No.

EX-POST EVALUATION REPORT

ON

THE PROJECT FOR THE IMPROVEMENT OF MAHAJANGA UNIVERSITY HOSPITAL IN THE REPUBLIC OF MADAGASCAR

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THE PROJECT FOR THE IMPROVEMENT OF MAHAJANGA UNIVERSITY HOSPITAL IN THE REPUBLIC OF MADAGASCAR

September 2005

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Ex-post Evaluation Report

(Global Improvement of Mahajanga University Hospital)

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List of acronyms and abbreviations

BMH	Bureau Municipal d`Hygiène	City Hygiene Office
CF	Coopération Française	French Governmental Cooperation
CP	Homologue	Counterpart
CHD	Centre Hospitalier de District	District Hospital
CHUM	Centre Hospitalier Universitaire de Mahajanga	Mahajanga Hospital University
CNAPS	Caisse Nationale de Prévoyance Sociale	National Social security Reserve Fund
CSB	Centre de Santé de Base	Basic Health Center
DRS	Document Stratégique de Réduction de la Pauvreté	Regional Health Office
EF	Fond d'équité	Equity Fund
GTZ	Gesellshaft für technische Zusammenarbeit	German Technical Cooperation
IEC	Information, Education, Communication	Information, Education, Communication
IRCOD	Institut Régional de Coopération et de Développement	Alsace Regional Institute of Cooperation and Development
JICA	Agence Japonaise de Cooperation Internationale	Japan International Cooperation Agency
MOH	Ministère de la Santé et du Planning Familial	Ministry of Health
NGO	Organisation Non Gouvernementale	Non Governmental Organization
NTS	Rien à Signaler	Nothing to Signal
PFU	Participation Financière des Usagers	User's Financial Contribution (Tariff)
RS	Système de Référence	Referral System
RSCR	Système de Référence et de Contre Référence	Referral and Counter Referral System
SUSI	Services des Urgences et des Soins Intensifs	Emergency and Intensive Care Unit
TELMA	Telecommunication Malagasy	Malagasy Telecommunication
URSR	Unité de Renforcement du système de Référence	Referral System Unit
VHF		Very High Frequency

1. Ex-post Evaluation study

1.1. Background and purposes of the study

1.1.1. Background

The project "Global Improvement of CHUM" is the first trial tripartite project where the Madagascan Ministry of Health, the French Cooperation and JICA work jointly for the improvement of health services. It is in the framework of Health Collaboration in Africa according to the Franco-Japanese agreement signed by French President Chirac and the Japanese Prime Minister Hashimoto during the 1996 summit. The tripartite agreement among the Madagascan, French and Japanese Governments was signed on June 2, 1999. The project lasted from 1999 to February 2004.

As a multi-partnership type, the project involves several stakeholders such as

- MOH, DRS, CHUM: responsible for the implementation of the project
- French Cooperation: responsible for management reform, internal organization of the units and training for human resources at CHUM
- JICA provided biomedical equipments and supported CHUM in its role of provincial referral hospital
- IRCOD : support of the Laboratory and the SUSI units in CHUM through trainings and equipments
- GTZ: main partner of the DRS in the development of the primary and secondary health in Mahajanga

In September 2003, a joint evaluation had been conducted by a Madagascan-French-Japanese team. The result of the evaluation was satisfactory: the objective of the project has been achieved. This success was due to

- the increase of the credibility of CHUM due to improvement in care, quality of services, equipment and facilities
- the improvement in the collaboration between DPS and CHUM
- the improvement in the public relations and IEC on CHUM

Accotrdingly, the present ex-post evaluation aims at assessing the impacts and the sustainability of the project.

1.1.2. Purpose of the study

The purposes of the ex-post evaluation study of the Project "Global Improvement of CHUM" are to:

- assess mainly the impact and sustainability of the project, feed back the lessons learned for improving the formulation of new projects and programs of JICA in the future and

give recommendations.

- fulfill the accountability to the Japanese taxpayers through the production of reports.

1.2. **Evaluators**

Members of Evaluation Team:

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The field study was carried out from September 23 to October 28, 2005.

2. Study methods

2.1. Outline of the project

2.1.1. Basic Information

Project title:	Global Improvement of Mahajanga University Hospital
Project site:	Mahajanga University Hospital
Cooperation Period:	May 1999 – February 2004
Cooperation Type:	Technical Cooperation plus Grant Aid
Target Group:	CHUM, 6 districts constituting the region of Boeny (Mahajanga I, Mahajanga II, Marovoay, Maevatanana, Mitsinjo, Ambato-Boeny) having in total 600,000 inhabitants.

2.1.2. Framework of the project

Overall Goals:	1) CHUM contributes to the improvement of medical care in Mahajanga. 2) Sustainability of the project is ensured by improved hospital management.
Project Purpose:	The number of patients that receive medical services increases.
Outputs:	1) Increased referral cases 2) Improved patients' satisfaction with medical services of CHUM 3) Affordable tariffs for patients set by CHUM 4) Improved administrative capacity of CHUM 5) Information on CHUM being disseminated to patients and local communities
Inputs:	
Japanese side:	1 long term expert (Oct 2000 – Feb 2004); 7 Short term experts; Training; Biomedical equipment; Total cost: 3.8 billion yen
French side:	1 long term expert (Nov 2002 – Feb 2006); 2 Short term experts; Total cost: 458,000 Euro

Madagascan side: Rehabilitation of infrastructure

2.2. Stakeholders and study methods

Table 1: Stakeholders and study methods

Stakeholders	Respondents	Study methods
Implementing agencies		
1. Ministry of Health	Decision makers in the Ministry Evaluation and Monitoring division Statistics division	Questionnaire by letter Interviewing Collection of secondary data (policy paper and statistical data on health.)
2. Regional office, Ministry of Health (DRS)[1]	Director and other informants responsible for referral system and public health promotion	Questionnaire by letter Interviewing
3. CHUM management	Director and unit heads	Questionnaire by letter Interviewing
4. Counterpart personnel	URSR, Doctors, nurses and administration staff	Questionnaire survey Focus group discussion (if necessary)
Beneficiaries		
5. Patients and local communities	Local Communities	Focus group discussion or questionnaire survey
Other stakeholders		
6. The French Government	Person in charge of the project	Interviewing
7. GTZ	Person in charge of the project	Interviewing
8. IRCOD	Manager(s) in charge of assistance to CHUM	Interviewing
9. Other medical facilities in Mahajanga	Managers of the hospitals, clinics and health posts	Interviewing or questionnaire survey

It is noteworthy that the ex-post evaluation of the project for the Global Improvement of CHUM has been conducted only one and half a year after the termination of the project. Therefore, the trend of all the statistical data might not seem very clear and that is why interviews are especially very important. However, due to a very tight schedule of the field study, interviews of health centers were limited in Mahajanga I and interviews of patients could not be done. However, interviews of beneficiaries were conducted. For the communities, interviews were done in only 3 fokontany in the vicinity of CHUM. Thus the number of interviewees was also very small (22 in total). Therefore, the results of those interviews are not statistically

[1] Before Madagascar had the system of 6 provinces; it has now shifted to 22 regions since the political reform in 2003. So DPS of Mahajanga refers to the old system covering 20 districts and DRS of Boeny refers to the new system covering the 6 districts targeted in the project. DRS of Boeny is the same DPS of Mahajanga with only reduced districts.

representative but they indicate qualitative results.

3. Results of Evaluation

3.1. Impact

3.1.1. Impact on the overall goal

The main impact seen by the study team is the project's contribution to the improvement of referral system in Mahajanga. In Madagascar, the referral system works as follows. First, the patient has to go to the CSB in his vicinity. If the doctor or health agent depending on the level of the CSB[2] finds the case upon his competence, the patient is referred to the existing CHD in the district. The referring doctor at the latter will refer the patient to the referral hospital if needed. For Mahajanga I, CSBs refer directly their patients to CHUM[3]. CHUM has developed the referral criteria during the project.

Health partners in Mahajanga have been working as follows. GTZ and DRS are working for the referral system and bringing their support in primary and secondary health centers. JICA and FC have been concentrating their actions in CHUM and in the development of the referral system in Mahajanga.

Statistical data, interviews of stakeholders and CP show that the referral system has a positive impact. It can be seen through the increased number of patients referred to CHUM during and especially at the end of the project (1,734 in 2002 and 5,830 in 2003). The number stopped increasing since 2003 and becomes quite stable or somehow lower but the difference is small (in 2004 and until August 2004).

This impact has been also measured with several stakeholders of the project such as CHUM, DRS, 6 CSBs in Mahajanga I (CSB II of Amborovy, of Mahavoky, of Mahabibo, of Antanamasaja and of Tanambao SOTEMA and of Tsararano), CP and BMH[4]. DRS confirmed that the impact is generally positive; 3 CSBs out of 5 responded said that after the termination of the project, the number of referred cases they have sent to CHUM has increased and they are satisfied with this result and consider it as an achievement of the project purpose. The response of the last 2 CSBs was also very interesting because they have noticed that the number of the cases they referred to has decreased much thanks to the training provided by specialist doctors from CHUM to doctors in CSBs and they also feel the effectiveness of the counter reference. For BMH, the referral system has a positive impact for it makes doctors more conscientious and

[2] CSB I has only nurses or midwives and CSBII has at least one doctor

[3] For the capital of the province, the hospital is a referral hospital.

[4] BMH refers also patients to CHUM, its ambulances serve to transfer patients from other health centers to CHUM

nearer of their patients. It is also noteworthy that the responsible for those CSBs have recommended that the CSBs should be given equipment to improve the referral system. In fact, the referral system cannot be complete if the whole system is not improved.

3.1.2 Other impacts

1) Policy impact

MOH finds that the referral system set by the project at CHUM was quite successful. For example, during the project in rural areas, there was real dedication of the communities. The involvement of the local people (through initiatives they took to coordinate between themselves to do what is the necessary to bring the patients referred to CHUM), their will to work together is a really good impact of the project. Actually, the project made them much closer to the health office in the area and more responsible concerning health of the community.

After the final evaluation of the project, MOH felt the necessity of spreading this and it is now elaborating a manual, based on CHUM model, which will be dispatched to all health centers throughout the country.

2) Improvement of hygienic conditions of other hospitals

For the protection of the environment, there is a positive impact of the project because CHUM is contributing to the training of staff to improve the hospital waste management at CHD II in Marovoay. It begins also embellishment of the center by planting grass and trees and prepares the implantation of green spaces within the center. Trash cans are also put everywhere to improve hygiene.

3) Function as the center for medical education

CHUM is a university hospital but medical education was not included in the project: at that time priority was to “raise” the hospital and to improve care. Anyhow, CHUM receives many students every year that can be classified into 9 groups of graduate students, trainees (they are preparing the doctoral thesis), nurses and midwife students, doctors working on their specialties (surgeons, cardiologist, etc.), students from Paramedical Institute (IFP) of Antananarivo (laboratory, radiology, mental health…), foreign students from France, Germany, Britain on vacation, students from the school of dentistry, and doctors from the periphery. Even if the education was not included in the project, students are also indirectly benefiting from the project. This statement of good impact is supported by medical doctors that were interviewed. Actually students improve their knowledge thanks to equipment provided by the Japanese government and through trained doctors supervising and teaching them during the training.

Techniques have been transferred to C/P. Students and trainees at CHUM are well aware of the referral systems and sustainability can be ensured for those students will be dispatched in the districts. CHUM has received about 600 students in 2003, 300 in 2004 and 400 in 2005.

3.1.3 Negative impact

No negative impact has been observed by the study team.

3.2. Sustainability

3.2.1. Financial sustainability

The financial sustainability is critical to the sustainability of the project. Unfortunately, the financial capacity of CHUM does not allow it to upgrade its present performance. With regard to Table 1, the receipt of CHUM during the project has always increased due not only to PFU but also to subvention. The total receipt decreased in 2004 compared with 2003 due to high subsidy received by CHUM but the PFU has been increasing a lot in 2004. And PFU is the convenient indicator to assess the sustainability of the hospital. In 2005, not only subsidy has decreased but PFU is very low and even if the number will triple until the end of the year, it would not even equal to PFU in 2004. When asked about this situation, the finance manager of CHUM has stressed that this is due to the financial situation of the population. The high inflation registered this year has a negative impact on the health behavior of the population. Patients have tendency to do self medication and health is not a priority anymore.

Apart from that, the tariffs unilaterally decided by the MOH cannot cover expenditures, so CHUM decided to charge patients a little more (e.g., purchase of thread in surgery, giving the management of the waiting room for accompanying person to a NGO.). Affordable tariffs do not always ensure sustainability of the project.

There are about 25 entities dealing with CHUM but only two of them (CNAPS, TELMA) have written convention. However, the tariff applied to patients reimbursed by their employers is much higher[5] and it can be profitable to CHUM to palliate the low tariff for the public. For example, the cost of an appendicitis ablation is about 93,000 Ariary for the public and 190,000 Ariary for reimbursed patients. CHUM has a mission to provide universal service to the public and CHUM does not want to tarnish its image in working too closely with private companies. However, there must be a compromise for its financial sustainability.

[5] CHUM has three types of tariff: for the public (cheapest), for a patient reimbursed by a company, and for a foreigner.

Table 2: Financial situation (receipt) of CHUM in Ariary during and after the project (source: CHUM)

Item	1999	2000	2001	2002	2003	2004	2005 (30/06/05)
Subvention	313.803.456	277.836.400	306.991.600	374.735.000	502.179.000	272.792.200	167.084.060
Receipt of cost recovery (PFU)	181.515.771	233.952.200	302.491.200	236.860.800	313.208.400	412.322.800	95.384.987
Total receipt	**495.319.227**	**511.788.600**	**609.482.800**	**611.595.800**	**815.387.400**	**685.115.000**	**262.469.047**

3.2.2. Personnel

1) Number of staff

The sustainability of the personnel of CHUM is also quite weak. The increased number of patients leads to the increase of workload which decreases the care hours and retired staff are not even replaced. The lack of staff concerns especially paramedics and eventually supporting staff and administration. This is for example the case of the HGE unit where there are only two nurses and they have to work 24 hours nonstop every two days. In other units, there are 3 nurses who do rotation during the week. According to the discussion we had with the personnel manager, they should be 4 at least. CHUM itself is not able to solve that problem, for recruitment of personnel is the responsibility of MOH. Only MOH decides the number of staff members coming to CHUM despite of the need of the latter. CHUM is unable to recruit part time nurses, either.

2) Provision of training to medical professionals

After the termination of the project, training sessions are still provided to the personnel of CHUM and the peripheral health centers. IRCOD still also contributes to the training of the SUSI and the laboratory units in Strasbourg, France, or by sending an expert for Mahajanga in order to train the staff locally. However, the sustainability may not be high because FC is still providing training (on Hygiene in Hospital, Good Practice Rules in Anesthesia – Resuscitation, Anesthesia, BO, Dietetic, Emergencies, Neonatology, Management and Leadership, Project management.). So the future after FC leaves is uncertain. However, the trend is positive because MOH has still given, for example, after the termination of the project the training on the implementation of the KANGOUROU method to the personnel in Pediatrics, Maternity and Family Planning, on Person living with HIV and Mother to Child Transmission Prevention to referring teams to CHUM and so on.

3.2.3. Technical aspects

1) Medical services

There is still improvement of the technical level of CHUM. The partners of CHUM have noticed the Improvement of the door service (reception). The medical units have also improved much and the quality of the service has been maintained after the termination of the project. The Pediatric, Maternity and Gynecology, Laboratory and SUSI units have been particularly stressed. The population also recognizes the high quality of the CHUM medical services. All the training sessions provided to CHUM have given rise to more qualified and more motivated staff, especially senior nurses.

Moreover, the response of the questionnaire sent to the staff members that have had training in Japan and the CP of the Japanese experts leads to the conclusion that the capacity building that they have received, the availability of appropriate equipment items contribute to the improvement of the quality of care provided to the patients. This is true for medical personnel but this is not always true for the Maintenance unit, for example. In terms of competence of maintenance agents, they have followed training abroad, but the training sessions cannot be adjusted to the reality in Madagascar and they feel somehow frustrated. A further explanation on equipment and maintenance agents is given the next paragraph.

2) Maintenance of medical equipment

212 equipment items have been installed. 83% are still functioning, and 58% are regularly used. The factors affecting the utilization of equipment are as follows:

- Equipment items are not maintained by local agents and not functioning due to shortage of spare parts in the local market and in the Indian Ocean region, or a long time required for repair. In the meantime, the guarantee period is over.
- Technicians are not able to fix the problems because equipment items are too complicated (e.g., lamp; automatic remote; incubator; problem of chip or electronic cards), or they are not adjusted to tropical climate (e.g., portable aspirator).
- Supplies and spare parts are costly.

The table in Annex 1 reflects the actual situation of equipment granted by the Japanese government in 2000 and indicates the range of maintenance and repair that have to be done.

In summary, the equipment is extensively used and the majority is still functioning. Yet their sustainability is highly questionable.

In fact, the success of the project increases workload and leads to an overuse of the equipment: they get broken very fast and the very low cost of care makes it impossible to renew them. The maintenance requires a sufficient budget and competent staff. In a financial year, the budget allocated to the maintenance medical equipment of CHUM as part of the running budget is not stable. In 2003, the budget was 28,500,000 Ariary so 5.6% of total subsidy and it was 16,550,100

Ariary in 2004, which is 6% of the total subsidy of the same year. This rate is too low for covering maintenance needs and buying supplies for equipments. Thus many equipment items may stay dysfunctional for a long time if they have a problem.

CHUM has to cover supplies as the Japanese grant does not include them. The French Cooperation has given some assistance to CHUM in supplies. However, according to the FC, it might be difficult for CHUM to cover its need in supplies after FC leaves. For instance, in oxygen, the quantity used from February to July 2005 is 6,067.5 m^3. If the price of a m^3 is 8,020 Ariary, the total expense in oxygen for CHUM within 6 months is 58,393,620 Ariary so about 15% of the receipt in 2005 (6 months).

It has been recognized by all the partners that CHUM cannot generate income to renew equipment with its extremely low tariff. For Madagascar and possibly for Sub-Sahara African countries, the definition of sustainability of an equipment item does not mean ability of the country to buy a new material after the granted one gets broken but the ability to make equipment last longer.

Despite the above-mentioned problems, technicians are doing their best to make equipment work by performing some adjustments and using existing local materials and spare parts. Such actions may decrease the reliability of the machine afterwards.

3) Materials provided to CHD and CSB

Despite the increase in the number of the referred patients, the DRS has raised some problems in the districts of Maevatanana, Mitsinjo, Mahajanga, Ambato Boeny and Marovoay that can be summarized as follows:

The management of BLU, VHF, Carts, Boats and Motor Boats in CSBs and CHDs is not working in many places due to conflict of interest between the management committee that has been set up during the project and whose members are most of the time the local authority or elected persons, and the health authority in the district. It would have been better to train the Health Committee which already exists in the community than to set up the new management committee. Most of the time, those equipments are run by the health center itself.

The communication materials (see Table in Annex 2) are much utilized and are maintained despite a problem with charging of batteries that has to be done every week in town where there is electricity for CSBs in enclaved areas. The trip lasts several days and the material cannot be used during that period. It has then decided to grant the centers 2 batteries. One of the Motor Boats ambulances is not working due to engine problems. In places such as Mitsinjo, the carts are not fully used because the community was not able to provide oxen as promised.

3.2.4. Sustainability of the Project's outputs

3.2.4.1. The number of the patients (Project Purpose)

The number of patients has been increasing during the project and at its termination but has become quite stable later on. From 1999 to 2002, the number of visits to the center increased more than 10% per year (see Final evaluation report), but it was stable after the termination of the project (see Table 4). But if only outpatients are considered, in 2002 the number was estimated at 10,359 and it decreased to 8,685 in 2003. Even if the number of patients received at CHUM does not increase, the population has confidence in CHUM and the data provided by the service of laboratory and the medical imaging shows that the number of users still increases after the termination of the project as indicated in Table 5.

However, if the tariffs are not reviewed, the number of patients at the current level is actually good for staff members because even now they are overwhelmed with work and equipment items are overused. Any increase in patients has to be proportional with the number of staff members and the capacity of the equipment.

Table 3: Number of patients received at CHUM after the termination of the project

Number of patients	2003	2004	2005 (Jan to Aug)
Out patients	8,685	8,061	4,755
Referred cases	5,830	5,674	3,362
Hospitalization:			
Maternity	1,688	1,830	820
Surgery	1,895	3,200	1,688
Medicine	2,334	1,964	899
Pediatric	1,636	1322	796
Stomatology	903	747	268
Reanimation	1,007	1,136	264
Total	**23,978**	**23,954**	**12,852**

Table 4: Number of analysis and radiography at CHUM

Number of patients	2003	2004	2005 (Jan to Aug)
Analysis at the laboratory	52,732	61,929	34,175
Radiography	10,602	12,047	4,192

3.2.4.2.Outputs

1) Increased referral cases

The number of referral cases increased during the project but then decreased a bit because little has been done after the project. Follow-up at the regional level is not ensured and CHUM managers stressed the need for stronger collaboration with DRS. The referral system and referral cards should also be extended to private health centers. Due to the lack of budget for field visits, the staff members of CHUM are not able to do field work anymore as they did during

the project. The project proved that direct contact was very efficient in earning the trust of the population in rural areas. Sustainability of the referral system depends also on number of staff members, equipment in CSBs and training. If CSBs are strengthened, self-referred patients at CHUM may decrease.

Most of the private health centers are not included in the referral system although there are more than 80 private clinics in Mahajanga city. The URSR did not contact the regional Committee of Medical Association (CROM or Conseil Régional des Ordres des Médecins, including public and private medical doctors) in Mahajanga though it could be a good tool for disseminating information on the referral and counter referral systems.

The counter referral system that was introduced during the project has little effect because of the following reasons:

- Managing staff members of CHUM find that CSBs are not well equipped to ensure the counter referral[6].
- For the DRS, the counter referral is effective. It also works in the 5 health districts. But in the other areas, the CHUM project is not even known. There has been close cooperation with CHUM and DRS during the project but due to change of staff (director of the health regional office), there is no more effort to disseminate the "CHUM model" to the other health centers in the 6 districts. In some cases, referral cards are not used any more; CSBs just send referral letters. DRS has also emphasized that the impact of the referral to referral system would be better if the CSBs were more equipped.
- For BMH, the counter referral has no impact because 80% are not used (e.g., case of Mahajanga I). Some public and private centers have no referral cards: private centers have not been introduced to that system and they are using only referral letters; public centers have no more stock of cards and most of the time patients are referred to them after reference to CHUM. Some patients are thus lost from the records. CHUM keeps the counter referral cards and there is no counter referral to the initial doctors.

2) Improved patients' satisfaction with medical services of CHUM

CHUM has no data on the satisfaction of the patient. Accordingly, a focused group discussion was done in 3 fokontany of Mahajanga I (Mahajanga city, Tsaramandroso Ambony, Mangarivotra). Several indicators on care from the discussion make it possible to measure the satisfaction of the population: quality, technical and scientific reliability, and the quality in the organization and in dispensation of care. Most interviewees see that, due good equipment, the

[6] Counter referral system: After treatment, the patient referred to CHUM are sent back to the initial CSB or health center

cleanness of CHUM and the quality of services have greatly improved. However, they have pointed out some bad habits of CHUM that are still remaining. They find some staff members unkind, the waiting time too long in a non-emergency case, and there are no visits of doctors on weekends. So they prefer going to CSBs or private clinics if they have money. Actually CHUM is a referral hospital and only referred patients should go there; however, self-referred patients are still coming. CHUM makes no distinction between self-referred and referred patients with regard to the waiting time. CHUM also finds that it is self-referred patients who are really complaining about the delay.

Some had complaints on what they saw as the very high tariff. However, a comparison of the tariffs of CHUM and a private hospital in Mahajanga showed that CHUM was less expensive for the public.

3) Tariffs affordable for patients set by CHUM

Normally, the tariffs are affordable for patients but some are still complaining about expensive fees at CHUM. The PFU is a barrier to accessing hospital care, especially for the poorest. MOH has then recently set up the Equity Fund (EF) system to give free medical care to indigents[7].

- *CHUM's initiative*

The EF is not formally installed yet. Normally, a special fund from MOH and a part of medical fees received from patients should be put in a sub-account for equity fund. Such process is under way. CHUM, with an insufficient budget for indigents, has taken some steps to help them. But they are currently not functioning:

- Depending on the case, and taking several criteria into account, CHUM takes care of medical fees and food for indigents. (This practice is now suspended.)
- During the project, CHUM set up a working group to care for indigents. The group consists of CHUM, the Catholic and Protestant Churches, an Indian association named KHODJA, DPS, and Mahajanga I city. The group set identification criteria for real indigents and formulated an indigent card which was different from that in CSBs. But this group is no longer functioning as some members left.
- Overloaded, CHUM is reducing the number of indigents that it takes care of.

The following table gives a summary of the fund for the indigents:

[7] Indigents are the poorest people constituting about 10% of the population

Table 5: EF 2003- 2005

	2003	2004	2005 (Jan to Aug)
Allocated budget	1,846,400 Ar (source CHU)	7,329,500 Ar (sources: CHU and grant)	4,000,000 Ar (source: MOH)
Expenditures	1,846,400 Ariary	7,329,500 Ar	1,939,800 Ar

- *Supporting "Indigents" in cooperation with local philanthropic organizations*

CHUM tries to coordinate activities with the other stakeholders. It is proposing to a Catholic congregation to work together on accurately determining the number of indigents.

An entity that takes care of patients is the Sisters of Sacré Cœur de Jésus et de Marie. Its prime targets are referred patients from enclave areas and patients of diseases that need long treatment such as tuberculosis. It engages in activities including the following:

- Free medicines with advice from doctors of CHUM (4,800,000 Ariary per year)
- Distribution of food 3 times a week for 60 to 95 persons (13,000,000 Ariary per year)
- Loans for patients who come from very far and have no more resources.

When comparing the expenditures for indigents of CHUM and Sacré Cœur de Jésus et de Marie), CHUM's expenditure amounts to only 26% of that of Sacré Cœur de Jésus et de Marie. Thus it is fair to say that the sustainability of the support to indigents is closely linked to the collaboration with other partners.

4) Improved administrative capacity of CHUM

In order to solve the problem of waiting time, the French Cooperation has improved the organization within CHUM, especially the route of patients, and has installed a waiting space for the patients. Everyone has recognized that the door service has greatly improved although it is not perfect yet. The managing staff members are thinking of putting pamphlets and a television in the waiting room for the information and sensitization on CHUM.

Since the departure of the French expert on hospital management in 2002, the post was vacant and the new expert arrived only in September 2005. He will stay at CHUM for one year to support the Director of CHUM.

The sustainability of the improved administrative of CHUM depends closely on sufficient and efficient administrative staff. Much remains to be done. For example, referral data and patients cards are not processed but just piled up. There may be an inexpensive way to take care of the problem.

CHUM does not know the real cost of a given type of care, so does not know the gap between "ideal receipt" and "actual receipt". Therefore, it is very difficult for CHUM to study the perspective for financial sustainability.

5) Information on CHUM being disseminated to patients and local communities

CHUM has been well known in the targeted 6 districts during the project because the staff members did field work there. There was nn information for the public after the termination of the project except during the 80th anniversary of CHUM in 2004. Self-referred patients coming to CHUM still exist and the number of patients is somehow stable. This shows that the former publicity on CHUM still has some impacts now. In addition, CHUM managers have shown determination on increasing publicity of CHUM. When all reforms are done, the public will be informed through such media as radio and TV.

3.3. Factors that have promoted and inhibited the project

3.3.1. Factors promoting impact

Micro projects such as URSR have been promoting the project. In fact, it helped improve the collaboration between DRS, CHUM, partners, city and the health services in Mahajanga. Adding to that impact was the commitment of URSR members and the staff of CHUM. Activities of DRS and GTZ are big factors that have promoted and are still promoting the project. Their actions at primary and secondary health services in places such as Marovoay strengthened the referral system.

3.3.2 Factors inhibiting impact

None in particular

3.3.3 Factors promoting Sustainability

PFU is the promoting factor of the financial sustainability. Without PFU, the project will not survive. However, a low tariff also poses risks to the sustainability of the project.

3.3.4 Factors inhibiting impact

The lack of personnel, especially paramedics, is the most important inhibiting factor of the project. It affects not only the quality of care but also the attitude of the staff towards patients.

4. Conclusions

After the termination of the project on the Global Improvement of CHUM, the ex-post evaluation shows a good impact on the referral system in Mahajanga despite of some weaknesses of the sustainability of the counter referral system. The impact of the project on students and

trainees at CHUM is also positive. The impact would have been totally positive if, during the project implementation, the means to secure the management and maintenance of equipment had been set.

With regard to sustainability, financial sustainability is still ensured by the FPU. However, it will be at risk in the near future if additional measures are not taken. Equipment items are also still functioning but a strategy should be found to lengthen their sustainability. On the other hand, technical sustainability is positive in general due to commitment of all stakeholders.

5. Recommendations

To CHUM:

- Maintenance: The problem of maintenance may be tackled by outsourcing some of the functions of the O&M department. The number of technicians for maintenance can be kept low if CHUM outsources some activities in this department.

- Shortage of paramedics: One possibility is to give inactive nurses in the area or recently graduated nurses the possibility of practicing their knowledge at CHUM as volunteers or at low cost with flexible working hours.

- Risk to finance sustainability due to low tariff: If the tariff of each medical care is calculated and known, it will be easier for CHUM to see the gap between the receipt and the real cost of a given medical act. With this data, it is easier to convince MOH and partners on how things should be done. CHUM will request partners to give this task a priority.

- Information on CHUM: When CHUM does its budgeting, it can use some part of the budget for publicity efforts through radio, TV, posters, and pamphlets. For the population in rural areas, field work of the staff members of CHUM is a good way to promote RS and the tariff for the public. That will also enhance the image of CHUM to the communities at CHD and CSB level.

To MOH

- Lack of staff: The MOH can support CHUM much more if it recruits staff members, especially paramedics, not only for the sustainability of the project but also because the working conditions of the personnel affect the care provided to the patients. MOH can also

send recently graduated nurses to work at the hospitals as trainees. In that way, the cost would be lower than recruiting new staff members.

- Problem of equipment: The department responsible for maintenance at the central level can study the possibility of standardization of the types of medical equipment utilized in Madagascar according to the economic situation and the capacity of the technicians. Such measure would also make it easier for the provider to run and keep spare parts and supplies to users for a long period of time.

- Low tariff which cannot recover the expenditure: Setting a price including maintenance cost and taking into account the purchasing power of the population would be the best solution to fix the PFU. But for public hospitals, the price is set by MOH. Subsidy from the government would be a solution to fill the gap between low tariff and real value of a given act of care. It will also allow the health center to maintain its equipment, and undertake activities to improve itself and services it provides.

To JICA

- A preliminary study on equipment among JICA, MOH, and CHUM should take into account the possibility of the CP organization to sustain them. It means that it should estimate the total cost of operation and maintenance including supplies and spare parts in order to assess the size of the budget needed. Equipment items for Madagascar need to have the following characteristics: simple and easy-to-use, not very sophisticated, manual and not automatic, adjusted to developing countries, and not requiring expensive supplies materials.

- The availability of spare parts after the guaranty period is seen as a major problem in keeping equipment functional. In some cases, Although equipment cannot be used due to the unavailability of spare parts (e.g., main cards for the Cardiotocographe, Poupinel MM, and Spectrophotometer) although equipment itself is functional. JICA may be able to help solve this problem by communicating with the manufacturers and distributors in Japan.

- JICA can help CHUM improve its sustainability by sending an expert to CHUM to help with calculation of the tariff and data processing.

6. Lessons learned

General lessons

- When supporting a referral hospital, careful analysis of the financial, technical and organizational capacity of the hospital needs to be conducted before investment. A high investment leads to an increased financial burden on the hospital. Consequently, the Ministry of Health needs to decide whether it will raise tariffs or allocate more budgets to the hospital to supplement the gap between the actual expenditure and the revenue that the hospital can generate from the tariffs.

- When estimating necessary investment for a hospital, partners need to ensure that the total value of the equipment, maintenance and supplies, not only for the guaranty period, but for several years after the guaranty period, is considered. This is necessary because the counterpart organization is often unable to renew equipment after the equipment depreciates, and equipment needs to be kept functional as long as possible. Thus it is important to provide simple, manual, not automatic and not computerized equipment if possible because the main problem comes from it. If the equipment is simple, the technician can ensure its maintenance. If it is widely used in the country, it is easier for the local biomedical equipment provider to provide spare parts and supplies.

- Managers of CHUM and some participants in training have pointed out the following problems: language problem; courses are not detailed enough; and courses cannot be applied to the case of Madagascar. Perhaps JICA should promote training in Madagascar, especially for the maintenance unit and send specialists to train technicians for the existing materials. Or it should send trainees to French speaking countries so the assimilation would be effective. In any case it needs to make the right decision.

Implications for a new project in CHUM

- JICA can work also with key CSBs and CHDs in the region and focus not only on CHUM, which is only the top of the pyramid, to ensure the effectiveness of the RS. JICA can also learn lessons from GTZ through its long experience in primary and secondary health support. Good coordination of partners would also be very important for the health system in Mahajanga because GTZ’s support in primary and secondary care may end in a few years.

ANNEXES

Annex 1

SITUATION OF THE HEAVY EQUIPMENTS GRANTED BY JAPANESE SIDE BY SERVICE (23/09/05) (*Source*: CHUM)

Service	Nbr	Utilization				State					
		Frequent	Some-times	Rarely	NTS	Good	OK	Not working	Broken (*)	Bad	NTS
Maternity Gynecology	33	17	10	1	5	15	11	3	2	-	2

(*) : CardioTocographe : Main card
Incubator with monitor of oxygen: not working since the beginning of the project

Surgery	4	3	-	1	-	2	2	-	-	-	-
SUSI	12	7	1	-	4	3	5	-	-	-	4
Medicine Cardiology	4	2	-	-	2	2	-	-	1	1	-

(*) : ECG 3 tracts and accessories : patient cable et battery

Medicine dermatology	4	2	2	-	-	3	-	-	-	-	1(being repaired)
Medicine (Hepato-Gastro)	8	-	-	-		8	-	-	-	-	-

The examinations are programmed

Medicine neurology	1	-	-	-	-	1	-	-	-	-	-

The examinations are programmed

Medicine pneumology	6	-	-	-	-	6	-	-	-	-	-

The examinations are programmed

Medicine 8 service	29	8	16	-	5	5	7	-	5	-	2(in reparation)

(*) : Glucometer with accessories : no provider of dipstick
: Pressure regulating valve plus rate meter for oxygen: broken knob
: Poupinel MM: card not working

Pediatric	39	23	8	-	7	19	9	-	7	2	-

(*) : Glucometer : no provider of dipstick
: Incubator with oxygen: warming lamp + thermostat
: Baby scale : incorrect indication

Radiologie	4	4	-	-	-	3	1	-	-	-	-
Lab (1biochimistry /hemato/bacterio)	19	16	-	-	3	13	1	-	5	-	-

(*) : Spectrophotometer : Main card
: Bidistillator: resistance of the boiler
: Centrifuge for hemolys tubes: rotor axle
: Electrophoresis: original reagent does not exist anymore
: Photometer of flame: -

Lab (BAT 2 and sterilization lab)	10	9	1	-	-	9	1	-	-	-	-
Special stomatology	4	4	-	-	-	4	-	-	-	-	-
Special ophthalmology/ORL	19	18	-	1	-	17	2	-	-	-	-
Specialty (ondotology)	3	3	-	-	-	3	-	-	-	-	-
Anatomo pathologie	8	7	-	-	-	8	-	-	-	-	-
Wash-house and lingerie	5	-	-	1	4	2	-	-	2	-	1

(*) : Laundry room and linen room : spur clamp
: Washing machine : socle-courroi

Annex 2

SITUATION OF TRANSPORT AND COMMUNICATION MATERIALS GRANTED BY THE JAPANESE SIDE (Sept 2005) (*Source*: DRS)

District	**Granted materials**	**Quantity**	**Actual state**	**Utilization**
Maevatanana	Cart	1	Good	Sometimes
	BLU	1	Good	Frequent
Mitsinjo	Cart	1	Good	Sometimes
	UHF	4	Good	Frequent
Mahajanga	BLU	1	Good	Frequent
	Boat	1	Good	Sometimes
	VHF	2	Good	Frequent
	Cart	1	Good	Sometimes
Ambato Boeni	VHF	2	Good	Frequent
	Motor Boat	1	Good	Sometimes
Marovoay	Cart	1	Good	Sometimes
	Motor Boat	1	Not working	Not working
	VHF	7	Good	Frequent

Annex 3

SCHEDULE

18-Sep	Sun	Arrival of the consultant in Antananarivo
19-Sep	Mon	Kick-off meeting Preparations of seminar
20-Sep	Tue	Seminar
21-Sep	Wed	Preparations of the fieldwork Confirmation of TOR
22-Sep	Thu	Ministry of Health French embassy
23-Sep	Fri	Move to Mahajanga
24-Sep	Sat	Studying secondary data Visit to CHUM Interviewing Communities
25-Sep	Sun	Summarizing findings Preparing for fieldwork Interviewing the Sisters of Sacre Coeur de Jesus et de Marie
26-Sep	Mon	Interviewing to CHUM management, URSR, FC
27-Sep	Tue	Interviewing to C/P and FC (CHUM) Questionnaire survey to C/P
28-Sep	Wed	Interviewing to C/P (CHUM) Interviewing to provincial office, Ministry of Health Interviewing to GTZ Interviewing to BMH
29-Sep	Thu	Visit and see equipment (CHUM) Visit Lutheran Private Hospital Interviewing to IRCOD
30-Sep	Fri	Move to Antananarivo
14-Oct	Fri	Preparation for supplemental study
14-Oct	Sat	Preparation for supplemental study
16-Oct	Sun	Reporting the results of evaluation Instructions on supplemental study

Annex 4

LIST OF KEY INFORMANTS AND INTERVIEWEES

MOH	- Dr. Rabeson Dieudonné Robert	- Secretary General
	- Dr. Rahantanirina Perline	- Director of Family Planning
	- Dr. Aimée	- Director of Referral Hospital
	- Dr. Jeannine	- Head of Department of monitoring and evaluation
DRS	- Dr. Ravalomanda Arison	- Director
	- Dr. Rasolofomanana Armand	- Responsible for Program Aids
	- Mr. Rasamoela Eric	- Chief Organization Officer
CHUM	- Dr. Ralaiavy Florette	- Director
	- Dr. Rasolomaharo Monique	- Former Director
	- Dr. Tiandaza Odilon	- Former Technical Deputy Director
	- Dr. Andriamiandrisoa Aristide	- Chief of Maternity unit
	- Dr. Ralaiavy Henry Albert	- Member of URSR
	- Dr. Razafimahefa Mamy	- Member of URSR
	- Dr. Andrianiaina Harivelo	- Medical doctor
	- Mr. Mikanony	- Technician on maintenance
	- Mme Bazezy Josiane	- Finance Manager
	- Mme Razaiarimalala Albertine	- Personnel Manager
FC	- Dr. Mallat Eric	- General Advisor on Health Cooperation
	- Dr. Lajoinie Guy	- Technical Advisor
	- Dr. Karman Jean Marie	- Director Advisor to the Director of CHUM
	- Mme Cauchoix Catherine	- Advisor to the Director of CHUM
GTZ	- Dr. Kocher Dieter	- Director
IRCOD	- Dr. Cabanne Valérie	- Project Officer
BMH	- Dr. Takotoarimanana Nirina	- Chief of BMH
	- Dr. Rafarasoa Marie Thérèse	- Private Medical Cabinet at La Corniche
Lutheran Hospital	- Dr. Andrainandraina Gustave	- Senior Doctor
	- Mme Ramanantsoa Hantarisoa	- Administrator
Sacré Coeur de Marie	- Sr. Paulette	- Responsible for indigents at CHUM

Annex 5

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3. Dr. Ikeda N., Rapport Annuel d'Activités pour le projet d7Amelioration Global du CHUM, Oct 2001
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Summary

Evaluation conducted by: JICA Madagascar Office

1. Outline of the Project		
Country：Madagascar		Project title：The project for the improvement of Mahajunga university hospital
Issue/Sector：Health/Medical Care		Cooperation scheme：Technical cooperation
Section in charge：Medical Cooperation Department		Total cost：3.87 Billion yen
Period of Cooperation	May 1999 – February 2004	Partner Country's Related Organization(s)： Mahajunga University Hospital Centre
		Supporting Organization in Japan： International Medical Centre of Japan
Related Cooperation	French Embassy: Financial aid and dispatch of experts to CHUM in the field of hospital management GTZ: Support in capacity development of primary health care in Mahajunga province IRCOD: Provision of equipment and training to the clinical examination and emergency care units of CHUM	

1-1. Background of the Project

The project "Global Improvement of CHUM" is the first trial tripartite project where the Madagascan Ministry of Health, the French Cooperation and JICA work jointly for the improvement of health services. It is in the framework of Health Collaboration in Africa according to the Frenco-Japanese agreement signed by French President Chirac and the Japanese Prime Minister Hashimoto during the 1996 summit. The tripartite agreement among the Madagascan, French and Japanese Governments was signed on June 2, 1999. The project lasted from 1999 to February 2004.

1-2. Project Overview

(1) Overall Goal
1) CHUM contributes to the improvement of medical care in Mahajunga.
2) Sustainability of the project is ensured by improved hospital management.

(2) Project Purpose
1) The number of patients that receive medical services increases.

(3) Outputs
1) Increased referral cases
2) Improved patients' satisfaction with medical services of CHUM
3) Tariffs affordable for patients set by CHUM
4) Improved administrative capacity of CHUM
5) Information on CHUM being disseminated to patients and local communities

(4) Inputs (as of the Project's termination)

Japanese side：

Long-term Expert:	1	Equipment:	3.68 Billion Yen
Short-term Expert	7	Local cost:	9 Million Yen
Trainees received:	12	Others:	10 Million Yen

French side:
Long-term Expert: 2 Trainee received: 5
Local cost: Approximately 15 Million Yen

Madagascar Side：
Allocation of counterpart personnel Construction of hospital facilities: 32 Million Yen (2.4 Billion Ariary)

(1 Japanese Yen = approximately 75 Ariary)

2. Evaluation Team	
Members of Evaluation Team	Ms Rasolonjatovo Hary (Pogramme Officer, JICA Madagascar Office) Ms Rasoloarisoa Marcelline (Consultant) Mr. Kaneyasu Ida (IC Net Limited)

Period of evaluation	September 23 – October 28, 2005	Type of Evaluation：Ex-Post Evaluation

3. Results of Evaluation

3-1. Summary of Evaluation Results

(1) Impacts

1) Impacts on the overall goal

Statistical data, interviews of stakeholders and CP show that the referral system has a positive impact. This impact has been measured with several stakeholders of the project such as CHUM and other medical facilities in Mahajunga. The Regional Health Office (DRS) confirmed that the impact is generally positive; 3 Basic Health Centers (CSBs) out of 5 responded said that after the termination of the project, the number of referred cases they have sent to CHUM has increased. The last 2 CSBs have noticed that the number of the cases they needed to refer to has decreased much thanks to the training provided by specialist doctors from CHUM to doctors in CSBs.

The Ministry of Health (MOH) finds that the referral system set by the project at CHUM was quite successful. For example, during the project in rural areas, there was real dedication of the communities. The involvement of the local people (through initiatives they took to coordinate between themselves to do what is the necessary to bring the patients referred to CHUM), their will to work together is a really good impact of the project. Actually, the project made them much closer to the health office in the area and more responsible concerning health of the community. After the final evaluation of the project, MOH felt the necessity of spreading this and it is now elaborating a manual, based on CHUM model, which will be dispatched to all health centers throughout the country.

2) Other impacts

CHUM is a university hospital but medical education was not included in the project: at that time, priority was to “raise” the hospital and to improve care. Even if the education was not included in the project, students are also indirectly benefiting from the project. Actually, students improve their knowledge thanks to equipment provided by the Japanese government and through trained doctors supervising and teaching them during the training. Techniques have been transferred to C/P. Students and trainees at CHUM are well aware of the referral system and sustainability can be ensured for those who will be dispatched in the districts. CHUM has received about 600 students in 2003, 300 in 2004 and 400 in 2005.

(2) Sustainability

1) Financial sustainability

The financial sustainability is critical to the sustainability of the project. Unfortunately, the financial capacity of CHUM does not allow it to upgrade its present performance. The receipt of CHUM during the project has always increased due not only to the users’ financial contributions (PFU) but also to subvention. However, In 2005, not only subsidy has decreased but PFU is very low and even if the number will triple until the end of the year, it would not even equal to PFU in 2004. This is due to the financial situation of the population. The high inflation registered this year has a negative impact on the health behavior of the population. Patients have tendency to do self-medication and health is not a priority anymore.

Apart from that, the tariffs unilaterally decided by the MOH cannot cover expenditures, so CHUM decided to charge patients a little more. Yet, it is still too little for make up for the gap between the receipt and the real cost of a given medical act. Affordable tariffs do not always ensure sustainability of the project.

Financial situation (receipt) of CHUM during and after the project (Unit:1000 Ariary)

Item	1999	2000	2001	2002	2003	2004	2005 (6months)
Subvention	313.803	277.836	306.992	374.735	502.179	272.792	167.084
PFU	181,516	233,952	302.491	236.860	313.208	412.322	95.385
Total receipt	**495.319**	**511.788**	**609.483**	**611.595**	**815.387**	**685.114**	**262.469**

(Source: CHUM)

There are about 25 entities dealing with CHUM. The tariff applied to patients reimbursed by their employers is much higher and it can be profitable to CHUM to palliate the low tariff for the public. CHUM has a mission to provide universal service to the public and CHUM does not want to tarnish its image in working too closely with private companies. However, there must be a compromise for its financial sustainability.

2) Personnel aspect

The sustainability of the personnel of CHUM is also quite weak. The increased number of patients leads to the increase of workload which decreases the care hours and retired staff are not even replaced. The lack of staff concerns especially paramedics and eventually supporting staff and administration. This is for example the case of the emergency care unit where there are only two nurses and they have to work 24 hours nonstop every two days. In other units, there are 3 nurses who do rotation during the week. CHUM itself is not able to solve that problem, for recruitment of personnel is the responsibility of MOH. Only MOH decides the number of staff members coming to CHUM despite of the need of the latter. CHUM is unable to recruit part time nurses, either.

Sustainability of inputs for medical care:

The equipment is extensively used and the majority is still functioning. 212 equipment items have been installed. 83% are still functioning, and 58% are regularly used. Yet, the prospect for their sustainability is highly questionable. The success of the project increases workload and leads to an overuse of the equipment: they get broken very fast and the very low cost of care makes it impossible to renew them. The maintenance requires a sufficient budget and competent staff. In a financial year, the budget allocated to the operation and maintenance of medical equipment of CHUM as part of the running budget is approximately 5 – 6%. This rate is too low for covering maintenance needs and buying supplies for equipments. Thus, many equipment items may stay dysfunctional for a long time if they have a problem.

3) Sustainability of the project's outputs:

The increased number of the patients:

The number of patients has been increasing during the project and at its termination and has become quite stable later on. But if only outpatients are considered, in 2002, the number was estimated at 10,359 and it decreased to 8,685 in 2003. Even if the number of patients received at CHUM does not increase, the population has confidence in CHUM and the data provided by the service of laboratory and the medical imaging shows that the number of users still increases after the termination of the project.

Number of patients received at CHUM after the termination of the project

Number of patients	**2003**	**2004**	**2005 (Jan to Aug)**
Out patients	8,685	8,061	4,755
Referred cases	5,830	5,674	3,362
Hospitalization:			
Maternity	1,688	1,830	820
Surgery	1,895	3,200	1,688
Medicine	2,334	1,964	899
Pediatric	1,636	1322	796
Stomatology	903	747	268
Reanimation	1,007	1,136	264
Total	**23,978**	**23,954**	**12,852**

Number of analysis and radiography at CHUM

Number of patients	2003	2004	2005 (Jan to Aug)
Analysis at the laboratory	52,732	61,929	34,175
Radiography	10,602	12,047	4,192

(Source: CHUM)

Increased referral cases:
The number of referral cases increased during the project but then decreased a bit because little has been done after the project. Follow-up at the regional level is not ensured and CHUM managers stressed the need for stronger collaboration with DRS. The referral system and referral cards are not yet extended to private health centers. Due to the lack of budget for field visits, the staff members of CHUM are not able to do field work anymore as they did during the project. The project proved that direct contact was very efficient in earning the trust of the population in rural areas. Sustainability of the referral system depends also on number of staff members, equipment in CSBs and training. If CSBs are strengthened, self-referred patients at CHUM may decrease.

Improved patients' satisfaction with medical services of CHUM:
CHUM has no data on the satisfaction of the patient. Accordingly, a focused group discussion was done in 3 communities by the evaluation team. Most interviewees see that, due good equipment, the cleanness of CHUM and the quality of services have greatly improved. However, they have pointed out some bad habits of CHUM that are still remaining. They find some staff members unkind, the waiting time too long in a non-emergency case, and there are no visits of doctors on weekends. In fact, much of the complaints come from self-referred patients who do not have any understanding of the function of a referral hospital. CHUM makes no distinction between self-referred and referred patients with regard to the waiting time.

Introduction of affordable tariff for the poor:
Normally, the tariffs are affordable for patients but some are still complaining about expensive fees at CHUM. The PFU is a barrier to accessing hospital care, especially for the poorest. MOH has then recently set up the Equity Fund (EF) system to give free medical care to indigents[1].

The EF is not formally installed yet. Normally, a special fund from MOH and a part of medical fees received from patients should be put in a sub-account for equity fund. Such process is under way. CHUM, with an insufficient budget for indigents, has taken some steps to help them. But they are currently not functioning:
- During the project, CHUM set up a working group to care for indigents. The group set identification criteria for real indigents and formulated an indigent card which was different from that in CSBs. But this group is no longer functioning as some members left.
- Overloaded, CHUM is reducing the number of indigents that it takes care of.

EF 2003- 2005 (Unit: Ariary)

	2003	2004	2005 (Jan to Aug)
Allocated budget	1,846,400 (source CHU)	7,329,500 (sources: CHU and grant)	4,000,000 (source: MOH)
Expenditures	1,846,400	7,329,500	1,939,800

CHUM tries to coordinate activities with the other stakeholders. It is proposing to a Catholic congregation to work together on accurately determining the number of indigents. An entity that takes care of patients is the Sisters of Sacré Cœur de Jésus et de Marie. Its prime targets are referred patients from enclave areas and patients of diseases that need long treatment such as tuberculosis. It engages in activities including the following:

- Free medicines with advice from doctors of CHUM (4,800,000 Ariary per year)
- Distribution of food 3 times a week for 60 to 95 persons (13,000,000 Ariary per year)
- Loans for patients who come from very far and have no more resources.

[1] Indigents are the poorest people constituting about 10% of the population

When comparing the expenditures for indigents of CHUM and Sacré Cœur de Jésus et de Marie, CHUM's expenditure amounts to only 26% of that of Sacré Cœur de Jésus et de Marie. Thus it is fair to say that the sustainability of the support to indigents is closely linked to the collaboration with other partners.

Improved administrative capacity of CHUM:
In order to solve the problem of waiting time, the French Cooperation has improved the organization within CHUM, especially the route of patients, and has installed a waiting space for the patients. Everyone has recognized that the door service has greatly improved although it is not perfect yet.
Since the departure of the French expert on hospital management in 2002, the post was vacant and the new expert arrived only in September 2005. He will stay at CHUM for one year to support the Director of CHUM.

The sustainability of the improved administrative of CHUM depends closely on sufficient and efficient administrative staff. Much remains to be done. For example, referral data and patients cards are not processed but just piled up. There may be an inexpensive way to take care of the problem.
Financial management is still weak. CHUM does not know the real cost of a given type of care, so does not know the gap between "ideal receipt" and "actual receipt". If they have this data, it would be much easier for CHUM to set strategy to tackle its financial problems.

Information on CHUM being disseminated to patients and local communities:
CHUM has been well known in the targeted 6 districts during the project because the staff members did field work there. There was no information for the public after the termination of the project except during the 80th anniversary of CHUM in 2004. Self-referred patients coming to CHUM still exist and the number of patients is somehow stable. This shows that the former publicity on CHUM still has some impacts now. In addition, CHUM managers have shown determination on increasing publicity of CHUM. When all reforms are done, the public will be informed through such media as radio and TV.

3-2. Contributing and inhibiting factors

- (Factor inhibiting sustainability) The lack of personnel, especially paramedics, is the most important inhibiting factor of the project. It affects not only the quality of care but also the attitude of the staff towards patients.
- (Factor promoting sustainability) PFU is the promoting factor of the financial sustainability. Without PFU, the project will not survive. However, a low tariff also poses risks to the sustainability of the project.
- (Factor promoting impact) Micro projects such as the improvements of referral system have been promoting the project. In fact, it helped improve the collaboration between DRS, CHUM, partners, city and the health services in Mahajanga. Adding to that impact was the commitment of the partner organizations and the staff of CHUM. Activities of DRS and GTZ are big factors that have promoted and are still promoting the project. Their actions at primary and secondary health services in places such as Marovoay strengthened the referral system.

3-3. Conclusion

After the termination of the project on the Global Improvement of CHUM, the ex-post evaluation shows a good impact on the referral system in Mahajanga despite of some weaknesses of the sustainability of the counter referral system. The impact of the project on students and trainees at CHUM is also positive. The impact would have been totally positive if, during the project implementation, the means to secure the management and maintenance of equipment had been set. With regard to sustainability, financial sustainability is still ensured by the FPU. However, it will be at risk in the near future if additional measures are not taken. Equipment items are also still functioning but a strategy should be found to lengthen their sustainability.

3-4. Recommendations
To CHUM:
- The problem of maintenance may be tackled by outsourcing some of the functions of the O&M department. This may be able to reduce the O&M cost of the CHUM and efficiently maintain the equipment in the hospital.

- CHUM needs to tackle the problem of the shortage of paramedics. One possibility is to give inactive nurses in the area or recently graduated nurses the possibility of practicing their knowledge at CHUM as interns or at low cost with flexible working hours.
- If the tariff of each medical care is calculated and known, it will be easier for CHUM to see the gap between the receipt and the real cost of a given medical act. With this data, it is easier to convince MOH and partners on how things should be done. CHUM will request partners to give this task a priority.
- When CHUM does its budgeting, it can use some part of the budget for publicity efforts through radio, TV, posters, and pamphlets. For the population in rural areas, fieldwork of the staff members of CHUM is a good way to promote RS and the tariff for the public. That will also enhance the image of CHUM to the communities at District Hospital (CHD) and CSB level.

To MOH

- The MOH can support CHUM much more if it recruits staff members, especially paramedics, not only for the sustainability of the project but also because the working conditions of the personnel affect the care provided to the patients. MOH can also send recently graduated nurses to work at the hospitals as trainees. In that way, the cost would be lower than recruiting new staff members.
- The department responsible for maintenance at the central level can study the possibility of standardization of the types of medical equipment utilized in Madagascar according to the economic situation and the capacity of the technicians. Such measure would also make it easier for the provider to run and keep spare parts and supplies to users for a long period of time.
- Setting a price including maintenance cost and taking into account the purchasing power of the population would be the best solution to fix the PFU. But for public hospitals, the price is set by MOH. Subsidy from the government would be a solution to fill the gap between low tariff and real value of a given act of care. It will also allow the health center to maintain its equipment, and undertake activities to improve itself and services it provides.

To JICA

- The availability of spare parts after the guaranty period is seen as a major problem in keeping equipment functional. In some cases, equipment cannot be used due to the unavailability of spare parts (e.g., main cards for the Spectrophotometer) although equipment itself is functional. JICA may be able to help solve this problem by communicating with the manufacturers and distributors in Japan.
- JICA can help CHUM improve its sustainability by sending an expert to CHUM to help with calculation of the tariff and data processing.

3-5. Lessons learnt

- When supporting a referral hospital, careful analysis of the financial, technical and organizational capacity of the hospital needs to be conducted before investment. A high investment leads to an increased financial burden on the hospital. Consequently, the Ministry of Health needs to decide whether it will raise tariffs or allocate more budgets to the hospital to supplement the gap between the actual expenditure and the revenue that the hospital can generate from the tariffs.
- When estimating necessary investment for a hospital, partners need to ensure that the total value of the equipment, maintenance and supplies, not only for the guaranty period, but for several years after the guaranty period, is considered. This is necessary because the counterpart organization is often unable to renew equipment after the equipment depreciates, and equipment needs to be kept functional as long as possible. Thus it is important to provide simple, manual, not automatic and not computerized equipment if possible because the main problem comes from it. If the equipment is simple, the technician can ensure its maintenance. If it is widely used in the country, it is easier for the local biomedical equipment provider to provide spare parts and supplies.

事後評価調査結果要約表

評価実施部署：マダガスカル事務所

1. 案件の概要		
国名：マダガスカル		案件名：マジュンガ大学病院センター総合改善計画
分野：保健医療		協力形態：プロジェクト方式技術協力
所轄部署：医療協力部医療協力第２課		協力金額：3 億 8700 万円
協力期間	1999 年 5 月ー2004 年 2 月	先方関係機関：マジュンガ大学病院
		日本側協力機関：国立国際医療センター
他の関連協力	仏外務協力省：マジュンガ大学病院センターの病院経営・ケアシステム改善のための資金提供と専門家派遣、ドイツ技術協力公社:マジュンガ州の 1 次・2 次医療改善、アルザス州自治体援助機構:マジュンガ大学病院センターの緊急部と臨床検査部に対する支援	

1-1. 協力の背景と概要

マジュンガ大学病院センター総合改善計画は、マダガスカル政府、フランス政府、日本政府の 3 カ国による共同プロジェクトである。1996 年のサミット首脳会議で、シラク大統領と橋本首相との間で調印されたサブサハラアフリカに対する共同支援の枠組みに基づき、1999 年 6 月、同プロジェクトに関する合意文書が調印され、日仏協力による 5 年弱の支援が実施され、2004 年 2 月に日本側の協力が終了した（フランスの協力は来年に終了予定）。

1-2. 協力内容

（１）上位目標

1) マジュンガ大学病院センター（以下センターと称する）によるマジュンガ地域医療向上への貢献
2) 病院経営改善による自立発展性の確保

（２）プロジェクト目標

1) センター受診患者の増加

（３）成果

1) 下位医療施設からの患者レファラルの増加
2) センターに対する信頼度の増加
3) 住民が支払い可能な診療費の設定
4) 病院運営と財務管理の改善
5) 患者や住民に対するセンターの情報提供の強化

（４）投入

日本側：

長期専門家：1 人	機材供与：	３億 6800 万円
短期専門家：7 人	ローカルコスト負担：	900 万円
日本研修：12 人	その他：	1000 万円

仏国側:

長期専門家： 2 人　　研修受入：5 人
プロジェクト運営コスト負担：約 1500 万円

マダガスカル側：

CP 配置：センター職員
病院インフラ整備：約 3200 万円（約 5.8 億アリアリ）　　（1 円＝18.35 アリアリ）

2. 評価調査団の概要		
調査者	ラソロンジャトボ・アリー（マダガスカル事務所プログラムオフィサー） ラソロアリソア・マセリン（コンサルタント） 井田光泰（アイシーネット（株））	
調査期間	2005 年 9 月 23 日ー10 月 28 日	評価種類：事後評価

3. 評価調査の概要

3-1. 評価調査の要約

(1) インパクト

1) レファラルシステム構築への貢献

病院の統計資料と調査チームの聞き取り調査から、本プロジェクトによるプラスのインパクトが確認された。センター周辺の５つの地方病院へのアンケート調査によれば、３つの病院でレファラル患者は増加傾向にあり、２病院はセンターの医師による研修の結果、必要な患者だけがレファラルされるようになった。

センターへのレファラル強化の取り組みについては、地方のコミュニティが主体的に協力した。プロジェクトを通してコミュニティは地域の医療機関との信頼関係づくりとそのためにコミュニティが担うべき役割について、意識を高めた。保健省はこの取り組みをレファラルシステムの成功事例として、現在、全国の地方医療機関に普及するため、この経験をもとにマニュアルを作成中である。

2) 医療教育機能の強化

本プロジェクトの計画段階ではセンターの強化が優先課題であり、医療教育は含まれなかった。医療教への意図的な取り組みはなかったが、新規に導入された医療機材や医師の技術レベルの向上は学生の研修とって間接的にプラスになっている。特に、レファラスシステムに関する実地研修を受けた学生は、地方配属となった際にレファラルシステムの向上に貢献できる。2003 年は 600 人、2004 年は 300 人、2005 年400 人の学生や医療従事者がセンターで研修を受けた。

(2) 自立発展性

1) 財政の持続可能性

財政の持続可能性はプロジェクトの自立発展性にとって重要な問題である。残念ながら、センターの財政能力では、現在のパフォーマンスをさらに向上させる余裕はない。プロジェクト期間中のセンターの収入は、利用者負担分の診療費と助成金によって常に増加していた。しかし 2005 年には、助成金が減少した上に、診療費も非常に低調で、年末までに数字が 3 倍になったとしても、2004 年のレベルに及ばないであろう。今年記録された高度インフレは、国民の健康状態に悪影響を与えており、センターの患者数の低下は、患者が病気になっても自己治療で済ませようとする傾向を反映したものと思われる。

保健省が一方的に定めた診療費では支出を賄いきれないため、センターは独自に患者の負担率を若干引上げることにした。それでも、収入と実際の医療支出の差を埋めるには至っていない。

プロジェクト期間中・終了後のセンターの財政状況（収入）（単位：1,000 アリアリ）

項目	1999	2000	2001	2002	2003	2004	2005 (6 ヶ月)
助成金	313.803	277.836	306.992	374.735	502.179	272.792	167.084
診療費	181,516	233,952	302.491	236.860	313.208	412.322	95.385
総収入	**495.319**	**511.788**	**609.483**	**611.595**	**815.387**	**685.114**	**262.469**

(データ提供：マジュンガ大学病院センター)

現在、センターが医療セービスに関して協力関係にある法人は約 25 社ある。雇用者負担分があるため、ここからの収入で、一般の患者への低い診療費を埋め合わせることができる。センターには国民全体へ医療サービスを提供するという使命があり、民間企業とあまり密接に関わることでこのイメージを傷つけたくはないとの意識が強いが、財政面の自立発展性のためにはある程度の妥協が必要である。

2) 人員面の自立発展性

人員面の持続可能性もまた非常に脆弱である。患者数が増えれば業務負担が増え、患者一人当りの介護時間は減少する。退職スタッフ分の空席も埋まっていない。スタッフ不足は特に医療補助員に関して深刻で、人手不足は管理職にも及び始めている。たとえば緊急病床ユニットの場合、看護師がわずか 2 人しかいないため 1 日おきに 24 時間通しの勤務を強いられている。他のユニットは看護婦が 3 人で、週日はローテーションで仕事をこなしている。職員の採用と採用規準は保健省の管轄で、センター 自身がこの問題を解決することはできない。。制度上、センターはパートタイムの看護師を雇用することもできない。

3) 医療機器の維持管理面

医療器具はかなり使い古されているが、大部分はまだ機能している。212 個の器具が設置され、その 83%はまだ機能し、58%は日常的に使用されている。しかし、これらの持続可能性への展望には大いに疑問が残る。患者数の増加に比例して器具も使用過剰になるからである。器具は消耗が早くなり、しかも機器購入費が非常に少ないため、買い換えることはできない。器具の維持には十分な予算と有能なスタッフが必要である。1 会計年度中、医療器具の運用・維持に充当される予算は予算全体の約 5～6%である。この率は器具の維持には十分でなく、器具の備品購入にも少なすぎる。このため、多くの器具は何か問題が起きれば長期間故障したまま放置されることになる。

4) プロジェクトの結果の自立発展性

患者数の増加

外来患者だけを見れば、2002 年の 1 万 0359 人から 2003 年の 8685 人に減っているが、患者総数はプロジェクト期間中と終了時点でも増え続け、その後は安定した。センターが受け入れる患者数が増加していないにしても、センターの調査や医療イメージを調べたデータからも、住民のセンターへの信頼感は強まっており、プロジェクト終了後もユーザ数は依然増加しつつある。

プロジェクト終了後にセンター が受け入れた患者数

患者数	**2003**	**2004**	**2005 (1 月～8 月)**
外来患者	8,685	8,061	4,755
レファラル件数	5,830	5,674	3,362
入院			
産科	1,688	1,830	820
外科	1,895	3,200	1,688
内科	2,334	1,964	899
小児科	1,636	1322	796
歯科	903	747	268
リハビリ科	1,007	1,136	264
計	**23,978**	**23,954**	**12,852**

センターの一般検査と X 線撮影実績

患者数	**2003**	**2004**	**2005 (1 月～8 月)**
一般検査	52,732	61,929	34,175
X 線撮影	10,602	12,047	4,192

レファラル件数の増加

レファラル件数はプロジェクト期間中増加したが、プロジェクト終了後はほとんど何も行っていないため、微減した。地域レベルでのカウンターレファラルは確立されていず、センターのマネージャーは州保健局の一層の協力が必要としている。レファラルシステム、レファラルカードについても、民間の医療施設にまで拡大すべきである。フィールド活動の予算不足のため、センターのスタッフは、プロジェクト期間中に行っていたようなフィールド活動をもはや実施できない。地方の場合、住民の信頼を得るには直接的な接触が非常に有効だということがプロジェクトで証明されている。レファラルシステムの自立発展性は、スタッフの人数、地方病院の器具の充実と人材養成にかかっている。地域の医療サービスがさらに強化されれば、センターに来る非レファラル患者は減る可能性がある。

センターの医療サービスに対する患者の満足度の向上

センターは、患者の満足度に関する調査を行っていないため、評価チームは、3 つのコミュニティでフォーカス・グループ・ディスカッションを実施した。参加者の多くは、良質な医療機器、センターの衛生状態、サービスの質は大幅に向上したと回答した。しかし、センターの悪習はいまだに残っているとの指もあった。一部のスタッフは不親切で、非緊急時の待ち時間が長すぎ、週末は医師の登院がないことなどある。実際、苦情の大部分は、レファラル病院の機能を全く理解していない非レファラル患者によるものである。待ち時間について、センターが非レファラル患者とレファラル患者を区別していないことがこうした不満の一因であると思われる。

貧しい人々に適正な治療価格の導入

通常、治療価格は患者が支払い可能な額であるが、それでも中には、センターの治療費は高いと苦情を言う人々もいる。特に、最貧層の人々が病院で治療を受ける上で障害となっているのが診療費である。そこで保健省は最近、貧困者層に無料医療サービスを与えるためのエクイティファンド制度を設けた[1]。エクイティファンドはまだ正式に設置されてはいない。保健省からの特別資金と患者から受け取った治療費の一部を、エクイティファンドの補助経費に充当することになるはずで、こうしたプロセスが進行中である。貧困者層への予算が不十分なため、センターはこれまで彼らを助成するため独自の手段を講じてきたが、現在は機能していない。プロジェクト期間中、センターは貧困者層に治療サービスを提供するための作業部会を設置した。作業部会は真の貧困者層を識別するための基準を設け、貧困者層用のカードを作成した。しかし、部会のメンバーの交代やポストの空席があり、この作業部会はもはや機能していない。また、センターは財政面の問題から、貧困者層の受入数を減らしつつある。

会計年度 2003- 2005 (単位: アリアリ)

	2003	2004	2005 (1 月～8 月)
予算配分	1,846,400 (出典：CHU)	7,329,500 (出典：CHU 及び無償)	4,000,000 (出典：MOH)
支出	1,846,400	7,329,500	1,939,800

センターはカトリック教会など他団体と協力し、次のような形で、遠隔地からのレファラル患者と、結核など長期的治療を必要とする患者への支援を行っている。

- センターの医師からのカウンセリングによる無料医療(4,800,000 アリアリ/年)
- 60～95 人対象の週 3 回の食糧配布(13,000,000 アリアリ/年)
- 遠隔地からの患者への交通費の貸与

この活動へのセンターの支出は、センターが独自に支援した場合の 26%程度に抑えられている。貧困者層への支援を拡大するためには、このような形で、他のパートナーとの協力を密接にしていくことが有効である。

センターの管理能力の向上

待ち時間の問題を解決するために、フランス外務協力省はセンター内部の組織、特に患者のルートを改善し、患者のための待合室を設置した。誰もが受付サービスの大幅な改善の必要を認めているが、まだ完璧とは言えない。2002 年にフランスの病院管理専門家が去った後もそのポストは空席が続き、後任の専門家が到着したのは 2005 年 9 月になってからだった。彼はセンターで 1 年間勤務し、センターの院長をサポートすることになっている。センターの管理体制は改善されたが、その持続可能性は有能な管理スタッフが十分得られるか否かにかかっている。処理されずに積み上げられているレファラルデータや患者カードなど、やるべきことはたくさん残っている。

財務管理も強化が必要である。センターはどんなタイプの治療に実際どれくらいの費用がかかるか、ということを把握していないため、「あるべき収入」と「実際の収入」とのギャップを把握できずにいる。財務問題に取り組むために、センターがこのデータを掴むことが重要である。

[1]貧困者層とは、人口の約 10%を占める最も貧しい人々である。

患者と地域への情報提供

プロジェクト期間中はスタッフが実地活動を行っていたため、センターは 6 つの対象地区ではよく知られていた。プロジェクト終了後は、2004 年のセンター創立 80 周年を除き、一般人を対象にした情報は一切提供されていない。それでもセンターを訪れる非レファラル患者はいるし、患者数もほぼ安定している。これは、センターに関する以前の知名度が今でも何らかの影響を与えていることを示している。さらに、センターのマネージャーはセンターの知名度向上への堅い決意を表明しているため、ラジオや TV などのメディアを通じた一般人向けの情報提供の強化が期待される。

3-3. プロジェクトの促進・阻害要因

- 看護師などサポートスタッフの不足は、ケアの質と患者の満足度を低下させる大きな阻害要因である。
- 利用者負担制度の導入は病院の財務状況を改善したが、低額に抑制されている診療費は、長期的には病院の財務的な自立発展性の阻害要因である。
- 外部関係者を巻き込んだレファラル改善などのミニプロジェクトは、プロジェクトの効果を促進した。こうした活動を通して、州保健局、他ドナー、その他の医療機関との連携が強化された。１次・２次医療の改善を進めるための州保健局やドイツ技術協力公社の活動も、各レベルの医療機関間のレファラルを強化するために極めて重要な役割を果たした。

3-4. 結論

マジュンガ大学病院センターから地域の病院へのカウンターレファラルはあまり機能していないが、地域病院からセンターへのレファラルシステムは強化された。センターの学生や研修員への良好なインパクトも見られる。プロジェクト期間中に、病院運営と機材管理の体制が確立できていれば、さらに大きなインパクトの発現が見られたと思われる。財政状況は患者負担制度によりある程度改善されているが、財務面の自立発展性のリスクは高く、収入確保の追加的な手だてが必要である。医療機器の多くが稼働しているが、機器の更新のための予算が確保できないため、現在稼働している機器の使用期間をどう長持ちさせるかが重要な検討課題である。

3-5. 提言

マジュンガ大学病院センターへの提言

- 機材のメンテナンスについては、機材保守部の役割を見直し、外部へのアウトソーシングの可能性を検討し、効率的な機材の保守と病院の維持管理コストの抑制を図ることを提案する。
- 看護師不足への対応策が急がれる。勤務時間に柔軟性を持たせたり、インターンの採用枠を設けるなど採用方法を見直して、新卒者や看護師資格を持つ地方在住者の採用など、人手不足解消の方策を検討するべきである。
- 現行の診療費と実際に発生する診療コストのギャップを把握することが必要である。こうしたデータが得られれば、保健省や協力組織と対策を立てることができる。センターが協力組織に対し、病院の財務分析への支援を積極的に求めることが望まれる。
- 病院の予算組みの段階で、マスメディアや広報誌を通じた病院の宣伝と病院職員によるコミュニティでの啓蒙・広報活動のための予算を確保することを提案する。こうした活動により、コミュニティと地域医療機関におけるセンターの信頼感を高めることができる。

保健省への提言

- 病院の活動の持続性を確保し、病院サービスの質を高めるために、看護師などのサポートスタッフの採用面でセンターを支援することが求められる。また、人件費を抑えながら人員を確保する手だてとして、積極的に新卒の看護師を研修生としてセンターに配属することを提案する。
- 公立病院の財務能力とメンテナンス能力に見合った医療機器を特定し、全国レベルで標準化を図ることを提案する。こうした取り組みが進めば、医療機器の代理店もスペアパーツや備品の在庫を安定的に確保することが出来るようになり、病院にとっても長期間機材を利用できる。
- 医療機器のメンテナンスコストなど実際のコストと患者の支払い能力の双方を勘案し、診療費を設定するのが理想的である。病院のコスト負担を軽減し、病院サービスの向上を図るためにも、病院への予算配分を増加することを検討すべきである。

JICA への提言

■ 保証期限後にスペアパーツを確保出来ないことが、医療機器を継続的に活用する上での大きな問題である。検査機器の一部には、本体そのものは活用可能でも、スペアパーツがないために稼働出来ない事例が見られる。JICA がメーカーや代理店とセンターとのコミュニケーションを促進することで、問題の解決の一助となる可能性がある。

■ 病院の財務データ整備と適正な患者負担診療費の検討はプロジェクトの自立発展性上、非常に重要な課題であり、財務分析の専門家を派遣する等の支援が有効である。

3-6. 教訓

医療機関への支援の自立発展性を高めるために

■ レファラル病院など高度医療サービスを提供する病院への支援に際しては、計画段階で財務、組織、技術面の能力評価が必要である。特に、投資コストが高いと病院の財務負担も増加するため、病院の財務状況を維持するためには、患者負担診療費を引き上げるか、病院への公的補助を増額する必要性が高まることに留意が必要である。

■ 途上国では多くの場合、独自に医療機器の更新を行う財政的な能力がないことが想定される。その場合、導入された医療機器が減価償却した後も出来るだけ長期間稼働させるしかない。したがって、医療機器の導入コストを検討する際には、保証期間後のメンテナンス費用やスペアパーツ代まで含めた維持管理コストを想定することが望まれる。また、自動ではなく手動にするなど出来るだけ簡易で電子パーツを必要としない医療機器を選択するべきである（本プロジェクトでメンテナンスが困難な機器の多くが電子部品の故障などの問題を抱えていた)。また、対象国で汎用性が高く、現地の代理店が対応できる機器を選択することも重要である。