RURAL OBSERVATORIES IN MADAGASCAR

An innovative mechanism for monitoring the countryside

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Since one of the main aims of the Madio project was to analyse the prerequisites for a revival of production, it was evidently essential to begin by compiling statistics on the agricultural sector in order to assess the adjustments that would have to be made in that sector. This diagnosis was made all the more necessary by the fact that the system of agricultural statistics had broken down. Consequently, while a veritable revolution had been sweeping the countryside since 1980, with the liberalisation of price structures and marketing channels, the impact of these changes had never been assessed. To meet this need, the Madio project established an innovative mechanism, involving the creation of four rural observatories. The present article describes this experiment. In the first part, we portray the context in which the rural observatories were established as part of the Madio projects, then we describe their chief characteristics before moving on to assess the contribution they have made in the first four years of their existence. Finally, we conclude by examining prospects for the future, especially as regards the creation of a complete network of rural observatories in Madagascar.

Analysing the economy of Madagascar without taking account of agriculture, which employs almost 80% of the active population, would be a tall order, such is the inconceivability of a sustainable and equitable growth process from which the country's rural areas are excluded. For the Madio project, the compilation of statistical information has proved to be indispensable, particularly in view of the fact that the statistical system was conspicuously deficient in this area. When the Madio project was launched in 1994, the most recent agricultural census was ten years old (1984), and no large-scale survey had been conducted since that date (Rakotomanana, 1994) – this in spite of the fact that the countryside had been experiencing real upheaval since the mid-eighties, thanks to the liberalisation of pricing structures and marketing channels.

Against this background, it was only right that the Madio project should enter the domain of agricultural statistics. The question was what form such involvement should take. Very clearly, Madio had neither the resources nor a mandate to conduct a conventional nationwide agricultural survey. This option was made even less practical by the fact that the Ministry of Agriculture planned to conduct a baseline survey with financial support from the European Union in order to update the figures from the 1984 census. For this reason, the Madio project team decided to try out an innovative approach, namely the creation of observatories in rural areas.

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A brief history of the creation of rural observatories

Of all the activities initiated within the scope of the Madio project, the creation of rural observatories is the one that corresponds most closely to the traditional responsibilities and interests of the IRD (*Institut de recherche pour le développement*, formerly known as Orstom). Over several decades, Orstom had produced a systematic body of research in the fields of economic anthropology, sociology and geography relating to the African rural environment, epitomised by its series of village monographs. While the importance of this type of research and the quality of the published studies are undeniable, in the course of time this type of specialisation came in for increasing criticism, particularly from the partners of Orstom (donors and development agencies). The criticism levelled at these studies was twofold:

The questions asked did not take sufficient account of the economic dimension, particularly the macroeconomic dimension, which has become the main concern of donors and African governments as structural adjustment becomes a global phenomenon.

Detailed though they might be, the findings of the monographs focusing on territorial 'micro-units' did not lend themselves to extrapolation.[1]

Consequently, these studies did much to project the image of Orstom's research as piecemeal, extremely long, devoid of a scientific basis, expensive, difficult to apply in practice and hence ultimately of no development value. Their legitimacy is further eroded by the fact that the universities gradually abandoned this line of research, deemed to be outdated, and thereby isolated Orstom from the rest of the scientific community. Orstom's approach was finally questioned within the organisation itself, which fell prey in the early nineties to the 'great synthesis' syndrome, when the management board asked some researchers to compile a collection of the most general and publishable findings from the vast array of monographs; this compendium has never seen the light of day.

At that time, the creation of the Ocisca programme (Observatory of Institutional and Social Changes in Cameroon) by Orstom's Society, Urbanisation and Development (SUD) Division was perceived as an innovative response to the criticism levelled at the monographic approach. On the one hand, the observatory was to be a means of analysing the ways in which groups within society who had all too often been disregarded by the first-generation advocates of structural adjustment responded to economic policies. On the other hand, the programme was designed to develop mechanisms that would monitor processes of change over a period of time as an alternative to continued reliance on a fundamentally timeless 'structuralist' approach. Finally, the multi-

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[1] Although these are warranted criticisms, they should not obscure the fact that this body of research, which was accumulated until the early eighties, is still used by researchers in the field if they manage to obtain copies. In fact, the social behaviour patterns identified by these studies often shed light on the present-day strategies of the various players in Madagascar.

disciplinary approach, Orstom's time-honoured remedy, was supposed to counterbalance the simplistic imperial 'economicism' of the 'developers'.

When discussions on the creation of the Madio project were launched in 1992-93 between DIAL and the SUD department at Orstom, such was the euphoria over the innovativeness and validity of the Ocisca programme in Cameroon, regarded as Orstom's answer to the World Bank's Social Dimensions of Adjustment in Sub-Saharan Africa (SDA) programme, that Orstom proposed the establishment of a spin-off programme, 'Ocisma', in Madagascar as part of a wider incubation process.

This option was ultimately rejected. On the one hand, it did not accord with the established aims of the Madio project, particularly as regards the aspect of macroeconomic analysis, which was not part of the Ocisca structure. On the other hand, the preferred institutional base also differed, Ocisca being geared to university research institutes and Madio to economic administrative bodies. In the meantime, Ocisca had encountered major difficulties in the field and had been the subject of undistinguished assessments.

In the end, the only feature of the Ocisca programme that the Madio project assimilated was the idea of rural observatories. Even here, the link was tenuous. The Orstom researchers belonging to the DIAL institute who were doing parallel work on the Ocisca programme in Cameroon for the French agency for development cooperation (*Coopération française*) and the Cameroonian Ministry of Planning took a critical view of the Ocisca mechanism (Herrera, 1996), judging that it fell short of the aims of the Madio project in two respects:

The genuinely economic aspect of the line of enquiry pursued in the Ocisca programme seemed inadequate, whereas it was the main focus of the Madio project.

The statistical management of the surveys (sampling, quality control and analysis of data) left a lot to be desired, which meant that their findings had to be used with great care. The absence of professional statisticians in the first Ocisca team was at the root of these shortcomings. While their absence is not a great problem in the monographic type of approach, it becomes a fatal flaw when quantitative multistage surveys have to be conducted.

Lastly, while the 'observatory' concept, albeit in a rather loose form, was retained by the Madio project, the way in which it was realised was designed to avoid previous shortcomings. This meant that, for the rural observatories as for the other components of the Madio project, the primary skills that were enlisted lay in the fields of economics and statistics, the principle being that the multidisciplinary approach, if mismanaged, becomes a potential stumbling block rather than an asset. While the issues examined by the rural observatories are resolutely economic and the instruments they use are statistical, the Madio project manifestly succeeded in ensuring that the observatories were open to inputs from other disciplines. In fact, by appointing as head of the observatories a geographical researcher from Orstom who is very

familiar with rural Madagascar and with the operators in the field of rural development, i.e. non-governmental organisations and development projects, the Madio project provided for fruitful cross-pollination between knowledge of local conditions, which are particularly complex in Madagascar in view of the isolation of the country's rural areas, and mastery of analytical methods. In this way, the choice of observation sites and local partners was made by the geographer in charge of the observatories, while the survey strategy (sampling, collection and logging) and the processing of results benefited from the experience of specialists in these fields (Droy, 1995).

This pooling of know-how ultimately made it possible to transform an experimental initiative into a smooth-running mechanism for the acquisition of knowledge, an instrument that has proved its worth.

The rural observatories in Madagascar

Although the observatories established by the Madio project were developed independently and largely on the basis of traditional local working methods, they may be regarded as part of the extended family of socio-economic observatories which have been proliferating since the 1980s in sub-Saharan Africa, particularly in the framework of the Orstom programmes. A recent study (Clignet, 1998) has attempted to collate the sparse and often disparate experience that has been acquired in the use of this new investigation method.

What is a socio-economic observatory?

Borrowed from astronomy, the word 'observatory' is used with increasing frequency to describe a particular form of information system. The use of observatories by economists and social scientists as a research tool was developed in the late eighties following the application of a similar method for the exploitation of hydrological and biological data.

Socio-economic observatories were created under the influence of new development philosophies, accentuating in particular the need to reduce poverty, combat exclusion and promote sustainable human development. The "*common aspect of all these aims is that they express, each in its own way, the extent of the social imbalances in today's world and the need to place greater emphasis on social justice in development initiatives and economic policies*" (tr. from Dubois, 1998, p. 178).

Socio-economic observatories "*permit the assessment of changes, for example the impact of political measures taken at a global level, by focusing on the effects of these measures on one or more pre-identified populations*" (tr. from Piron, 1998, p. 226). In fact, the paramount aim of observatories is to identify, by means of a number of indicators, the dynamics of improvements or deteriorations that affect people and their living standards.

A socio-economic observatory has certain characteristics of its own, namely "*focusing on a particular social category over a given period, observing*

continuously in order to follow the development of behaviour patterns and combining quantitative methods, to describe a situation, with qualitative methods, to explain that situation" (tr. from Dubois, 1998, p. 182).

Four observation sites to reflect regional diversity

Because of the diversity of its reliefs and its climates, Madagascar possesses a very wide variety of ecosystems in which agriculture is practised. The geographical distribution of the population is also very uneven, which determines the intensity or otherwise of the farming methods used in the various regions. Appropriate rural-development policies cannot be formulated unless this diversity is taken into account.

The choice of sites

In the absence of a recent and reliable sample base,[2] the sites of the rural observatories were selected by a process of informed choice. It cannot therefore be claimed that the selected sites are in any way regionally or nationally representative in the statistical sense of the term. An observatory is a confined area, limited to a few villages that are chosen because they illustrate one of the key sets of problems affecting Malagasy agriculture.

A list of potential sites was drawn up on the basis of the following criteria:

- the broad agroclimatic area and the dominant production system (cash crops, food crops, fishing or livestock husbandry);
- population density, the ethnic composition of the population and migratory movements;
- accessibility or isolation: existence of roads or tracks for the transport of produce and distance to markets and secondary urban centres;
- support structures or organisational framework: state of agricultural, livestock and fishing authorities, present or past existence of development projects (NGOs, bilateral or multilateral cooperation schemes).

The sites on this initial list were correlated with a development indicator for each of the *fivondronana*, or districts.[3] These single composite indicators were calculated by the regional-planning division of the Ministry of Planning on the basis of data on the physical accessibility of the region, on the availability of public health and education facilities, on the basic infrastructure of water and

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[2] The creation or updating of such a sample base is outside the ambit of the Madio rural-observatories project.

[3] In 1995, the administrative structure in Madagascar comprised four tiers: the six faritany, or provinces, were subdivided into 111 fivondrana; the next lower tier was that of the firaisana, followed by the smallest unit, the fokontany. A new administrative structure was established in 1997, when the fokontany were abolished and the firaisana were replaced by communes, whose territorial boundaries differed from those of the firaisana in some parts of the country. The two upper tiers were retained.

electricity supply, postal services and telephone lines and on access to government or private-sector economic-assistance services (organisational structures, financial institutions, marketing boards, etc.). The *fivondronana* were classified into four categories, ranging from the least developed, which are concentrated in the south and south-east, to the most advanced, which tend to be in the north and the north-east. One of the sites for the rural observatories was chosen from each of these four categories.

Four observatories, four sets of problems

Four observatories were created in 1995, and each of them demonstrates a different set of problems facing Malagasy agriculture (see map below). The choice was limited to four because of the human and financial resources available for the project and because of the experimental nature of the operating method.

The observatory on the coastal Mahafaly Plateau in Toliary Province: a population of fishermen and livestock farmers in an arid and isolated area

The coastal Mahafaly Plateau is a very isolated area with low population density. Its coastal villages are peopled by two different ethnic groups: the Vezo, who live from fishing, and the Tanalana, who are livestock farmers. Most of the fishery products are marketed, but on conditions that are unfavourable to the fishing communities – a consequence of their isolated situation. Living conditions in the villages are very primitive; the supply of fresh water is attended by severe difficulties, and a number of public services have been withdrawn. Rainfall is low and irregular, and drought often ruins harvests, as happened in 1995. In connection with the observatory, collaboration was begun with the main development agency in the region, which runs support schemes for integrated community development of traditional fishing on the south coast of Madagascar.

The vanilla observatory in Antalaha: impact of trade liberalisation on vanilla producers

The north-east of Madagascar is famous for its large-scale production of major exports: primarily vanilla, but also coffee, pepper and cloves. These products vary in their relative importance as cash crops within the peasant farmers' production system, where they co-exist with food crops such as rice, cassava and bananas. Trade in vanilla was liberalised in May 1995, and the observatory monitored the producers' responses to this new situation as events unfolded.

The Vakinankaratra observatory in Antsirabe: family smallholdings in the central plateau

The central plateau is the most densely populated region of Madagascar. In order to make better use of the diverse environmental facets of the rugged terrain, the peasant farmers of the plateau have developed a diversified cropping system. The district of Vakinankaratra in the heart of the central plateau was chosen as an observation site to illustrate the problems besetting

family smallholdings whose main activity is rice-growing but who suffer from a general shortage of rice.

The Marovoay observatory for the Lower Betsiboka Plain: a large irrigated rice-growing area where restructuring is taking place

The plain of the lower Betsiboka river was developed in the colonial era and has become one of Madagascar's most productive rice-growing areas. Some of the rice grown here was exported to Europe. This area is chiefly populated by migrants who have come from several parts of Madagascar looking for work and, subsequently, land. Like the other large irrigated areas, the Lower Betsiboka Plain was hit hard by the crisis of the eighties: central government struggled to administer the area, and the supply of agricultural inputs and equipment dried up. The area's 'modern-minded' peasant farmers who were firmly integrated into the market economy had to adopt retrenchment or diversification strategies. At a time when the agricultural irrigation networks are being rehabilitated, and responsibility for their management is being transferred to the water users, the observatory has provided an insight into the strategies adopted by producers.

The survey method

A panel study

For each rural observatory, a multistage survey of households was conducted on an annual basis. The survey took the form of a panel study, the sample comprising a constant set of households from year to year.

In the first of the annual surveys in 1995, a sample of around 500 households, based in at least two sites (hamlets or villages) was selected for each observatory. In two of the observatories, the sample comprised all the households in selected villages, while in the others the sample households were randomly selected from an exhaustive sample frame of households.

The sample frame was compiled at the start of each annual survey with a view to identifying the respondent households from the previous year and, if appropriate, finding out why particular households were no longer listed. In this way, the survey could take account of changes in population from one year to the next as households moved away and new households were established. Since a constant sample size of 500 households for each observatory was to be maintained, the households that had moved had to be replaced by new households on the basis of random selection; these new households were either drawn from the villages already covered by the survey or, if the total population of those villages had become insufficient, from other villages nearby (see Table 1 below).

At the request of the partners of the Madio project and the development agencies, the geographical coverage of the rural observatories was gradually widened. In 1997, for example, the Vakinankaratra observatory began to monitor five villages instead of only two. This broader approach made it

possible to obtain a better picture of the whole district, since each village represented a specific aspect of local activity. In 1998, the same operation was undertaken in Marovoay, where two villages on the left bank of the River Betsiboka were surveyed to supplement the data from those on the right bank. Finally, in the territory covered by the Antalaha observatory, two new villages were selected from the Sambava-Andapa corridor, in the area of operation of the EU-funded project for the revival of crop exports. These extensions of the observatories' geographical coverage have had little effect on to the size of the sample of households interviewed in each observatory area; they were essentially made in order to replace households withdrawing from the panel with households living in new survey areas.

A household survey

The observation unit for the rural observatories is the household, not the farm as in traditional agricultural surveys. This approach makes it possible to cover the entire range of each person's activities and to make the fundamental but all too frequently blurred distinction between the rural world and the world of agriculture. While the great majority of rural householders are crop farmers, livestock farmers or fishermen, others may be craftsmen, tradesmen, shopkeepers or indeed wage-earners. Moreover, for each household the survey makes a distinction between the primary activity, i.e. the activity considered by the household to bring in most of its income and/or to consume most of the family's working time, and the secondary activity or activities of the household. It is very common for households to engage in more than one remunerative activity, and the survival of rural households often depends on it. Targeting households is a means of assessing the level of secondary activity and identifying the members of the working population who have secondary jobs, not necessarily in agriculture.

Table 1 Population surveyed by the four observatories in 1998

	Antalaha	Antsirabe	Marovoay	Toliary	Total
Number of households	553	598	553	504	2,208
Total number of household members	2,850	3,581	3,192	2,934	12,557
Average household size	*5.2*	*6.0*	*5.8*	*5.8*	*5.7*
Household panel surveyed in 1995, 1996, 1997 and 1998	297	288	303	227	1,115

Sources: Rural observatories, 1995-1998; Madio

Information is collected on the basis of statements made by the householder and his or her partner. These statements are made in answer to both qualitative and quantitative questions. In this system, the acreage farmed, the volumes of agricultural production and the quantities marketed are calculated on the basis of the knowledge and memory of producers. In 1996 a test was conducted on a subsample of households to verify the declared acreage figures; in this test, the measured surface areas of fields were compared with the acreage stated in the

interviews. The results showed that there was no systematic bias, since inaccuracies in the interviewees' statements tended to cancel each other out.[4]

Organising operations – a tricky undertaking

The key role of the supervisors

The dispersal of the sites throughout Madagascar and the work undertaken in the isolated areas raised serious logistical problems and required the team in charge of the observatories to duplicate a number of operations. In the system that has been put in place, the survey supervisors play a key role. Two or three supervisors ensure that the field work runs smoothly and check the quality of the data collected each year in each of the observatories. The supervisor in charge of an observatory is a permanent managerial employee of the Madio project. He or she is assisted by one or two deputy supervisors, selected on the basis of their experience of surveys and their level of academic qualification or their knowledge of rural economics. They all have at least a degree in economics, business management, agricultural science, history or geography, and some have already taken part in other surveys in the framework of the Madio project. As far as possible, the services of these deputy supervisors are retained, and they take part every year in the surveys conducted by the rural observatories in order to master the prescribed surveying methods. The supervisors organise the work cycle, take part in the field operations from start to finish and then work on the data. Their presence in the villages throughout the surveys is one of the keys to the quality of the surveys. This way of working differs from the other surveys that have been conducted in rural areas, because in other surveys temporary researchers are normally far less closely integrated into the organisational structure.

Recruitment and training of researchers

The team of researchers is recruited and trained locally at each observatory. In fact, to facilitate contacts with the respondent households, and hence to ensure that the findings meet certain quality standards, the researchers must be natives of the survey area who are familiar with local customs and practices and the local dialect and can therefore communicate easily with their interviewees. They are not, however, assigned to their native village, since the questionnaire asks for confidential information. In any case, the qualification requirements (at least the university-entrance qualification - the *baccalauréat* - but preferably a university degree) generally rule out the recruitment of researchers from rural areas. Since the researchers are recruited on a temporary basis – for the two-month period of field work – and since not all of the research team are available in consecutive years, recruitment and training sessions are held every year.

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[4] For a more systematic study of the comparison between declaratory methods and methods based on physical measurement, see the article by T. Marchant (1989), who concluded that neither of the two methods established clear superiority over the other - at least not in the context in which they were used in Africa.

Researchers are recruited with the aid of the local partner organisations of each observatory. The supervisors administer written and oral tests and then provide a week's training for the ten or so successful candidates selected for their respective observatories. This training focuses chiefly on explaining the aims of the questionnaire, teaching the recruits how to complete the questionnaire, fostering team spirit and showing the recruits how to approach their assigned households. Practical cases are analysed. The training sessions take place in town, either in premises lent by partner organisations or in halls hired from private owners.

The 'integration stage'

The work of conducting the survey by interviewing householders does not begin until the researchers have been in their assigned villages for a few days. This transition period is known as the 'integration stage' and is used to discuss matters with the authorities, be they administrative departments or traditional local leaders. This is generally the occasion when the results of the previous survey are presented.

The team then compiles the sample frame; if it comprises more households than they need, the team selects households by drawing lots. During these few days, the researchers have the task of finding out from the villagers the units of measurement that are used in the village and converting them into standard weights or units of length. These few days enable the villagers to become accustomed to the presence of the researchers.

The survey stage proper

The interview with a household, at which the interviewer completes a questionnaire, takes about two hours. In principle, the householder and his or her partner should both take part in the interview. The number of households interviewed by a single researcher is limited to three per day. This 'arbitrary' constraint was imposed to curb any temptation to rush the survey. Every evening, the researchers return the completed questionnaires to their supervisor, who tells them which households to interview the following day.

On a daily basis, the supervisors take part in the survey of households by organising the researchers' work schedule and validating completed questionnaires on the day they receive them; in the event of an error or imprecise response, the supervisors are therefore able to call on the households in question the following day. The supervisors assign codes to various items of information as soon as they receive the completed questionnaires and conduct consistency tests between the answers to various questions. This organisational method is unusual in a rural survey, because living conditions in the villages are particularly harsh, and organisers are often loath to live in the bush for several weeks at a time. The concentration of the interviewed households within a very limited area makes it possible to carry out this close monitoring, which would be impossible to achieve in a nationwide survey. This system is a very important means of guaranteeing the quality and reliability of the findings (see Table 2 below).

The questionnaire

In spite of the desire to simplify the survey as much as possible so as not to try the patience of the households whose help is systematically enlisted every year, the complexity of the rural world on the one hand, with its diversity of crops and livestock, its agricultural and its non-agricultural activities, and the commitment to the accurate quantification of flows and stocks on the other hand have resulted in the production of a relatively long questionnaire, which runs to about ten pages. It comprises a general section, with the same questions for every observatory year after year, and special sections, which are either specific to each observatory, such as the vanilla section in Antalaha or the fishing section in Toliary, or are devoted to a topic that is highlighted in a particular year, such as educational issues, the distribution of household tasks between men and women, etc.

The general section

Among the variables selected for the general section of the questionnaire, economic information (prices, quantities marketed or consumed by households, etc.) plays a considerably more important role than technical information about farm structures. The data that are collected relate especially to the factors of agricultural production (land, labour, agricultural equipment, etc.) and the supply of produce (quantities produced by farmers, consumed by households and marketed). The monitoring of prices paid to producers is also especially important in a context of liberalisation and diminishing state intervention. Activities other than farming are also taken into account, particularly with regard to the income they bring into households. The questionnaire also collects information on household living standards (monetary expenditure, housing standard and means of transport), on children's schooling and food security, with questions relating to both quantity and quality. The whole of this collected information provides insights into the strategies of fishermen, crop and livestock farmers and other producers in their respective areas of activity.

Table 2 Characteristics of the interviews conducted during the four surveys, from 1995 to 1998, for each rural observatory

	Antalaha				Antsirabe			
	1995	1996	1997	1998	1995	1996	1997	1998
Respondent category*								
householder	-	83	76	79	-	63	64	66
partner	-	16	21	20	-	35	35	32
other	-	1	3	1	-	2	1	2
Interview quality**								
good	63	56	73	49	41	39	24	15
average	35	40	25	49	55	55	68	81
mediocre	2	4	2	2	4	6	8	4

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Table 2 Characteristics of the interviews conducted during the four surveys, from 1995 to 1998, for each rural observatory *(continued)*

	Marovaoy				Toliary			
	1995	1996	1997	1998	1995	1996	1997	1998
Respondent category*								
householder	-	78	79	82	-	71	49	59
partner	-	21	20	17	-	27	46	40
other	-	1	1	1	-	2	5	1
Interview quality**								
good	41	40	51	44	73	60	44	32
average	55	51	43	48	26	36	50	65
mediocre	4	9	6	8	1	4	6	3

* This information was not recorded in 1995.

** The quality of an interview is based on the researcher's assessment of the way in which the interview proceeded. It takes account of two factors: the reticence of the interviewee and his or her difficulty in answering questions.

Sources: Rural observatories, 1995-1998; Madio.

The special sections

To supplement the general section, which is an essential basis for the calculation of household income, and the section that is specific to each individual observatory, a special topic is highlighted each year. In 1997, for example, the questionnaire was designed to provide a better understanding of the specific roles of men and women with regard to a range of household activities. In 1998, a section on rural radios was added at the request of the partner organisations collaborating with the Madio project in the framework of the rural observatories.

'Peasant measurements' or standardised units?

The choice of units of measurement raises a methodological problem. In fact, the units that are used among the peasant population to measure surfaces, weights and volumes are not standardised and vary from one village to another. Requiring peasant farmers and fishermen to give their answers in standard units, i.e. kilograms, litres or hectares, is the surest way of losing touch with reality. We therefore opted to work with 'peasant measurements'. Agricultural production is measured in *daba* or *vata* (oilcans), in *zinga* (a kind of metal drinking vessel), in *sobika* (baskets) or in cartloads. Rice-growing acreage is measured by the number of transplanters, by seed quantities and by *kipa* (the number of seedlings to be planted out). In each village, these units of measurement are identified and converted into standard weights and measures before the start of the household survey. This work has to be done separately for each village, because the same names are sometimes applied to different measures from one village to another (for example, the cans or *daba* hold different volumes of fluid), nor is there any standardisation of 'peasant measurements' between villages. After the interview with each respondent

household, the completed questionnaire is reviewed by the supervisor of the survey, who converts the 'peasant measurements' into standard weights and measures.

The timetable and cost of operations

The entire survey process at the rural observatories takes about ten months. This period is divided into three phases (see Figure 1 below).

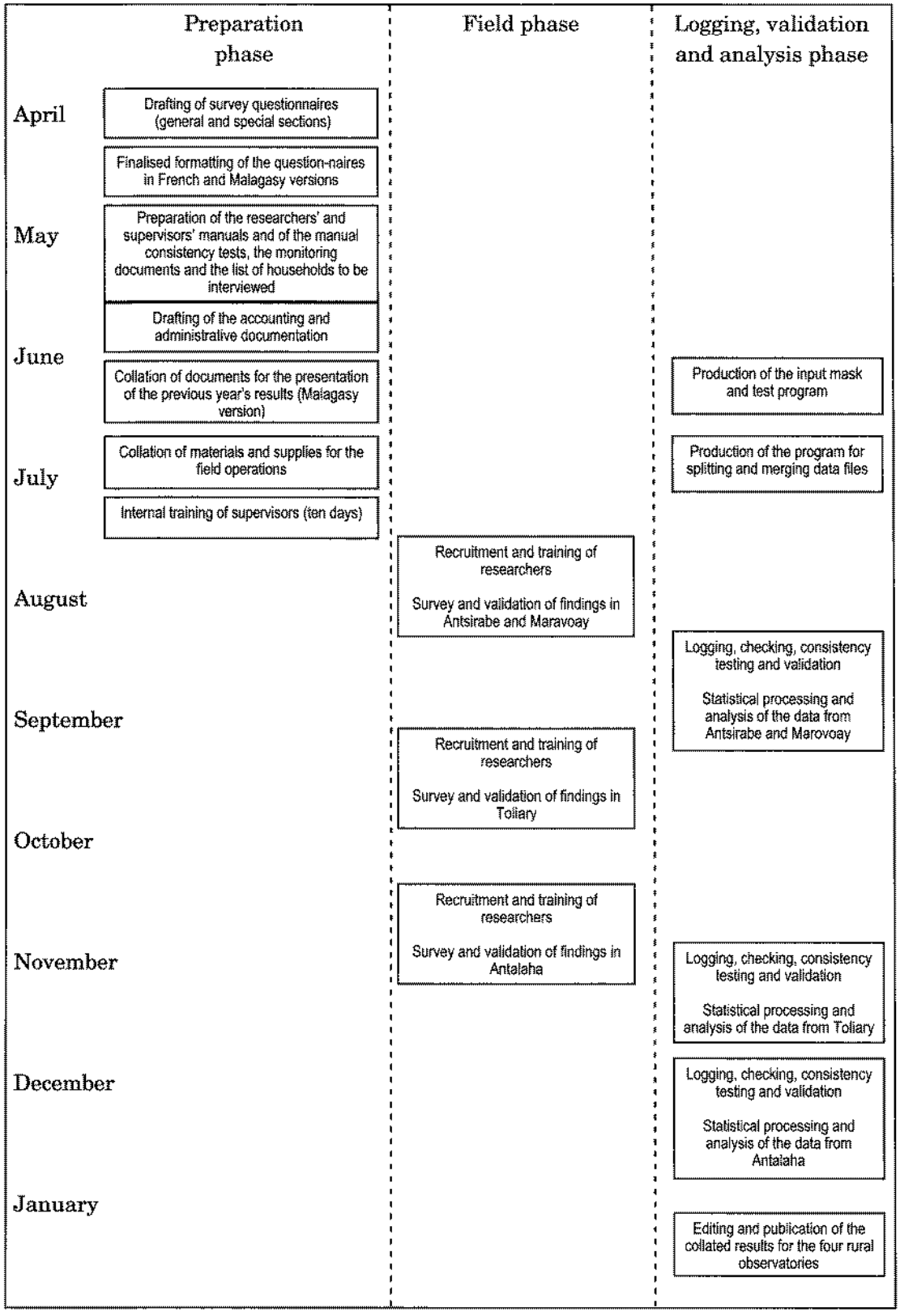
During the **preparatory phase**, lasting two to three months, the management teams of the rural observatories draft and finalise the general and special sections of the questionnaires. They also finalise the manuals and technical documents for use during the collection of data as well as the budget estimates. In addition, the supervisors put together survival packs for the researchers in the field; the main contents of these are a set of cooking utensils, camping equipment and the supplies required for the collection of data. During this preparatory phase, ten days of internal training are held for all the supervisors with a view to ensuring that the same methods, concepts and collection procedures are used in all the rural observatories.

The **field phase** involves the completion and validation of the questionnaires on the basis of interviews with the respondent households. To this end, the recruited researchers (about ten per observatory) attend a week's training course before leaving for their survey locations with the supervisors, who bear ultimate responsibility for the quality of the validated questionnaires. Because of differences in agricultural timetables, and also partly for reasons connected with human resources and logistics, the collection operation is divided into two parts: the first collection period is from mid-July to the end of August in Antsirabe and Marovoay, and the second stretches from mid-September to the end of November in Toliary and Antalaha.

The **logging, validation and analysis phase** starts with the production of the input mask, the program for splitting and merging data files and the consistency-testing program. The data for Marovoay and Antsirabe are logged before the start of the second collection period so that the management teams of the rural observatories can begin to process and analyse the captured data. Consequently, once the data from the second collection period have been validated, it is merely a matter of launching the same programs again. The initial results are edited during the months of December and January, then the annual publication of results takes place around the beginning of February.

Every year, the collection team in each observatory comprises two or three supervisors, ten to twelve researchers and a driver.

Figure 1 Standard timetable for an annual survey for the four rural observatories



From the start of field operations until the publication of the first results, the annual aggregate expenditure on the four observatories is in the order of 100,000 French francs (see Table 3 below). The average cost of an annual survey for a rural observatory is about FF 25,000, but the precise amount depends on various factors (distance from the capital, accessibility, availability of accommodation for the researchers, etc.). The cost of a single validated questionnaire works out at FF 50 on average, which is an entirely reasonable amount for a survey of this type.

An instrument for the acquisition of new knowledge about rural areas

Complementing traditional agricultural surveys

Having described the methods employed by the rural observatories, we must now address the very reasonable question of the place occupied by this system of surveys in the traditional framework of agricultural statistics. This question is made all the more pertinent by the fact that the rural observatories have often been perceived as a direct, and hence unwelcome, rival by the competent officials in the Malagasy Ministry of Agriculture.

We should certainly stress that the rural observatories are not intended in any way to provide macroeconomic data on Malagasy agriculture as a whole or even on regional agriculture within Madagascar. The choice of villages and the survey strategy were expressly designed for a different purpose. So the extrapolation of figures on cultivated acreage, total production volumes, the marketed quantity of each product or harvest yields, all of which are indispensable when it comes to compiling national accounts, is not a matter for the rural observatories but for the national statistical authorities in the domain of agriculture

Although in statistical terms each of the observatories only represents itself, their primary aim is to shed light on a particular set of problems associated with a specific economic issue and reflecting one facet of the diverse rural world in Madagascar. For this reason, publications containing the findings of the observatories always present the processed data for each observatory separately, never as aggregate figures.

This being the case, why choose an approach that does not adhere to the paramount precept of statistical enquiry, namely representativeness? From a statistician's point of view, the absence of scope for extrapolation is undoubtedly a handicap, but the use of rural observatories nevertheless offers a number of significant advantages which cannot be provided by the more traditional agricultural surveys, at least in the manner in which they are conducted in Africa, and particularly in Madagascar.

First of all, the geographical concentration of the project areas facilitates the administration of surveys - a rock on which numerous statistical operations in rural areas have foundered. The low cost, the reliability of data resulting from

closer scrutiny of field operations and the rapid availability of results (less than three months after the data have been collected) are all advantages that derive from this geographical concentration.

Moreover, the creation of a panel of observation units (households) is the best means of taking account of individual trends that develop in the course of time. In fact, cross-sectional surveys can only provide aggregates and structural data. They do not provide any basis for behavioural analysis, which could reflect the wide diversity of individual characteristics and the temporal dimension. The study of households is also an advantage, since it serves to elucidate the complexity of the decisions taken at that level, decisions that could not be fully understood if they were examined on the sole basis of production units, as is the case in most agricultural surveys. It is also the analytical level that has been used in the most significant new microeconomic studies of agricultural households. One example of this type of approach has been developed on the basis of data from the rural observatories with the aim of studying the determinants of the rice supply to Malagasy households (Robilliard, 1999).

Table 3 Annual budget of the rural observatories, 1995-1998 (in French francs*)

	1995	1996	1997	1998
Preparation of field operations	12,250	-	-	-
Reproduction of questionnaires	5,470	5,570	4,050	3,690
Vehicle running costs	5,010	17,130	7,010	6,620
Payment of the team of data loggers	8,330	8,120	8,430	6,680
Payment of the data-collection team	52,600	57,080	58,240	69,980
Supplies, equipment and rent	6,860	5,260	3,300	3,740
Publication of initial results	19,710	16,810	15,270	14,260
Total	110,230	109,970	96,300	104,970

* Monetary amounts have been converted from Malagasy francs (FMG) into French francs on the basis of the average exchange rate for the survey period in the relevant year: one French franc was equivalent to FMG 900 in 1995, FMG 797 in 1996, FMG 884 in 1997 and FMG 936 in 1998.

In addition, given the small sample sizes in agricultural surveys in Africa – a few thousand units at best – some specific subjects are beyond the reach of these surveys. Vanilla producers, for instance, represent only one to two per cent of all agricultural producers in Madagascar, so it is impossible to record their responses to the liberalisation of the vanilla trade by a national survey involving a representative sample of the entire farming community. And yet vanilla is a strategic product for the Malagasy economy, and the quality of harvested vanilla deteriorated in the course of the 1990s. The question asked in the observatory framework is therefore whether the changes in the organisation of the vanilla trade have altered the options available to producers and their behaviour patterns.

The rural-observatory approach also makes it possible to enhance the interpretation of individual characteristics and developments through low-cost

access to intermediate-scale economic information extraneous to the survey. In other words, the narrow geographical focus makes it possible to gather, at low marginal cost, available data on intermediate structures (medical and care facilities, schools, markets and collection centres) and thus to assess more accurately the interactions between supply and demand than would be possible through a household survey alone, which examines only one of the two aspects of every market (the demand for health care or education, the supply of agricultural produce, etc.).

Finally, given the decline of the system of agricultural statistics in Madagascar, the rural observatories are a means of obtaining indicators and approximate values for the main parameters of Malagasy agriculture in the absence of national data (the development of rice yields, for example, or the percentage of agricultural incomes derived from secondary activities). The diversity that exists both between observatories and between the villages surveyed by any one observatory provides a significant array of variable information. For example, the rice yields measured by observatories vary from one metric ton per hectare in Antalaha and Antsirabe, areas that do not specialise in rice production, to two metric tons per hectare in Marovoay, which is in one of the country's two main rice-growing areas; these figures alone give us good reason to assume that the official national average yield of more than two metric tons per hectare is grossly overestimated (Roubaud, 1997).

In fact, the rural observatories constitute the only large-scale statistical operation that has been successfully conducted in rural areas of Madagascar since the mid-eighties. Although Madagascar remains a largely agricultural country, with the farming community comprising ten million people, or 80% of the total population, the statistical system in its present state cannot provide a clear picture of the agricultural sector in Madagascar.

The last national agricultural census dates from 1984, and even that was not an exhaustive census but a survey conducted on a sample of about 3,000 farms. From then until 1992, the UN Food and Agriculture Organisation (FAO) financed annual surveys of a smallish number of farms; the results of these surveys were of limited validity. The permanent survey of households, conducted in 1993 on a sample of 4,500 households, 3,050 of which were agricultural households, comprised a section on agricultural holdings, which supplemented what was known about the agricultural sector. There were, however, inconsistencies between these two sources. The projections published by the Agricultural Statistics Unit of the Ministry of Agriculture and the data from the permanent household survey differed widely in some respects. For example, while both sources concurred in putting rice production at approximately two million metric tons, the acreage given over to paddy fields was estimated at two million hectares in the results of the permanent household survey as against one million hectares in the statistics compiled by the Ministry of Agriculture. This resulted in a 100% difference in the estimated average yield (one tonne per hectare compared with two tonnes per hectare).

More recently, some donors, conscious of the gaps in the system of agricultural statistics and of the urgent need for reliable statistics on crop and livestock

production and fish catches, particularly for the compilation of sound national accounts, have provided funds for national surveys. For the 1995/96 growing year, a fairly small-scale survey, focused on rice-growing, was conducted by the Agricultural Statistics Unit of the Ministry of Agriculture with funding from the French national agency for development cooperation, *Coopération francaise*. The European Union also released ECU 700,000 for a baseline agricultural survey in 1998/99. In neither case did the outcome live up to expectations. While the first of the surveys was certainly conducted, only an initial provisional report on the structure of farms has appeared, and four years have now passed without the final documents having been published. As for the baseline survey, an evaluation recommended the suspension of the project following the efforts to compile a sampling frame, so disastrous were the results of that process (Delorme, 1999). To put it bluntly, Madagascar will not possess reliable national agricultural statistics for a long time, and so the rural observatories still have a good long life ahead of them.

A monthly survey of rural consumer prices

The survey based in the observatories allows us to follow the development of producer prices from year to year but not the development of consumer prices. Knowledge of the latter, however, is indispensable if we are to assess the real development of the purchasing power of rural households. Reference to the official consumer-price index (CPI) is of limited value in that it relates only to the capital city, while the extended CPI covers only the country's seven largest cities and towns, not its rural areas.[5]

It is for this reason that the Madio project created a consumer-price index for the rural observatories (CPI-RO). For each observatory, almost 50 staple products are the subject of three price surveys per month, conducted at the actual places where rural households obtain their consumable supplies. A permanent resident of each village conducts these price surveys on behalf of the local observatory and is remunerated for this work. The completed questionnaires are then sent to Antananarivo, and the CPI-RO is calculated by applying the specific weightings that are derived from the annual survey conducted by the rural observatories.

The principal findings obtained from the CPI-RO are as follows:

- A comparison is made between the price levels and price trends recorded for each observatory and those of the nearest large town or city (price levels are compared to calculate the 'cost of isolation', and trends are compared in order to assess the integration of rural markets). This analysis may be based on aggregated figures or on specific major products, such as rice.

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[5] See the article by Andriamampianina Rakotomalala and Rachel Ravelosoa in issue 27 of InterStat on the CPI.

- Producer and consumer prices are compared, particularly for rice, as a means of assessing the growth or decline in the producers' share of retail prices.
- A deflator is calculated to adjust the value of rural income and consumption as estimated in the annual survey, particularly for the purpose of analysing poverty levels.

The first analyses of the CPI-RO were contained in the publication on the 1998 annual survey conducted by the rural observatories.

Production of a film on the methods used by the rural observatories and their findings

Besides the channels that are traditionally used to publicise the findings of surveys (publication of initial descriptive results or thematic studies, for example), the rural observatories are also the subject of a video documentary, entitled *Paysages de campagne: les observatoires ruraux pour le suivi du monde rural à Madagascar* ('Country landscapes – rural observatories monitoring rural life in Madagascar' - Hubert, 1999). The use of modern information technology seemed to be a good way to ensure that the research findings emanating from the rural observatories would be more widely disseminated. The fact is that, in Madagascar as in numerous other developing countries, access to printed documents remains the preserve of a small minority, from which the peasant population is generally excluded. Scientific films are a powerful means of disseminating research findings to people who are rarely told about them. For this reason, three partner organisations (the European Union as the donor, the Madio project as the supervisor of the observatory scheme and a professional video-production team) came together in 1998 to make a film on the rural observatories.

For this documentary, which took a year to make (from July 1998 to July 1999), the three partners set themselves a twofold aim:

- to increase awareness of the realities of rural life in Madagascar among the widest possible audience, and
- to produce a teaching resource for all operators in the field of rural development (administrative bodies, NGOs, peasant associations, etc.).

The primary addressees of the film were clearly the interviewees themselves. At the meetings at which the results of the survey were presented, the film served as the basis for a discussion on the benefits of surveys and of the analyses that are derived from them. But the target audience extended far beyond the group of interviewees. The documentary made it possible to show peasants in one area how people in other parts of the country lived and what problems they encountered. The value of this approach becomes clear when we consider the extreme diversity and isolation of Madagascar's rural areas. The film is also relevant to the urban population. As the gulf between urban and rural lifestyles gradually widens and as ties of kinship between town and country become ever

looser, the inhabitants of towns and cities, especially the younger generations, are losing touch with the rural areas, even though the majority of Malagasy still live there.

As an educational tool, the documentary has been used to familiarise bodies interested in the possibility of creating a network of rural observatories with the observatory approach and with the main difficulties involved in conducting surveys in a rural environment. It has served as a starting point for televised debates on agriculture and was also shown in educational establishments pending a wider marketing drive.

Prospects for the establishment of a network of rural observatories in Madagascar

After four years' experience and a process of trial and error that occurs with any innovation, the methodology of the rural observatories has demonstrated its viability. It has moved on from an initial experimental phase, when everything had to be built up, and is now in full production. The rural observatories may therefore be described as a proper information system with clearly defined aims, a timetable, standardised collection and processing procedures and trained teams with a sense of attachment to the project. All of these instruments enable the observatories to produce indicators for the monitoring of rural conditions and to publish sharply defined documentation. There is now a need to think about on the future of this system, and two prospects have to be considered: consolidation of the existing structure and the possibility of extending it.

Consolidation of the gains made by the four observatories of the Madio project

As with the other activities of the Madio project, it was decided to extend the life of the rural observatories. This decision in itself is a token of their success, in that the Madio donors have deemed it necessary to prolong the innovative observatory experiment.

Compensating for the loss of the IRD researchers

Despite the progress they have made, extending the life of the rural observatories is not just a routine operation. The national statistical office Instat has never shown any interest in assuming responsibility for the rural observatories, a position that contrasts with its attitude to the other surveys initiated by the Madio project. Agricultural statistics are a matter for the Ministry of Agriculture, and the methods used by the rural observatories are not compatible with the customary system for compiling official statistics. The withdrawal of the researchers from the *Institut de recherche pour le développement* (IRD) at the end of the first half of 1999 meant that subsequent annual surveys would be entirely in the hands of the Malagasy observatory teams within the Madio structure. The loss of the IRD input affected all the activities of the Madio project, but it was most keenly felt in the context of the

observatories, since they represented the operation in which the transfer process was weakest. The respective areas of competence of the IRD geographer who shared responsibility for the observatories and the other members of the team, who were more familiar with quantitative research but less experienced, had led to a division of labour which did not help the Malagasy team to master the process in its entirety. For reasons of short-term efficiency, a fairly watertight division of responsibilities had been established, with the Malagasy team taking charge of all technical and field operations, while the geographer from the IRD was chiefly responsible for subsequent stages in the process, particularly the final editing of the initial results prior to publication. Nevertheless, since 1999 great efforts have been made to ensure that every step in the production of the research findings, right down to the editing of the initial results, is fully mastered by the local team without any overall loss of quality.

Exploiting the databases

In more structural terms, the data from the four successive surveys conducted in the years 1995 to 1998 have not been sufficiently exploited. Beyond the publication of the initial results, very few thematic studies have been produced on the basis of the survey files. This shortcoming is ascribable to an excessively lengthy annual baseline production cycle, in which the team manages to complete one annual survey just as preparations for the next survey in the series are due to start. Once the survey procedures become more of a practised routine, it is reasonable to expect that survey process could be compacted into a six-month period, culminating in the publication of the initial results, which would leave the other six months of the year free for intensive exploitation of the data. It should be said that the existing databases contain a real wealth of information and are unparalleled in Madagascar as a basis for either traditional micro-econometric studies using the wide range of information provided by the panel on production functions, expenditure patterns, yields, etc., or studies on specific and cross-sectional issues, whether based on the sections that appear in the questionnaire every year, such as the food-security section, or the special sections that have featured in the questionnaire in one particular year (education, household division of labour, etc.).

Integrating the intermediate-scale economic dimension

The mechanism of the rural observatories is based on two surveying systems, namely the annual survey of households and the price surveys that are conducted with a view to calculating the monthly consumer-price index for staple goods. There had been plans to enhance this approach by collecting information, possibly of a more qualitative nature, in the intermediate domain between the macro- and microeconomic levels, i.e. local authorities, the organisations that form the economic and social infrastructure of the areas under examination and strategic players such as collection centres, haulage operators, leading figures in the villages, etc. The fact that the scheme is firmly rooted in the areas covered by the rural observatories is particularly conducive to the consideration of these intermediary institutions and players, and this is the beauty of the monographic approach. The importance of these institutions

and players as a key to the understanding of observed phenomena was also emphasised in the World Bank's Social Dimensions of Adjustment in Sub-Saharan Africa (SDA) programme, which contained a community survey alongside the more traditional household survey (Dubois, 1996). This intermediate-scale economic component of the rural observatories, which is still in its infancy, should be the subject of further investigation, since it would be a means of combining the current microeconomic approach based on the study of household behaviour with other avenues of research, such as the analysis of supply chains or of institutional economics.

The creation of a network of rural observatories in Madagascar

Besides the intensification of the existing mechanism, a second prospect consists in the geographical extension of the coverage provided by the rural observatories.

It soon became apparent that the geographical concentration of the observatories, which is a defect when it comes to representative analysis, satisfies the demand for development projects with an assessable impact on specific geographically defined areas. It is a fact, however, that the instruments used in the assessment of development projects are not designed to meet this demand. They are based on resource indicators (amounts disbursed) and on resource-use indicators (number of wells dug, number of schools rehabilitated, number of peasants receiving small loans, etc.), but not on outcome indicators. Moreover, those who are in charge of projects conduct their activities in the dark, so to speak, without being able to ascertain whether they are having a sustainable impact on the well-being of the target group. Since they are located at the project sites, the observatories can meet this need for outcome assessment.

Since 1996, the delegate of the European Union in Madagascar has shown a particular interest in this potential use of rural observatories, not only as a research tool but as a truly operational facility too. The discussions that were initiated at that time led to the official launch of a real network of rural observatories in April 1999, attended by the Minister of Agriculture and the representatives of the participating donors (see Droy and Parent, 1999).

This network has a threefold aim:

- to extend the coverage of the system of rural observatories established by the Madio project to other districts, scattered across the entire territory of Madagascar, on the basis of particular sets of problems reflecting the diversity of rural conditions in Madagascar; in the absence of reliable agricultural statistics, the information provided by the network of observatories is deemed to be an indispensable aid to the formulation of appropriate rural-development policies;
- to provide instruments to measure the local impact of development activities in the rural environment;

- to create a forum for exchanges of information between various bodies operating in rural areas so that each can benefit from the others' experiences (catalogue of successes and failures).

The workshop at which the network of rural observatories was launched was organised by the Rural Policy and Development Unit at the Ministry of Agriculture. This unit has been entrusted with the task of communicating the results of the network's activities to the authorities responsible for decision-making in the realm of agricultural policy. The workshop was held from 24 March to 1 April 1999 and was attended by representatives of all the relevant partner organisations. The Madio project provided the scientific input with the assistance of two international consultants with experience of observatory work, one in the Madio framework and the other at the IRD. The workshop provided an opportunity to address the methodological problems connected with the establishment of the network: choice of sites and the need for regional representativeness, collection of information in the field, capture, validation and analysis of data and publication of findings in the form of collated summaries. The debates that followed each of the presentations paved the way for the adoption of a single approach, specific to the network. The workshop also adopted a model questionnaire, comprising a general section for completion by all observatories, based directly on the questionnaire used by the Madio observatories, and special sections relating to the specific set of problems encountered in each observatory area. The first annual survey by the new network of 13 observatories, which include the four observatories of the Madio project, took place in 1999.

In the year 2000, the network was extended to 17 observatories (see Figure 2 below), each comprising an operator (NGO, firm of research consultants, etc.) with executive responsibility and a donor to provide the funding. The observatories that are not part of the Madio project are supported by three donors: the European Union and the French and German agencies for development cooperation (*Coopération française* and *Gesellschaft für Technische Zusammenarbeit (GTZ)*). The new observatories have adopted the model established by the Madio project, and the Madio team has also been given responsibility for the technical coordination of the network (methodology transfer, quality assurance, etc.). Accordingly, the network coordinator is a member of the Madio project team. The transfer of know-how to other operators means that a degree of operational responsibility can be devolved. But the methodological unity of the system must be protected from centrifugal forces so as to ensure that the various groups of observatories all produce comparable findings.

From the perspective of the Madio project, the creation of this network of rural observatories is particularly significant. On the one hand, it perpetuates the observatory approach and lends it the new methodological dimension of assessability as an integral component of development projects. On the other hand, from a strictly research-based point of view, it provides an instrument for closer monitoring of rural conditions in Madagascar as well as an opportunity to validate the hypotheses tested in the narrower framework of the four Madio

observatories by re-testing them in a wider context. In due course, this network could serve as a model for use in other countries (Dubois, 1999).

But the success of this extension of the rural observatories is not guaranteed from the outset. In 1997, for example, the first extension of the scheme took place when four additional observatories were established in southern Madagascar as part of the *Relance du Sud* project at the request of the Food Security Unit of the European Commission. Although this process was successfully completed, serious problems were encountered along the way, particularly as regards the quality of data, in spite of supervision by the Madio team. This experience underlines the difficulty involved in conducting statistical surveys in cases where the operator in charge of the survey is not a specialist in the relevant field. The problems encountered then will surely serve as a salutary lesson for the future.

Conclusion

The rural observatories established as part of the Madio project may be regarded as an overall success. The observatory methods, which were experimental in the early stages, have proved valuable in terms of both the conduct of surveys and the quality of the collected data as well as providing results that can be used to analyse the development of the rural areas of Madagascar. Given the deficiency of the official system of agricultural statistics, the rural observatories serve to provide information - localised in scope perhaps, but up to date and reliable – on the development of rural conditions at a crucial time of economic transition. The benefits derived from the rural-observatory experiment and the increase in the number of survey sites offer interesting prospects for the development of this approach, which could fan out to other countries. Rural observatories are a complement rather than an alternative to the traditional statistical system, which we hope to see rehabilitated in the coming years, so that the synergy generated by the combination of these two types of observation can be fully explored.

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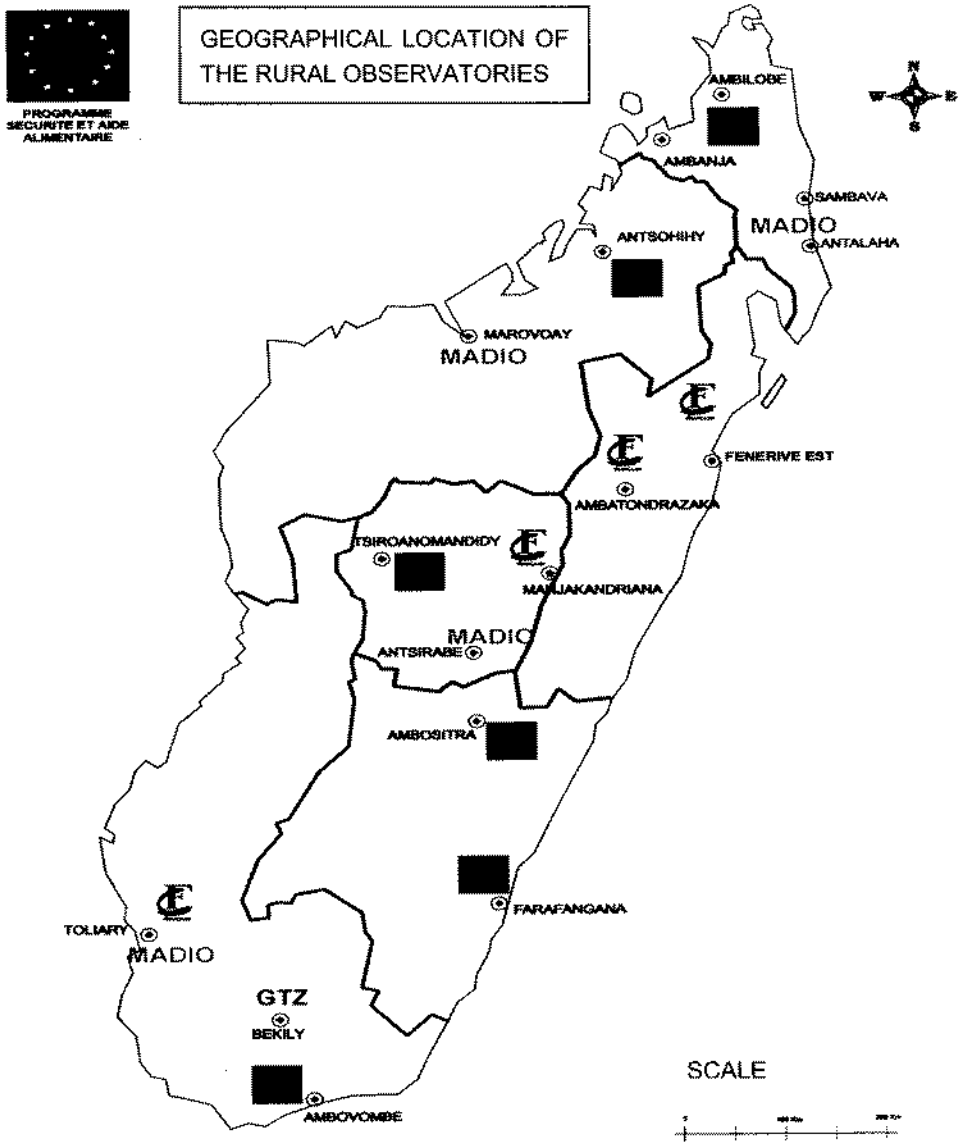
Figure 2 The network of rural observatories: geographical locations



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CONTENTS

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IN THIS ISSUE

by Philip Crook

As promised, this issue of Inter-Stat contains the final three articles related to the MADIO project in Madagascar.

In the first article, Philippe Antoine, Philippe Bocquier, Thierry Maminirina and Nicolas Razafindratsima describe a survey known as Biomad. Biomad was a retrospective survey of the dynamics of the urban job market and household living conditions over a 30 year period to 1998. It was one of a wave of surveys designed to renew the system for the collection of demographic data on geographical and social mobility, and follows on similar work in Bamako, Dakar and Yaoundé. The article well illustrates the benefits of such a survey and gives details of how it was undertaken.

The second article is by Mireille Razafindrakoto, who discusses how problematic it can be to monitor the formal activity of industries. This is often taken as a routine statistical activity, but Mireille argues that very few African countries have genuinely reliable data on the sector. The Malagasy experience of an annual survey of industry therefore illustrates the possibility of implementing a solid and reliable system for analysing changes in the formal industrial sector, and the benefits of doing so.

Our final article is by Isabelle Droy, Raphaël Ratovoarinony and François Roubaud, and concerns the setting up of four rural observatories across Madagascar. The word *observatoire*, I feel, does not translate easily into English, since the obvious equivalent, *observatory*, is so strongly linked with looking at the heavens that the sense in which it is meant now is obscured. That was of course the origin too in French – but in this context "the paramount aim of observatories is to identify, by means of a number of indicators, the dynamics of improvements or deteriorations that affect people and their living standards." In the case of Madagascar, that meant not merely viewing from afar a focal group of villages but also setting up a number of institutions which had a permanent staff for a fixed time period within the chosen survey areas.

The articles in this issue of Inter-Stat first appeared in Statéco 95-96-97, 2000. The English versions have been provided by the Translation Service of the European Commission.