

ENVIRONMENTAL IMPACT ASSESSMENT : A EUROPEAN PERSPECTIVE*

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INTRODUCTION

The advent of environmental impact statements (EIS's) for major federal actions in the United States as a result of the National Environmental Policy Act 1969 (NEPA) has stimulated considerable interest in the use of some form of environmental impact assessment (EIA) system in the United Kingdom. The subject has been investigated in a number of government funded studies^(1,2) and recommendations bearing upon its implementation have been made as a result of others.⁽³⁻⁶⁾ These studies generally support the improvement of provisions for EIA of private sector projects or developments (e.g. new oil refineries) as part of the existing development control system and of public sector projects (e.g. new trunk roads) as part of existing review and authorisation procedures. The Government has not yet indicated its intentions on the implementation of an EIA system, though a decision is expected soon. It has, however, recently announced its intention to strengthen the environmental provisions in the evaluation of major road schemes.⁽⁷⁾

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It is useful to view possible British responses to NEPA in a European context, since many of the other Member States and the Commission of the European Communities have also taken a keen interest in EIA. (8) The Council of Ministers of the Communities approved, in December 1976, a proposal to examine how procedures for systematic consideration of environmental impacts might be applied in decision making by public authorities both within the Communities and within the Member States. (9) A number of EIA studies have now been completed by the European Commission prior to possible action.

The Federal Government of West Germany, in its Environment Programme of 1971, determined that, "examination for environmental compatibility" should be an essential factor in the preparation of all measures by federal authorities. It is now the responsibility of individual ministries to implement such compatibility testing, based upon a Model Procedure prepared by the Federal Ministry of the Interior. The French Protection of Nature Act 1976 provided that studies undertaken prior to commencing significant public works or private projects requiring public authorisation must include an impact assessment. A number of Application Decrees were issued during 1977 to specify the coverage, content, provisions for public consultation, etc, of this assessment. (8)

In Ireland, the Local Government (Planning and Development) Act 1976 empowers the Minister for Local Government to require the preparation of an EIS, as part of the development control procedure, for all large private projects (defined as having a value in excess of £5m). The Dutch Central Advisory Council on the Environment reported in 1976 to the Ministers of Health and Environmental Hygiene and of Economic Affairs on the desirability and feasibility of introducing EIA procedures as part of the Netherlands' environmental

policy. It recommended the preparation of EIS's for a wide range of government measures and the Ministers have commissioned a number of case studies, involving the EIA of both projects and development plans, prior to taking action. (8)

Two elements of these European responses are of particular interest:

- (1) The approach being pursued by all Member States, including the UK, is to strengthen their existing planning and decision procedures to incorporate EIA rather than to replace procedures with totally new legislation like NEPA. They justify this by pointing to the very considerable differences between the institutional framework of environmental policy in the USA and in most European countries.
- (2) In certain Member States (France, Netherlands, West Germany) the range of possible actions to which an EIA system is applicable includes the approval of programmes and plans as well as of individual projects such as new industrial complexes or water resource schemes. This reflects some change in emphasis in the USA which, in the early years, was almost exclusively concerned with projects but more recently has emphasised the potential importance of EIA of programmes. (10) However, the narrower project appraisal has been adopted in Ireland and the UK studies have mostly been similarly restricted. The possible limitations of this approach became apparent at the recent Windscale inquiry (11) and are partly recognised in two of the recent British studies (1,6) as well as in the Government's decision to publish an annual White Paper on its policy for roads. (12)

This article, therefore, addresses the following main questions:

- (1) What are the requirements of an EIA system potentially applicable in any country and to different types of action?
- (2) To what types of action should an EIA system apply?
- (3) To what extent are the requirements of an EIA system already satisfied in Member State authorisation procedures for:
 - (a) projects
 - (b) land use plansand what are the main deficiencies still to be remedied?

REQUIREMENTS OF AN EIA SYSTEM

The main purpose of EIA is to promote a systematic assessment of the likely environmental impacts associated with a proposed action by a public authority (including the authorisation of privately funded projects, e.g. through the grant of planning permission) and to provide, at a sufficiently early stage, for the integration of the assessment into the planning and decision processes relating to that action. To serve this purpose efficiently the following basic conditions should ideally be satisfied:

- (1) A draft environmental impact report (EIR), in the form of one or more documents, should be prepared and this should contain:
 - (a) a description of the proposed action and its purpose and of the environment which it is expected to affect;
 - (b) an assessment of the probable impact of the proposed action on the environment;
 - (c) an assessment of the extent to which the proposed action complies with approved environmental plans, policies and controls;
 - (d) a review of the probable environmental impacts of

alternatives to the proposed action;

(e) a non-technical summary of (a)-(d).

- (2) The draft EIR should be prepared and made available prior to the first significant point in the public authority's decision process. Provision should also be made to limit the action which the applicant may take prior to the completion of the EIA process.
- (3) The public authority should consult and (on the basis of the draft EIR) obtain the comments of other authorities with jurisdiction or special expertise relating to any environmental impacts involved. Also, except where significant, unavoidable problems of commercial confidentiality or state security are involved, the draft EIR should be made available to the public for comment.
- (4) A final EIR, incorporating a summary of the main comments received and of any modifications to the original proposals, should be prepared and then accompany the proposed action through the remainder of the public authority's decision procedure.
- (5) Provision should be made to post-audit the environmental impact assessments made for a selection of actions to evaluate both the quality of the assessments made and the implementation process.

Before an EIA system became operational these requirements would have to be expressed in more detail by means of, for example, more precise guide-lines on the content of EIR's, on the responsibility for their preparation and on the provisions to be made for consultation. Such guide-lines might well need to vary according to both the type of action and the existing procedures of the public authorities involved.

TYPES OF ACTION

In principle, an EIA system should apply to *all* actions likely to have a significant environmental impact, irrespective of their type, of the public authorities involved, or of the instruments of approval and implementation used. The potential scope of a comprehensive EIA system is, therefore, very considerable and could encompass the approval of policies, plans and programmes of different kinds, as well as of industrial projects, at all levels of government.

These different categories of action and levels of government are illustrated in Figure 1. As this shows, the most likely chronological sequences of events are horizontally, from left to right, vertically, from top to bottom, or diagonally, descending from left to right. For example:

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Fig. 1]
- (a) broad policies provide a framework within which plans are formulated, which then provide the basis for the rolling programme of implementation and, finally, the approval of individual projects within that programme (e.g. national transport policy → national roads long-term plan → 5 year road building programme → action to build a section of motorway);
 - (b) national policies, plans and programmes provide a framework within which regional and then sub-regional and local policies, plans, programmes etc., are formulated, (e.g. national land use plan → regional land use plan → sub-regional land use plan → local land use plan);
 - (c) national policies can form the context for regional plans and programmes, which in turn may provide a framework for local projects (e.g. national economic policies → regional

strategic plans and investment programmes → sub-regional and local infrastructure projects).

Obviously, however, there are many departures in practice from the system outlined. A major project which is inconsistent with a plan may still be approved and then lead to a major revision of the plan itself. More generally, the sequencing of actions which is described will not always occur because of administrative delays in parts of the system or because of poor co-ordination between authorities.

Nevertheless, subject to these provisos, it seems meaningful to envisage a chronological sequence of categories of action; and parallel to this, the possibility of a 'tiered' system of environmental impact assessment. Such a system appears to offer a number of potential advantages over an EIA system which is restricted to individual projects:

- (1) The form of action at one tier is inevitably conditioned by prior actions at higher tiers. If higher level actions (e.g. national road policies and plans) are not subject to adequate environmental evaluation, then lower level actions (e.g. individual road schemes) may be mispecified.
- (2) As the decision process moves to the lower tiers, the viable alternatives to the proposed action become more narrowly circumscribed and the level of institutional willingness to contemplate alternatives may decline. EIA confined to the lowest (project) tier is inevitably inhibited in its examination of alternatives.
- (3) Similarly, the time available in which to collect and analyse environmental data, if delays in approving actions are to be avoided, becomes more restricted at the lower

tiers. In a tiered EIA system, however, part of the data collection can be undertaken at the policy or plan-making stage.

- (4) Where projects are individually small in size but collectively large in number (e.g. in some forms of housing and office development), the introduction of EIA at plan and programme stages may lead to substantial time savings, if the necessity for individual project evaluation is thereby greatly reduced.

The potential benefits of extending EIA systems to higher tiers in the decision process are beginning to be more widely recognised, as mentioned earlier. However, as an ECE report has indicated:

"although it seems generally agreed that a tiered structure of the impact assessment process would be desirable, the complexity of plan and programme assessment and the poorly developed methodology have resulted in attention being concentrated on individual projects." (13)

It is, therefore, logical to look first at the existing procedural arrangements for EIA of projects. However, because environmental goals are often implicit in the land use planning process, because some provision for consideration of environmental matters in plan preparation already exists in many cases and because land use plans frequently form the context for project authorisation, plan making might be the first higher tier to which an EIA system is extended.

ENVIRONMENTAL IMPACT ASSESSMENT OF PROJECTS

All Member States have authorisation procedures relating to the siting, building and operation of new establishments. Siting and building conditions are normally controlled by a planning or building

permit system for which the responsible public authority is frequently, but not invariably, the local authority. In addition, there are authorisation procedures to commence prescribed operations in those buildings and/or to discharge wastes from them. (14)

The licences in most of these cases are granted by authorities at provincial, regional or national levels of government with a distinct tendency, in the case of large or potentially hazardous categories of development, for final decisions to be taken at the higher levels of authority.

In certain countries, such as the United Kingdom,

"the boundaries within which planning authorities can operate in dealing with applications for planning permission and proposals for development by Government Departments are wide enough to enable them to take account of the total effect which a particular development is likely to have on its surroundings both immediately and in the longer term." (1)

A similar situation exists under the Local Government (Planning and Development) Acts in Ireland. In these cases the planning authority is well placed to perform the function of "lead agency" in the implementation of an EIA system. In other words, the planning authority can co-ordinate the views of the various bodies involved when taking a considered decision.

In other Member States the environmental impact assessment of new industrial establishments is more likely to form part of the licensing systems established under separate environmental legislation. This applies in Denmark (Environmental Protection Act 1973), the Federal Republic of Germany (Federal Immission Control Law 1974), France (Dangerous and Insanitary Establishments Law 1917, as amended) as well as in Belgium, Italy, Luxembourg and the Netherlands (under more diverse legislation.) (15) "Lead agencies" suggest themselves from among the licensing authorities in these countries, for

example, the factory inspectorate in West Germany.

Although the various authorisation procedures for industrial developments differ between Member States (and sometimes within Member States) they generally, and to varying degrees, contain some provision for:

- (a) presentation to the authorities of documentary evidence about the proposed development and its likely environmental impact;
- (b) consultation, relating to the assessment of the impact, with other authorities and the public;
- (c) incorporation of the findings of the consultation process into the subsequent stages of the authorisation procedure.

These provisions broadly correspond to three of the five requirements of an EIA system, as described earlier. However, experience in the Member States suggests that:

- (1) the documentary evidence submitted by developers rarely matches satisfactorily the listed information requirements of a draft EIR;
- (2) important information is supplied at too late a stage in the decision process and may seriously undermine the value of consultation in the process;
- (3) deficiencies occur (though not in every case) in the range of consultation, in advance publicity and the availability of relevant documentation, and in the time available for the submission of comments;
- (4) the procedures by which the findings of the consultation process are incorporated into the decision process are sometimes deficient;

(5) post-auditing of impact assessments is relatively rare.

These deficiencies of practice, compared with EIA requirements, while serious, are mostly capable of correction within the framework of existing Member State project authorisation systems. They do not appear to necessitate the creation of entirely new ones.

In many cases, though not all, the provisions described above do not apply to projects sponsored by a public authority (i.e. where the public authority is the developer). However, in relation to nuclear installations and publicly owned power plants, legislation in Member States has established fairly full procedures for the provision of documentation on environmental impacts and for consultation with other agencies and the public. Similarly, highway legislation in certain countries makes corresponding provision in relation to the authorisation of highway projects. In general, however, it appears that such procedures for public authority projects are less comprehensive and developed, and less formalised, than those authorising private sector projects. Hence the strengthening required in this area to satisfy EIA requirements will be greater than in the private industrial sector in many Member States.

ENVIRONMENTAL IMPACT ASSESSMENT IN LAND USE PLANNING

Each of the Member States possesses a planning system for the regulation and development of its land. Historically, land use planning commenced in all Member States with the local authority but over the years it has been extended to higher levels of authority, sub-regional, regional and, exceptionally, national. During the same period, some elements of national economic and sectoral planning (e.g. transport, water supply) have been regionalised and, in certain

cases, incorporated at that level into the land use planning system. Hence there is, within the European Communities, considerable diversity in the content of land use planning, in the levels of administration at which it takes place, and in its comprehensiveness, measured in terms of geographic coverage. (16)

Despite this diversity, however, there are a number of common elements in these land use planning procedures which are relevant to the possible implantation of an EIA system:

- (a) Statutory recognition of environmental goals within the broad objectives of land use planning.
- (b) Provision for the preparation of planning documentation including:
 - (1) background information in the form of a survey of existing conditions, an indication of future prospects and problems, and (though less commonly) an identification and examination of alternative planning strategies;
 - (2) the plan itself, together with associated land use maps.
- (c) Provision for consultation and public participation on the basis of this documentation, and for the consequent revision of the plan during subsequent stages in the planning process.

As in the case of existing project authorisation schemes, these provisions broadly correspond to several of the requirements of an EIA system, and provide a procedural framework onto which a system could possibly be superimposed. Figure 2 illustrates where the main elements of environmental impact assessment might be integrated into the different stages in the land-use planning process, indicating also where the chief areas of deficiency in present planning arrangements mainly arise.

Fig. 2

1. Planning goals and objectives

Recent land use planning legislation in Member States frequently refers to the pursuit of broad environmental goals.⁽¹⁶⁾ For example, the UK Town and Country Planning Acts 1971 and 1972 indicate that structure plans should contain policies for the improvement of the physical environment. The Federal Regional Planning Law (1965) in West Germany provides that:

"natural facts as well as the economic, social and cultural requirements should be taken into consideration ... provision is to be made for the preservation, protection and cultivation of the landscape ... sufficient care is to be taken to control water pollution ... to prevent air pollution, and to protect the public against noise."

The Belgian Organic Law (1962) provides that plans should be prepared from the economic, social and aesthetic standpoints, but having regard to the general objective of conserving intact the natural beauty of the country. The Danish National and Regional Planning Act (1973) defines the purposes of planning to include:

"utilisation of the land and natural resources of the country ... in such a way that air, water and soil pollution, as well as noise nuisance, be forestalled."

The Dutch national physical planning policy, based upon the Physical Planning Act 1965, identifies the need for:

"a more critical and more careful use of raw materials and energy and restrictions of the burden on the environment."

However, whilst these statements of environmental planning goals provide the justification for inclusion of environmental impact assessment as an integral component of the plan-making process, they are too broad to provide an operational basis upon which it can satisfactorily proceed. Unfortunately, the environmental objectives which are elaborated from these goals during the planning process are often insufficiently comprehensive and operationally precise to

enable environmental impact assessment to contribute fully to plan generation and evaluation.

2. Survey and prediction of environmental conditions

Given the existence of environmental planning goals there is an implicit assumption that the background planning documents will include a description of existing environmental conditions, prospects and problems and an examination of the environmental implications of alternative planning strategies. However, it is most unusual for this to be an explicit statutory requirement. An interesting exception is provided by the Danish planning and environmental legislation. In that country, provision is made for mapping the sources of pollution in each county area and the levels of pollution to which it is exposed, and for carrying out landscape and mineral resource analyses for each county. These surveys (and the pollution, conservation and mineral resource sectoral plans to which they give rise) then become part of the background planning documentation.

In a number of Member States guidance on the collation and analysis of environmental data is provided less formally (e.g. through departmental circulars). However, a most striking feature is the great variation in practice in these aspects of data gathering and processing, both between and within Member States. Quite apart from the problems arising from incomplete knowledge of environmental phenomena there are substantial differences occurring in the range of environmental phenomena surveyed, in the quality of the data assembled and in the sophistication of data analyses and presentation attempted.

3. Identification and evaluation of alternative plans

The required content of land use plans is often specified, at

least in broad terms, in planning legislation. This usually includes reference to certain categories of environmental phenomena but these frequently only relate to the more traditional environmental aspects of land use policy such as the protection of open spaces, the designation of areas of nature protection and the conservation of ancient monuments. Exceptionally Danish county plans must include guide-lines for "the siting of establishments etc. for which pollution prevention may demand special requirements with regard to their location," and
← "the utilisation of land for the exploitation of stone,
← gravel, and other natural resources in the ground." (16)

Again, it appears that the combined effect of imprecise environmental planning objectives, an inadequate environmental data base, and incomplete specification of environmental requirements in the content of land use plans is often reflected in deficiencies in two aspects of the planning process of central importance to any EIA system: that is, insufficiently systematic use of environmental criteria in the *generation* and *evaluation* of alternative plans.

4. Consultation and public participation

The arrangements for consultation, and particularly public participation, in the plan-making process vary greatly between the Member States, but also according to the type of plan being prepared. In most Member States there is a distinct tendency for the provision for direct public consultation to diminish as the geographic area to which the plan relates is enlarged. The most notable exception to this is provided by the Dutch planning system where even the components of the national physical plan are submitted to direct public debate.

In general, the Dutch, Danish and UK planning systems make

considerably greater provision for public consultation than the Italian and French systems, though in the latter two cases such provisions are being increased. The stages in the planning process in which public consultation occurs, and the amount and type of background planning documentation which is made publicly available prior to it, are as critically important in the effectiveness of an EIA system as the form of it, and the time allowed for it. In a number of cases such consultation takes place at too late a stage and/or is conducted on the basis of inadequate documentation to serve satisfactorily the purposes of an EIA system.

5. Monitoring of plan implementation

Again, the extent of plan monitoring varies considerably both within and between Member States. However, where plan monitoring does occur, there is only limited evidence of the monitoring of the environmental impacts associated with plan implementation.

Therefore, as in the case of project authorisation, the broad institutional framework for environmental impact assessment in plan-making largely exists in the Member States. Equally, however, it would seem undeniable that considerable scope exists for the strengthening and improvement of EIA practice within that framework. The final section which follows touches upon some of the main issues involved in promoting this improvement.

CONCLUSIONS

The first reaction to the notion of introducing an EIA system into Europe, of those conscious of its NEPA antecedents, is understandably cautious. However, stripped of its American terminology and viewed within the framework of existing institutional arrangements for project

and plan approval it becomes, reassuringly, more familiar.

Of course, a danger (not unknown in some British circles) in this recognition of the superficially familiar is to foster the mistaken view that an EIA system is already fully operational in Europe. It is, therefore, worth re-iterating that the adoption of an EIA system carries with it the implication that appropriate authorisation schemes satisfy specified minimum requirements concerning:

- (a) the environmental documentation to be prepared;
- (b) the stage or stages in the authorisation process by which that documentation should be completed and made available;
- (c) the forms, extent and timing of consultation and public participation on the basis of the documentation;
- (d) the incorporation of the environmental impact assessment into the final stages in the evaluation of each action;
- (e) post-auditing of a number of these.

Although, at the present time, the main preoccupation in most discussions of EIA systems is with their *procedural* aspects (particularly the sensitive question of the role of consultation and public participation) the issues of most practical significance are probably more *methodological* in nature. These relate to the means by which:

- (a) the general quality of draft EIR's is to be raised, in the short run, to a significantly higher level than that of the environmental documentation currently provided for in existing authorisation schemes;
- (b) the environmental impacts, once carefully assessed for an action, are then to be compared with the economic, social, etc. impacts in reaching a final decision on the action. (This raises the issue of impact weighting which we have examined elsewhere. ⁽⁸⁾)

Reviews of the current "state of the art" in EIA properly draw attention to the difficulties caused by gaps in basic environmental data and incomplete technical knowledge of environmental relationships. (1,2, 17) However, practical decisions, in many fields, have often to be made on the basis of incomplete and imperfect information. This appears to be generally true of environmentally significant developments and is certainly currently the case in considering development projects and land use plans. To make such decisions better informed, two requirements must be satisfied:

- (1) The most immediate need is to make better use of the environmental information and understanding which exists or can readily be made available.
- (2) The longer term need is to improve the environmental data base and the knowledge of environmental relationships.

These requirements naturally demand different means of fulfillment. First, the considerable variation in the quality of existing EIA practice suggests that a priority in the formal implementation of an EIA system should be to promote more widespread use of "best available" assessment practice. The means by which this might be done include:

- (a) programmes of EIA case studies, relating to different types of action, to test different assessment methods and help identify those most suitable for differing circumstances. (Some EIA case studies are currently being undertaken in the Federal Republic of Germany and the Netherlands as well as in the United Kingdom);
- (b) preparation of EIA manuals for field use in the assessment of particular categories of action. (Examples of such manuals have been prepared in the Federal Republic of Germany and France, as

well as in the United Kingdom⁽²⁾; a number of examples also exist in the United States⁽¹⁸⁾);

- (c) EIA training programmes. (Two broad kinds of programme are needed - technical training courses for specialists and familiarisation courses for non-specialists).

Second, the implementation of EIA systems should stimulate further attention to such matters as the review of existing environmental monitoring systems, methods of data assembly and dissemination, and of environmental mapping as well as the formulation of further research programmes into environmental systems. It will, however, also be necessary to recognise the need, not always appreciated in the preparation of EIS's in the United States, to balance the value of more refined estimates of impacts against the additional time and finance needed to secure them.

Even the more widespread application of best available practice cannot be achieved overnight and there is understandable concern that a formal commitment to an EIA system may raise expectations of the quality of assessments beyond what is realisable in the shorter term. Knowledge of the very large number of projects submitted to impact assessment in the United States and the prospect of the application of EIA to other categories of action in a tiered system give rise to further apprehension. The following measures, however, should help to allay such concern.

- (a) A restriction on the number of actions within any one category, to which the full EIA system applies to those most likely to cause a significant impact. The Irish system, for example, is restricted to the projects costing in excess of £5m, whilst the French system imposes restrictions based upon the type as well as size of projects.⁽⁸⁾

- (b) Phasing the formal application of an EIA system so that it is not applied simultaneously to all types of action. The prevailing view in Europe appears to favour restricting the first phase of implementation to projects or, possibly, to projects together with certain types of land-use plan. However, whatever phasing is adopted, it seems desirable that there should be a clear indication of the intended phases to follow so that preparation can be made for their implementation.
- (c) Adequate provision for the financing of an EIA system. In a number of Member States it is customary to require developers to finance the costs of documentation needed in the processing of their project application and, in these cases, it is assumed that the same principle will apply on the introduction of an EIA system. Elsewhere, part of the financial responsibility falls upon the licencing (or planning) authority. The problems both of finance and staffing are most acute where this is a local authority. In the absence of developer payments, some support from higher levels of government (particularly where the scheme or plan is of broad environmental significance) may be desirable.

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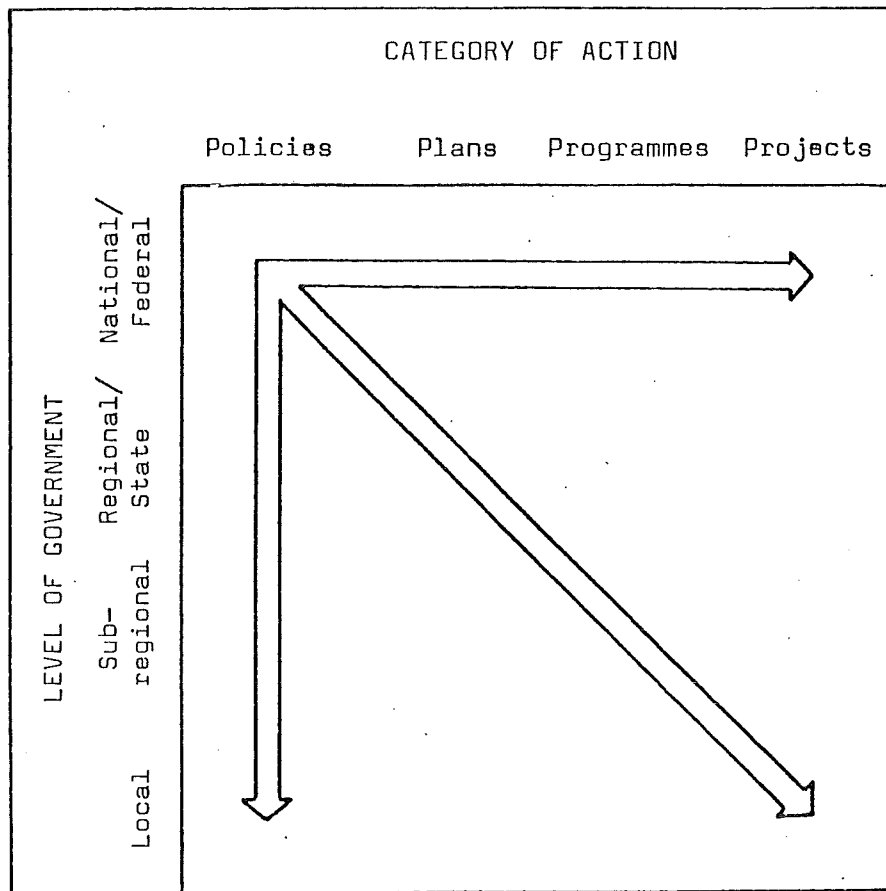


FIGURE 1: CATEGORIES OF ACTION AND LEVELS OF GOVERNMENT (PUBLIC AUTHORITIES) WITHIN A COMPREHENSIVE EIA SYSTEM.

FIGURE 2: INTEGRATION OF THE PHYSICAL PLANNING PROCESS AND THE EIA SYSTEM

