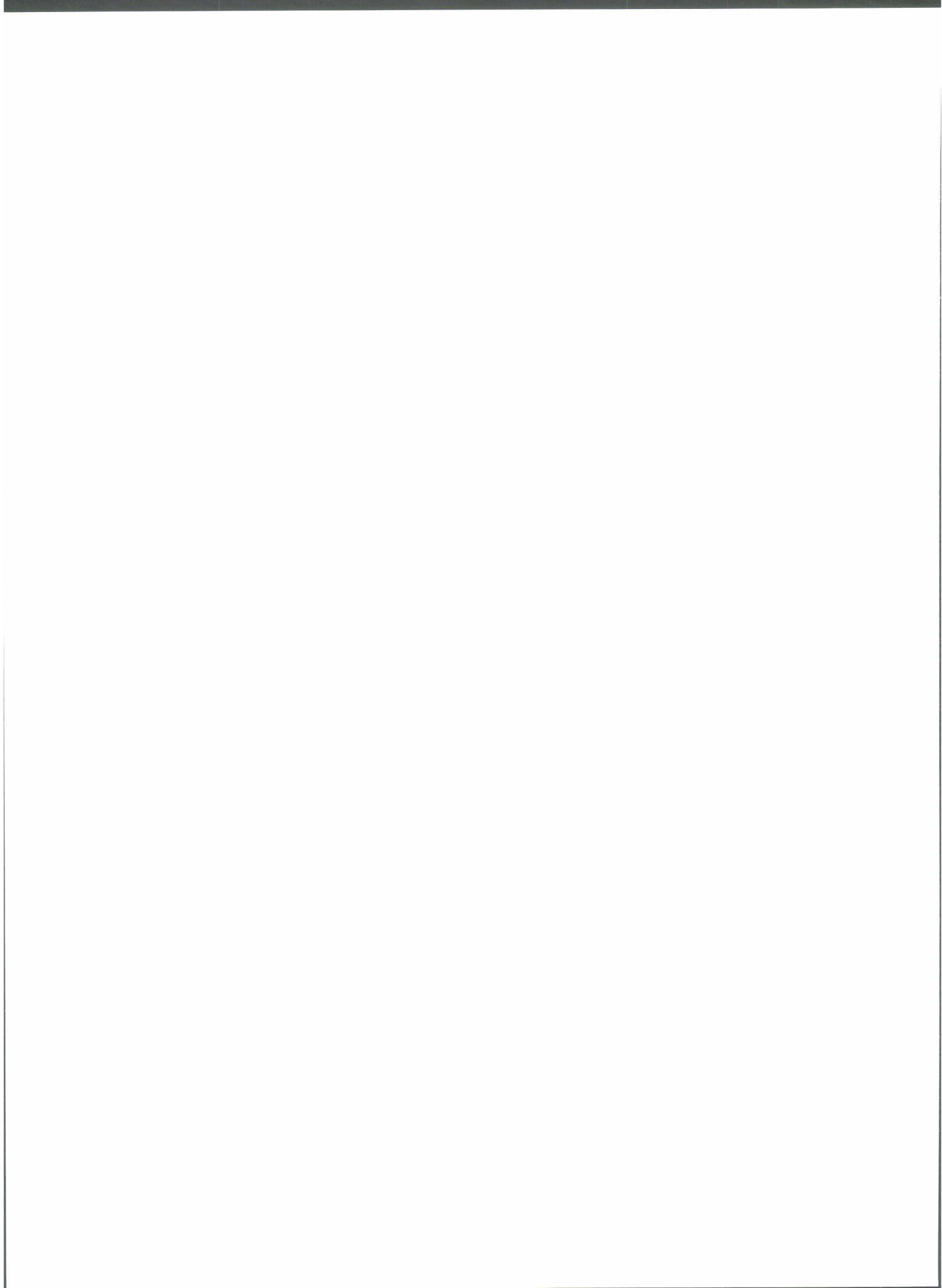
- There is a need for the introduction of new technologies especially in administration and organisational practices.

- There is a need for investment reorientation in the region so as to concentrate resources to most efficient activities.

- There is a need to support activities which will verticalise production

- There is also a need for proper institutional context as well as a modern network of financial and techno-economic support.

5. Key issues

5.1 Introduction

The case studies which were carried out are examples of the use of ISSA for territorial planning in a regional context. The case studies were selected to provide illustrations from different types of region. They do not constitute a representative sample, and it is not possible to draw definitive general conclusions from a small set of specific cases.

With that in mind, it is possible to draw together the key issues which arose during the case study phase, and this chapter identifies the main themes. We have organised the discussion around four themes :

- Infrastructure.

- Centralisation/decentralisation.

- Direct/indirect impact.

- Potential/actual benefits.

5.2 Infrastructure

The implementation of information society applications depends on the provision of appropriate infrastructure, both in the sense of physical communications infrastructure, and in the sense of human capabilities. In the case studies, we were concerned with the extent to which territorial planners consider infrastructure availability, quality and cost, and whether these considerations are integrated into the ways in which ISSA can be used. We were concerned also with the different frameworks for providing infrastructure which are contained within our set of cases.

Infrastructure in the LFRs

In spite of considerable attention and investment over the last decade, the less favoured regions still lag behind the core regions in certain necessary aspects of infrastructure and services. This is the case when we consider not just the availability of infrastructure, but also questions of access and affordability. A recent study prepared for the European Commission claims that while there is now no measurable difference between the cohesion countries and the core countries in physical access to the PSTN, there are significant gaps in quality of service, in access to digital exchanges, and in the uptake, and so demand for advanced services (EC, 1996).

This may well be true at an aggregate level. Our case studies in Greece and Portugal, however, suggest that the situation in the least favoured parts of the cohesion countries is still significantly worse, even for basic PSTN access.

The gap in supply is made more important when the telecoms market is liberalised, as the pressures of competition and commercial discipline drive investment towards areas which offer the greatest return on investment. These areas are almost all urban concentrations with a high proportion of business customers in the core parts of the country.

This is the case for the incumbent operator, and for new market entrants. When we look at our Scottish examples, customers in the Glasgow area now have a choice of around six telecoms providers, while those outside the main metropolitan areas are served by one or perhaps two.

The infrastructure which is required for the successful implementation of ISSA involves much more than a good physical telecommunications infrastructure. Indeed, while telecoms is a *necessary* condition for ISSA, it is not *sufficient* in itself. The discussion in Chapter 3 of this report outlined the range of benefits which could be achieved through the implementation of ISSA, and noted the barriers to take-up. These barriers include access to technology; cost of using a service; cost of providing a service; and the level of training and education needed to decide to use the service in the first place.

During the case studies, we tried to assess the existence of the less physical types of infrastructure. In particular, we looked for evidence of agencies beginning to address the kinds of barriers we identified in the conceptual stage of the work. From our set of case studies, we conclude that the territorial planners are clear on the necessity of adequate telecommunications infrastructure. There is a general *idea* that other measures are required, but no clarity on what these measures may be.

To illustrate this point, the case study which contains the most advanced thinking about how to apply ISSA is Highlands & Islands. In this case study, we can see the beginnings of attempts to address these wider issues, for example through the establishment of the University of the Highlands & Islands, and the support for the business information source. This type of measure is moving on from concern over infrastructure to an emphasis on applications and support for applications.

To put this in context, it is now several years since the infrastructure was put in place, and it is only recently that the thinking about applications has reached a point of actually implementing some. The case studies which were carried out in Glasgow, Greece and Portugal are some way behind in terms of advancing the use of innovative applications, and thinking about the broader needs associated with their use.

It is possible that there needs to be a learning curve, where regions go through the stages of defining physical infrastructural requirements, implementing those, and then develop ways of using the infrastructure. However, it is a poor use of resources if all regions have to repeat the same learning curves.

Infrastructure planning

In all of the case studies, and we believe it is generally the case, telecoms infrastructure is specified by the telecoms operator and not by the territorial planner. This means that decisions about the kind of infrastructure to be built, and the plan for its implementation and roll-out are made by the telecoms operator. In all of the case study regions, there was little co-ordination between infrastructure planning and territorial planning.

Of course, the telecoms operator looks at demand and potential demand for services when planning a network. However, the very understanding of demand, let alone its interpretation, is different from the way in which a territorial planner would define and understand it. The telecoms operator is quite rightly concerned with volume of traffic, revenue, cost of construction and so on, and must be confident that the infrastructure provision will justify the investment. The telecoms operator does not need to think about encouraging particular types of industry to use particular types of service. The operator does not need to think about the implications of facilitating certain types of economic activity in certain parts of a territory - the concern is with how much telecoms is used, not what it is used for.

This is perfectly reasonable, and we do not wish to criticise telecoms operators for failing to act as economic development agencies. However, the agencies which participated in our case studies agree that they are not part of the planning process for infrastructure, and neither is infrastructure planning integrated into their overall territorial or economic planning.

Inevitably, infrastructure planning as carried out by the telecoms operator is technology-led rather than development-led. This is the case even for those operators which have spent a lot of effort on becoming more responsive to customers.

While this separation may have been unimportant when telecommunications meant basic voice telephony, it becomes much more of a problem when we consider the complex requirements of services and applications. The notion of *how* telecommunications is used becomes a significant issue - it is no longer enough to know whether it is available or not. In other words, planning for advanced applications needs to consider what kinds of users are likely to use what kinds of services and in what ways, and this indicates a need for infrastructure and territorial planning to becomes more rather than less integrated.

> **Infrastructure**
>
> • LFRs lag behind in access and cost
>
> • operators, not planners specify telecom provision
>
> • technology-led
>
> • little co-ordinated planning
>
> • unclear future

Liberalisation
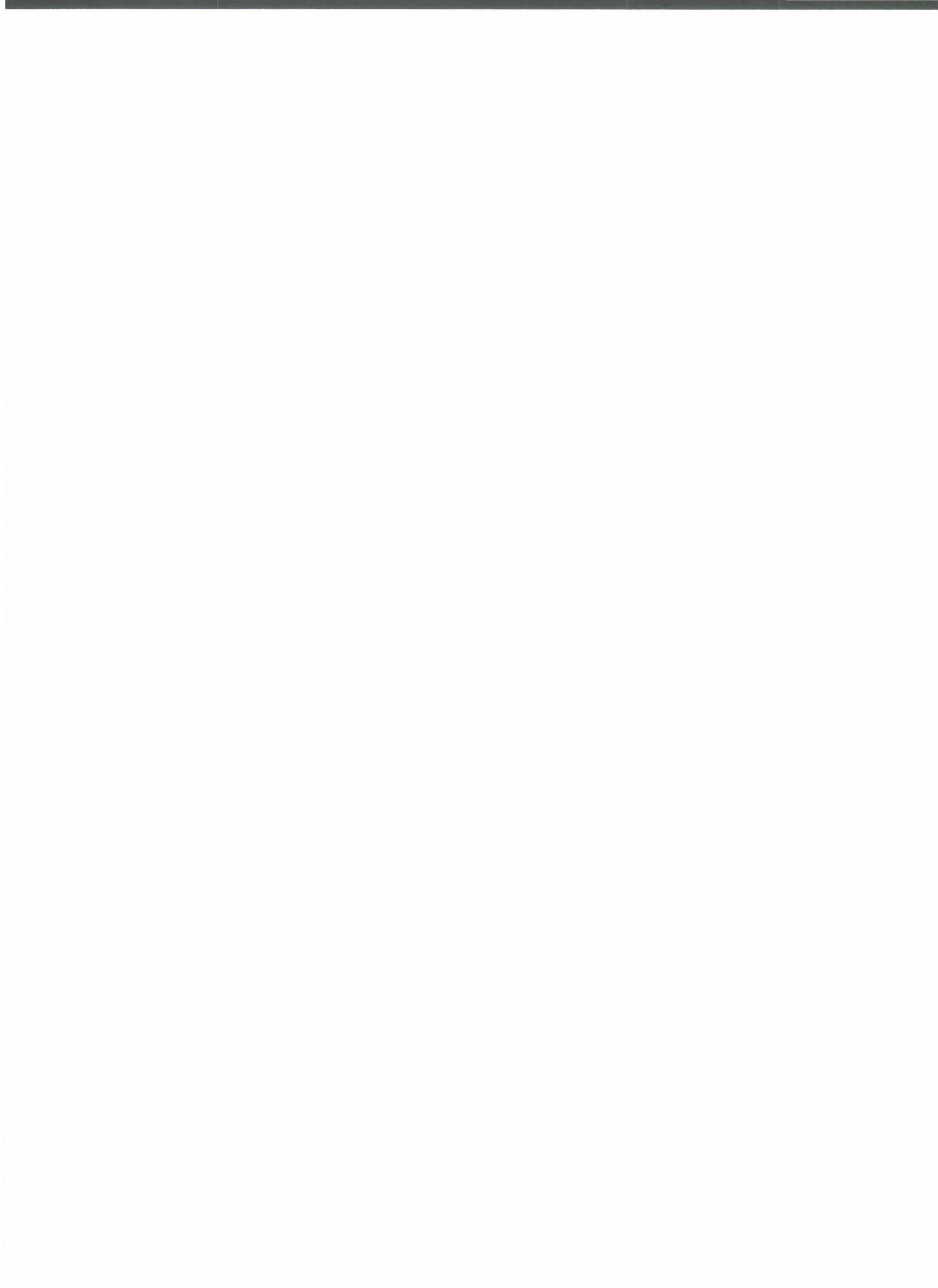
The case studies which were carried out illustrate the spectrum of liberalisation experiences within the Union, and provide interesting examples of how the priorities are decided under different regulatory regimes. For Greece and Portugal, for example, the concern is with coverage and access. The telecoms operator has not yet achieved total coverage of the population for basic telephony.

In Scotland, there is little concern over universal service at present. The concern is with future supply. While there is no perceived disadvantages at this time, there is no guarantee that this situation will continue. For example, OFTEL is now considering proposals for the geographical deaveraging of tariffs. Up till now, remote areas have been charged the same tariffs as central areas, irrespective of the cost of supply. If tariffs are deaveraged, users in remote areas could face higher prices. When this possible trend is set in the context of a development strategy which has focused on telecoms-intensive industry, precisely because there has been no geographical disadvantage, the seriousness of the problem becomes clear.

All of the case studies noted concerns about the provision of universal service in a liberalised environment, and we would note that, in general, while the telecoms regulatory path for the Union may be clearly specified, the implications for the less favoured regions are not so clear. This is a particular issue for the least favoured parts of the less favoured regions.

5.3 Centralisation versus decentralisation

During the conduct of the case studies, we looked for examples of the possible centralising or decentralising effect of ISSA, and examined how this process may work.

At a general level, it is difficult to attribute either centralisation or decentralisation directly to ISSA. ISSA, or more specifically, a good telecoms infrastructure, can be an important factor in attracting inward investment.

The EC has noted that the availability of networks is an important element in a region's competitive advantage; particularly its ability to attract direct investment. According to a survey of 500 large European businesses, 59 per cent considered the availability of high quality networks to be a crucial determinant of where to locate production activities (EC, 1994a).

We discussed the importance of high quality infrastructure above. However, while this may be an important factor, it is rarely the only factor in determining location decisions. The range of factors which come into play makes it difficult to provide definitive evidence of the centralising or decentralising effect of any one factor. With that qualification, we can note the following :
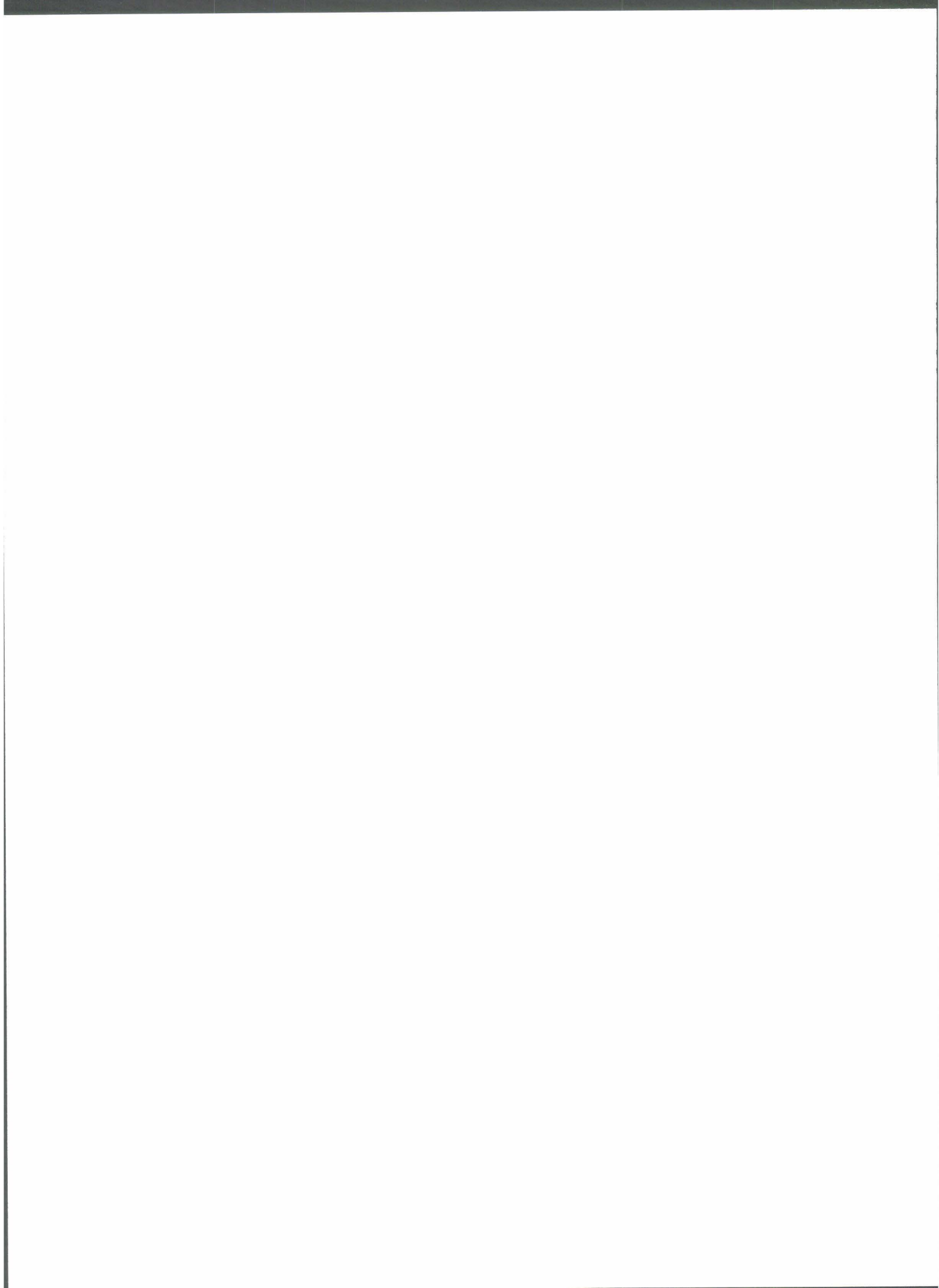
- Attracting telecoms intensive industries can be a positive development strategy. The examples of both Scottish case studies illustrate concrete benefits associated with the deliberate support for industries which are dependent on excellent communications. Glasgow, for instance, targeted call centre operations by hosting an inaugural conference in 1995. A number of companies have now established services, amongst them Direct Line (financial services) which created 200 new jobs, and British Telecom, which runs its direct sales operation from Glasgow, and created 300 new jobs.

- In the Highlands & Islands, the target for the telecoms initiative was 500 new jobs by 1999. By 1995, jobs associated with the investment totalled 654. The bulk of these new jobs are in industries which are high volume users of telecommunications.

These examples illustrate the decentralising effect, in that the availability of good infrastructure has enabled the creation and maintenance of new types of jobs.

We can also find examples of the way in which advanced communications can encourage the centralisation of economic and social activities:

- The redevelopment of city centres can act to pull investment, employment and people back into the city. While this has a positive aspect, in that it helps address the issue of urban decline, it can have a negative impact on the surrounding areas. We had one example of this tendency in Glasgow, where a number of successful urban regeneration projects have tended to concentrate new enterprises in the city centre. This is followed through in the planning of infrastructure, in that one interview noted that there was 'no need' to invest in broadband communications outside the city centre.

Our conclusion on this issue is that we found examples of a tendency for telecommunications to aid the centralisation of economic and social life, and we found examples of telecoms aiding decentralisation. Without wishing to generalise too much from our small set of case studies, it is suggested that ISSA offers the possibility of aiding either tendency, and could be used to support policies designed to centralise, in the case of urban regeneration, and to decentralise, in the case of development in remote areas.

We would like to highlight one very significant issues around the centralising-decentralising theme, and that is the status of the least favoured regions. Two of our case studies (Thrace and Highlands & Islands) are examples of developments which can be characterised as the creation of poles of development. In both cases, resources have been concentrated on key towns, and key economic activities. This is a valid strategy. Given the state and level of development in both areas, and given the scarcity of resources, it is valid to concentrate efforts on initiatives which are most likely to succeed. The idea then would be that there is an eventual trickle down through the rest of the region, so that the benefits eventually are more widely spread.
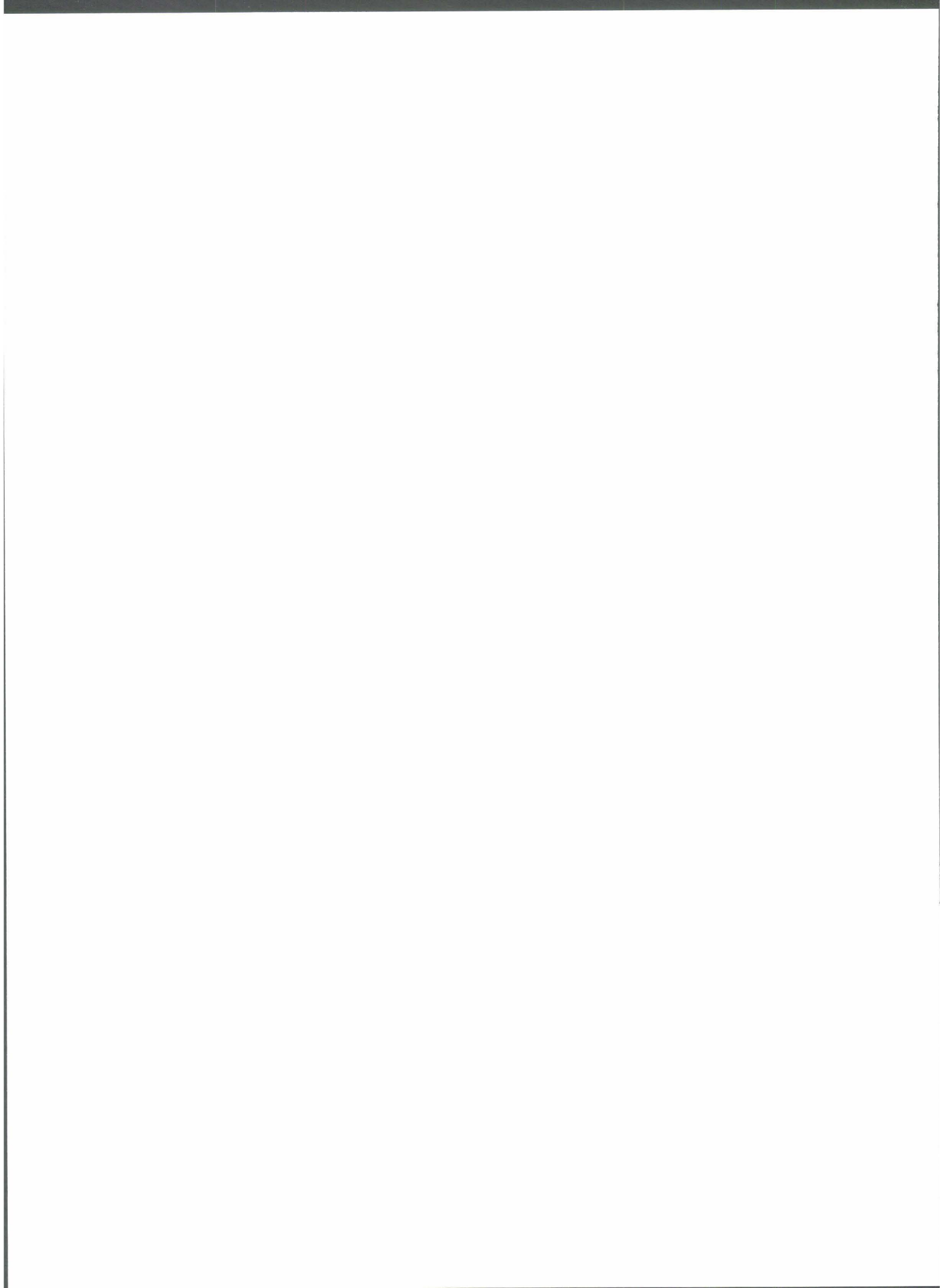
However, the problem remains of the least favoured regions. To give an example of how this problem is manifested, Highlands and Islands have experienced an overall increase in population over the last decade. Most of this increase is in the coastal strip around Inverness. The islands and remoter parts of the Highlands continue to experience out-migration. In other words, although we can see decentralisation from the central belt of Scotland to Inverness in the north, at another level, Inverness then becomes a centre, and the same pattern is repeated again for its remote hinterland.

Similarly, in an urban context, we can see the positive side of urban regeneration in Glasgow, with new jobs and new homes in the city centre. However, the problems associated with structural upheaval do not go away, and the housing estates on the periphery of the city still contain a population with high long term unemployment and multiple social problems. They are effectively ghettos.

> **Centralisation/ decentralisation**
>
> • evidence of both tendencies
>
> • strategic choice
>
> • least favoured lose out
>
> • price is social cohesion

It is not obvious how the problems of the least favoured regions may best be addressed. To continue with the example of Glasgow, the support for new types of industry and success in reinventing the city are part of a very dynamic development strategy. However, the new types of industry which have grown up do not, in general, employ the people who worked in the old industries. The argument at this level is really one of the need for social cohesion measures alongside economic growth.

For example, it can be suggested that ISSA may not be of benefit to a region if its workforce does not have the necessary skills, or if younger generations are not developing a higher level of skills than previous generations. Thus it is essential that policies which plan for development with ISSA must also consider the interrelationships with other policy areas, such as education.

5.4 Direct versus indirect application

One of the key attractions of ISSA as an economic and social driver is its potential to generate benefits which are diffused across economic sectors and through social relationships.

ISSA as a project, or as a support mechanism

A major issue arising from the different levels of impact is the extent to which ISSA should be an item in its own right, or whether it ought to be embedded within planning and development. This has long been an issue of concern for the Structural Funds. In cases where member states do not include specific programmes to support information
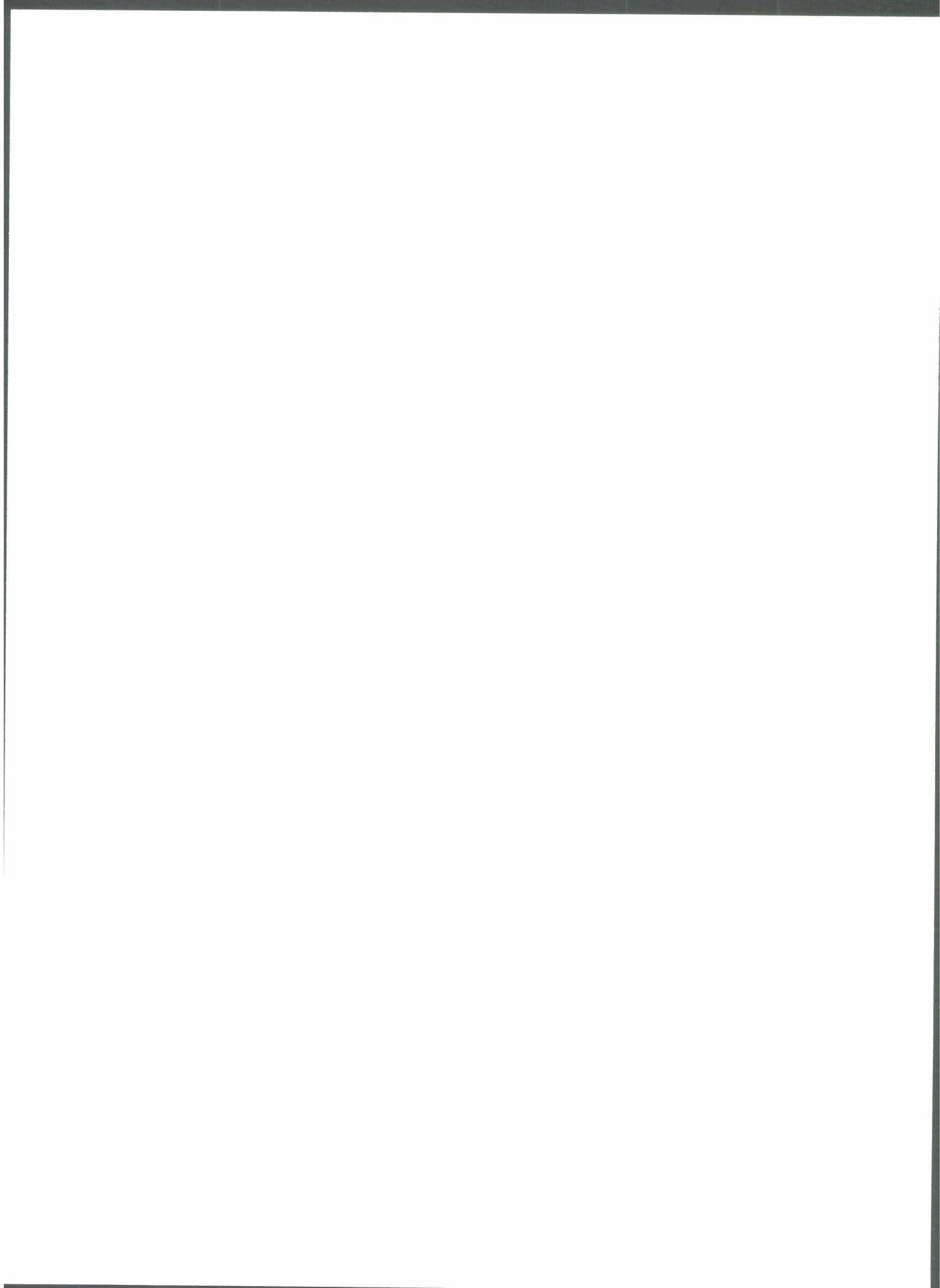
society measures in their national operational programmes, it is possible that the use of ISSA is actually implicit throughout the programme. Of course, it is also possible that it has not been considered at all.

We can distinguish two levels. The first level uses an ISSA label to identify projects and programmes. There would be an associated budget line, and projects which are identifiably ISSA projects. Examples of this kind of approach can be found in the Highlands & Islands case study, where the initiative was clearly a telecommunications project, and the Commission's STAR programme.

The main advantage of this approach is that the objective is clear, and it is obvious what the subject matter is. The main disadvantage is that it has inevitably been technology driven. Even where attention has been paid to the economic and social impact of the action, the project is defined by the technology, and this is its starting point.

The second level looks at overall development and planning goals, and applies ISSA to the realisation of these goals. With this approach, ISSA does not have a heading in its own right - it facilitates other measures. The advantage of this approach is that it maximises the way in which information services can be applied to many types of economic and social activity. The main disadvantage of this approach is that it can only work when there is already a high level of awareness of the potential to apply ISSA. It depends on people involved in all aspects of planning being aware of the potential types of information application which could be used, and being able to identify where they should be used, and how they should be implemented.

For information society measures really to benefit regional development, we would expect implementation and planning to be carried out at the second level. In other words, information society measures would be an integral part of all types of planning, and would be considered, for example, in the way in which finance or programme monitoring is considered, as an element of all projects and proposals.

However, even the more advanced regions, in terms of support for ISSA measures, are still operating at the first level.

Lack of integration

The concept of territorial planning was one which was imposed by us - none of our interviews considered their function or activity under such a classification. The main problem is that territorial planning suggests a degree of co-ordination which is absent in the regions where we undertook case studies. As we discussed earlier, territorial planning suggests the integration of planning across various domains, and our case study regions shared a lack of integration.
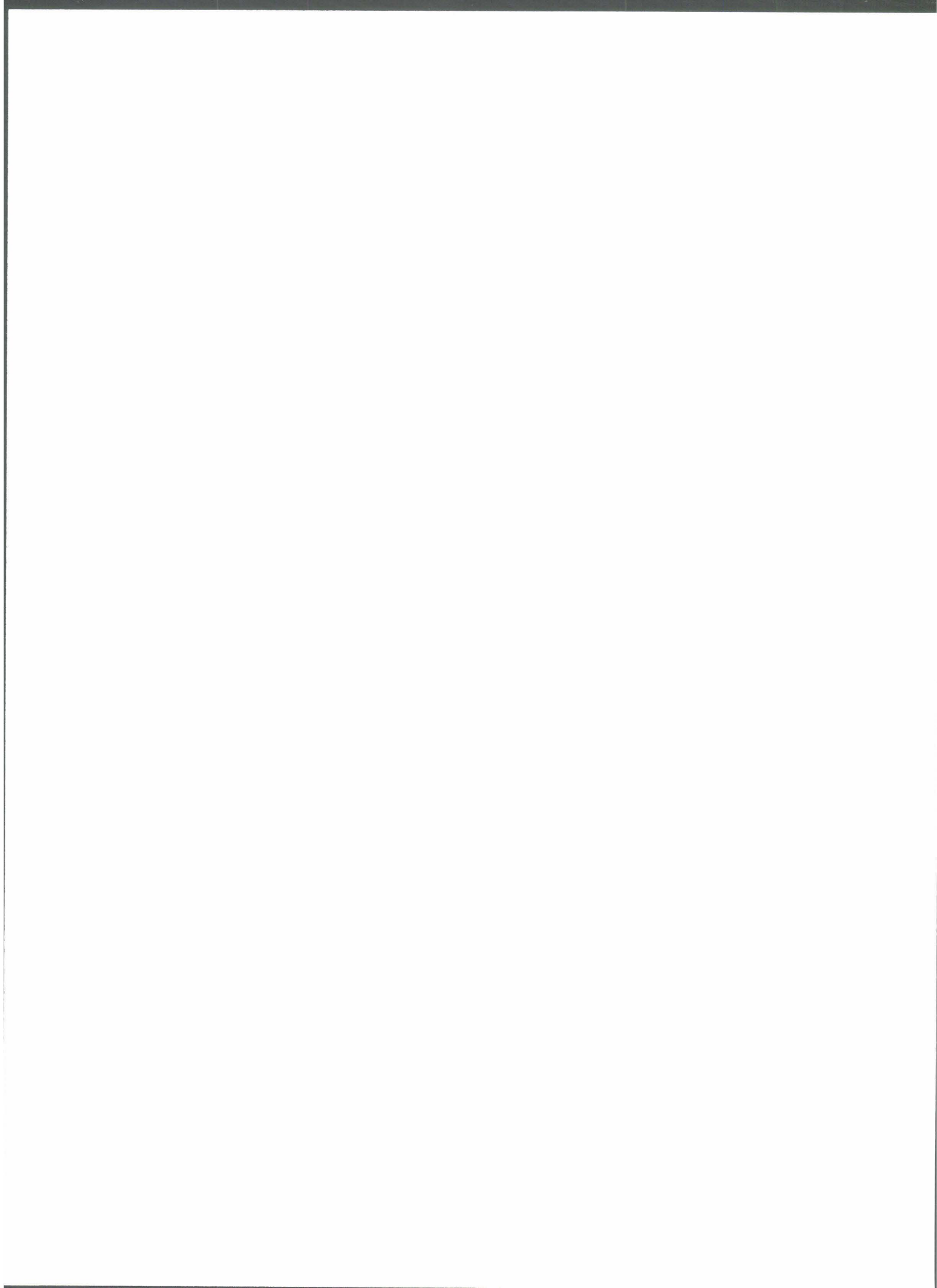
One possible explanation for this is that, at least in the regions we examined, there is a centralisation of power, coupled with a decentralisation of responsibility. This means that responsibility for identifying projects may be devolved to a regional or local level, but the authority to decide strategy and to commit budgets is frequently highly centralised. One of the consequences of devolving responsibility is that while there are advantages in local level input, the disadvantage is that effort is fragmented, and often duplicated. We can see this for instance in the Glasgow case study, where a number of agencies are working in much the same area.

Direct/indirect
• ISSA - project or support mechanism?
• ISSA still not integrated in planning
• regional fragmentation

Potential versus actual impact

The whole idea of information society is still relatively new, and a major problem identified by the agencies is the need to find what is real amongst the high levels of unrealistic expectation. There are very few good examples of the actual impact of implementing ISSA. In fact, it can be argued that the situation is even worse than this in that there are still very few good examples of the impact of implementing advanced telecoms services, let alone the full spread of applications and services associated with the information society.

This creates problems also in securing support for ISSA measures. During the case studies, we came across many very talented and committed people working at project level, but noted very few senior champions in the planning agencies. The lack of senior level comprehension is linked to the lack of hard evidence about the benefits which ISSA can offer. This is directly connected to our point on the desirability of moving from approaching ISSA as a project, to treating ISSA as an integral part of every project.

The problem is not basic awareness. All of the agencies we interviewed believed that ISSA was important, and most had explicit policies to do with encouraging the use of ISSA. There was little doubt that ISSA offers great potential, and that future economic and social growth depends on its full utilisation. This belief is echoed at all levels of the agency.

The problem comes in the translation of this general belief into actual implementation, and into the funding of actual implementation. The broadband pilots described in the Glasgow case study is a good example of this problem. The pilots contained a thorough cost benefit analysis, as well as a process of defining user requirements and securing user participation in all stages. Despite a positive outcome in terms of the reports which were produced, there has been no further progress due to an inability to find financial support. Part of this inability is to do with lack of information or knowledge about where to find support, but the greatest part is due to a lack of determination at decision-maker level.

For territorial planners, the agencies know what ISSA is; they know it is important, but they don't know what to do or how to do it.

Potential/actual
• lack of real evidence
• lack of champions
• basic awareness not an issue
• problem of implementation

6. EU territorial planning policy

There are two objectives that underpin policy formulation in the European Union:

- Economic and social cohesion.
- The completion of the internal market.

It is worth tracing the evolution of these two objectives and the policies that arise from them. The growing interdependence of the various parts of the European territory became quite obvious from the first meetings held by the Ministers responsible for spatial development who have stated that rational decision-making requires both the development of trans-national cooperation on planning and the preparation of an integrated spatial strategy for the European territory.

National decisions taken by one Member State have implications for others or indeed for the whole of the European Community. At the same time Community policies have implications at national and in many cases regional level. It therefore became apparent that there was a need for European level cooperation and exchange of information. It was also necessary to establish a formal process of consultation as an essential vehicle for policy development.

The Committee on Spatial Development (CSD) was established in 1989 and has contributed to the expression of the political will of the Member States and the Commission in the development of the European Spatial Development Perspective (ESDP). The objective of this work is to facilitate cooperation in the area of spatial planning in the European Union and ensure the coherence and complementarity of the national spatial development strategies as well as to coordinate the spatial aspects of the Community policies.

In 1991, the European Commission published *Europe 2000: Outlook for the development of the Community's territory* in order to present a coherent framework of reference for planners at European, national and regional level.

Since that time the European Union has experienced many political, social and economic changes, with the German unification and the accession of Austria, Finland and Sweden. In 1993, the European Community became the European Union with a new Treaty that introduced the following important elements:

- The establishment of social and economic cohesion as one of the main pillars of the EU and as an element in other EU policies.

- The development of trans-European networks for the interconnection and interoperation of national networks and the access to these networks, taking into account the necessity to link peripheral regions to central regions of the Union.

- The protection of the environment including measures concerning town and country planning and land use.

In December 1993, the Brussels European Council adopted the Commission's White Paper *Growth, competitiveness and employment* (EC, 1994c) which proposed the development of a common information space as an element that reinforces European competitiveness which in turn can contribute to the creation of employment.

In June 1994 the Corfu European Council identified a series of points as a basis for the continuation of debate on the White Paper. These included issues such as reforms at national level for the improvement of the efficiency of employment systems, better exploitation of the SMEs' employment potential, high priority transport and energy projects and new models of sustainable development, in particular relating to the environment. Priority was also given to '.. the full exploitation of the possibilities and opportunities provided by the Information Society', a term implying the extensive use of information and communication technologies in the work environment and at home.

In September 1994, the Commission presented *Europe 2000+, Cooperation for European territorial development* (EC, 1994a) at an informal Minister's meeting in Leipzig. This summarised the developments that had taken place since the publication of *Europe 2000*.

At the same time the CSD presented a document entitled *Principles for European spatial planning policy*, outlining the underlying political principles and examines potential spatial development policies. It identified three spheres of activity:

- Initiatives to promote a more balanced and polycentric urban system.
- Initiatives to provide parity of access to infrastructure and knowledge.
- Wise management and sustainable development of Europe's natural and cultural heritage.

The sphere of activity that deals with access to infrastructure and knowledge touches on the dramatic changes in our society caused by the convergence of the information technology, telecommunications and information content industries. The document recommends a strategy of 'deconcentration' in order to ensure access to information and knowledge throughout the European Union, not only in the core European regions and some emerging centres of the periphery. It also suggests that these centres of education and research, which it calls 'infostructures', cannot be developed on the basis of commercial criteria. It then continues to say that access to these technologies has the tendency to reduce the importance of spatial proximity to nodes of communications services. The determinant factors then become the time, cost and effort needed to access the network. The section concludes by saying that 'public authorities should exercise a fundamental responsibility of regulation (laying down standards for the quality of service and for charging)'.
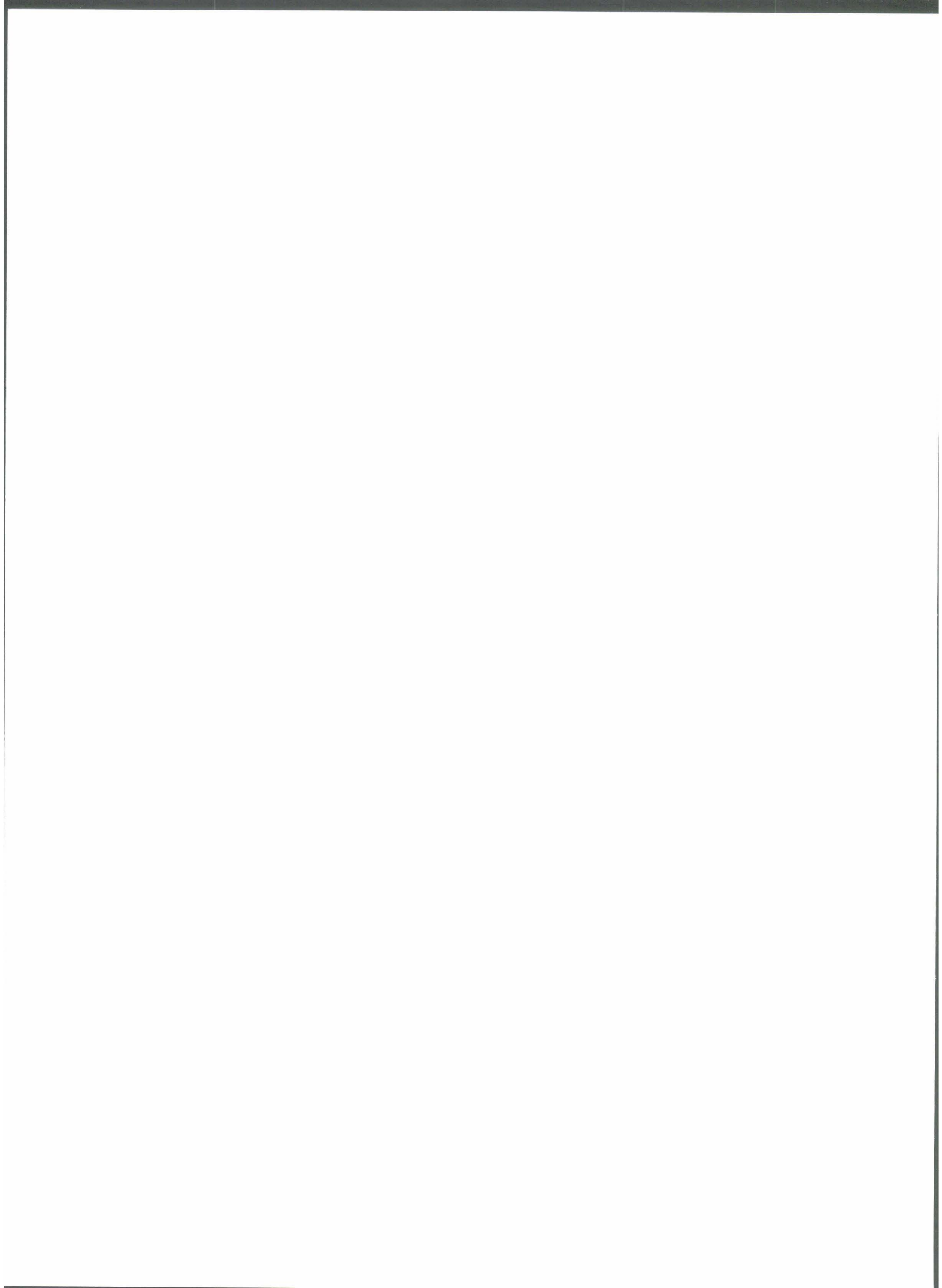
The work of the CSD for the development of the European Spatial Development Perspective will be gradual and it will be based on the proposals of the Member States, the analysis and guidelines presented by the Commission in its *Europe 2000+* communication and its follow-up work. The principles will be built on subsidiarity and will not be binding on Member States.

In January 1997 the Committee of the Regions (COR) presented its *Opinion on Spatial Planning in Europe.* The COR defined six EU planning regions: the Alpine Arc, the Mediterranean region, Central Europe, Central Capitals, the North Sea and Baltic regions and the Atlantic Arc. In its *Opinion*, the COR proposed the following actions:

- That the COR, as the representative of regional authorities, be consulted and invited to participate in the informal councils of spatial planning ministers in connection with the European spatial development perspective.

- That the Treaty (Art. 130) is amplified in order to provide for spatial planning policy to fall within Community competence with a provision for a community legal instrument to formalise and promote inter-regional cooperation.

- That sectoral policy must be examined from the point of view of its impact on spatial planning, in the interests of integrated development and territorial cohesion.

- That structural funds policy should reflect the special position of the wider regions as defined in the interregional structures and should draw development programmes for the entire region along with the corresponding budget and allocation of financial contributions.

The Commission document *Cohesion and the Information Society* (COM (97) 7 Final) made reference to the link between territorial planning and the Information Society through its capacity for economic development potential for a region:

> Though ICTs (information and communication technologies) are not, by themselves, bringing about or determining any particular spatial outcome, their up-take affects regions' ability to exploit and develop their human resources, infrastructures and the like, thus determining a region's development potential. This is important, in particular, for SMEs which represent the backbone of regional economic structures, especially in LFRs. At the same time if all citizens are not offered equal opportunities of access to the information society, we risk the creation of new forms of social exclusion. [EC, 1997]

6.1 Regional effects of trans-European information networks and their associated services and applications
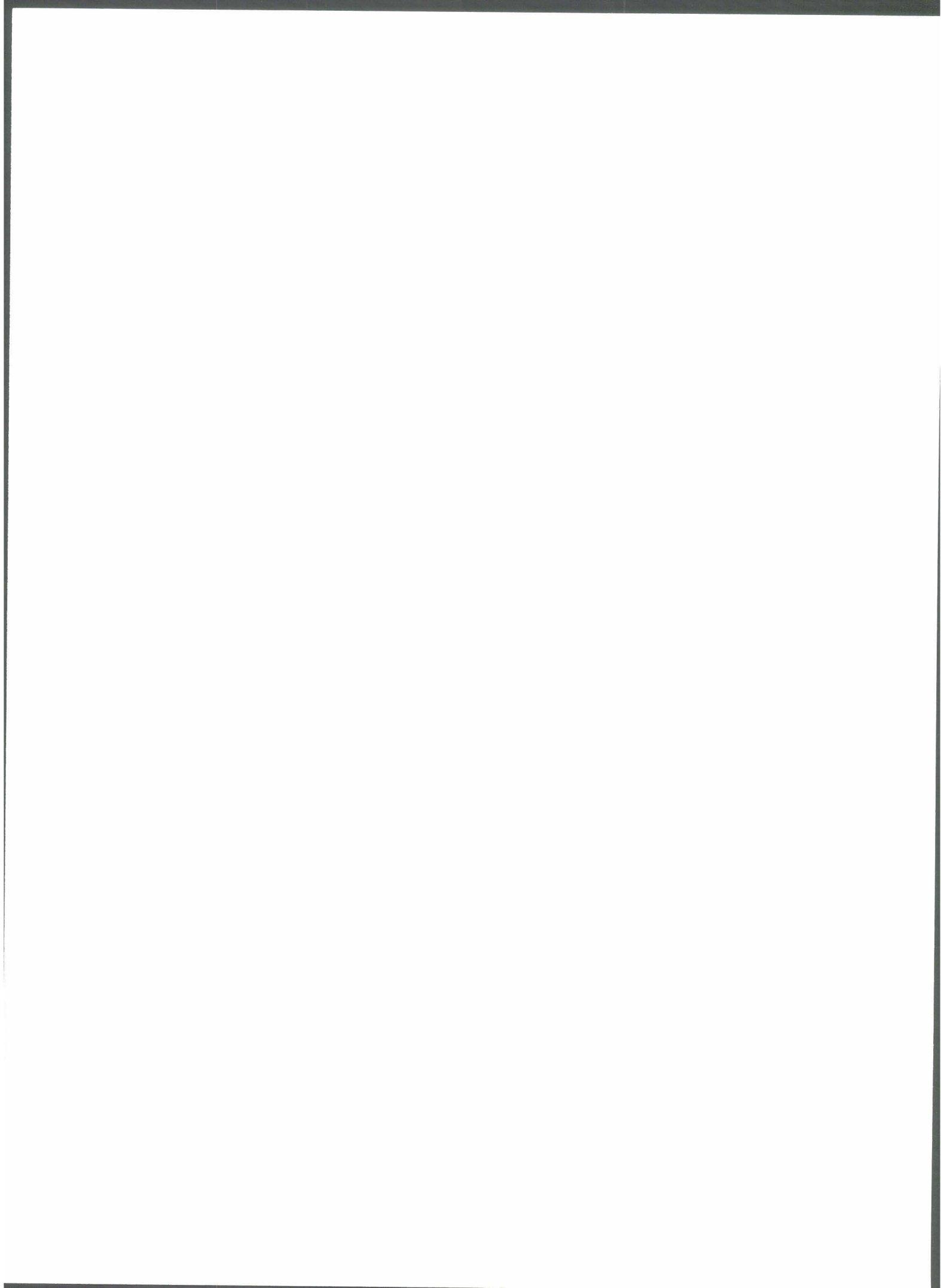
The Commission's White Paper on *Growth, competitiveness and employment* has established the creation of major infrastructure networks, including information networks, as one of the main priorities for Community action with the objective to improve European competitiveness and to promote the harmonious development of the European Community as a whole.

The Bangemann group that was composed of leading figures in information and communications technologies presented a report in June 1994 at Corfu that outlined an action plan for the implementation of the Information Society which reiterated the priorities regarding networks and identified priority programmes in teleworking, distance learning, health networks, a network of University and research centres and a network of public administrations.

In the Commission's *Europe 2000+* report the new policy adopted is summarised:

> Community priorities are to develop the use of information technologies, to ensure the provision of basic trans-European services throughout Europe, to work towards establishing an appropriate regulatory framework and to improve industrial technological performance. [EC, 1994a]

The report makes a distinction between infrastructure and services and applications:

- Information highways (broad band networks) which allow a large quantity and variety of information to circulate rapidly and simultaneously.

- Services, notably the promotion of those facilitating access to information (databases), its transmission (electronic mail) and its exchange (interactive video).

- New applications in work, health care, education and leisure, with priority in the areas of teleworking, tele-information, tele-medicine and tele-administration.

Improved information highways and the deployment of more sophisticated services and applications can result in positive economic and social benefits which include enhanced GDP and employment, improved business competitiveness, improved access to information databases and educational distance-learning facilities and improved spatial harmonisation as a result of reducing the negative effects of the peripherality of LFRs.

The first level of possible disadvantage facing the LFRs is infrastructure. However, it is not the only condition for the best use of information society services and applications (ISSA). There is a requirement for a whole spread of diffuse measures to do with public awareness, training, relevance of applications that can have a much greater impact in the implementation of the information society policy.
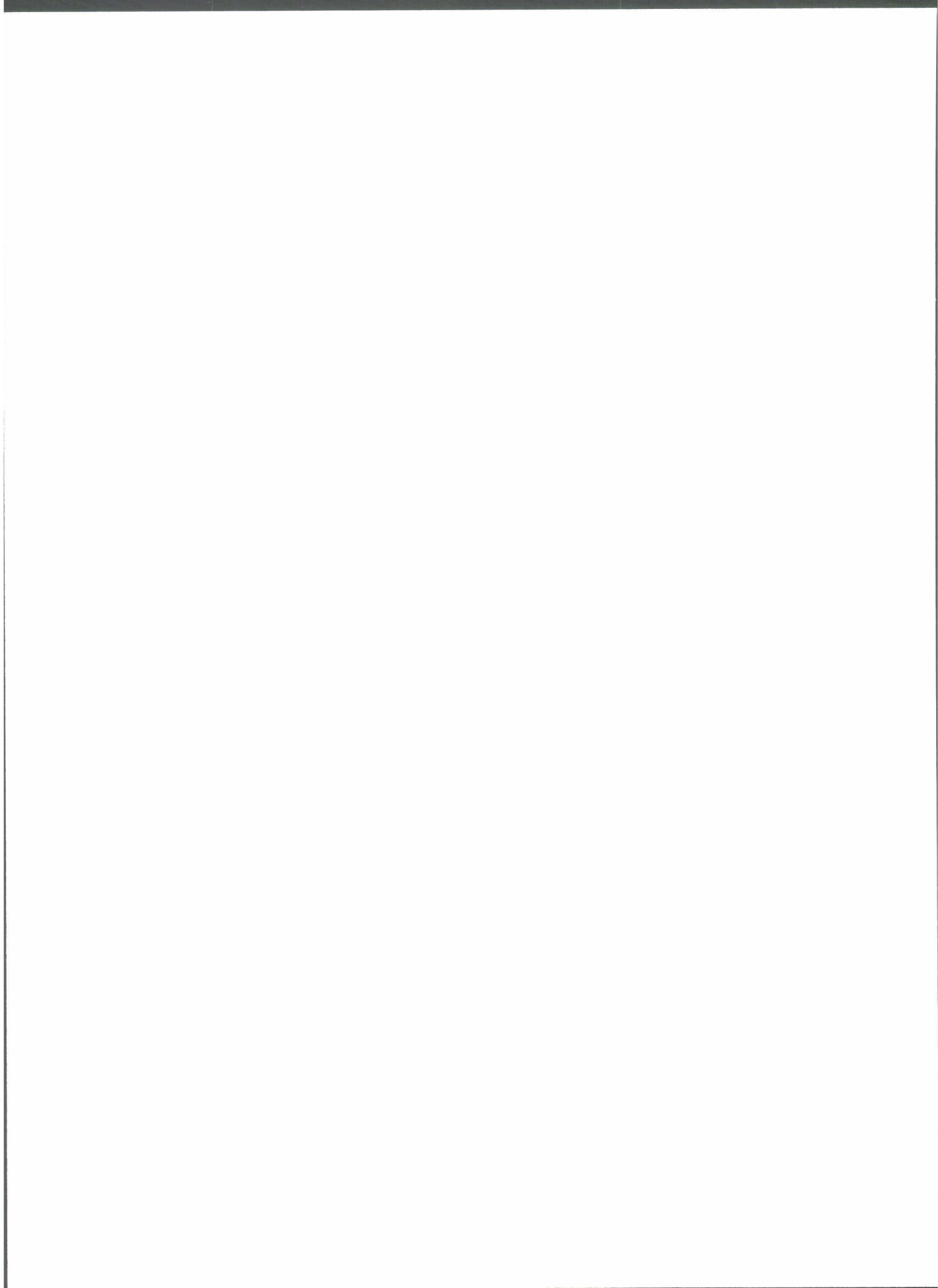
At the same time the deregulation and privatisation policies of the European Union tend to push prices closer to cost, a trend that could present a considerable threat to the LFRs as they have been benefiting from the cross-subsidisation practices embedded in telecomunications pricing systems.

In the absence of LFR-focused policies that would promote the use of ISSA at an affordable cost and would support awareness and training efforts to ensure skill development in the regions, the take-up of new services will continue to be limited relative to the core regions and the types of ISSA supported economic activity will be rather routine and low-skilled.

We are, therefore, in a position where two EU policy initiatives are interacting. On the one hand there are territorial planning and regional policies seeking to promote economic and social cohesion and to accelerate the completion of the single market. On the other, there are information society policies that seek to stimulate economic growth and competitiveness while also promoting greater social cohesion.

The challenge is to identify ways in which these broad policies and the initiatives that arise from them, can be harmonised.

6.2 Case study work and observations

The case study work undertaken by this team leads us to a number of broad conclusions:

First, regional and local authorities are the natural Commission partners regarding spatial planning as they are better situated and understand the local situation and dynamic at regional level.

Even though the powers and responsibilities of the regional authorities in the three Member States that our team visited are different, in all cases they considered themselves responsible for initiating Information Society programmes that could have a spatial planning potential. Furthermore, regional and local authorities view information and communication technologies and the deployment of advanced services as an economic development tool.

Communication among the various local actors that could play a critical role in the exploitation of the Information Society is however insufficient to generate a coherent regional strategy for the economic development of the region or for its territorial planning.

The process of integrating ISSA into planning activity is gradual and requires considerable effort in parallel public awareness, education and training efforts. It is important, therefore, that there is an increasing sense of awareness that regional cooperation is not undertaken in isolation, but a region or regions can share collectively
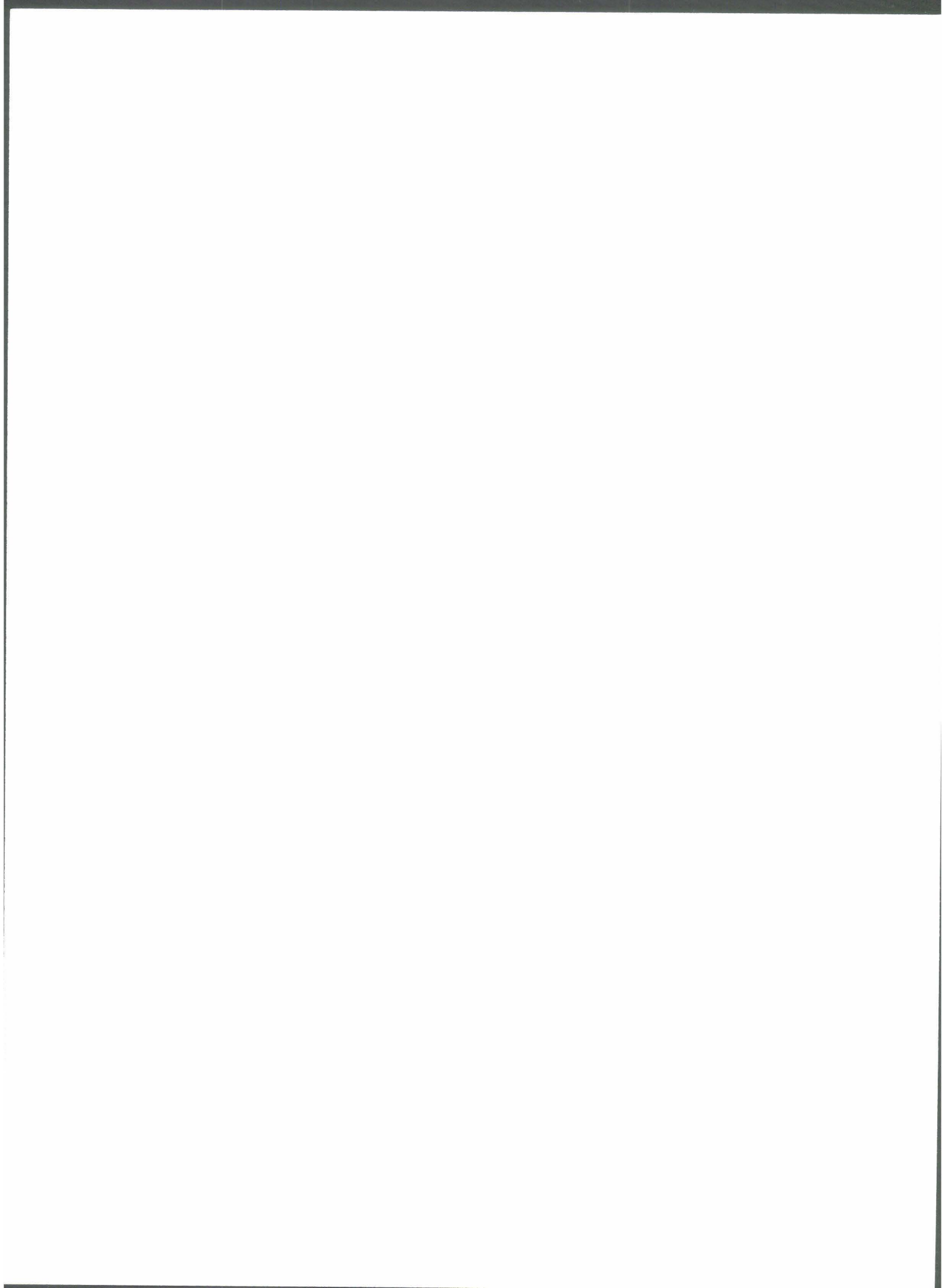
the responsibility to explore the Information Society potential. At the same time interregional cooperation in the exchange of information and experiences is not fully explored.

We have, therefore, a situation in which there are considerable imbalances with respect to access to ISSA and awareness of the various services and applications that may be available within a given region.

Finally, integration of ISSA into the territorial planning process is constrained by the lack of 'champions' in the regions to develop applications and to demonstrate examples worth following in ISSA deployment.

6.3 Policy considerations

Communication and information policies are growing in significance in the regional political agenda as governments are trying to come to terms with the wider social, political and economic implications at regional level. At the same time there is increased acceptance of the need for spatial planning in particular in the LFRs and their links to important centres of economic activity within the region but also within other regions in the EU and in neighbouring states.

The stakes for Europe's LFRs

In this time of search for regional niches the most difficult task ahead for the LFRs is the ability to adjust to a highly competitive, service-based global economy. In such an economic environment in which business and communities in core European regions are using ISSA strategically to gain a competitive advantage and an improved quality of life, regions that have limited access to them are unlikely to survive. A number of policy prescriptions follow from this.

The need for a regional Information Society strategy as a tool for economic development

Within the European Community context it is becoming clearer that communication policy cannot be considered in isolation as it may have a considerable impact on other policy sectors. Participating in the Information Society is often a mixed blessing and often functions as a double-edged sword. Therefore, it is essential for all local actors that participate in the regional economy to understand, and take into account, not only the benefits and the costs associated with these new services and applications, but also the socioeconomic conditions under which the benefits are likely to be realised.

Regional and local authorities are better situated and understand the local situation and dynamic at regional level. They are the focal point of any strategy building and they can provide the continuation in the learning and the experience gained in the new
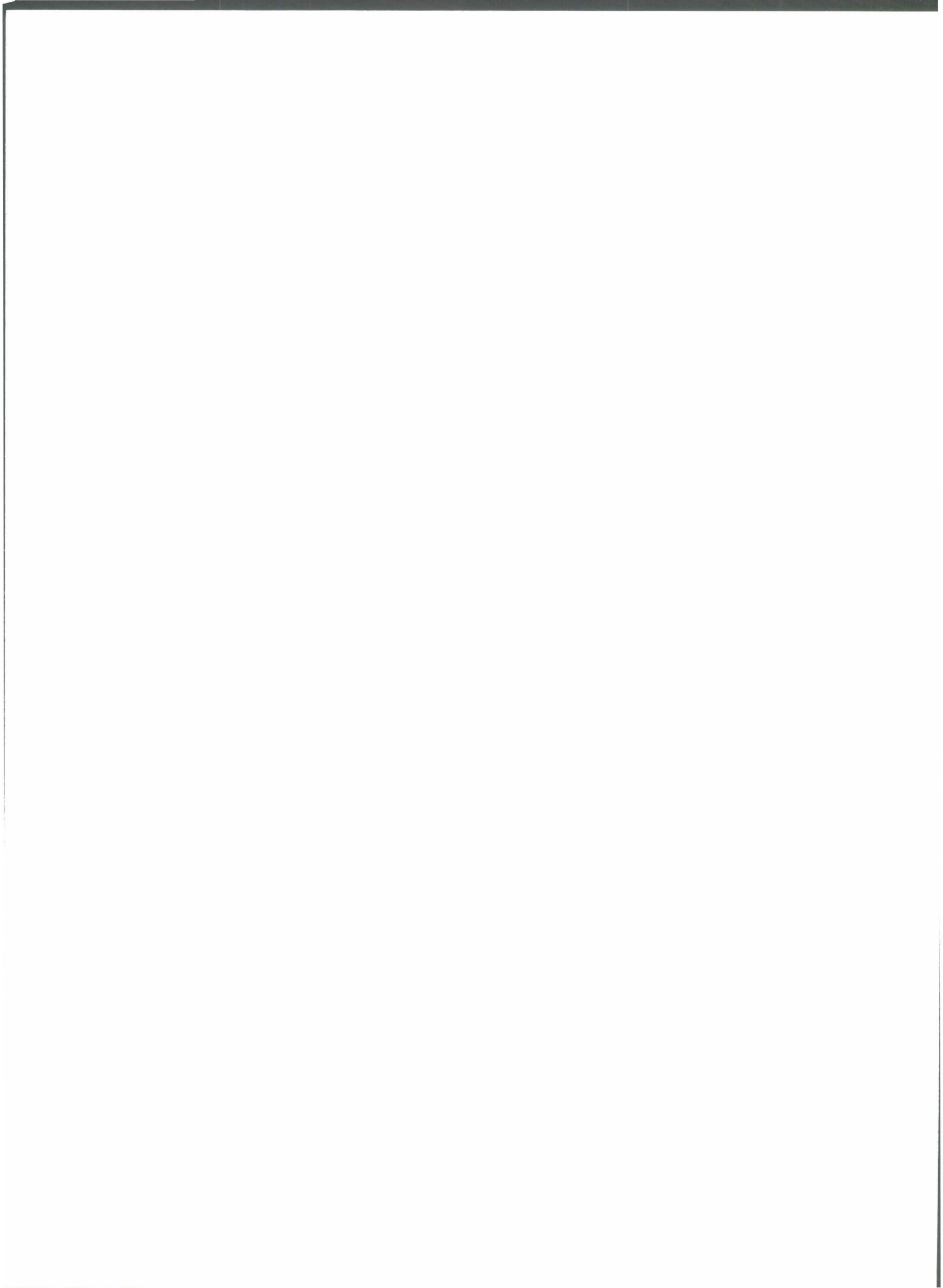
environment. However, alone they cannot bring about the required changes. These come only when all local forces are implicated in building an integrated regional strategy that is based on partnerships, both public and private and a genuine commitment from as many as possible regional actors.

Considerable experience in strategy building at regional level is now being accumulated through the Art.10 ERDF and Art.6 ESF funded Innovation and Technology Transfer and Information Society pilot initiatives. The European Commission needs to continue the work in defining this approach of developing a regional Information Society strategy and to stress to the regions the necessity of developing a strategic direction in this field.

The need to express clearly the link between ISSA and territorial planning

Politicians and decision makers need to better understand the link between ISSA and territorial planning and furthermore they need to provide the vision and leadership required needed to promote the effective deployment of ISSA for economic development which affects territorial planning. Providing vision in setting territorial planning objectives through the use of ISSA could open new opportunities and options for development for the LFRs and the creation of new sources of local employment which will diminish out-migration if not reverse the trend.

Policy thinking in this area needs further development in defining and identifying the broader requirements of ISSA and then incorporating them into the overall regional economic strategy.

The need for the development of local demonstrators

There are not many concrete examples of specific direct costs and benefits, such as creation or loss of jobs. It therefore becomes that much more difficult to quantify the indirect costs and benefits, which may be even more important, such as a positive or negative effect on the quality of life. In addition, even if an example is available in one Member State, it may not be that relevant for another. Clearly, what works in one region, does not necessarily work in another. It is through understanding of local potential and through focused training and education that a region can best explore new options and opportunities that may be available to it.

Through this process of evaluation, learning and experimenting, relevant local demonstrators can be built that are extremely critical in convincing the local community for the associated benefits of a certain action in a familiar context that would be easy to relate to. The European Commission could consider how best to work with the regions in supporting local demonstrators and how to increase awareness of them through dissemination of information and results.

The need to promote a learning society

ISSA can provide access to learning opportunities for the LFRs by overcoming distance and time barriers. In addition, learners can be connected to each other and thereby allowing for a sophisticated exchange of experience at individual and institutional levels. ISSA then becomes a tool which helps individuals maintain themselves in the marketplace or even create new options for employment in the future.

Technological improvements alone cannot bring about significant changes in the economic potential of an LFR. It is the development of the local workforce through education and re-education that can provide the necessary elements for the exploitation of new technologies and could improve the efficiency of delivery of services in transport, medicine, education, etc. For the LFR resident ISSA provides a unique opportunity to have access to learning opportunities at any time and place which could significantly affect carreer choices and quality of life expectations. Policy should focus on interoperability of equipment and networks and on ensuring that such education and training provision is easily accessible by those who need it most.

The European Commission should consider defining the requirements, both in terms of physical infrastructure, and in terms of the local potential of human resources and capabilities, and should also include an analysis of the actual learning that is needed to open up opportunities at regional level.

The need to promote inter-regional cooperation and sharing of experiences

One of the main conclusions of the research studies that led to *Europe 2000+* is that:

> European cooperation is the only way to foster a territorial development which does not lead to excessive disparities between regions and which provides a more equal possibility of establishing the various conditions necessary for improving competitiveness. [EC, 1994a)

Regions need to explore their potential within the new dynamic of a networked world through new alliances and a new context. It is not only the dramatic technological changes of the 1980s and 1990s that are necessitating a different approach. Other significant structural changes are also occuring in the world economy: the collapse of the former socialist countries, the increased importance of the Pacific basin areas, new trade agreements with Mexico and other countries, European enlargement and an increase in regional trade partnerships internationally.

A culture of cooperation and inter-regional exchange makes it possible to explore new business opportunities, trade partners, public-private partnerships and cultural exchanges for the regions. This way the regions could evaluate the sustainability of current economic policies and their impact. Policies that may have been sustainable within a national context may no longer be so in a global context and regions should, therefore, explore their global potential because this will definitely have implications for the way that regional-territorial decisions are being made.
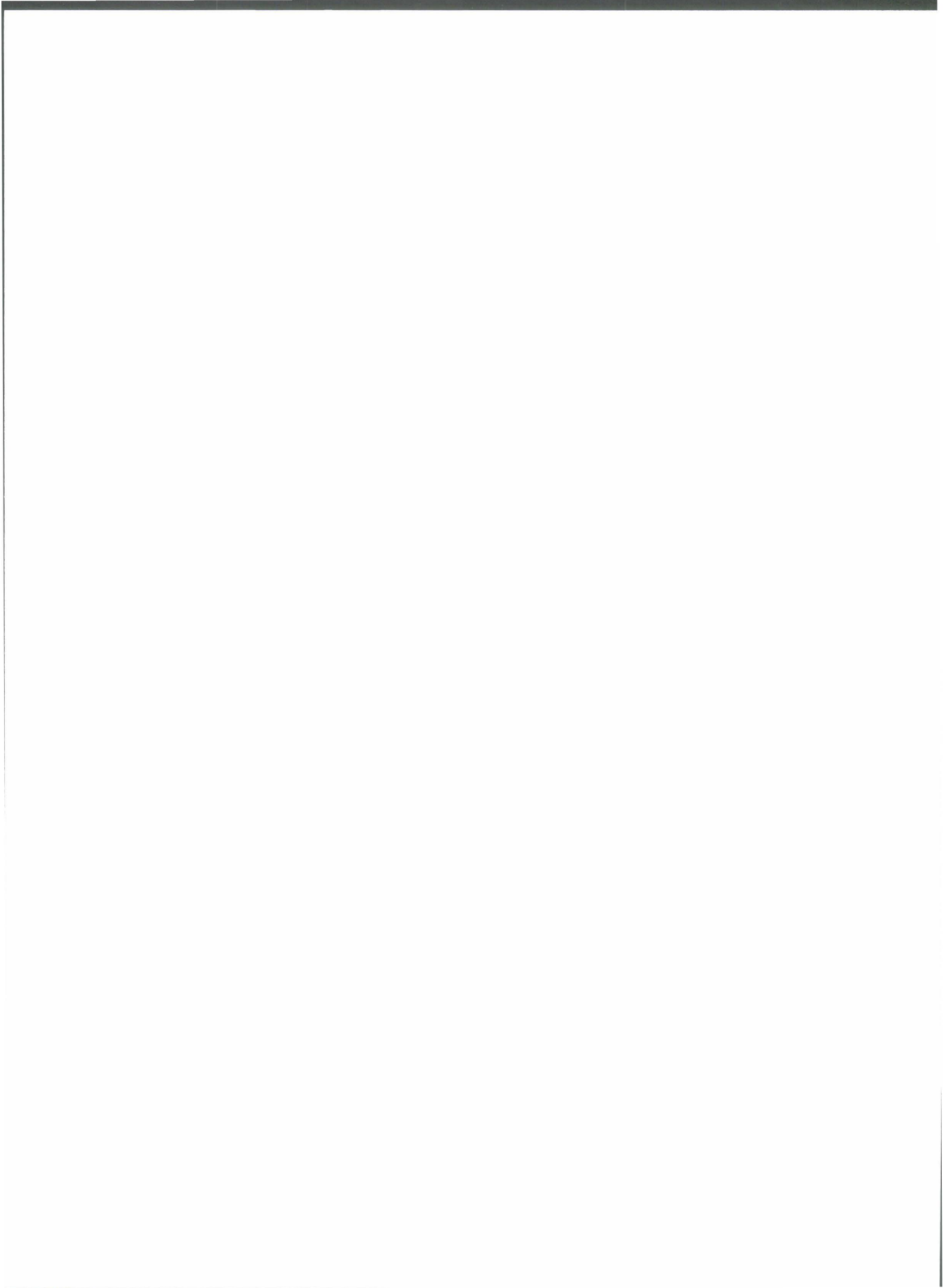
The European Commission should continue encouraging the new process of cooperation and regional consensus and should incorporate in its policy development the lessons that are being currently learned through the pilot activities. In addition, it needs to consider future support actions that would spread the message beyond the small number of regions that are presently participating in the pilot scheme in order to involve as many European regions as possible.
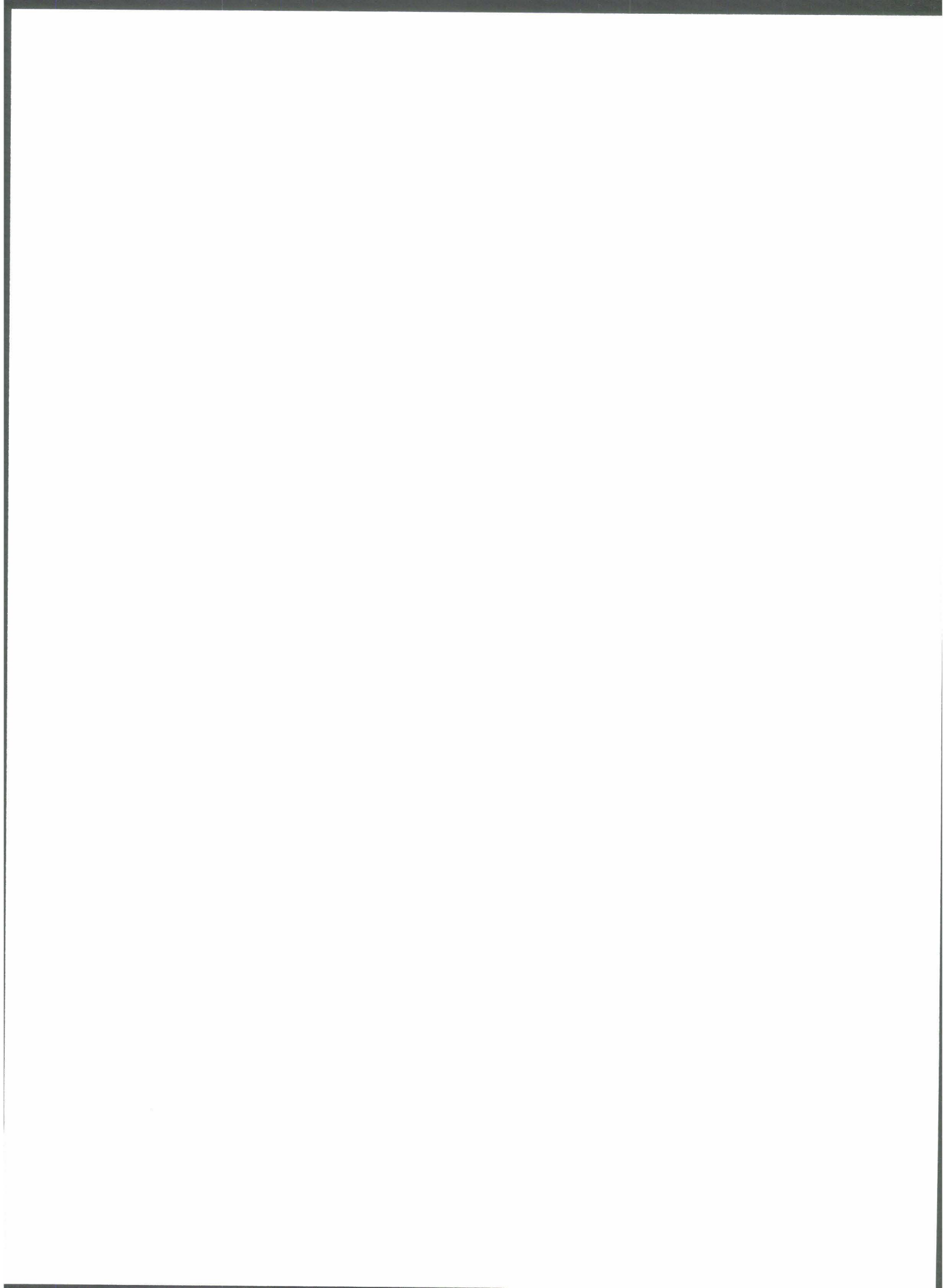
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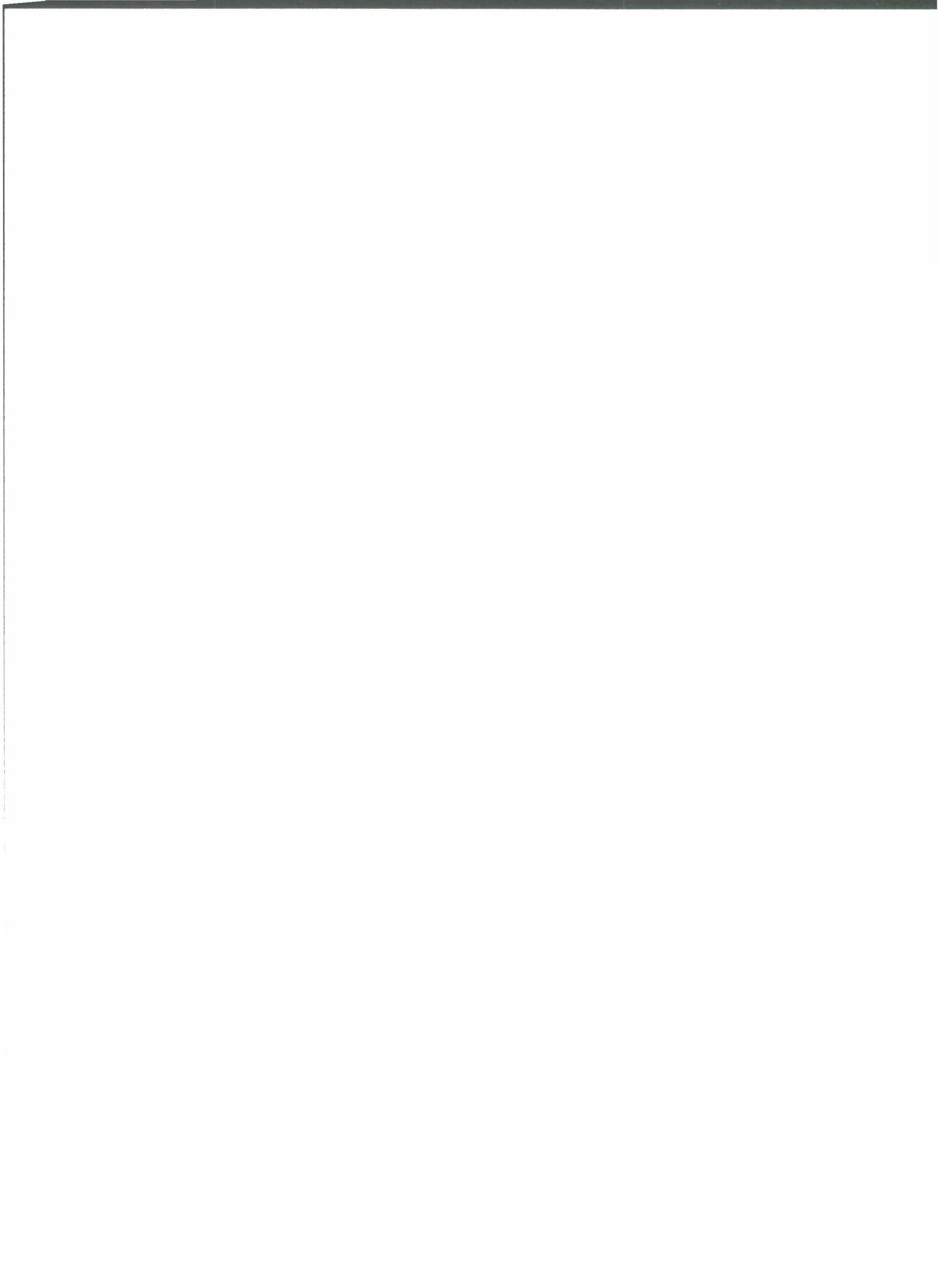
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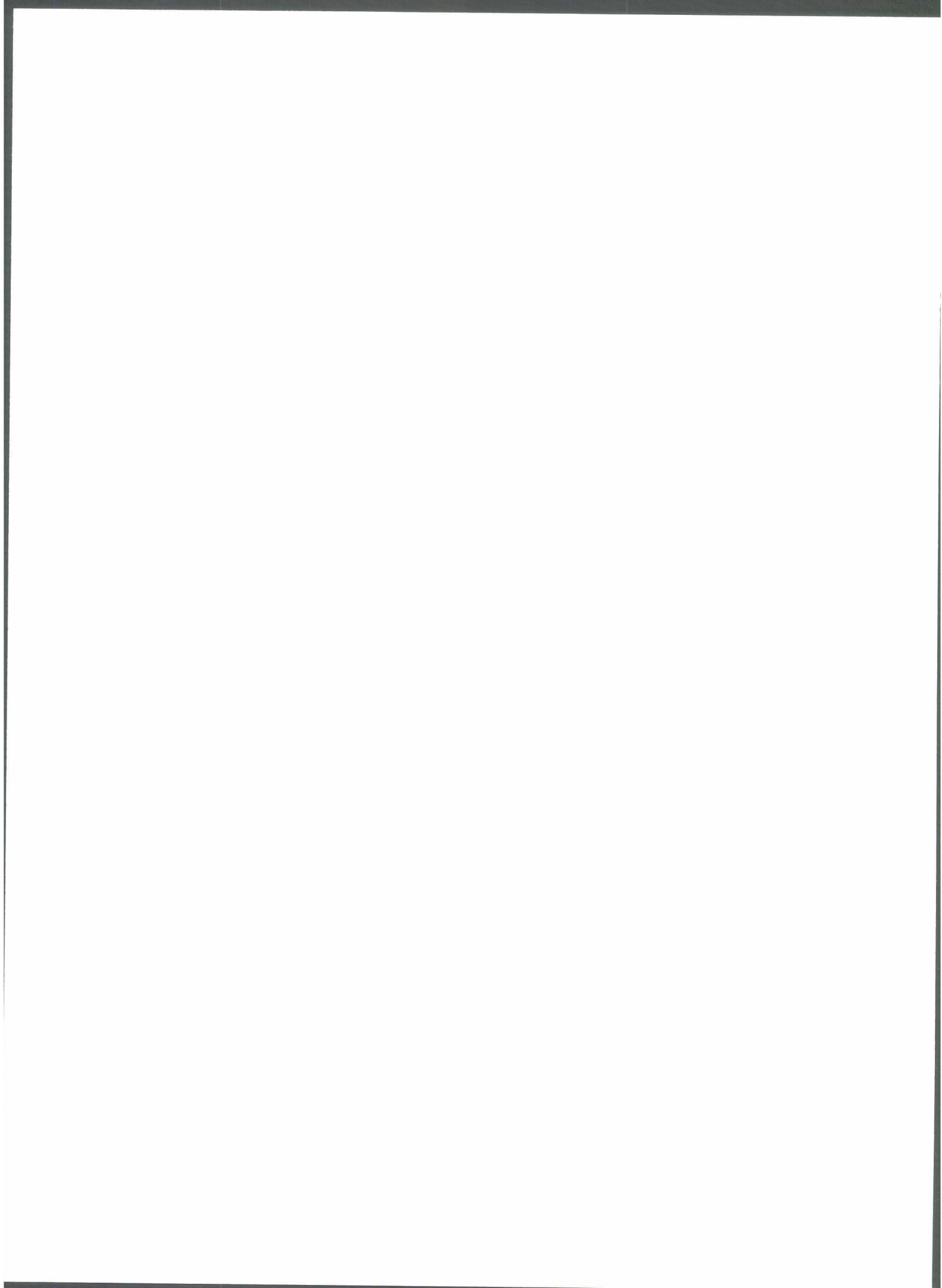
Annexes

Annex A: Scotland country report

Annex B: Portugal country report

Annex C: Greece country report

Annex D: Case study format

Annexes

Annex A: Scotland country report

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Annex C: Greece country report

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The impact of the information
society on the
territorial planning of the
less favoured regions

Annex A
Scotland country report

May 1997

Policy Studies Institute,
London
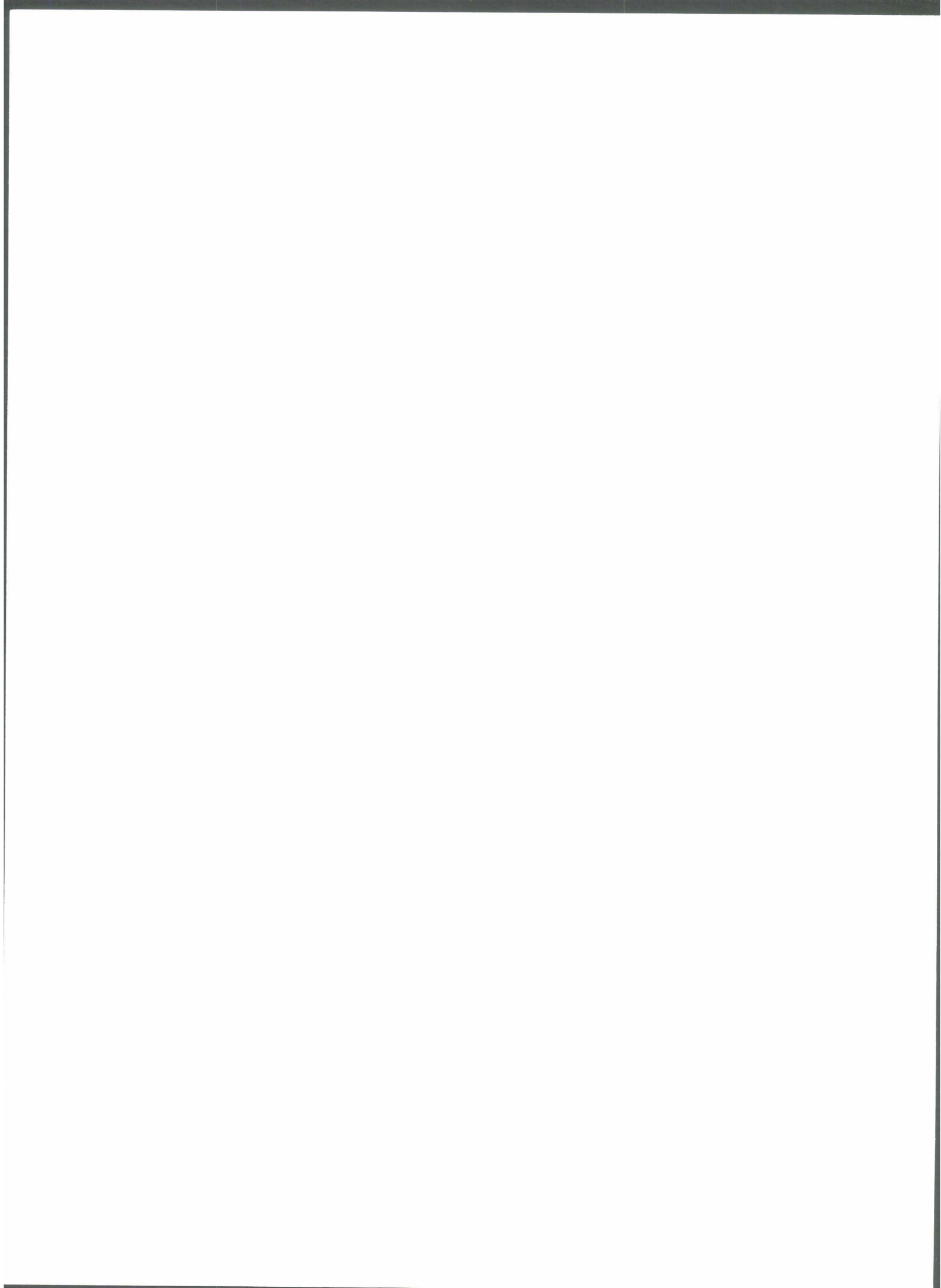
The impact of the information
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Scotland country report

March 1997

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London

CONTENTS

1. SCOTLAND

1.1 Introduction

Scotland was an independent state until 1707. It is now part of the United Kingdom, but retains some separate institutions such as a legal system and an education system, and has a distinct culture.

The country is made up of three distinct bands. Industry and commerce are largely concentrated in the central belt, which contains the cities of Glasgow and Edinburgh. The area to the south of the central belt is mainly rural, with some specialised industry such as textiles. The area to the north of the central belt is also rural, depending on primary industries and tourism, plus activities connected with the exploitation of oil from the North Sea.

Figure 1: Map of Scotland showing Glasgow and H&I region
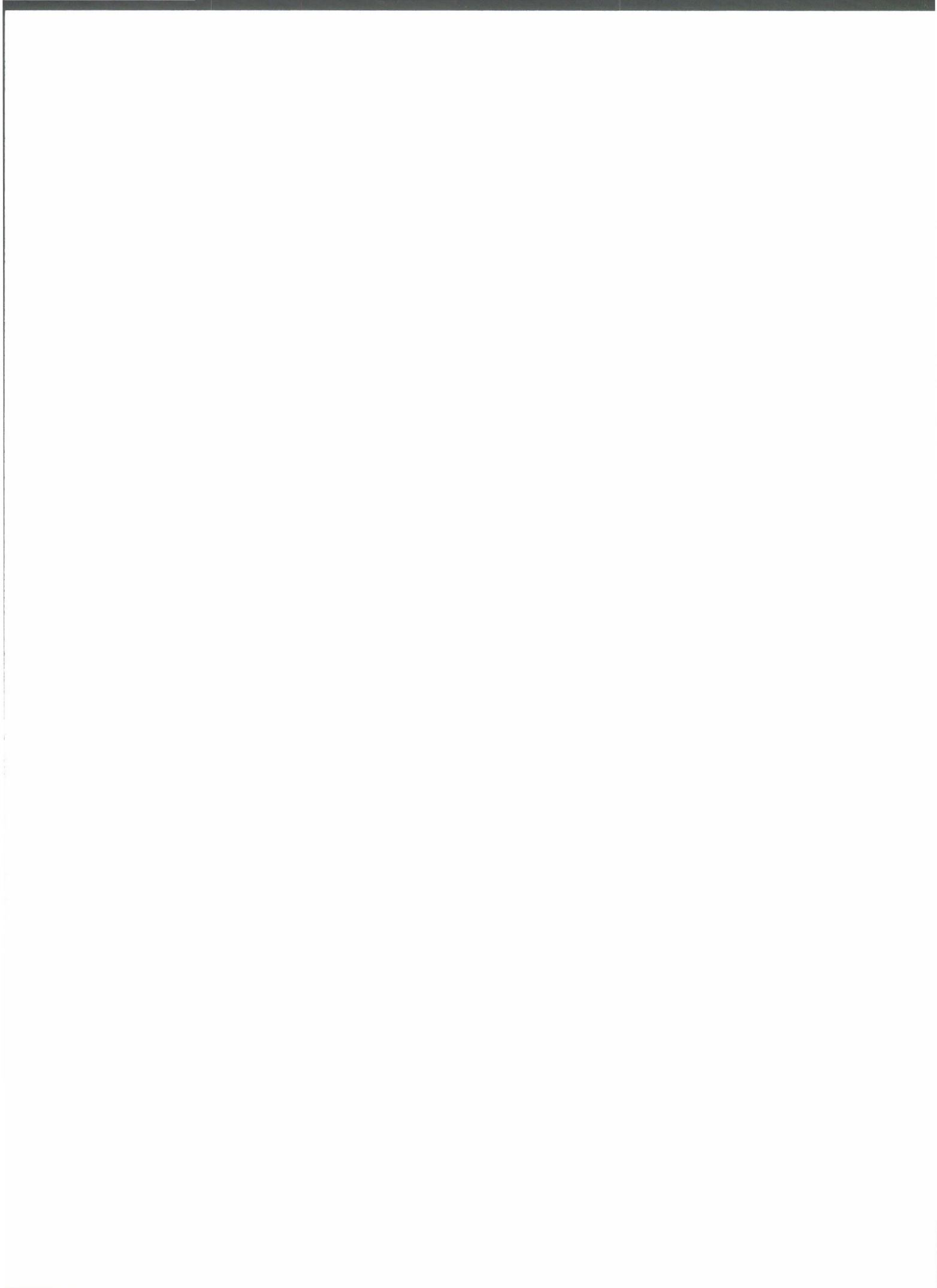
1.2 Economic and social overview

Scotland's economy is generally characterised by the failure to create employment in the face of the decline of traditional industries.

Scotland's population has been decreasing slowly, and although there was a small net migration gain in the early 1990s (the first for over 40 years), there continued to be an increase in the out-migration of young people. This is clearly linked to the high levels of educational achievement, coupled with the lack of work opportunities. The proportion of Scots entering full time education is higher than for any other UK region, and the country has a strong network of universities and other higher education institutions.

We have carried out two case studies in Scotland, one in the Glasgow area, and one in the Highlands & Islands. These areas provide examples of two very different environments, with different issues and approaches to territorial planning. Glasgow is in the industrialised central belt of the country, and has experienced major economic restructuring due to the decline of heavy industry. The Highlands & Islands are on the periphery of the Community. The area is remote, and one of the least populated parts of Europe, with a high proportion of the population engaged in primary industry (agriculture, forestry, fish farming, fishing), and in tourism.

1.3 Telecoms/information overview

The telecoms sector in Scotland - as in the rest of the UK - has been subject to a rapid transition from monopoly supply to a liberalised and competitive marketplace.

The UK pioneered telecommunications liberalisation in Western Europe. Limited competition in terminal equipment was introduced in 1981 and in 1984 the monopoly operator, British Telecommunication (BT) was privatised and a second operator was licensed. The UK telecommunications market is currently one of the most liberal in the world with competition in voice telephony, data communications and value-added services, mobile communications and network infrastructure provision. The telecommunications market is regulated by an independent body, the Office for Telecommunications (OFTEL). Competition has improved both the range and quality of service provision and network infrastructure, and tariffs are amongst the lowest in Western Europe.

In this competitive climate, data relating to regional telecommunications provision is regarded by UK operators as commercially sensitive, and not disclosed publicly. For this reason it is not possible to provide a profile of telecommunications provision in the Scottish cases study regions. In lieu of this sub-regional analysis, the figures in Table 2 (over page) provide an overview of telecommunications provision in the UK as a whole.

Table 2 : Telecommunications statistics - UK

	1988	1991	1994
Inhabitants (m)	57.24	57.38	58.09
Main lines (m)	23.85	25.56	28.39
Main lines/100 inhab.	41.67	44.61	48.87
% main lines connected to digital exchanges	..	55	82.7
ISDN subscribers 000s	..	..	50
Faults per 100 main lines per annum	..	15	15
Source: ITU Yearbook 1994; ITU World Telecommunication Development Report 1995			

BT remains the dominant operator in Scotland, with high levels of investment in infrastructure and services. BT employs around 10,000 people, compared with a total of 4,000 for all other operators combined.

However, the last five years have seen a number of new entrants in the Scottish market, offering a range of services to a range of market segments. Table 3 below summarises the current market position, and telecoms operators active in the country are described in the annexes at the end of the report.

Table 3: Telecommunications supply in Scotland

service	operator	market
full service fixed network	BT	business + residential
access provider	Mercury Scottish Telecom	mainly large business mainly urban
cable TV + telecoms	TeleWest (E of Scotland) CableTel (W of Scotland)	residential + small business

mobile voice	Cellnet (BT) Vodafone Orange	business + residential
global services	Concert (BT/MCI) AT&T	large business
infrastructure	Scottish Hydro (N of Scotland) Racal-BRT NTL	PTOs
international simple resale	ACC Worldcom	large business

Source: Scottish Enterprise and PSI, 1997

In addition to the companies listed in the table, we can note services announced but not yet begun :

- Mercury One-to-One announced in September 1996 that it would open its PCN service in Central Scotland,

- Fibreway, a fibre provider part-owned by British Waterways, will provide fibre services to PTOs.

- Scottish Telecom is due to launch a radio-based fixed telephony service in the first half of 1997. Atlantic launched a pilot radio access service in the Glasgow area at the end of 1996, and expects to roll this out within two years.

The effects of competition have been uneven within Scotland. For example, cable franchise areas cover around 50% of the population in urban areas, and none in rural areas, and all new market entrants tend to focus on the central belt.

As well as regional differences within Scotland, there are differences between Scotland and other parts of the UK. Table 4 below shows the relative density of telecoms provision across the UK
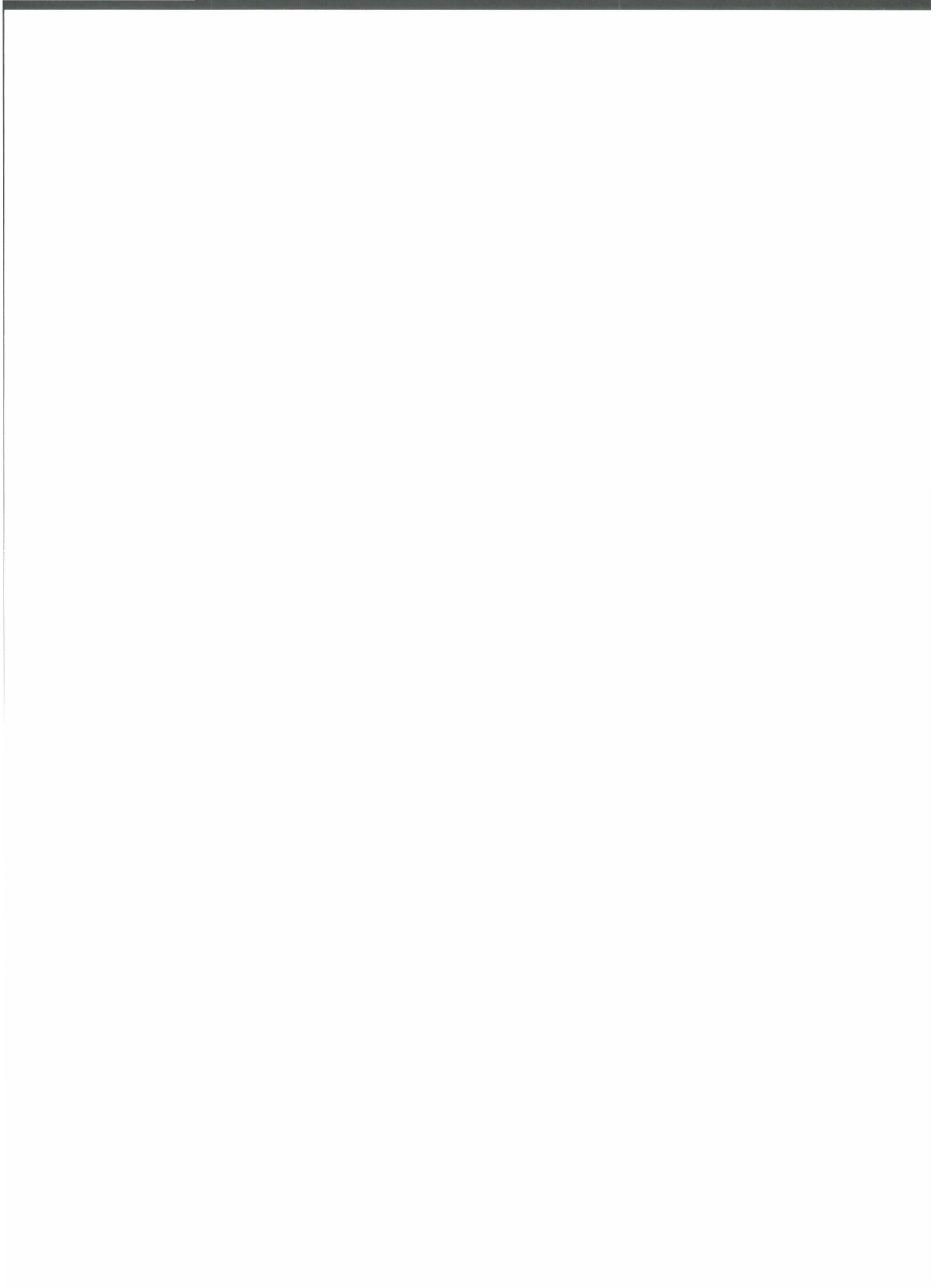
Table 4: Intensity of telecommunications infrastructure deployment in the UK

Very low density   *Highly dense*

Density of telecoms demand £m/km2	Scottish villages	Scottish towns	Aberdeen/ Dundee/ Perth	Edinburgh/ Glasgow	Greater London	City of London
Competitive access provider	N	N	1	1	1/2	3
Long distance carrier	N	N	1	1	2	2
BT	Y	Y	Y	Y	Y	Y
Cable co.	N	N/Y*	Y**	Y	Y	Y
Fixed radio access co.	1	2	2	2/3	3/4	4
ISR (indirect)	Y	Y	Y	Y	Y	Y
ISR (direct)	N	N?	2	2/3	6/7	10/12
Dialback	Y	Y	Y	Y	Y	Y
Satellite gateway	N	N	N	1	N	3/4
Global service co.	N	1	1	2/3	3	3

* Depending on size/proximity to Central Belt

** Not Aberdeen

We can see that, while the absolute position of Scottish business in respect of telecoms provision is improving, its relative provision to the markets in South East England is being eroded. This is, to some extent, mitigated by regulation. OFTEL requires BT's prices to be geographically averaged and non-discriminatory. However, OFTEL's protection is unlikely to be indefinite - we would expect that, as the market matures, it will withdraw from direct price intervention and rely on competitive pressure. This is a particular issue for both of our case study regions, as the quality and availability of telecoms have been major selling points for inward investors. This point is developed further under each of the specific case studies below.

1.4 Territorial planning in Scotland

Agencies and the planning process

This section presents the approach to territorial planning for Scotland as a whole. The specific structures associated with each of the case study regions are discussed in the separate case studies below.

Figure 2 shows the key agencies involved in the planning process, with their main areas of responsibility.

From this, we can see that the three levels of government are :

- Scottish Office, which is the central government department, and represents central (UK) government policy in Scotland

- Enterprise Networks, which are the development agencies

- local authorities

Annexes I, II, III and IV provide background in the following areas :

- UK regional policy

- UK information society policy

- planning system objectives and structure

- telecommunications operators in Scotland
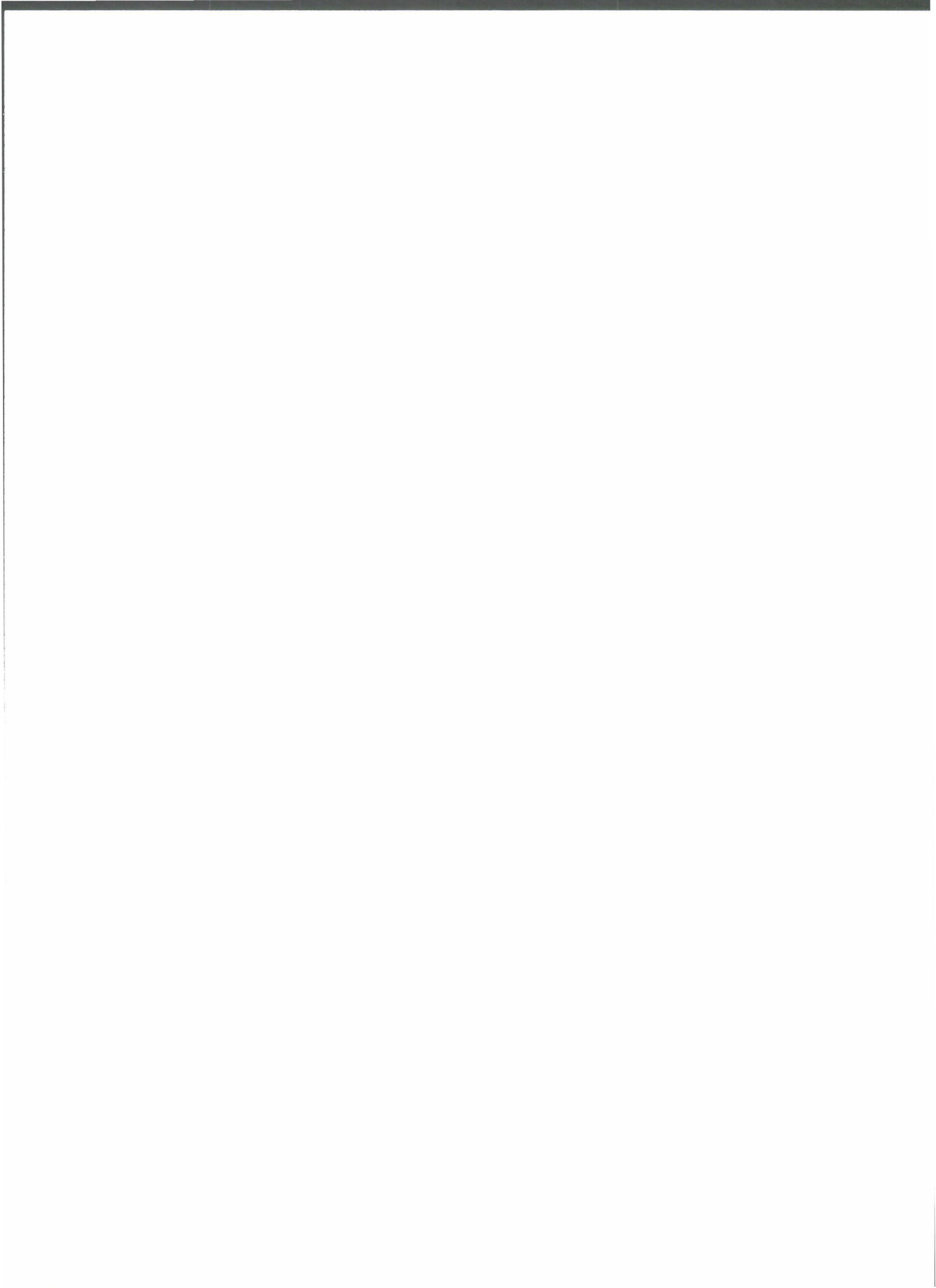
Figure 2: Territorial planning agencies in Scotland

National Government

The Scottish Office

Development Department

Responsibilities include:

- physical infrastructure & built environment
- statutory planning framework
- local government
- European affairs

Education & Industry Department

Responsibilities include:

- education and training
- economy and Enterprise networks
- Scotland's relations with Europe

Local government

(32 unitary councils)

Responsibilities include:

- land-use planning system, including the preparation of strategic plans and operation of planning control
- economic development
- education
- transport
- housing
- cultural and leisure services

Highlands & Islands Enterprise
(Headquarters plus 10 LECs)

Scottish Enterprise
(Headquarters plus 13 LECs)

Provides and manages government and EU support to industry and commerce. Empowered to:
- attract inward investment
- provide financial and management support to business
- undertake environmental improvement and land reclamation
- increase jobs and skills

⟶ Direct funding relationship

- - - - - - - - - - - - - ▶ Indirect relationship/partnership
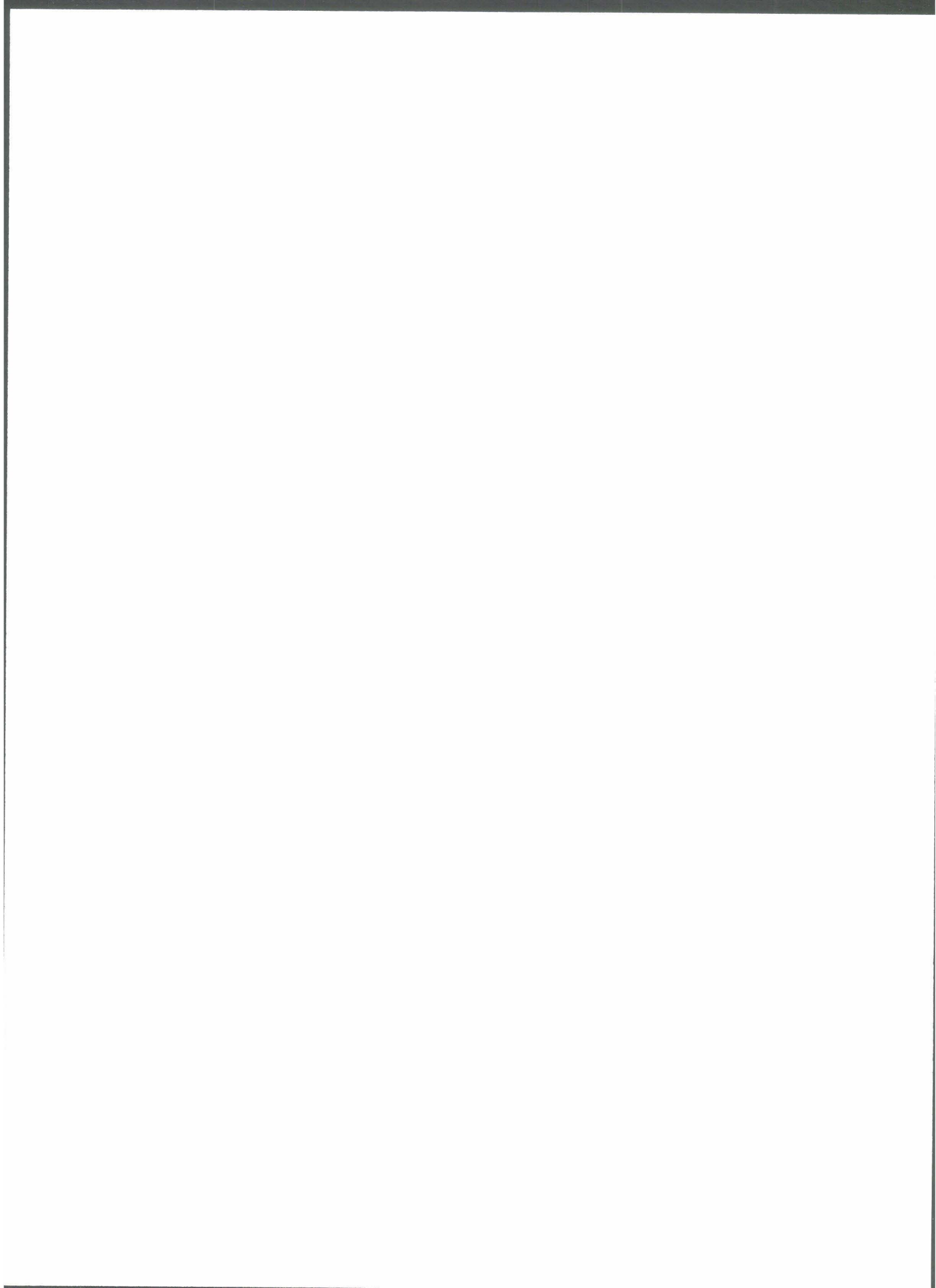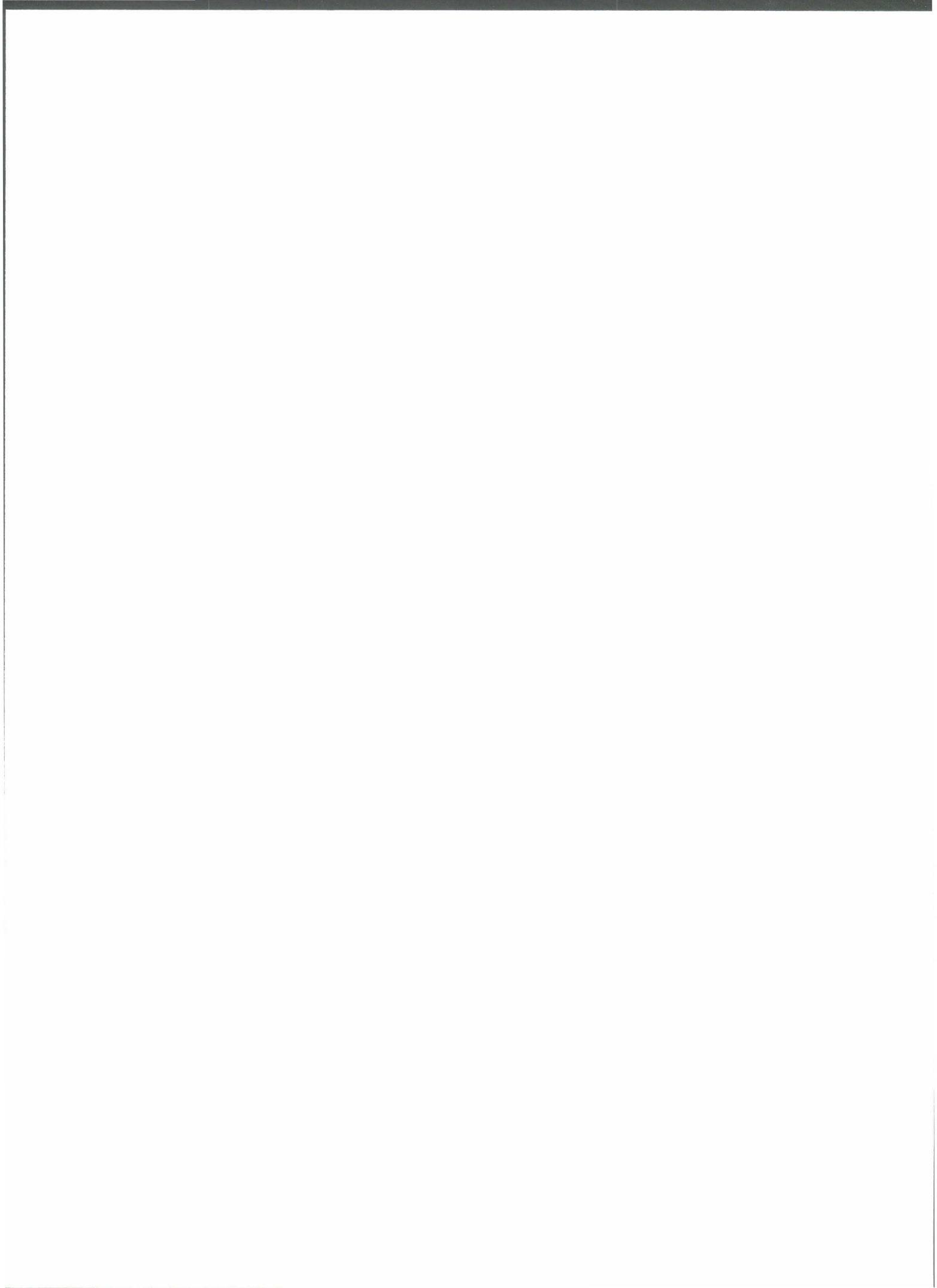
2. Case Study One : Glasgow

2.1 Economic and social profile

The Glasgow conurbation has a population of around 1 million - about 20% of the total Scottish population. The population expanded rapidly during the nineteenth century, as the city built a strong economic base in manufacturing and heavy industry. At the beginning of this century, half the world's shipping tonnage was built in the Glasgow area, and it was the largest global producer of railway locomotives and other equipment.

The decline of heavy manufacturing has had an enormous impact on the area. During the 1980s, unemployment rose to over 25% of the workforce, with the worst hit areas reaching over 50% unemployment.

Figure 3 below shows the trend in unemployment since 1983, and while the situation has much improved from the 25% peak, the current rate of 15% is still almost double the UK average.

Figure 3: Unemployment levels in Glasgow, 1985-1995 (per cent)(a)
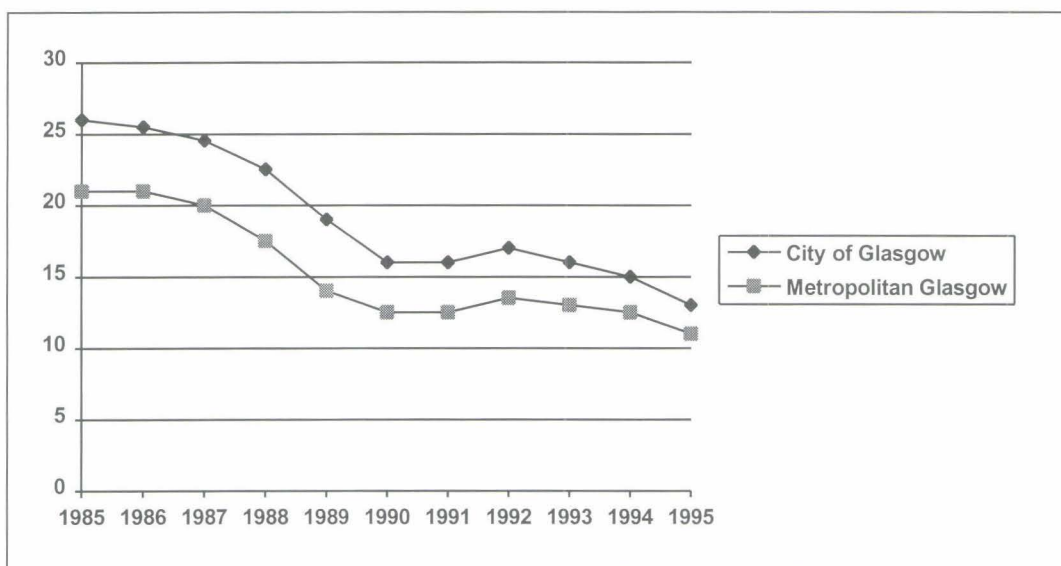
Source: Glasgow Development Agency

(a) Figures for June of each year.
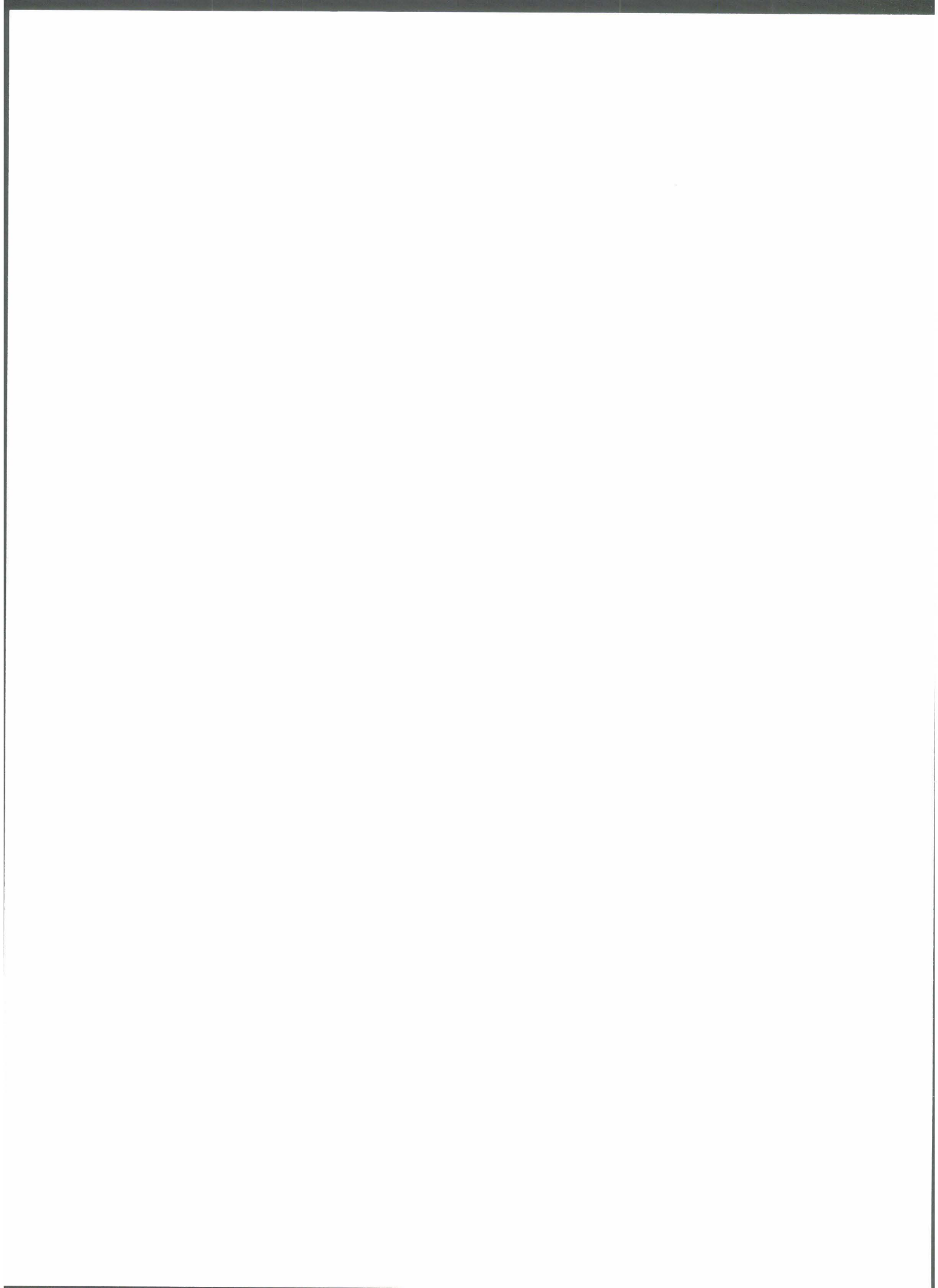
Figure 4 illustrates the structural shift in the economy from 1985 to date.

Figure 4: Employment by sector in Glasgow, 1985 - 1994
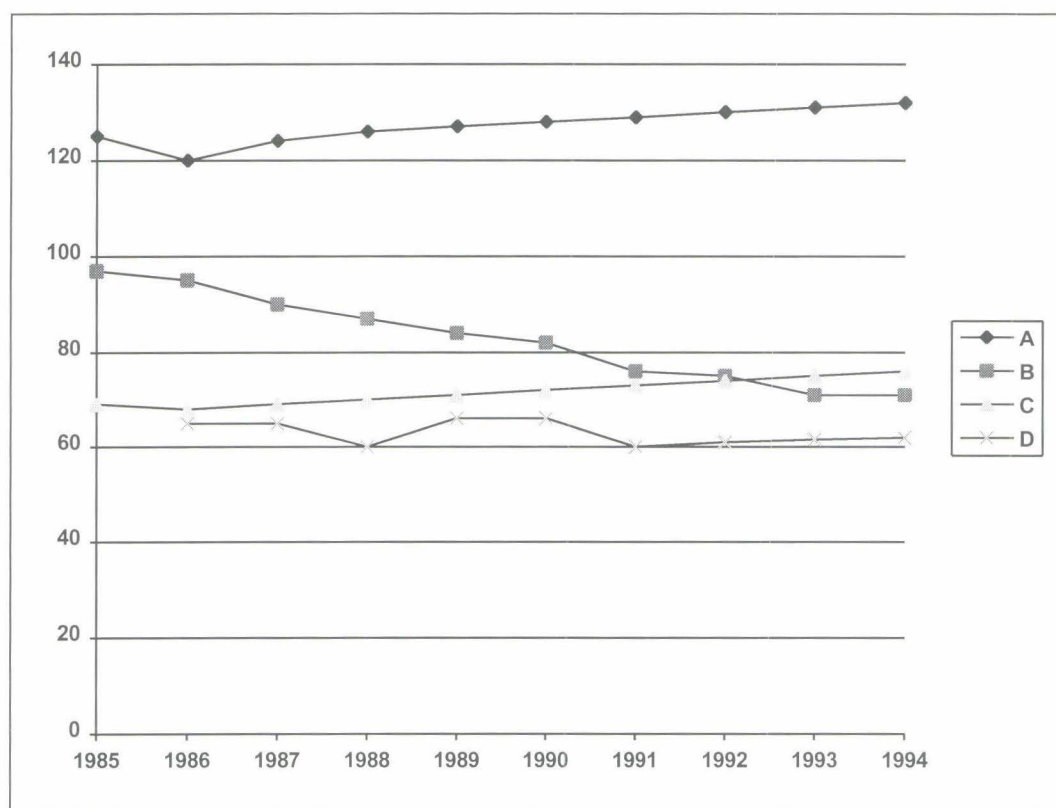
A = Education , research, healthcare, other services
B = Production industries and construction
C = Business services, communications and transport
D = Retailing, wholesaling, hotels and restaurants

Source: Glasgow Development Agency

We can note the continuing decline in production industries, alongside growth in services. However, the major service growth area is in the public sector - health and education - with a slower growth achieved in business services.

While the total level of unemployment has been reduced, the structural change affects who will be employed, as well as where they will be employed. In other words, there is a parallel change in the structure of the workforce. The industries which formed Glasgow's
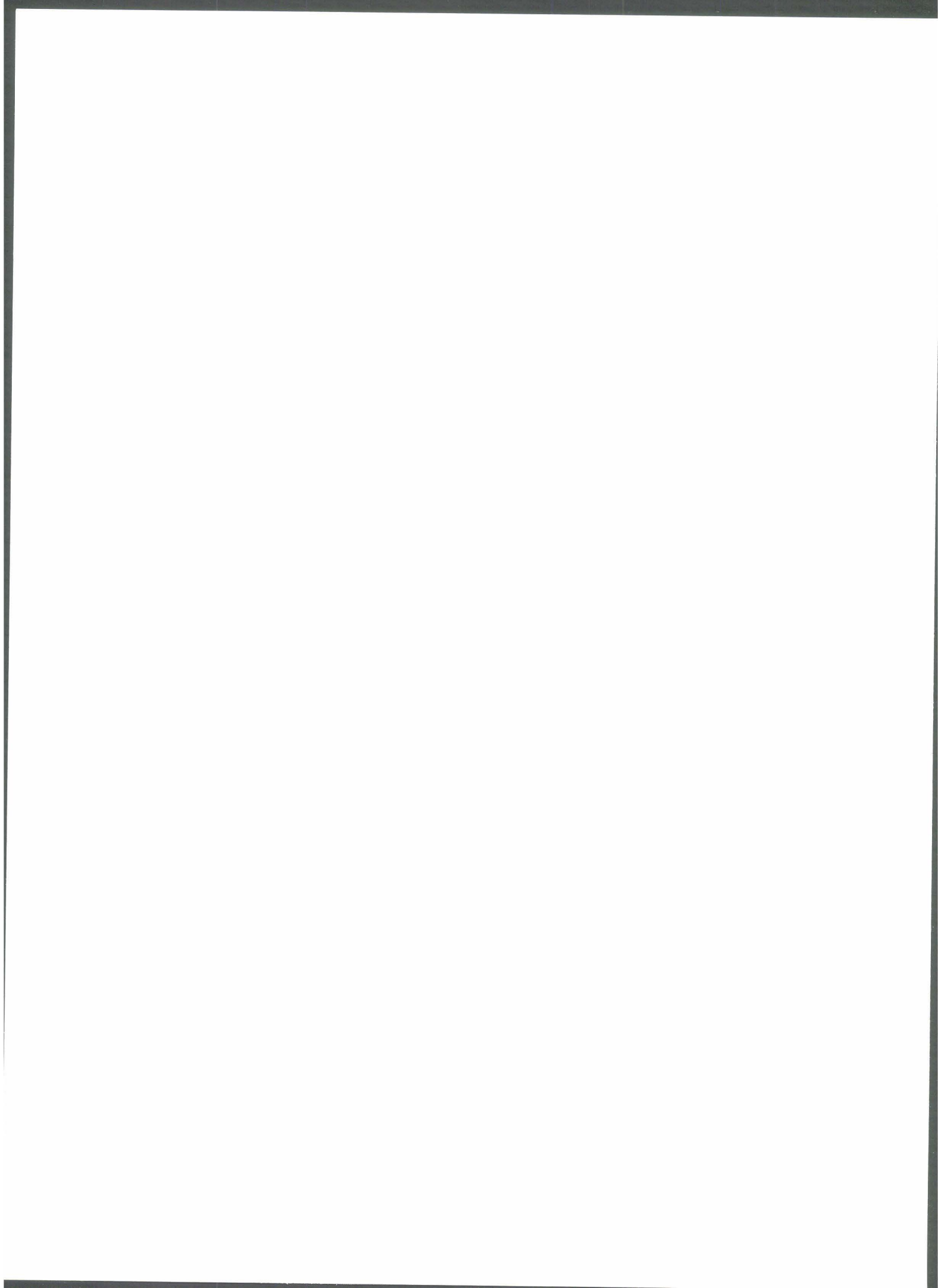
economic core were based on heavy engineering, and demand a different type of workforce to the new growth industries in the service sector.

Over the last 20 years, Glasgow has pursued a very deliberate policy to attract and build an information technology industry. This began with the attempt to create a "Silicon Glen" in imitation of Silicon Valley, and a number of computer companies established assembly plants in the central belt. The policy has been criticised for creating "Screwdriver Glen" - the development did not move up the value chain, and inward investors have tended to locate low skilled assembly functions, and not the higher value added R&D functions. There has also been a tendency to relocate once the advantageous financial terms run out.

However, despite those criticisms, the policy did create jobs in new industries, and did contribute to the image of a region which could sustain high technology industry.

The approach to territorial planning in Glasgow has undergone a major shift from one of decentralisation the 1950s and 1960s, to one which now focuses on the regeneration of the city. In the 1950s and 60s, there was a strong move to shift people from the city to new housing estates which were built on the outskirts, and to new towns. Two new towns were built within a ten mile radius of Glasgow, and several large housing estates were built around the city boundaries.

By the 1970s, this policy was stopped, and attempts made to reverse the process. The housing estates which were built during this period now contain some of the worst examples of deprivation in Europe. Since the 1970s, the approach has focused on the need to regenerate Glasgow city, and attempts made to attract businesses and people back to the city centre.

This is the context for the examples we discuss below. We have concentrated on specific aspects of ISSA in the territorial planning process, namely, measures to do with managing transport; pilot projects for broadband; support for small business.

2.2 Telecoms/information profile

The general status of telecoms in Scotland was described in section 4.5.3 above.

Within Scotland, the Glasgow area is well served in terms of infrastructure. The high density of business, industrial and academic users creates attractive market pportunities and there are now a number of competing infrastructure providers in the city. There is no perceived gap in supply between the core South East of England and the Glasgow area.

The emphasis of the Agency approach to telecoms is on the need to maintain this position. This means ensuring that Glasgow does not become disadvantaged, both in terms of cost and availability. This approach inevitably leads to a focus on the need to stimulate demand, and to ensure that businesses are aware of the potential benefits of new telematics applications.

2.3 Key issues for territorial planning

structural economic change

The scale of economic restructuring in Glasgow has been dramatic and painful, with serious problems remaining in unemployment and urban deprivation. The areas which have achieved growth in employment are generally not areas where those previously employed in heavy industry will find work. This means that, while the overall levels of unemployment have been reduced, there remains a large pool of long-term unemployed.

On the positive side, the strategy of targeting potential high growth companies does seem to be working, and Glasgow is establishing an economic base in several growth areas such as optoelectronics and biotechnology.

patterns of migration

the development of the city centre has resulted in the movement of people back into the city. There have been several large housing projects, mainly private sector financed, to renovate and provide high quality accommodation. However, the problem of the peripheral estates remains.

investment

Glasgow benefits from Scottish Enterprise's active inward investment arm, Locate in Scotland (LIS). The Local Enterprise Company, Glasgow Development Agency (GDA), also runs a Business Location Service which can advise on government financial assistance, property, and recruitment and training, and act as a co-ordinator for inward investors.

GDA can also offer development funding using a range of mechanisms such as low interest loans and equity participation. GDA has discretion up to around 65kECU, though amounts above this can be negotiated at a national level with Scottish Enterprise.

Training and Employment Grants Schemes can pay up 60% of the wage costs for companies locating in designated areas, and which employ long term unemployed in permanent jobs.

There is a Seed Capital Fund available for existing and start-up businesses, with equity funding of up to 65kECU.

A recent report from Scottish Enterprise noted that the key factors influencing inward investors were :

• skills and educational level

• available pool of committed employees

- quality of infrastructure, notably transport and telecoms

- accessibility

As an example of how these factors interact, Glasgow has attracted a number of companies setting up call service operations in the city. GDA hosted an Inaugural Call Centre Conference in 1995, with a target of 80 attendees. Over 200 companies attended the event, and a number have now established services. For instance, British Airways has a telephone sales operation; Direct Line (financial service company) has a major financial service operation run by telephone sales; British Telecom runs its UK direct sales operation from Glasgow.

In terms of benefit, Direct Line has established 200 new jobs in Glasgow, and BT has established 300. This type of activity is highly dependent on an excellent telecoms infrastructure, and is a good example of economic development which could not happen without such an infrastructure.

Glasgow has benefited from significant European funding. It is within an Objective 2 region, and received around 130 MECU from the ERDF, and 2.6 MECU from the ESF in the period 1994-96.

qualitative change

On a qualitative level, Glasgow has changed remarkably over the last 15 years. The city undertook an international marketing campaign in the early 1980s, based around the slogan "Glasgow's Miles Better". The aim was to alter the city's image of a rough and violent place, and to build on tourism and cultural activities. The success of this and subsequent campaigns resulted in Glasgow being designated the European City of Culture in 1990, and the City of Architecture and Design in 1999. Glasgow now hosts a number of major international festivals, and has recently opened a new concert hall.

To some extent, these achievements are achievements of marketing, rather than evidence of substantive change. However, against a background of major economic and social problems, they have helped to create an image of a location which is vibrant and forward looking, and this contributes greatly to the drive for inward investment.

future trends

The economic trends noted above are likely to continue. In common with the rest of the UK economy, Glasgow is experiencing an irreversible decline in manufacturing and engineering. The city contains extremes : it has a highly skilled and educated workforce alongside a high proportion of long term unemployed. The development of the service sector is promising for the first category, but cannot offer much to the second.

This uncomfortable duality is evident also in the distribution of population. Urban regeneration in the city centre is creating an increasingly attractive place to live and work,

but also a location which is expensive to live in. A major trend for the future will be how this contradiction is managed, and how those living on the periphery of the city are included. It is a local translation of the problems of cohesion which are faced at a EU level.

2.4 Territorial planning

The overall land-use planning process for Scotland is described in the annexes at the end of the report.

The planning environment in Glasgow changed last year, with the restructuring of the regional government agencies. Previously, Glasgow was part of Strathclyde Region, which ran from the border with England up into the beginnings of the Highlands. The regional structure has now been dissolved, and this level of administration is now under Glasgow City Council.

Responsibility for different aspects of territorial planning is spread amongst a number of organisations. The key actors are the Scottish Office; Glasgow Development Agency; and Glasgow City Council.

2.5 Description of planning examples

This section describes three examples of how ISSA is being used in territorial planning. The examples involve different types of application, and involve different agencies and combinations of agencies. The examples are :

- the use of ISSA to support a transport strategy

- the development of broadband pilots as demonstration projects

- the creation of a small business support network

example 1 : transport strategy

this example focuses on one aspect of a co-ordinated plan for the city centre, under the umbrella of the Glasgow City Centre Millennium Plan. The Millennium Plan is an overall planning exercise which seeks to address environmental, economic and social problems in the city centre. Its aim is to make the city a more pleasant living and working environment.

The transport strategy is being developed and implemented by the City Council. The Council has been involved for 20 years in introducing telematics based traffic control facilities. The Council is a consortium partner in the TABASCO (Telematics Applications in Bavaria, Scotland and Others) project, funded under DRIVE 3.

For the purposes of this study, we have looked at the transport management programme. There are three key aims :

- improve facilities for cyclists and pedestrians

- promote public transport

- accommodate essential vehicle access

We can note under each of these headings how ISSA is being used to further the territorial planning objectives.

improve facilities for cyclists and pedestrians

the overall plan is to increase the pedestrian and cyclist priority areas, and at the same time reroute traffic around rather than through the city centre. The city's CITRAC traffic control system, which is part of the DRIVE project, is developing more sophisticated control and driver information systems, and has improved incident detection. It is developing advanced variable signing for car parking.

promote public transport

Glasgow has one of the highest uses of public transport in Europe, with almost 70% of journeys to the city centre made by public transport. The city is currently piloting a real time passenger information system on one of its bus routes, and hopes to extend this.

The council is involved in the City On-Line project, along with organisations such as Caledonian Newspapers and CableTel (local CATV franchise holder). There are currently 22 kiosks providing tourist and travel information. These use CD-ROM, but the intention is that they will go on-line, using CableTel's network.

essential vehicle access

the main role of ISSA in addressing this objective is in the provision of driver information services, which help drivers to find the most appropriate route and the vacant parking spaces.

analysis

The City Council is committed to using ISSA to provide better information services for all travel. The trend is towards real-time services. This is required for travellers who are currently in transit, where for drivers, for example, the information service is linked into the traffic control system. Real-time information is also required for those planning journeys, who need data on delays, availability, alternative routes and so on.
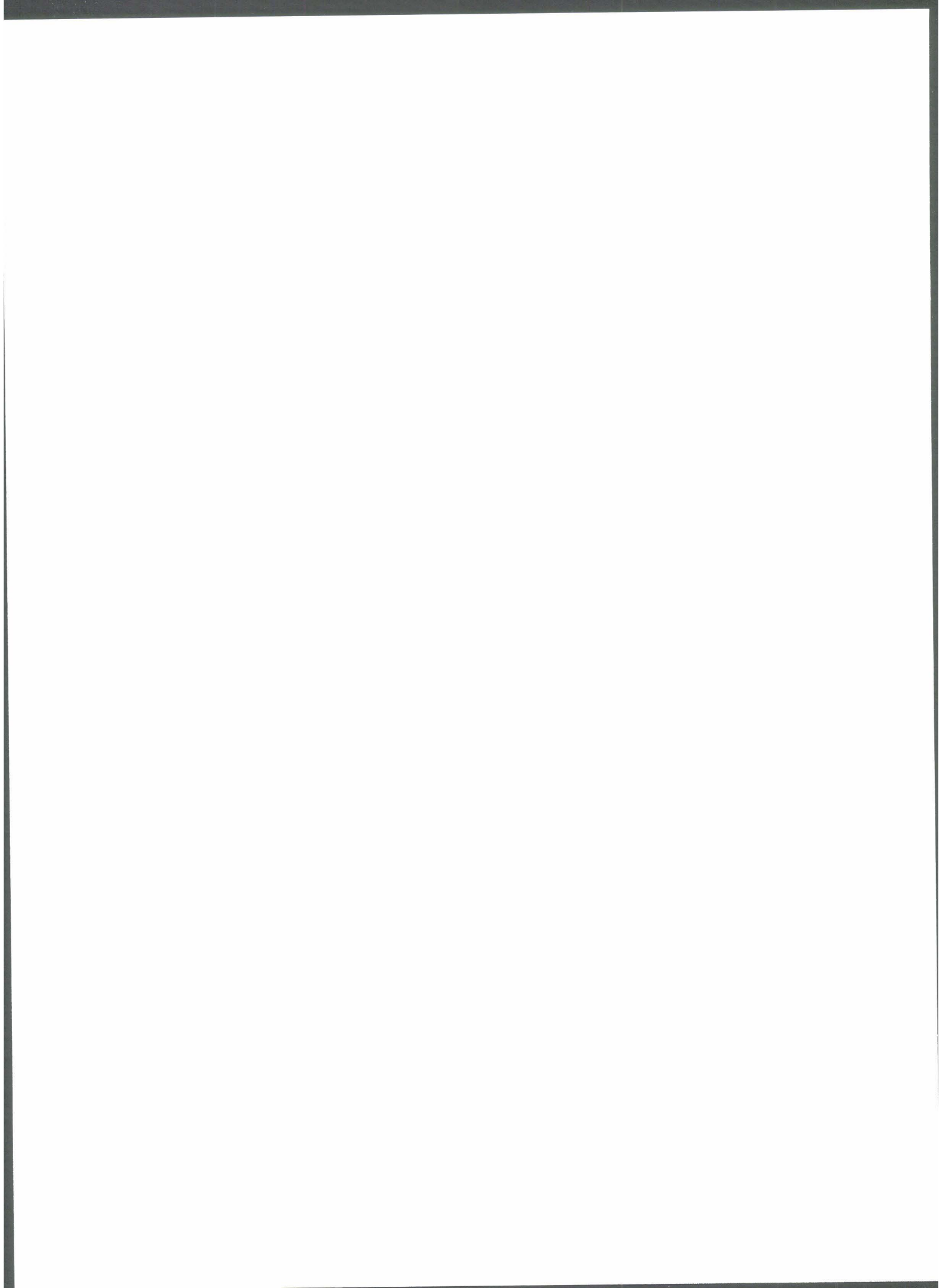
A strength of this initiative is the way in which it is integrated into an overall territorial plan for the management of the city centre and of access to the city.

There are two unresolved issues. The first is to do with the management of the information. While there may be an integrated plan at a strategic level, there is less integration at an operational level. There is currently no single organisation which could manage the type and volume of data involved. The second is to do with access to the information. This is still very much at an experimental stage. Several possible solutions have been put forward, including delivering on-line service to public access kiosks, and using the CATV franchise holder network to deliver service to the home. In the latter case, while the cable network may be in place, the type of equipment which would be used in the home is not specified.

example 2 : broadband pilots

The Glasgow Development Agency (GDA) has an explicit aim to promote better use of telecoms within the business community. Its approach has been to provide "practical" help, emphasising costs and benefits associated with the use of telecoms, focused on specific sectors and sizes of company.

About five years ago, GDA initiated a Telecoms Audit service, primarily for SMEs. This service was designed to provide a structured assessment of how organisations were currently using telecoms, and to identify ways in which telecoms could be used more effectively and more cheaply.

As the next step in its activities, GDA commissioned research into opportunities offered by broadband communications. The report presented the all too familiar picture of a lack of demand resulting from a lack of awareness of the possibilities of broadband; a lack of suitable and exciting applications which make best use of broadband capabilities; and a supplier focus on the consumer market which contradicted GDA's belief that long term viability would be best served by business adoption of broadband.

GDA decided to move these issues forward by examining the feasibility of a set of pilot projects. The intention was to work out possible pilots in some detail, and that this exercise in itself would highlight organisational and technical requirements. The timing fitted with the construction of a Metropolitan Area Network linking Glasgow's universities.

Pilot participants were identified by GDA. The criteria for selection included sector; and a set of characteristics thought most receptive to broadband. The sectors which were selected were manufacturing; media and design, education, and health. The characteristics included high volume frequent communications; multiple dispersed users; high image content; and highly complex communications needs.
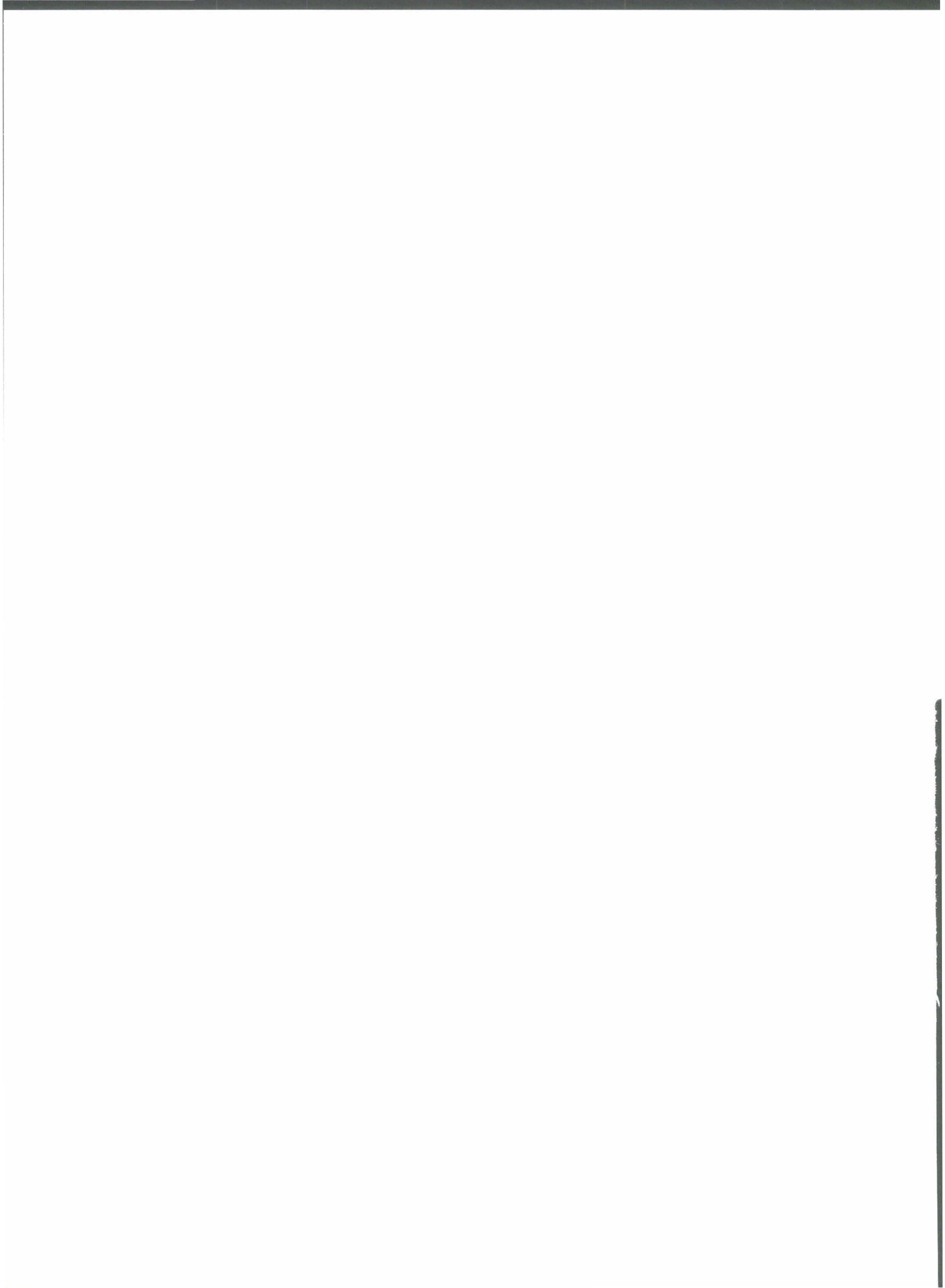
GDA decided to select organisations for detailed study, and set three criteria for selection :

- immediate benefit : the project should have a positive cost benefit in its own right, and a fast return on investment

- essential to survival : the project will develop a core function of the organisation, and ideally one which is necessary for the continuing survival

- broadband ready : the project will move business processes to a point where migration to broadband is straightforward.

GDA identified seven possible organisations for further study. Each organisation met GDA's criteria, and each contained several possible projects. These are summarised in Table 5 below.
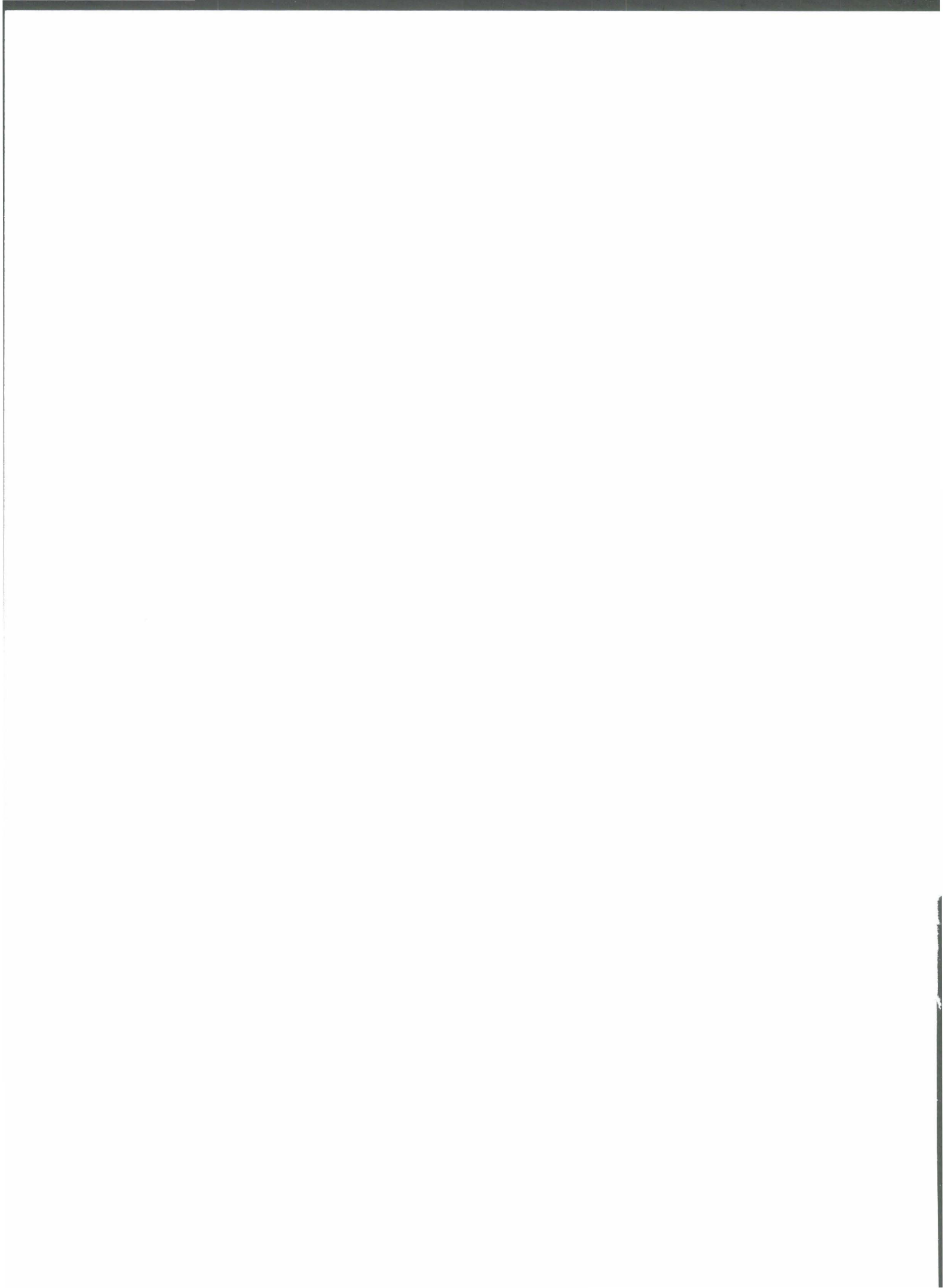
Table 5: GDA pilot telematic projects

organisation	sector	project type
Albion Automotive	manufacture	remote working
BBC Scotland	media (broadcast)	multimedia (databases and education)
Community Colleges	education	multimedia packages and flexible learning
Glasgow Dental Hospital	health	remote diagnostics and support; multimedia databases
Glasgow School of Art	education	image database; flexible & distance learning; multimedia
Scottish Film Archive	media	multimedia database; Internet
Scottish Business School	education	business information services; flexible learning; multimedia applications

With each participating organisation, GDA produced a report describing the possible projects (each project is essentially one application of broadband) and identifying expected costs and benefits. Costs and benefits include direct and indirect elements.

The assumption at this stage was that funding for pilot projects would be a mix of public and private sector investment.

The study phase of the work is now complete, and GDA has three pilot projects with which it is now seeking funding. The Agency emphasises through this exercise that the pilots must be able to be translated for other companies and other sectors, and above all must provide concrete examples of the advantages and disadvantages of using broadband.

In the course of this work, a number of issues have been identified by GDA concerning the ways in which the Agency can or should support the transition to broadband. These issues include :

- need to plan for the next generation of technology. While the current level of infrastructure in Glasgow is good, it is important that the city can maintain its
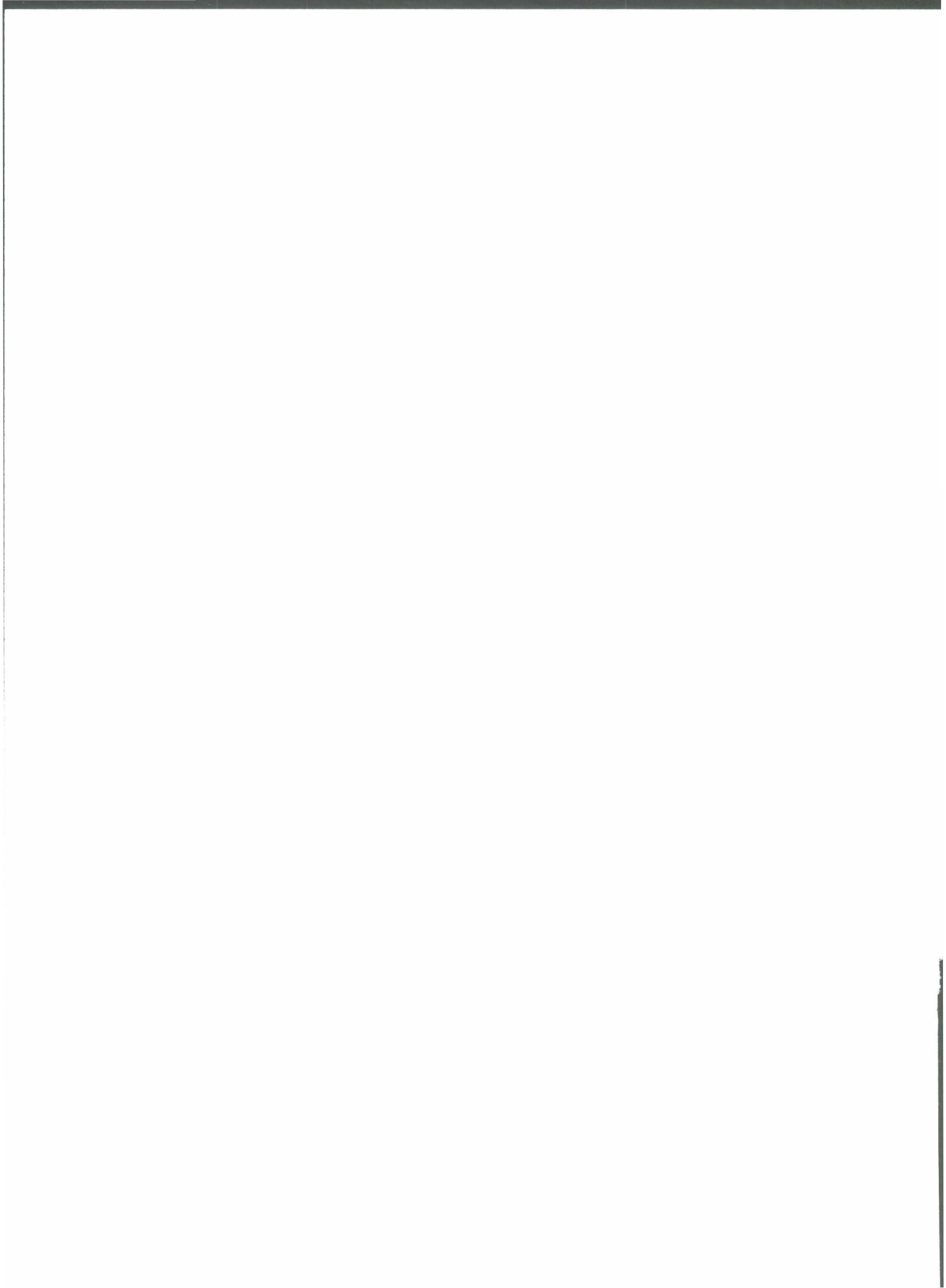
competitive edge in terms of the facilities it can offer existing businesses and potential inward investors.

- location of development. The view within GDA has been that broadband is something for the city centre, where there is a high concentration of high volume business users. This may conflict with development strategies which seek to locate certain types of business in green field sites. It is GDA's view that, in general, broadband would not be part of the strategy for green field sites unless the costs and benefits were more adequately understood. This process needs to be planned for - it will not happen by accident.

- integration with other business development functions within the Agency. Issues surrounding broadband touch on activities dealt with in different parts of the Agency, and there is a danger that effort is fragmented, or worse still, contradictory. This effect is highlighted by the approach which has focused on the ways in which business processes have to be re-engineered to make best use of broadband.

- difficulties in dealing with European funding. The Agency reported several problems in its dealing with EU funding in this area, and suggested that the way in which EU programmes are constructed can act as an inhibiting factor. For example, there is a perceived lack of a consistent set of selection criteria for some of the programmes (notably ESPRIT). A more fundamental problem is in approach. The GDA preferred approach would be to have staged projects, with targets and objectives to be met. These would start small, probably with one participating organisation, and build up to the kind of project which the CEC normally requests at the outset.

analysis

GDA has a well structured approach to the use of ISSA, and in the example discussed above, the objectives, target audience and success criteria are clear. However, even in an organisation like this, where there is already a commitment to the importance of ISSA in territorial planning, there is an issue over the priority which is attached to projects of this type. There is a conflict between whether ISSA should be treated and managed as an area in its own right, or whether considerations of ISSA should be diffused amongst various business and planning functions. Ideally, we would expect that the latter is the most effective way, but this may be an aim which cannot be realised until awareness within the agencies has been raised.

We can see the same question at a European level. Should information society applications be promoted as an end in themselves, or should they be an integral part of most other activities?

The approach to the definition of pilots, and the detailed work with participating companies is very interesting but resource-intensive. It has been driven by a single member of staff who has now left the Agency and the way forward is not clear.
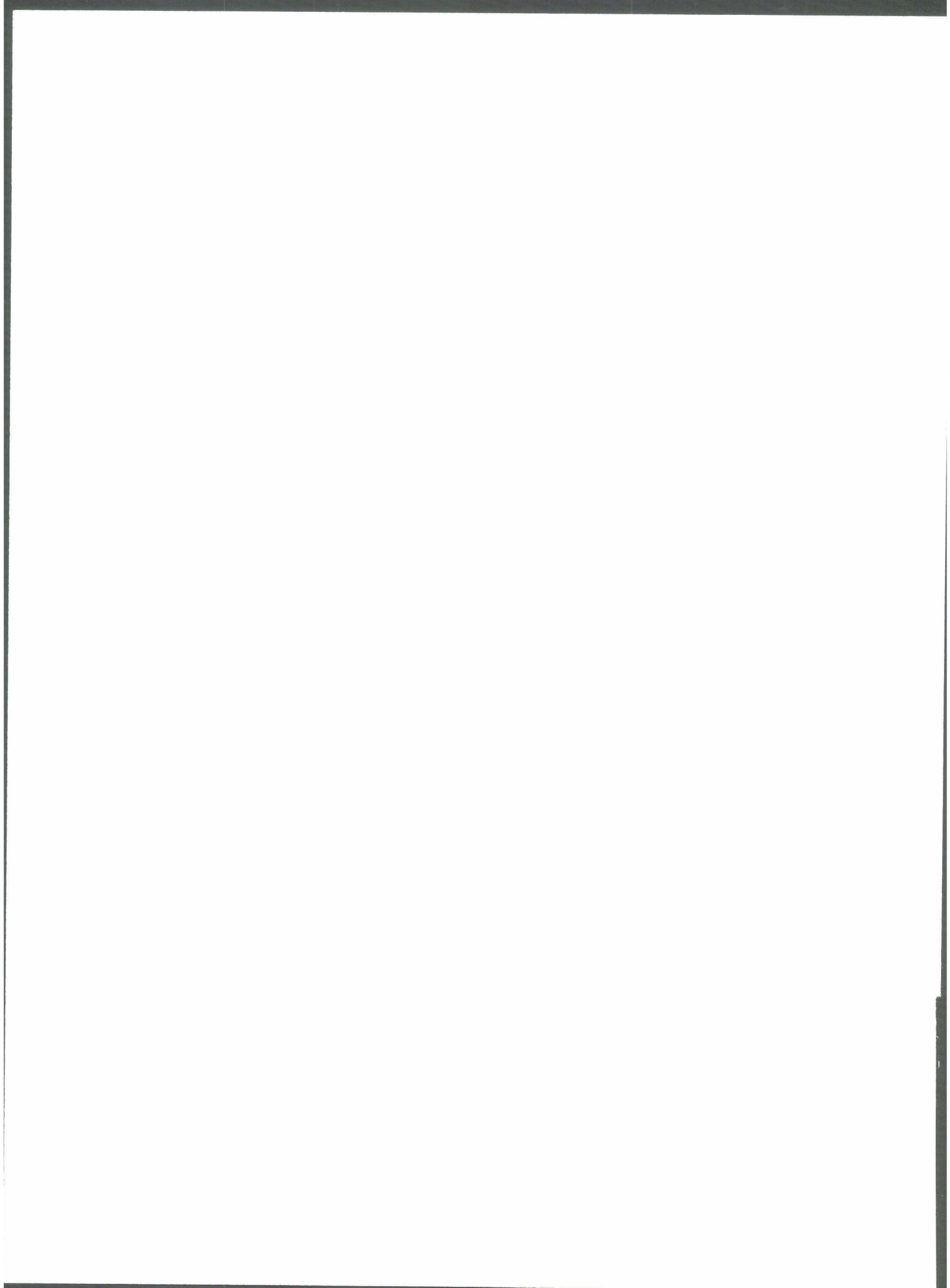
example 3 : support network for small businesses : SPAN Programme

The stated objectives of the SPAN Programme are :

"..to forge a self-sustaining national momentum in the development of, demand for, and supply of, products and services over information highways. It is our intention to ensure that Scotland develops exploiters and not just passive users of the information highways." [Scottish Enterprise, 26.11.96]

SPAN was launched in 1995, as an initiative of Scottish Enterprise. It is managed from SE headquarters in partnership with the Local Enterprise Companies (LECs) and with Highlands & Islands Enterprise (HIE). It will run for four years, and has a budget of around 1.3MECU.

In addressing both the supply and demand sides of ISSA, SPAN has four activity areas. These are :

1. awareness raising. This is centred on events, plus the production and distribution of information material. SPAN expects to organise a package which will be taken up and delivered by the LECs. The target audience is therefore the business development staff in the LECs, who will then have contact with end users.

2. project development. This area covers the innovative use of technology and applications to address business issues, and the use of leading edge technology to trail and pilot new applications. The intention here is to support the Scottish supply industry. The level of financial support provided by SPAN is limited - funding is expected to be primarily private sector. The project team has produced a useful guide to preparing proposals for support under this heading, which outlines the types of projects which will be supported; the ways in which projects should be organised and managed; and the criteria for evaluation.

3. act as a focal point for LECs. This activity includes the provision of a central technical guidance function.

4. represent Scottish interests. The SPAN team note that Scotland is currently well served in telecoms, but that effort is needed to ensure that this state continues, and that a constant dialogue is required with policy makers, regulators and the supply industry.

analysis

The main problem with the SPAN programme is that it is trying to do too many things with less than adequate resources. From the perspective of this study, the activity areas which are of interest are the "advising the advisers" role, and the attempt to act as a co-ordinating point for applications development.
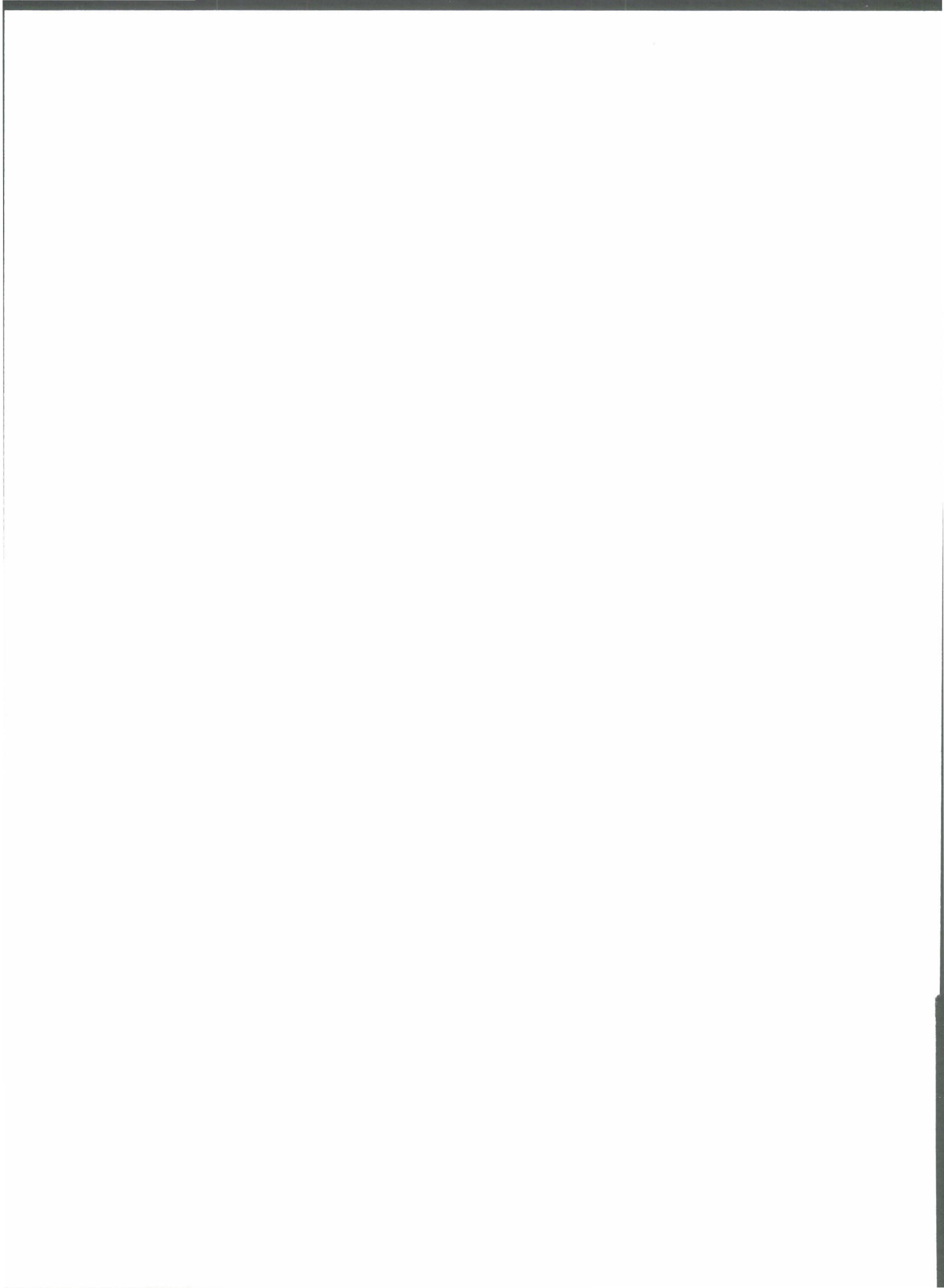
Looking at the first of these, the SPAN programme is really a support network for the people who advise and work with small businesses, rather than a programme directly aimed at SMEs. While this is a necessary task, it is essential that the programme compensates for the lack of direct contact with the ultimate beneficiaries, by finding a mechanism to ensure that the actions are relevant to their needs.

The co-ordinating role is useful. The overall impression of activity in ISSA in Scotland is that there is a lot going on, but it is somewhat chaotic. There is often a lack of communication between agencies involved in similar work - sometimes by default, and sometimes deliberately. This inevitably leads to overlap and duplication, and a co-ordinating role could help to reduce this.
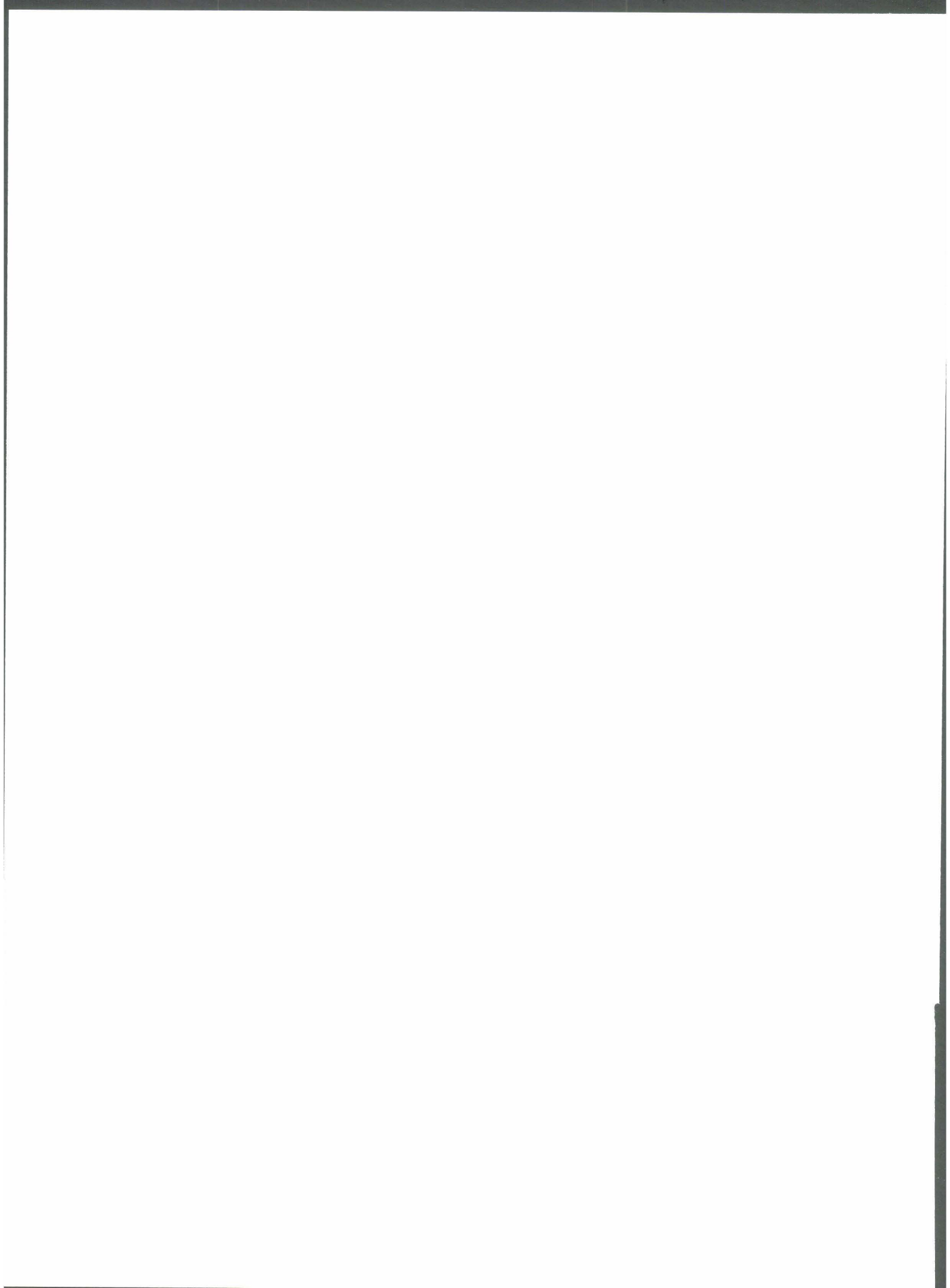
3. Case Study Two: Highlands and Islands region

3.1 Economic and social overview

The Highlands and Islands of Scotland lies at the northern extremity of the British Isles. It is a region of dramatic scenery, comprising lowlands, mountain ranges and over 90 remote islands, many of which are uninhabited.

population

The region accounts for one-sixth of the UK's landmass but only one per cent of its population. Population density is consequently amongst the lowest in the EU at approximately 9 people per square kilometre; only certain areas of Finland and Sweden are more sparsely populated. Approximately two-thirds of the region's population live in dispersed rural areas, or on islands.

The population of the region currently stands at approximately 373,000, more than at any time since the 1920s. Historically the trend in population has been one of out-migration and concentration around major towns. Having fallen from approximately 450,000 in 1850 to some 325,000 in the late 1950s the region's population stablised during the 1960s. Total population grew considerably during the 1970s (partly due to the development of the North Sea oil and gas fields) and as Figure 6 shows, has grown steadily since 1991.

Figure 5: Population trends in H&I region
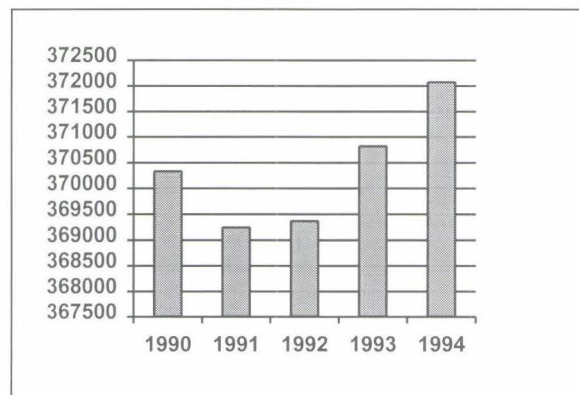
Source: Highlands & Islands Enterprise, Annual Reports 1992/93 - 1995/96

(a) Figures refer to Highlands & Islands Enterprise area

This increase in the region's overall population masks contrasting trends at the local level. The region's largest town, Inverness, which lies at the centre of the region's core, has one
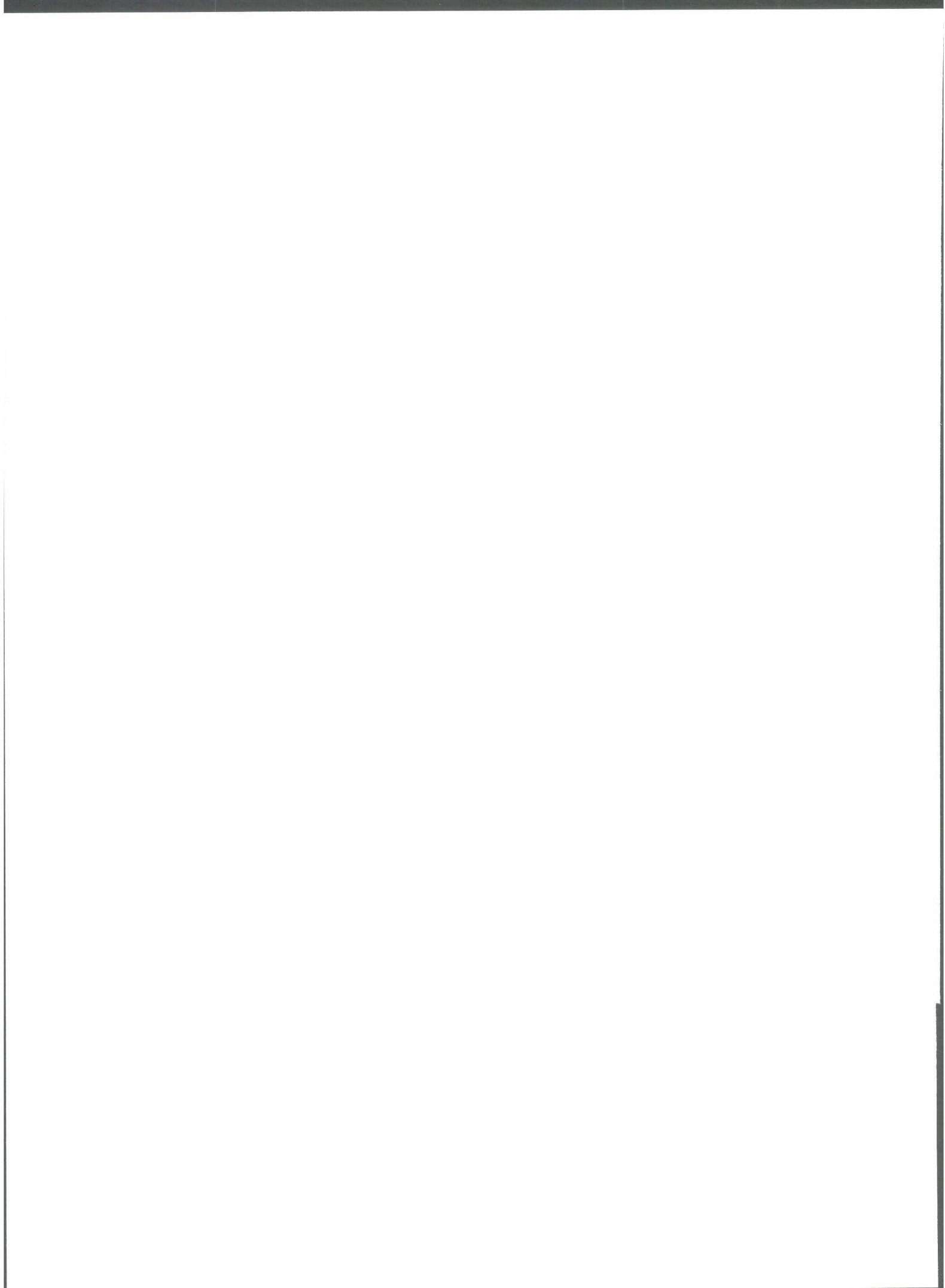
of the fastest-growing populations in Scotland. By contrast, the populations of the remoter islands have been in decline for over a century.

Figures relating to net in-migration also conceal the fact that the region's migrants tend to be the young and qualified, leaving in search of work and education. The 25-44 age group is particularly under-represented in the more remote islands of the region.

economy

The economy of the region is considerably influenced by its geographic situation; peripherality and difficult terrain make transport and communications a problem.

In recognition of its special needs the Highlands and Islands region was given Objective 1 status under the EU Structural Funds for the period 1994-1999. Distinguished by a GDP figure of less than or close to 75 per cent of the Community average, Lesser Favoured Regions include the whole of Greece, Ireland and Portugal.

Under the Single Programming Document (SPD) detailing the agreement, the Structural Funds will make a contribution of approx £244m to the Highlands and Islands during this period.

The Highlands and Islands' Objective 1 programme centres upon supporting business and developing communities. The six individual priorities of the region's development strategy are shown in Table 6 together with the anticipated total cost and the EC's contribution (both in MECU).

Table 6: Highlands & Islands development strategy

Sub-programmes/Measures	Total cost (MECU)	EC contribution (MECU)
Business development	296,230	71,100
Tourism, heritage, culture	91,950	24,200
Environment	34,600	16,300
Primary sectors	274,130	68,700
Community development	92,360	46,900
Communications/service networks	216,950	79,700
Technical assistance	6,200	3,100
Total	1,012,420	311,000

Under the sixth priority area, approximately 216,950 MECU will be dedicated to the improvement of communications and service networks to enhance business and community development. These include upgraded road and rail networks, improved ferry facilities,
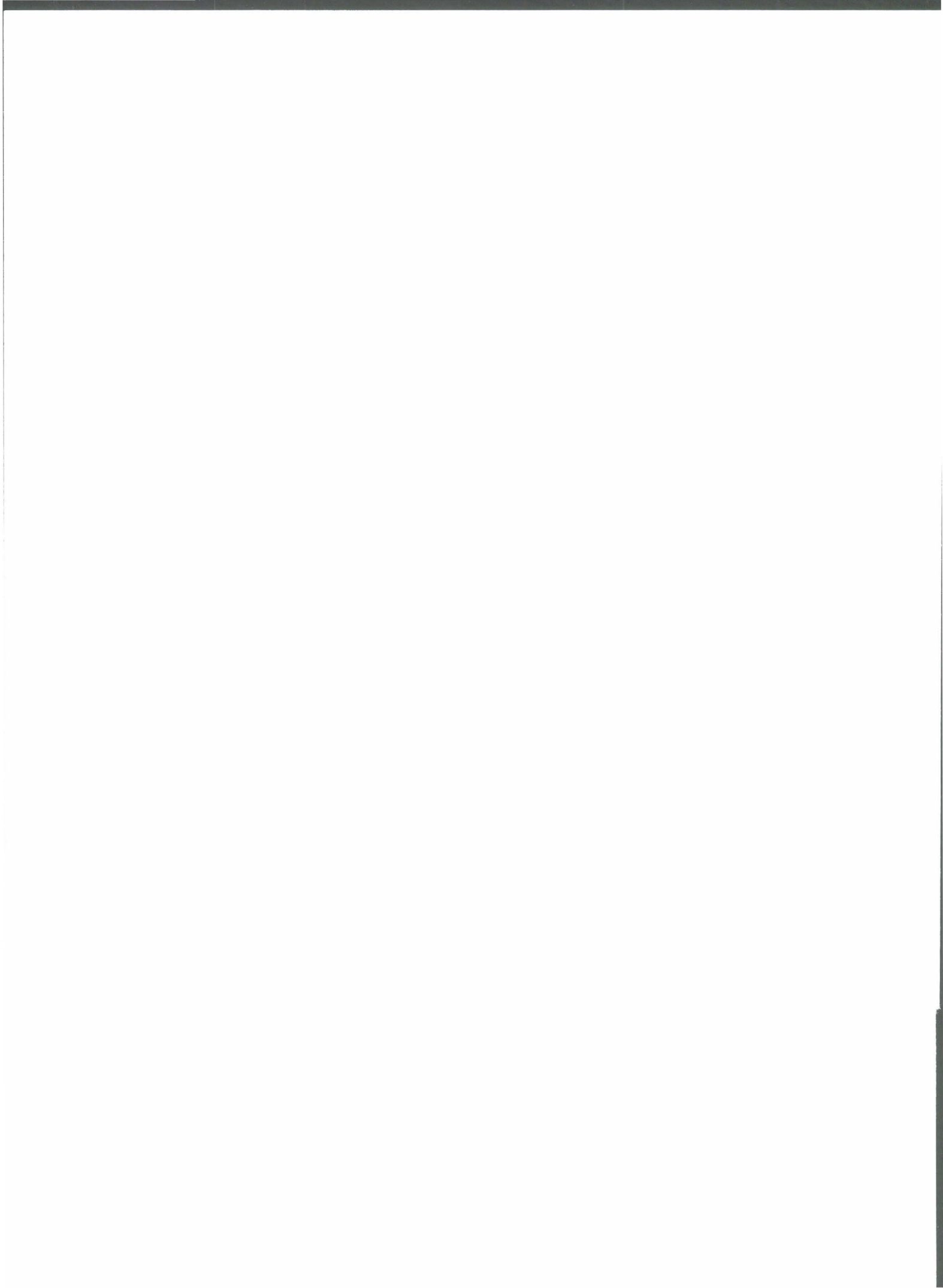
ports and airports, enhancement of information and communication technologies and measures for energy and water supply.

Notwithstanding the region's Objective 1 status, employment levels grew steadily during the 1980s and 1990s. The majority of the growth has been in service sector employment (particularly tourism). Self employment has risen dramatically - up 33 per cent between 1981-1991 (*HIE Strategy for Enterprise Development*, not dated). The overall upward trend conceals important differences at a local level; whereas employment in some areas has grown steadily in the past decade (e.g. due to the exploitation of North Sea oil) others such as the Western Isles have consistently experienced high unemployment levels.

Despite these positive trends in employment, the region's unemployment levels remain high, reflecting the fact that much of the increased employment opportunities have been absorbed by net inward migration. Unemployment within the region stood at 13 per cent in 1994, higher than either the EUR 12 or UK averages. This represented growth of five per cent on the region's 1990 unemployement figures.

Figure 6: Unemployment trends in H&I region
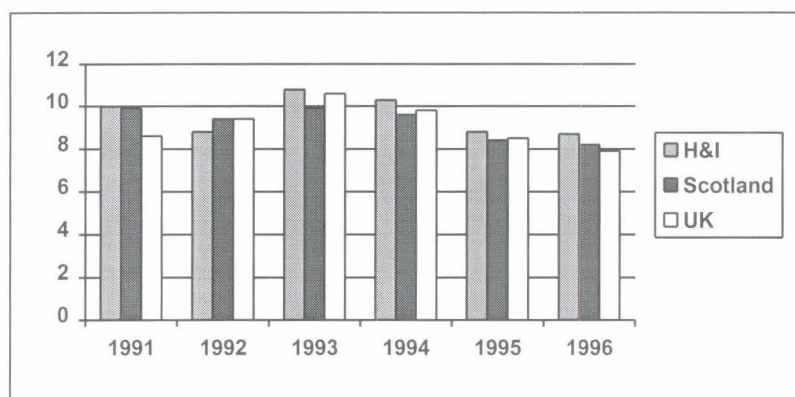
Source: Highlands & Islands Enterprise, Annual Reports 1992/93 - 1995/96

(a) Figures refer to Highlands & Islands Enterprise area

Employment by sector

By comparison with other parts of Scotland and the UK, the region's economy is characterised by a particularly high dependence on primary industries. Approximately four per cent of the workforce is employed in the traditional industries such as fishing, farming and forestry, twice the UK average. Although employment in some primary sectors is buoyant (Scotland produces 90 per cent of the UK's salmon, and whisky production is an important employer) the general trend for primary industry employment is downward.

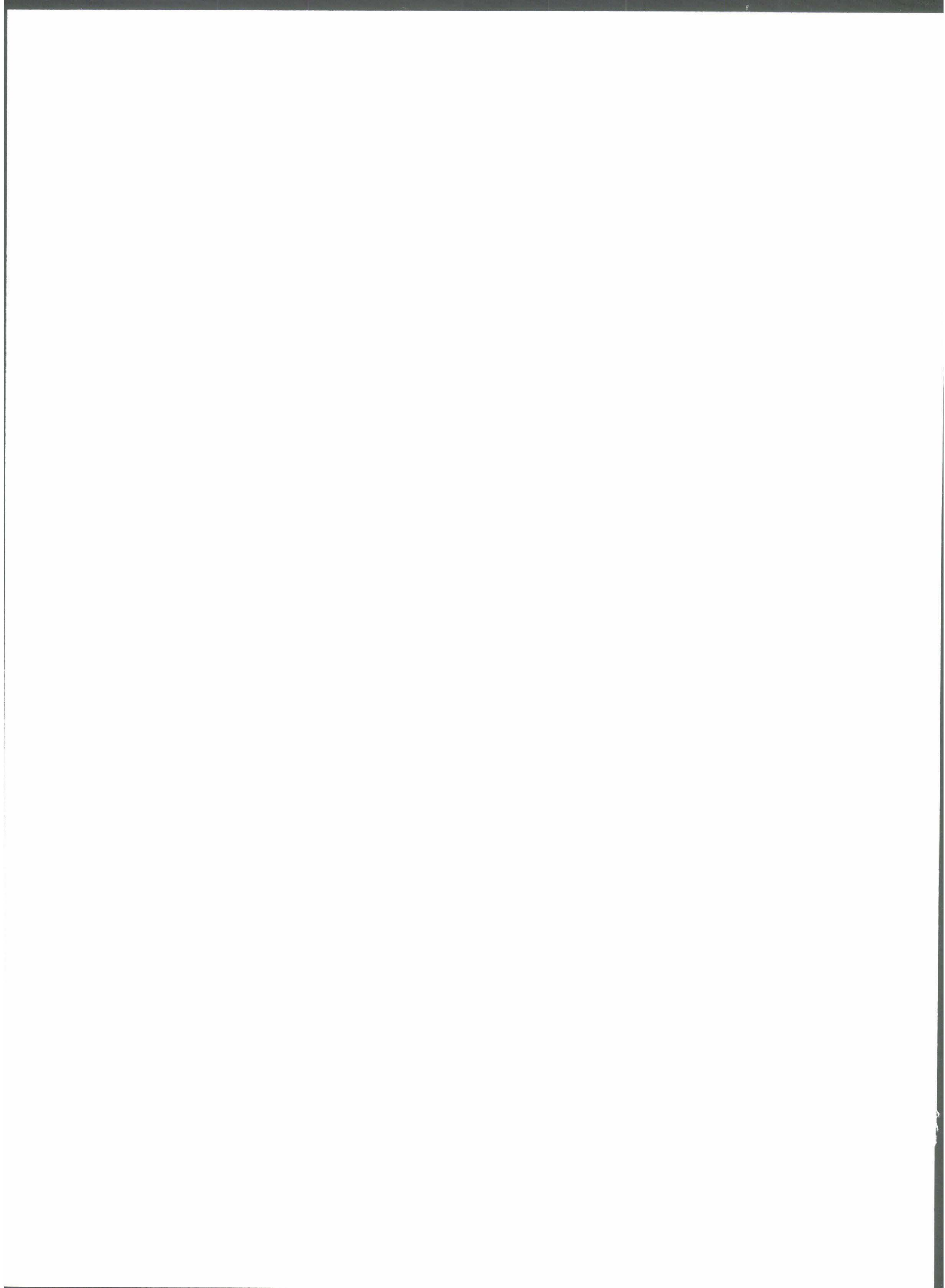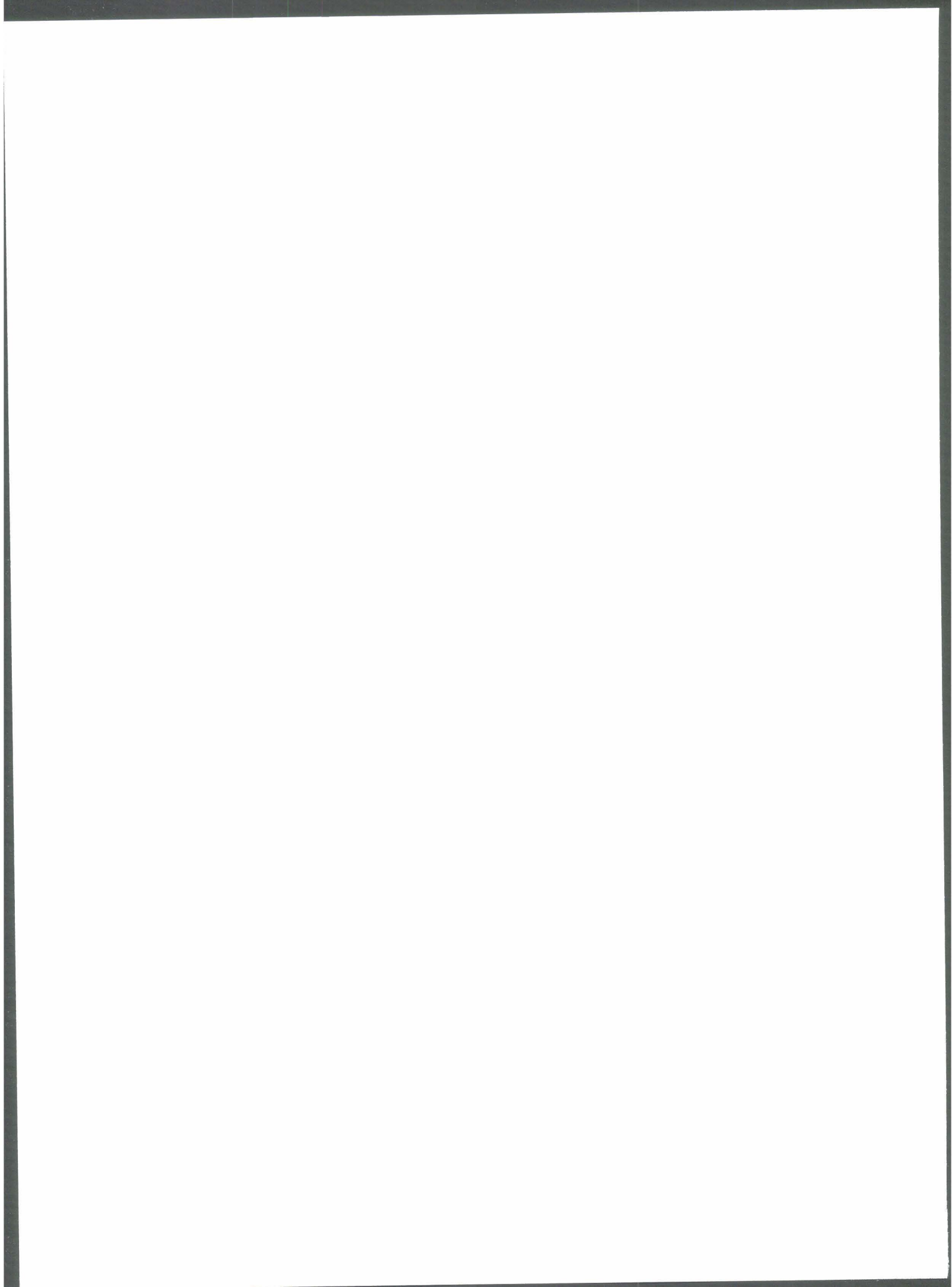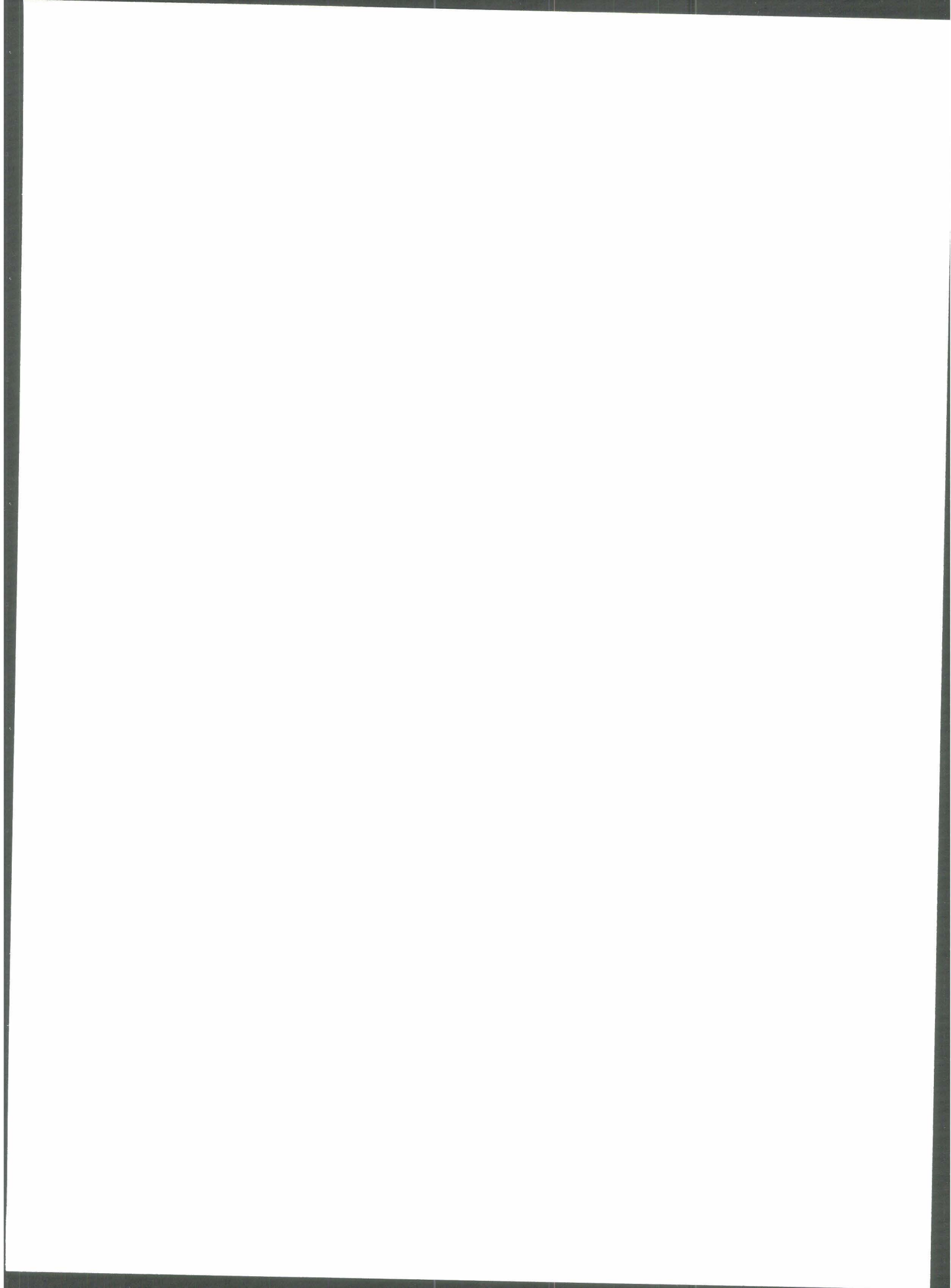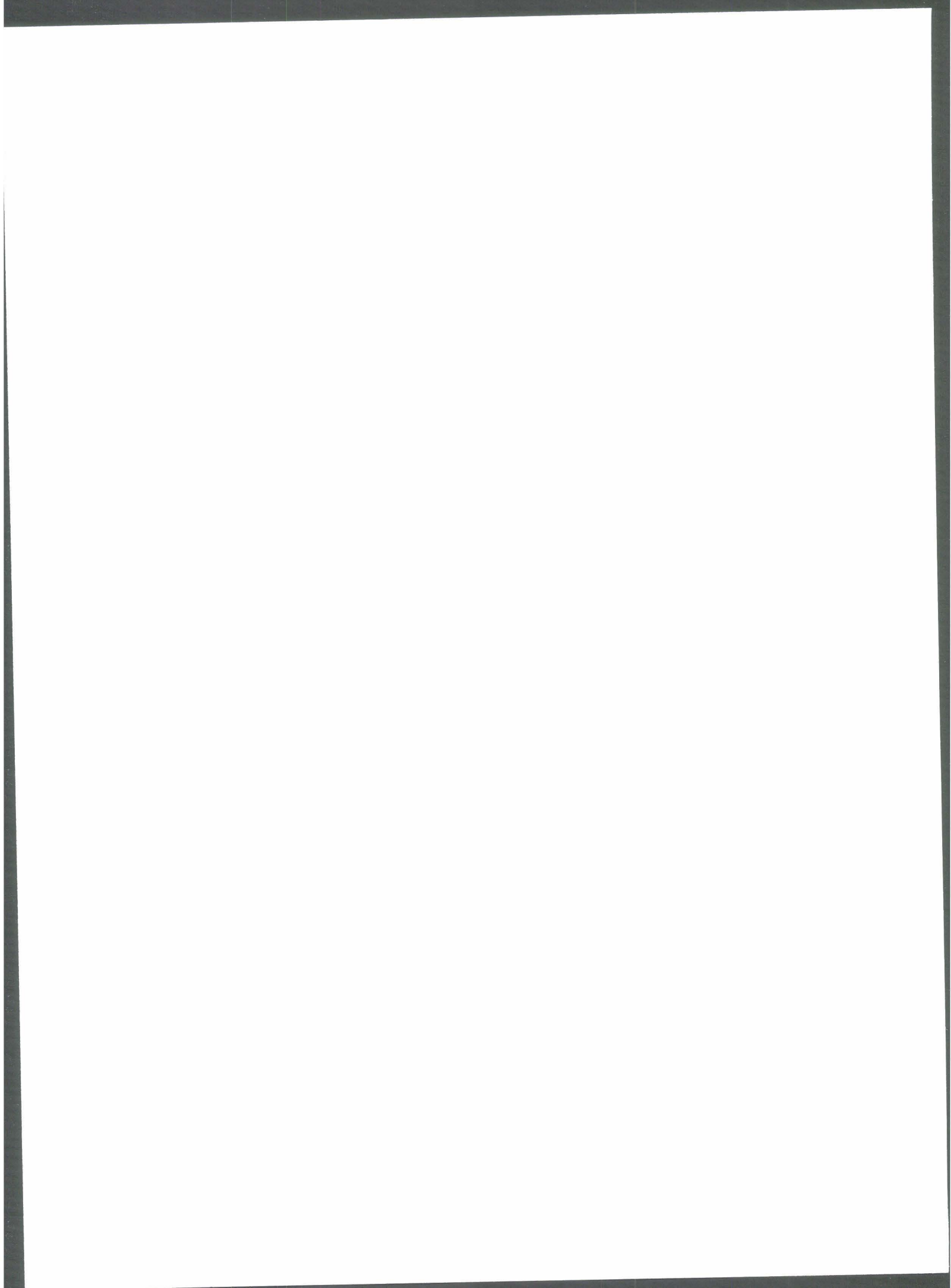## Figure 7: Employment in agriculture in H&I region, 1989 and 1993(a)
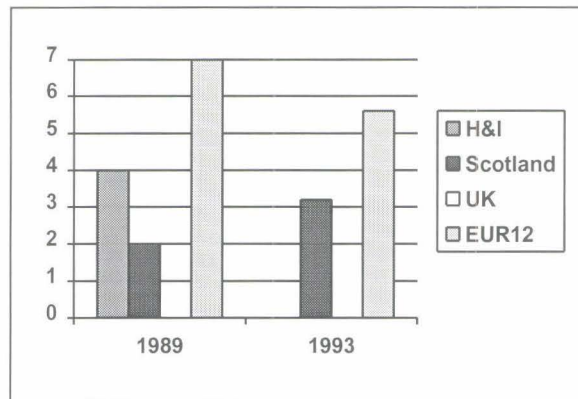
Source: Portrait of the Regions (1989 figures); Regions (1993 figures)
(a) Figures refer to standard NUTS regions. 1993 H&I figures not available.

The service sector is the most important employer in the region, providing jobs for 73 per cent of the region's workforce. A high proportion of these are employed within public services such as local govt, education and health. Growth in telecommunications related work (e.g call centres) has increased as a result of the Highlands and Islands Telecommunications Initiative (see 4.6.2 below).

Figure 8: Employment in service sector in H&I region, 1989 and 1993(a)
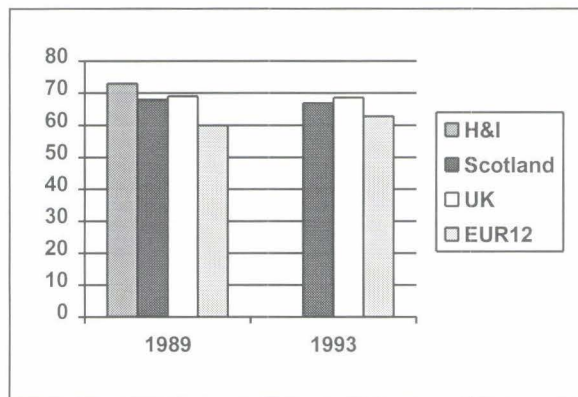
Source: Portrait of the Regions (1989 figures); Regions (1993 figures)
(a) Figures refer to standard NUTS regions. 1993 H&I figures not available.

The region's industrial sector is relatively small by national standards, accounting for approximately 13 per cent of jobs in the region. This sector is dependent on a limited number of industries - oil, nuclear power, aluminium production, paper and primary

product processing. The oil industry is very important, although activity in this area has now peaked and is expected to decline slowly in the coming decade.
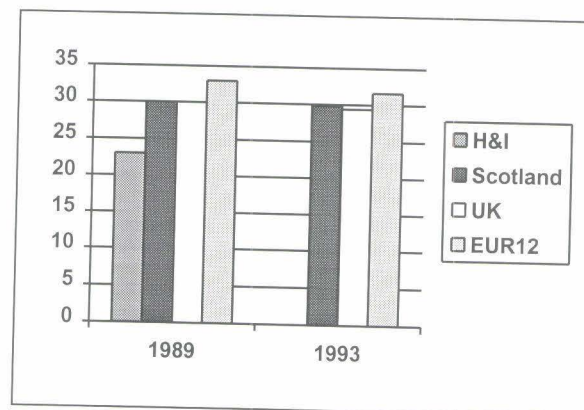
Figure 9: Employment in industry in H&I region, 1989 and 1993(a)

Source: Portrait of the Regions (1989 figures); Regions (1993 figures)
(a) Figures refer to standard NUTS regions. 1993 H&I figures not available.

Notwithstanding the presence of some large employers, the region's industrial base is mainly composed of micro-enterprises and SMEs. Research (Bryden et al, 1995) suggests that nearly two thirds of the region's workforce may be employed in businesses of ten people or less.

3.2 Telecommunications/information profile

Despite its low population density and the comparatively low levels of telecommunications use, the Highlands and Islands region benefits from a comparatively advanced telecommunications network. A major upgrade of the region's telecommunications infrastructure (the Highlands and Islands Telecommunications Initiative - HITI) was carried out between 1989 and 1992, following negotiation between the economic development agency Highlands & Islands Enterprise (HIE) and British Telecom (BT). HIE contributed £5m towards the cost of the £16m upgrade, with the remainder being provided by BT.

At present over three quarters of business and residential lines are connected to Digital Local Exchanges (DLEs), providing a full range of digital services. The majority of the remaining lines are connected to UXD5 exchanges, providing a more limited range of digital services.

In theory, British Telecom's basic rate ISDN service, ISDN2, is available to 96 per cent of business lines in the region. However the considerable distances between some customers and the exchanges prevents full service provision for some; basic rate ISDN becomes unavailable once the 'line loss' is too great, typically beyond 4-5 km of a LDE.

The Highlands & Islands territorial planning agencies see the telecommunications network as an important means of realising the region's economic potential. A range of
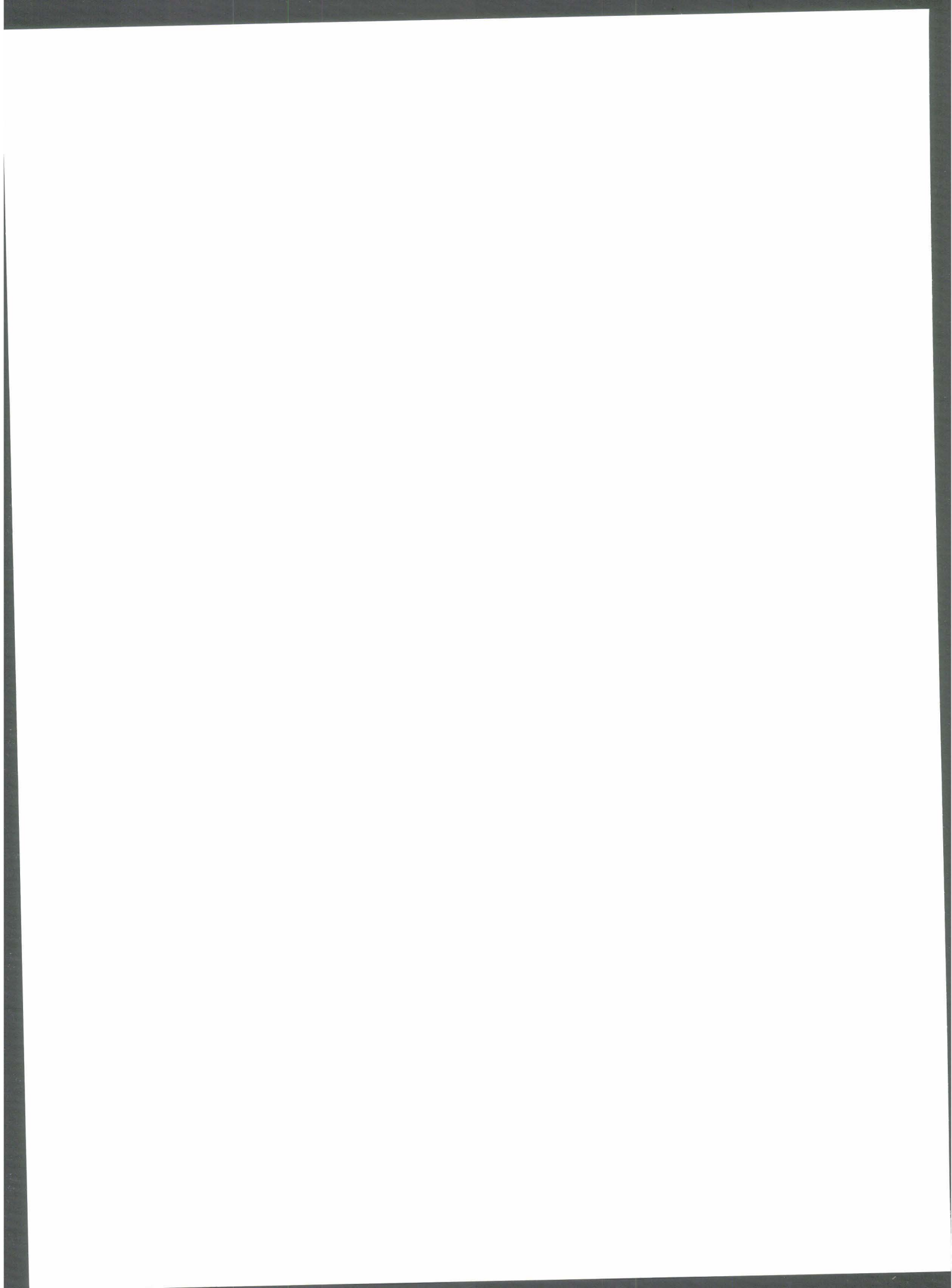
initiatives have been launched to encourage use the network and of telematics applications by the region's businesses. The availability of the advanced telecommunications infrastructure has also attracted significant inward investment, particularly from information and telecommunications intensive businesses such as telephone help desks and call centres.

future developments

HIE has applied for ERDF funding (of approximately £2m) toward the cost of upgrading the fixed telecommunications network in the more remote parts of the region. The remainder of the costs will be borne by British Telecom.

Cellnet and Vodaphone are in negotiation to upgrade their mobile telephone networks in the region under a scheme involving some use of shared networks. The £46m project was initiated by HIE and is dependent upon Objective 1 support from the European Commission. If completed, it will provide a full digital service to 95 per cent of the population by the end of 1997.

British Telecom is trialling Wireless in the Local Loop (WILL) technology for deployment in rural areas. The technology should provide full digital servies to customers in remote locations.

3.3 Key issues for territorial planning

structural economic change

As Section 4.6.1 observes, the economy of the Highlands and Islands region is heavily dependent upon low growth industries such as agriculture, and upon a narrow industrial base. Jobs in the oil industry (and related areas) are set to decline in the coming decade, and although employment in certain sectors has increased, the region's net inward migration has meant that unemployment in some areas has actually increased. The challenge facing economic planning agencies is to encourage the generation of alternative employment via growth in the service sector and value-added industries such as high technology. Employment creation is particularly important for the populations of the region's more remote areas, which are particularly dependent upon low growth primary sector employment and where unemployment is at its highest.

The HIE *Network Strategy for Enterprise Development* identifies four broad sectors on which the Network should focus its efforts: Food and Drink; Manufacturing and Production; Tourism; and Knowlege, Information and Telecommunications.

patterns of migration
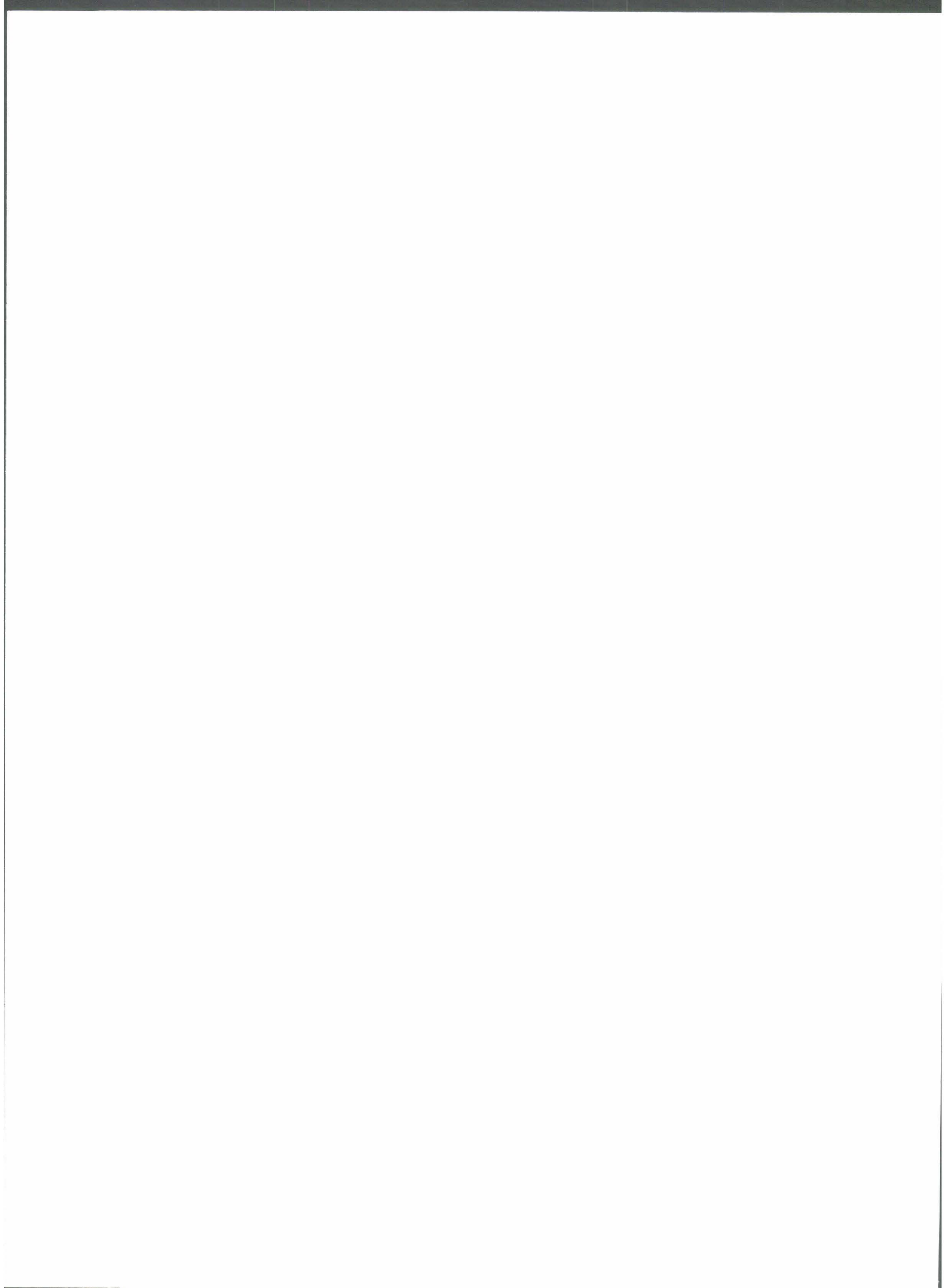
Outward migration is not a signficant problem for the Highlands and Islands region, which has one of the fastest-growing populations in Scotland. However the continuing imbalanced pattern of migration is an issue for the remoter parts of the region.
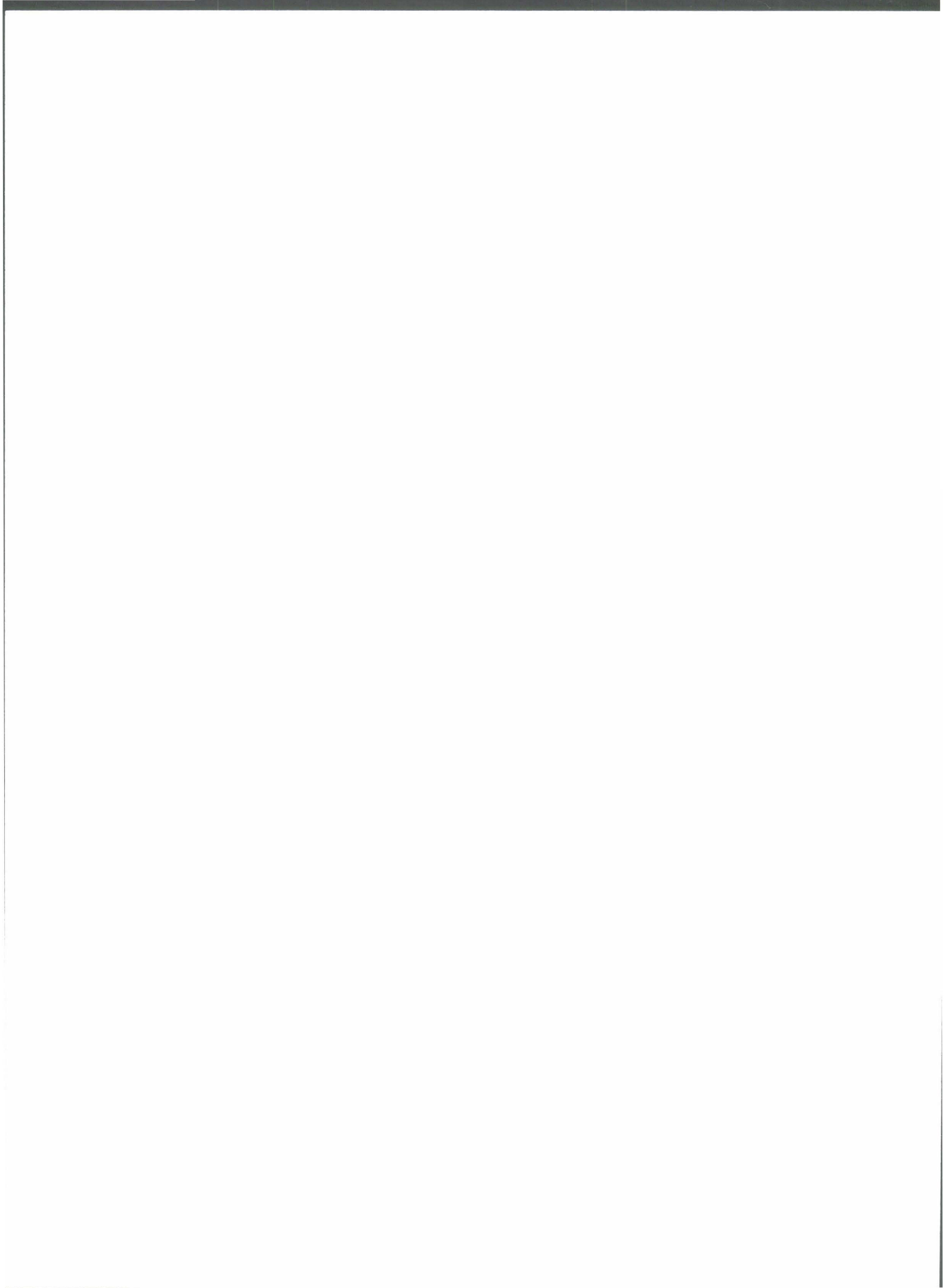
investment

HIE aims to stimulate investment in the Highlands and Islands region via a package of financial support, training, marketing and business advice, and the creation of development land and property for purchase and rental. The region's quality of life, low unit costs (e.g competitive labour costs), competitive property costs, workforce loyalty (generating low employee turnover), and high educational attainment levels are seen as significant assets in attracting inward investment.

the environment

The Highlands and Islands region has a considerable asset in its natural environment, which attracts people to the area both to live and work, and as tourists. Much of the region's economy depends indirectly upon the preservation of an unspoilt environment - primary goods such as foodstuffs draw heavily upon the region's image of environmental purity. In view of these considerations, it is particularly important that territorial planning actions protect and enhance the natural environment.

qualitative change

The decision by HIE to invest in the Telecommunications Initiative was, at that time, its biggest single investment ever. It was a remarkably visionary step, particularly as the level of manifest demand for telecoms did not justify the investment, and nor did the types of demand associated with the existing economic and social structure.

The justification which was put forward by the Agency was that the region's future had to be in information intensive industries. The primary sector was in decline, and the geographical location and physical structure meant that the region had never had a viable industrial base. The view which was put forward was an act of faith that telecoms could help overcome physical barriers. This was taken even further in suggesting that the Initiative could have a significant indirect benefit in promoting the image of the region as one associated with advanced technology.

future trends

The main challenge facing territorial planners is to deal with the centralisation of people and economic activity within the region. The core parts of the region are significantly out-performing national norms for employment levels and population retention. However, the remoter parts of the region continue to experience steady economic decline, and continue to

3.4 Territorial Planning agencies
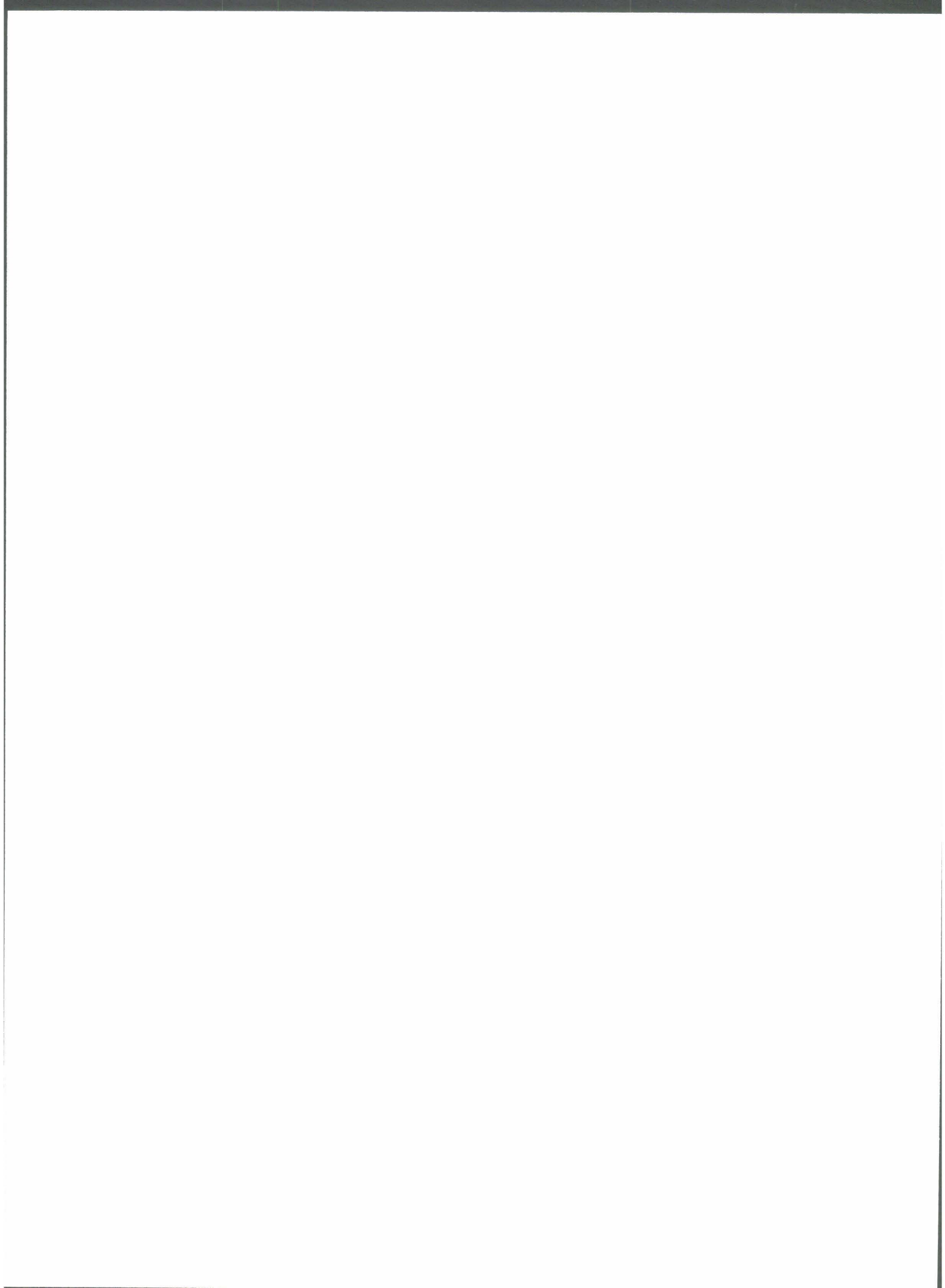
The principal territorial planning agencies in the Highlands and Islands region are the Highlands and Islands Enterprise network and local government.

The Highlands & Islands Enterprise network is made up of the network's central co-ordinating body Highlands and Islands Enterprise (HIE), and ten Local Enterprise Companies (LECs) located throughout the region. The LECs are funded by HIE, whose income in 1995/96 amounted to £76m, of which £45m was distributed to the LECs. The H&I Enterprise network promotes the economic development of the region, providing financial assistance to businesses, information, advice and consultancy, vocational training and property management services.

The current structure of local government in the Highlands and Islands region was established by the Local Government etc (Scotland) Act 1994 and came into effect on 1 April 1996. The structure consists of 29 single-tier councils (replacing 53 district and nine regional councils) plus three Islands Councils (Orkney Islands, Shetland Islands and Western Isles).

The largest of the new single-tier councils in the Highlands and Islands region is the Highlands Council. This covers a third of Scotland's mainland and has a population of 208,000. The Highland Council replaced the Highland Regional Council and eight Highland District Councils in the 1996 reorganisation. Its responsibilities include economic development, education, housing, transport services and land and environment plus various other amenities such as culture and leisure services.

Both the HIE and the Highlands Council have promoted the use of information and communications technologies as a means of economic development and improved public service provision. As Section 4.6.2 has discussed, HIE and its predecessor, the Highlands & Islands Development Board (HIDB), have both been enthusiastic advocates of advanced telecommunications infrastructure. The completion of the Highlands & Islands Telecommunications Initiative is testament to HIDB's belief in the economic benefits of ICTs.

3.5 Description of planning examples

Highlands & Island Enterprise's investment in the region's telecommunications infrastructure is a significant example of territorial planning. The primary aim in enhancing the telecommunications infrastructure was to promote economic development and it is generally acknowledged that the initiative has succeeded in creating new jobs in the region. The original target was for 500 new jobs to be created by 1999; a study conducted in 1996 (Bryden et al, 1996) suggests that the project has far exceeded original expectations with 654 jobs created by 1995 alone.

Many of these jobs were created when businesses took the opportunity to locate telecommunications-intensive activities in the region. Highlands & Islands' low land and

labour costs, quality of life and workforce skills and loyalty are seen as a major asset. HIE has vigorously promoted these benefits to potential inward investors. It has also used financial incentives to attract companies to the region.

However, much remains to be done to encourage organisations already based in the region to exploit the network's full potential. Having secured the necessary infrastructure, HIE and other territorial planning agencies are faced with the task of promoting awareness and use of ISSA amongst both public and private sector organisations - for job creation as well as for improved public service provision.

The examples below describe various cases in which the region's planning agencies have used ISSA in pursuit of territorial planning objectives:

- to attract inward investment
- to provide public information services
- to promote the use of business information by SMEs within the region
- to launch a 'virtual' university in the region
- to develop teleworking activities in remote locations

example 1: inward investment of large companies (British Telecom Thurso help desk)

The British Telecom Centre is Thurso is one of three such organisations in the country. It provides computer support to BT staff throughout the UK, as well as operating a document design centre and various other support operations.

The centre provides an example of how a planning activity initiated by the one of the region's main territorial planning agencies (the Highlands & Islands Telecommunications Initiative, or 'HITI'), encouraged a large national business to relocate part of its activities to the region.

In considering this planning example, it is important to bear in mind that BT's decision to locate in the Highlands & Islands region was initially a 'political' one; as part of HITI the company had agreed to establish demonstration projects in the Highlands & Islands in order to provide a focus for the Initiative. Notwithstanding this, the centre has provided particularly successful; the BT representative interviewed for the study considered Thurso to be the best of BT's three UK centres.

Echoing HIE's claims about the region's 'quality of life' and attraction for inward investors, it is clear that one of the reasons for the success of the Thurso venture has been the quality of the local workforce. Staff turnover is very low and skill levels are high (although the latter may be attributed to the availability of redundant staff from the
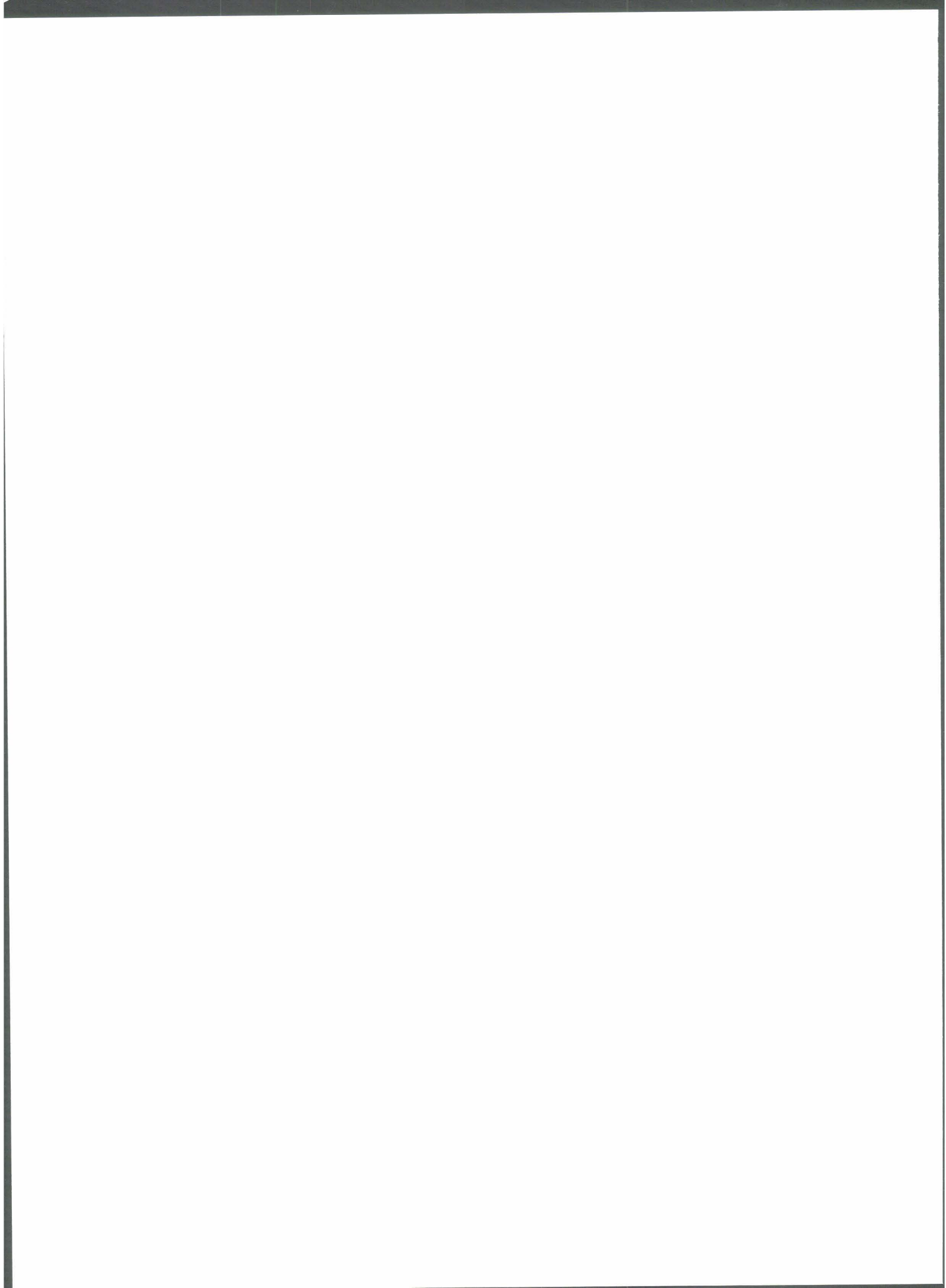
nearby Dounreay nuclear plant, which was recently decommissioned, rather than the efforts of the local community college).

Launched with a staff of 25, the unit has grown considerably. Within 18 months the staff had increased to 80 and at the end of 1996 the centre employed 200 people. It is anticipated that by the end of 1997, staff numbers will increase to 300 people.

Analysis

HIE's success in attracting companies such as BT to the Highlands & Islands region owes a great deal to the HITI. Without the existence of the advanced telecommunications infrastructure, it is doubtful that BT would have chosen to locate its help desk operations in Thurso.

However, the existence of the infrastructure should not be seen as the only reason for the company's decision. David Henderson, head of HIE's Knowledge, Information and Communication programme (and architect of the HITI) observed that the telecommunications infrastructure is no more than a means to an end, providing a way to unlock the region's potential. Arguably, the business support provided by HIE to BT (staff training and recruitment services, property location and provision, grant support) is one of the most important elements in the entire territorial planning equation.

example 2: business information for companies in the HIE region (Business Information Source)

The Business Information Source (BIS) is an example of a initiative using information and communication technologies to facilitate access to business information by organisations in remote locations. A subsidiary organisation of HIE, it was launched in 1992 as a partnership between HIE, the Highlands Regional Council and the private sector with the aim of providing a 'one-stop shop' for business information to organisations throughout the region.

BIS is currently undergoing expansion as part of the SME Initiative Plan for the Highlands & Islands which proposes that in order to reduce reduce the isolation of SMEs in the region, satellite Business Information Services be established in each of the ten LECs. These satellite BIS will be linked to BIS headquarters in Inverness via e-mail and videophone. Some 50 per cent of their costs will be borne by ERDF funding.

Service provided

BIS   considers   itself   to   have   three   main   roles:

- a general 'front-line' business information service to Inverness and the surrounding areas

- a specialist information service to the business community of the Highlands & Islands
- a business information and library service to the HIE network.

BIS is thus essentially a business library and an information brokering service; clients are able to pay for on-line searches and a service called 'Eurolert' whereby subscribing organisations are automatically e-mailed when relevant information (e.g. calls for tender) is published.

BIS also provides a World Wide Web site which promotes its services and provides information to staff at each satellite BIS (http://www.cali.co.uk/bis).
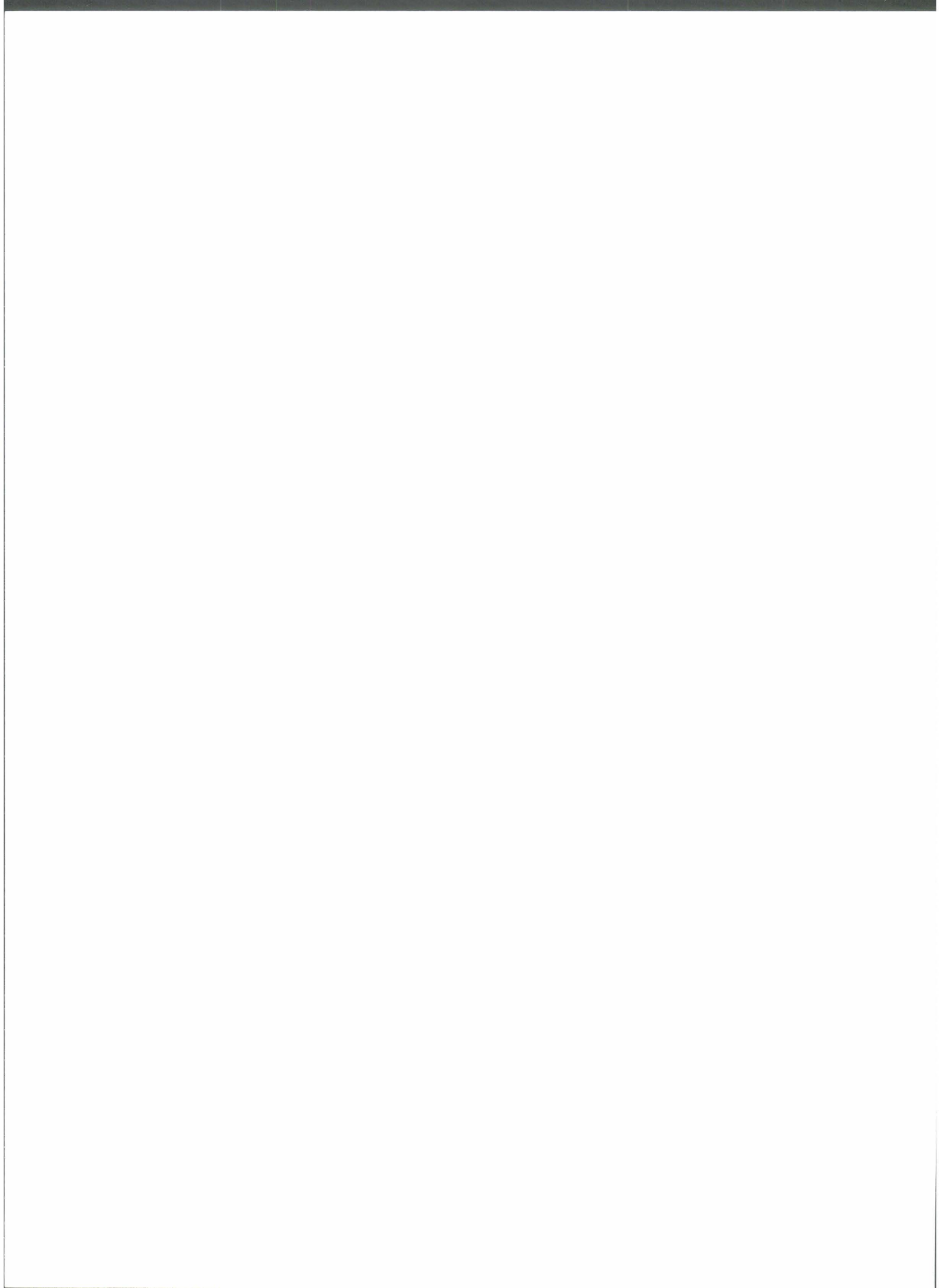
Analysis

BIS is primarily concerned with information content rather than information technology. However it employs ISSA in the delivery of its services and encourages businesses within the region to do likewise. BIS considers that it is increasing small companies' familiarity with business information and information and communication technologies.

BIS receives over 5000 queries per annum and claims that use of the service has grown steadily since it was established. However there have not been any formal evaluations and in consequence it is difficult to determine how successful the initiative has been.

example 4: a networked university for the Highlands & Islands (University of the Highlands and Islands)

Although there are a number of further education colleges in the Highlands & Islands, the region suffers from the lack of a local university. As Section 4.6.3 notes, the 25-44 age group is particularly under-represented in the more remote islands. The out-migration of the young and the qualified in search of higher education is likely to be an important element in this as many of the region's graduates do not return.

Various attempts have been made in the past to apply distance learning technologies as a means of delivering education to remote locations within the region. However, those wishing to pursue a higher education degree were limited to 'correspondence' courses provided by the Open University. Such courses offer degree and postgraduate level tuition but students do not have the opportunity for contact with other students and tutors normally found on a university campus. Moreover, they do not provide the physical focus for research and development offered by a traditional university.

The Highlands & Islands University (UHI) represents an attempt to bridge this gap. A broadband network will be used to link ten of the region's colleges and a number of smaller institutions into a federal collegiate institution. Students will live on or off each of the ten small campuses and tuition, lectures and seminars will be delivered to each campus using on-line services and video telephony.

The University currently offers eight degree programmes, through Inverness, Thurso, Moray, Lews Castle and Perth Colleges and the UHI network validated by Stirling, Aberdeen, and the Robert Gordon Universities. The UHI recently signed an agreement with the Open University which will help accelerate progress towards securing degree-awarding powers in its own right - an essential step towards attaining full university status. A further step will be that of developing post-graduate research degrees. The Open University Validation Service will act as sponsoring institution for UHI, enabling it to supervise PhD students and researchers.

The cost of establishing the HIU is approximately £86.5 million. Some £33.5 million is to be provided by the UK Millenium Commission and the remainder is being sought from ERDF, HIE, private sector and local authority sources.

Analysis

It is too early to attempt any evaluation of this territorial planning example; indeed, the Millenium Commission's decision to award the initial £33.5m grant to the HIU was only announced in late 1996.

However it is possible to speculate upon the potential impact of such an initiative on the region's development. Possible effects on migration trends have been discussed above and it is clear that the HIU has the potential to play an important role in developing skills within the region. Furthermore, the company managing HIU hope that the project will stimulate investment in broadband communications networks linking the ten sites which in itself will be of benefit to the region as a whole if it increases access to advanced communications infrastructure.

example 5: remote delivery of public services (The Highland Regional Council - Project LAMBDA)

Project LAMBDA is an interesting example of the use of advanced communications technologies to bring public services to remote and peripheral regions. A pilot project, it was launched in 1994 under the RACE programme and funded by the EU. Four European countries participated: Scotland, Ireland, Germany and Greece. The aim of the project was to use advanced technologies to enhance the opportunities of people living in remote rural areas of Europe and to remedy some of the worst characteristics connected with remoteness from the main centres of population.

The organisation responsible for implementing the project in Scotland was the Highlands Regional Council (HRC), the predecessor to the Highlands Council. The project was managed by the IT Department of the Council.

Specifications

The system was based around seven public access computers linked to the LAMBDA system using ISDN-2. Each had a videophone and links with various information providers, delivered via a common interface designed by HRC.

Location

The service was provided in seven locations, chosen as sites which would particularly benefit from a remote information link. The community populations ranged from 1,541 to 505.
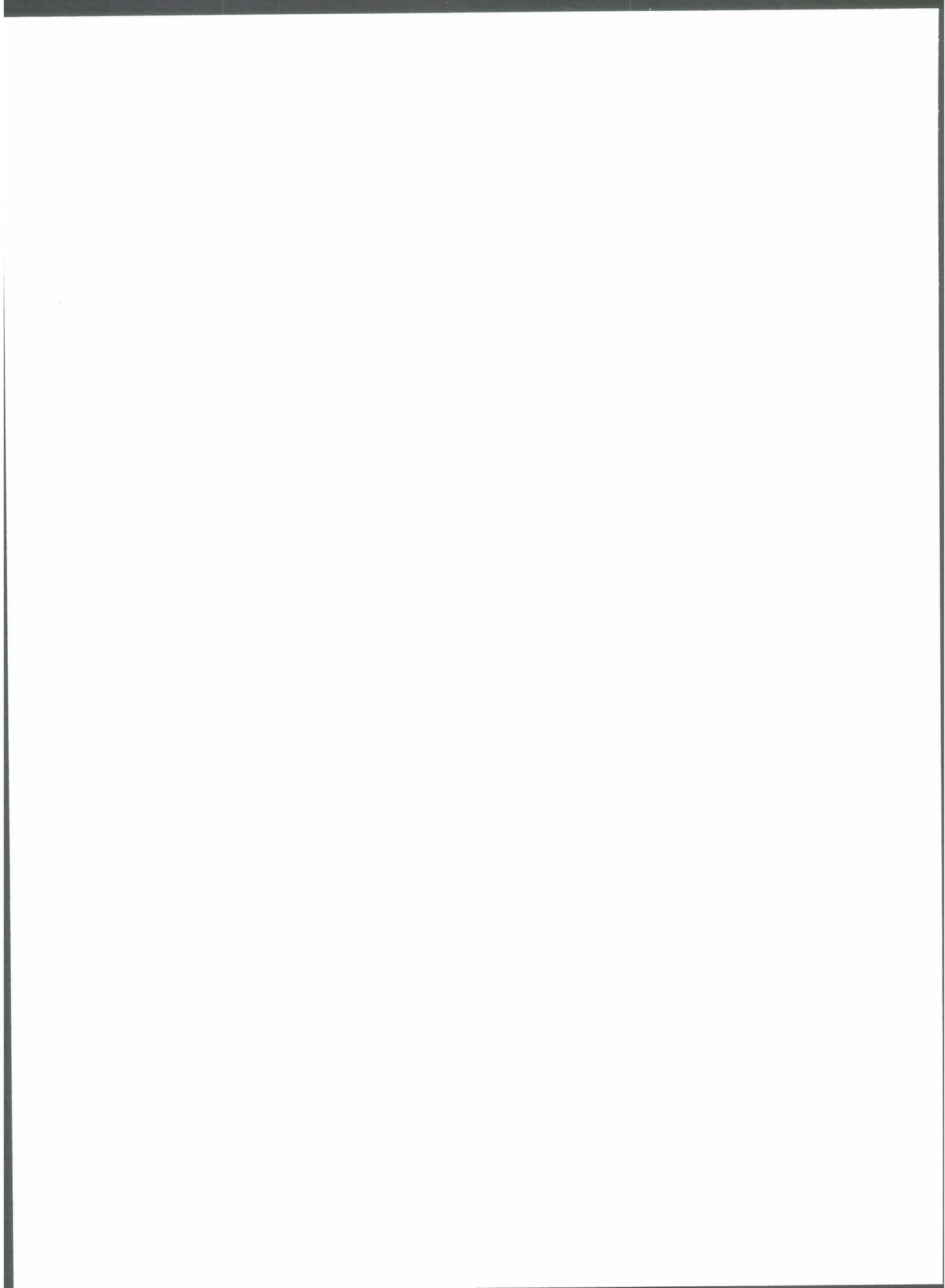
The units themselves were sited in the most central locations, although HRC found that a balance had to be struck between making the units accessible and ensuring the users' privacy.
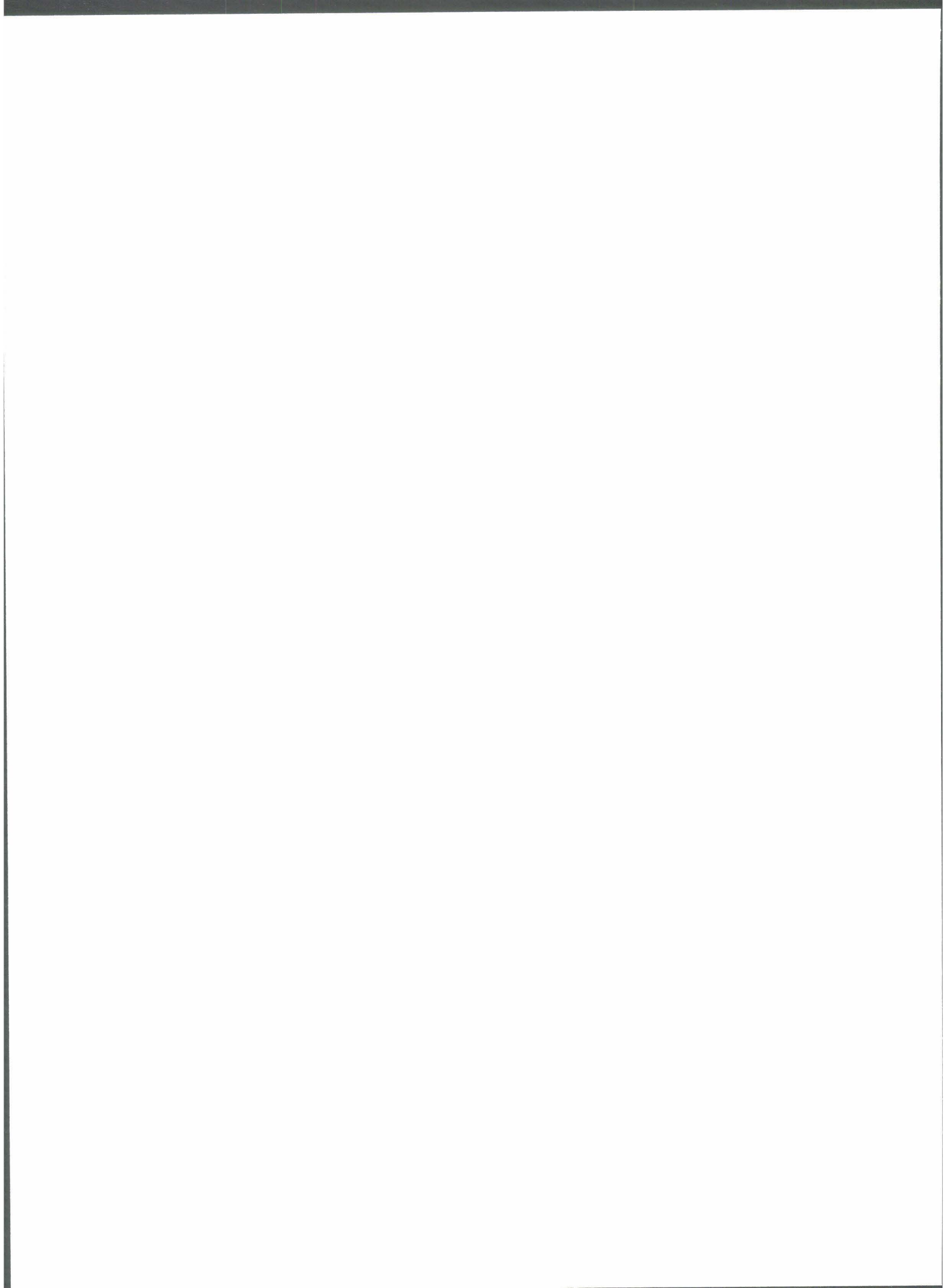
Information

The types of information provided on the system were constrained by availability and in consequence, the majority of the information came from HRC itself rather than external information providers. The different categories of material were as follows;

- on-line public information leaflets (e.g. Council Tax, Training and Careers, Financial Assistance for Businesses)
- public library information, including the Library Catalogue on-line plus borrowing request services
- access to the Highland Museum Collection information service
- Welfare Benefits service
- Highland Regional Council information including departments/services and councillors

The system also offered a videophone link to each service provider

Analysis

HRC undertook various quantitative and qualitative analyses of the project. It concluded that the system had great potential, with an enthusiastic response from users. The videophone link was found to be very popular particularly for contact with the Benefits Agency (Welfare support). However, a number of issues would need to be addressed if it were to be launched as a full-scale service:

Organisational issues

HRC experienced a number of problems in securing the support of other information or service providers. This limited both the scope and quality of material available on the system; the Council's research found frustration at the lack of in-depth information. This implies negotiation with service providers over access to databases and data compatability.

The inability or unwillingness to provide information indicates the importance of securing service providers' suppport for the project.

Publicity and awareness

HRC found that publicity for the service was an important determinant of use. Support Groups were established for each unit and these proved valuable in stimulating usage.

Technological obsolescence
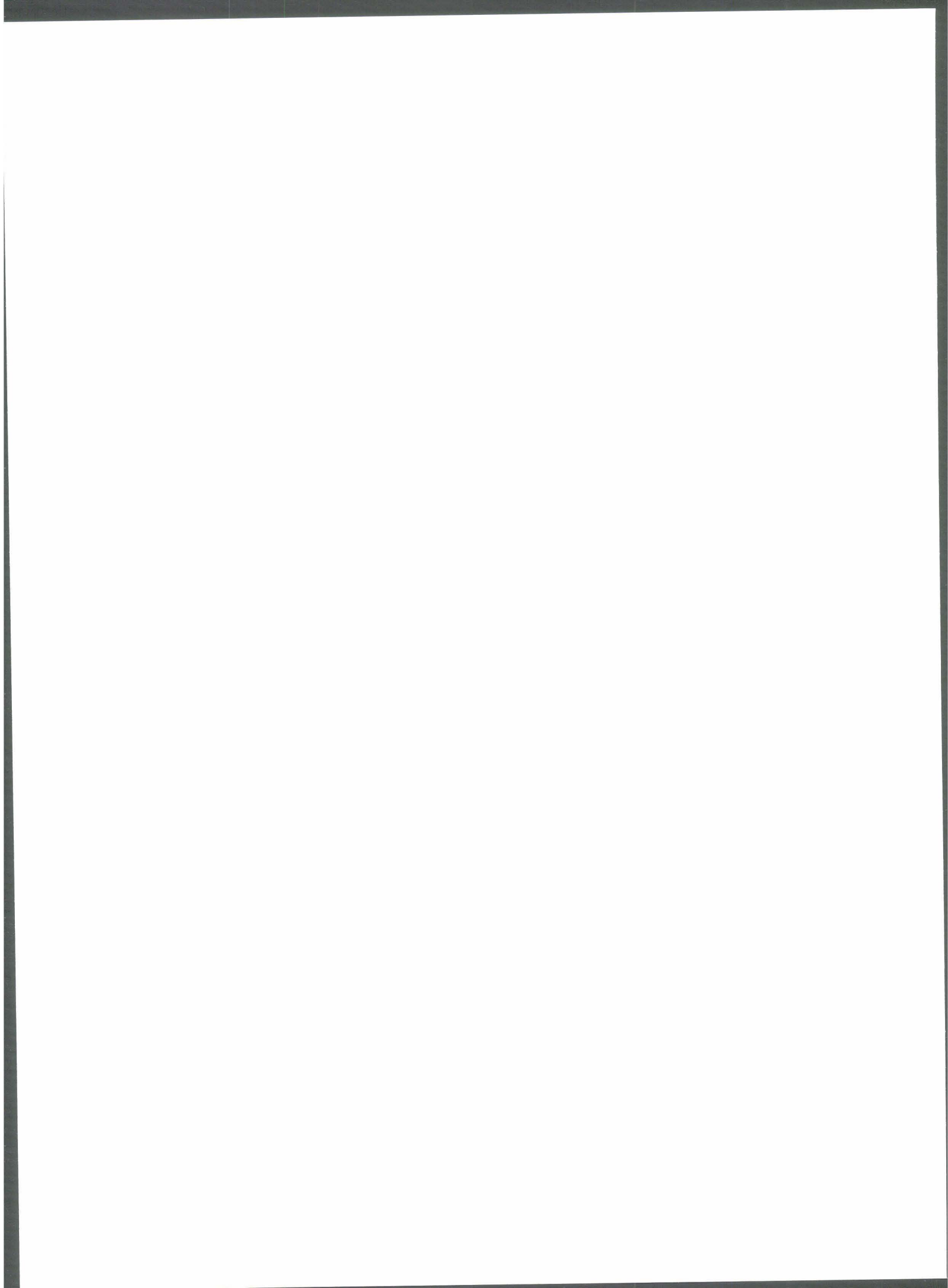
It is now felt that developments in the Internet have superceded the technology used in the LAMBDA project, although many of the organisational and publicity issues still remain salient.

(Community Telecottage Centres)

In a region such as the Highlands & Islands, in which some communities are extremely distant from the main centres of population, high capacity telecommunications offer the potential for many forms of remote or tele-working.

Territorial planning initiatives to bring ICT-based development to rural areas frequently involves public investment in community projects. One such initiative developed by Highlands & Islands Enterprise in 1990 was the Community Telecottage Centre (CTCs) project in which ITC-based facilities were provided to communities in some of the most remote islands and townships.

The aims of the project were to:

- raise awareness of the availability of advanced telecommunications
- provide training for local people
- provide access to shared IT and telecommunications facilities
- provide a site for teleworking.

The community-run projects were subsidised by HIDB/HIE and BT for an initial three years after which they became self-financing.

Analysis

The success of the CTC project has been mixed. The projects were always expected to depend heavily upon local support and enthusiasm for their success and this appears to have been the case. Some have flourished; the success of the Lerwick initiative encouraged the Shetland Council to establish five new CTCs, based around the existing skills of community members. Another recognised success story is the Western Isles' telecottage from which a thriving local company, Lassair, was established.

In other areas however, projects appear to have suffered from a lack of management skills. Interviews conducted for this study suggest that an important factor in the success or failure of CTCs is the presence of an enthusiastic project champion with the necessary business acumen to secure earned funding once the public subsidy ended. The evidence from the Highlands & Islands suggests that once the support from HIE and BT came to an end, a number of the projects quickly encountered financial difficulties. As one interviewee observed:
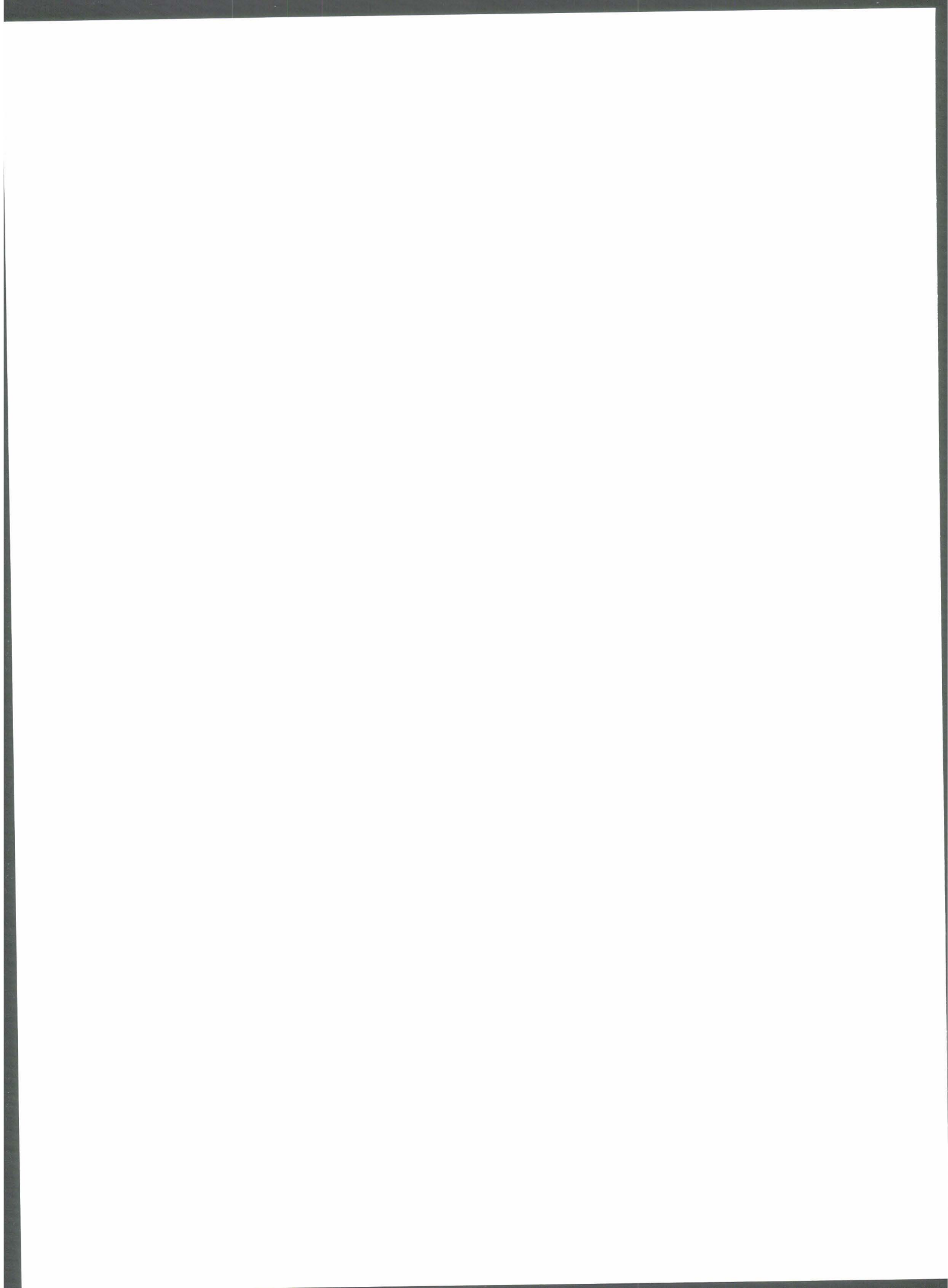
The telecottages were established with little consideration of the business side; they weren't run as businesses but as a social or community concern. So when the public funding ran out, many simply folded.

Notwithstanding the success or failure of individual CTCs, HIE considers the project to be a success. In some cases, the initial investment has generated local employment, and in all cases, the projects raised local awareness of ICTs and contributed to training and skills development within their local communities.
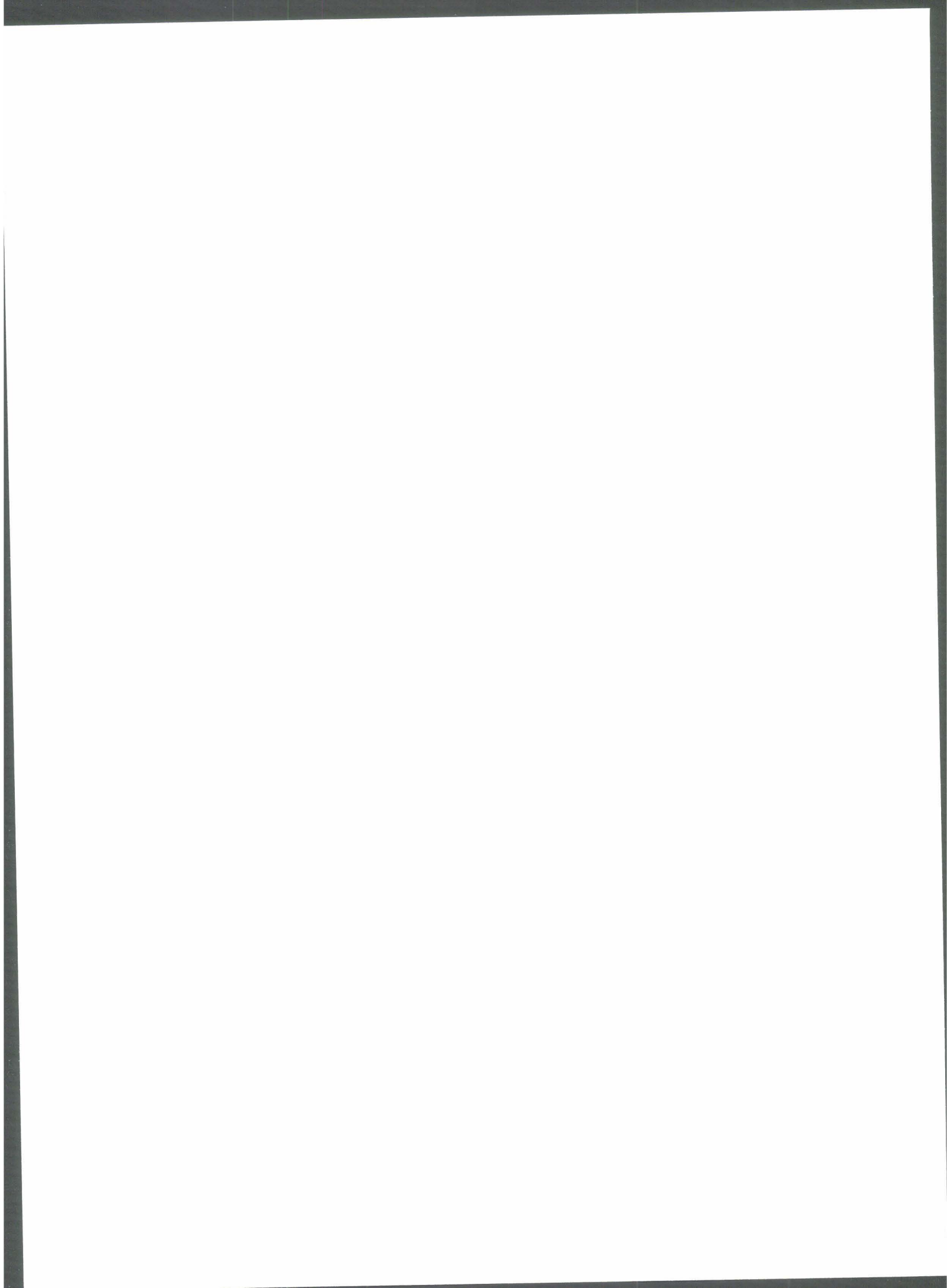
ANNEXES

Annex I: Economic planning and development in Scotland

The main themes of the Government's regional industrial policy are set out in two White Papers on Competitiveness entitled *Helping Business to Win* (May 1994) and *Forging Ahead* (May 1995).

These documents represent the Government's first major statement of regional industrial policy since the 1983 White Paper *Regional Industrial Development* and the 1988 White Paper *DTI - The Department for Enterprise.*

The Government's regional economic policy is amply documented in the above papers, and in the 1994 Trade & Industry Select Committee report on Regional Policy. Summarising long-term trends in Government policy in this area, the Select Committee noted that regional policy '.. has become less concerned with seeking to shift activity from one part of the country to another [location controls] and more concerned with developing 'indigenous potential'.

In its response to the 1995 Trade & Industry Select Committee report on regional policy, the Government acknowledges this shift in approach. It says that the 1988 White Paper announced an increasing emphasis on '..policies designed to achieve improvements in the managerial skills and strategies of businesses, and a shift to a discretionary regime of regional grants'. This approach marked a departure from the previous system which was largely based upon an automatic grant regime.

These changes have been undertaken against a backdrop of change in economic conditions. The Government's response to the Select Committee says that there have been four key developments:

- unemployment patterns have changed, with regional imbalances narrowing but a growth in disparities at the local level;

- there is increased competition for internationally mobile industrial and commercial projects (ie. inward investment)

- the Government has strengthened its efforts to regenerate areas suffering serious unemployment and other structural problems

- the Government has developed new challenge mechanisms to encourage the formation and development of local partnerships and a coherent approach to regeneration.
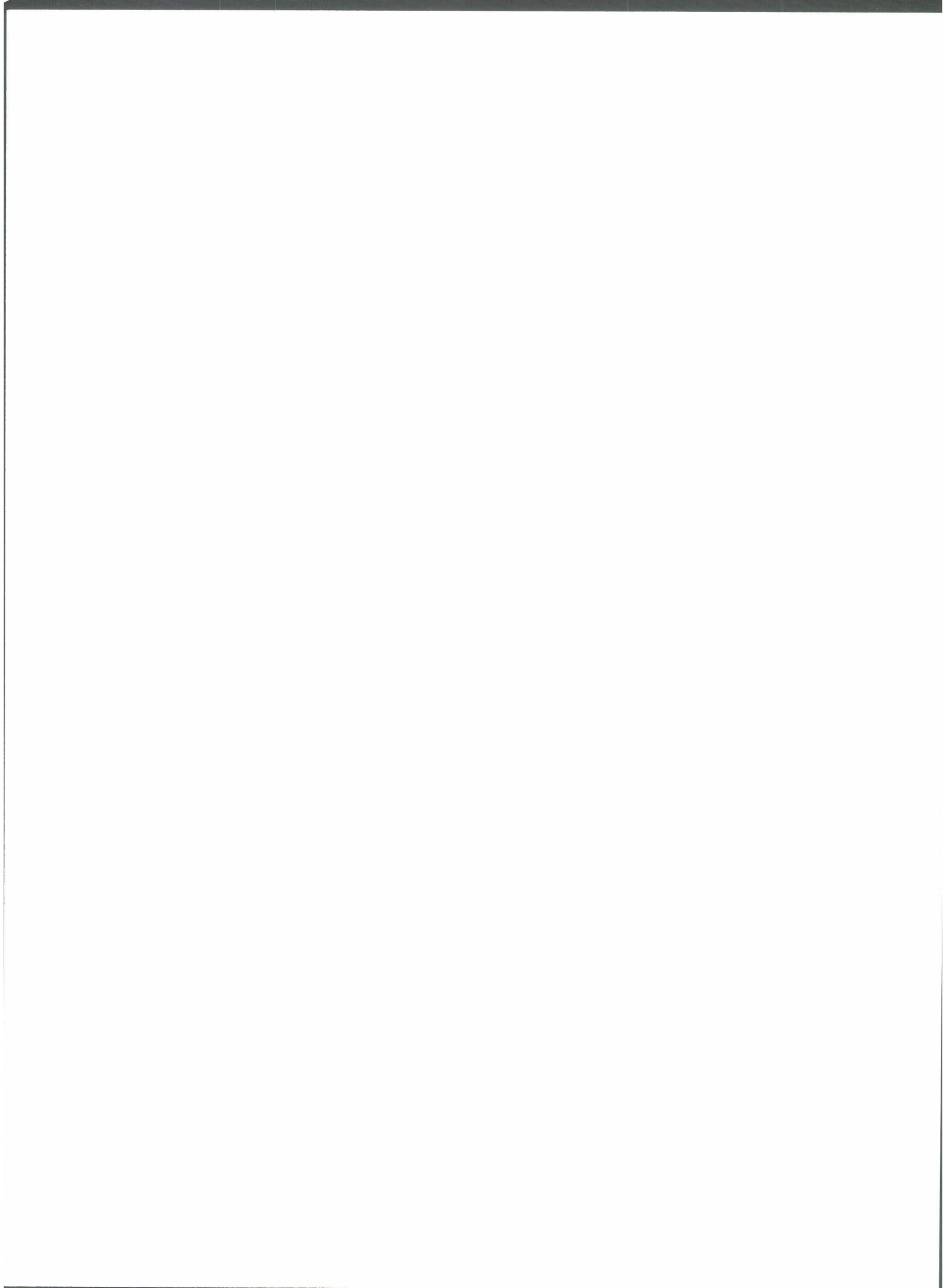
Central government financial support to business in Scotland

According to the DTI, the broad objective of the Government's regional policy is to reduce regional imbalances in employment and to encourage the development of indigenous potential within the Assisted Areas on a stable long-term basis [Memoranda p12].

The Government seeks to realise these objectives by promoting competitiveness and encouraging economic potential within the disadvantaged regions. It does this through a system of financial incentives to companies to invest in Assisted Areas, and a national network of organisations which provide advice and support to businesses. Over 60 per cent of Scotland's working population live in Assisted Areas (35 in the UK as a whole) and Scotland is a major beneficiary of financial assistance.

The main regional incentives are Regional Selective Assistance (RSA) and Regional Enterprise Grants (REG).

RSA is the Government's main financial incentive. It is a discretionary grant available to companies in most manufacturing and some service sectors for investment projects which involve expansion, modernisation or rationalisation and which create or safeguard jobs. In the five years to March 1993 offers of RSA accepted in Scotland totalled over £428m.

Regional Enterprise Grants are made up of two discrete types of grant targeted at small businesses. It provides support for investment an innovation projects. In Scotland, REG is administered by the Scottish Office Education and Industry department.
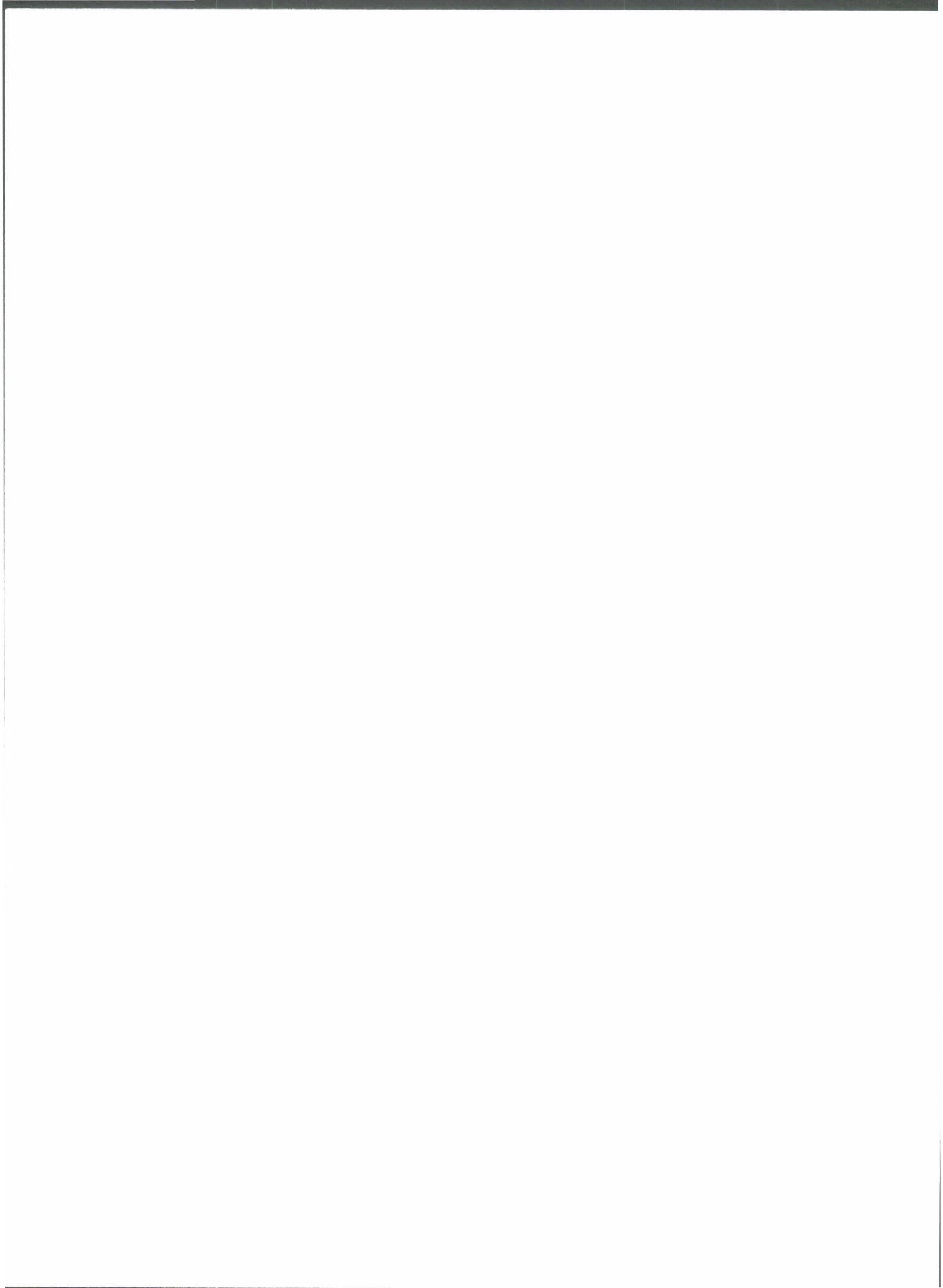
The Enterprise Networks

There are two Enterprise networks covering the highlands and lowlands of Scotland. Activities are directed by the Enterprise Agencies (Scottish Enterprise and Highlands & Islands Enterprise) and implemented by Local Enterprise Companies.

SE and HIE are the main deliverers of Scottish Office regional economic policy. They were set up in 1990 to promote economic development and environmental improvement in Scotland.. They are funded via grant-in-aid from the Scottish Office (Education and Industry department) and receive limited income from business activities.

The EAs have a wide ranging remit, including the provision of grant support to business, infrastructure provision and land management and training provision and development [more on EAs in Agencies file]

The Local Enterprise Companies

The bulk of SE and HIE activity (accounting for approximately 85% of SE expenditure) is carried out by a network of 22 Local Enterprise Companies (LECs) funded by the Enterprise Agencies. Thirteen LECs form the Scottish Enterprise network and 9 the HIE network.

The LECs are private companies working under contract to the enterprise agencies to deliver services to businesses in their respective areas. Their Directors are drawn predominantly from the private sector.

The LECs integrate a range of activities including training and business development and infrastructural provision. They have a relatively high level of autonomy and according to a recent Trade & Industry Select Committee report 'are able to deliver national schemes and programmes flexibly in response to local needs and circumstances'.

Both LECs and EAs operate within the context of the planning system, particularly where they are involved in urban renewal, property development, land renewal and environmental improvement.

LECs prepare 3 year business plans and one-year operating plans on an annual basis.

Local authorities

Local authorities' role in relation to economic development focuses on two themes: providing suitable locations for business development and reconciling the needs of business and industry with the general aim of protecting and improving the environment.

The role of local authorities in this area is detailed in NPPG 2, *Business and Industry*. The SO notes that economic growth and protection of the environment requires development plans which are up to date, relevant to demand, and which indicate where develpment may take place, a supply of sites which matches needs, speedy development control decisions and a general encouraging ethos.

More specifically, NPPG2 says that authorities should have regard to the following objectives:

-       priority should be given to job creation and economic development

-       an adequate amount of land for business and industry development must be provided, with an improved choice in terms of quality, size and location

-       economic development must not cause unacceptable damage to the environment

-       site distribution should facilitate energy efficiency
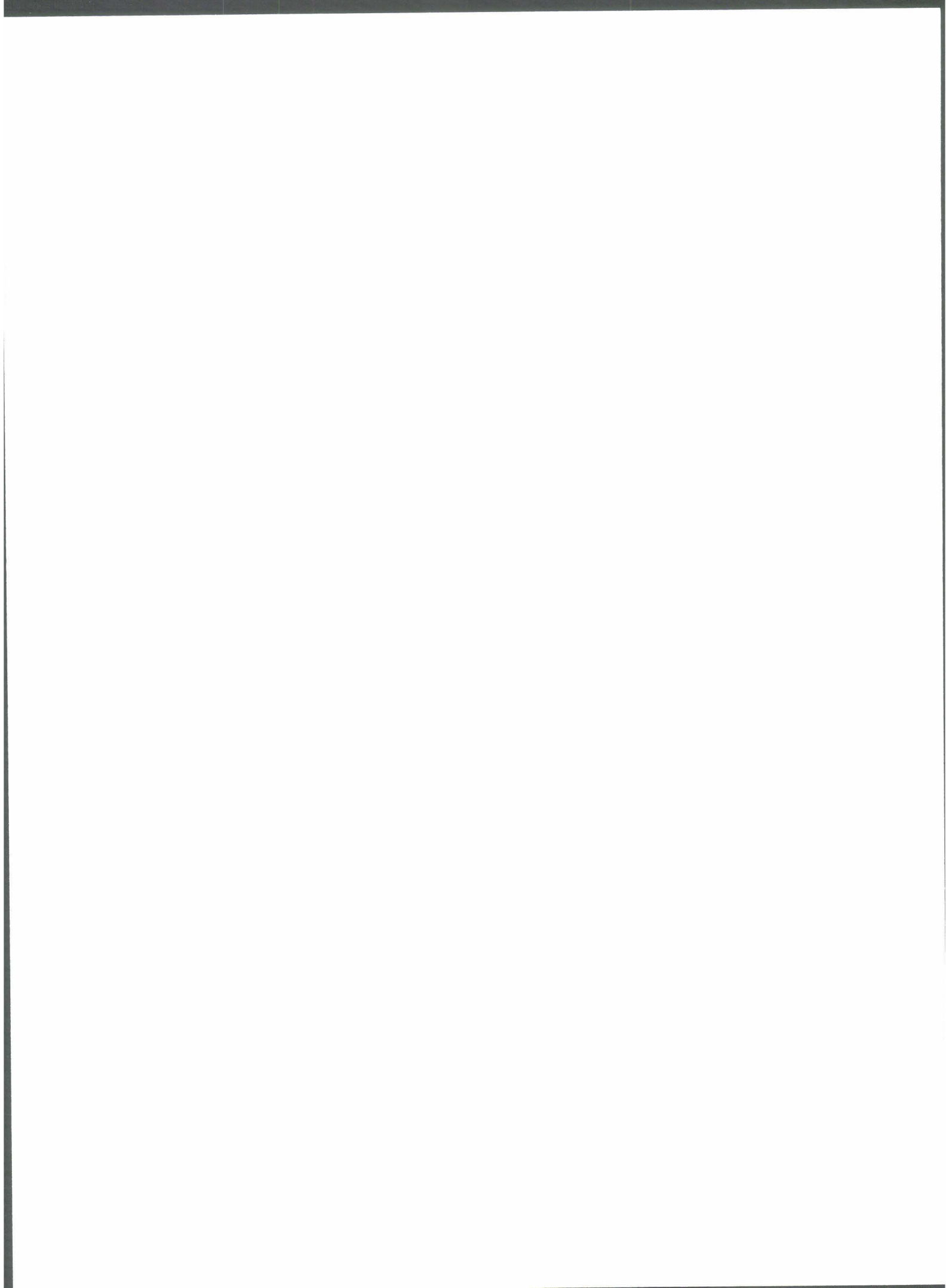
-        planning authorities should support other Government policy objectives such as developing small businesses
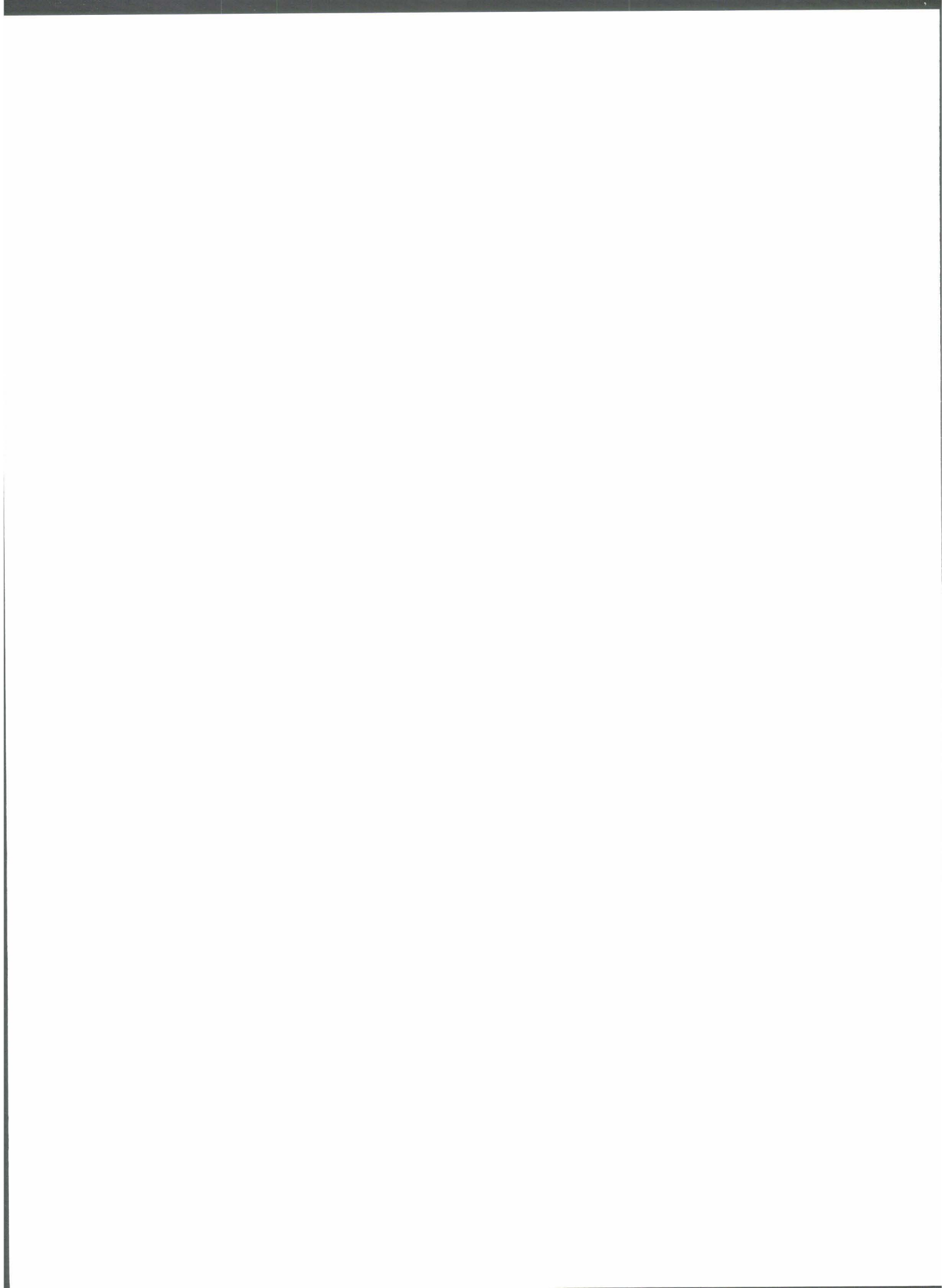
Annex II: The Planning System in Scotland

The main primary legislation governing planning activity in Scotland is the Town & Country Planning (Scotland) Act 1972. The Act has been substantially amended over the last twenty years.

The Scottish planning system exists to ensure the effective development and use of land in the public interest. As detailed in the Scottish Office Development Department *Planning Charter Standard Statement*, the planning system operates to:

- provide effective development for homes and jobs;
- meet our desire for mobility;
- conserve the heritage of older buildings;
- protect the environment and ensure that development and growth are sustainable - in other words, that decisions will not harm the environment for future generations;
- guide development to the right places;
- prevent development which is not acceptable; and
- protect the rights of the individual.

Three general objectives for the planning system are defined by the Scottish Office (NPPG 1, 1994).

First, the planning system exists to set the land-use framework for promoting economic development. In accordance with the Government's aim of promoting economic development and job creation, development plans should allow for the provision of locations, sites and premises required by industry. A stable and efficient planning framework is a prerequisite for investment and economic development and the Government has taken steps to ensure that the planning system is as streamlined as possible.

Second, the planning system should encourage economic, social and environmental regeneration. Local plans should identify the opportunities for housing, commercial and business development to contribute to the economic, social and environmental regeneration of communities.

Third, the planning system should maintain and enhance the quality of the natural heritage and built environment. Development plans should protect the environment and promote the re-use of formerly developed urban land ('brownfield' sites). Environmental quality should also be protected through the promotion of good design.

The concept of 'sustainable development', an integral part of the EU's spatial planning policy, informs all planning activity in the UK. The Government committed itself to sustainable development in the Environment White Paper (ref.) *This Common Inheritance*, in which it explained that the concept involves 'living on the earth's income rather than eroding its capital'. Sustainable development is thus an approach based upon ensuring that
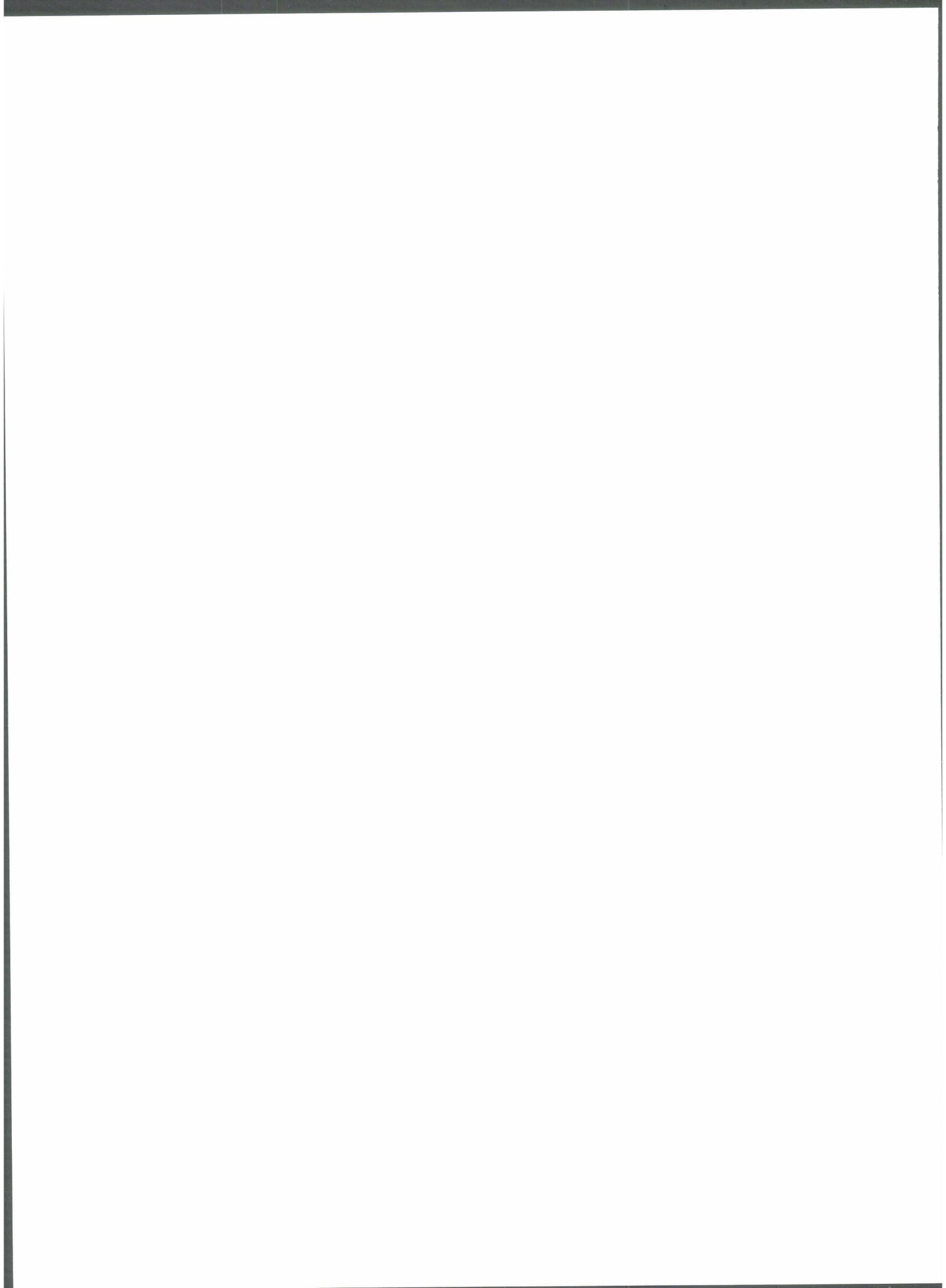
the consumption of renewable natural resources does not exceed the limits of their replenishment.
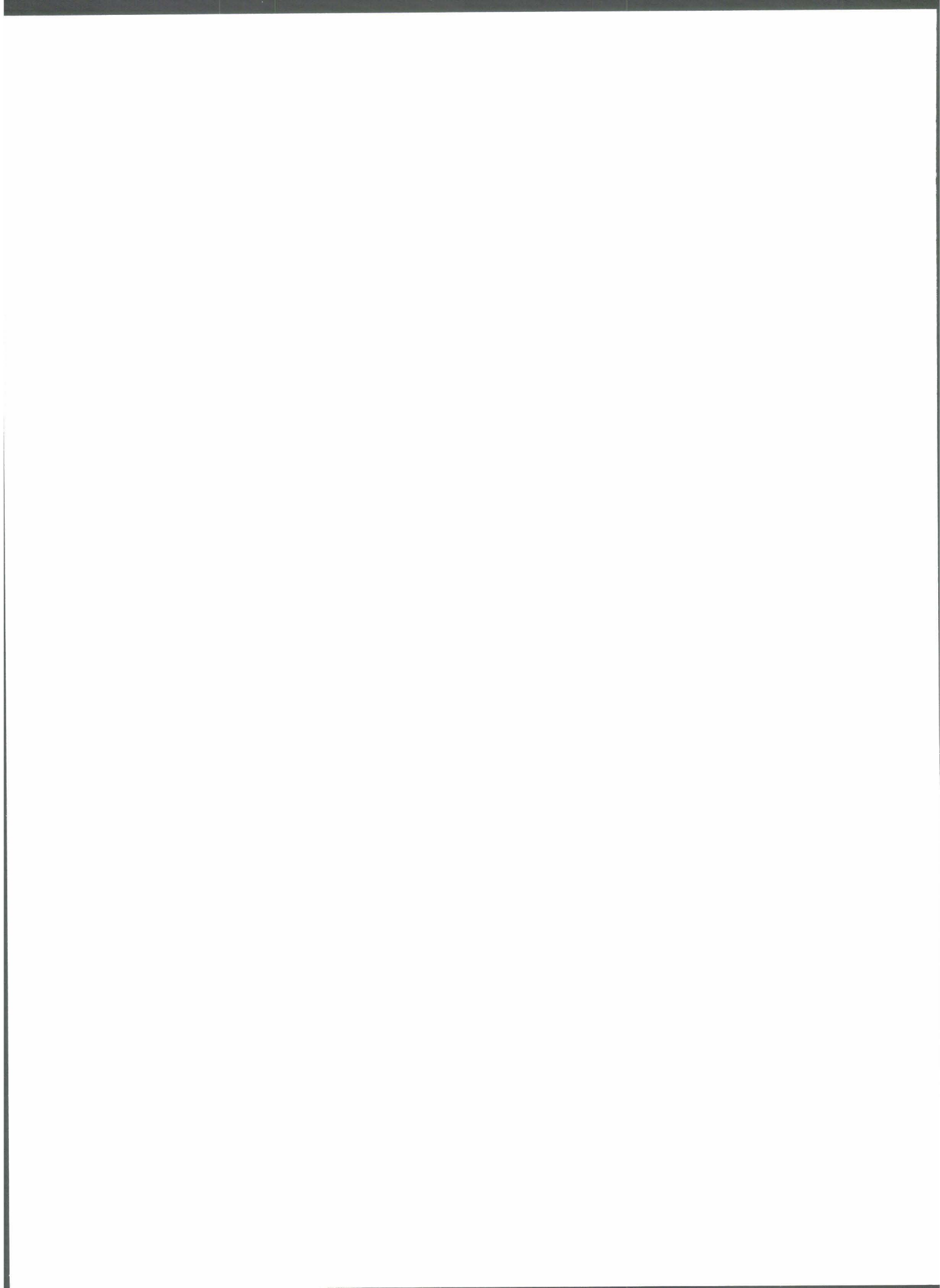
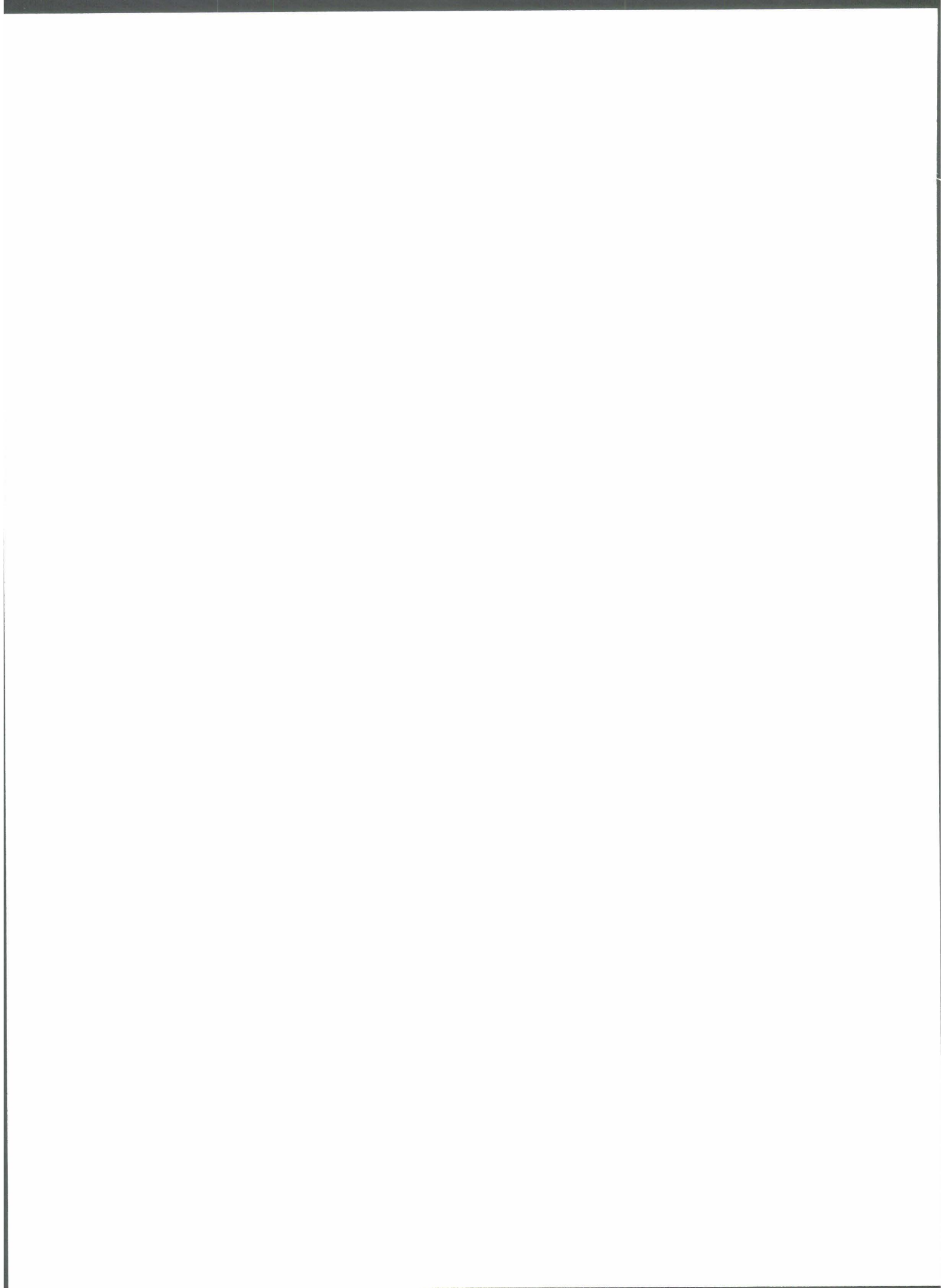## The operation of the Scottish planning system

The Scottish planning system operates on the principle that decisions should be taken at the most local administrative level. In this way, the involvement of the Secretary of State in local planning decisions is kept to a minimum. However, strategic plans at the regional level are subject to the approval of the Secretary of State; this control extends indirectly to local plans which must take account of the Government-approved strategic plan framework. The Government's policy on planning is itself influenced by European policy and international agreements (see table).

Table: the Scottish Planning Policy Framework

Level	Document	Author
Intl	Rio Declaration (Agenda 21)	Rio Summit
EU	Europe 2000+ EU Directives	CEC CEC
National	T&C Planning (Scotland) Act 1972 and subordinate legislation	Scottish Office
National	NPPGs (statements of central gov't policy, guidance on DPs)	Scottish Office
National	Circulars (advice and guidance on policy and procedure)	Scottish Office
National	PANs (guidance on good planning practice)	Scottish Office
Regional	Structure plans (strategic regional policy framework)	Regional/island authorities
Local	Local plans (detailed local development guidance)	Unitary councils

The role of the Scottish Office Development Department

Most planning decisions are taken by local authorities, but central government plays an important role in developing and maintaining the statutory framework. The Secretary of

State for Scotland gets directly involved in the operation of the system in a number of other ways.

First, the Secretary of State provides a range of policy guidance, including:

- National Planning Policy Guidelines (NPPGs), statements of planning policy on land use and related matters. There are over ten NPPGs addressing different themes. NPPG2 (Business and Industry) addresses economic development. There are no NPPGs which specifically address telecommunications or telematics, although NPPG2 briefly discusses teleworking.

- Planning Advice Notes (PANs) disseminate good practice.

- Circulars explain new legislation or administrative procedures and the reasons for changes in Government policy. There are currently 150 circulars extant.

The Secretary of State also influences the planning process via approval procedures.

- Authorities' structure plans must be approved by the Secretary of State.

- Local authorities are required to notify the Secretary of State of applications in relation to particular categories (eg. major structure plan departures)

- The Secretary of State can call in any planning applications for his decision rather than the local authority's.

- Planning applicants can appeal to the Secretary of State where they are dissatisfied with their authority's decisions or timetable.

The role of local authorities in the planning process

The main planning functions of local authorities are the preparation of development plans for their areas and development control (deciding planning applications and enforcing rules and conditions).

Development plans

Statutory development plans are the blueprint for development activity within a given geographical area. They are made up of two documents: structure plans and local plans.

Structure plans provide the strategic policy framework for development in a region over a ten to fifteen year period. They provide a basis for the coordination of strategic decisions relating to land use, and set out the policy context within which local plans must be formulated.
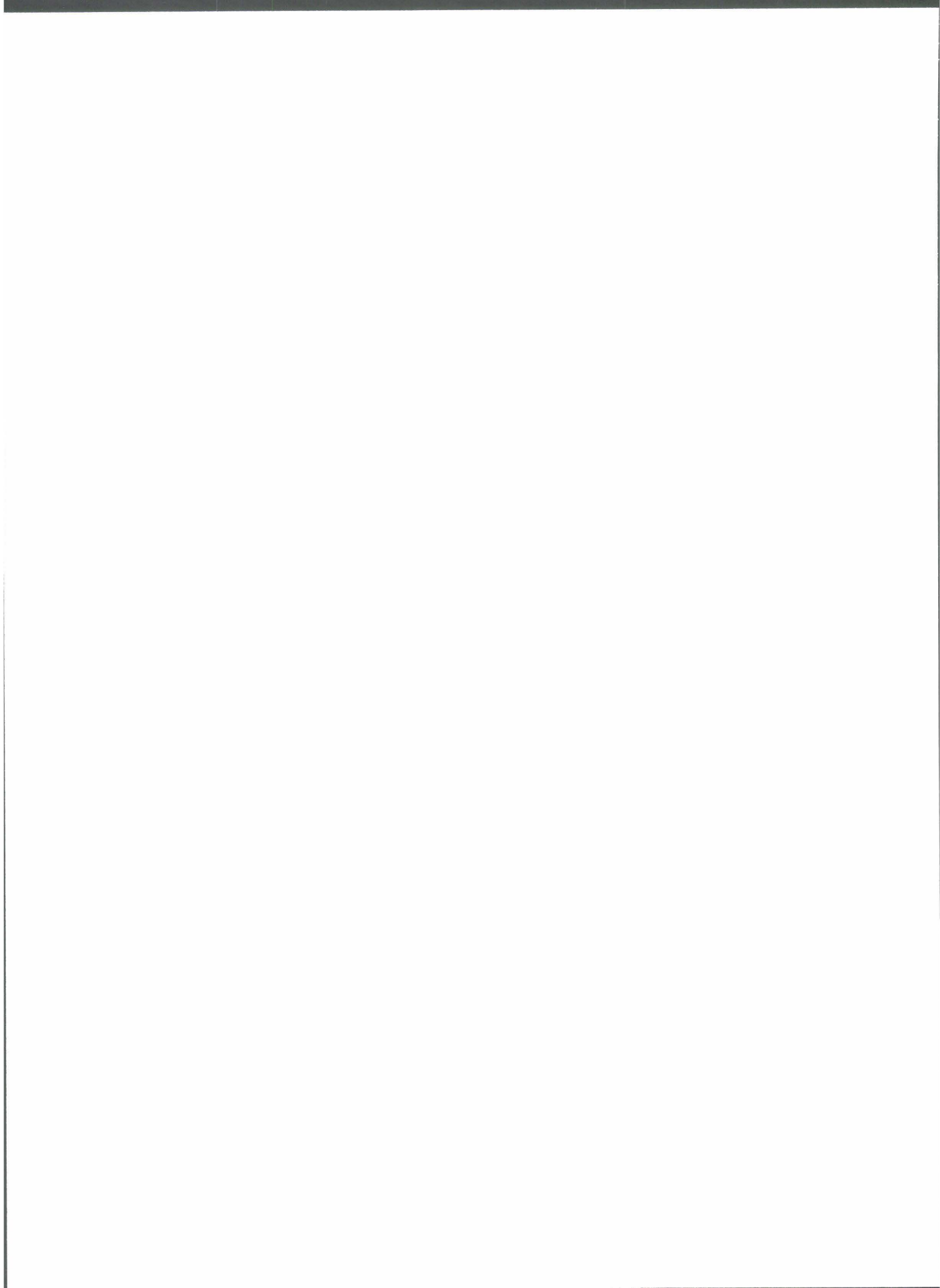
Prior to 1996 structure plans were prepared by regional and islands authorities; they are now prepared by groupings of unitary councils (and occasionally by individual unitary councils) and by the islands authorities.

Structure plans are subject to approval by the Secretary of State who may modify them after public consultation. The plans must take account of the national policy guidance detailed above. They should also be consistent with wider European and international environmental policy (see table).

Local plans provide specific planning policy guidance and advice for development in each locality in conformity with the structure plan. They provide the details for development, in accordance with the broad policy framework of the structure plan.

Local plans are prepared and adopted by individual unitary councils (or islands authorities). They are approved and adopted by unitary councils and are not subject to the approval of the Secretary of State although it is expected that they will conform to structure plan and wider policy guidelines.

Local plans should be regularly reappraised and altered or revalidated at least every five years.

The planning process

There are essentially two processes involved in local land-use planning.

First, there is the preparation of development plans. This is undertaken by local authorities with the guidance of the Scottish office. There are various statutory consultation activities which must be undertaken and there may be a public inquiry.

Second, there is the development control process, essentially the appraisal of planning applications. All applicants have a statutory right to a response to their application within a given period of time and a right to appeal to the Scottish Office if their application is rejected.

The Enterprise networks

The Government's programme of land renewal is operated within Scotland by SE and HIE and delivered mainly through the LECs working in conjunction with planning authorities. The LECs are able to combine derelict land environmental improvement and economic development powers to ensure maximum environmental and economic gain (more on Enterprise networks below).

Annex III: Information Society Policy in Scotland

National Government policy: the Information Society Initiative

The Information Society Initiative (ISI) is a national programme aimed at promoting the use and development of information and communication technologies in the UK. It was launched in February 1996 and will run for four years. The promotional material describes it as a partnership between industry and Government; the Government will invest up to £35m in the programme and expects a matching amount to be provided by the private sector.

The ISI has two principal aims: to demonstrate the potential of new technologies to British businesses and to help them take advantage of the opportunities they offer. It provides both practical advice and financial support to all industrial sectors throughout the UK. There is a particular emphasis upon the needs of SMEs.

Advice is delivered locally through a network of local support centres and professional and trade associations. In Scotland, support is available from Local Enterprise Companies and via the Enterprise Agencies' SPAN initiative (see below).

Financial support is available in the form of grants for model projects.

The Scottish Office and ISSA

The ISI is a UK-wide initiative and the Scottish Office (SO) does not have any separate 'information society' policy initiatives.

However, the SO does provide advice and support for Scottish businesses in their use of ICTs indirectly via Enterprise network initiatives. These include the Scottish Enterprise (SE) Smart Partnerships Across Networks (SPAN) initiative and the Highlands & Islands Enterprise (HIE) Knowledge, Information and Telecommunications (KIT) programme.

The Enterprise networks: support for telecoms infrastructure provision

The Enterprise networks have invested substantially in the improvement of telecommunications infrastructure in Scotland. Examples include HIE's Telecommunications Initiative, undertaken in collaboration with BT in [DATE], which provided most of the HIE area with access to a full digital service.

HIE contributed £5m to the £20m investment. The Scottish Office's *Rural Scotland* White Paper notes that the network has encouraged the establishment of a range of jobs based on information technology. Examples include IBM's computer help desk at Thurso and Hoskyns' out-sourcing centre.

Local authorities and ISSA
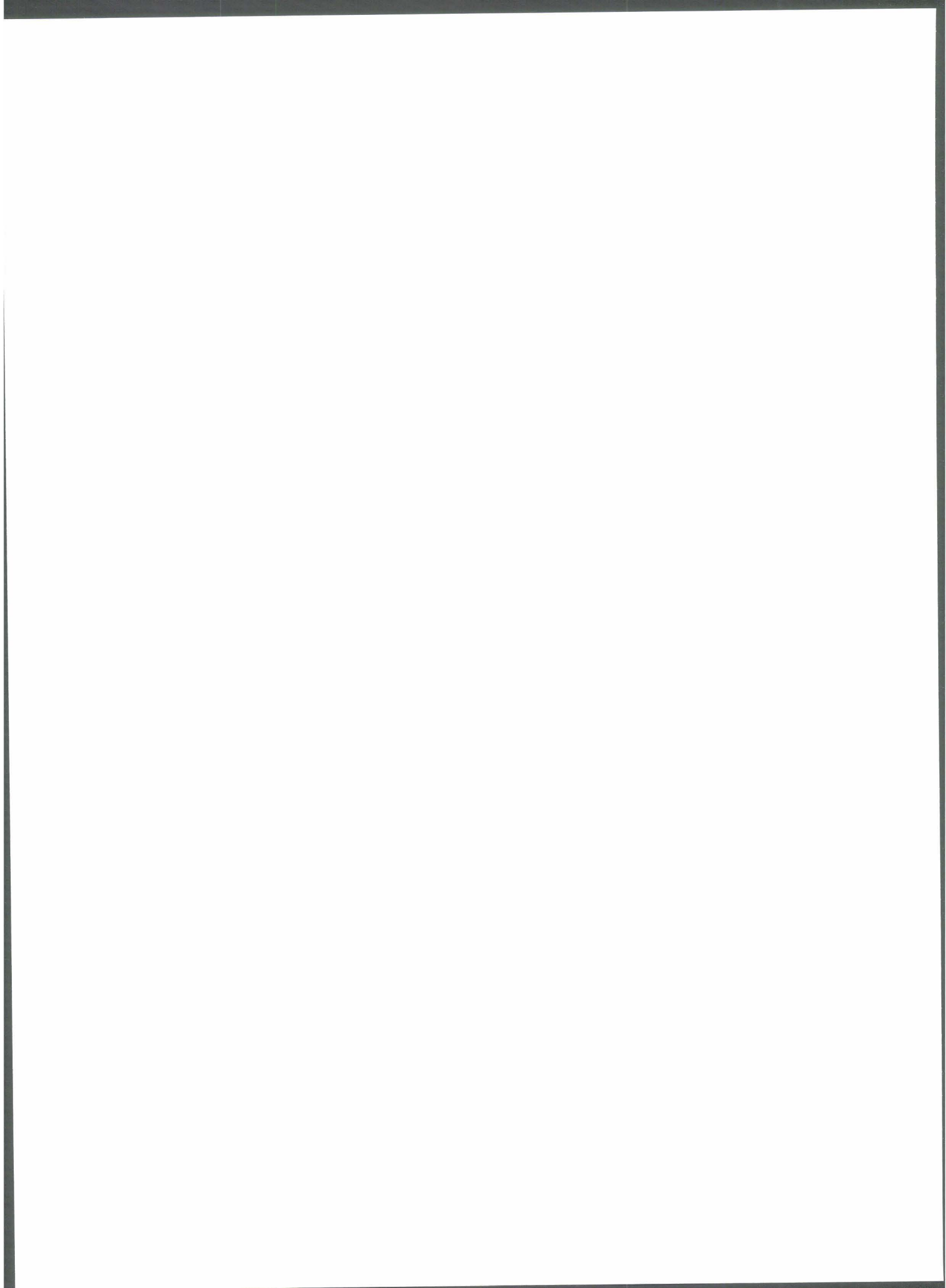
Scottish local authorities' role with regard to telecommunications infrastructure development is essentially one of control rather than promotion. There is little mention of telecommunications in the National Planning Policy Guidance (NPPGs) issued by the SO to local authorities.

However, NPPG2 observes '.. technological innovations are likely to increase the incidence of homeworking. This will be particularly important in rural areas where electronic communications permit businesses to be located without any major disadvantages, for example the Unst Telecroft'.

Having recognised the connection between telecommunications and homeworking, the NPPG observes that homeworking itself does not necessarily require planning permission.

There is no guidance for local authorities' use of GIS in local planning activities. However the importance of GIS to the work of planners is clearly recognised (see for example *Review of the Town and Country Planning System in Scotland: Digest of response to the consultation*; Question B3).
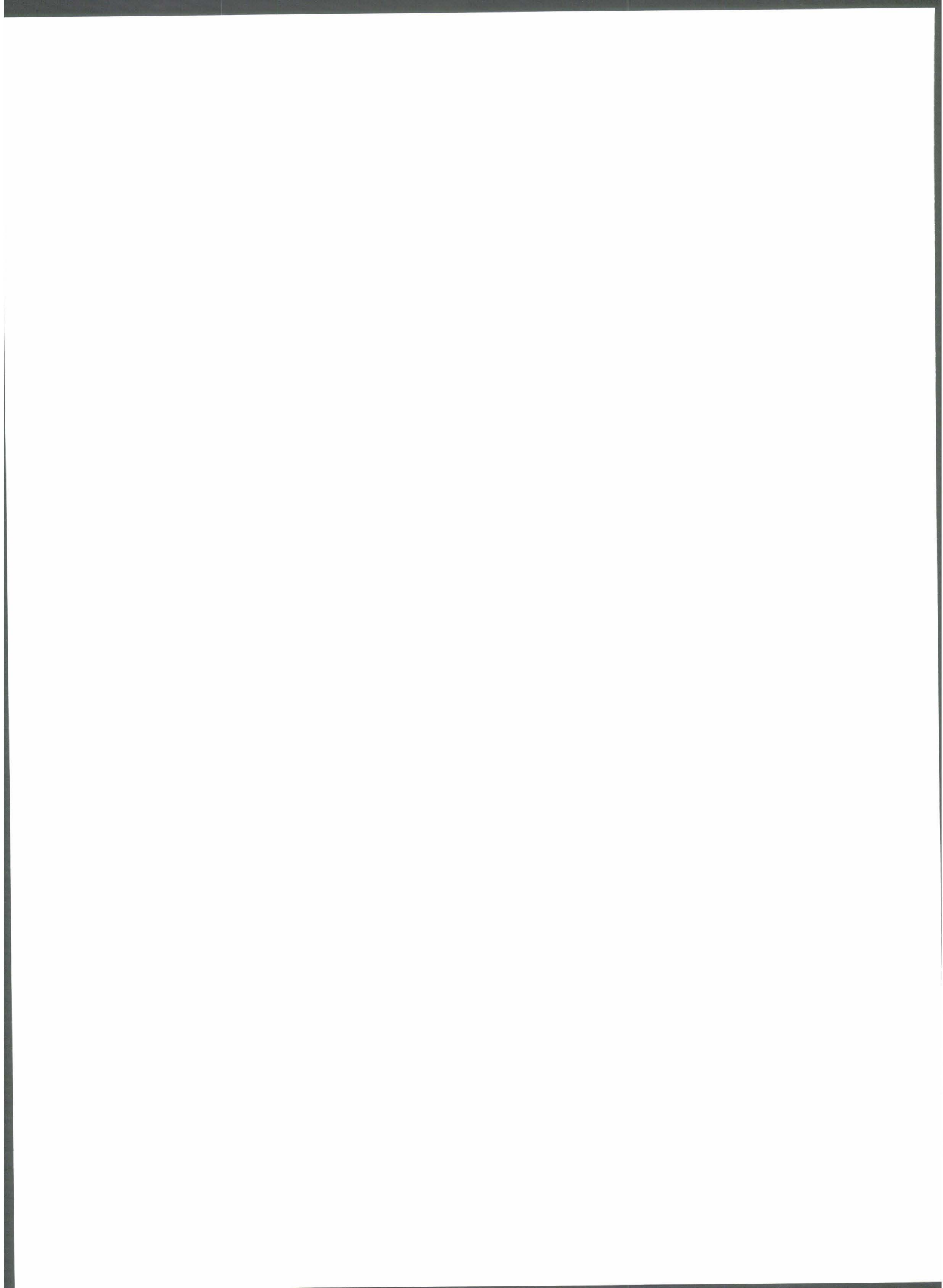
Annex IV: Telecommunications Operators in Scotland

BT, The Former State-owned monopolist, remains the dominant telecommunications public telecommunications operator in Scotland (as in the rest of the UK). It provides a full range of telecommunications service to all types of user throughout Scotland and is often *de facto* the only supplier of fixed-network infrastructure in rural Scotland (this is particularly the case in the Highlands and Islands and in the Borders).

BT is subject to intense regulation by Oftel. This includes:

- an obligation on BT to provide voice telephony services (including public call boxes) at affordable prices throughout the UK under it Universal Service Obligation (USO);

- an obligation to offer services on a non-discriminatory basis (including price) to equivalent customers so that Business and residential customers in region of low competitive intensity are not disadvantaged; and that

- BT services are subject to a price cap: the latest proposed version of this is a price cap of RPI-4.5% covering lower volume residential users and small businesses.

BT has formed a joint venture with MCI to provide International high-value added telecommunications services though Concert. BT is responsible for Concert service provision in Europe and is actively partnering to form second/third operators in all EU countries.

Mercury Communications Limited is a subsidiary of Cable and Wireless. Mercury entered the fixed network telecommunications market following the abolition of the BT monopoly in 1984. After a period of attempting to complete the BT across the full range of services Mercury has re-focused on higher-value business and residential customers.

Mercury recently disposed of a number of peripheral business including in-house directory enquiry provision and its public call box business. (acquired in the UK, including Scotland, by InterTelcom an Italian company).

Scottish Telecom, a wholly owned subsidiary of Scottish Power, entered the Scottish telecommunications market in November 1994. It is now actively selling to major telecommunications users in Central Belt and on the Scottish east as far north as Dundee. Its product range is more extensive than other recent Scottish entrants and its initial strategic orientation is more directly towards major business and public sector users.

AT&T Unisource is the common European brand of AT&T and a consortium of four continental operators (Anasarca). This agreement forms the primary European element of **AT&T's World** Partners alliance. Unlike BT AT&T has typically sought to partner the former monopolist in order to enter previously closed national markets.
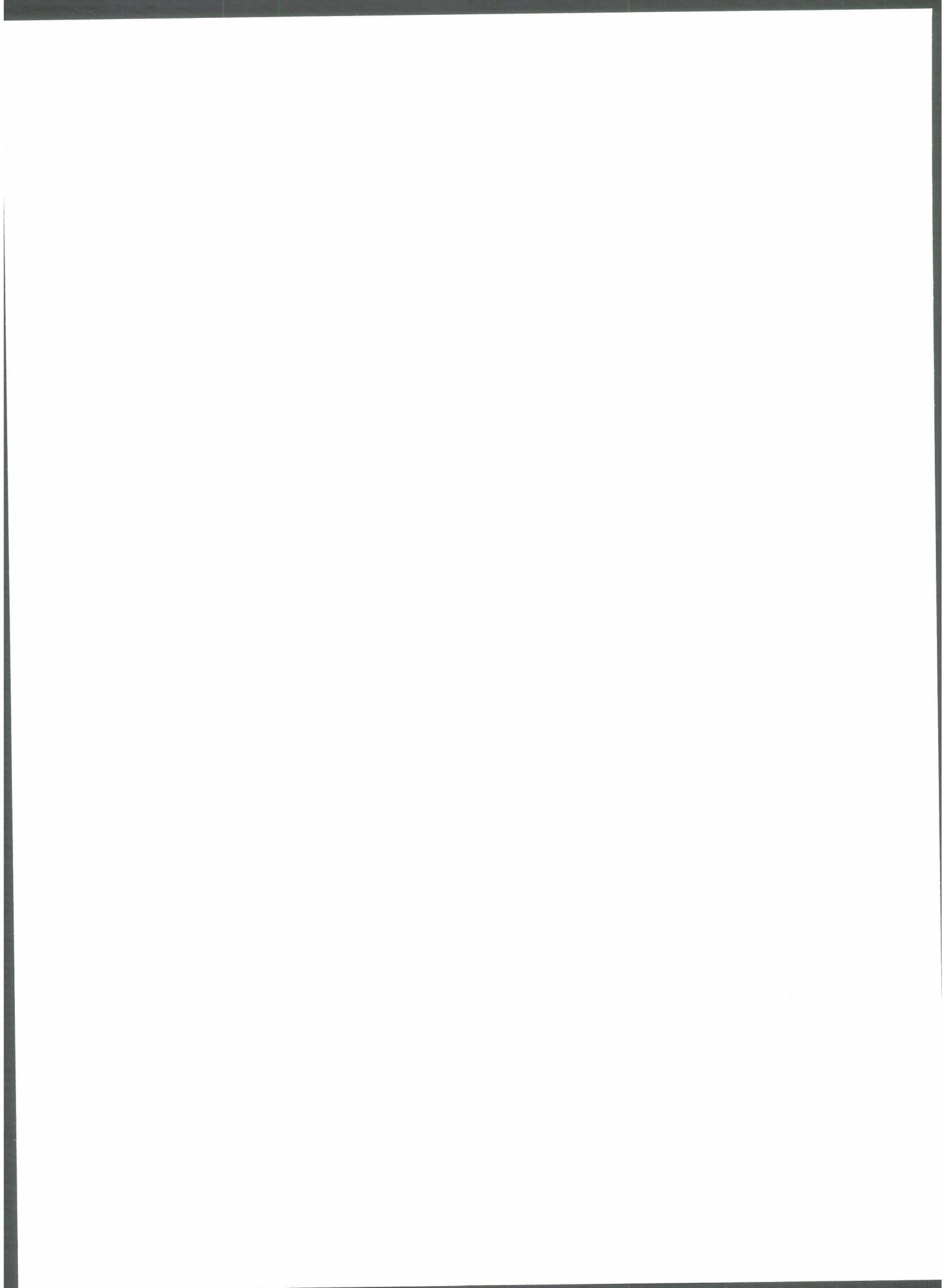
The consortium will offer one-stop shopping in the European and global markets for major business customers with communications requirements covering a number of countries. Each partner in the consortium offers a range of services-across all market sectors-in its home and to other markets in which it is active. In Scotland AT&T will fulfil this role and is now selling actively in the Central Belt.

Telewest is the largest Scottish cable operator with almost 550,00 Scottish homes within its franchises. It holds eight Scottish cable franchises the largest of which is Edinburgh. Telewest like other cable franchisees initially attempted to sell residential television services as its prime focus. However, following the Duopoly Review, its emphasis switched to telecommunications service provision to residential and business markets.

Problems surrounding perceived programme quality led poorer cable TV penetration and a higher churn rates among cable TV subscribers than expected. By co-selling telephony and television churn is reduced. Residential telephony is now turning into a significant success. Of Tallest's eight regions only one shows a penetration of less than 25% (of homes passed) while three had penetrations of above 30%.

Cabletel operators five contiguous franchise areas in the South West Scotland including Glasgow. Like UA has developed its initial residential television focus to include residential and business telecommunications. Cable has now (Sept 96) finished a business network to serve Glasgow's Central Business district.

In April 1996 Cabletel acquired **NTL** (the former transmission arm of the Independent Broadcasting Authority) with the intent to offer end-to-end broadband services.

NTL's core business is the distribution of commercial television and radio programming. The company's recent success in winning a 10 GHz fixed radio licence signalled an intention to move from its present niche to a position closer to that of a full service PTO and will allow CableTel to expand from its cable company niche.

Racal-BRT is the former British Rail Telecommunications which was purchased by Racal Network Services in1995. The company offers managed network services, notably including LAN-LAN interconnect.

Scottish Hydro-Electric has a full PTO licence but has chosen only to provide services to other network operators on its existing 34 Mbit/s ring in the Highlands.
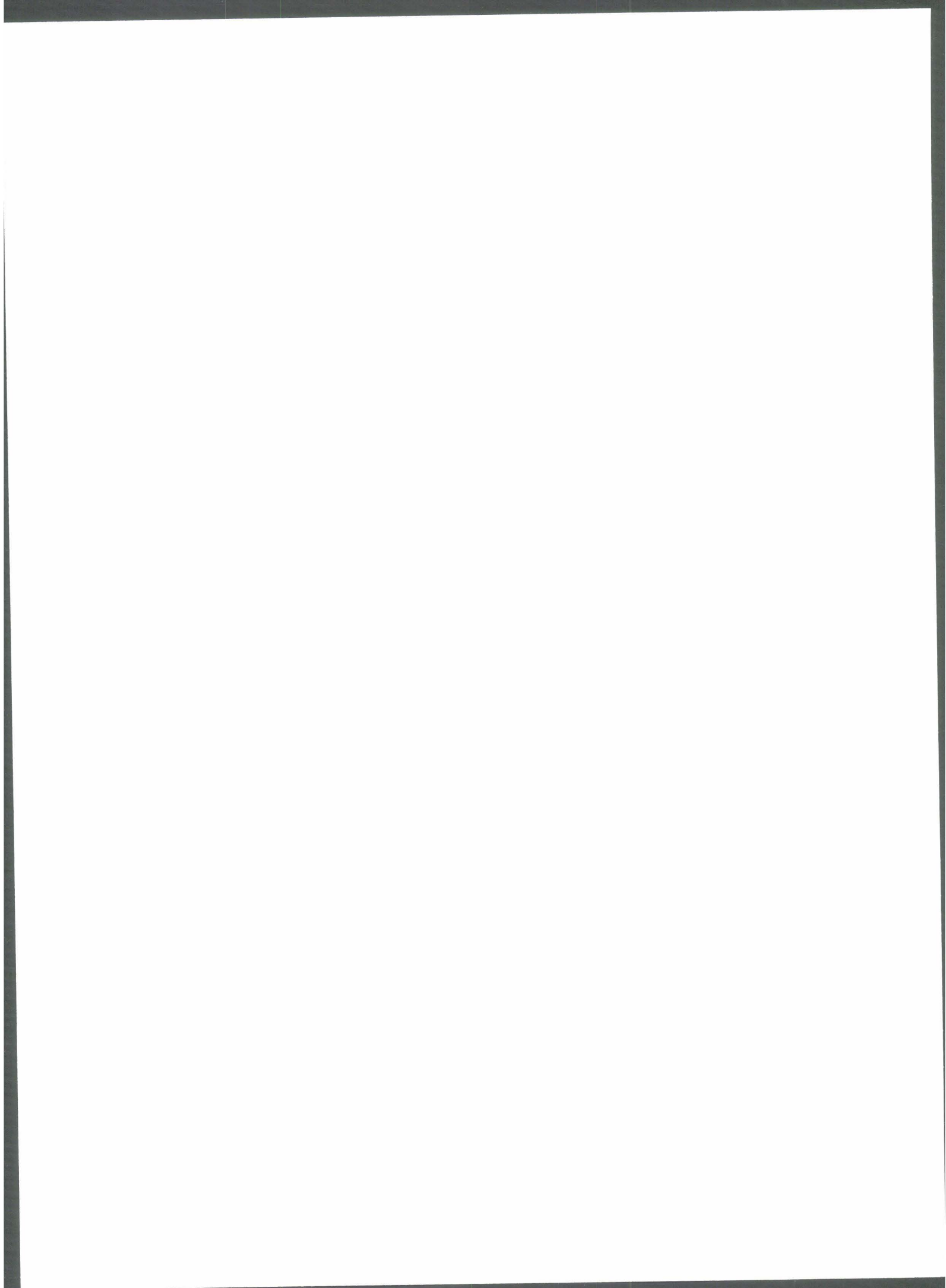
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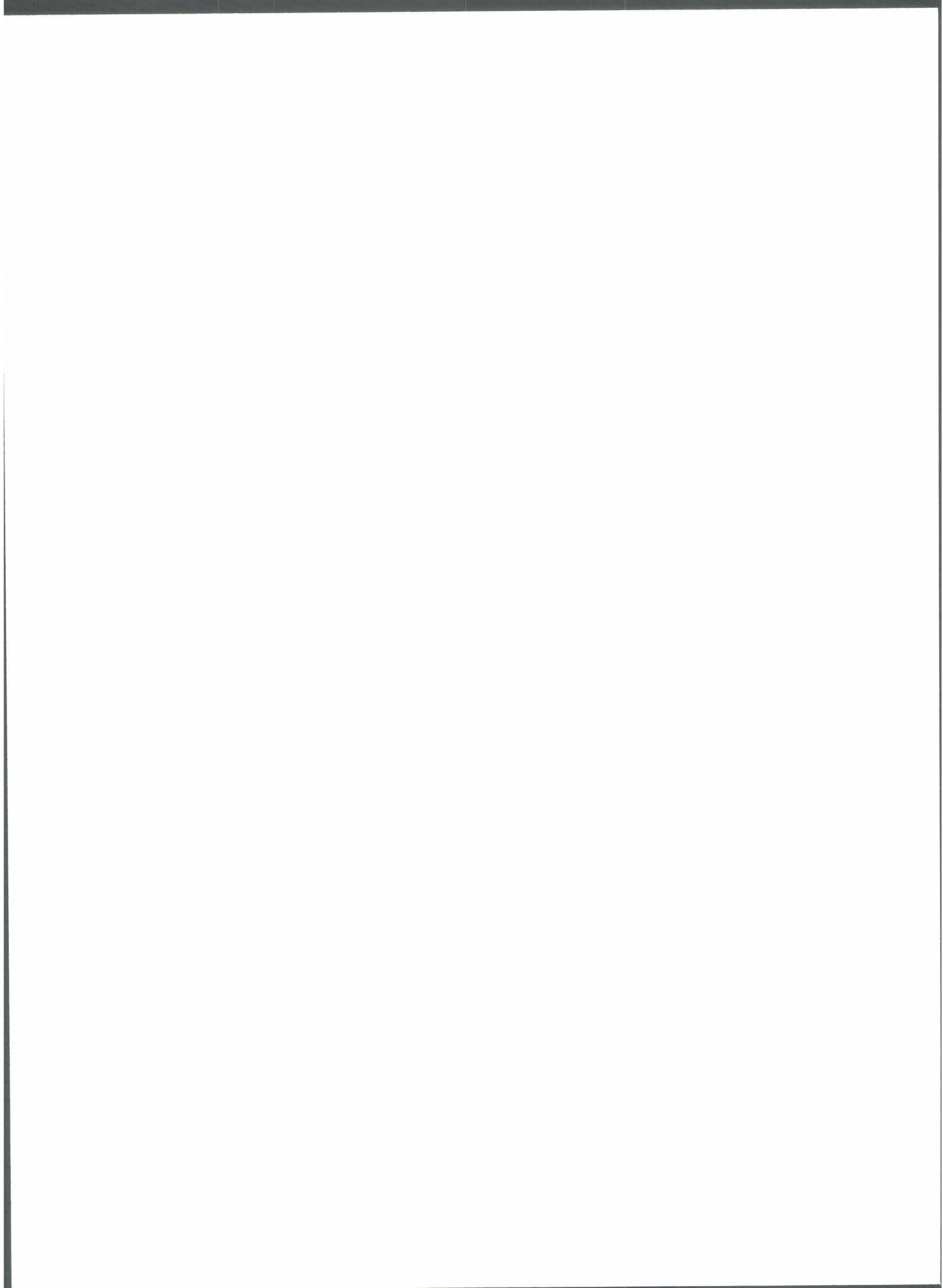
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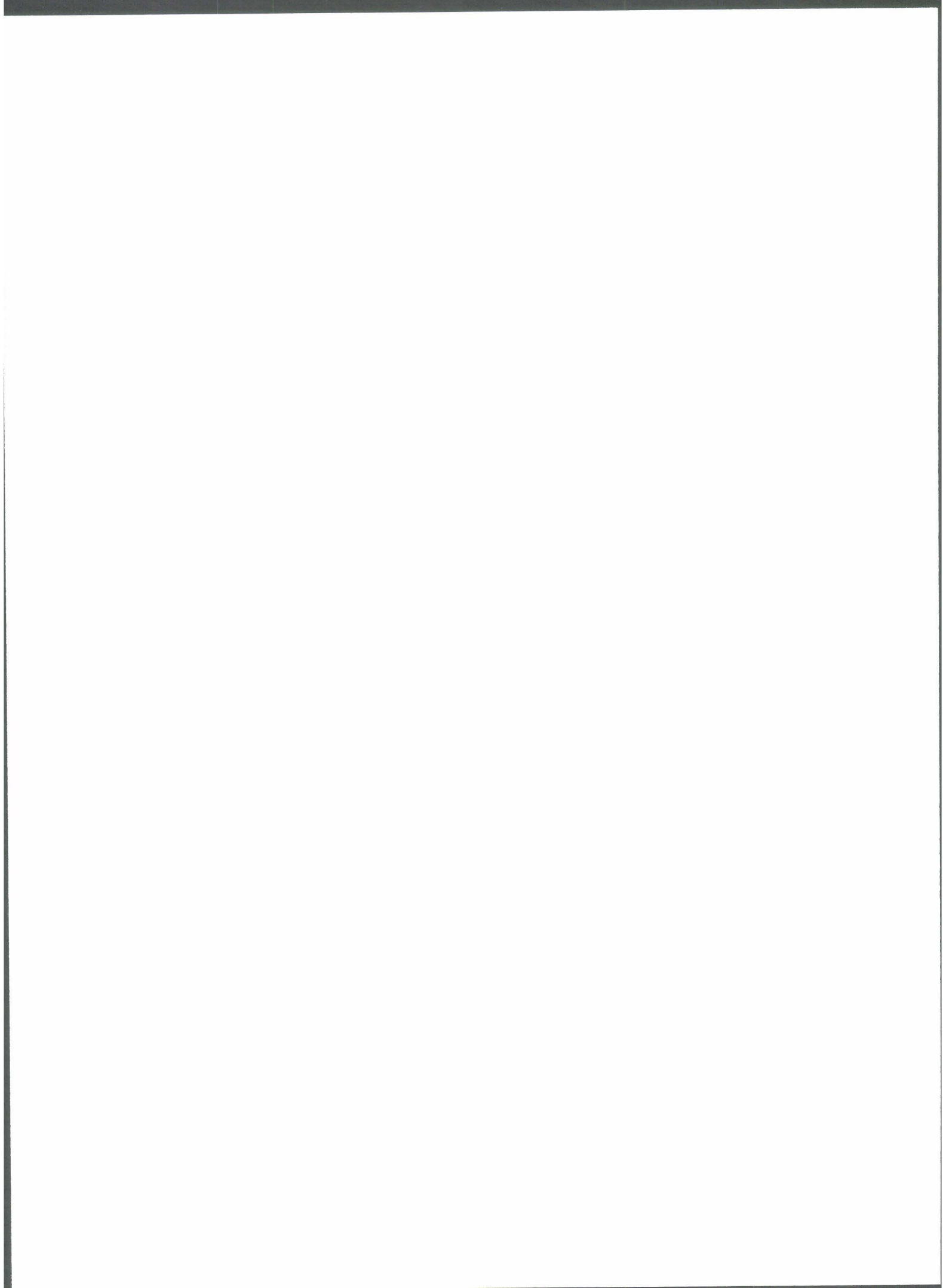Trade and Industry Committee (1995) Fourth Report *Regional Policy.* Volume II Memoranda of Evidence. London: HMSO.
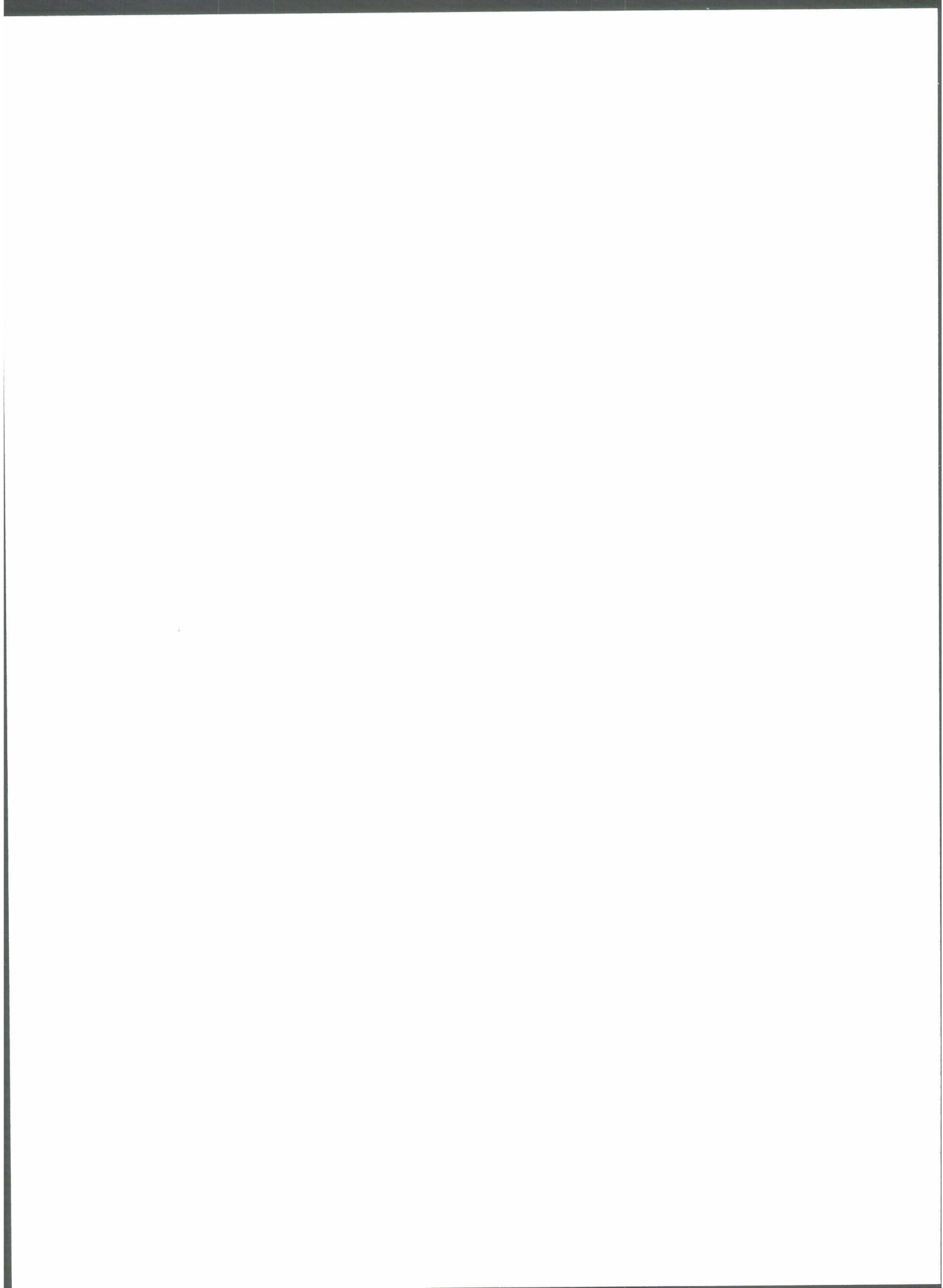
The impact of the information
society on the
territorial planning of the
less favoured regions

Annex B
Portugal country report

May 1997

CITI/INETI
Portugal

Impact of ISSA on territorial planning

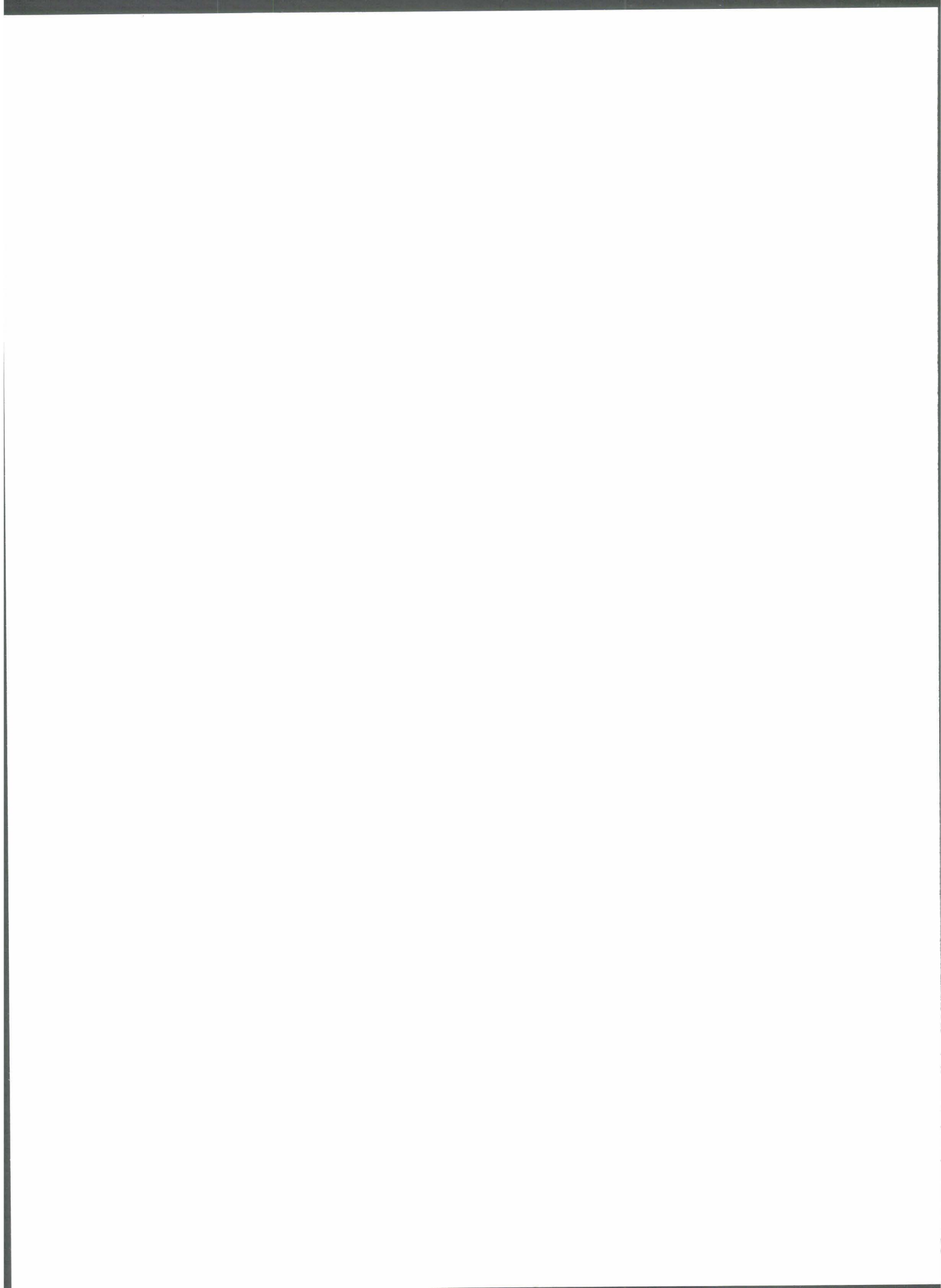# Portugal

Country Report

May, 1997

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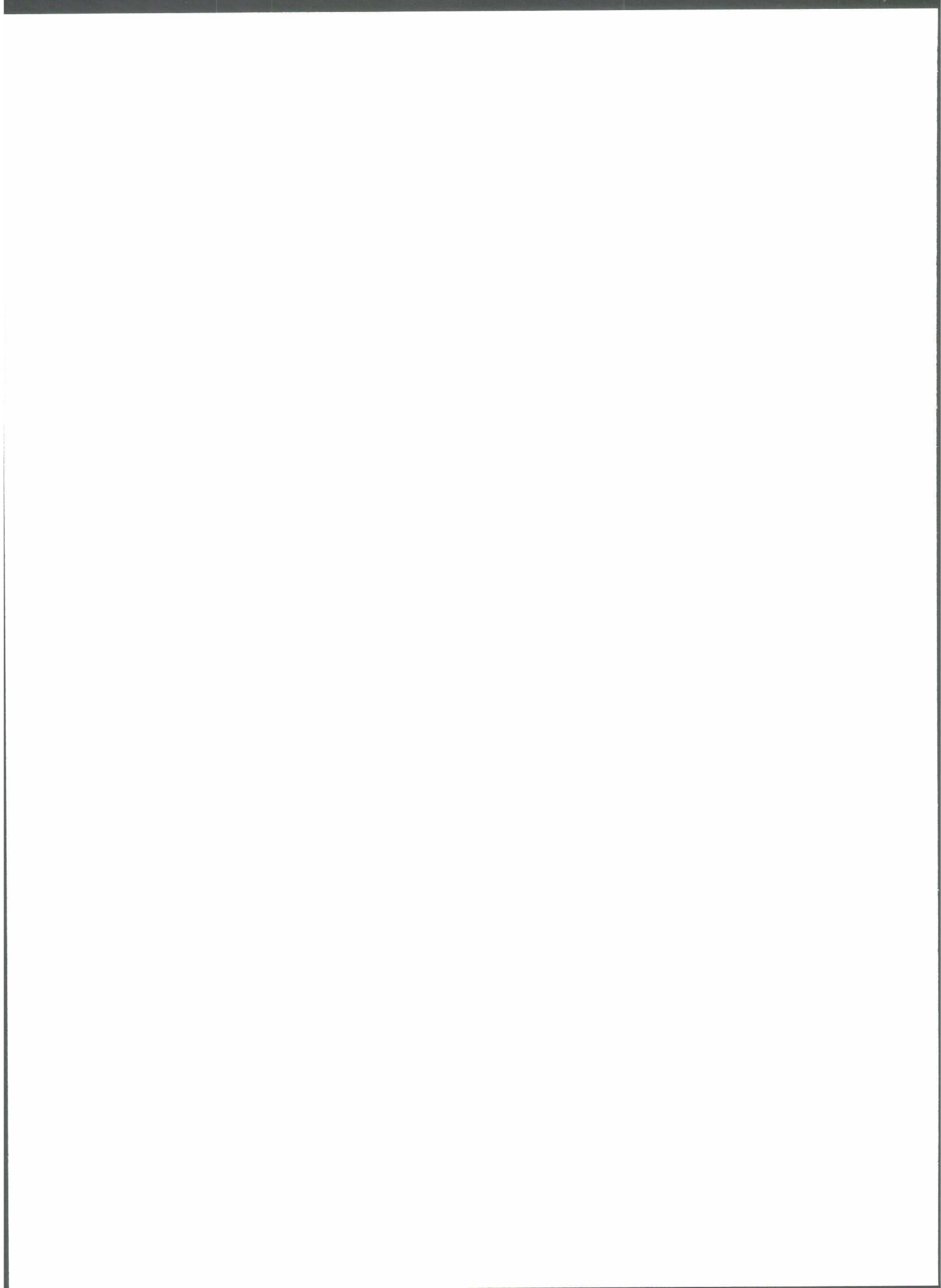**With the assistance of:**
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INSTITUTO NACIONAL DE ENGENHARIA E TECNOLOGIA INDUSTRIAL

CENTRO DE INFORMAÇÃO TÉCNICA PARA A INDÚSTRIA

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Annex IV: Organisations contacted

1. Introduction

Case-study one, Centro, looks at the central region of Portugal, and especially at the Municipality of Mangualde, where pilot projects set up and made available demonstrators of advanced telecommunications services and telematic applications to be used by the local SMEs, the local authorities, other public and private organisations, and the population in general.

Case-study two, SNIG, is a horizontal case-study, addressing a system that is planned to be a nation-wide information system consisting of a computer network of geographic information systems at municipal, regional and national levels; the system contains geographic and geo-referenced information, and is of major importance for territorial planning. The following macroeconomic indicators draw a brief characterisation of Portugal.

1.1 Economic and social overview

Population

Portugal (mainland and the Autonomous Regions of Azores and Madeira) had in 1996 a total resident population of 9,372,100. In 1996, the total labour force increased by 0.7%, corresponding to 32,200 people, 25,400 of which correspond to an increase of 0.6% on employment, as compared to 1995. Unemployment has increased by 2,1% in relation to 1995, for those seeking a first job; the number looking for a new job has slightly decreased (Table 1).

Unit (thousands)	1995	1996
total population	9 356.5	9 372.1
labour force	4 550.6	4 582.8
employment	4225.1	4 250.5
unemployment	325.4	332.3
labour force participation rate %	48.6	48.9
unemployment rate %	7.2	7.3

Source: http://www.ine.pt/ine/video/html/estemp.html

Table 1: Population

Employment in the primary sector (Agriculture, forestry and fishing) shows a significant increase of 8.5% (the highest level since 1992) while the

secondary sector decreased by 2.1%. The services sector shows stability with only a 0.6% increase (Table 2).

Unit (thousands)	1995		1996		VAR
	total	%	total	%	
Agriculture, forestry and fishing	477.5	11.3	518.1	12.2	8.5
Industry, construction, energy and water	1 363.6	32.3	1334.8	31.4	-2.1
Services	2 384.0	56.4	2 397.6	56.4	0.6
Total employment	4 225.1	100	4 250.5	100	

Source: http://www.ine.pt/ine/press/html/ieq3a396.html

Table 2: Employment by sector

As regards the employment structure, the professional group showing an increase of 6.1% is that of the "Self-employed, without any dependent staff". This group represented 20.6% of the total labour force, in 1996.

The table below (Table 3) shows the growth of the unemployment rate in Portugal since 1991 as compared with a sample of other EU countries, the lowest figure being for Portugal, 4.1% in 1991. Although there is a steady increase every year, the figures in 1995 were still well below those of other two southern European countries, Spain and Italy, and 3.5 percentage points below the EU average.

	1991	1992	1993	1994	1995	1996	1997 1st Q
Portugal	4.1	4.8	5.5	6.8	7.2	7.3	7.3
EUR12	8.7	9.4	10.9	11.4	10.7 (EUR15)		
Spain	16.0	18.1	22.8	24.1	22.9		
Germany	4.2	4.6	7.9 (unif.)	8.4	8.2		
France	9.4	10.4	11.8	12.6	11.6		
UK	8.8	10.1	10.4	9.6	8.8		
Italy	9.9	10.5	10.3	11.5	11.9		

Source: MEPAT *Informação Económica*. Lisboa: DPP, nº 39, Nov.-Dez. 1996.

Table 3: Unemployment Rate (%)
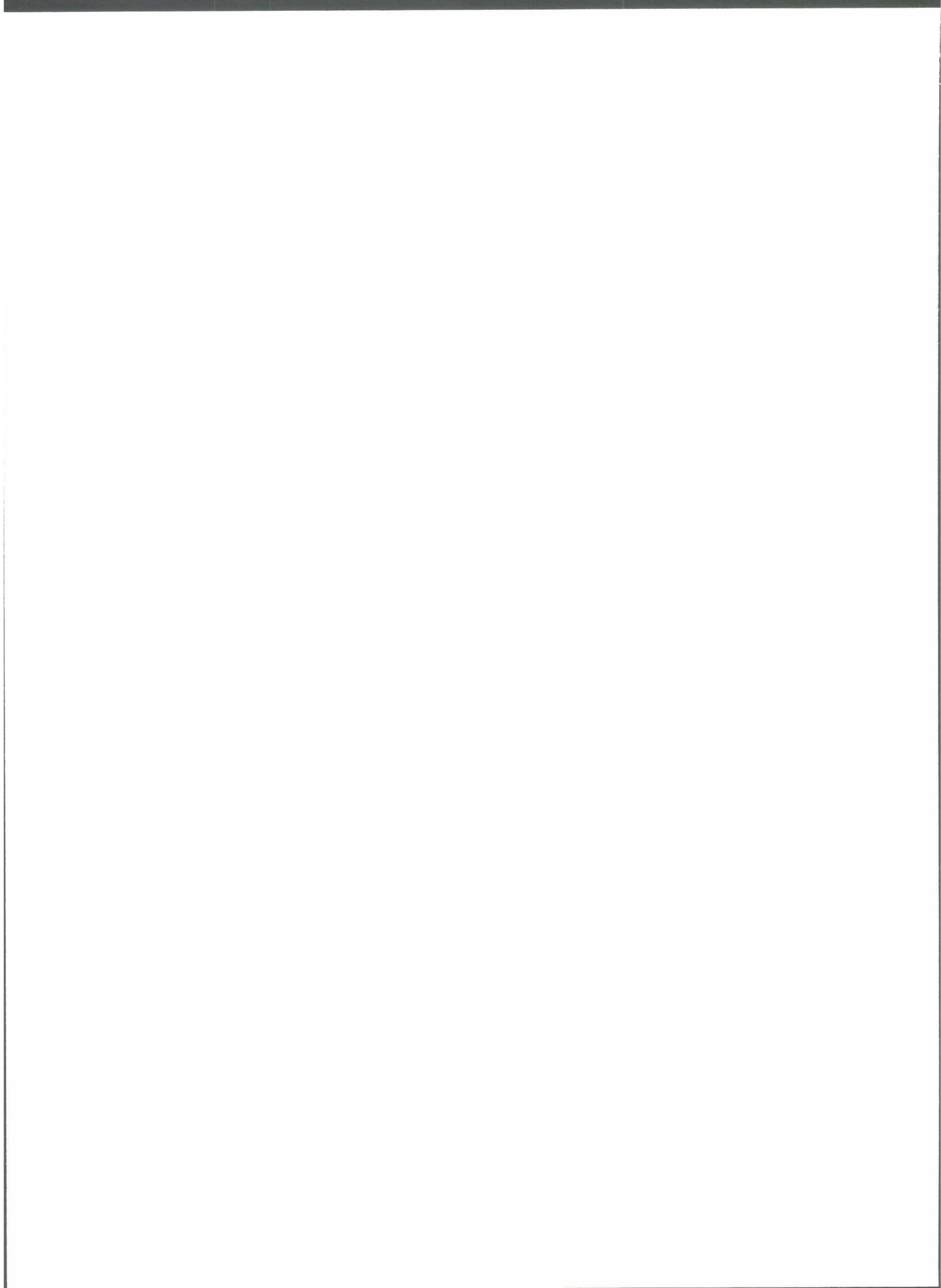
GDP

Forecasts from OECD published in December 1996, show for Portugal a 2.6% increase of the GDP for 1996 and a 2.9% for 1997. These figures are above the average of the OECD countries (2.4%).

The Portuguese economy in 1996 is generally described as having a positive performance. Its growth rate was higher than the EU average and there is a strong political commitment from the government to create the conditions for the country to meet the convergence criteria and to join the first group of countries in the European Monetarian Union.

1.2 Telecommunications/ Information overview

The evolution of the Portuguese telecommunications during the last decade is shown in Table 4. Since 1987 the waiting lists for telephone main lines have dramatically decreased, and the waiting times for connection dropped from nine and half months in 1987 to about a week in 1995.

Digitisation started in 1988, while the installation of optical fibre began in 1990 and covered in 1995 a total of 134128 kms.

As for the mobile telephone service, during 1996, there was an increase of 95% in relation to 1995 (see Table 5) and the average annual variation amounted to 118.6% in relation to 1990.

In what concerns the division of subscribers by type of technology, by the end of 1996 analogic technology represented only 2% of the mobile service telephone market.

During 1996 about 687 millions of telephone calls were made, corresponding to more than 786 million minutes of utilisation. In relation to 1995, the increase in the number of telephone calls amounted to 113% and to 81% in what concerns the conversation time.

Information services provision

Telepac S. A., is the national largest operator of data communications and offers access to several international and national databases.

Data on provision of information services connection times and number of users was impossible to obtain.
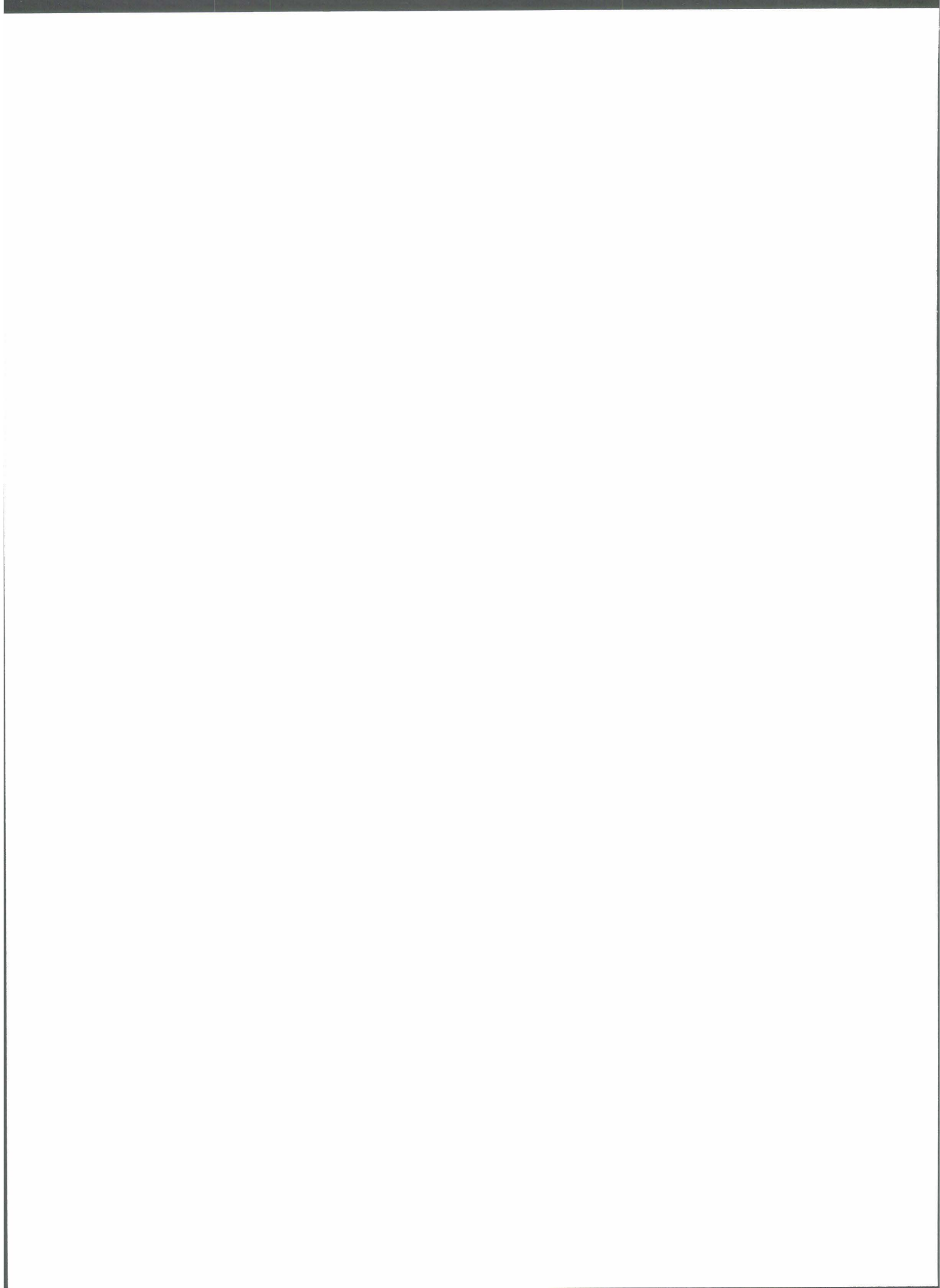
	units	1988	1989	1990	1991	1992	1993	1994	1995	1996
number of telephone main lines	10^3	1848.2	2077.5	2379.3	2694.1	3014.2	3 260.2	3444.3	3566.1	3724.3
density of main lines	main lines/100 inhab.	18.7	21.0	24.1	27.4	30.6	33.0	34.75	36.15	37.54
number of public payphones	10^3	22.1	23.7	25.6	28.3	30.3	31.7	32.8	33.1	34.9
density of public payphones	public payphones /1000 inhab.	2.2	2.4	2.6	2.9	3.1	3.2	3.3	3.3	3.5
waiting list of main lines	10^3 requests	178.3	227.9	219.5	205.8	149.7	56.7	16.7	6.4	7.6
waiting time of main lines (for connection)	1 month	9.43	10.32	7.68	6.66	4.50	2.01	0.64	0.26	0.25
digitalisation of local switching of main lines	%	2	14	30	44	54	59	62	70	na
repairs	/100 inhab	58	60	58	51	43	52	46	36	na
optical fibre	Km			3950	6681	13251	15280	99600	134128	na

Table 4: Telecommunications sector profile (Source: Instituto das Comunicações de Portugal)
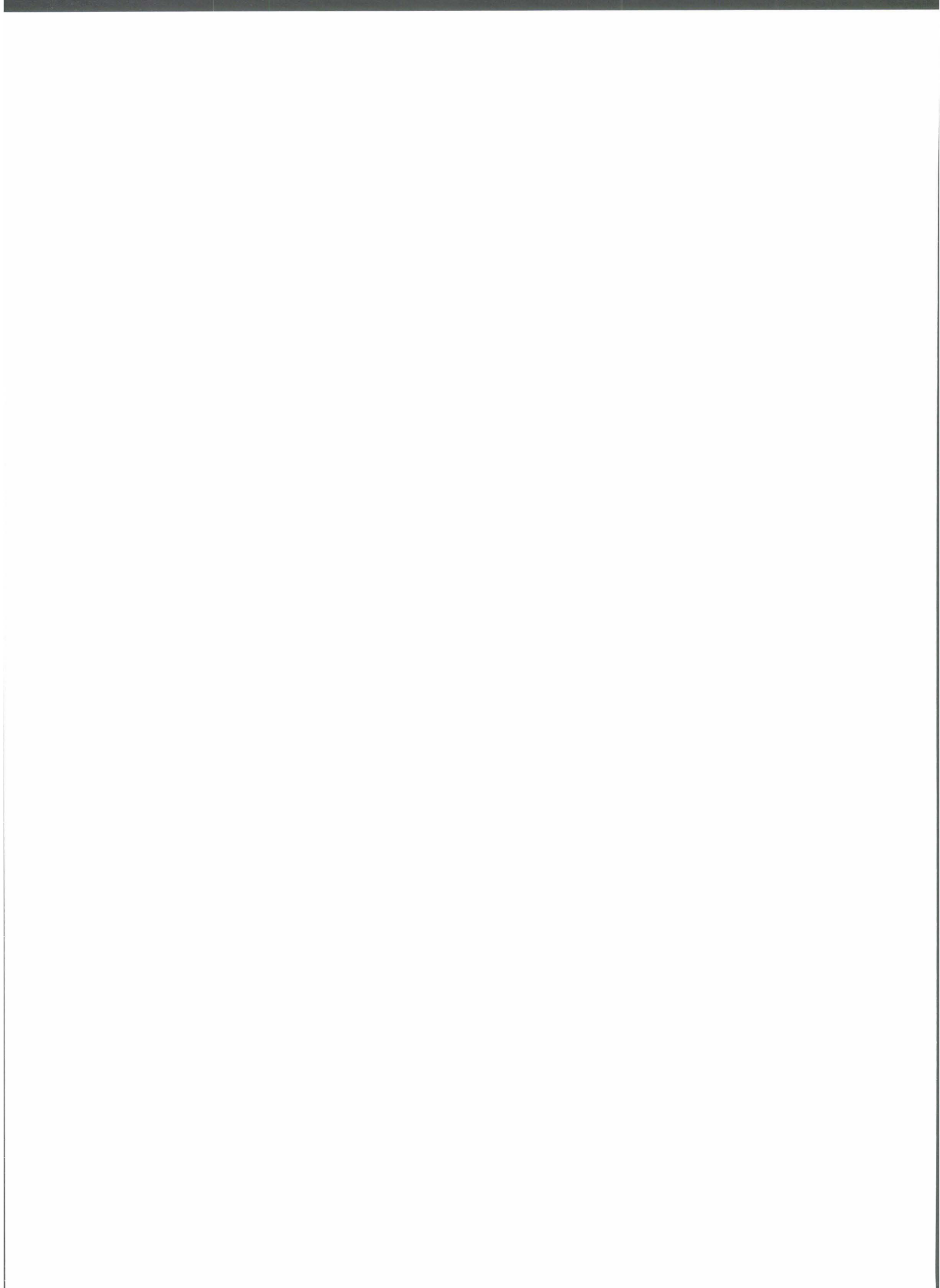
	units	1989	1990	1991	1992	1993	1994	1995	1996	
number of subscribers	10^3	2 782	6 461	12 570	37 262	101 231	173 508	340 845	663 651	
increase rate	%		132	95	196	172	71	96	95	
Technology analogic	10^3	2 782	6 461	12570	25 420	31 003	24 752	18 719	12 909	
digital		-	-	-	11 842	70 228	148 756	322 126	650 742	
utilisation time	10^3 minutes	-	-	-	-	-	-	435 556	786 804	var 96/95 81%
telephone calls	10^3 units	-	-	-	-	-	-	323 193	687 837	var 96/95 113%

Source: Instituto das Comunicações de Portugal

Table 5: Cellular mobile telephone service

1.3 Organisation of Territorial Planning

Two main trends characterise the present official approach to territorial planning issues in this country (Comissão Europeia, 1994):

- broadening the focus from urban to municipal planning, with the introduction of the concept of municipal directory plan in the beginning of the 80s;

- evolving from a tradition of management based on the partition of land, to the subordination to the guidelines of plans for regional development and to the investment programmes of the central government.

The new planning system is based on the implementation of a policy of territorial management, and it aims at correcting distortions resulting from the type of development pursued until the 80s, which caused:

- illegal partition and management of land;

- unequal configuration of geographic development (favouring urban areas versus the rural areas and the coastal stripe versus the hinterlands);

- predominance of the large urban centres of Lisbon and Oporto versus the small and medium size towns;

- insufficient development of the road network to the hinterlands.

At present planning activity is concerned not only with territorial biophysical and economic features, but also with environmental matters (e.g. air, land and water pollution), quality of life and other issues concerning the earth and general welfare. However, the dispersion of legislation makes life difficult to investors, controlling agencies, and general population (Matos, 1996).

One of the policy measures on territorial planning for 1997, stated on the major national planning instrument (Grandes Opções do Plano), was exactly to create a global legal framework for territorial planning in Portugal. A proposal of such a law (Lei de Bases do Ordenamento do Território) has just been released and made available for public discussion and it is accessible via the Internet (http://www.min-plan.pt/menu/projpub/ordterr.htm).

1.3.1 Agencies involved in territorial planning

The principal administration agency in territorial planning is MEPAT (Ministry of Equipment, Planning and Administration of Territory).

In 1979 (DL nº. 494/79, 21st December) the Regional Co-ordinating Commissions (CCRs) were created in order to support municipalities in what

concerns co-ordination and interconnection of administrative, financial and technical actions. At the same time CCRs should also execute the political decisions for regional development, improving dialogue and co-operation between municipalities and central administration.

More responsibilities have been attributed recently to the CCRs in terms of their own competence for territorial planning and territorial management. They are now effectively the regional services of MEPAT (DL nº. 260/89, 17 August; DL nº. 108/94, 23 April).

The municipalities are responsible for the preparation of the PMOTs (Municipal Plans for Territorial Management), the PDMs (Municipal Directory Plans), PUs (Urbanisation Plans) and PPs (Circumstantial Plans).

1.3.2 Geographic levels of territorial management

At national level, strategies are designed for the management of the national territory, guidelines are issued concerning regional and municipal management, and these guidelines are articulated with several sectorial policy instruments.

At regional level, the strategy for regional territorial management is defined and articulated with national socio-economic development policy; the fundamental principles of municipal management are established.

At municipal level, rules of soil utilisation are established according to guidelines and principles issued at national and regional levels, and according to strategic development options of the municipalities.

1.3.3 Instruments of territorial planning and management

The instruments of territorial development have a strategic nature, defining the key options for the organisation of the national territory, establishing guidelines for land use and providing references for the elaboration of territorial planning instruments. They are:

- The PDR (Plan for Regional Development) - the most global of the territorial plans, which coincides programmatically with the European Support Framework Programme. This document establishes a strategic and operational framework for a development contract to be established between Portugal and the European Union for the period 1994-1999.

- The PROTs (Regional Plans for Territorial Management) - define the territorial management policy for the area they cover (DL nº. 176-A/88). This area may include more than one municipality, the aggregation of municipalities being based upon similar economic, ecologic and other characteristics.
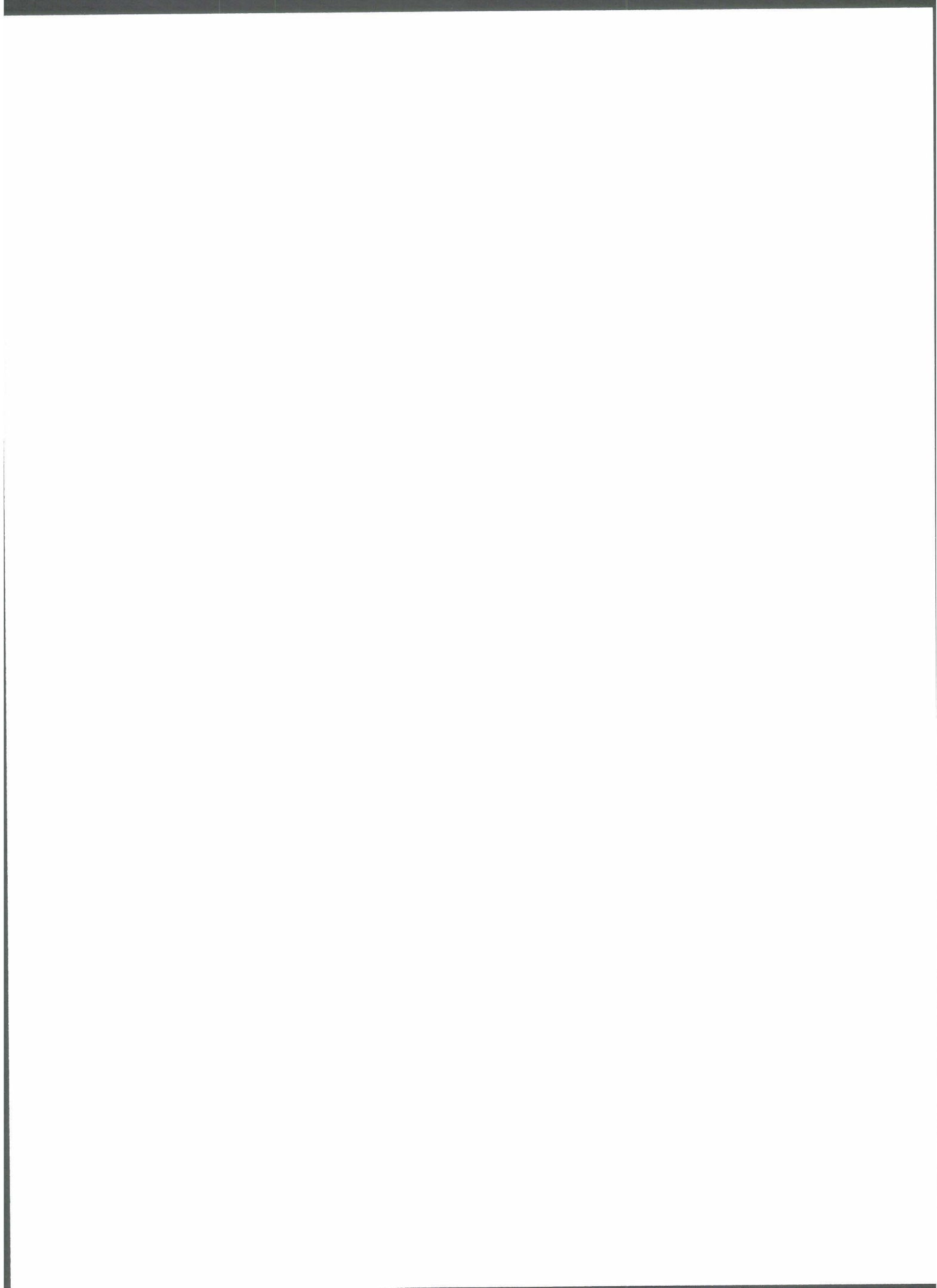
The instruments of territorial planning have a regulatory nature, establishing the rules for soil utilisation, for human occupation and the building of urban networks and systems.

- The PMOTs (Municipal Plans for Territorial Management), whose responsibility belongs to the municipalities, are plans of economic and social development, territorial management and urban management. They include the PDMs (Directory Municipal Plans), the PUs (Urbanisation Plans) and the PPs (Circumstantial Plans). These three types of municipal plans must be effectively articulated (DL-69/90, 2 of March 1990):

- The PDM (Directory Municipal Plan) was created in 1977 (Law nº 79/77), but became fully operational only in 1992 (DL nº. 208/82). The PDM establishes the municipal goals as far as socio-economic development is concerned, and is basically a planning tool which looks at the occupation, utilisation and transformation of the municipal territory.

- The PU (Urbanisation Plan) defines exclusively the characteristics of urban space such as its size and shape, the constructions, the protection of patrimony values, etc.

- The PP (Circumstantial Plan) concerns mainly the general changes in buildings and free spaces.

The instruments of sectorial policy consubstantiate the social and economic development policy for a certain area and assess their territorial impact. They can take the form of action plans and programmes whose responsibility belongs to the central government, such as those relating to transports, communications, energy and geologic resources, education, culture, health, housing, tourism, agriculture, trade and industry, forests and environment.

Territorial Plans	Decision Making	Budgetary Control
PDR (Plan for Regional Development)	Central government	General Inspection of Finances
PROT (Regional Plan for Territorial Management)	CCR-(Regional Co-ordinating Commissions) and approved by government	They are submitted to several budgetary controls
PMOT (Municipal Plans for Territorial Management)	Municipality	They are controlled by the financial departments of the municipalities
PDM (Directory Municipal Plans)	Elaborated by municipality and approved by government	Idem
PU (Urbanisation Plans)	Municipality (after approval of	Idem

Territorial Plans	Decision Making	Budgetary Control
	PDM by government)	
PP (Circumstantial Plans)	Municipality (after approval of PDM by government)	Idem

Table 6 - Portuguese territorial plans: responsibility for their elaboration, approval and financial control

1.3.4 The planning process

The main characteristics of the new approach to territorial organisation are an emphasis on decentralisation - responsibilities being distributed between government and local authorities, as shown in the diagram represented in Fig. 11, and the hierarchisation and interconnection of different levels of plans; global laws are elaborated by the government, regional plans are prepared by regional delegations of the central government and local plans are elaborated by the municipalities (Comissão Europeia, 1994).

The PDR (Plan for Regional Development) is elaborated by government, and is controlled from the financial point of view by the General Inspection of Finances through the evaluation of other control systems carried out at other operational levels.

The PROTs (Regional Plans for Territorial Management) are elaborated by Regional Co-ordinating Commissions and approved by government. PROT is a management, not a development plan, so it does not have an investment programme; only specific activities under this plan, will be financially controlled.

The PMOTs (Municipal Plans for Territorial Management) are elaborated by municipalities and approved by government. They are financially controlled by the financial departments of the municipalities, since every municipal plan concerns actions and projects included in the annual municipal activities planning.

The PDM (Directory Municipal Plan) is the most important planning tool at municipal level. Municipalities can engage in urbanisation plans and circumstantial plans only after the approval of the PDM by government (Table 6).

The overall planning process is pictured in Fig. 1 (over page):
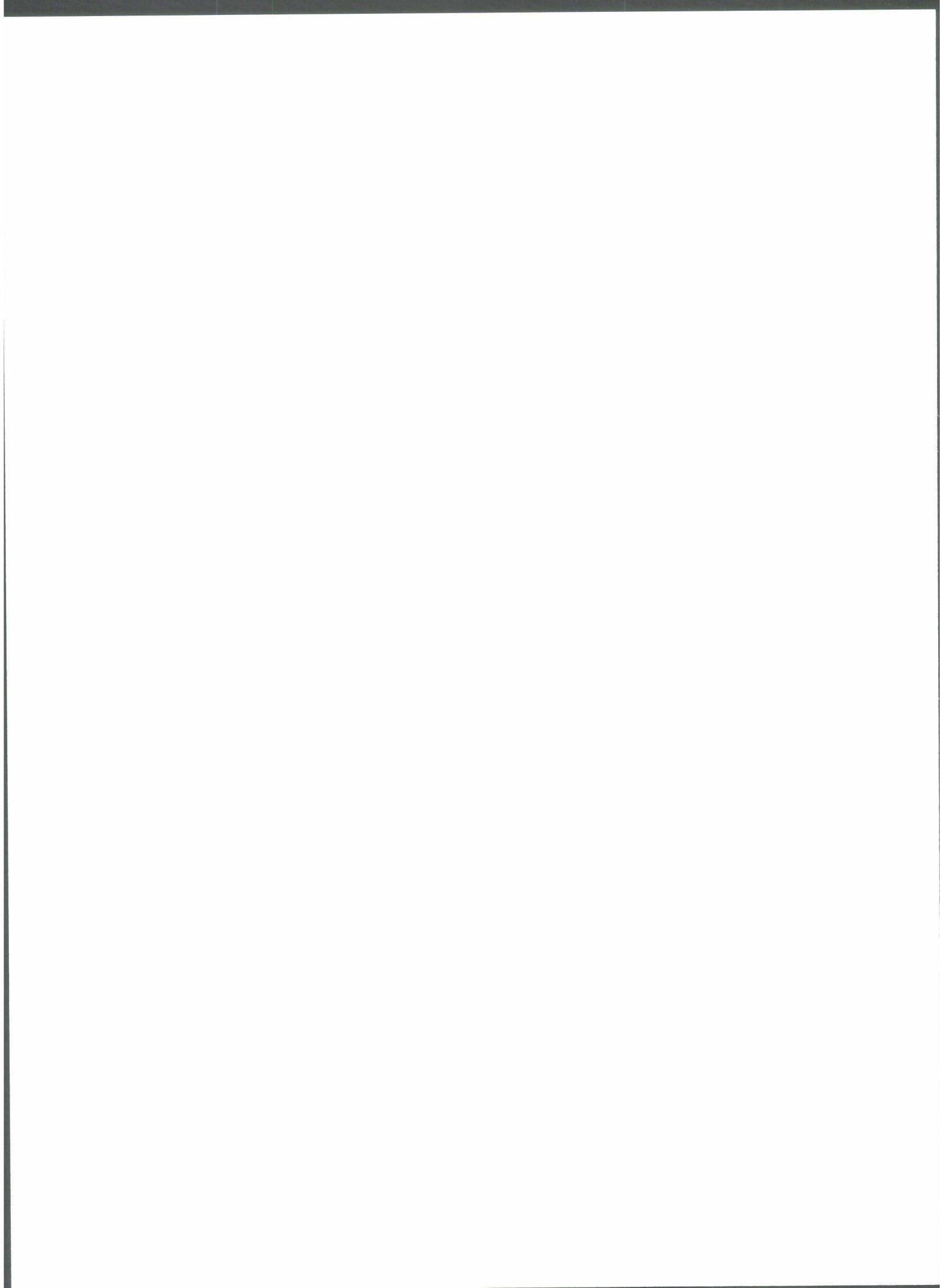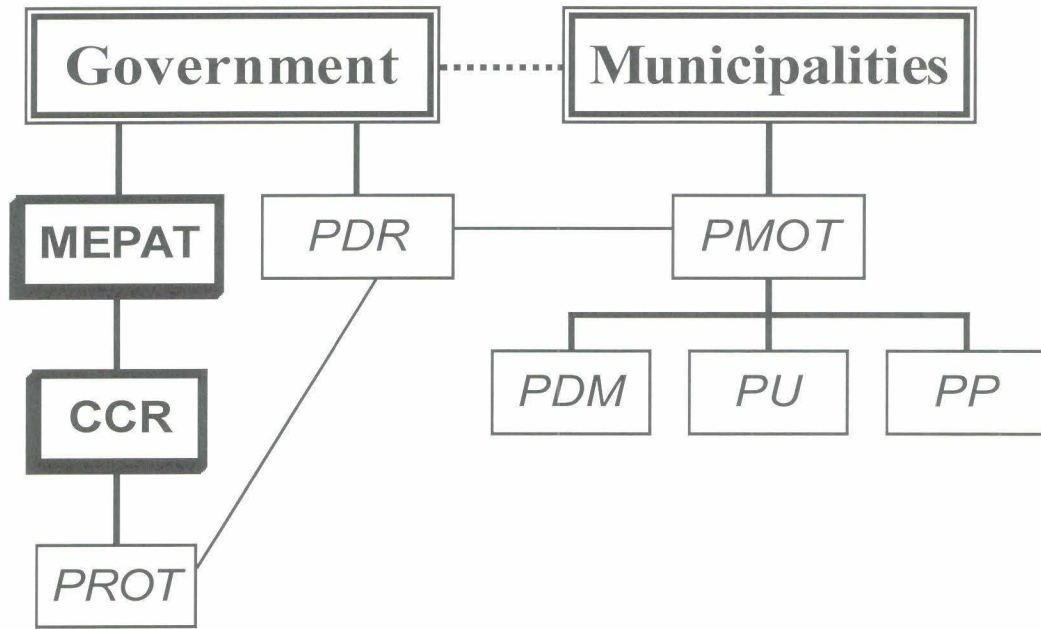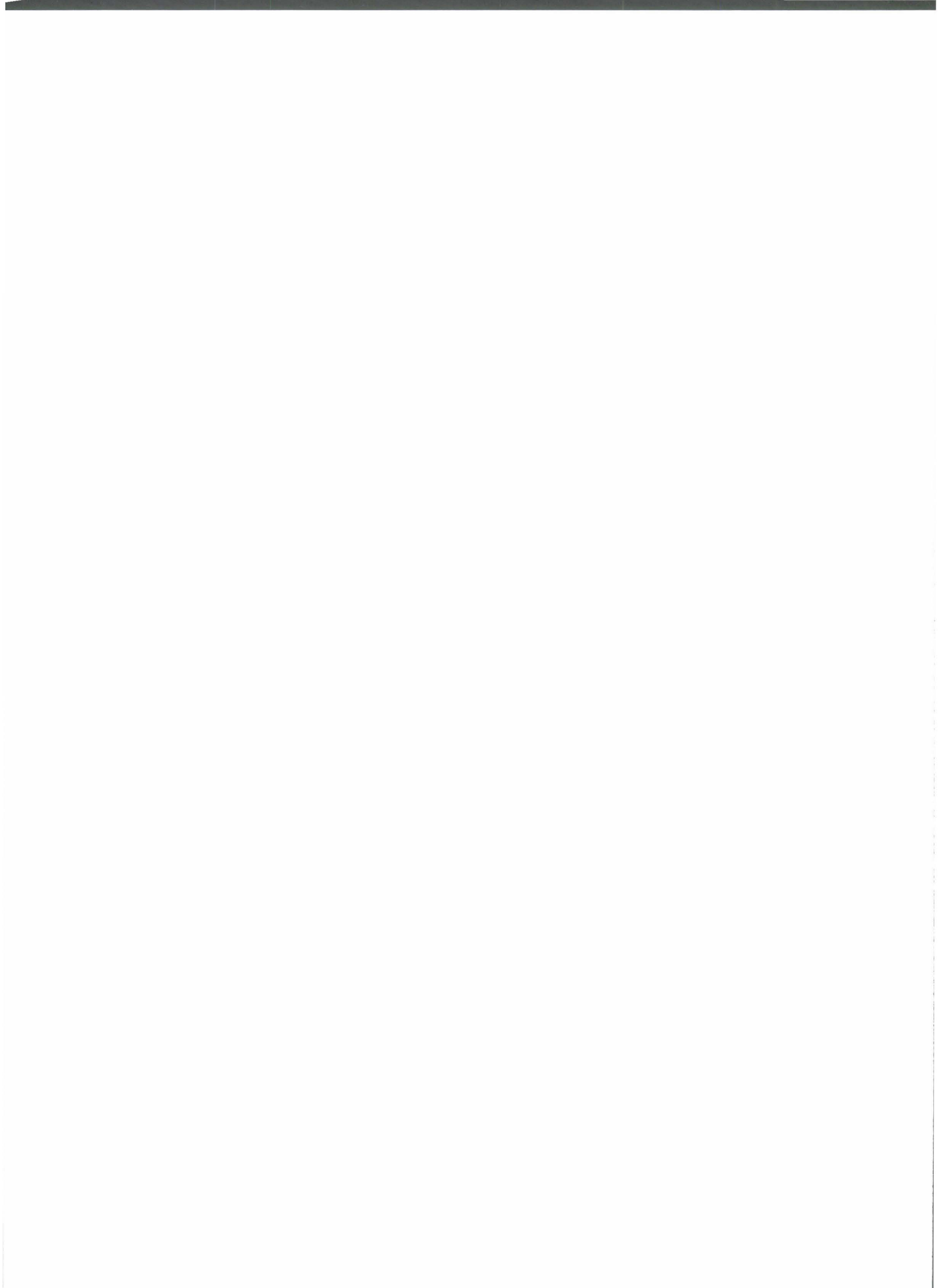
Figure 1: Diagram of the Planning Process in Portugal (Agencies are represented in bold, planning instruments in italic)

2. Case-studies

2.1 Methodology

Both case-studies were carried out according to a common methodological approach, including desk research, interviews and observation.

Desk research included data collection from printed and electronic relevant sources; documentation was analysed and key informants were identified. Interviews to key-informants were carried out during January and February, 1997.

In case one, key-informants were chosen following the track of a pilot project, Mangualde 2000, most referred to in the documentation. We wanted to capture the views of the Promoters, Facilitators or Intermediaries and Users of such project.

A total of eight interviews were carried out to:

- Project Manager from CET / Portugal Telecom

- President of the Municipality of Mangualde

- President of the Associação Azurara da Beira

- Development agents of Associação de Desenvolvimento do Dão

Operators of the demonstrators located in Mangualde, Santiago de Cassurães and Cunha Baixa.

In case two, the key informants were identified according to the professional roles played within the National Geographic Information System.

A total of four interviews were carried out to:

- Project Manager of CNIG

- Head of the Planning and Co-ordination Department at CNIG (and manager of PROSIG and PROGIP programmes)

- Head of the GIS Unit at the Municipality of Oeiras

- Head of the GIS Unit at the Municipality of Lisbon

These two last key informants were suggested by the Project Managers at CNIG as being those that could shed more light on the application of GIS to territorial planning, in this country, due to the more advanced stage of development of GIS.

Case-study two is a horizontal study that looks at the system as a whole and its national, regional and local implications for territorial planning and territorial management in Portugal. Therefore, the format of its description does not fit into the common structure.

2.2 Case-study One: Centro

2.2.1 Regional characteristics

The Centro Region of Portugal comprises seventy eight municipalities within seven districts (the first level of the Portuguese administrative division). It is geographically located half-way between Lisbon and Oporto and has easy access to Europe by land, via Vilar Formoso, in the Spanish border, and by sea via the port of Aveiro. The Centro region corresponds to 26% of the total territorial area of mainland Portugal, 23,666 square kilometres, and its resident population is 18% (1,721,650) of the total Portuguese population.
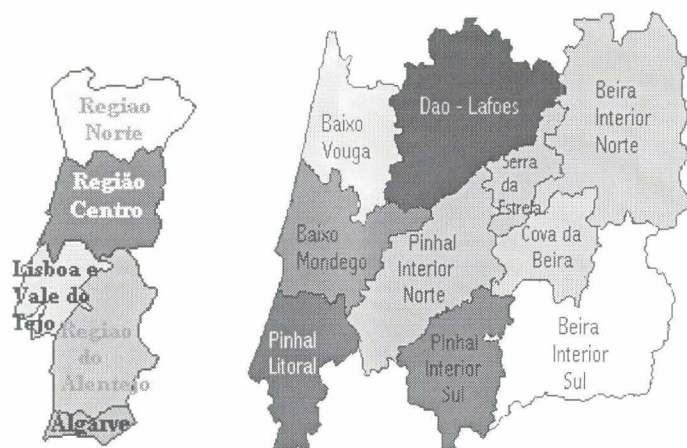
Figure 2: The Centro region

The Centro region has a large forest area, despite the fires that every summer are a nightmare to local populations and authorities. It has a rich historical and cultural heritage and large-scale educational and training facilities, which include the University of Coimbra, one of the oldest in Europe.

There is a great imbalance between the coastal and the interior areas. The coastal stripe has increased its population and industrial activity, while the interior has gradually lost its population and farming and forestry activities are still predominant. The lack of an internal road network was a barrier to the development of the region, however, gradually the fundamental country's road network has been built and reduced the isolation of the interior (Eurostat, 1993).
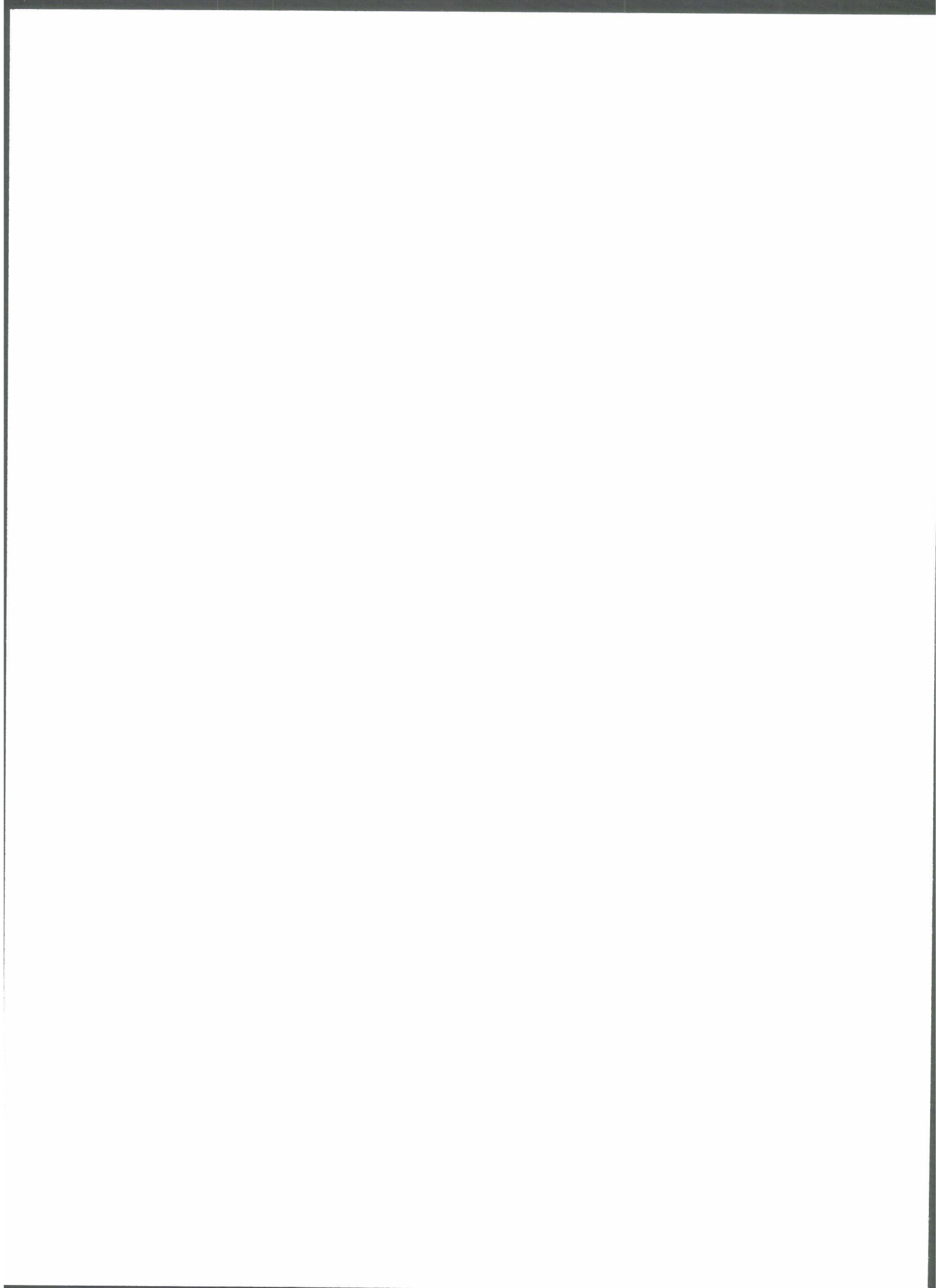
2.2.2 Main socio-economic indicators

Data from 1994 (Table 7) shows a total labour force of 861,800, of which 828,800 correspond to employed population. An employment rate of 50.7%, is slightly above the country's average for the same period.

	Centro Region	Mainland
Total Population	1699,4	9349,1
M	819,7	4494,0
W	879,7	4855,1
Labour Force	861,8	4585,7
M	462,6	2512,3
W	399,2	2073,3
Employed Population	828,8	4258,0
M	447,7	2354,1
W	381,1	1903,9
Unemployed Population	33,0	327,7
M	14,9	158,3
W	18,1	169,5
Employment rate (%)	50,7	49,0
M	56,4	55,9
W	45,4	42,7
Unemployment rate (%)	3,8	7,1
M	3,2	6,3
W	4,5	8,2

Source: Anuário Estatístico da Região Centro, INE, 4º Trimestre 1994 (Unit: Thousands)

Table 7: Main employment indicators in the centro region

Direct foreign investment has been oriented mainly to the manufacturing industries and to the timber and cork sectors followed by the machinery and metalwork sectors (Figure 3, over page).
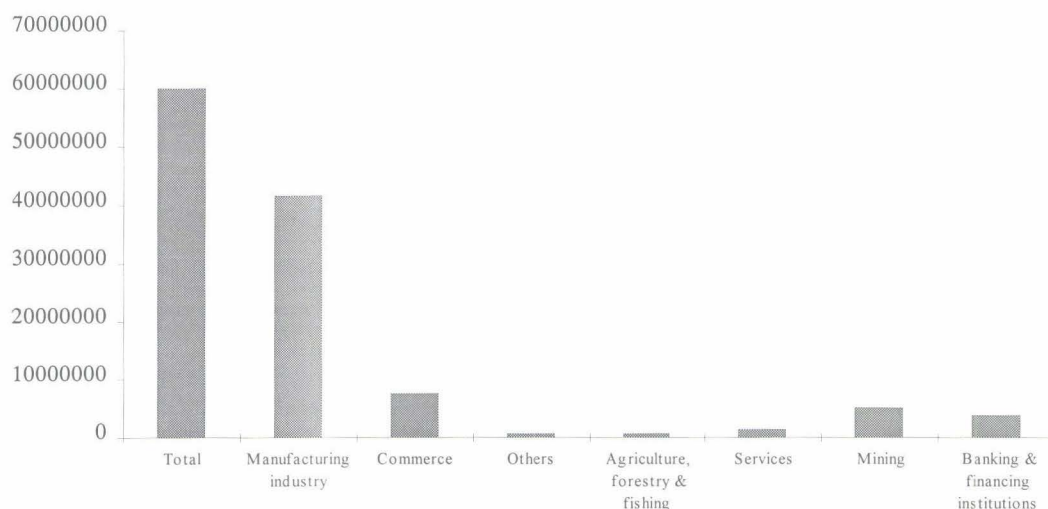
Source: http://ww.ccr-c.pt/região/investimento_sector.html

**Figure 3: Foreign investment in Centro region by activity sector**

2.2.3 Telecoms profile

The most recent figures available for the Centro region (1996), provided by Portugal Telecom show a percentage of 35 per 100 inhabitants of permanent phone service (analogic access) slightly below the national average of 37.5% (see Table 8).

2.2.4 Mangualde

Mangualde is one of the municipalities of the Centro region, included in the sub-region called Dão- Lafões. This municipality was one of the seven cases studied within the REVOLVE (Regional Evolution Planning for IBC - Information Broadband Communications - within the RACE programme) project, a major study carried out from 1988 to 1992 by a European consortium which included research teams from the Portuguese telecommunications operator (Portugal Telecom, Centro de Estudos de Telecomunicações).

A detailed analysis of the socio-economic environment of Mangualde was produced by the consortium which shows the county as an area with a high potential for development.
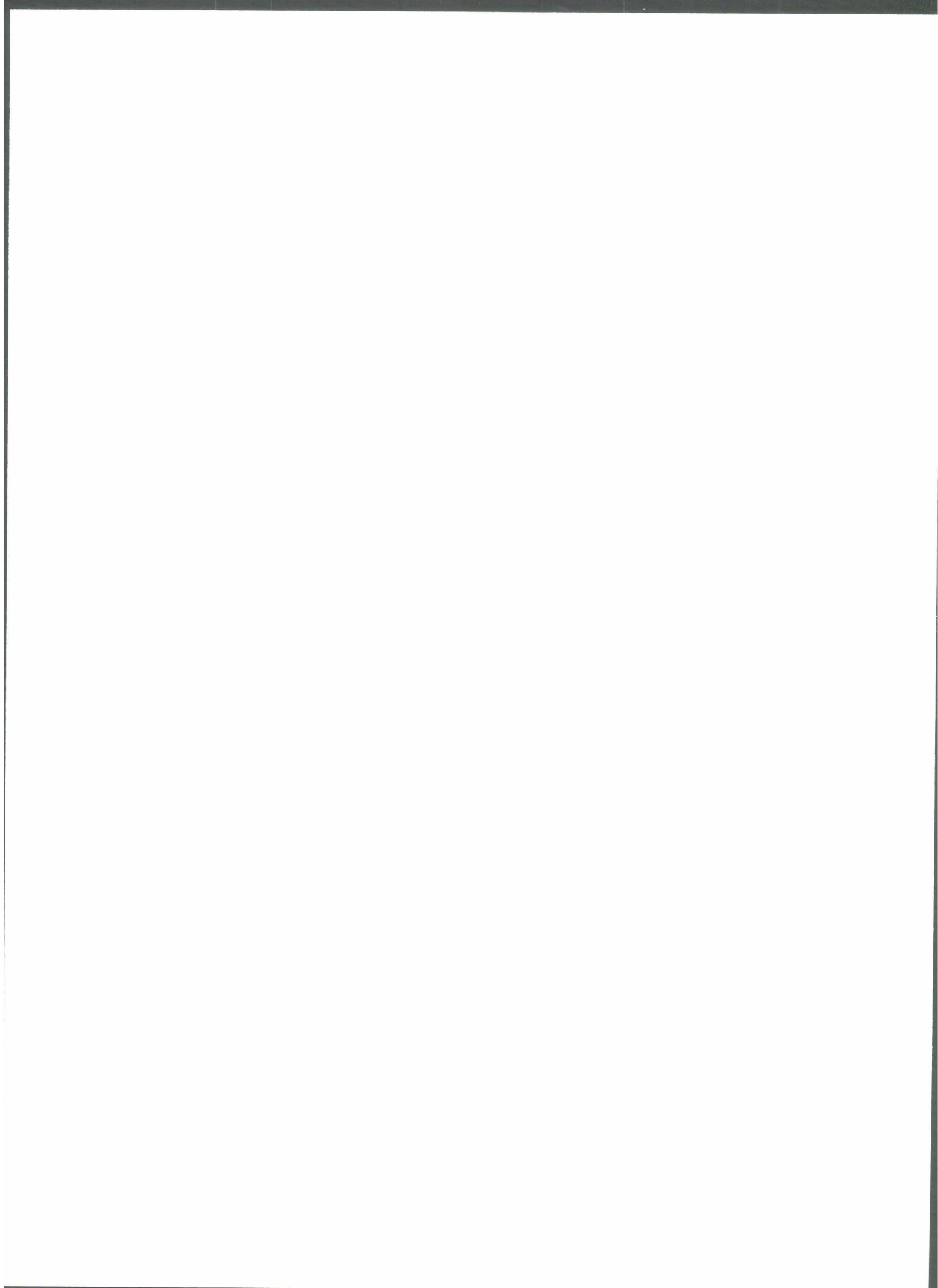
In the context of the present case-study, Mangualde assumed a central role because of the previous pilot experiments in launching ISSA described below, and that constitute the core of the Case-study field work. An effort to obtain recent statistical data was made, in order to update the socio-economic profile of the county in what concerns its main features. Based upon the elements provided by the services of the municipality, (internal document, 1997), Mangualde is characterised by:

A total resident population of 21.513, with the following age distribution

Population distribution per age:

0-14:   4.517

15-24:   3.314

25-64:   10.306

65>:   3.671

The employment structure follows the pattern for the Centro region with a high rate of people working in the primary sector.

Employment structure:

Agriculture: 1.225

Industry: 3.240

Services: 2.974

Total of unemployed: 399

The main economic activities are: metalwork and machine manufacture, wood and timber, and clothing industries.
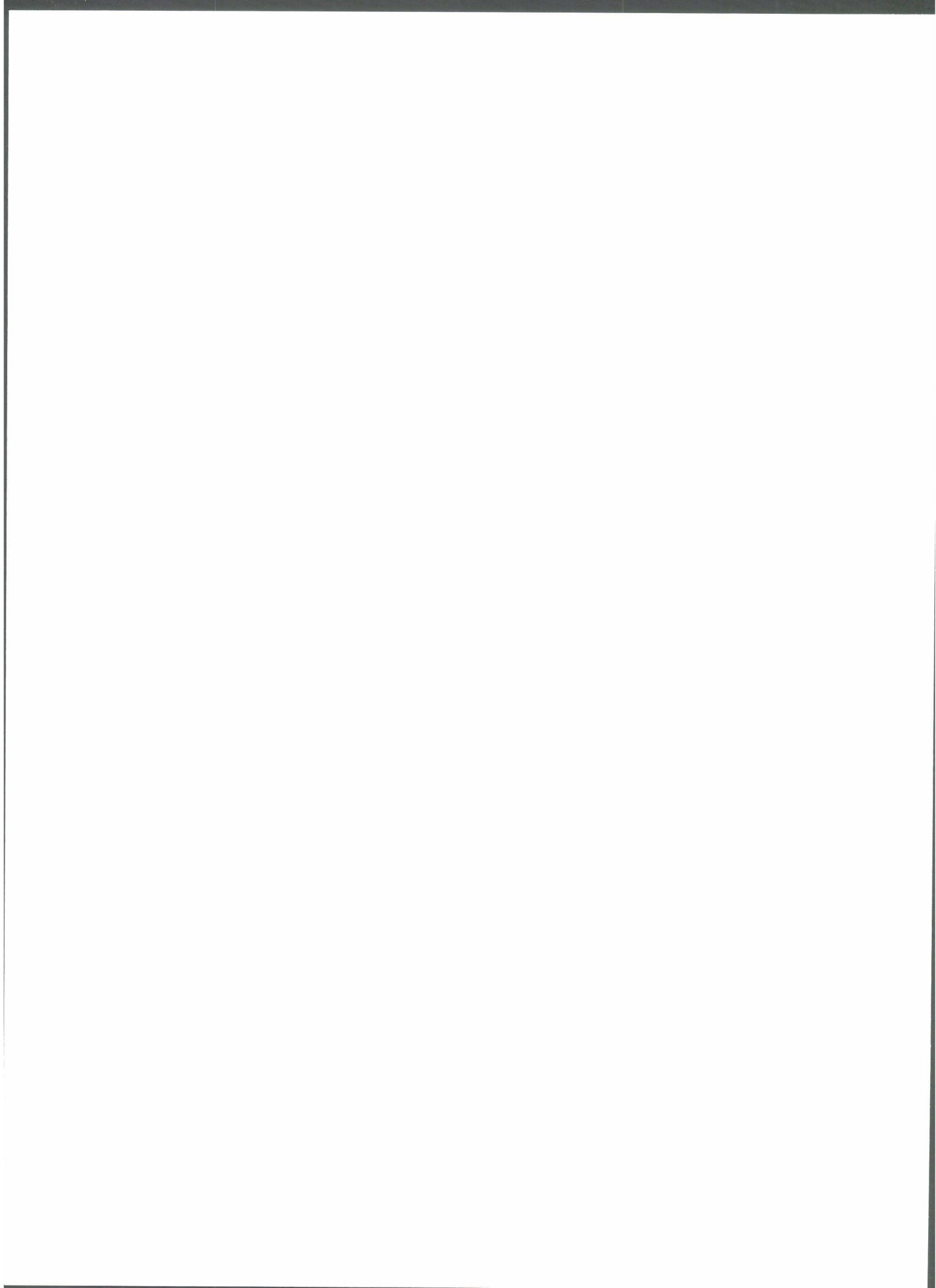
| INDICATORS		Units	Mangualde	NUTS III Dão-Lafões	NUTS II Centro	Country
Permanent Phone Service	PP's (Analogic Access)	TOTAL (10^3)	6,5	84,5	593,2	3 724
		Per 100 Inhab.	29,1	30,0	35,0	37,5
		Per sq. Km	29,3	24,2	25,1	40,6
	PP's (Analogic and Digital Access)	TOTAL (10^3)	n.a.	n.a.	n.a.	3 822
		Per 100 Inhab.	n.a.	n.a.	n.a.	38,5
		Per sq. Km	n.a.	n.a.	n.a.	41,6
	PF's	TOTAL	79	1 134	6 850	34 904
		Per 100 Inhab.	3,6	4,0	4,0	3,5
		Per sq. Km	35,7	32,5	28,9	38,0
Mobile Services (10^3)	Mobile phones		n.a.	n.a.	n.a.	332
	Pagers		n.a.	n.a.	n.a.	108
Cable Television (10^3)	Cabled homes		n.a.	n.a.	n.a.	900
	Connected homes		n.a.	n.a.	n.a.	167
	Penetration rate		n.a.	n.a.	n.a.	18,5
Data and correlated services communication (10^3)	Packet Switch Network (Telepac)		n.a.	n.a.	n.a.	17
	INTERNET Access		n.a.	n.a.	n.a.	36
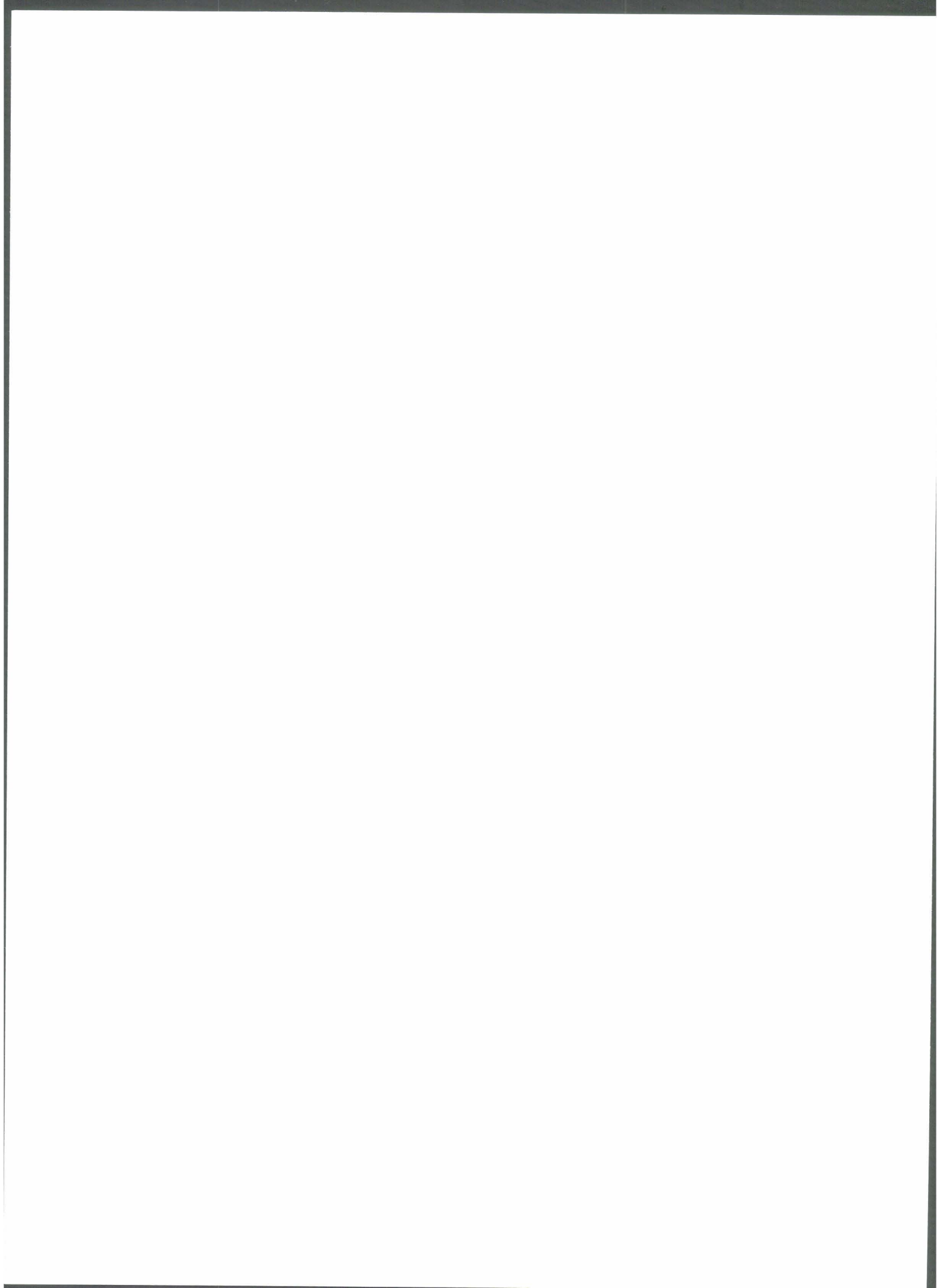
Table 8: Telecoms profile (n.a. - not available)   (GPC/ PCL 1996   Source: Portugal Telecom)
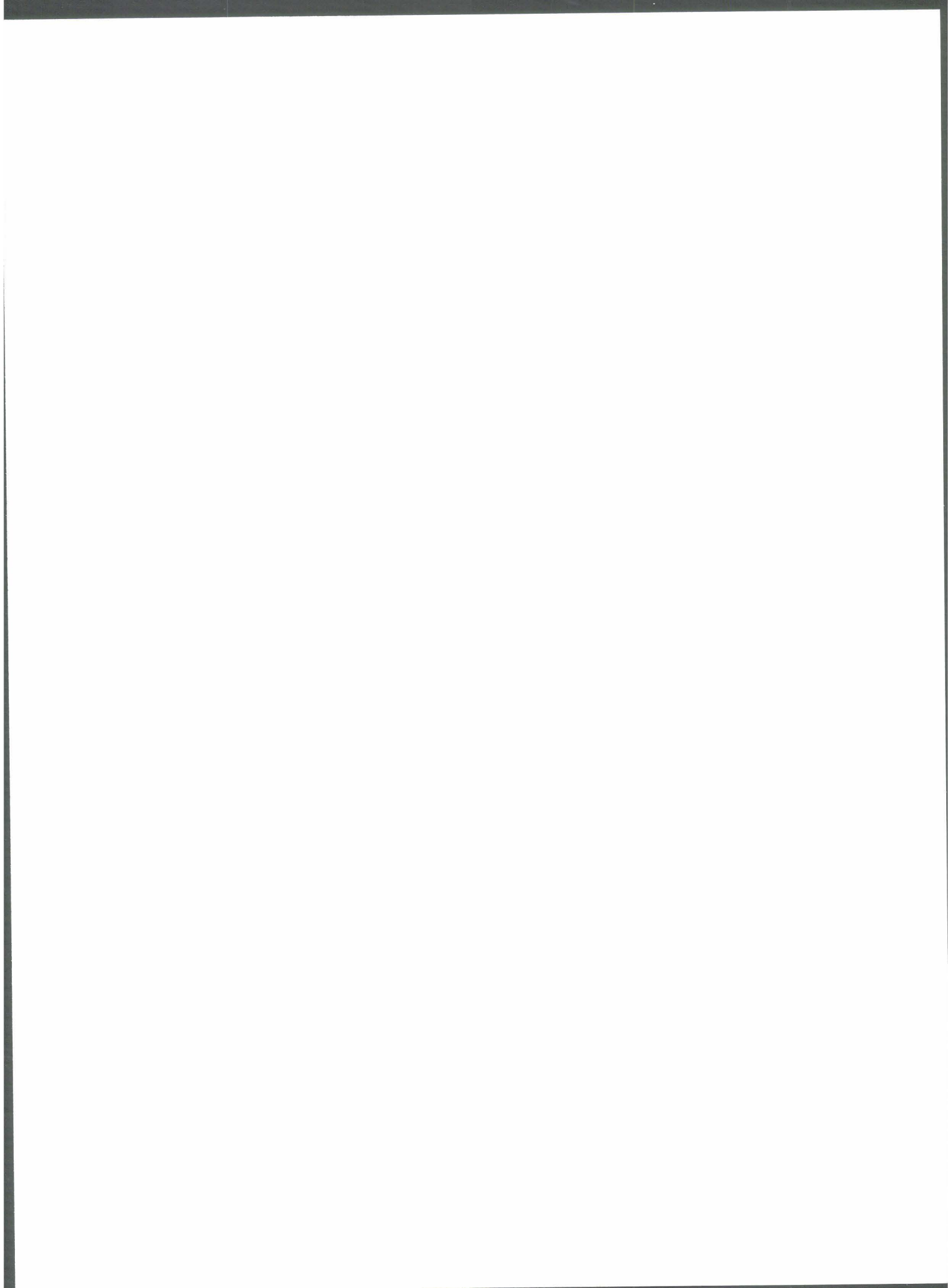
Cultural Heritage

The territory of Mangualde has been populated since remote eras and there are several vestiges of pre-historic civilisations. From the Roman colonisation there are also vestiges in particular those related with the cross-road marks. People from the region are proud to affirm that Mangualde was ever since in the centre of important cross-roads and consider that the recent construction of the principal itinerary IP5 from Vilar Formoso (in the Spanish border) towards the sea port of Aveiro was a very important factor for regional development.

2.2.5 Telecommunications infrastructure

Data from the REVOLVE project showed that Mangualde region had a telecommunications network covering circa 70% of the county, and the services available were telephony, telex, data service, Telepac, and leased lines. The telecommunications distribution was mainly aerial cable.

According to the classification scheme adopted by REVOLVE, Mangualde was characterised as a Type 2 region. This basic classification scheme for European regions distinguishes between regions characterised by a potential demand-driven introduction of IBC, requiring high levels of initial investment to initiate the IBCN but relatively low revenues per connection, to recoup the initial outlay within a reasonable period (Type 1). And regions that also require a high level of initial investment but would take significantly longer to recoup the costs; these regions are likely to sustain a commercial IBCN in the medium term (Type 2). Type 3 regions being those that would not be able to sustain an IBCN without considerable initial and ongoing subsidisation (Siochrú, 1991).

Examples of ISSA for regional development

Mangualde 2000 Demonstrator

Project REVOLVE was *"devoted specifically to an examination of the implications of IBC for the less favoured regions of the European Community"* and addressed questions such as: *"has IBC the potential to reduce disparities between central and peripheral regions? And if so, in what circumstances?"*

It did not include research on technologies; however, during phase two of REVOLVE, Portugal Telecom, the Portuguese partner of the consortium, decided to finance the implementation of a prototype in the Mangualde region to demonstrate a range of telematic services and, according to one of our key-informants, "test in the field the methodology developed under phase two of REVOLVE" (Lusitana Fonseca, from CET).

It was a strategic option taken by Portugal Telecom to finance this demonstrator. The Municipality of Mangualde backed the idea and has maintained a close co-operation with Portugal Telecom, being the logistic partner and promoter. In May 1992 the demonstrator Mangualde 2000 was in the field.

Technological infrastructure

The demonstrator is supported by an optical fibre network linking the central node of CET-Aveiro to the nodes of Mangualde, Cassurães and Cunha Baixa and the transmitter of Mourilhe. Three Centres of Advanced Telecommunication Services, one located in the building of the Municipality of Mangualde and two other located in the peripheral villages of Santiago de Cassurães and Cunha Baixa were installed.

Also as part of the project, a residential area of seventy five homes in the city of Mangualde was cabled with optical fibre and connected to the system, which allows the residents to access the telematic services available. The node of Mangualde city has a studio equipped with a video-conference system with three video-cameras, and three monitors. In an open working space three personal computers, printers and a television set, are available free of charge for public use.

The node of Santiago de Cassurães is located in the building of the Junta de Freguesia (the administrative authority in the village) and it is equipped with the video-conference system (one fixed camera and three monitors). It has two PCs and printers for public use. The node of Cunha Baixa has the same equipment and it is located in the village "social centre".

Services Available

The services available include video-conference, telephone, distribution of television and telematics applications.

Staff

The nodes are run by an operator in each location. Technical maintenance and support is provided by technicians from Portugal Telecom, CET-Aveiro.

Other ISSA Projects: Wolf and ISDN-SMEs (RDIS-PMEs do Dão)

Portugal Telecom-CET has been heavily involved in the promotion of telematic services and applications in the Centro region of Portugal, building up from the experience of the REVOLVE Project and addressing different sectors and needs. It was the leader of the Portuguese consortium that integrated the Wolf - Internet and W3 Opportunities in the Less Favoured Regions, project. This project aimed at encouraging the use of Internet for business advantage by small companies, of seven LFRs of the EU.

In Portugal, Wolf involved thirty small and medium enterprises and several entities (regional associations for development and university departments) and it was an important vehicle to demonstrate the Internet potential in the region.

Project RDIS-PMEs do Dão follows the same strategy devised by the telecoms operator to promote the use of advanced telecommunications by the enterprises and organisations, in order to support local socio-economic development, such as business information centres and development agencies. This project aims to set up a network of agencies to aid the entrepreneurs (Gabinetes de Apoio ao Empresário) in the municipalities, equipped with "demonstrators of advanced telecommunications services and telematic applications". These agencies will have background support from ADD (Agência de Desenvolvimento do Dão), an agency whose mission is to promote the local development of a geographic area that includes five municipalities of the sub-region Dão-Lafões.

2.2.6 Analysis of key issues

Population exposure to IT

Main users of the applications - The Mangualde demonstrator is seen by the developers (Portugal Telecom), and the promoters/facilitators (The Municipality of Mangualde and associations such as Associação Cultural Azurara da Beira and Associação Desenvolvimento do Dão) as an important infrastructure to promote the use of information technologies.

The usefulness for real life practical applications in leisure, education, cultural and social events has been demonstrated to a variety of local users and of other communities.

Leisure/ education - A programme of activities oriented to students of primary and secondary schools that envisaged to expose the students to IT was set up in collaboration with the head masters and teachers. Educational and leisure video sessions were prepared for different groups of students. Video games were also available. Occasionally, video conferencing sessions were organised between schools from this region and from Lisbon, exposing students to these technologies for the first time.

The computer facilities available at the nodes in the villages are used on a regular basis by students from the secondary level, and as it was referred to by one of the operators, there is now a need to book in advance because of the interest that Internet access has risen.

For school beginners every academic year, nurses and other staff from the local health centre collaborate in the organisation of specific sessions. These sessions include the presentation of educational videos for health care and
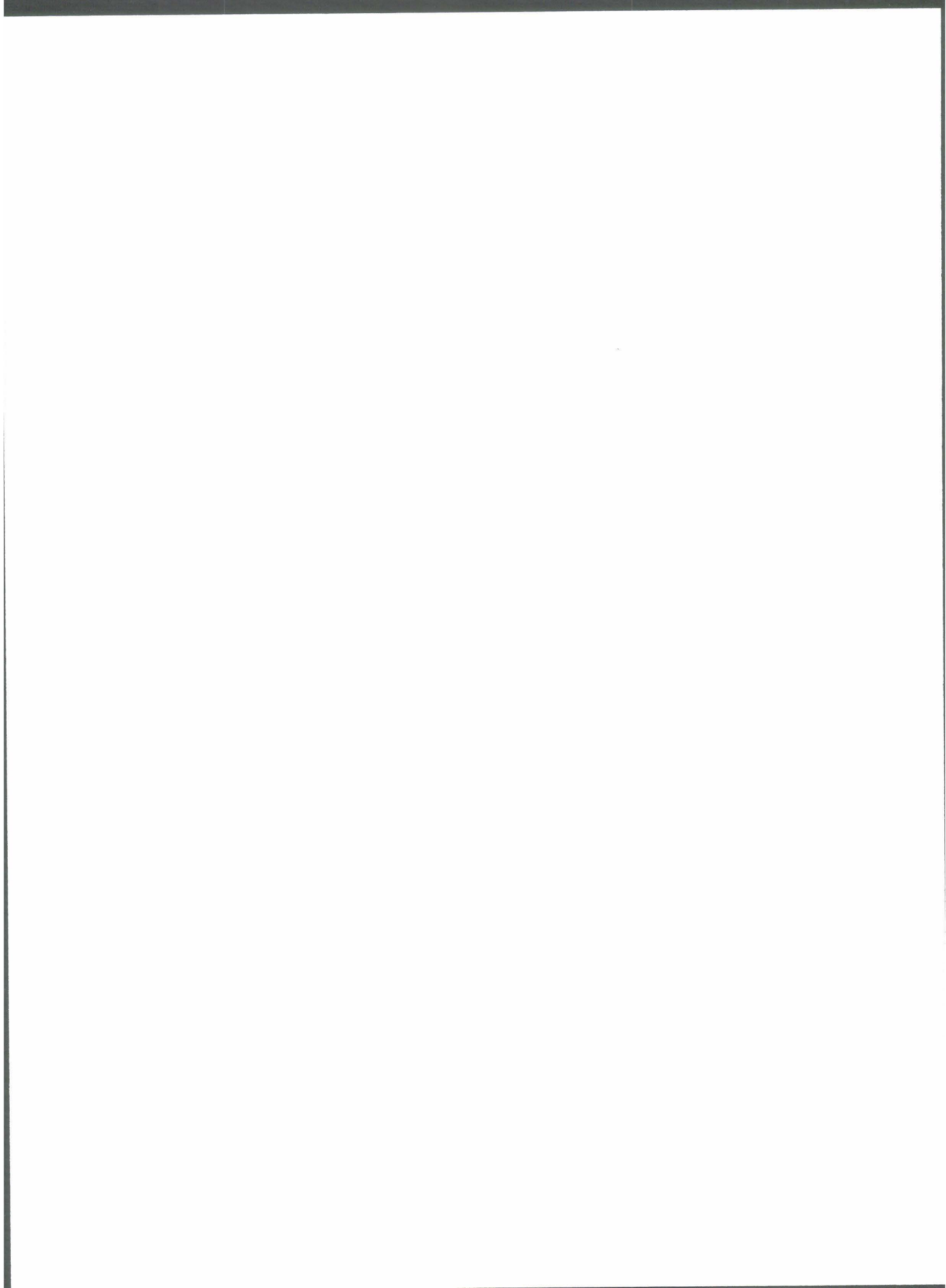
prevention and are transmitted from the node of Mangualde to the other nodes where students get together.

Cultural/ social - Cultural events are held regularly and cultural and recreation associations have played a key role in organising such events. The auditorium of the municipality adjacent to the node of the demonstrator has been used to organise sessions whenever government members or other public figures visit the region. for example, in February 1997, a one-day session was organised to debate the theme of regional television; that event brought to Mangualde representatives from government, political parties, opinion leaders and communication experts. The existing infrastructure of the Mangualde demonstrator was used and the event was broadcasted through the Internet.

The first multimedia tourist guide of the Mangualde region was developed by teachers and students of the secondary school of Mangualde and of Portugal Telecom. Other initiatives to explore the local archaeological patrimony (very rich) have been carried out in collaboration with the University of Coimbra. The cable television pilot system installed in the residential area of Mangualde was considered very successful, giving these populations early access to international TV channels, facilities that only more recently, via satellite, start to spread in the region.

An important social application of advanced IT that has been demonstrated is directed to a particular sector of the population, the elderly, and intends to reduce the isolation of those living in residential homes. Regularly, cultural events or just "chatting sessions" are organised to put in contact friends and relatives living in different areas of the region.

Consulting and advising sessions with medical doctors have also been organised to demonstrate the usefulness of IT to overcome distance barriers. However, other barriers, namely of a regulatory and administrative nature, have prevented the expansion of this important application. As it was pointed out by the interviewees, problems relating to the lack of regulation of telework, are a constraint to medical doctors and other health care professionals, for example, to spend on a regular basis their working time in one of the nodes.

Professional use - From the results of this study it emerged that applications oriented towards professional users have been more difficult to implement. The facilities available at the nodes located in rural villages (free fax and telephone) are occasionally used by local businesses and by some family-type enterprises. However, there is a lack of applications oriented towards professional users, mainly because more sophisticated applications need skilled staff supported by a business-oriented organisation, or a public body. Nevertheless, as it was stressed by both Portugal Telecom and the President of the Municipality, the Mangualde demonstrator had great impact in the local enterprises, by making them aware of how useful new technologies can be.
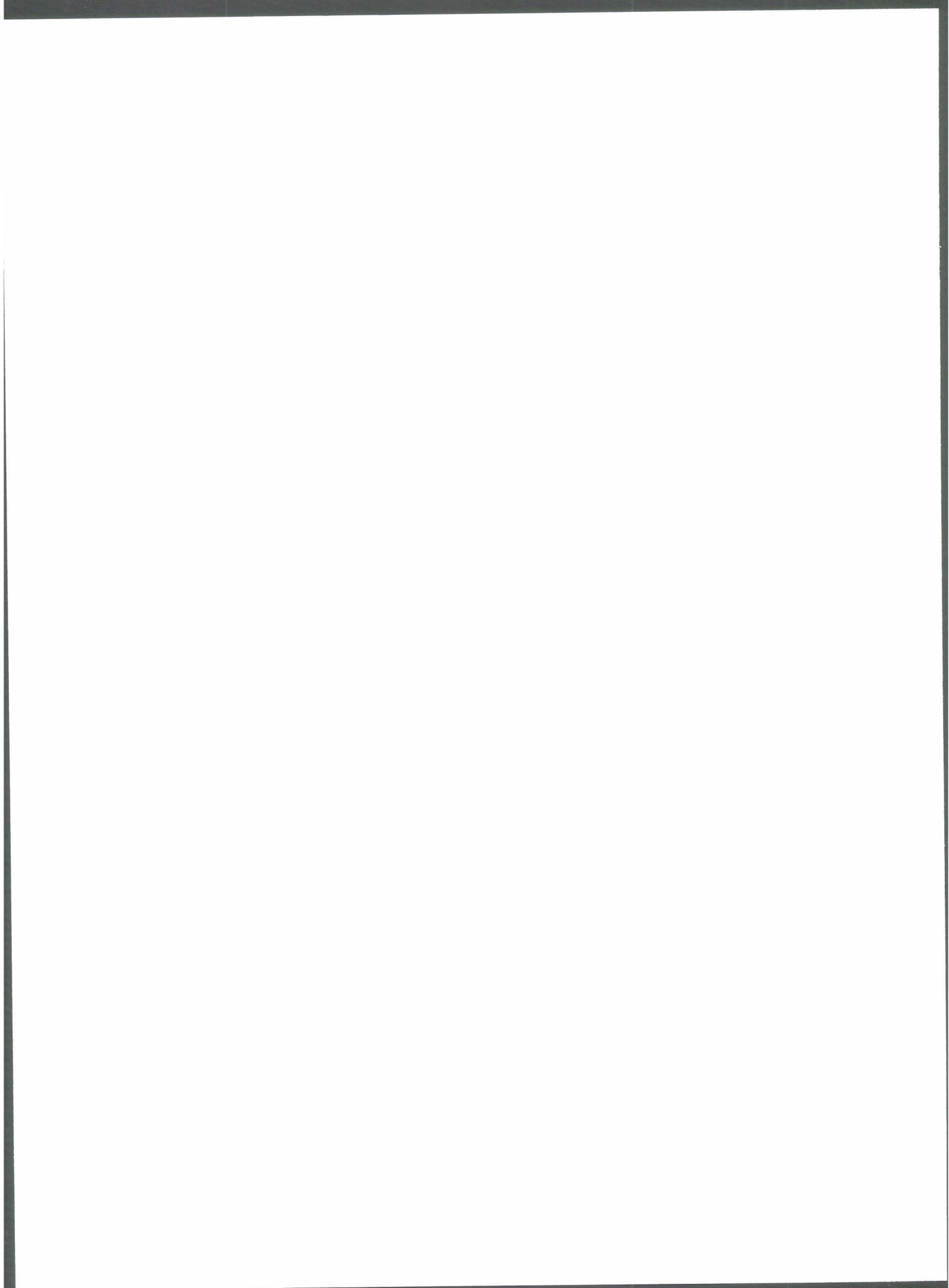
Significant demand for high capacity lines and Internet access in the region (higher than in other regions with similar characteristics) is seen by Portugal Telecom as an indicator of a positive response from the population and the enterprises.

From pilot to real applications: factors affecting the generalisation of ISSA

The resources factor - After several years of demonstration activities and pilot applications development, the project leader of the Mangualde 2000 project (a senior engineer and "innovation champion" of Portugal Telecom) considers that to move to the next phase there is a need to concentrate the available resources. The costs associated with the deployment of such infrastructures prevent its generalisation to the whole population of remote regions. However, the creation of resource centres combining a range of information technologies and appropriate information services and applications, is an alternative.

The strategy followed by the telecoms operator was, in this case, to show the potential of such technologies and to motivate local agencies to integrate them into their own development / planning strategies. Only if the various regional and local planning agencies make use of such equipments and tools and establish a coherent strategy to further develop existing IT infrastructures, the telecoms operator might decide to invest in regions that only on a medium term are likely to sustain commercial broadband communications.

The Municipality of Mangualde is aware of the importance of ISSA for the socio-economic development of the region, but in the opinion of the President, the reason why the experience of the Mangualde 2000 has not overcome the demonstration phase is related with the scarce financial capacity of the municipality.

Legal/ organisational constraints - Both the promoters/ developers (Portugal Telecom) and facilitators (Municipality of Mangualde) of the Mangualde 2000 project agree that there are areas, such as medical assistance, counselling and education where services could be implemented easily and having an immediate positive effect on populations.

The main difficulty that was pointed out is the lack of a legal framework for nurses, medical doctors and teachers, to work on a "non traditional basis", that is out of their normal workplace. Proposals for specific projects sent to the Ministry of Health were given no answer.

Impact of ISSA on territorial planning - Evidence from this case-study shows that ISSA have very little impact on territorial planning. The principal planning agency at local level, the municipality, does not have a strategy to integrate disperse initiatives.
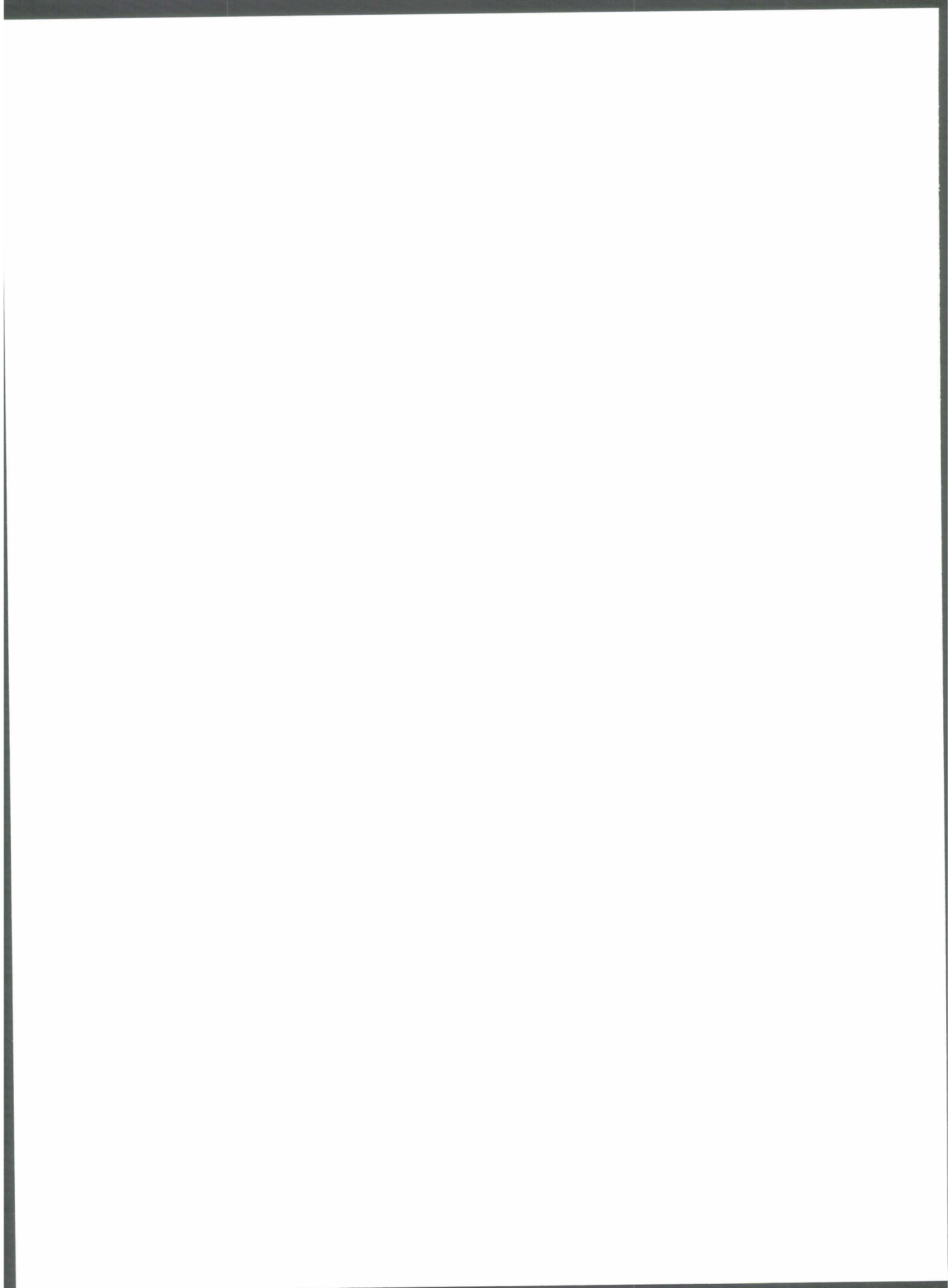
At the general economic development level, other agencies such as Associação de Desenvolvimento do Dão (Association for the Development of Dão), are aware of the potential that information technologies and information services have for the progress of local communities. Their strategy is geared towards creating synergies among different programmes. The examples given were related to the need to have an integrated approach to professional training programmes, schemes to support the SMEs and the development of telecommunication infrastructures.

2.2.7 Conclusions

1. The usefulness for real life applications in leisure, education, cultural and social events has been demonstrated.

2. Applications oriented towards professional users have been more difficult to implement due to the lack of skilled personnel and the absence of business-oriented organisations associated to the project.

3. The leap from pilot to real applications will take place only if the regional and local planning agencies make use of such equipments and tools and establish a coherent strategy to further develop existing IT infrastructures.

4. The lack of a legal framework for work "on a non-traditional basis" has hampered the delivery of medical assistance, counselling and educational programs using ISSA.

5. Evidence from this case-study shows that ISSA have had little impact on the territorial planning activity; the local planning agency (Municipality of Mangualde) does not have a strategy to integrate dispersed initiatives. Other agencies (such as the Association for the Development of Dão), however, have tried to create synergies among different programmes and the development of telecommunications infrastructures.
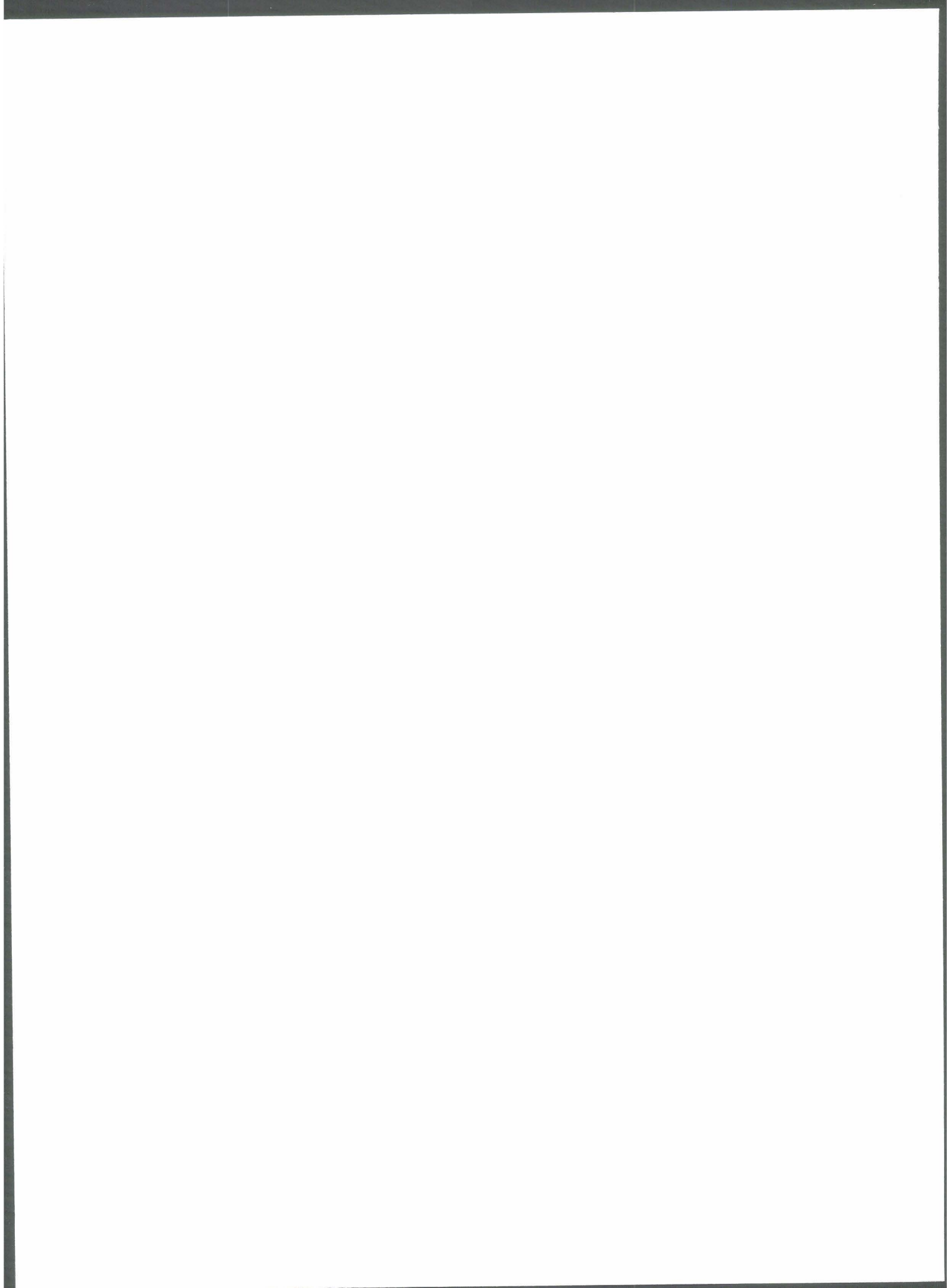
2.3 Case-study Two: SNIG - *Sistema Nacional de Informação Geográfica* (National Geographic Information System)

2.3.1 Characterisation of the System

Aims, structure and components

Geo-referenced data is crucial for managing the growing complexity of territorial planning, territorial management and economic development. Consequently, there is an enormous pressure to make it readily available and in an efficient manner according to the demands of users.

SNIG - *Sistema Nacional de Informação Geográfica* (National Geographic Information System) was created in Portugal, in February 1990, through the Decree-Law nº 53/90, of the 13th of February. It is planned to be a nation-wide information system consisting of a computer network of GIS (Geographical Information Systems) at municipal, regional and national levels - the SNIG nodes - containing geographic information or geo-referenced information. This network includes also geo-referenced application-specific data (sectoral data). The main objective of SNIG is

> *"to promote and guarantee the permanent availability of the data that are needed for the planning and the management of land resources and related activities and, in more general terms, for land use planning."*

(http://helios.cnig.pt:8880/english//overview/overview-text.html)

This system is open to producers and users of geographic information. It is co-ordinated by CNIG, described below, which is also the central node of the system. The system also integrates:

- seven regional nodes, five of which at the CCRs - *Comissões de Coordenação das Regiões* (Regional Co-ordinating Commissions): *Norte, Centro, Lisboa e Vale do Tejo, Alentejo and Algarve* and two other nodes at the Autonomous Regions of *Azores* and *Madeira*.

- local nodes containing municipal information (at the Municipalities).

CNIG - *Centro Nacional de Informação Geográfica* (National Geographic Information Centre) was created in 1990, to co-ordinate and implement the National Geographic Information System (SNIG), through the same Decree Law (Decreto-Lei nº 53/90, of 13th February). At present, CNIG reports directly to MEPAT - *Ministério do Equipamento, Planeamento e Administração do Território* (Ministry of Equipment, Planning and Administration of Territory).
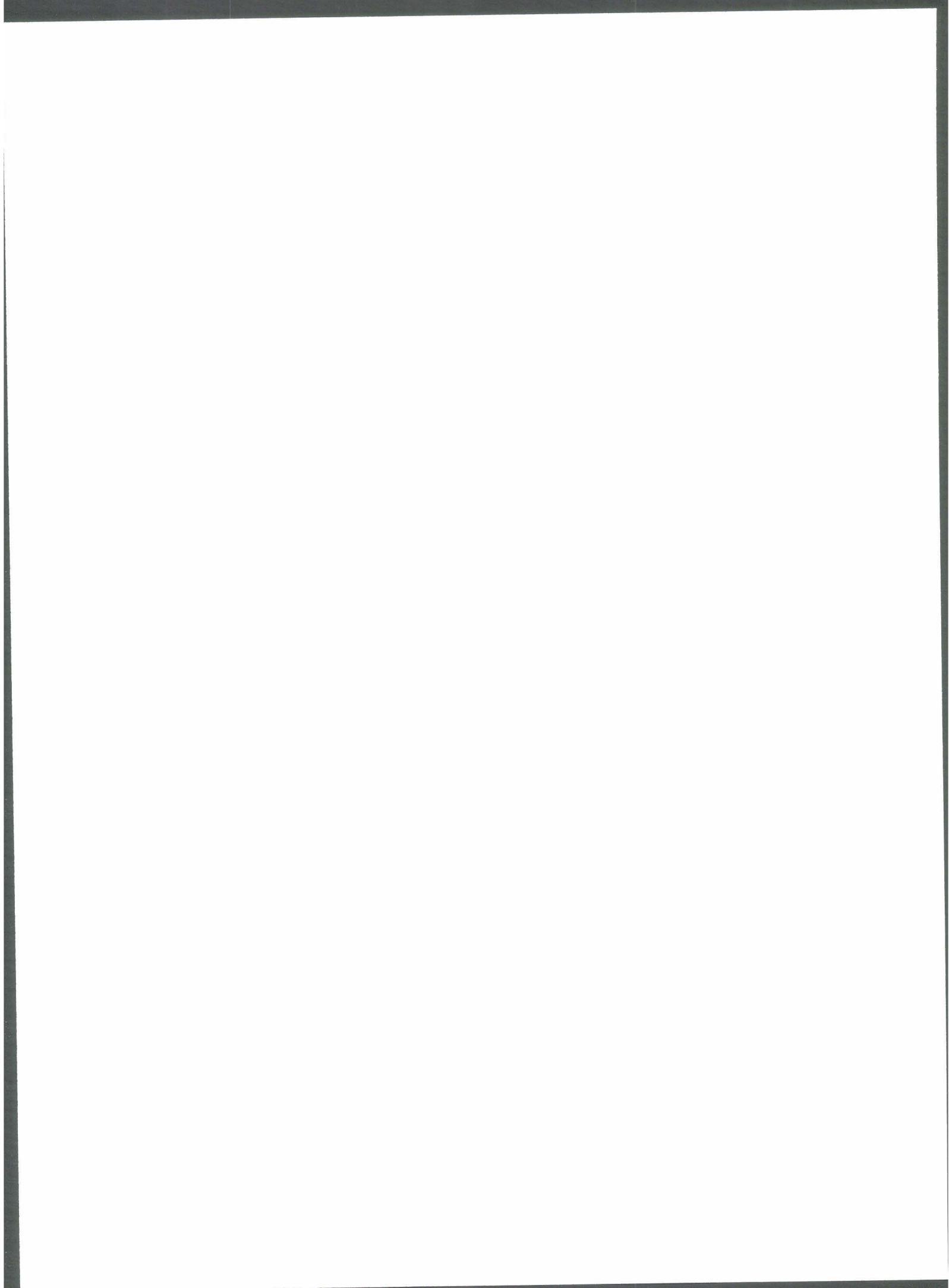
Its broad objectives are achieved through the integration of the alpha-numeric and graphic components of geo-referenced data. This integration includes the conception and development of software applications, with the aim of providing the user with a seamless, integrated, networked access to the information available at the different nodes and sectoral databases resident on the SNIG network.

SNIG Network - *Rede do Sistema Nacional de Informação Geográfica* (National Geographical Information System Network) was officially launched on the 3rd of May 1995. The network has been operating since its official opening and was the first national geographic information infrastructure to be created in the European Union. This was the successful outcome of a process of conception, experimental development and implementation, undertaken by CNIG. Since then, it has become the physical network of SNIG.

SNIG Network is being developed under the co-ordination of CNIG with the collaboration of two other research institutions: FCCN - *Fundação para a Computação Científica Nacional* (National Foundation for Scientific Computing), and DECivil (Department of Civil Engineering) of Instituto Superior Técnico (Technical University of Lisbon).

CNIG developed a WWW-based gateway giving access to geographic meta-information inventories. The creation of the SNIG network also involved the development of software applications, aiming at offering the user efficient access to the information available at the different nodes and sectoral databases within the SNIG network.

These software applications enable users to querying a meta-data catalogue describing digital geo-referenced information, produced by Portuguese agencies through the use of icons, menus and forms. These have been developed by CNIG, which is also responsible for the management of the meta-data catalogue describing the information that is distributed by and resides in the SNIG network nodes.

When the user wishes to access the information he or she is routed through Internet facilities to the information sources available at the producer agencies.

Specific programmes

It was recognised that local authorities were the primary users of the national GIS and two programmes were established to support their participation in the development of the System:

PROSIG - *Programa de Apoio à Criação de Nós Locais do Sistema Nacional de Informação Geográfica* (Support Programme for the Creation of Local Centres of the National Geographic Information System) - created by
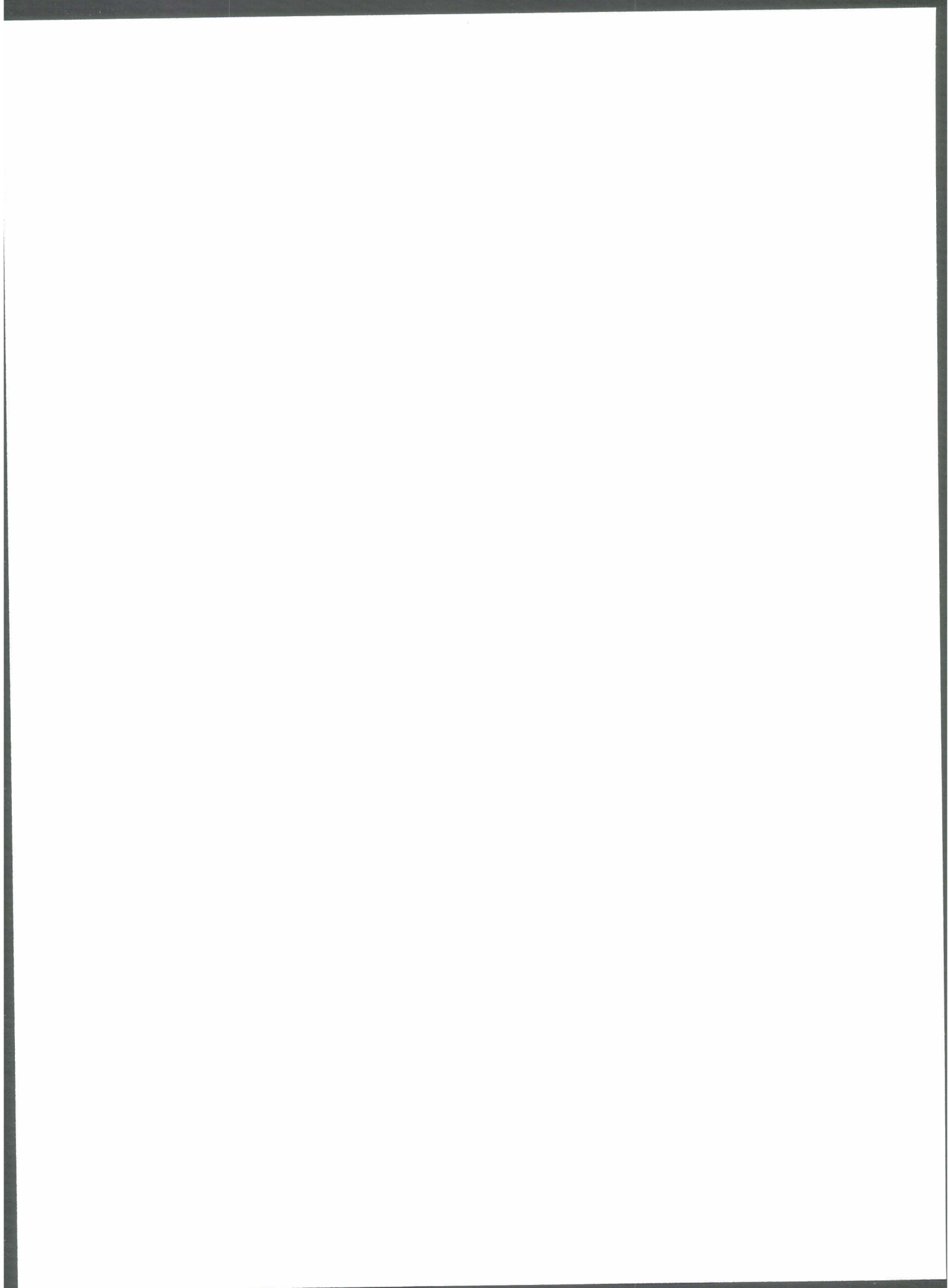
Despacho nº 12/94, from the 1st of February 1994, of the Ministry of Planning and Territorial Administration;

PROGIP - *Programa de Apoio à Gestão Informatizada dos Planos Municipais de Ordenamento do Território* (Support Programme for Computerised Management of the Municipal Plans for Territorial Management) - created by *Despacho Conjunto* from the 9th of February 1994 of the Presidency of the Council of Ministers and the Ministry of Planning and Territorial Administration.

In the context of these two programmes, PROGIP and PROSIG, CNIG has been performing several activities in support of the municipalities that are using computer applications and digitising their PMOT - *Plano Municipal de Ordenamento do Território* (Municipal Plan for Territorial Management) and creating their local GIS, to integrate them with the SNIG network as local nodes. This support takes place in a variety of ways as outlined below.

PROSIG - In the context of PROSIG, the support provided includes:

- definition of a model of technical specifications for public tenders covering both the hardware and software of the GIS;

- dissemination through all 305 municipalities, of several reports on the criteria for establishing a local GIS, including the pre-requisites and evolutionary phases;

(http: //helios.cnig.pt:8880/english//overview/overview-text.html)

- awareness actions targeting members of the Local Government and municipalities' staff, on aspects related to GIS and their application to territorial management;

- provision of training courses, for municipalities' staff directly involved in the use and exploitation of the local GIS; these courses address several subjects, namely Hyper-Text Mark-up Language (HTML), server/network administration and GIS technologies.

According to a recently issued Evaluation Report, (PROSIG Evaluation Report, December 1996) there are forty three Protocols signed with not only municipalities, but also Municipalities Associations. However, according to the same report, the overall assessment of this programme is considered to be below what was expected.

The main explanation for this is that the implementation of PROSIG requires strong technical capacity and a high commitment from the municipalities, especially concerning the computing applications development to be built on top of the GIS and the evident need to develop skills of the staff involved to enable the most efficient exploitation of the available information resources.
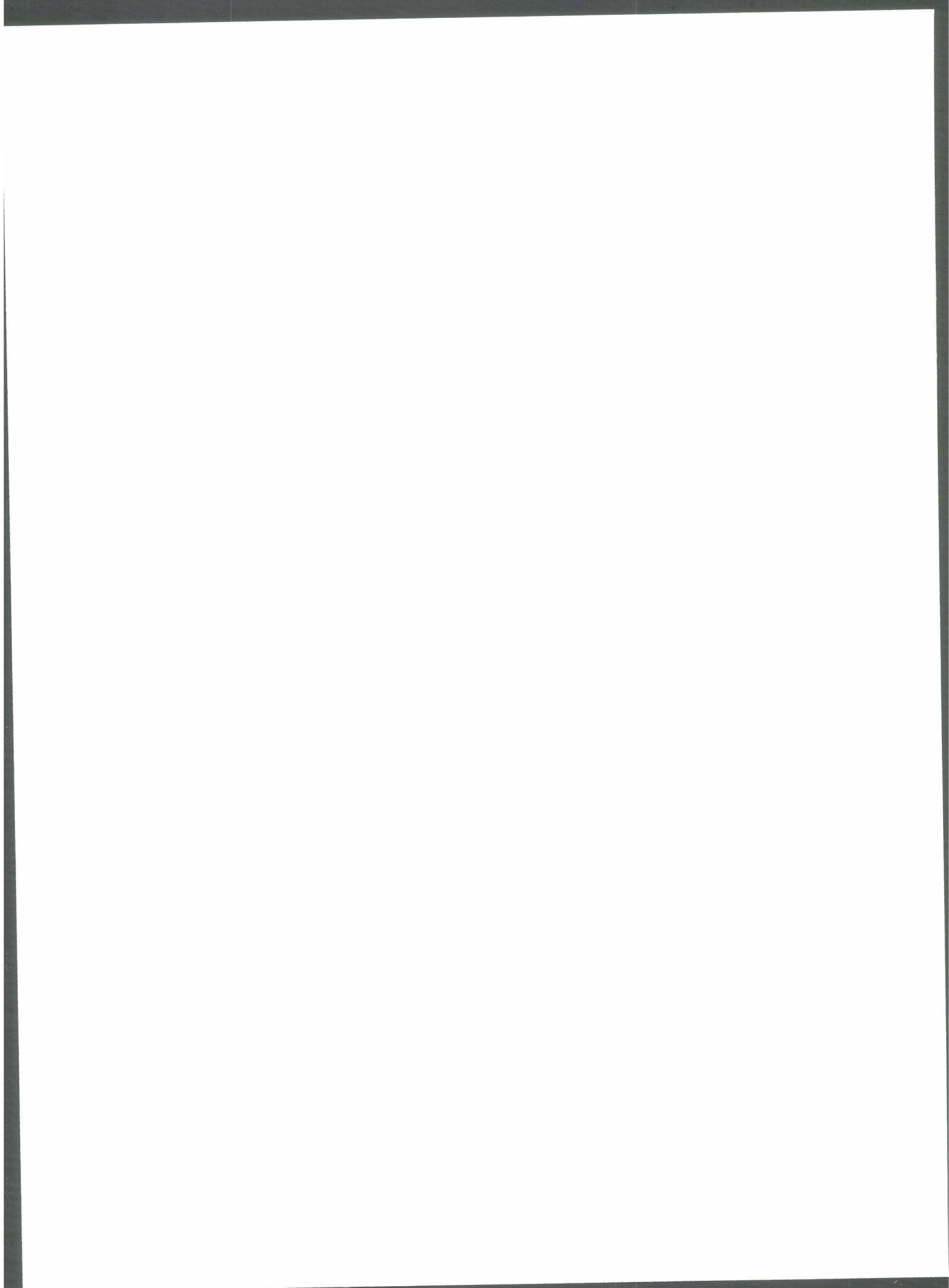
In this context, it is planned that CNIG will increase its support to those municipalities that are creating their Geographic Information Systems, as local nodes of the SNIG network, as well as to all the municipalities that have already joined the programme. It is considered that one of the ways to increase this support is to develop the methodologies required for the application of GIS in territorial planning and territorial management, as well as to demonstrate its usefulness as an infrastructure to support development.

PROGIP - The main objective of this programme is to promote the computerised management of Municipal Territorial Management Plans, guaranteeing the systematic update of the information that they contain and in this way contributing towards the modernisation of Local Governments. Future PROGIP activities will include:

- digitisation of the fundamental Plan's maps;

- conception and development of computer applications specific to Plan's management;

- adaptation of such applications to the specific situation of each municipality;

- training of the technical staff who are going to use and exploit these applications.

The 1996 PROGIP Evaluation Report just issued, states that, so far, 230 Municipalities have submitted proposals to receive support within PROGIP. Of these 230, 185 Protocols have been signed, up to December 1996 (ninety three in 1995 and ninety two in 1996). Submissions awaiting signature of Protocols correspond to those municipalities that either do not have their Municipal Plan for Territorial Management approved or that had not submitted their proposals by the end of 1996. An overall assessment indicates that PROGIP progress is very satisfactory (Manuela Mourão, from CNIG).

The computer application which enables the adaptation of software to the specific situation of each municipality has been awarded a prize, Prémio Descartes 1995, by the Instituto de Informática, Portugal, in February 1996; this demonstrates the importance attributed to this application by the Public Administration (Local Government, in this case) and to its application to the country's development and modernisation plans.

Research projects

CNIG is a research agency which, as well as co-ordinating SNIG (and PROSIG and PROGIP), develops its activities on a contractual basis for Research and Development projects, across three main areas of interest:

- remote sensing and digital image processing
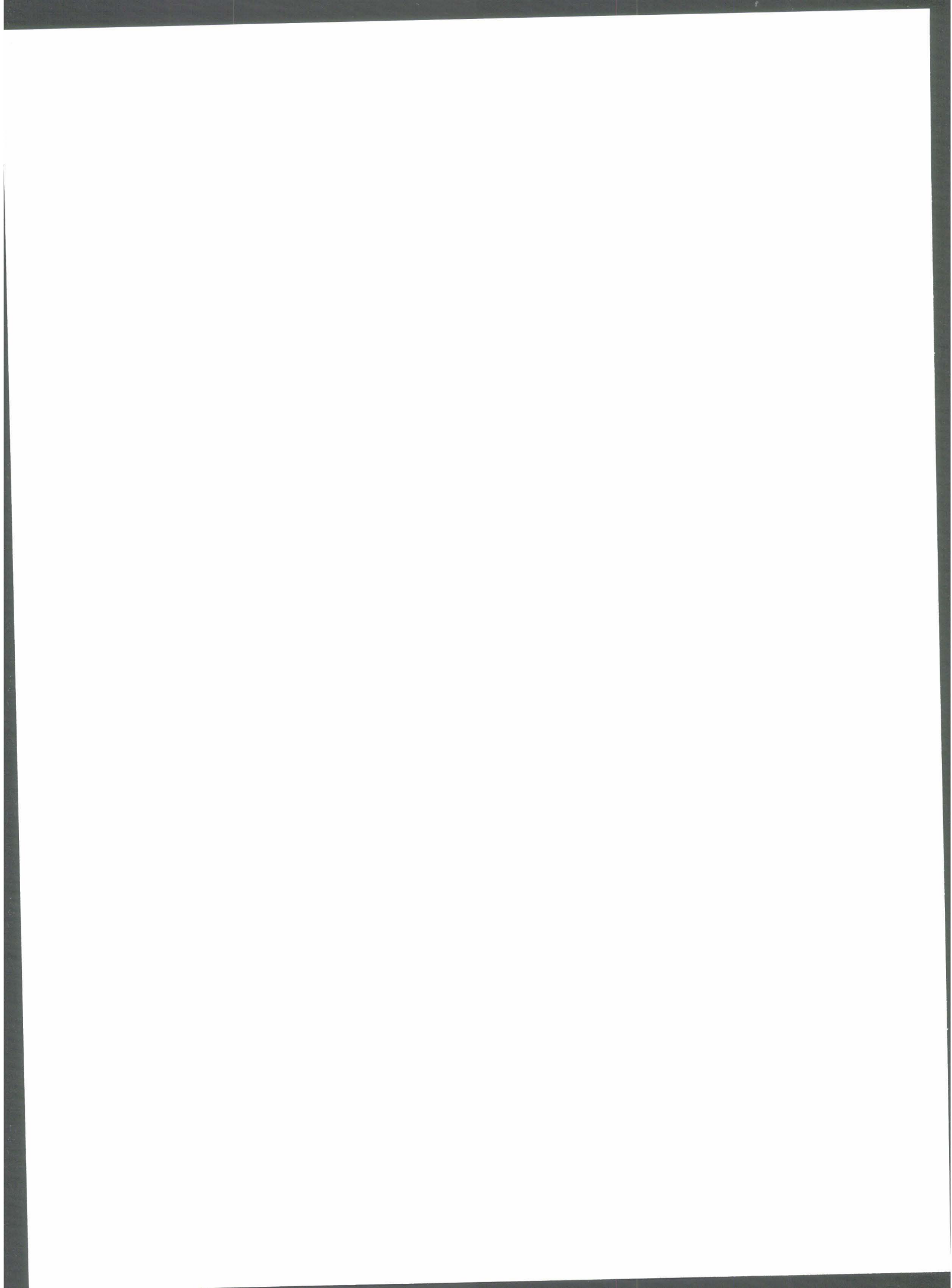
- GIS applications

- multimedia technology

It is also forecast that CNIG will increase support to firefighting organisations and to municipalities, for the exploration of the Forest Fire Risk Maps that have been produced by CNIG together with the computer applications developed, to optimise the fire prevention infrastructure in terms of fire location and firefighting capabilities.

Funding

The funding for CNIG comes from four main sources:

- European funds, through the 4º Quadro Comunitário de Apoio / Plano de Desenvolvimento Regional (4th Community Support Framework / Regional Development Plan);

- state budget;

- research under contract;

- payment for services provided by CNIG.

2.3.2 System management

Awareness / marketing

Since SNIG was launched in fact, in 1995, annual meetings have been carried out with representatives of all the municipalities in order to keep them informed about system aims and developments, and to motivate them to join the system; with this in mind, activity reports issued by the system are sent to all existing and to some potential partners.

Factors affecting potential partners' decision to join the System

The existing asymmetries not only among regions, but also between urban and rural areas, the coastline and the hinterland, are reflected in the disparity of resources of each of the 305 municipalities. Scarcity of resources usually results in simple structures, few staff and a lack of specialised skills.

"Rich" municipalities are, therefore, more likely to have prepared their territorial plans and to have submitted them for government approval, which is a "sine qua non" condition to apply to PROSIG; they also tend to be more familiar with information and communication technologies, and are more aware of the advantages of geographic information systems and therefore better prepared to join a system such as SNIG.
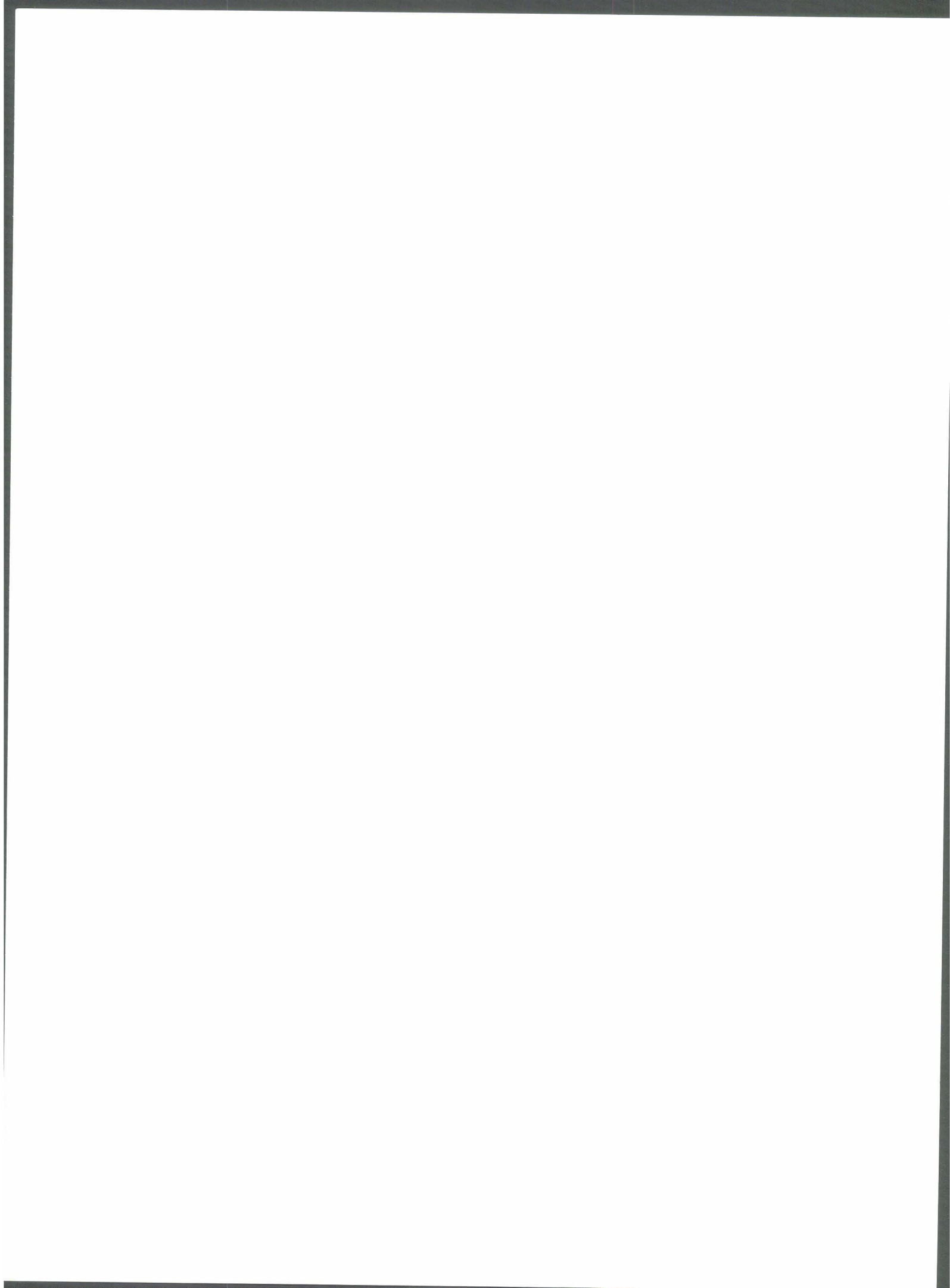
Interviews with system managers confirmed these assumptions and provided insight into the difficulties more commonly faced by the municipalities that aspire to become local nodes of the system. These difficulties were broadly described as having to do with few staff, lack of technological skills and, most importantly, the absence of digitised cartography. As referred to by one of the system managers interviewed (Manuela Mourão, from CNIG), there has been little investment in the preparation of cartography during the last years, and it is impossible to manage the territory without cartography. Reference was also made to the high cost of producing cartography (Manuela Mourão, from CNIG and Mota de Sá, from the Municipality of Lisbon), and to the fact that there is no funding available for the production of large-scale digitised cartography.

Factors other than availability of resources may also influence the decision to join the system. Since one of the basic requirements for joining SNIG is the willingness to share computer applications and information, some organisations may not be willing to do this, if they find that choice weakens their competitive advantage. However, this does not apply to the municipalities. One of the system managers (Manuela Mourão, from CNIG), remarked that municipalities in more advanced positions seem eager to share their expertise and experience with other, less advanced municipalities.

Policy concerning the commercialisation of geographic information

CNIG, the central node of the system, provides the facilities needed to enable system partners to make their information available via the network but does not interfere with the decisions to charge or not charge for the use of that information; this is entirely the producer's responsibility.

Present and potential partners who are willing to charge for the information they provide have two options at present: either wait until the system has built in the facilities needed to make payments safe through the net, or accept orders through the net and charge their clients directly. Interviews with system managers testified to the occurrence of positions of both kinds among present and potential partners of SNIG.

Evaluation

System managers consider that SNIG represents an advanced level of organisation and dissemination of geographic data, compatible with the current level of development of the information technologies. It is integrated in the INTERNET and was conceived as a fully distributed network, integrating almost all the agencies that produce geo-data, either at national, regional and local levels, in Portugal.

One of the system managers interviewed (Rita Nicolau, from CNIG), stressed how important it was for the development of the system, to be integrated in the INTERNET, since this technology allows a number of developments,
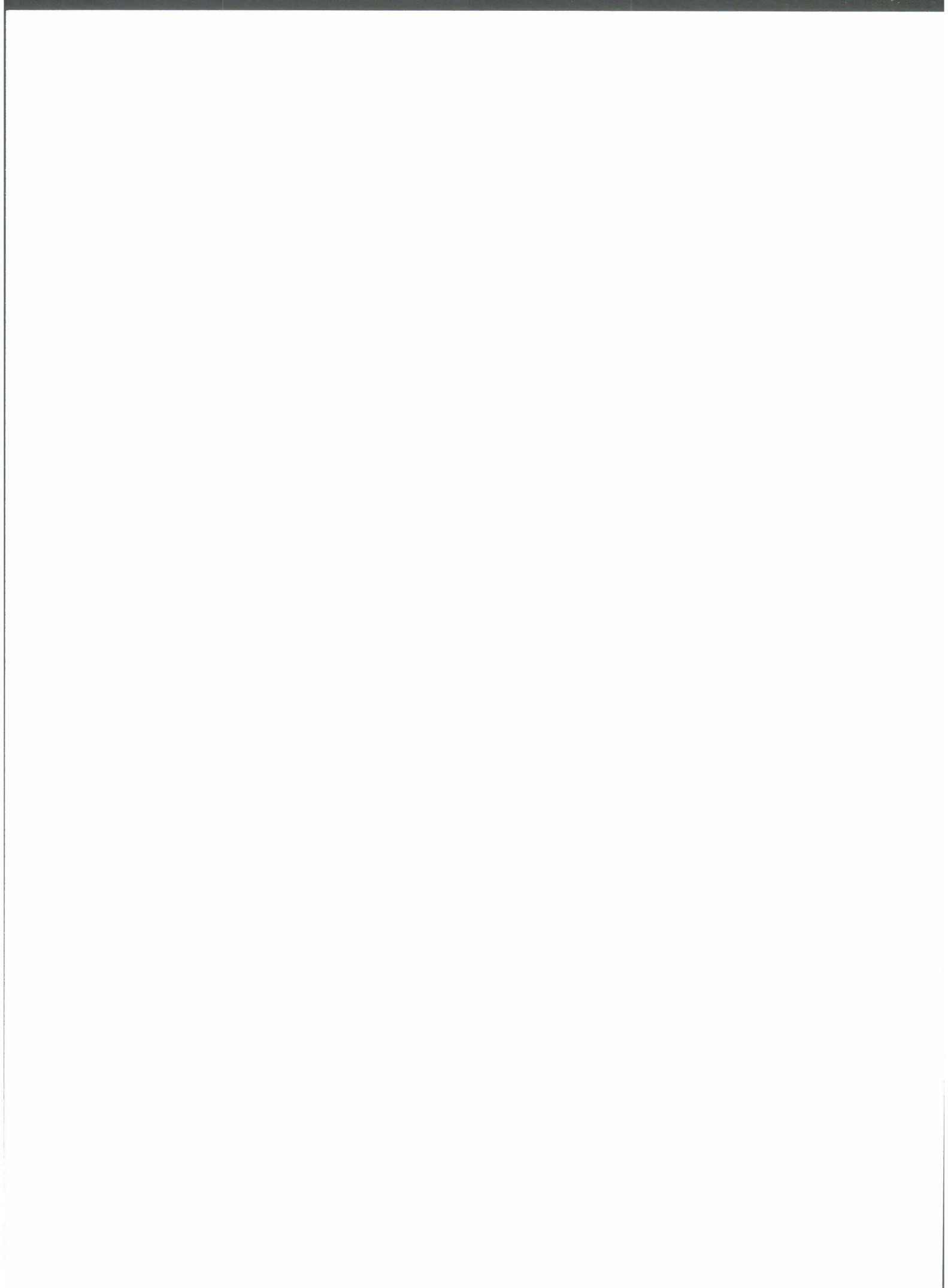
including the transmission of images, which is of great importance for geographic information.

2.3.3 Staff training

Although there is not a specific training programme to be delivered to the staff of organisations that have joined the system, a set of specific courses has been developed, covering systems management, network management and internetworking, router software configuration, HTML interface design for relational databases, and on commercialisation and security. While some of the training - that related to specific software packages - is provided by hardware and software producers/ vendors, other courses are taught by teaching staff from the Technical University of Lisbon.

CEFA - *Centro de Estudos e Formação Autárquica* (Centre of Studies and Training for Municipal Staff) aims at developing studies and provide training for municipal staff. A protocol was negotiated between CEFA and CNIG, on which terms CEFA organises training courses for the municipalities and CNIG provides the tutors for the courses on geographic information systems.

The regional nodes located at the CCRs - *Comissões de Coordenação Regional* (Regional Co-ordinating Commissions) play a key role in the liaison with their respective municipalities; their knowledge of the regional issues and of the specific conditions of each municipality is also helpful in the detection of training needs. Interviews with CNIG managers pointed to this important component of the activity of the CCRs and clarified that the training courses promoted by them are funded by PROFAP - *Programa de Formação da Administração Pública* (Training Programme for the Public Administration). However, the heads of municipal GIS units interviewed made clear that they had little contact with their CCR, and that their GIS had been developed in an independent way. But the cases of these two large municipalities are exceptional, and are explained in 5.7.5.. Had we had the possibility to contact smaller, poorer municipalities, and we would most likely have confirmed the views of the CNIG managers.

In the course of the interviews carried out with system managers, it became clear that some of the technical staff of the CCRs who had received specialised training in GIS had left the Commissions in order to take better paid jobs in private companies. This was attributed to the scarcity of training in this field. CNIG is presently acknowledged as a "centre of excellence" in this area: postgraduate trainees and other specialised staff who are trained there, are immediately approached and offered contracts by companies with an interest in geographic information systems. According to the same sources, university education in this field is presently limited to a MSc in Geographic Information Systems, by the Technical University of Lisbon. Other universities have R&D projects in this field and others are developing curricula, but they are just plans for the time being.

2.3.4 Technological issues

The technological resources that PROGIP funds make available for those municipalities signing a PROGIP protocol, include provision for a PC with CAD software and creation of a database.

PROSIG is more ambitious and aims at the creation of the local GIS nodes. The municipalities and associations of municipalities that have signed a PROSIG protocol will use the GIS nodes for supporting territorial planning and territorial management.

One of the main difficulties affecting further development of SNIG is the lack of digitised cartography. This aspect has been highlighted by the manager of the specific programmes, PROSIG and PROGIP, and also by the heads of the GIS units at the Municipalities of Oeiras and Lisbon. These two interviewees - heads of GIS units António Fernandes, from the Municipality of Oeiras, and Mota de Sá, from the Municipality of Lisbon - declared that most of the cartography of Portugal is outdated. Produced after the Second World War, only limited updating has taken place. This is particularly important for municipalities with a great pace of urbanistic growth, such as that of Lisbon.

These same interviewees made clear that the first step to be taken, in order that GIS could be used for territorial planning, was the preparation of cartography in digital format in a more appropriate scale (1/10000). At present, both Municipalities of Lisbon and Oeiras have invested considerable funds in digital cartography. The majority of the other municipalities in the country will be supported by PROGIP for carrying out the digitisation of their Municipal Plans for Territorial Management.

The application of GIS to territorial planning is, therefore, being held up by the lack of digitised cartography. Although some municipalities, in addition to Lisbon and Oeiras, already have their GIS, they are in an early stage of development and cannot yet make their information available through the network.

2.3.5 Impact of GIS on territorial planning and territorial management

As described above, the creation of SNIG is recent (1990), and the implementation of the specific programmes that enable the system to support the digitisation of municipal plans and to encourage the creation of GIS in the municipalities are even more recent (1994), as is the very implementation of the SNIG network (1995).

The only cases of municipalities where GIS are operational, are the cases of two large municipalities - Lisbon-city and Oeiras, in the outskirts of Lisbon - where the process of studying, developing and implementing the GIS began even before the creation of SNIG. In fact, awareness towards the potential of
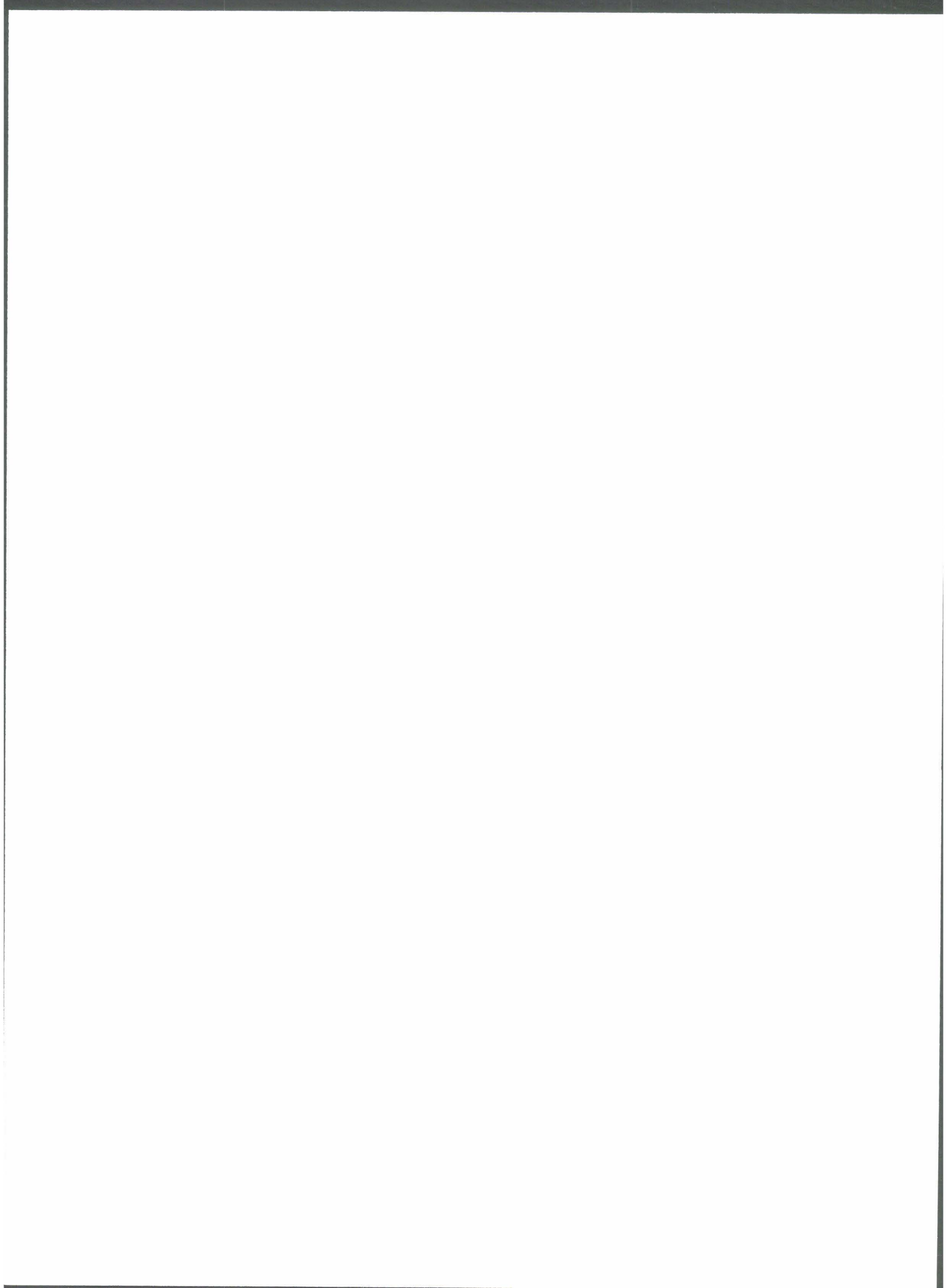
GIS seems to have started among national organisations involved in territorial planning and territorial management only about ten years ago.

The Municipality of Lisbon

The head of the GIS unit of the Municipality of Lisbon, Mota de Sá, described a long and tortuous process that eventually led to the gradual implementation of the local GIS. A core factor in the decision to digitise the municipal cartography was the evidence provided by a study carried out by this head of unit, concerning the immense costs brought in by the lack of updated digitised cartography. The development of the local GIS emerged afterwards as a logical sequence. However, the huge size of this municipality and the considerable degree of autonomy of each municipal department posed complex organisational problems that delayed the process and made the implementation of the system difficult and slow. It became operational only in the beginning of the current year.

There are about ten nodes of producers / users of geographic information in the organisation as a whole. The central node is the GIS unit, where five people "using more sophisticated equipment collect, clean, make compatible and put together" the information provided by those ten nodes. The resulting product is then redistributed and made available to all who need it.

There is no feedback available so far that may provide management indicators. More important, there is no indication of a direct impact of the GIS on the municipal activity of territorial planning and territorial management. The only feedback perceived by the head of unit refers to the reaction of the organisational producers and users of geographic information, who are pleasantly surprised by the potential of GIS and by the value added to each sectoral contribution after being integrated with the other contributions.

The Municipality of Oeiras

The process of development of GIS in this municipality differed radically from the one described above: in spite of having started later, this was the first municipality in this country to launch a fully operational geographic information system The difference was rooted mainly in the clear support of the President of the municipality, from the very beginning. Other factors may have helped, such as the smaller size of the municipality. When asked which sort of organisational problems had affected the development of the system, the head of this municipal GIS mentioned "people's mentality" and added:

> "No service can impose a computer application on another service. Especially when this implies the elimination of documents which unitary cost may be   1 PTE, while the cost of processing it may go up to 2000 PTE. Each head of service is responsible for the decision whether this or that paper may be eliminated or not. There are administrative circuits that have to be revised and this is not easy". (António Fernandes, p.5)
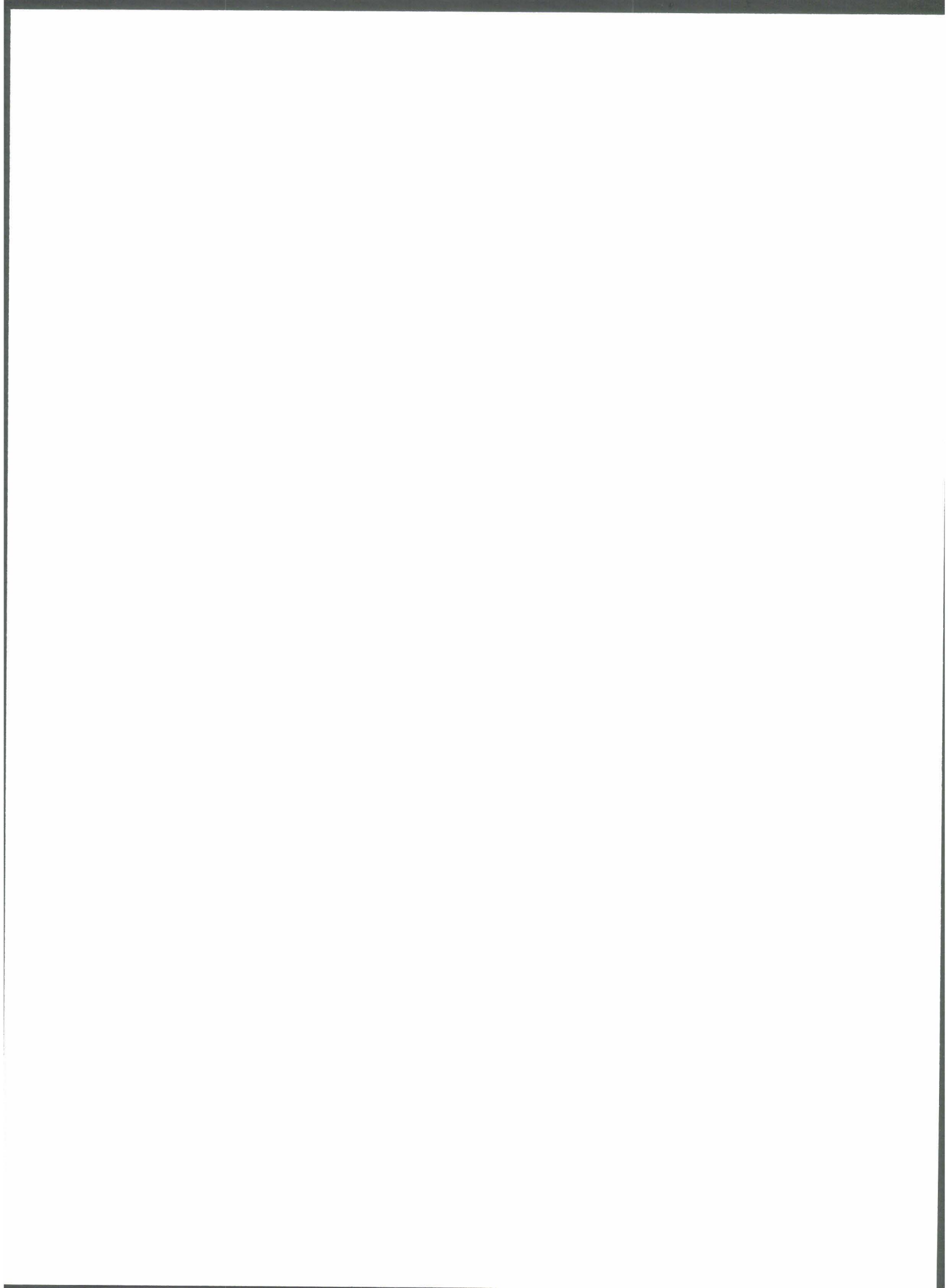
Anyway, the system developed fast and, as an example of its success, this head of unit referred that the Municipality of Oeiras had the highest number of projects supported by European funds, in the district of Lisbon, even though all the other seventeen municipalities had access to exactly the same possibilities. In our opinion, this may reveal an incipient positive economic outcome of the use of GIS technology.

No information was available concerning the utilisation of the system (who uses the system more often, what kind of information is demanded more frequently), but the most important internal users were clearly identified with two municipal departments. A considerable amount of information of interest to the local community is available via the Internet, such as the municipal guide, including all the maps relating to collective equipments, services and commercial units. This information, however, has little to do with the geo-referenced information that characterises a GIS, which is mainly for internal use of municipal staff.

Impact of ISSA on the economic and social development

As for ISSA in general, the interviewee from the Municipality of Lisbon reported some services provided by the municipality to the local community or to anyone visiting Lisbon, such as the cultural agenda of the city of Lisbon. The geographic information system itself provides information of interest to the community in general, such as the location and characteristics of the municipal green areas - natural parks and gardens - and, in some cases, the timetable for guided tours. The user of the system can "travel" in the park and ask questions about specific bits or specific matters. The same works for the location and characteristics of collective equipments such as hospitals and schools.

Our key-informant from the Municipality of Oeiras referred to the availability, through the Internet, of the municipal guide, including all the maps relating to collective equipments, services and commercial units, as mentioned above. More important than that, is the already available service of suggestions and complaints, via the Internet, and the project, which is in an advanced state of development, to launch a service, also via the Internet, of requests for information (about issues such as garbage collection, green areas, beaches, side-walks or parking places) and reception of complaints from citizens; photographs and names of each head of unit of the municipal services will be displayed, so that ordinary citizens can question directly each of them, concerning the outcome of their requests or of their complaints.

Although it is not possible, for the time being, to assess the economic impact of ISSA in general, either at regional or at local level, some evidence begins to emerge about social impacts at local level, even if at a very small scale so far. In the municipalities approached, it is getting easier for citizens to exercise their right to keep informed about issues of direct interest for them,

directly from their homes. By making municipal information available in this way, the municipalities are getting closer to their local communities.

2.3.6 Conclusions

1. The rate of adoption of ISSA in the municipalities is not uniform. Some have systems running and keep on finding new applications for GIS, others have systems planned or starting up. Based on the cases analysed, it is possible to anticipate that some municipalities may face difficulties due to organisational problems and the lack of commitment of some of the local governments in the implementation of ISSA tools.

2. There is a lack of qualified staff to exploit the GIS technologies due to limited training opportunities available and to the chronic lack of human and material resources in the municipalities. This is a big hurdle to overcome, when trying to implement the use of ISSA for regional planning.

3. Lack of digital cartography is delaying the use of geographic information systems in Portugal. Although regionalisation is at present an issue in this country, there is a need for more investment in the production of digitised cartography in a more accurate standard scale (1/10000).

4. The recent development of SNIG allowed a top down approach creating a seamless networked system distinct from that of other countries where there are disparate systems employing different standards, which are difficult to integrate.

5. It is still early days in the implementation of SNIG in Portugal, so very little can be said about its economic benefits or the impact on territorial planning and territorial management. The information market in Portugal is still embryonic and some agencies are finding difficult to share the information and become active members of SNIG.
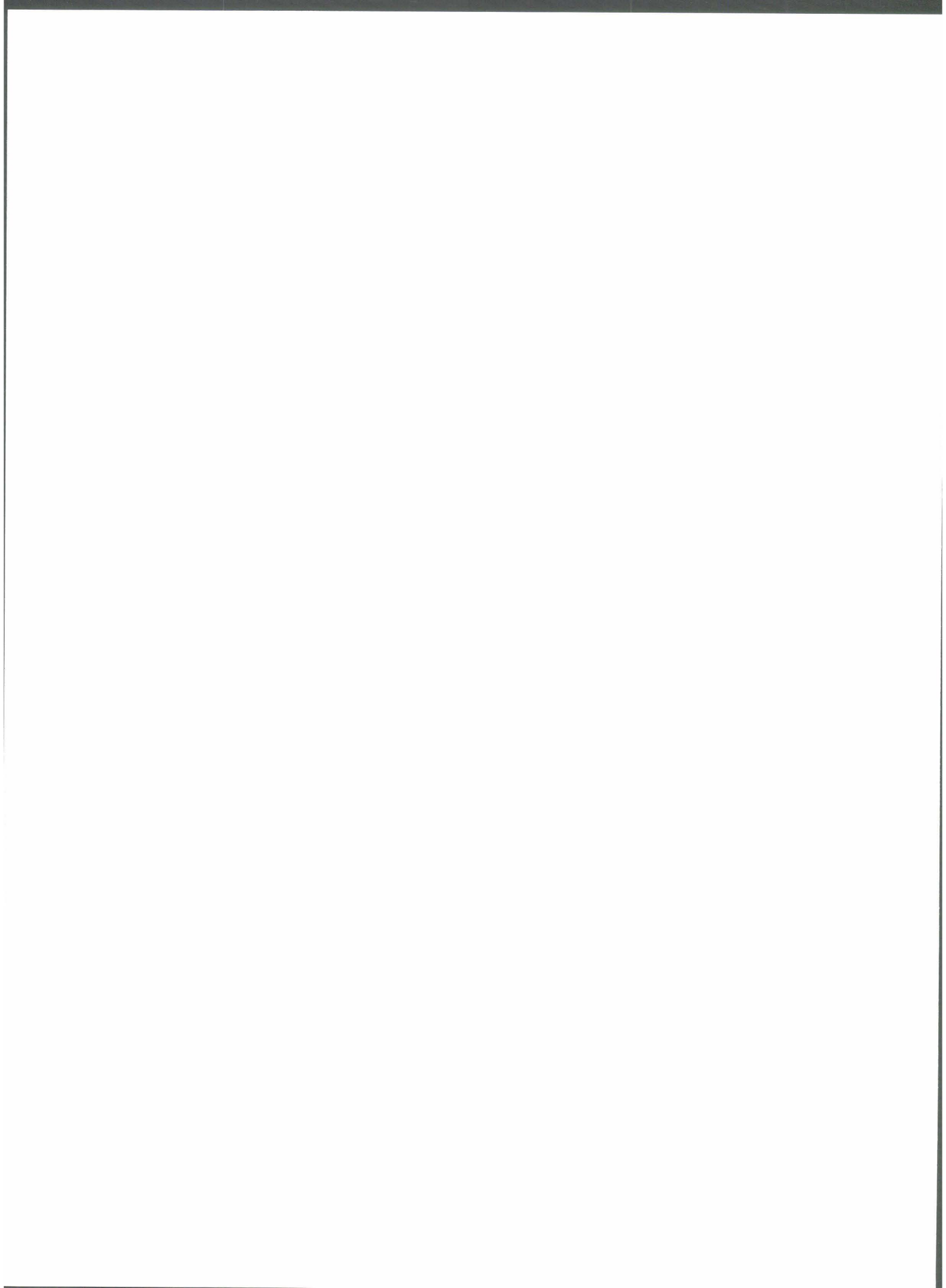
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Video

Mangualde 2000: Demonstrador de Tecnologias e Serviços. Programa Portugal Telecom Eficiente. Direcção Central de I&D/ CET.

ANNEX II: Acronyms

CCR - Comissões de Coordenação Regional *(Commissions of Regional Co-ordination)*

CCRA - Comissão de Coordenação da Região do *Alentejo (Co-ordinating Commission for the Alentejo Region)*

CCRA - Comissão de Coordenação da Região do Algarve *(Co-ordinating Commission for the Algarve Region)*

CCRC -Comissão de Coordenação da Região Centro *(Co-ordinating Commission for the Centro Region)*

CCRLVT - Comissão para a Coordenação Regional de Lisboa e Vale do Tejo *(The Regional and Co-ordinating Commission for the Region of Lisbon and Tagus Valey)*

CCRN -Comissão de Coordenação da Região Norte *(Co-ordinating Commission for the North Region)*

CET - Centro de Estudos e Telecomunicações *(The Centre of Studies and Telecommunications)*

CEFA - Centro de Estudos e Formação Autárquica *(The Centre of Training for Municipal Staff)*

CNIG - Centro Nacional de Informação Geográfica *(The National Geographic Information Centre)*

FEDER - Fundo Europeu de Desenvolvimento *Regional (European Fund for Regional Development)*

IBC -Comunicações de Banda Larga *(Information Broadband Communications)*

IBCN - Rede de Comunicações de Banda Larga *(Information Broadband Communications Network)*

MEPAT - Ministério do Equipamento, Planeamento e Administração do Território *(Ministry of Equipment, Planning and Administration of Territory)*

NUTS - Nomenclatura das Unidades Territoriais *(Nomenclature of Territorial Units for Statistics)*

PDM - Plano Director Municipal *(Directory Municipal Plan)*

PDR - Plano de Desenvolvimento Regional *(The Plan for Regional Development)*

PMOT -Plano Municipal do Ordenamento do Território *(Municipal Plan for Territorial management)*

PORLVT -Programa Operacional da Região de Lisboa e Vale do Tejo *(Operational Programme for the Region of Lisbon and Tagus Valley)*

PP - Planos de Pormenor *(Circumstantial Plans)*

PROFAB - Programa de Formação da Administração *Pública (Training Programme for the Public Administration)*

PROGIP - Programa de Apoio à Gestão Informatizada dos Planos Municipais de Ordenamento do Território *(Support Programme for Computerised Management of the Municipal Plans for Territorial management)*

PROSIG - Programa de Apoio à Criação de Nós Locais do Sistema Nacional de Informação Geográfica *(Support Programme for the Creation of Local Centres of The National Geographic Information System)*

PROT- Plano Regional de Ordenamento do *Território (Regional Plan for Territorial management)*

PU - Plano de Urbanização *(Urbanisation Plan)*

QCA - Quadro Comunitário de Apoio *(Support Community Framework)*

RDIS - PME's - Rede de Dados e Integração de Serviços em Pequenas e Médias Empresas *(Data Network and Services Integration in Small and Medium Enterprises)*

SIG -Sistemas de Informação Geográfica *(Geographic Information Systems)*

SNIG - Sistema Nacional de Informação Geográfica (National Geographic Information System)
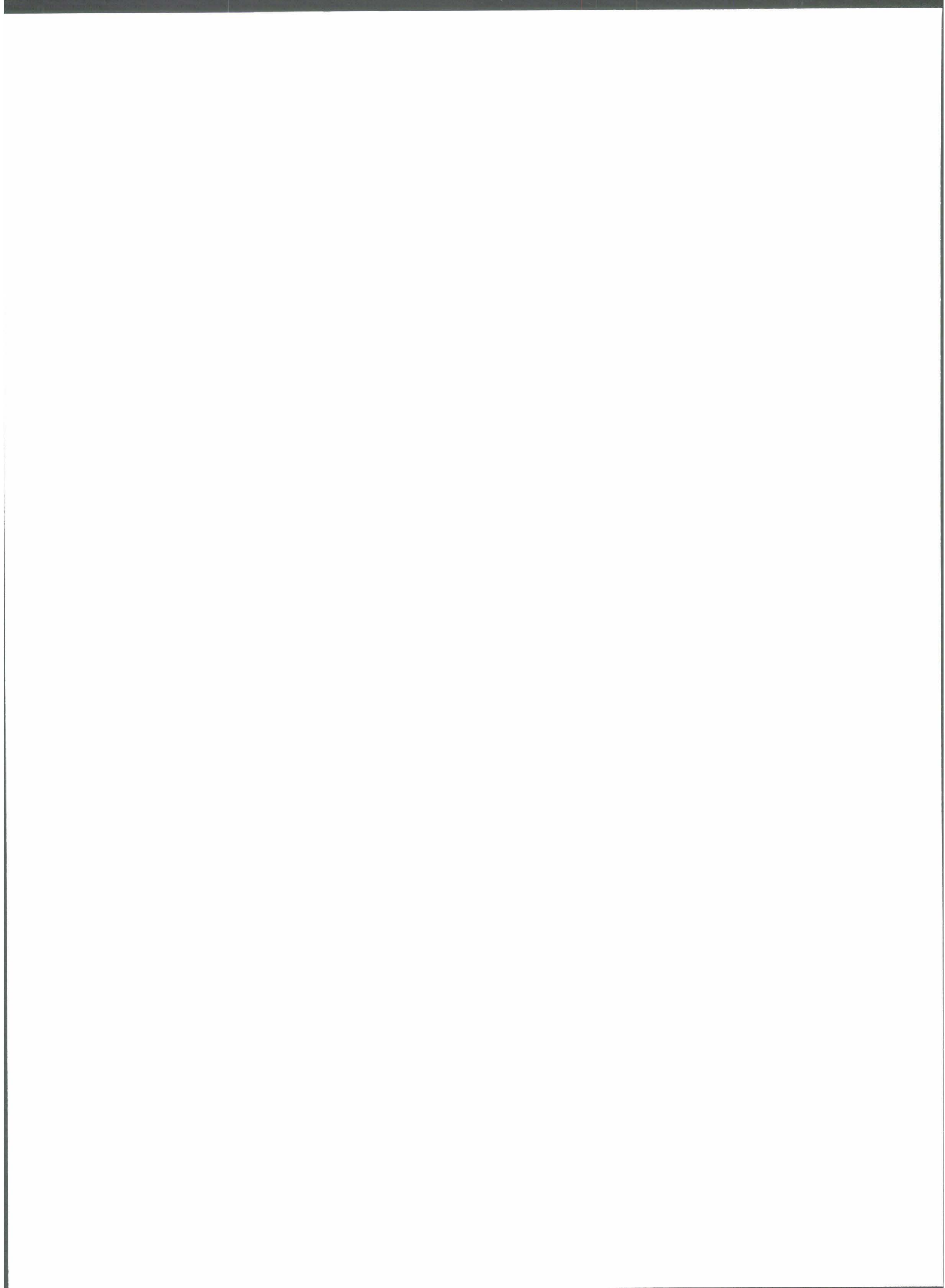
ANNEX III: Interviewees

Interviewee: Eng° António Barreiros

Organisation: Câmara Municipal de Mangualde

Address: Câmara Municipal de Mangualde

   3530 MANGUALDE

Phone number: 032-611699

Fax number: 032-623958

Interviewee: Dr. António Bernardo Marques Marcelino

Organisation: Associação Cultural Azurara da Beira

Address: Associação Cultural Azurara da Beira

   Rua 25 de Abril

   3530 MANGUALDE

Phone number: 032-622170

Interviewee: Dr. António Fernandes

Organisation: Câmara Municipal de Oeiras

Address: Tagus Park

   Núcleo Central, Sala 207

   2780 OEIRAS

Phone number: 01-4211427

Fax number: 4211428

Interviewee: Sr. Bruno Miguel Gonçalves Pereira

Organisation: Demonstrador Mangualde 2000

Address: Câmara Municipal de Mangualde´

Projecto Mangualde2000

3530 MANGUALDE

Phone number: 032-612138

Fax number: 032-612141

Interviewee: Engª Lusitana Fonseca

Organisation: Centro de Estudos de Telecomunicações (CET)

Address: Rua Engº José Ferreira Pinto Basto

3800 AVEIRO

Phone number: 034-381831

Fax number: 034-24723

Interviewee: Engª Manuela Mourão

Organisation: Centro Nacional de Informação Geográfica (CNIG)

Address: Braamcamp, 82, 4º

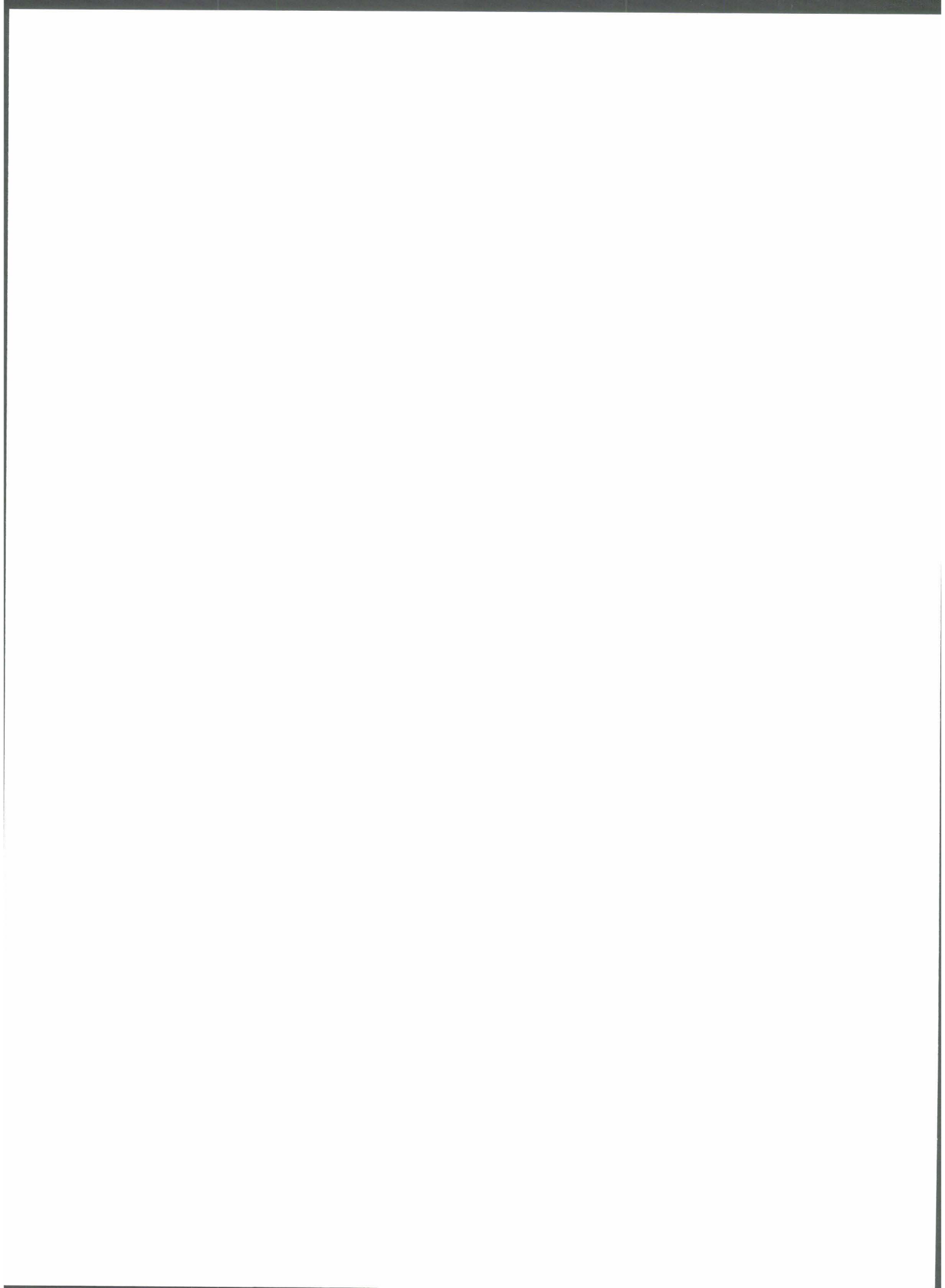1250 LISBOA

Phone number: 01-3863664

Fax number: 01-3862877

Interviewee: D. Maria Adelina Figueiredo

Organisation: Centro Social da Cunha Baixa

Address: Centro Social da Cunha Baixa

Cunha Baixa

3530 MANGUALDE

Phone number: 032-612156

Fax number: 032-612157
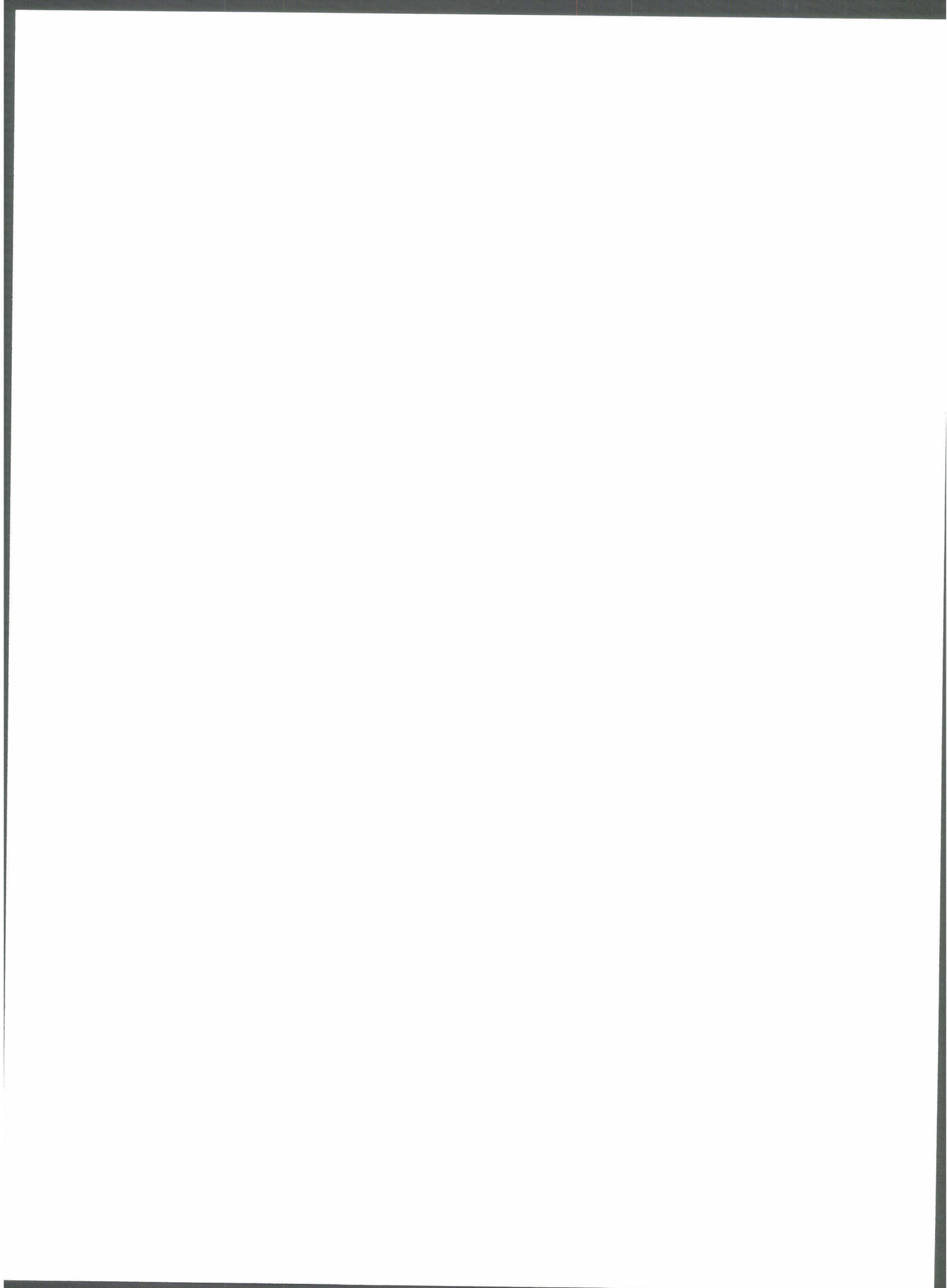
Interviewee: Engº Mota de Sá

Organisation: Câmara Municipal de Lisboa

Address: Rua de São Bento, 640

   1250 LISBOA

Phone number: 01-3875175

Fax number: 01-3882442

Interviewee: Dra. Rita Nicolau

Organisation: Centro Nacional de Informação Geográfica (CNIG)

Address: Braamcamp, 82, 5º Esq.

   1250 LISBOA

Phone number: 01-3863664

Fax number: 01-3862877

Interviewee: D. Teresa Pinto

Organisation: Junta de Freguesia de Santiago de Cassurrães

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   Santiago de Cassurães

   3530 MANGUALDE

Phone number: 032-612160

Fax number: 032-612161

Interviewee: Dra. Teresa Pinto/ Dra. Cristina Saraiva

Organisation: Associação de Desenvolvimento do Dão (A.D.D)

Address: R. Alexandre Herculano
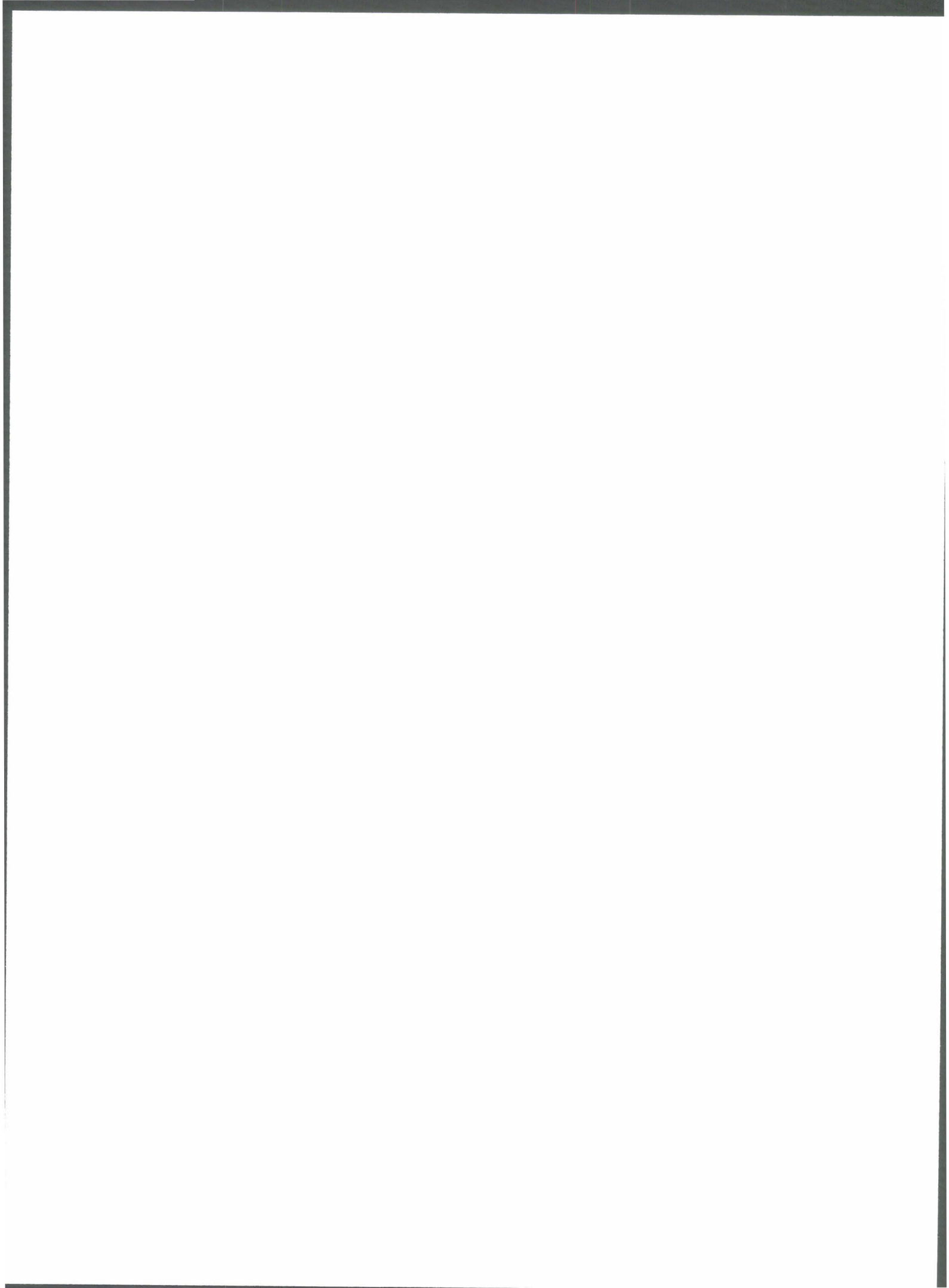
Apartado 17

3550   PENALVA DO CASTELO

Phone number: 032-642632

Fax number: 032-642669
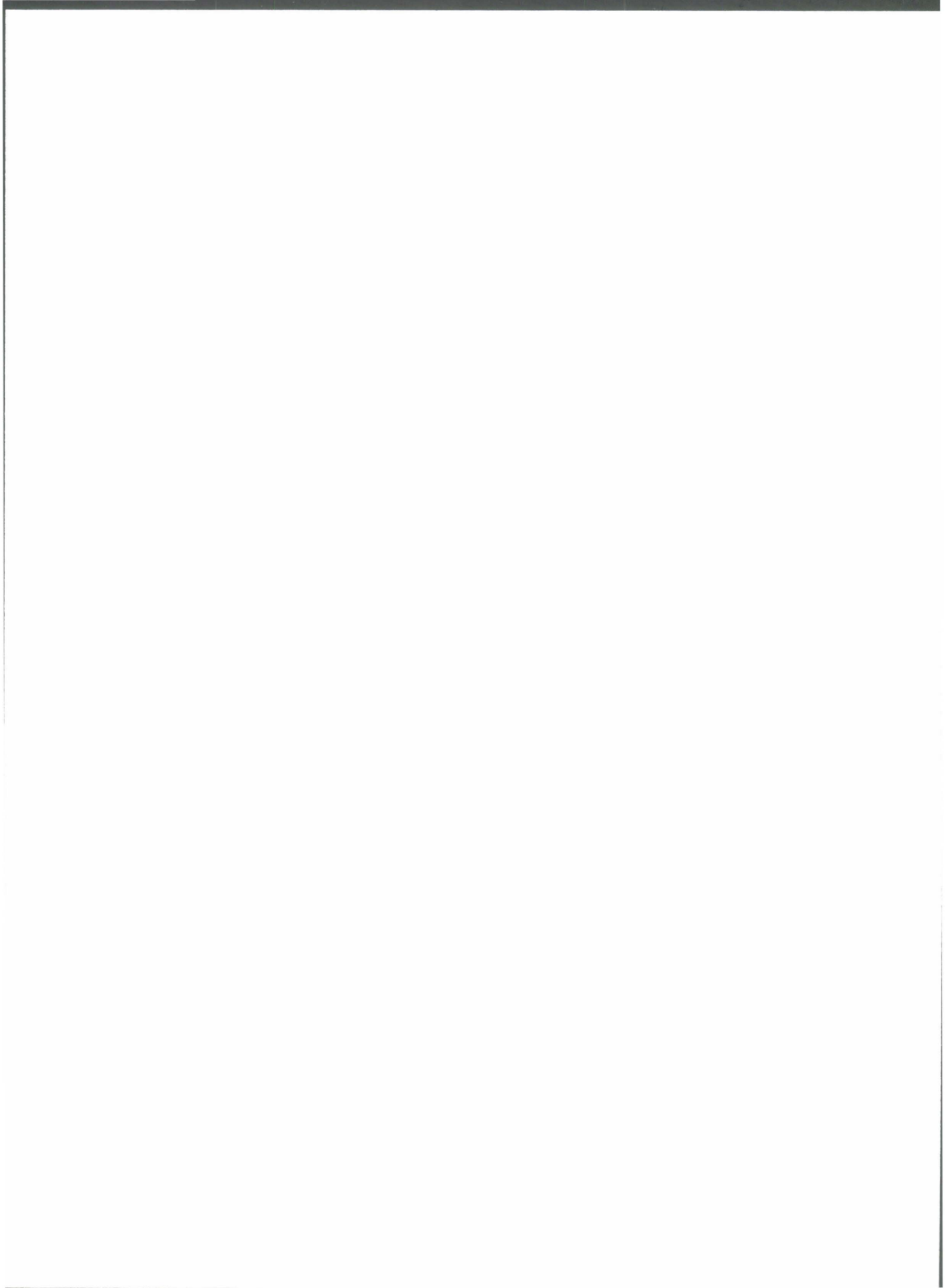
ANNEX IV: Organisations contacted

Organisation: Associação Cultural Azurara da Beira

Address: Associação Cultural Azurara da Beira

   Rua 25 de Abril

   3530 MANGUALDE

Phone number: 032-612170

Organisation: Associação de Desenvolvimento do Dão (A.D.D)

Address: R. Alexandre Herculano

   Apartado 17

   3550 PENALVA DO CASTELO

Phone number: 032-642632

Fax number: 032-642669

Organisation: Câmara Municipal de Lisboa

Address: Rua de São Bento, 640

   1250 LISBOA

Phone number: 01-3875175

Fax number: 01-3882442

Organisation: Câmara Municipal de Mangualde

Address: Câmara Municipal de Mangualde

   3530 MANGUALDE

Phone number: 032-611699

Fax number: 032-623958
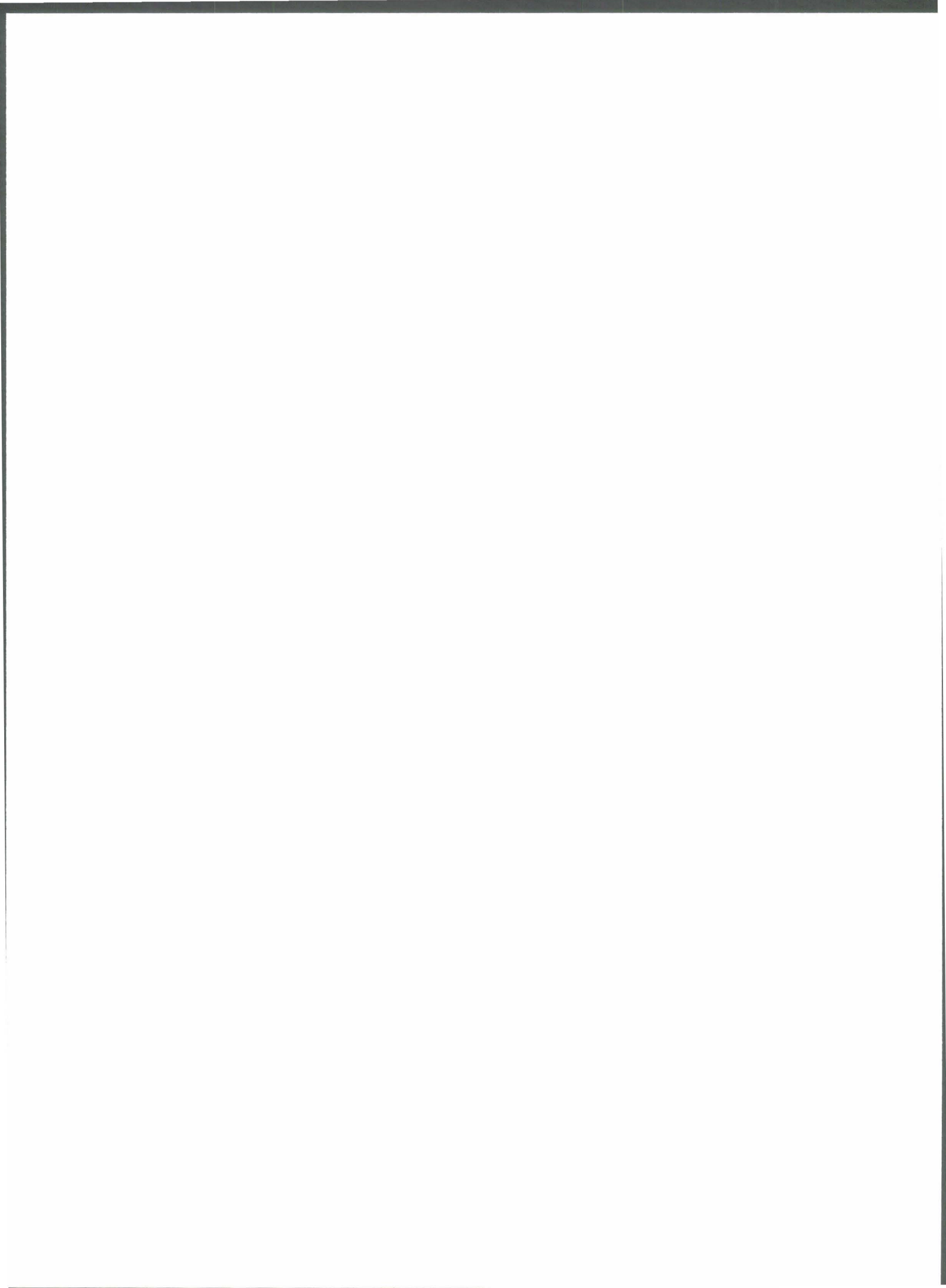
Organisation: Câmara Municipal de Oeiras

Address: Tagus Park

  Núcleo Central, Sala 207

  2780 OEIRAS

Phone number: 01-4211427

Fax number: 4211428

Organisation: Centro de Estudos de Telecomunicações (CET)

Address: Rua Eng° José Ferreira Pinto Basto

  3800 AVEIRO

Phone number: 034-381831

Fax number: 034-24723

Organisation: Centro Nacional de Informação Geográfica (CNIG)

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Phone number: 01-3863664

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Organisation: Centro Nacional de Informação Geográfica (CNIG)

Address: Braamcamp, 82, 5° Esq.

  1250 LISBOA

Phone number: 01-3863664

Fax number: 01-3862877

Organisation: Centro Social da Cunha Baixa

Address: Centro Social da Cunha Baixa

Cunha Baixa

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Organisation: Demonstrador Mangualde 2000

Address: Câmara Municipal de Mangualde´

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Fax number: 032-612141

Organisation: Junta de Freguesia de Santiago de Cassurrães

Address: Junta de Freguesia de Santiago de Cassurrães

Santiago de Cassurrães

3530 MANGUALDE
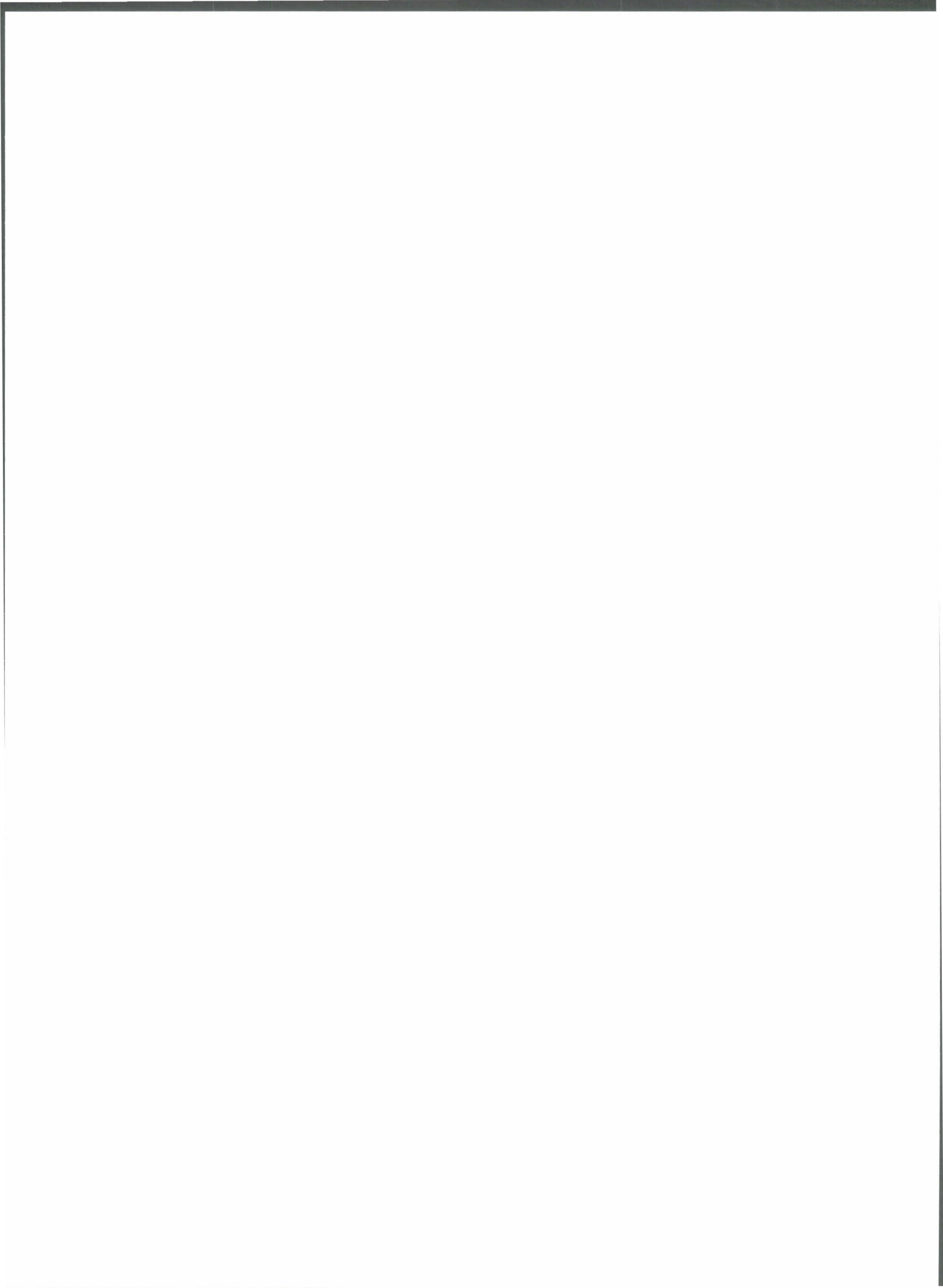
Phone number: 032-612160

Fax number: 032-612161

The impact of the information
society on the
territorial planning of the
less favoured regions

Annex C
Greece country report

May 1997

City Liberal Studies,
Thessaloniki

The impact of the information
society on the
territorial planning of the
less favoured regions

Greece country report

March 1997

City Liberal Studies,
Thessaloniki
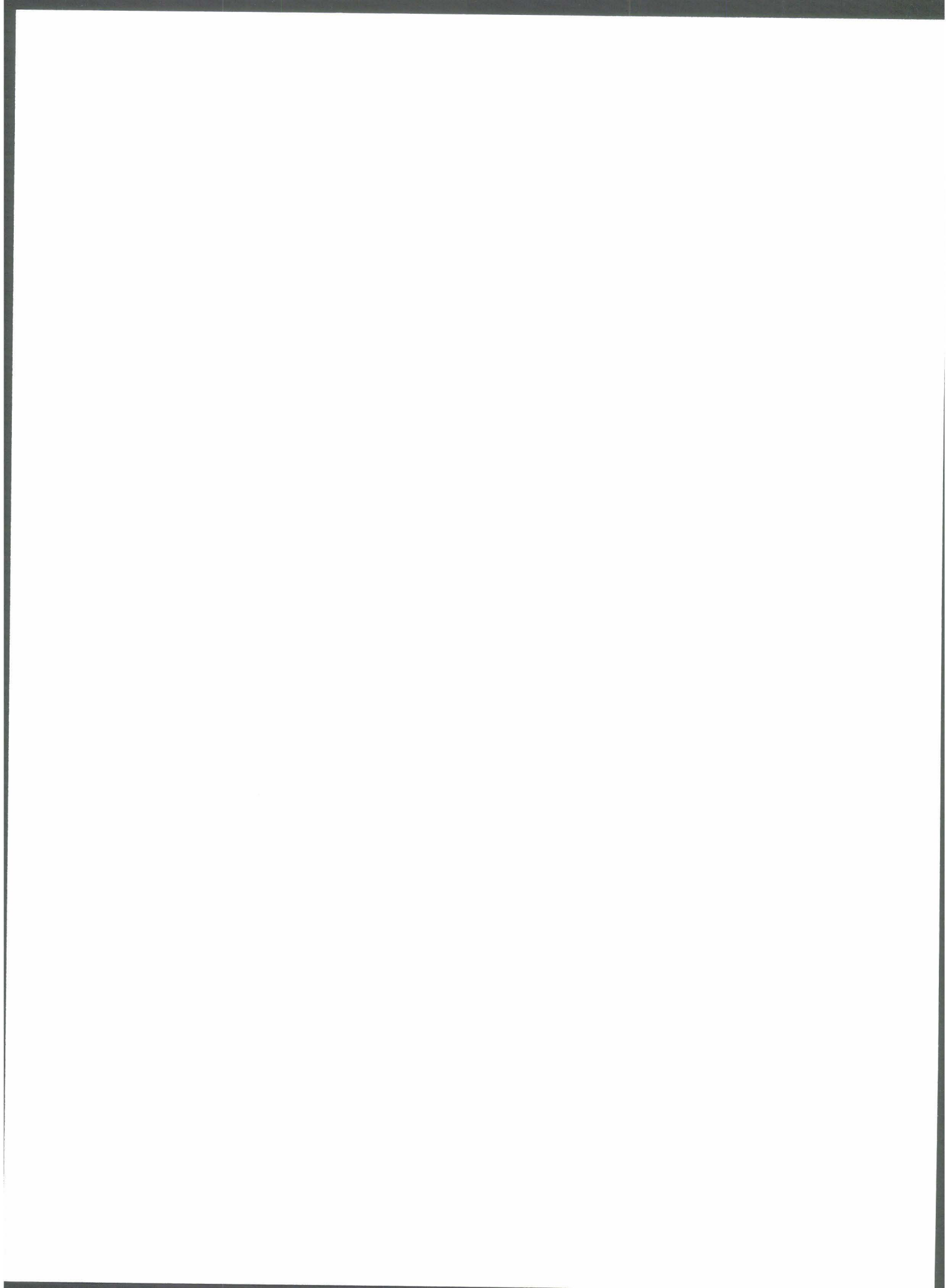
Contents

1. INTRODUCTION

1.1 General Trends of the Economic Development in Greece.

The following table summarises the main economic figures for Greece

Table 1 Greece - Basic Economic Figures

SURFACE*	13.195.741,3
POPULATION*	
Total	10.529.900
Active	3.886.157 37,7%
EMPLOYMENT*	
Total	3.571.957
Primary sector	668.776 18,7%
Secondary sector	852.946 23,9%
Tertiary sector	1.843.612 51,6%
UNEMPLOYMENT*	
Total	314.200
% Active	8,1
GDP**	
Total	14.422.533
Primary sector	1.982.789 13,7%
Secondary sector	3.714.774 25,8%
Tertiary sector	8.724.970 60,5%

*Source: NSSG, Population Census 1991.
** Source: NSSG, National Accounts, current prices, millions GRDs, 1993.

During the last 20 years, the Greek economy has undergone important changes. These changes are directly associated with two major evolutions at the international level. The first is the shifting patterns of international competition, and the second is the integration of the country as a full member of the European Community. The main characteristic of these changes is the dramatic reduction of the GNP growth rates. During the 1960-70 period, Greece was ranked second among all the OECD countries, by using this criterion. In comparison, using the same criterion, Greece was in the last position among the same countries during the 1980-90 period.
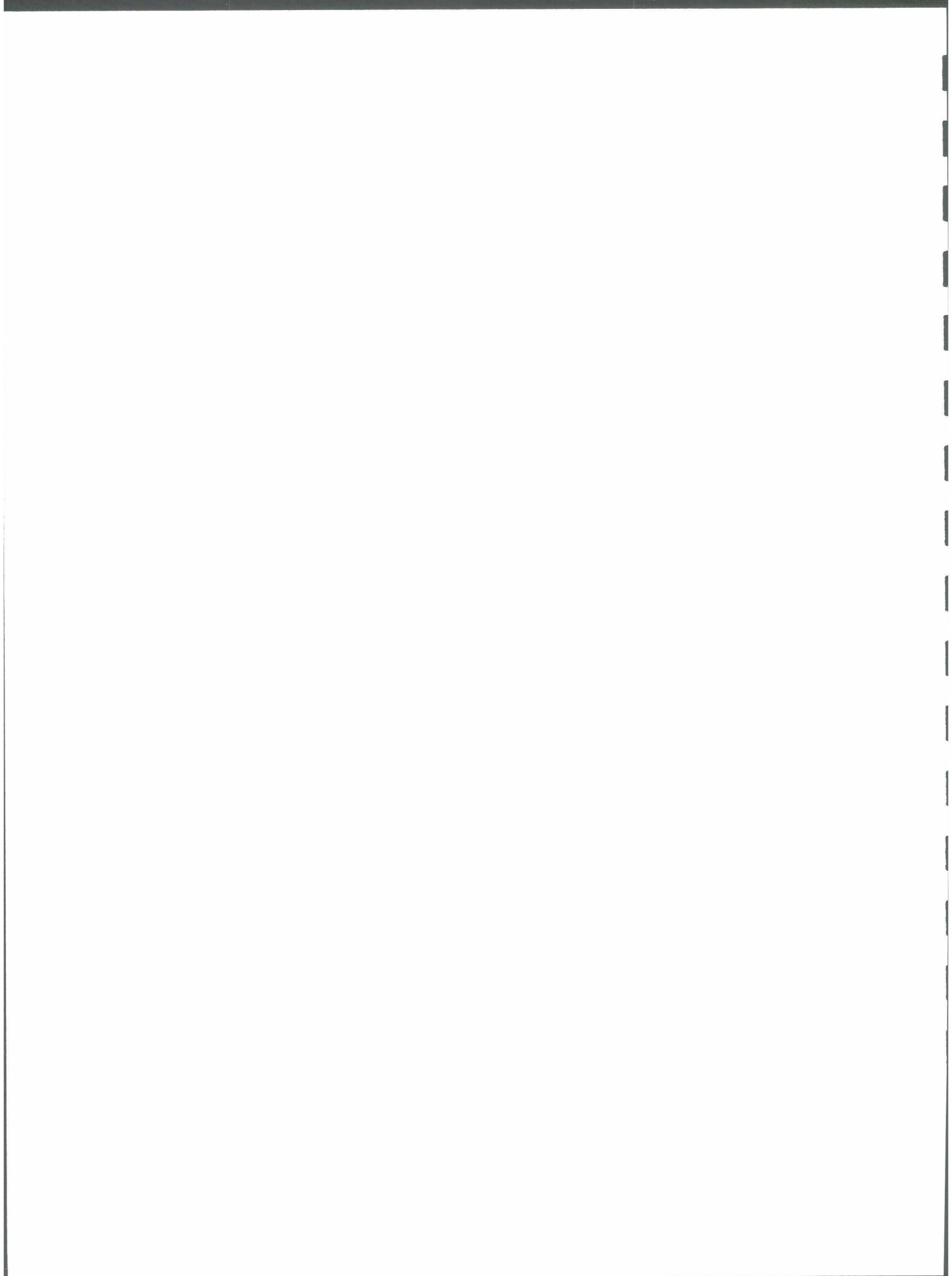
We can observe the same situation by comparing the Greek performance with that of the other European countries. Greece was not able to diminish the distance that separates itself from the other European countries and it was overtaken by Portugal and Ireland. It is worth mentioning that there was a slight reduction of regional inequalities among the more and the less developed regions during this crisis period. An explanation of this phenomenon should be based rather on the low growth rates of the core regions than on the dynamism of the less developed ones.

1.2 Telecommunications/information profile

The profile of the Greek Telecommunication sector is presented in the Table 2. The sector is dominated by the Hellenic Telecommunications Organisation SA. (OTE), a public organisation which has the legal monopoly for the great majority of telecommunication services.

Table 2: Telecommunications Sector Profile, Greece

|	1996**	1997*	1998*	1999*	2000*
Number of teleph.lines***	5320	5460	5585	5695	5800
Teleph lines/inhab.***	0,505	0,518	0,530	0,540	0,550
New tel.connections	170	140	125	110	105
Network Digitalisation(%)	42.76	55.2	63.6	72.0	80.3
Switching Digitalisation(%)	70.1	75.3	n.a	n.a	n.a
Repairs/100 inhab.	35.7	31	n.a	n.a	n.a
Density of cellular teleph. systems (subscribers/1000inh.)	32.2	44.6	60.7	73.1	80.7

* projections
** estimations
*** thousands
Source: OTE, Annual Strategic Plan 1997

With a turnover representing 2,6% of the Greek GNP in 1994, OTE is charged with the modernisation of the telecommunication sector. According to its business plan, it is going to spend for this reason more than 1.25 trillion GDR in the period 1996-2000. The Telecommunication Development Plan of OTE, included in the Support Programme 1994-1999, follows the development strategy and its part of the Development Program 1994-1998. The proposed program's aims are: expansion of digital infrastructure in the whole country; digital transmission, multiplex switching; replacement of all analogue with digital technology; infrastructure; installation of
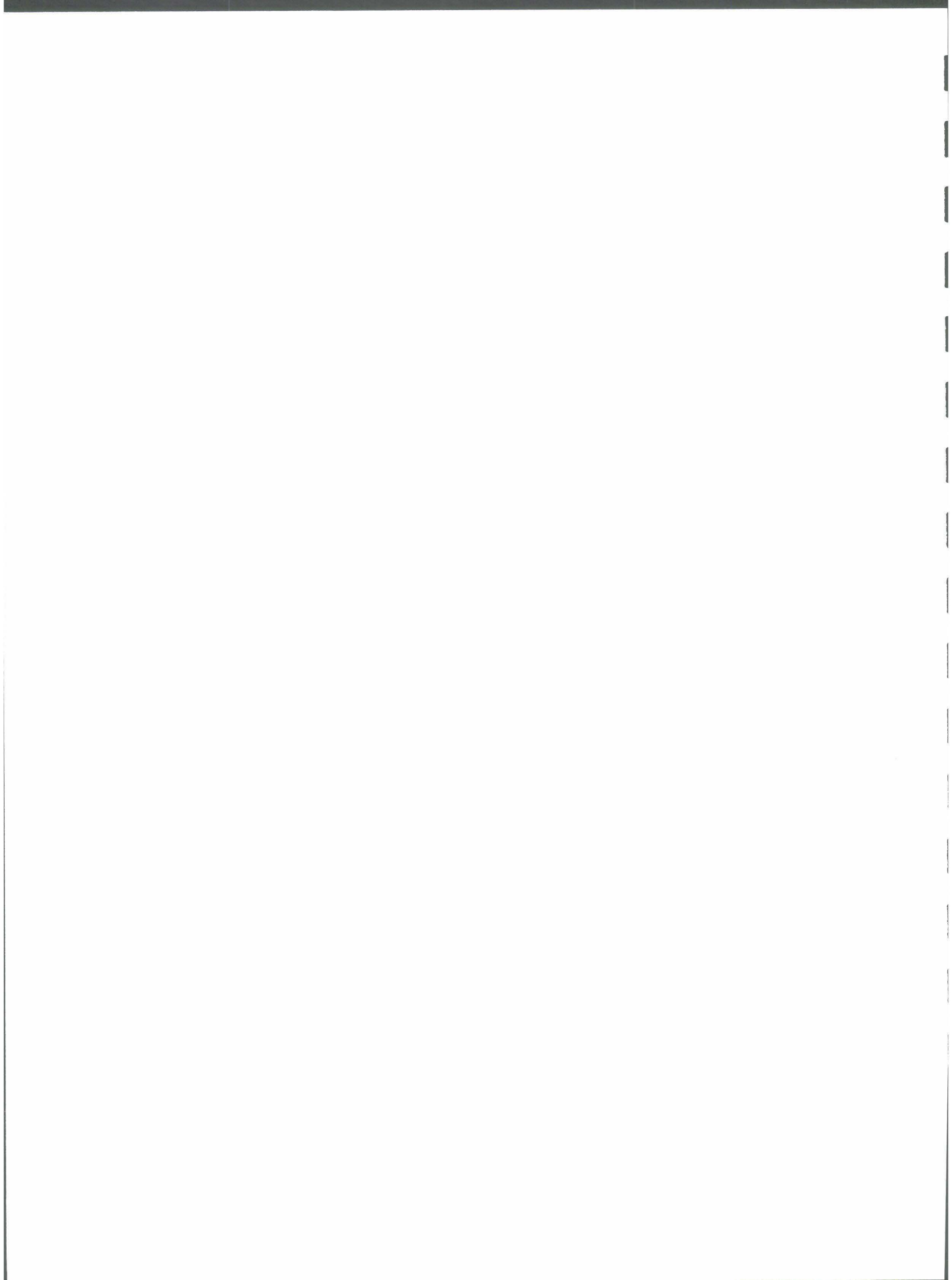
digital telecommunication rings, either fibre optic or fibre optic and radiolinks; evaluation of PDH and SDH systems; no further use of copper cables for the local network; open network provision CCITT and ETSI standards.

The main figures of the Greek Telecommunication Company is presented in Table 3 compared with the figures of other National Telecommunication Organisations.

Table 3: National Telecommunication Organisations - Comparative Data (1994)

	OTE	Telefonica	Portugal Telecom	Telia A.B (Sweden)	P.P.T. Telecom (Netherlands)	BT Group (UK)
Operating Margin (%)	29	15	24	3	23	22
Net Profit Margin (%)	19	7	6	2	11	13
Ret. on Equity (%)	37	8	17	6	24	21
Dept/Equity	1.21	1.68	1.55	1.58	0.96	0.73
Current Ratio	0.59	0.47	0.69	1.12	1.2	1.02
Turnover Growth Rate (%)	25	14	23	0.35	7	3
Pre-Tax Profit Growth Rate (%)	36	10	129	-46	3	39
Connections/employee	192	203	n.a.	184	231	197
Turnover/employee (USD)	79500	135000	n.a.	174000	220000	155000
Capacity Utilisation (%)	91	n.a	n.a	n.a	90	85
Network Digitalisation	31	47.8	n.a	80	100	80
Turnover/Connection (USD)	410	663	n.a.	665	950	803
Investment/Connect. (USD)	121	210	n.a.	127	198	122

Source: OTE, Business Plan, 1995

2. CASE STUDY 1 - CENTRAL MACEDONIA REGION

2.1 Economic and social profile

The objective of this section is to identify certain general features of Central Macedonia's regional productive system and compare them to the corresponding features of Attica, the core region of the country, and to the country as a whole.

- According to the 1991 census, 16,7 of the country's population live in the Region of Central Macedonia. Attica represents 34,34% of the total population. The population average growth rate, for the period 1981-91, was 0,65%.

Population : Average Annual Growth Rates
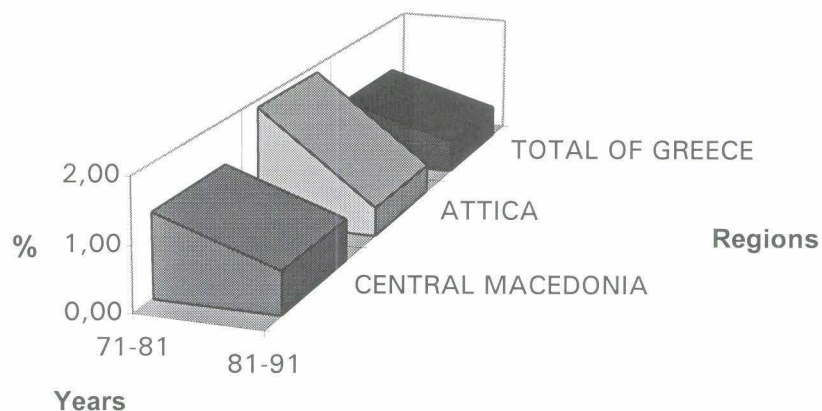
- The active population of the region corresponds to 39,5% of the total population (38,1% for Attica and 37,9% for Greece as a whole.)

- Distribution of employment among the basic economic sectors is as follows: 22,04% in the primary sector, 29,7% in the secondary sector and 48,9 in the tertiary sector. The same percentages for Attica are 1,52% primary, 27,63 secondary and 70,85 tertiary sector and for Greece 19,87%, 25,35% and 54,7% respectively. We can observe that the level of service employment in the sector is fairly low compared to the Attica percentage.
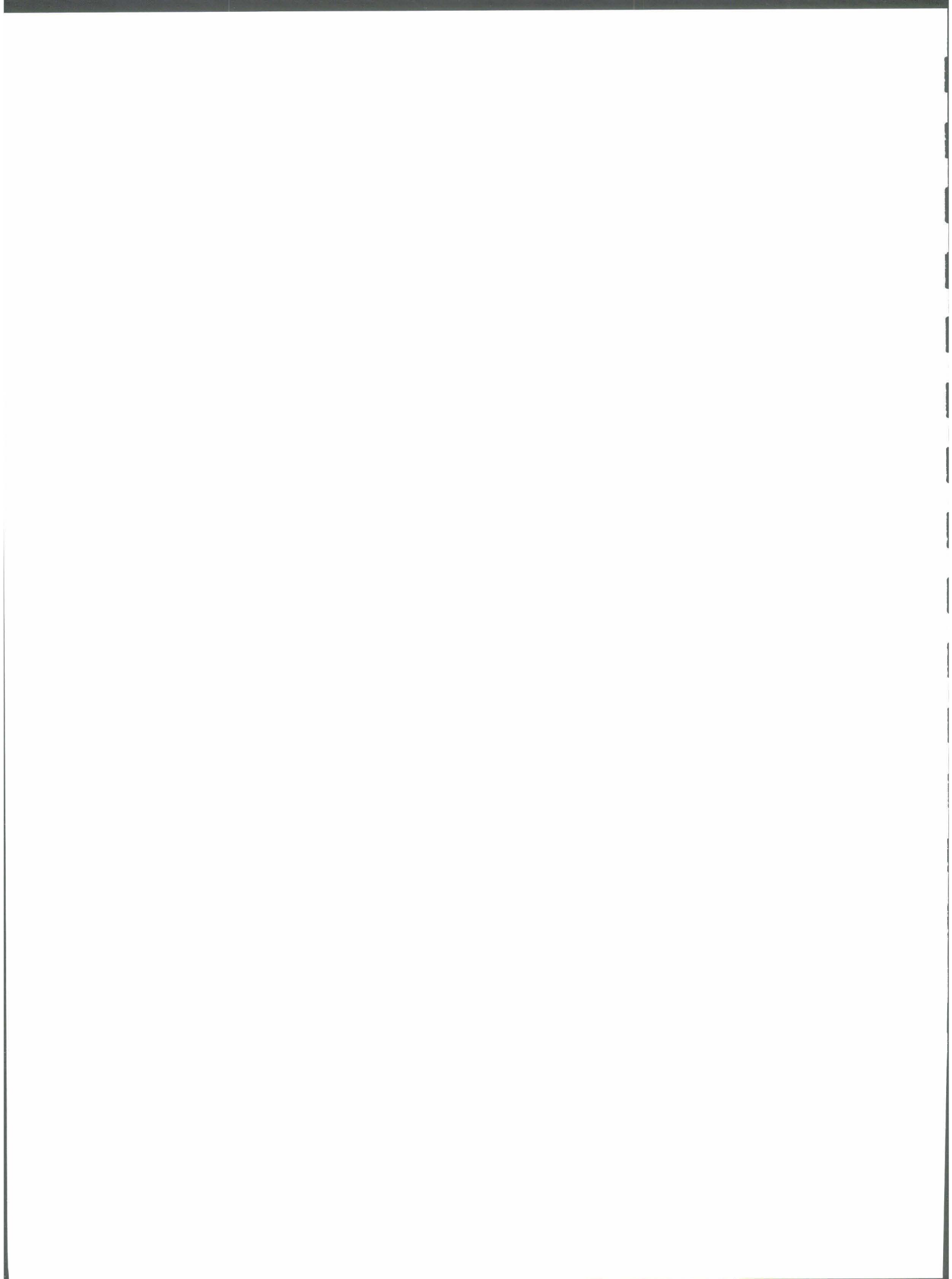
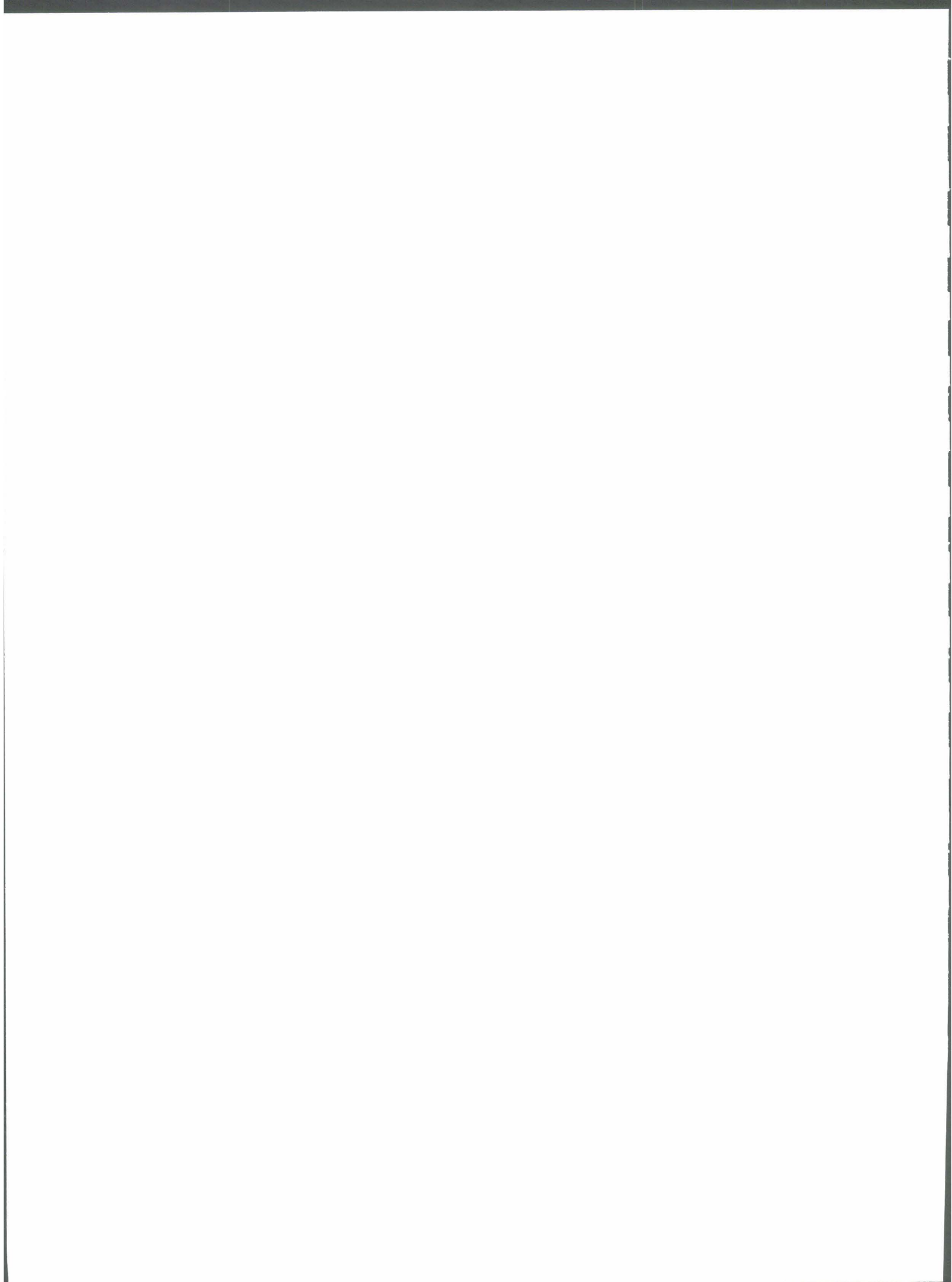**SECTORIAL EMPLOYMENT : CENTRAL MACEDONIA 1991**
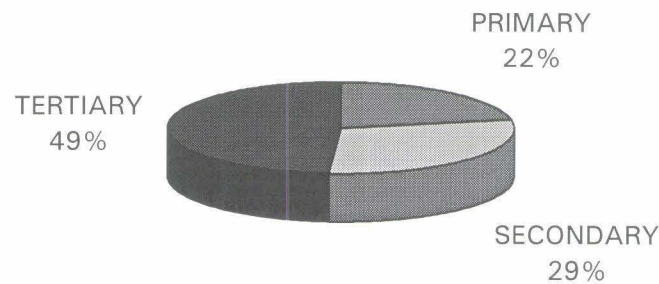
- Unemployment is lower than the national average. (7,6% and 8,1% respectively on 1991)

- The region accounts for 16,6% of the country's GNP, while Attica accounts for 36,64.

- The primary sector provides 20,2% of the GNP of the Region, , the secondary 28,4 and the tertiary 51,15%. The respective percentages for Attica are 2,09%, 26,14% and 71,77%, and for the whole country 17,08%, 27,44% and 55,49%.

- The region of Central Macedonia accounts for 19,9% of the country's GNP in the primary sector, 17,3% in the secondary sector and 14,8% in the tertiary sector. The respective percentages for the country's core region, Attica, are 4,48%, 34,89% and 47,37%.

GNP Annual Growth Rates
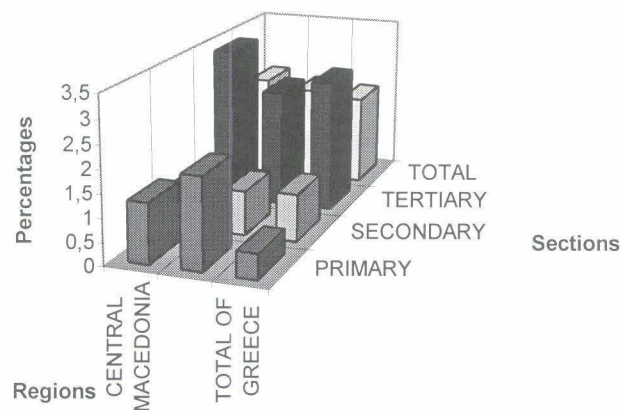
- Three sectors accounted for 50% of all industrial capital in the region: the food industry with 22,5% of industrial capital, textiles with 14% and beverages with 13,9%. While these sectors are, in most instances, labour intensive, the high rates

of investment being effected in them indicates a trend towards the transformation of these traditional sectors into capital-intensive industries.

**GNP SECTORIAL COMPOSITION : CENTRAL MACEDONIA 1991**
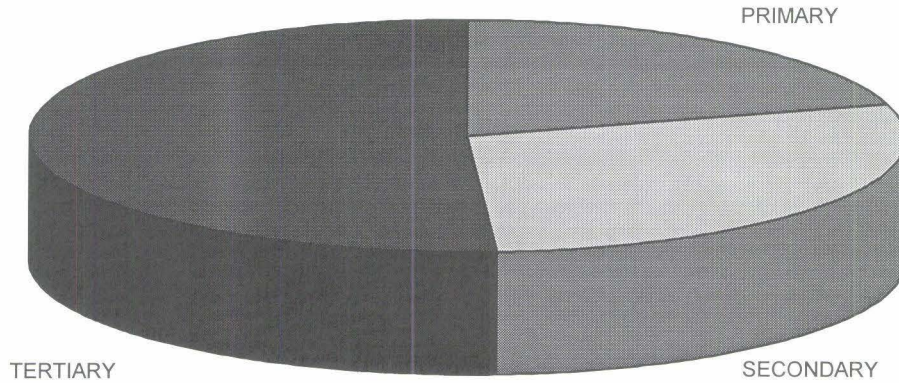
- SMEs dominate the region's productive system - as indeed of the country as a whole. SMEs generally display low levels of organisation and considerable management deficiencies, giving the region a particularly low average figure for employees per company (6,5 employees per unit). Small and medium units accounts for 98% of all manufacturing companies and absorb 72% of total industrial employment.

WELFARE INDICATORS
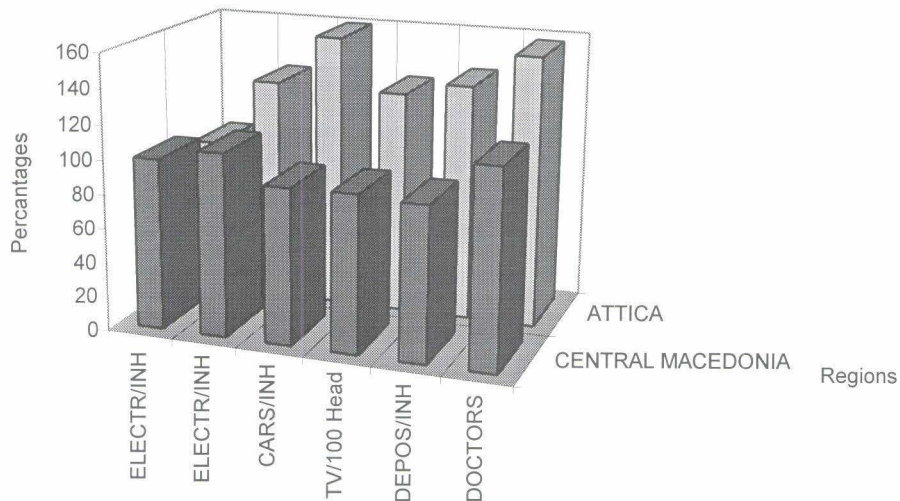
- Concerning the welfare indicators (TV/inhab., cars/inhab., doctors/inhab., disposable income per inhabitant), we can see that they are generally below Attica's levels.
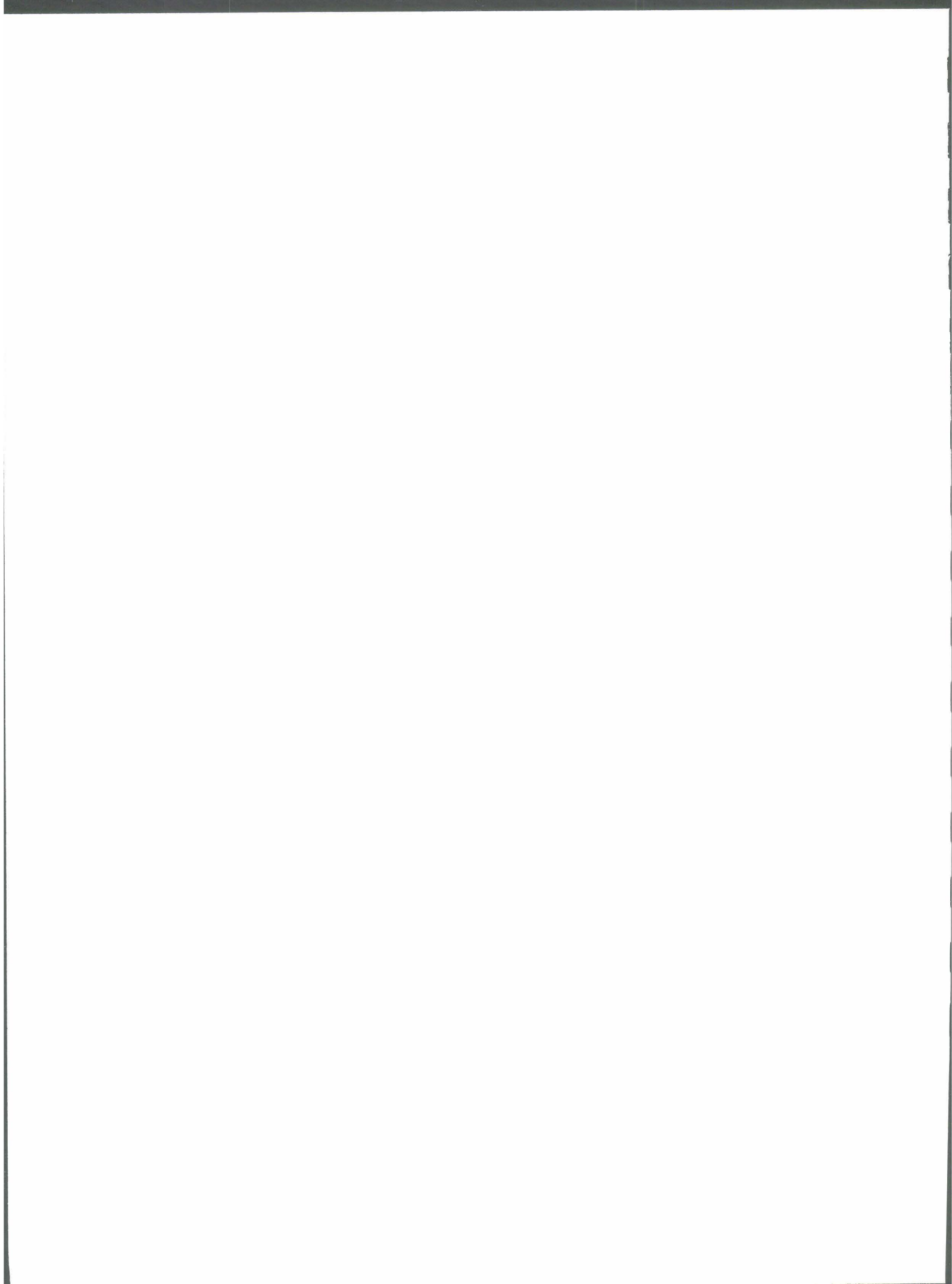
2.2 Telecoms / information profile

Information technology applications play an important part in business modernisation efforts in Central Macedonia Region. With respect to the main areas of application of IT, we can stress the following points:

◊ The accounting sector was the first to apply information services. In the Greek market in particular, accounting applications addressed to industrial companies are well developed and a wide variety of solutions are available, either in the form of standard packages or customised applications.

◊ With respect to the basic commercial applications, almost all industrial firms in Central Macedonia have installed systems, while at the same time the Greek market for this type of application is covered by a number of products and information services companies.

◊ In the production sector, there are certain areas where informatics has penetrated to a considerable extent, creating islands of automation using data systems in the absence of an integrated support system of the production process (programming, monitoring and control) with the exception of isolated instances especially in the chemicals sector.

◊ In the field of production planning, installed systems are limited mainly to medium term Material Requirement Planning. There are a very few cases of integrated industrial resources management systems, which offer the possibility of global linkage and co-ordination of all industry's operations.

◊ In the administrative data systems sector there are a few examples of integrated systems which provide full automation for the collection and processing of information from all the separate operations within a firm.

The telecommunications system may be considered as a critical factor in leveraging efficiency and therefore economic and social development. However, the level and the quality of telecommunication services provided can be characterised as rather low compared to the European average.

COMMUNICATION INFRACTURE
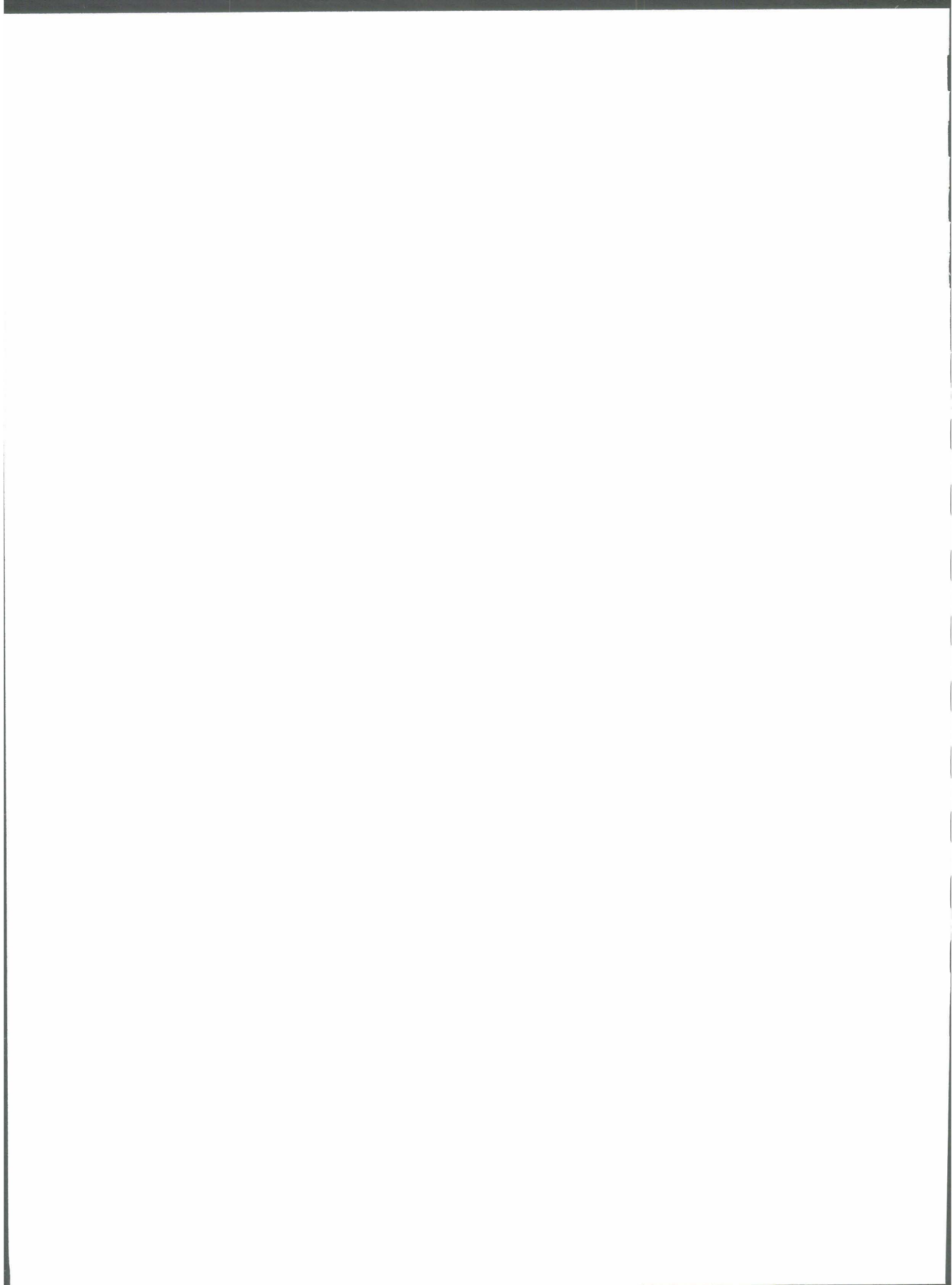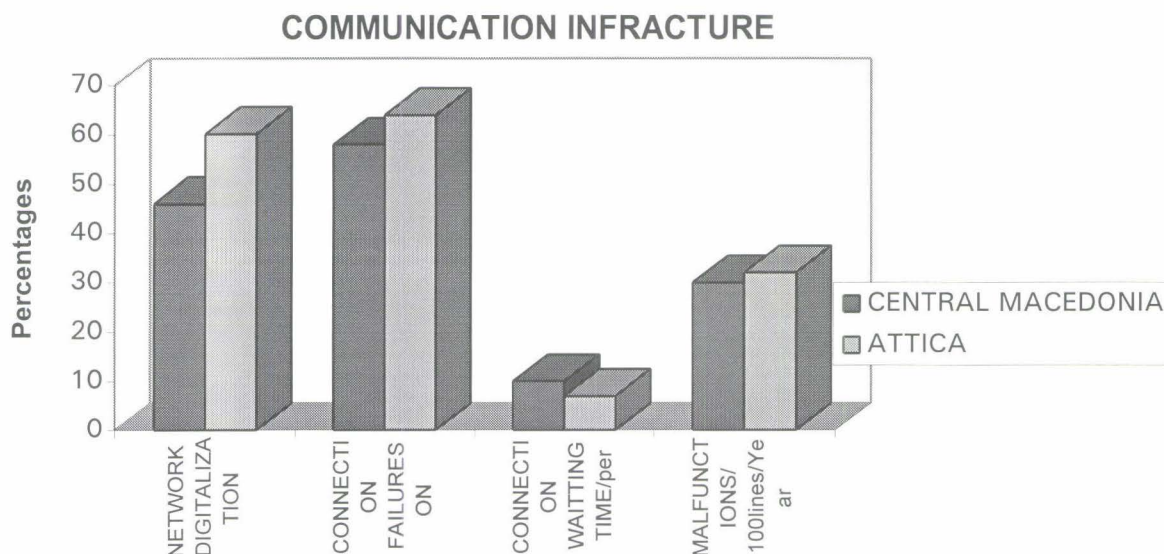
⇒ Only 46% of the region's network has been digitalised. This is a low percentage compared to 60% of the Attica network.

⇒ Using as a performance indicator the number of connection failures in peak hours, we can see that the relevant percentage is 58%, extremely high, showing the insufficiency of the infrastructure and the inefficiency of the system.

⇒ The average waiting time for new connections is 10 days, fairly high compared to the European average.

⇒ Finally, with respect to the value-added communication services, 83% of the services provided concern the Attica region and only 4,5% the Central Macedonia.

It is worth mentioning that the National Telecommunication Company has an ambitious five-years plan of modernisation and ameliorating the quality and the efficiency of telecommunication services. The results of this plan can be of critical importance for the overall development process of the region.
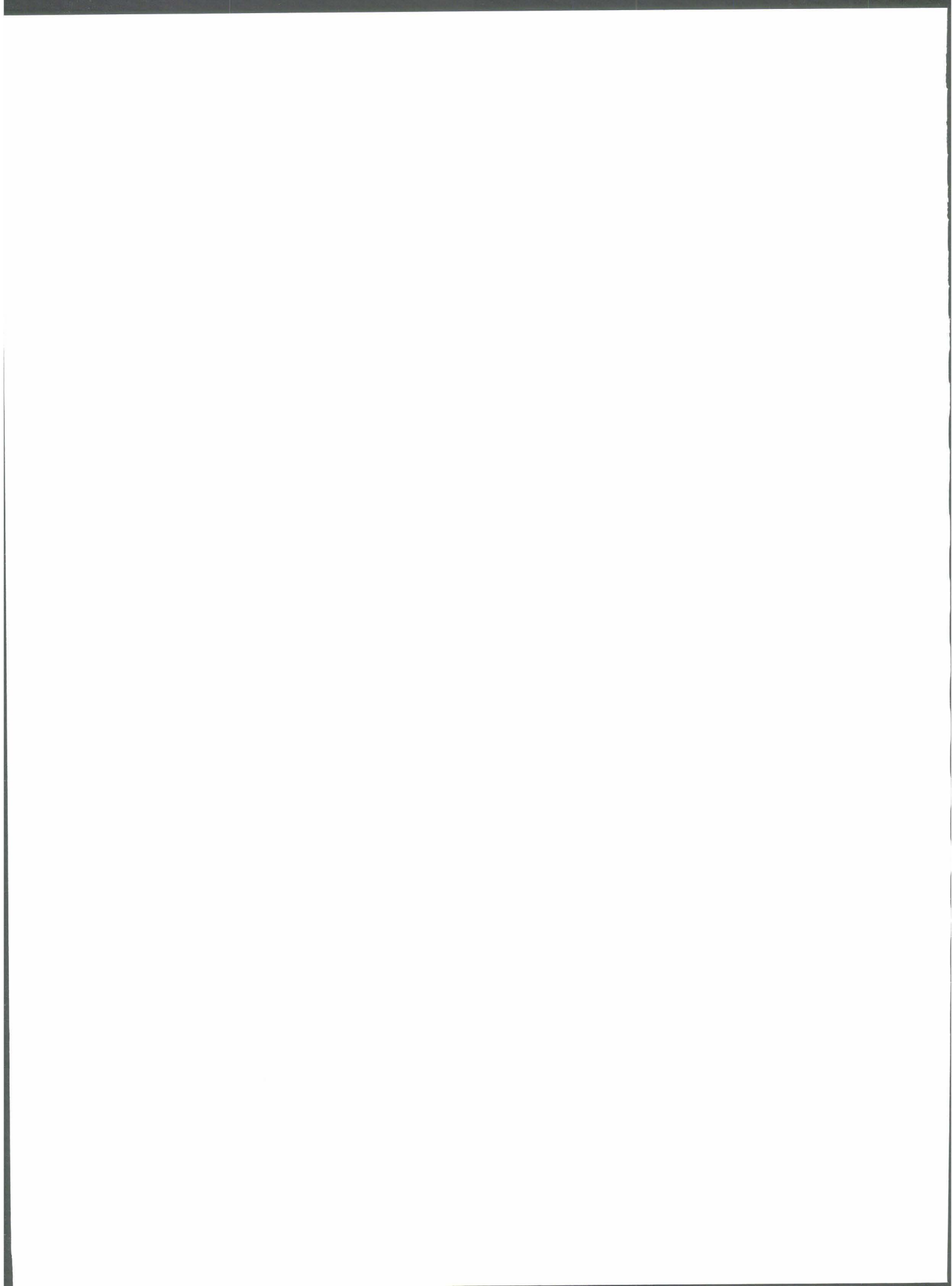
2.3 Key issues for territorial planning

Having noted the general characteristics of Region's productive system, we can identify some key issues with a view to defining a framework for the essential strategic choices and priorities necessary to build them up.

- Reinforcing cohesion within the productive system. While dependence on a single economic activity facilitates specialisation, creating significant external economies, it also leaves the Region in question exceptionally vulnerable to circumstance. The objective must be to achieve, as far as possible, a balanced distribution of development among the three economic sectors. This will ensure a stronger, less vulnerable and more effective system. Other sectors (besides the industrial) must be selected which promote or are capable of promoting a transfer of technology to industry. The emphasis is on «integration» of the Region's productive system.
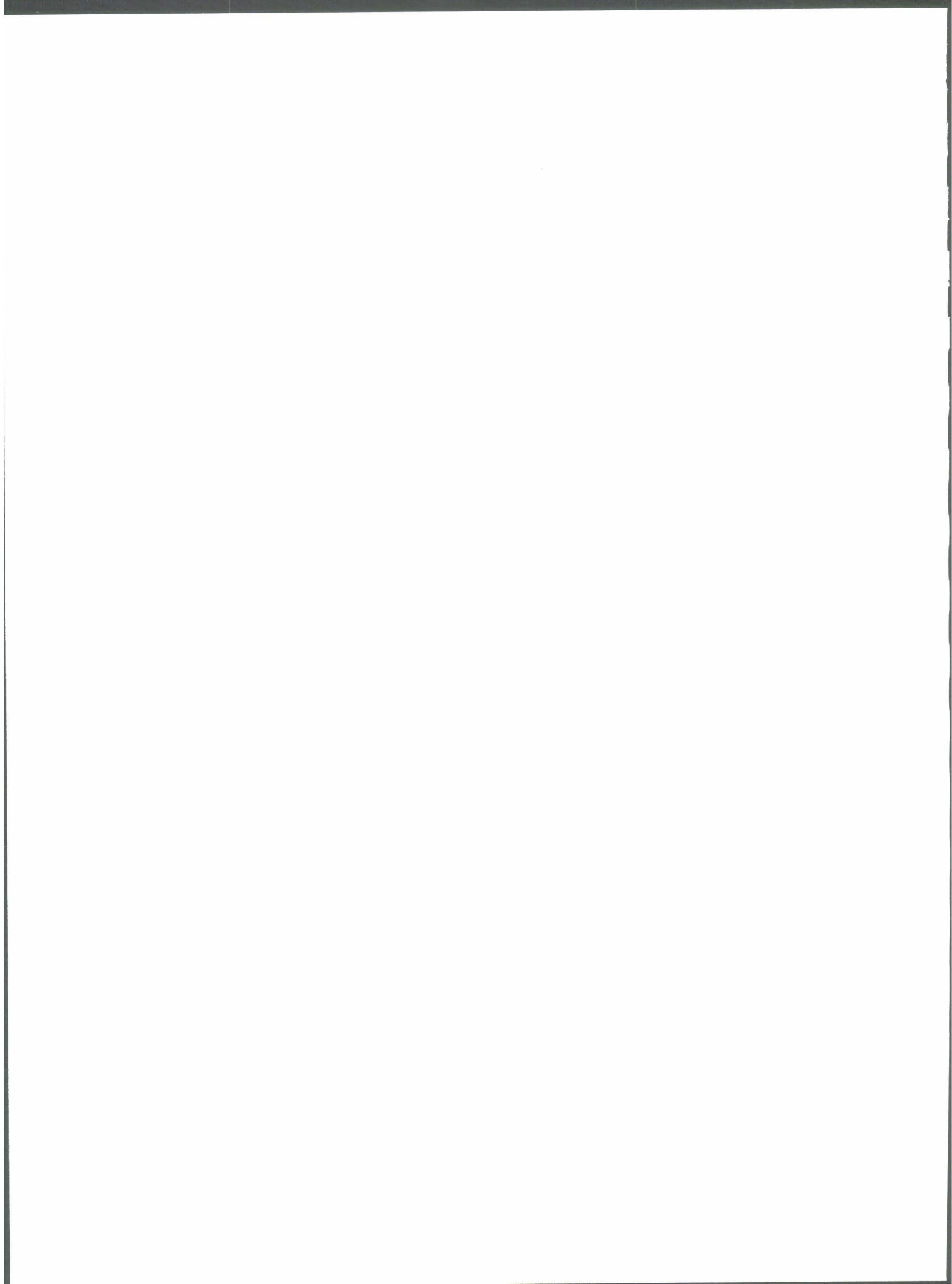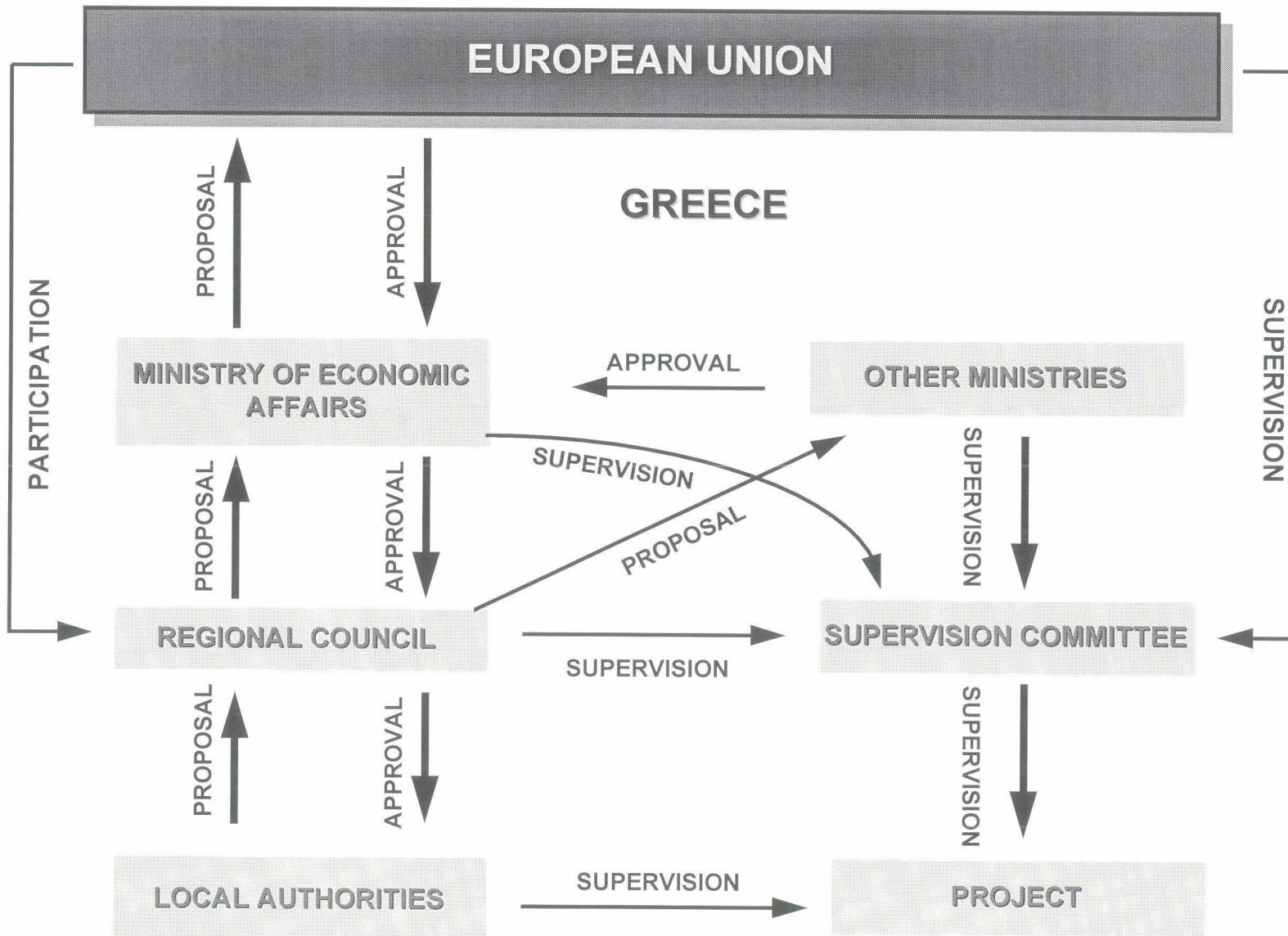
- Increasing employment and/or increasing exports and/or promoting import substitution. There is no point in focusing on one or other of these goals: the sole solution viable in the long term is to render the productive system internationally competitive and oriented towards the middle to upper range of the market, at least for certain products.

- Emphasis on flexibility, on just-in-time production, on production of quality and speciality products, on re-engineering, on company networking, and not simply on up-grading mechanical equipment.

- Promoting the creation of networks. The co-existence of large and small enterprises within a specific sector or complementary sectors in specific areas facilitates the creation of «networks» or «concentrations» of enterprises which according to both recent theory and international experience are particularly important.
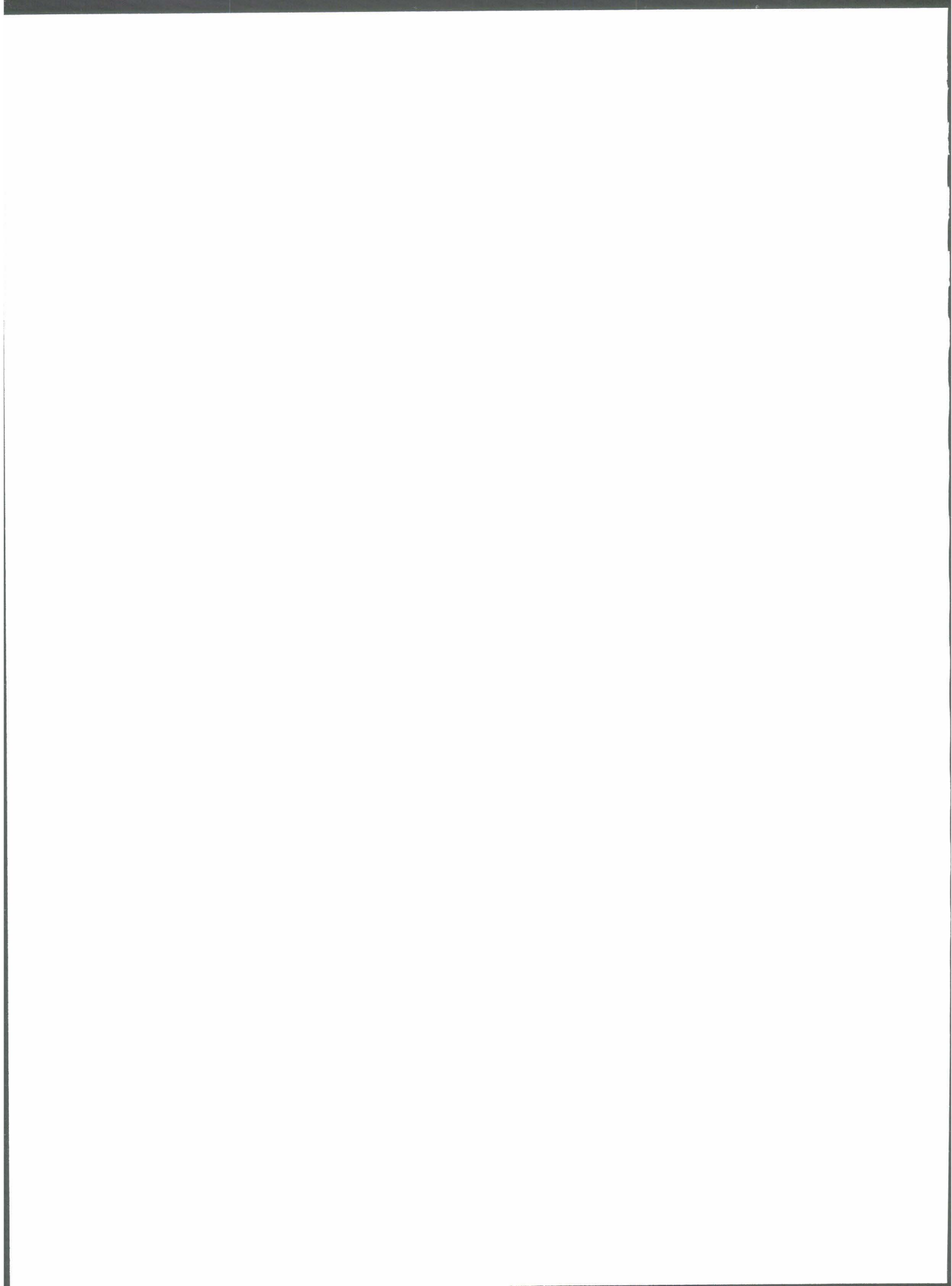
Market expansion. This concerns the demand in various markets (domestic, European, Balkan, etc.), as well as the strategies still open to Greek companies to improve their competitiveness. The opening of the Central and Eastern European markets is a major challenge for Greece. Nor should already developed markets be ignored, especially those favoured by geographical proximity. Finally, there should be emphasis on capturing the domestic market as a base, by the production of internationally competitive products, of course, not by imposition of protectionist measures.
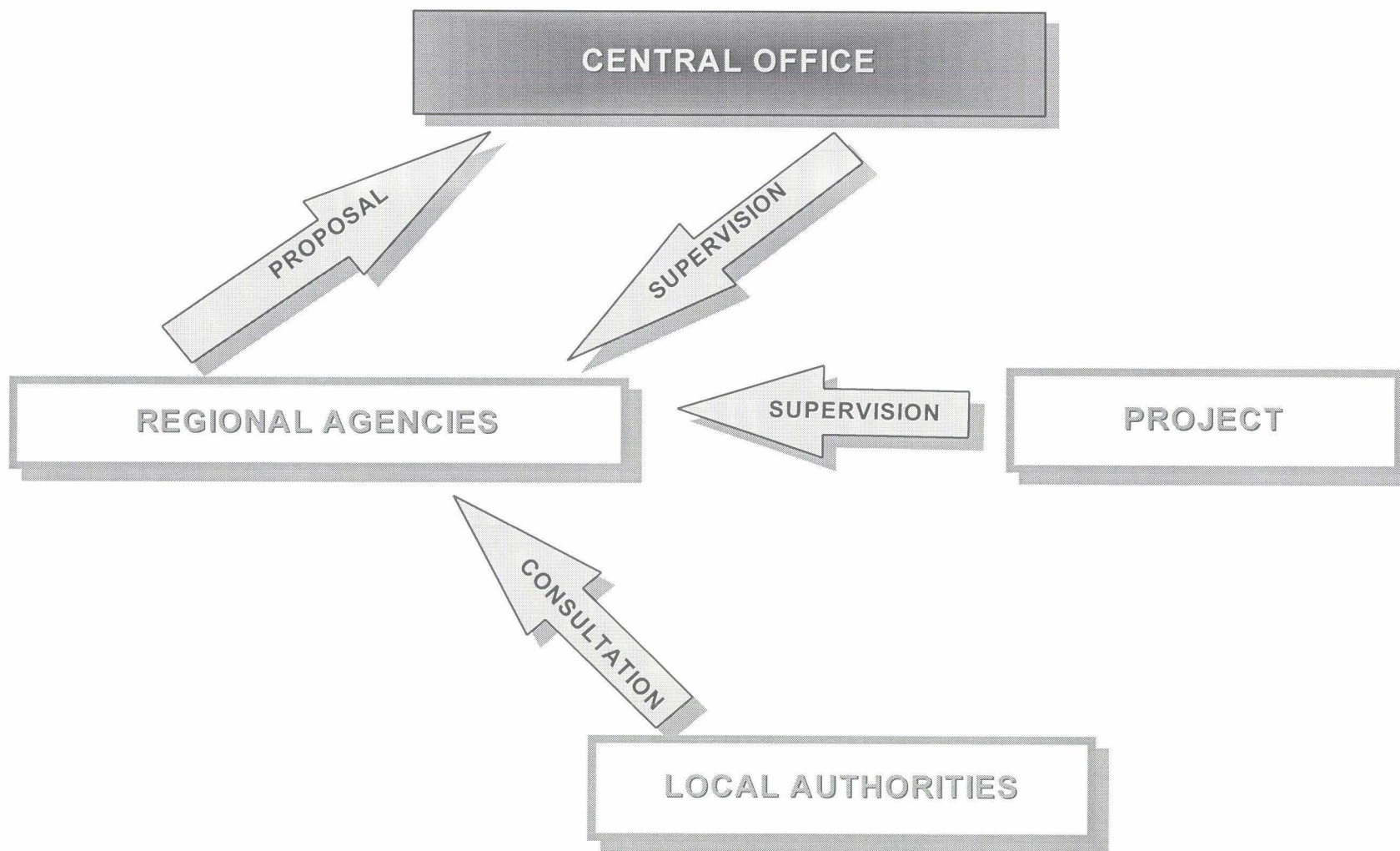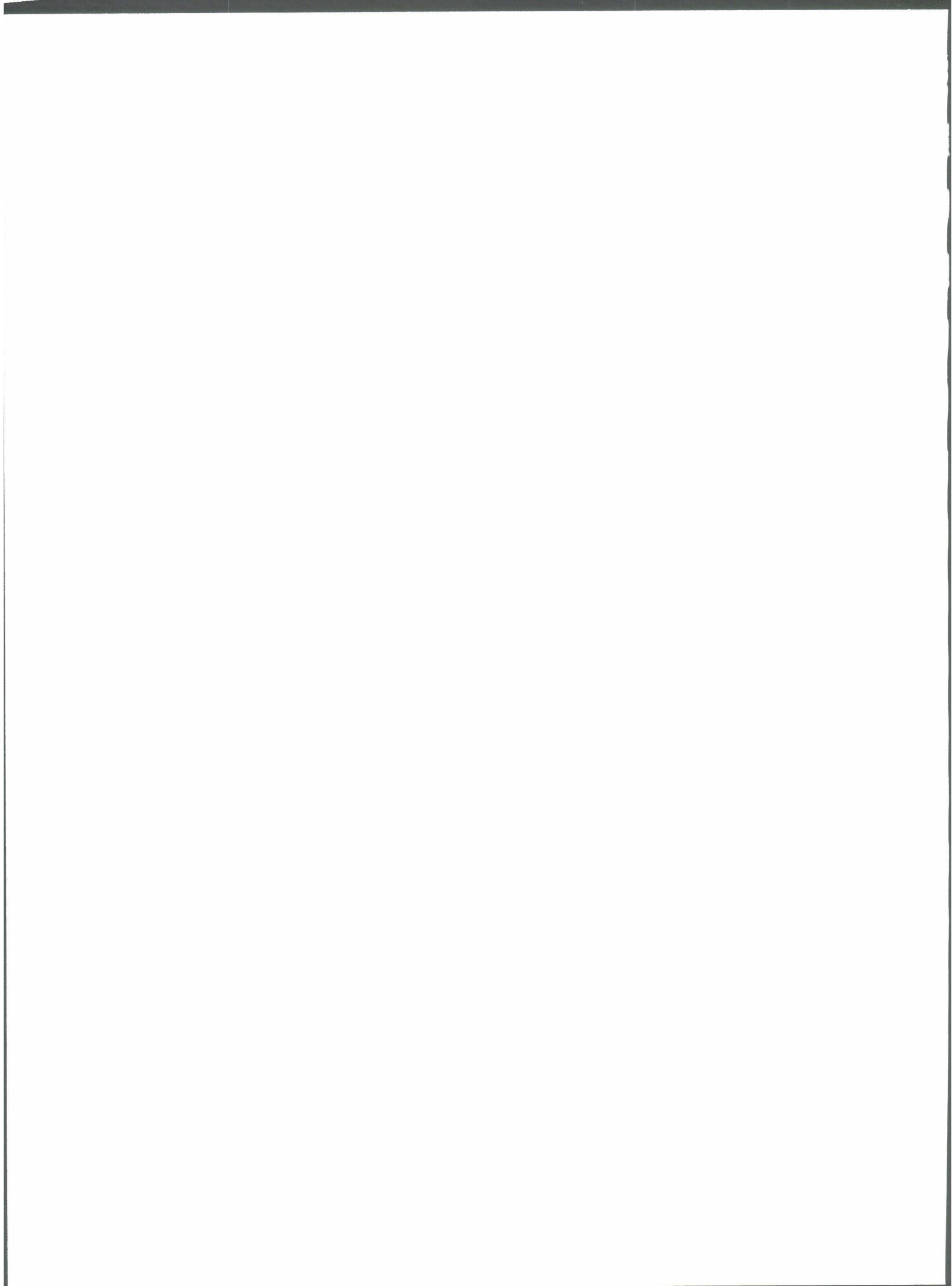
Territorial planning

TELECOMMUNICATION INFRASTRUCTURE PROJECTS
GREECE

CENTRAL OFFICE

PROPOSAL

SUPERVISION

REGIONAL AGENCIES

SUPERVISION

PROJECT

CONSULTATION

LOCAL AUTHORITIES

2.4 Description of the planning process

The Planning Process depends heavily on the specific kind of infrastructure project and the sector concerned. Generally, there is not a stable framework of regional planning described accurately by a coherent body of legislation. On the contrary, processes change sometimes rapidly and do not provide a stable context for decision making.

A. Transportation and Generic Infrastructure Projects.

Four types of agents are involved in the process of planning:
- the local authorities
- the regional council
- the Ministry of Economic Affairs and other relevant central government agencies or ministries.
- The Commission of the European Union

Local authorities submit specific projects to the regional council. They explain their importance, its potential impact on the local society and a first approximation of the necessary cost.

The regional council collects the proposals. It examines their feasibility, complementarity and resolves problems of probable overlap. It can also go back to the local authorities and ask for further details or clarifications. Then the regional establishes a priority list. It has also the responsibility to reject propositions when it finds the arguments of a project are not sound enough or that its cost is disproportionate to its benefits. In this last procedure, a representative of the Ministry of Economic Affairs and occasionally a representative of the European Union participate. The regional council can also elaborate on its own projects by overcoming the limits of local authorities.

During the next phase the relevant local authorities are asked to prepare a full dossier concerning all the projects that are on the top of the priority list, including technical and economic studies, environmental studies, etc. These full dossiers are submitted again to the regional council. A final priority list is then established and submitted to the Ministry of Economic Affairs. When the European Union is involved in the funding of a project, its approval is also necessary. Infrastructure projects are financed according to this final priority list and the budget is allocated to each region.

The supervision of the projects is made by supervision committees named by the regional councils. Supervision committees establish progress reports to the regional councils, the ministry of the Economic Affairs or other ministries involved. The overall process of project implementation and supervision is periodically monitored by the European Union's representatives.
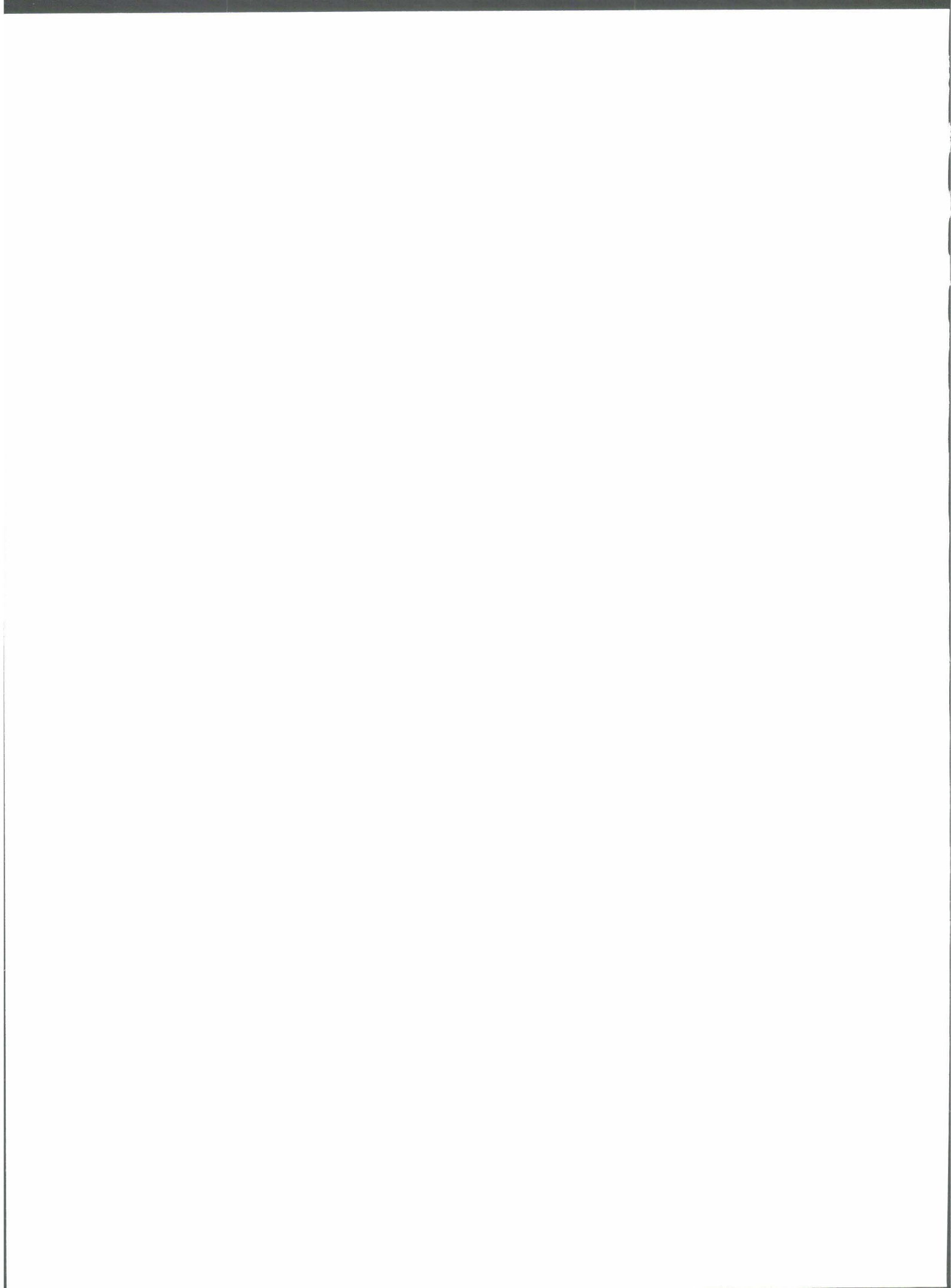
B. Telecommunications Infrastructure Projects

The global responsibility for the projects of telecommunications infrastructure is the Hellenic Telecommunications Organisation SA. (OTE). After consultation with local authorities, each regional agency of this company prepares a report describing the needs of its region and proposes specific projects. These projects are evaluated by the central management of the organisation and incorporated in its five-year plan. Regional agencies also have the responsibility of project supervision. They must submit two-month reports to central management describing the progress of the project implementation.

C. Energy Infrastructure

The same process is followed as in the case of telecommunication infrastructure. The global responsibility in this sector is the Greek Public Power Corporation.

2.5 Planning examples.

*The Regional Technology Plan (RTP) for Central Macedonia*

The Regional Technology Plans constitutes a new policy of the European Commission which enhances the synergy between the Research and Development Policy and Economic and Cohesion Policy. RTPs have been launched in four regions of Northern Europe: Leipzing-Halle-Dessau (Germany), Limburg (Netherlands), Lorraine (France) and Wales (U.K), and more recently four less favoured regions have joined the programme Abruzzo (Italy), Castilla y Leon (Spain), Central Macedonia (Greece) and Norte (Portugal).

The philosophy of the Central Macedonia RTP project is based on the fact that innovative regional development relies on complementary corporate strategies and public development policies. Innovative corporate strategies in production, in inter-firm co-operation, in product development and the flexibility of the labour market must rely on appropriate political regulation and intervention.

The main objectives of the RTP action are:
- to encourage the endogenous technological development of the region;

- to improve the capability of local and regional actors to design policies which correspond to the real needs of the productive sector and the strengths of the local scientific community;

- to support local consensus among the public authorities, the private sector and the universities about the character of technological development of the region.

The deliveries of the RTP action in Central Macedonia include the:
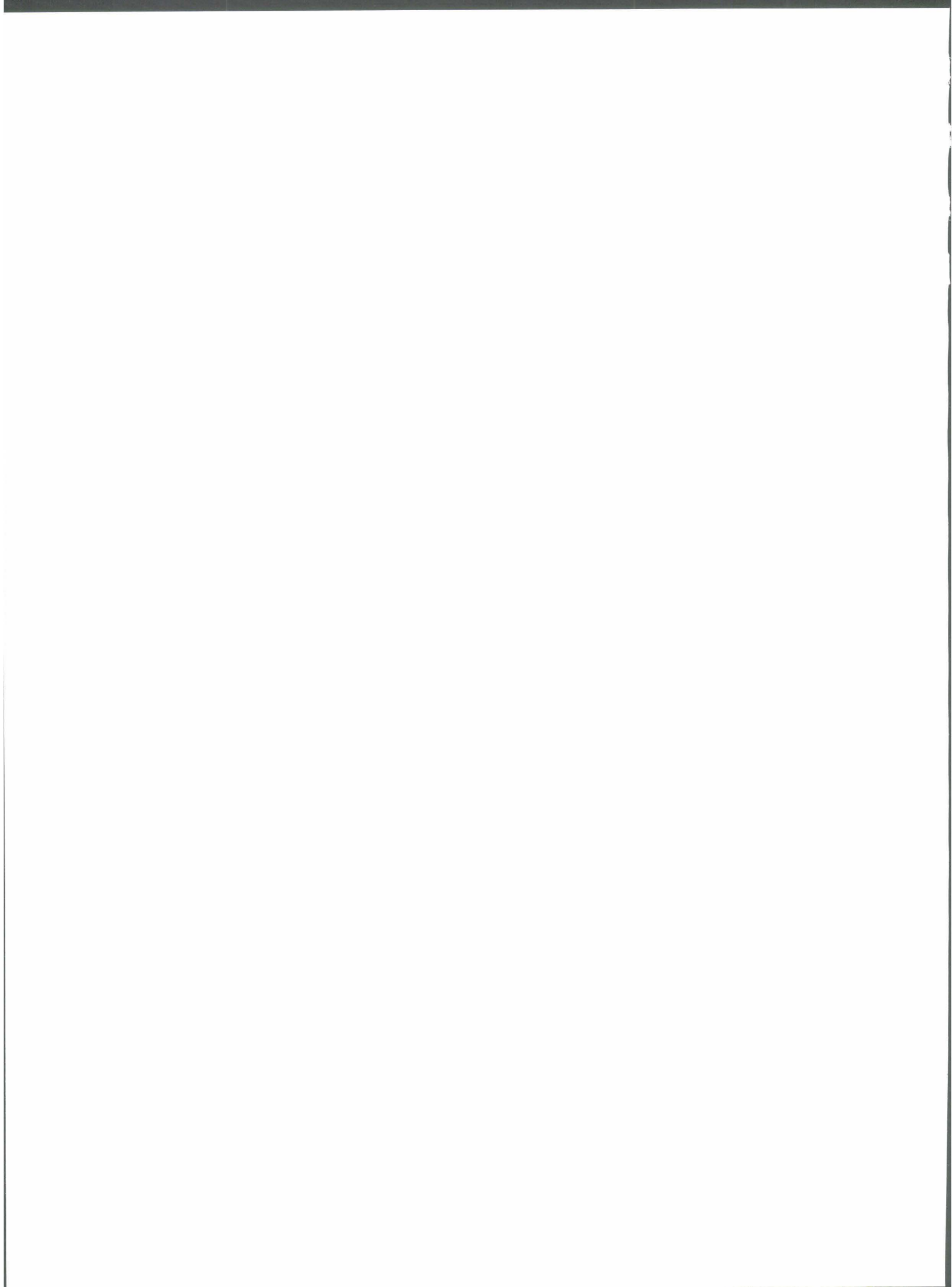
- definition of a plan for technological development of the region, based on the agreement of the main actors of the public and private sector

- organisation of a system for continuous monitoring and evaluation of technology issues and the needs of regional firms;

- participation of Central Macedonia in the network of the Community's regions developing RTPs, and in the related initiatives for technological exchange and development.

The management structure of RTP action in Central Macedonia include two bodies: a Steering Committee and a Management Unit. The Steering Committee is composed of representatives from the Ministry of Macedonia and Thrace, the General Secretary for Research and Technology, the Business Community of Northern Greece, the Aristotle University of Thessaloniki and the Technology Park. This Committee oversees the whole operation and guarantees its success assuring a regional consensus among the actors involved. The Management Unit assures the day-to-day work of the programme, launches the necessary studies and supports technically, the orientation of the Steering Committee.

The RTP action in Central Macedonia consists of three stages:

- The first stage concerns the analysis of the industrial and technology structure of the region: Analysis of strengths and weaknesses of regional firms, business needs in technology and innovation, technology supply by local research centres and technology transfer mechanisms.
- The second stage concerns the preparation of an action plan for regional innovation and technology support, including the priority intervention sectors, potential technology partners, assessment of RDT gaps and needs, relevant projects already designed by local and regional authorities.
- The third stage will allow an investigation in implementation procedures, including legal and administrative procedures, local consciousness of the importance of technological support planning, finance capabilities and mainly the translation of strategic directions of the action plan into operational measures and projects involving regional economic agents.

2.6 Analysis of the case study

2.6.1 An evaluation of the Territorial planning process

Proceeding to a brief evaluation of the planning process described above, the following points should be stressed:

1. Clear and observable amelioration of the management of infrastructure projects and control mechanisms during the last five years. One of the main reasons for this event is the adoption of European Union standards in infrastructure project evaluation, selection, implementation and control.
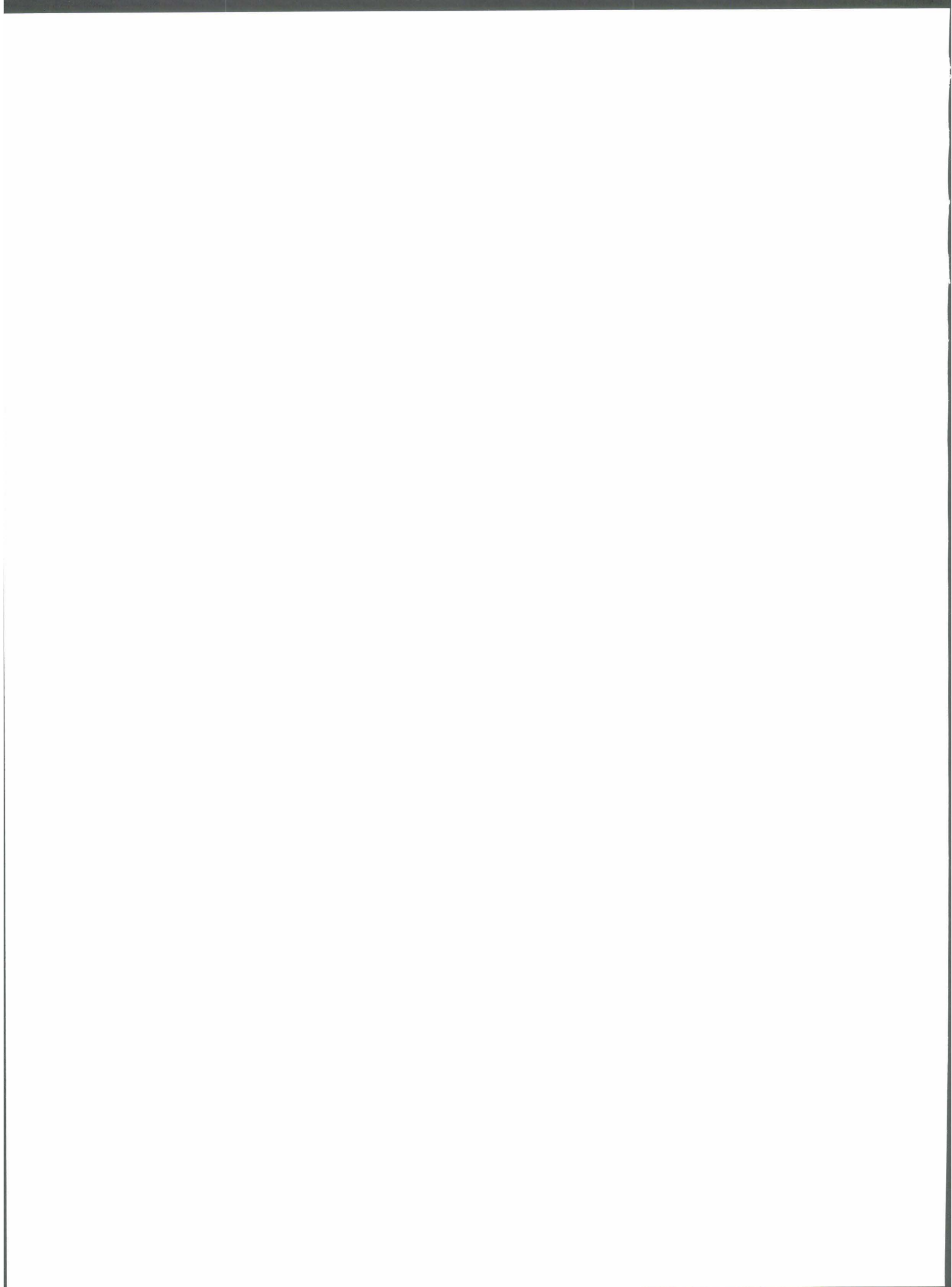
2. No clear definition of development priorities in national level. We can distinguish two alternative strategies:

- Rapid development of national competitiveness to meet European standards. Main implication: selective allocation of resources in areas already having development potential.
- Improve social cohesion and balanced regional development. Main implication: resource dispersion, insisting on less favoured regions.

These strategies can lead to contradictory policies but their combination is also possible. The appropriate balance of effort for national competitiveness and the effort for social and territorial cohesion can be the main challenge for a modern regional policy. This balance must be the result of a coherent planning process involving the determination of objectives, priorities, and evaluation criteria.

3. No clear definition of development priorities at a regional level. (priority development sectors, territorial development priorities). These priorities should match the region's resources to the changing national and international environment so as to meet the objectives for economic and social development. In particular, Central Macedonia should exploit its key geographical position in the Balkan peninsula.

4. No clear specification of leverage mechanisms of infrastructure projects. This absence creates strong probability of resource misallocation. The adoption of an leverage evaluation criterion is particularly important for investments in telecommunication and information infrastructure.

5. No clear attribution of responsibilities and initiative margins among planning authorities. Confusion and overlapping phenomena can be the results of such a situation. A stable framework of regional planning described accurately by a coherent body of legislation, independent of political changes, should be the kernel of any efficient planning procedure.

6. Bureaucratic procedures leading to time delays and inefficient communication between agencies involved in planning procedures.

2.7 Key points - Lessons to be learned

With respect to the above mentioned evaluations, the key points for an improvement of the planning procedure can be the following:

- Definition of development priorities in national and regional level.

- Use the leverage potential of alternative infrastructure projects as a selection criterion. Re-evaluate the role of information and telecommunication infrastructure under this point of view. Evaluate the long term results of infrastructure projects in the overall development process.
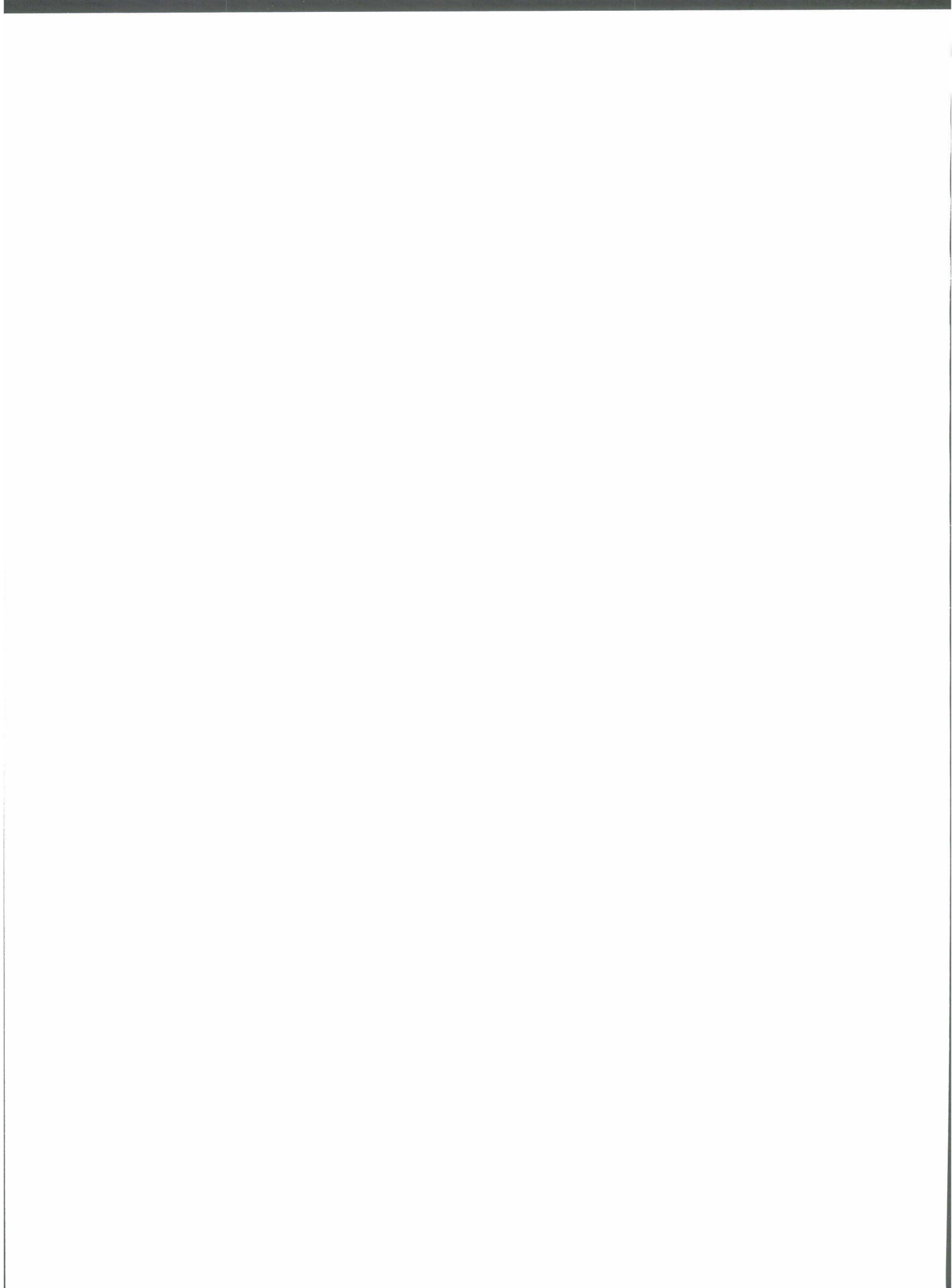
- Clear definition of responsibilities leaving space for initiative.

Use information technology against bureaucracy as well as to broaden communication channels.

3. CASE STUDY 2 - EASTERN MACEDONIA & THRACE REGION

3.1 Economic and social profile.

Eastern Macedonia-Thrace is the least developed region of Greece and one of the less developed regions of the European Union.

- According to the 1991 census, the region accounts for 5,56% of the total Greek population. The average growth rate of population was -0,08%. The national average growth rate was 0,52% and Eastern Macedonia-Thrace is the only region presenting a negative population growth rate.

Population : Average Annual Growth Rates
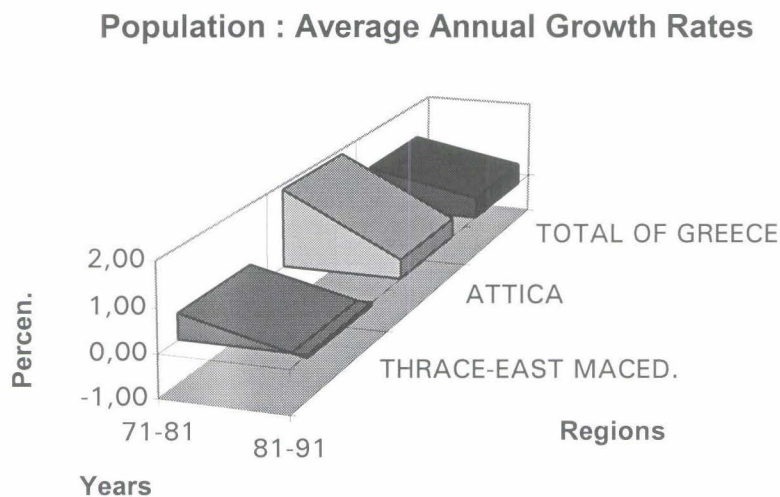
- The active population of the region corresponds to 37,6% of its total population.

- Unemployment is slightly higher than the national average (8,5% and 8,1% respectively in 1991)

- Distribution of employment among the three basic economic sectors is as follows: 38,38% in the primary sector, 21,91% in the secondary sector and 39,71% in the tertiary sector. The respective percentages for the entire country are: 19,87%, 25,35% and 54,58%. The weight of the primary sector is the most important among all the Greek regions and one of the most important in the overall European Union. On the contrary, the tertiary sector is clearly underdeveloped compared to the national percentage.

SECTORIAL EMPLOYMENT : THRACE-EAST MACED. 1991



TERTIARY
40%

PRIMARY
38%

SECONDARY
22%
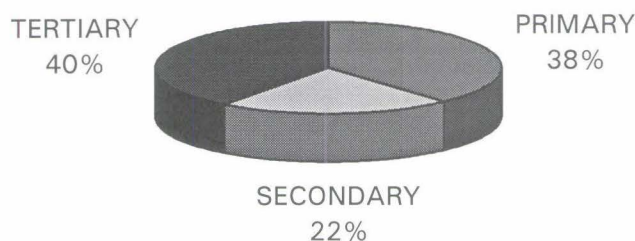
- The region of Eastern Macedonia-Thrace accounts for 5,23% of the country's GNP. The average GNP annual growth rate, for the period 1981-91 was 1,71%. The national GNP growth rate for this same period was 1,91%.

- In 1991, the primary sector of the region represented 8,48% of the national primary sector, and the secondary and the tertiary 5,38% and 3,95% respectively. In this same year, the contribution of the core region of the country, Attica, was 3,28%, 34,65%, 49,79% for the same three basic economic sectors.

GNP SECTORIAL COMPOSITION : THRACE-EAST MACED. 1991


PRIMARY

TERTIARY
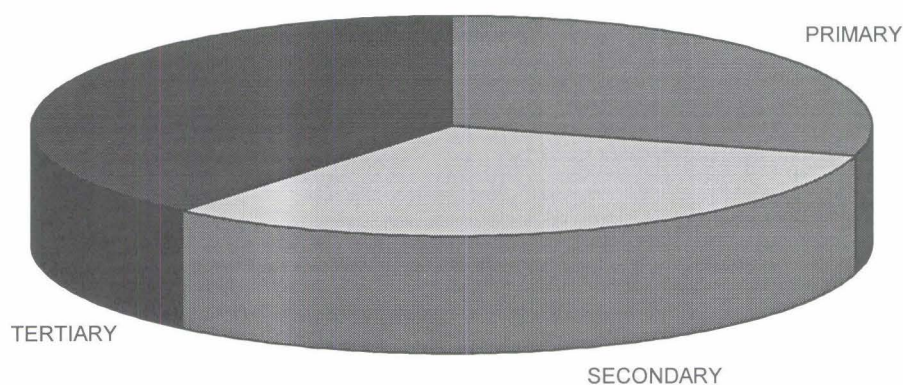
SECONDARY

- In 1991, the primary sector provided 29,31% of the GNP of the region, the secondary 31,93% and the tertiary 38,76%. The respective percentages for the entire country was 17,04%, 27,44% and 55,49%.

GNP Annual Growth Rates
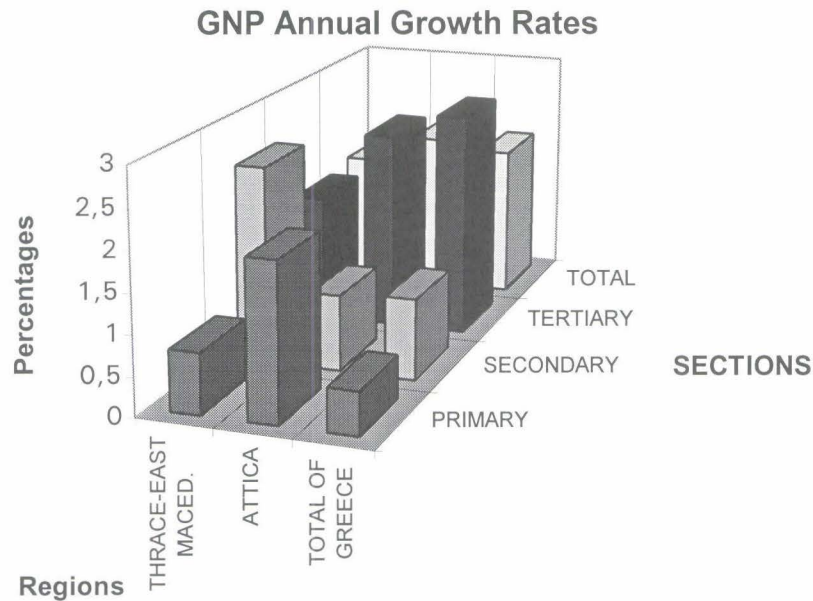
- With respect to the main welfare indicators (Electricity consumption/inhabit., cars/1000 inhabit., TV/1000 inhabit., doctors/1000 inhabit., disposable income per inhabitant), the region's performance is well below the national average.

WELFARE INDICATORS
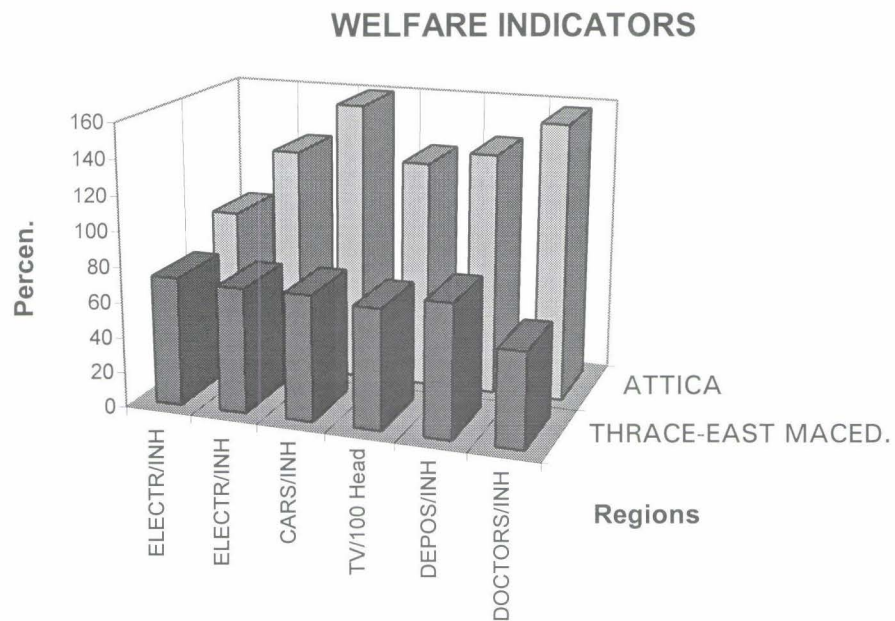
### 3.2 Telecommunications/information profile

- The diffusion of information technologies is lower than all the other Greek regions. *The main applications of IT in the region, concern office automation. The penetration of*

information technologies in the production sector is low and concentrated around the few large companies of the region.

- 59,8% of the telecommunication network was digitalised in January 1997. This is virtually the same as digitisation in Attica, but there are only 251.000 telephone lines in the region.

- The average waiting time for new connections is 11 days, compared to seven days in Attica.

- With respect to the value added telecommunication services, only 1,4% of the services provided in the country concern the Eastern Macedonia-Thrace region.

COMMUNICATION INFRACTURE
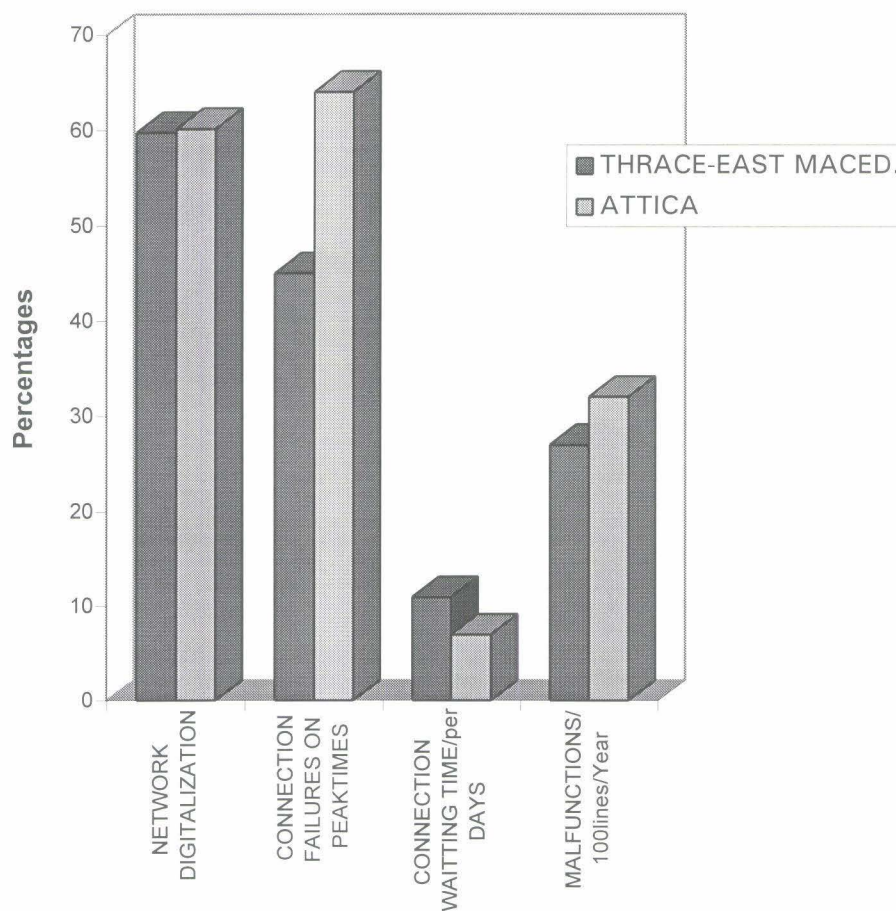
1.3 Key issues for territorial planning

- Creating «poles of development», in both the geographical and the industrial activity senses. This will lead to development spreading beyond the initially selected boundaries,

in the first instance to the rest of northern Greece and in the second to the other less innovative companies.

- Emphasising up-grading of human resources not only with regard to professional know-how but also with respect to cultural perceptions and attitudes towards work.

- Re-thinking incentives. The type of incentives offered to enterprises is extremely important. The incentives offered to date have had three major weaknesses: that is, a) there has been no stable incentives policy, which has a negative effect on investments, b) incentives create «abnormalities» in the market, because they are accorded as an emergency solution which in the final analysis only serves to regenerate the problem, and c) they are supplied in the form of subsidies or grants for buildings, equipment and personnel.

- Encouragement and attraction of investment. The origin of investment capital (local or external sources) should not be a problem, but should depend in each instance on the terms on which the investment is effected by the domestic or «foreign» investor and especially on how it fits into the global regional development strategy.

3.3 Territorial planning

The agencies involved and the process are the same as the ones of the Central Macedonia regions.

3.3.1 Description of planning examples

Example 1: Development Prospects of the Eastern Macedonia-Thrace Region

Sponsors and objective of the project

Project realised on behalf of the Regional Council and the Ministry of Economic Affairs. The objective of the project was to constitute the basis for long-term regional planning.

Contents of the project

The project was divided in three parts:

- In the first part, the present socio-economic situation in Eastern Macedonia was analysed. There were also detailed statements about the current situation of production and human resources in the region as well as about the existing institutional context and government policy.

- In the second part, the possibilities of attracting investments in the region are examined. Manufacturing as well as the primary sector of production are particularly emphasised.

- In the third part, the existing institutions and mechanisms of the region are presented, while some others are proposed in order to support new investment initiatives.

Methodology Used

The research has been elaborated in two levels:

a) Elaboration of primary and secondary statistical data of the region. Data has been collected through fieldwork and distribution of questionnaires.

b) Analysis of the means and presuppositions necessary to put into action existing as well as potential production activities. Interviews have been carried out through visits and contacts with local agents.

Project's Conclusions

1) The model of development applied until now seems to have reached its limits (traditional industrial activities based on cheap labour and low processed agricultural goods).

2) There is a need for the introduction of new technologies especially in administration and organisational practices.

3) There is a need for investment reorientation in the region so as to concentrate resources to the most efficient activities.

4) There is a need to support activities which will vertically integrate production.

5) There is a need for a proper institutional context as well as a modern network of financial and techno-economic support.

3.4 Analysis of the case study

The main points discussed for the case of Central Macedonia concerning the planning process are also applicable in the case of Eastern Macedonia- Thrace. However, some additional points must be stressed concerning the orientation of the development strategy of the specific region.

- Attraction of investment from other Greek regions or from abroad should be an integral part of the regional development planning. It seems that the region does not dispose enough capital resources for an endogenous process of growth. Telecommunication and information infrastructure should be considered as an important factor of investment attraction.

- Particular emphasis should be given to the up-grading of human resources not only with regard to professional know-how but also with respect to cultural perceptions and attitudes towards work.

- The promotion of economic growth, often in response to acute economic crisis, has also been seen as a way of resolving physical and social problems. However, although economic development may support social and environmental goals, there is a growing recognition that the two can be antagonistic. Economic growth strategies have not only been unable to prevent social polarisation and segregation and the deterioration of environment. They have actually deepened these processes in some cases. The goals of social balance and environmental sustainability are crucial for the long-term economic expansion. The enhancement of the natural, cultural and social environment will be of critical importance for the region's development since these factors increasingly affect the locational decisions of both firms and individuals.

- Public-private partnerships can be critical for the region's development. Public-private partnerships may be extended to a large number of sectors, including finance, infrastructure, technology development, training etc. It seems that partnerships rather than the neo-liberal divide between the public and private sectors, may ensure a modernisation process and new industrial practices.
- Strengthening the technological modernisation processes, the technology transfer mechanisms and the innovation capacity of the region must be considered as a main objective of the regional development. The relative priorities should be:

* Increasing the financial resources available to companies for technological modernisation.

* Increasing the technological capacity of the work force

* Improving companies' access to external technology resources.

* Reinforcing the endogenous technology supply.

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Annex D

Case study format

Methodology for case studies

Case studies were undertaken using a common format. Specific areas of investigation were as follows.

1 Overview

1.1 Economic and social profile

- employment by sector
- employment by firm size
- unemployment
- population
- population density
- GDP/inhabitant

1.2 Telecommunications profile

- % digital lines
- waiting times for line installation/connection

1.3 Key issues for territorial planning

- structural economic change
- patterns of migration
- investment, including foreign
- qualitative change
- future trends

2 Territorial planning

2.1 Agencies and the planning process

- agencies, responsibilities and reporting relationships
- the planning process

2.2 Description of planning examples

- planning objectives (sectoral/evaluation/timescales/targets)
- finance
- use of ISSA

3   Analysis of case studies

- impact of territorial planning actions
- key issues
- lesssons to be learned.