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HUMAN RESOURCES PLANNING AND MANAGEMENT: A REVIEW OF ISNAR ACTIVITY

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This paper will briefly review ISNAR's work concerning human resources planning and management (HRPM) during the last twelve months. The main focus will be on the analysis and recommendations contained in NARS reviews undertaken during this period.

Three key HRPM subject areas will be addressed, namely, planning, staffing and development, and utilization. The following discussion will describe in general terms how these different aspects of HRPM have been dealt with in recent ISNAR reviews of national agricultural research systems and will consider some of the main conclusions and recommendations that have emerged from these exercises.

HUMAN RESOURCES PLANNING

Human resources planning is concerned with the assessment and provision of the types and amounts of skills required for the attainment of predetermined tasks over a specified time period in the most cost-effective manner. In simple terms, this planning process can be divided into two main parts: one which is concerned with the question - what human resources will be required?, and the other, which focuses on - what human resources will be available?

The level of detail and sophistication in dealing with human resources planning issues has varied from one review to another. To a large extent this is mainly due to differences in the precise terms of reference of the review mission and the extent to which they worked with research managers and scientists (sometimes constituted as task forces) in developing estimates of human resource requirements for the future.

ISNAR's recent work in Tunisia is a good example of the benefits that can be derived from working closely with a team of national consultants, each of whom has specialized expertise in certain clearly defined areas. In

the Tunisian report, research needs by commodity and disciplinary areas are specified in considerable detail, using professional researcher full time equivalents (f.t.e.). A ten-year planning period is adopted, and two sets of first and second order research priority needs are presented (See Table 1). It is noticeable that no sophisticated manpower planning methodology has been used to determine these priority needs. Instead, they have been derived as an integral part of the overall research planning process. This once again underlines the point that human resource requirements for agricultural research personnel can only be estimated on the basis of carefully formulated national research strategies and program objectives. There is no human resource methodology that can circumvent the necessity of undertaking this detailed planning and programming of agricultural research activities.

By expressing future research needs in terms of scientific full-time equivalents, the Tunisian team can make a comprehensive assessment of human resource requirements which is independent of the present organizational structure of agricultural research in Tunisia. Once requirements have been established, it is then appropriate to consider what the most appropriate organizational structure should be. It also encourages a national system perspective by implicitly taking into account all relevant scientific professional personnel in the country. Finally, it helps to ensure that new physical investments for agricultural research are planned so that they serve in a precise manner the needs of professional personnel for research facilities. Too often in the past, research infrastructure has been developed without a clear conception of its future utilization by research personnel.

On the basis of a rigorous examination of agricultural research needs in Tunisia, the team estimates that a total of 248 f.t.e. researchers will be required in 1996 in order

to meet first-order research priorities, and 318 f.t.e. researchers to meet second-order research priorities. Given that there were approximately 245 f.t.e. professionals already engaged in agricultural research activities in 1985, this means that the 10-year research plan elaborated by the team could be implemented *without any increase in the overall numbers of researchers*. Furthermore, the team also concludes that if the experiment station network is rationalized in accordance with their recommendations, then financial resource requirements in 1996 would be no higher than at present. The second-order priority needs require only a 20% net increase in professional research personnel over a ten-year period. While research expenditure would need to increase on average by 2.6% per annum to ensure that these additional researchers are utilized effectively, total agricultural research expenditure in 1996 would remain at the mid 1980s figure of 1.6% of agricultural gross domestic product.

The limited increases in research personnel recommended by the Tunisian team should be contrasted with the very large increases in research personnel which are frequently recommended in national agricultural research plans. Clearly, in some instances, these increases are justifiable, both in terms of actual research needs and in the likely availability of resources, but very often over-inflated estimates of human resource requirements are produced which are only tenuously related to the overall research planning process. When this happens, human resource plans are little more than 'wish lists'. The adverse consequences of this approach to human resource planning are well known. A very similar human resources planning methodology was adopted in the Niger review, again with heavy reliance being placed on collaboration with national research personnel in developing personnel requirement estimates.

The Zimbabwe review adopted a more aggregated approach to determining human resource requirements than was the case in Tunisia. The team recommended that government financial support to the Department of Research and Specialist Services (DR & SS) should increase in real terms by 5.0% per annum during the next 5-6 years, which is in line with the targeted growth of the agricultural sector under the present Five-Year National Development Plan. Under this particular financial scenario, the team calculated that the Department could effectively employ approximately 195 professional staff by 1992, compared with the 140-150 who are currently employed. On the supply side, it was concluded that given current and projected outputs of agriculture and science graduates from domestic and

overseas training institutions, DR & SS should be able to recruit the required number of high-quality graduates to attain the projected net increases in professional and sub-professional staff, taking also into account additional recruitment to make up for the attrition of existing staff. The key resource constraint identified by the team is the likely availability of experienced researchers in DR & SS who have an essential role to play in supervising inexperienced staff. It was recommended, therefore, that DR & SS employ sufficient numbers of expatriate scientific staff as a stop-gap measure during the next 5-10 years.

On the basis of an examination of the main commodities, factors and production systems in Zimbabwe, the team allocated the projected professional staff complement of 195 among the proposed research programs and research services activities. Again, it should be noted that it is the research program (measured in full-time equivalent research person years) that provides the essential building block of the human resources planning exercise.

The review of the Institute of Agricultural Research in Ethiopia was centrally concerned with analyzing the feasibility of a comprehensive manpower development plan developed by the Institute. This calls for a doubling of professional research staff during a nine-year period. While the team believed that IAR's projected human resource estimates were well reasoned, concern was expressed about the availability of university and other graduates to meet recruitment targets. In general, the overall demand for these personnel from government agencies is much greater than the supply. Another set of concerns expressed by the team focused on the ability of IAR to train and effectively deploy such a large increase in mainly inexperienced staff across a much enlarged network of research stations. The team recommended that IAR should set up a Manpower Development Unit which would have the main responsibility for the implementation and monitoring of the manpower development plan.

During 1987, ISNAR staff participated in a review of the NARS in Pakistan. With regard to human resources planning, the mission report noted that further planning should concentrate on improving the efficiency of *existing* research staff, with fewer additions of staff, concentrated on carefully chosen high-priority research problems and that clearly delineated research programs must form the basis of human resources planning. The lack of a well-developed human resources computerized information system was identified as an important factor impeding the production of a long-term operational research plan. In all NARS, but especially relatively

large and decentralized ones such as in Pakistan, research managers must have comprehensive, up-to-date information on all key aspects of the utilization of human resources. This will be dealt with in some detail in the presentations on management information systems and program budgeting.

STAFFING AND DEVELOPMENT

Control over the recruitment process is a prerequisite for effective HRPM. With the exception of Tunisia, research systems reviewed by ISNAR missions during the last year have had sufficient control over the recruitment of researchers and other key categories of personnel. Furthermore, they have generally been able to attract higher-quality recruits, although again, relatively poor conditions of service in the ministry research organizations in Tunisia have militated against this.

With regard to training, considerable emphasis is placed on the need for carefully programmed on-the-job and formal training for researchers and other support personnel. Recommendations in this area are relatively uncontroversial, given the widespread recognition by senior research managers in the NARS concerning the importance of training. However, this is sometimes not the case at the senior policy-making levels and among government agencies responsible for approving training activities.

An important issue is the extent to which a formal apprenticeship for graduate researchers should be instituted. In the Zimbabwe and Uruguay reports, 4-5 year apprenticeships are recommended, composed of two years of closely supervised and structured on-the-job training, followed by master's degree training (or equivalent) in research methodology and an appropriate specialization.

All the review countries, with the exception of Pakistan, continue to be heavily dependent on overseas institutions for most postgraduate training, which has given rise to many of the well-known problems of cost, relevance and duration.

In those countries where very large increases in the research cadre are planned (Ethiopia, Uruguay), the formulation and implementation of comprehensive training strategies pose a major challenge. This is not simply a question of costs, but equally significant are the problems associated with the sequencing of formal postgraduate degree training and the selection of overseas universities.

Given the large investments in training by many NARS, the need to evaluate the effectiveness of training activities becomes increasingly important. ISNAR will need to give more attention to this in the future.

Training requirements for technical and administrative support personnel are given relatively limited attention in the review reports. This is symptomatic of preoccupation with professional personnel requirements, and development and utilization issues in NARS. Again, this imbalance in treatment needs to be rectified.

HUMAN RESOURCES UTILIZATION

A multitude of factors collectively influence the efficiency with which agricultural research personnel are utilized. This, after all, is what agricultural research planning and management is all about. However, two particular issues have preoccupied recent ISNAR reviews: the level of staff morale and motivation, and closely linked to this, the availability of operational resources.

Concerns about motivation take one to the heart of what is conventionally known as organizational behavior theory. This focuses on the behavior of the individual in an organization and looks in particular at his/her specific needs and responses to incentives, pressures and influences in the work environment. The review reports generally identify poor conditions of service for researchers and other staff as being the major cause of poor motivation. Incomes are not only very low in an absolute sense but also in relation to what is paid to equivalent personnel in other public and private organizations. This is identified as 'the major problem' in Tunisia, where senior university professionals earn up to twice as much as equivalent research personnel employed in the Ministry of Agriculture.

The Uruguay and Zimbabwe reports make comprehensive recommendations about the grading and pay structures of researchers and technicians. In the case of Uruguay, the establishment of a new semi-autonomous agricultural research organization (to be called Instituto Uruguayo de Tecnologia Agropecuaria) has provided the opportunity for a thorough reappraisal of the existing conditions of service.

The median experience-income profile for agricultural researchers in Uruguay is flat, with very compressed income differentials between staff with different levels of experience. It is possible to analyze the extent to which incomes are dispersed around the median values.

This dispersion is limited in Uruguay, which indicates that seniority tends to be the most important determinant of professional income.

The Uruguay report recommends that the existing grade and salary schemes should be replaced by new ones which will effectively meet the motivational and overall career needs of IUTA professionals in addition to other staff categories. The report states that the new schemes should be based on the following principles:

- * Simple in conception so that they can be easily understood by all employees and implemented in a straightforward manner. Thus, the existing system of multiple income additions and allowances (for total dedication, seniority, family situation, etc.) should whenever possible be consolidated into a single salary.
- * Effective promotion and financial incentives throughout the entire career of the staff member. There should therefore be regular opportunities for significant promotion, which should be linked with relatively sizeable percentage increases in remuneration.
- * For each staff category, a set of job titles which readily convey the competence and/or seniority of the staff member and also help to provide a clear sense of career progression. The recommended new job grading scheme for researchers comprises: Assistant Researchers, Researcher I, Researcher II, Senior Researcher, Principal Researcher and Chief Researcher.
- * Well-specified promotion criteria which place primary reliance on demonstrated job performance but, where appropriate, give adequate recognition to the attainment of job-relevant qualifications. Simple seniority criteria should generally only play a limited role.
- * There should be dual administrative and scientific career ladders for professional staff. Thus the competent professional who wants to remain a practicing scientist throughout his/her career can do

so, while at the same time receiving an income which is equal to or even greater than that of management staff.

- * Closely related to merit promotion criteria and the dual ladder, promotion to higher job positions should not be subject to the availability of vacancies in fixed establishments but simply on whether the individual fulfills the specified performance and service requirements for promotion.
- * Provision for accelerated advancement of a specially competent and highly motivated staff who make exceptionally valuable contributions to research activities. Without this flexibility there is the likelihood that 'high flyers' will leave to take up more attractive jobs elsewhere.
- * An income growth curve that corresponds with the underlying relationship between the age (or experience) of researchers and their level and rate of growth of individual productivity. This curve should normally be 'S' shaped, with low productivity growth during the early stages of the professional's career, while new skills are being acquired, followed by a period of relatively rapid growth which gradually tapers off as the researcher reaches the latter stage of his/her career.
- * Full-time employment but with some opportunities for professional staff to supplement their incomes through outside consultancies.

On the basis of these principles, new grade and salary schemes for professionals in INTA are proposed in the report.

The existing grade and salary schemes for researchers and technicians employed by DR & SS of Zimbabwe conform to a much greater extent to the above principles than in Uruguay. Consequently, the report's recommendations are generally more limited, being confined to making slight adjustments in the typical length of time spent by a researcher in each grade and ensuring that the researcher enjoys steady career progression for at least 30-35 years.