3. THE INTERDISCIPLINARY PROCEDURE OF REGIONAL PLANNING

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3.1 Introduction

Regional planning is both integrative and comprehensive: *integrative* in the sense that it interrelates with other types of planning, such as national, sectoral, and village planning, and *comprehensive* in the sense that it covers the social, economic, physical and technical aspects of the planning objects. The comprehensiveness of regional planning means that individuals of different disciplines have to work together in an interdisciplinary way.

3.2 Disciplines and interdisciplinarity: terminology

The term *'discipline'* is understood to mean: a branch of science. Science, however, can ramify in two ways:

> according to methods (e.g. physics, chemistry, economics, sociology);
>
> according to themes (e.g. agronomy, civil engineering, mining engineering, political science). Such themes are, in fact, professional branches which often combine a number of basic sciences, e.g. agronomy is an integration of biology, chemistry, physics, and economics.

In this book the term *discipline* will be used for both types of ramification. When two or more disciplines cooperate, the terms 'multidisciplinary' and 'interdisciplinary' are both used. We prefer to distinguish them as follows:

> In *multidisciplinary* activities, persons versed in different disciplines work together without any explicit pattern of interrelation ship. Their findings are brought together in a cumulative way. During the studies, the disciplines have not necessarily influence on each others work.

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1 *The theoretical observations in this chapter are based on annotations from B.E.J.C. Lekanne dit Deprez.*

Interdisciplinarity, in contrast, requires a purposeful pattern of interrelation right from the start. By introducing this sense of purpose, the one discipline will, throughout the studies, use the findings of others. Such cooperation can lead to integrated conclusions and insights of a far better quality than would be possible under the cumulative approach.

It is obvious that although the two approaches are complementary in complex planning studies, the more embracing term 'interdisciplinarity' is the more appropriate.

3.3 Interdisciplinarity in regional planning

The comprehensiveness of regional planning necessitates the involvement of expertise from such disciplines as: soil science, hydrology, civil engineering, agronomy, economy, sociology; and within those professions various specific expertise may be needed.

If a team of some size is to cooperate efficiently, each member must have not only a clear understanding of the function he must fulfil in his own field, but also some conception of the functions to be fulfilled by his fellow team members. Each team member will roughly be faced with the following tasks:

To collect, evaluate, and analyse data relevant for the field for which he is responsible.

On the basis of these data:

- to describe the present situation
- to indicate the processes that resulted in the present situation
- to make tentative projections of future developments to be expected under certain (sets of) conditions
- to aggregate or de-aggregate goals, objectives, and targets
- to develop programs of action designed to achieve the goals, objectives, and targets

To provide information resulting from the above named tasks to other team members in the way requested by them and in a 'language' understandable to them.

To watch over the way his information, passed on to other team members, is used.

To accept information from other team members and to use this, taking into account the conditions indicated by those providing the information.

Some examples of the interrelations between activities of different disciplines are:

The climatologist, hydrologist, and soil scientist collect data, on the basis of which the agronomist can provisionally indicate what kind of crop can be grown in the region. However, the first-mentioned members cannot always provide their data with complete exactness (the rainfall can vary from year to year or from season to season; the soil composition and depth may be favourable for certain crops, within certain given margins). The fact that most information is supplied 'between margins' means that the team members providing it must watch over the way those receiving it are using the information that does not belong within their own field.

The health specialist can indicate the potential drop in death rates provided certain diseases are eradicated. This information makes it possible for the demographer to indicate the future population pyramid. This, in its turn, supplies the education specialist with vital information on the expected primary school population and provides the economist with data on the expected increase in the male and female population of working age.

Before the agricultural extension specialist can outline the future extension program, he needs data from the agronomist (which, in turn, is based on information from the soil scientist etc.) indicating what measures have to be taken to increase the present crop production. For the same purpose the sociologist and the agricultural economist have to indicate the present pattern of the farm population and the incentives that will influence their activities.

In all these examples one thing is crucial: the transfer of information from one team member to another. In most cases the information has to cross the boundaries of disciplines. The more closely the disciplines are related, the easier these crossings will be. If, however, disciplines have little or no relation to each other, difficulties can arise.

3.4 Possible impediments in teamwork

For want of 'universal experts', the tasks of an interdisciplinary study are assigned to a team of specialists, each of them dealing with one or more (sub)disciplines. Although most experts react favourably to the idea of interdisciplinary cooperation, they do not always understand that it is fraught with problems, or at least turns out to be more difficult than cooperation between closely allied disciplines.

In this Framework, for the sake of convenience, we speak of the tasks of disciplines; but it should not be forgotten that the actual work has to be performed by individuals. Irrespective of the individuals and their personal characteristics, impediments in communication between team members may

occur. Some of the more common are described below.

Limited view of the problem

Each team member can only cope with a limited part of the problem being studied by the team. He is looking at the commission in his own specific way in accordance with the professional training he has received. This kind of reductionism can lead to the following attitudes:

> The team member hesitates in looking beyond the boundaries of his own discipline, which can hamper the consultation necessary with other disciplines; he is either uncertain or does not see the benefit of such consultation.
>
> He thinks that the present situation can be best explained by the data and theories of his own discipline and that development will only be possible if his recommendations are implemented without change.

Different ways of thinking, methodology, and presentation of results

Because of their training, team members of different disciplines have different ways of thinking, which find expression in:

> *Usage of different language.* The same terms used in different disciplines may have different meanings, or different words may have the same meaning. During discussions, this can lead to unnecessary differences of opinion or to an agreement on certain elements of study where in fact there is no agreement. The result is confusion and frustration.
>
> *Usage of different methods.* If the need to use certain methods is not clear to other disciplines, this can lead to arguments, especially if these methods require a large proportion of the team's scarce resources, or demand a duration that can endanger the working program of the whole.
>
> *The way of presenting the results.* The technical disciplines can formulate most of the information they collect in a quantitative way. The laws underlying the processes they describe, and propose to influence, can be indicated by formulae and hold true under different circumstances (e.g. the law of gravity).
> The data provided by the social sciences can only partly be expressed quantitatively. Most of the laws underlying the social processes hold true only under specific circumstances and for a certain period of time. One must be aware of this difference.

The academic discussion

Sometimes there is the tendency for discussions between disciplines, especially if they are closely related, to go into the basic concepts of a

discipline. Pressure is exercised on team members to explain and justify the way they are using their specific knowledge and methods within the framework of the interdisciplinary program. Such discussions are usually merely academic, but tend to consume a considerable amount of time.
There is also the danger that team members presume to express an opinion on another's discipline: on its measure of scientific character, the method it uses, or the usefulness of the information it provides. This type of discussion easily leads to tension in the team and should be avoided or limited whenever possible. The team members must respect one another in the responsibilities they have been given.
In the interim or end evaluation of the planning process, however, the problems that have been raised in this type of discussion should be given proper attention as they may point out ways in which the performance of the team can be improved in future exercises.

Resistance against research on a wide scope

When related disciplines cooperate, usually each experiences the process as an innovation in which knowledge is extended beyond the boundaries of each's own discipline. Interdisciplinary studies that require a much wider scope, however, are usually less enthusiastically received because the participants are less familiar with the consequences of their partnership and with the organization pattern as a whole.

Regional planning is an action-oriented activity

Sometimes team members become so absorbed by the scientific problems they encounter during their work that they tend to devote much of their time to studying these problems in the best academic way available in their discipline. They forget that the main object of regional planning is problem solving. If recommendations for extended studies are put forward, they should be incorporated into the recommended programs of action, but not undertaken during the planning itself.

Consistency of information

Nearly always there are disparities in the amount and quality of data that can be collected by the various disciplines in the time available. Disciplines faced with a large amount of data have sometimes to limit themselves in their detailed analysis or in their collection of additional data because

their information has to be matched with more rudimentary material from other disciplines. It is sometimes frustrating for team members that not all their information is used and included in the report because of the constraints that other disciplines are meeting. Such disparities between information sources should be identified in the early stage(s) of studies and the program of work adjusted accordingly.

Personal characteristics of team members

Apart from the professional competence of team members and the general requirements indicated above, teamwork is certainly favoured by good moral attributes of the team members. Some individual shortcomings will usually have to be accepted, but care must be taken that these do not obstruct mutual communication.

The outlook on life held by team members

The philosophy of team members (be it religious or political) will tend to influence the selection of the matters they think important for development. The participants may thus have different views of approaching the studies, which will come to the fore at critical stages, e.g. when the de-aggregation of goals into objectives and targets is being considered, when programs of action are being prepared, and when priorities are being set. Even though the final decisions must obviously comply with the requirements of the principal, it is useful that team members know from each other - in a general sense - the convictions they adhere to.

Some of the above impediments may be aggravated when the team is composed of members of different nations. The differences in language and/or training may then turn out to be an extra handicap.

3.5 Qualities required in members of interdisciplinary teams

To ease the difficult process of interdisciplinary cooperation, team members must possess certain qualities; these partly refer to personal character and partly to education and training. Some of these are listed below. It is unlikely that all these attributes will be found in one person, but a certain combination of them is needed if a person is to function well in a team.

> The team member must be well versed in one or, if possible, several disciplines. To avoid very large regional planning teams, which are expensive and make internal communication even more

difficult, he should preferably be a 'generalist' in one or more fields rather than a specialist in a very specific or limited field. So, an all-round agronomist is preferred to a specialist in one specific crop.

He should have a clear perception of the place and the extent of his function within the overall pattern of studies.

He must be willing to cooperate. Training at universities is usually directed more towards scientific achievement via individual efforts, which all too often results in persons who shy away from team work and prefer to work on their own. A spirit of disciplinary cooperation is therefore considered a valued asset.

He must have the ability to listen to others and try to understand them even when this requires a considerable effort on his part because they are speaking a different 'language' or jargon.

He must have the patience to explain to his fellow team members his major findings and conclusions, being aware that it will often be difficult for them to follow his reasoning.

He must respect the other team members as individuals as well as representatives of their disciplines.

He must be willing to accept from other disciplines conclusions and recommendations that he cannot always completely evaluate himself but which constitute important elements for his own work.

He must have the ability and willingness to draw sometimes far-reaching conclusions and recommendations from limited and incomplete data.

He must have the capacity to keep to the main headings and not lose himself in the details of the mass of information he has to analyse.

He must be able to recognize and accept the relative importance of his own discipline and be conscious that his discipline by itself will usually not be able to supply the final solutions.

He must be prepared to compromise when necessary.

Once he has accepted team membership he must be willing to respect the pattern of norms and values that are at the background of the goals stated by the team's principals, even when those norms and values are not in concurrence with his own.

He must be willing to accept the authority of the team leader, and of the other team members in their discipline representation.

3.6 The composition of the team

Most regional plans are commissioned by national governments. The relevant planning studies are usually conducted by a specially selected team of ex-

perts who perform their commission in accordance with the conditions laid down in the terms of reference.

The members of the team will usually be brought together for one specific regional planning exercise and will remain a team only for the duration of that exercise, or part thereof. The team will be chosen in such a way that all disciplines relevant for the needs of the region will be represented. Although there are many possible combinations, the following fields will almost always be represented:

- physical resources
- production development
- social and institutional matters
- economy
- physical infrastructure.

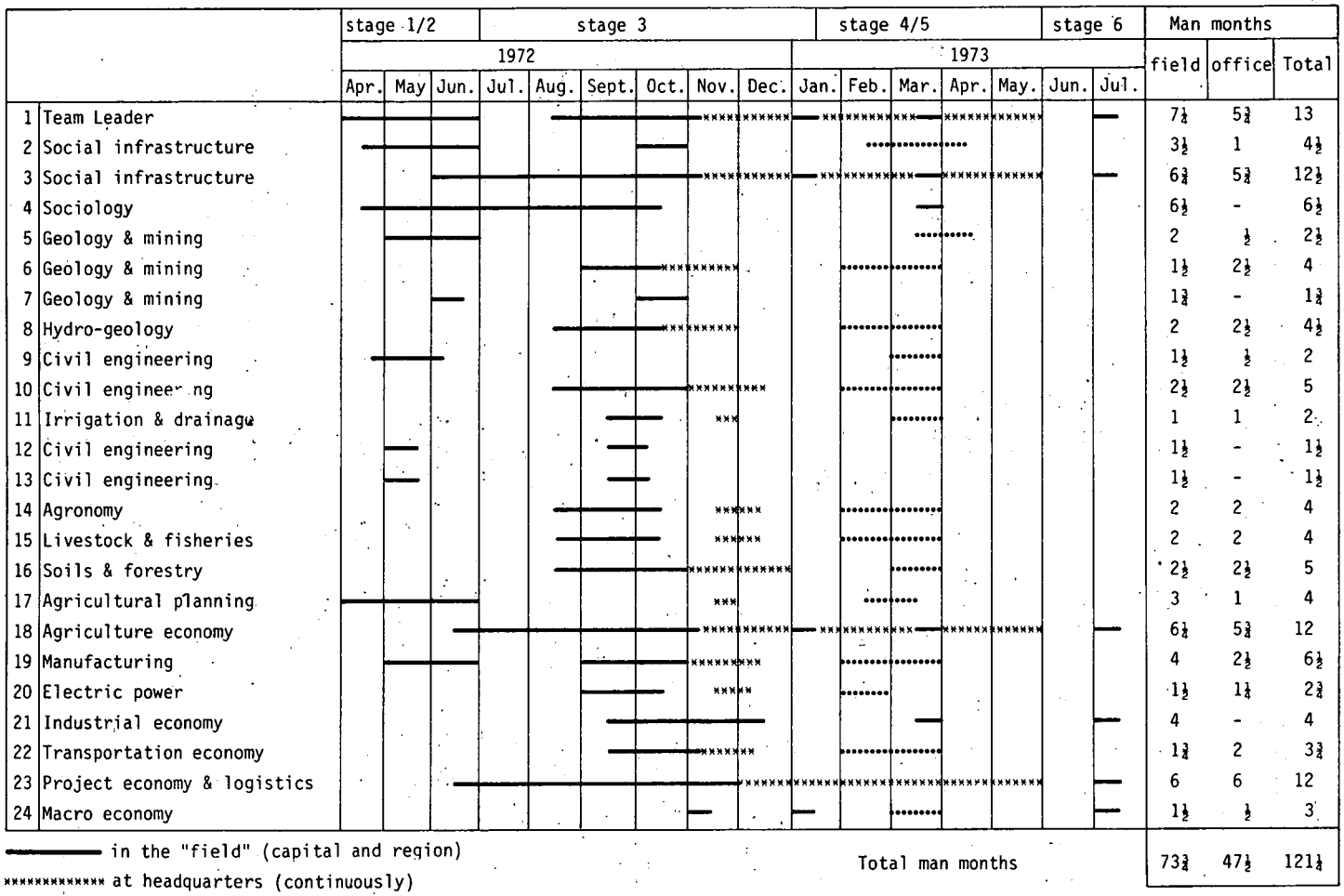
Considering the diversity of problems encountered within these fields, each of them may need from 3 to 6 experts, making a total of between 15 and 20. Some of these experts will participate for a limited period only. If the plan is to be elaborated to the level of an inception plan only, a team of 4 to 6 experts will suffice.

Prior to the recruitment of these experts, *an assignment schedule* must be drawn up indicating the manpower and the duration of the services required per discipline. (This schedule will usually be compiled in the pre-planning phase by 2 or 3 experts who constitute a key group.) Such a schedule is needed for two reasons: the first is to enable cost estimates to be calculated, and the second is to fix the approximate dates when individual experts will be required. Figure 3 shows an example of such a schedule (also called bar-chart).

It is obvious that in the pre-planning stage one cannot know precisely what expertise is required throughout the exercise. In practice, therefore, 15 to 20 per cent of the budget is usually reserved to meet the cost of additional expertise found to be needed in a later stage.

The team members representing the key disciplines will be present during the entire study. For other disciplines, it may suffice that their representatives be present only during certain stages; sometimes well-timed visits by consultants provide the best solution.

Fig. 3. Example of an ASSIGNMENT SCHEDULE



Occasionally, efficiency may be served by having certain work, such as laboratory research, model studies, computerized calculations, or mapping, done outside the region, for instance at the headquarters of one of the agencies involved. If this procedure is followed, extra care should be taken that the required regular consultation with the key group does not suffer.

Team members may be citizens of the country that has commissioned the regional plan, or they may come from elsewhere. They may be employees of national or regional governmental agencies, universities, or other institutions. Alternatively, an appeal may be made for complete teams or individual experts to be provided by United Nations agencies (UNDP, FAO, UNESCO), intergovernmental organizations, donor countries through bilateral-aid programs, or by a consultant firm under direct contract. Sometimes a team is assembled from a combination of these sources.

In whatever way the team is formed, team members must be freed of all other duties during the periods they are scheduled to work in the team.

3.7 Management and responsibilities within the team

Within the team, the tasks and responsibilities must be divided in such a way as to make optimum use of the available expertise. Exactly who will be responsible for what may differ from one regional plan to another.

One of the team members will be appointed *team leader*. His main duties will be to integrate the research and planning activities of the team, to stimulate cooperation where necessary, to arrange and to maintain communication with the principal and with any other agencies involved. The function of team leader is not bound to any particular discipline, but it is advisable that he undertake the studies in his own discipline so as not to lose touch with the professional daytoday affairs of the team. The man chosen for the job of team leader must be experienced in regional planning and must, moreover, possess the qualities of a good administrator.

His tasks can be summed up in Table 2.

It is advisable that the team be kept regularly informed of the progress that is being made and of the interim results of the studies. For this purpose, the team leader should arrange meetings, which could be held, say, once or twice a month.

Table 2 Tasks of an interdisciplinary team leader

Steering the team towards a wise and sensible plan

- Elaborating details of the plan, whilst keeping its aims central.
- Assigning the tasks to the various disciplines.
- Maintaining a balance between collective and individual tasks.

Safeguarding communication within the team

- Ensuring that the exchange of information among team members remains understandable.
- Gradually building up a consensus.
- Being on the alert for signs of discouragement.
- Recognizing disagreements between team members and resolving these with them.

Organizing team activities

- Phasing the studies.
- Coordinating individual studies arranging and chairing various types of meetings.

Organizing activities outside team

- Holding regular consultations with government officials.
- Consulting with target groups.
- Stimulating and arranging contacts with outside experts.

General management

- Personnel affairs.
- Finances.
- Trips, field work, transport, equipment.

In a team of the size needed for regional planning, the team leader will be supported by several (2 to 4) experienced senior members, known as key members. These *key members* will preferably represent the broad fields of economy, sociology, agronomy, and physical resources. They will act as coordinators of the disciplines to which they are most closely allied. Together, as *key group*, they will prepare the drafts of the interdisciplinary interim reports.

Inherent in the planning process is a succession of consultations among changing combinations of team members. The items discussed will be the organization and intensity of study, the analysis and interpretation of

data, the integration of results, the presentation of results, and so on. Each of these discussions should result in a conclusion and a decision on how to proceed further. Obviously, a sound *decision-making procedure* is called for.

A certain *protocol* that could be followed is suggested below. Within the team, responsibilities - and consequently decision-making - can be grouped as follows.

Decision-maker	Responsible for	In consultation with
Team leader*	Directing the procedures within the team	Key member
Key member(s)*	Integrating the items within one broad field	Team members working within this broad field
Other team members and consultants	Elaborating the items within a (specific) discipline	

* Apart from their integrating function, team leader and key members bear responsibility for their own discipline

The *team member* representing a certain discipline is considered *responsible* for the decisions *made within his specific field*. He is also responsible for seeing that the information he provides to other team members is correctly interpreted and used.

It may sometimes happen that a team member, besides the responsibility he bears for his own discipline, may also be held responsible for a field that is not entirely his own. If so, he must ensure that in one way or another he obtains expert advice on that subject from outside the team so as to be able to provide the correct information required for the plan.

As a consequence of the interdisciplinarity of regional planning, it can happen that a team member is unable to complete his studies until he ob-

tains information from others. With the close links between studies and planning decisions, this can cause delays. In such cases, the team member involved will earn the gratitude of his fellow members if he can supply provisional data based on well-founded estimates.

In those activities that have a particularly interdisciplinary character, it may not always be immediately obvious which discipline should be responsible for the whole. In such cases, the team leader will appoint one of the more involved disciplines as being *'mainly responsible'*, i.e. in charge of coordination within that particular study. The other disciplines will then be regarded as *'obligatorily assisting'* or *'optionally assisting'*, which, however, does not discharge them from responsibility for their own contribution to the whole.

Although a team member may strictly only be responsible for his own discipline, this does not mean that he should remain impassive on matters that are not precisely within his field. During team discussions, it will be expected of him that he will make suggestions on how material should be integrated and in what form the whole should finally be presented. Of course, on matters of which he is not knowledgeable, he should participate with the appropriate reserve.

Formally, the team as a whole carries no responsibility, nor does it have any official decision-making rights; its organizational structure and heterogeneous composition does not lend itself for this purpose. Formal responsibility to the principal - for the studies and for the final integrated plan - rests with the team leader, who bases his decisions on discussions with the entire team.

If, on matters vital to the studies or planning, any serious disagreements should occur between a team member who is responsible for a certain decision and one or more of the other members, the team leader must attempt to reconcile the opposing parties. If he is unsuccessful, he should consult with other members of the team and, if necessary, with an outside expert, after which he may feel qualified to make the final decision himself.