CHAPTER 1

INTRODUCTION

1.1 Rationale

Malaria kills more than 1.5 million people each year in the world; and between 300-500 million others fall ill from it. Over one million of these deaths are children under five, but also women in their 1st or 2nd pregnancy, older children and young adults. Tropical Africa account for the overwhelming majority of both cases of malaria and deaths (Kondrachine and Trigg, 1995). With 270-480 million of malaria cases per year, sub-Saharan Africa accounts for 90% of malaria cases per year in the world (OMS, quoted by CNLP, 1994, 3).

Malaria is the most important public health problem in Bénin, as in most of the tropical African countries, with seasonal outbreaks. Malaria is endangering not only the health of the population of Bénin, but also their overall socio-economic development. It is the first leading cause of morbidity. Both public and private health facilities reported that malaria accounted for 32.72 % of cases in outpatient departments; and 21.13 % of cases in inpatient departments in 1993. Malaria is also the first leading cause of mortality : 13.32 % of deaths in inpatient departments in health facilities in 1993 (Ministère de la Santé, 1994). Table 1.3 in appendix 1 shows the incidence of the five leading causes of morbidity and mortality in Bénin from 1990 to 1994, and highlights the importance of malaria.

The cases reported here are probably underestimated, as they are only those registered in health facilities, both public and private. The last level of health care in practice is the Health Centre, at commune level; although officially, it is stated in the National Health System (NHS) of Bénin that health care is decentralized down to the village level (see table 1.1). So, there still are many cases of malaria in villages which are not reported nor registered in any health facilities, because of physical inaccessibility to enable patients for treatment seeking in health facilities. The situation is more or less identical for the whole tropical Africa where only 12-22 million malaria cases are reported for 270-480 million cases per year (OMS, quoted by CNLP, 1994, 3). Physical accessibility has been defined in Bénin as the ratio of people living within 5 km or less from curative care centre (one walking hour), and 2 Km from preventive care centre, over the total number of people supposed to be covered. According to this formula, number of the population living in the more than 3,000 villages have no local access to official health care.

To solve this problem, and also to strengthen community participation in the management of their own health problems and in line with the principle of decentralization, health services are being decentralized down to the village level using Community Health Workers (CHWs). This has been in progress since 1990 in six pilot communes, one

in each of the six provinces of the country. The CHWs are in charge of the health status of their villagers, along with some villagers, members of the village health committee (composed of the representatives of the elders, women, youth, etc.). The CHWs are trained and supervised by the nurses and midwives of their commune health centre. They are trained to provide the community with basic curative care as well as assisting commune health centre personnel in providing preventive care, e.g. Expanded Programme of Immunization (EPI) to people in their villages. Curative health care at the village level is directed towards the first three or five most prevalent diseases in the area of work of each CHW; these includes simple malaria, hookworm or intestinal parasites, simple respiratory infection, simple diarrhoea and simple wounds. Malaria is the first leading cause of morbidity and mortality in all the six provinces as shown by table 1.4 of the distribution of the five leading causes of morbidity and mortality in Bénin in 1993 (in appendix). From that table, it is vivid that malaria is a holo-endemy in Bénin. That is why it is the most important disease which the trainers of CHWs emphasize in all the six provinces of the country. As case management - prompt diagnosis and effective treatment - has been recommended by a WHO Expert Committee as a major strategy for malaria control (WHO, 1986), prompt diagnosis and effective treatment of malaria among communities at the grass-roots level will be of great importance.

This strategy of CHWs is not unanimously accepted in Bénin. There are not only advocates, there are also opponents. According to advocates of the strategy, the CHWs can play a key role in control of simple diseases at the village level, especially malaria which is known to be widespread in all villages. They also argue that it is the best approach to get better coverage of health care intervention, especially in curative care and also in preventive care as well. The CHWs should not be neglected, especially as the Government faces a lack of qualified health personnel in public health facilities. This shortage is due to the ban of recruitment of staff imposed by the structural adjustment programme (SAP) which has been in place since 1986. In 1993, there was 1 MD per 17,361 people, 1 nurse per 4,088 people and 1 midwife per 10,707 people in the country (Ministère de la Santé, 1994). They add that the CHWs strategy is a way to solve this problem of lack of health manpower, allowing the small number of qualified personnel to concentrate on serious cases of illness in health centres, while CHWs provide care for simple cases of the most prevalent diseases at the village level. If well trained and regularly supervised. with a good level of community participation, the CHWs can help to better achieve a good coverage of some curative and preventive health interventions (eg., EPI). Along with them, a good coverage in EPI can be sustained for a long period so as to achieve the goal of eradication of the targeted diseases.

On the other hand, the opponents of the CHWs strategy argue that the strategy may be too expensive compared to the benefits it yields. According to them, the strategy is not sustainable unless the CHWs are paid or motivated financially by a regular monthly salary. But the latter do not generate enough revenue to bear the burden of a monthly

expenses. The willingness of the CHWs to work without any financial compensation is not reliable, since some of them started to claim some compensation for the job they are asked to do. Moreover, it is not quite fair to make them work even "for their community" without any compensation, as the professional health workers are being paid by the Government. But, the latter has neither enough resources, nor incentive to enroll the CHWs as officials because of SAP. They concluded that the performance of the CHWs is doubtful, as they are trained for "only few weeks", whereas paraclinic studies need years.

Indeed, CHWs are village volunteers, both male and female, non-professional health workers, operating at the village level. They were selected by their communities on a voluntary basis, and agreed not to claim any rewards nor salary for the work they are requested to do, as far as they will be serving their communities. But in some villages, after about two years of running the CHWs strategy, the villagers themselves decided without the intervention of professional health workers, to give some rewards in cash to their CHWs. In this way, one cotton-producing village (Ouessènè) in the commune of SORI (see table 1.1 in appendix) in the northeast region decided to give to each of its two CHWs 20,000 Franc CFA (US $ 70) per year deducted from the annual rebate the village received from the Government for their cotton production. In another village of the same commune, the community helps the CHWs on their farms. In the commune of Djougou 2, in the north-west region, the formal rewards of the CHWs consists of 50% of the money paid by people for deliveries. In the commune of Paouignan in the central region, and at Agatogbo in the south-west region, the CHWs are rewarded with 10% of the "benefit" issued from the drugs sales in their villages. So far, these are the different schemes for rewarding CHWs which are taking place in the CHWs experimental programme. However, there are some other experiences in different regions of the country, run informally by some of bilateral projects (AN/SSP with the Netherlands in the northwest, PBA/SSP with Germany in the northeast and PMSBS with Switzerland in the central region). All these projects have their own way of rewarding the CHWs which will be interesting to study, in the perspective of an harmonization or uniformization of rewards and then extending the strategy to the entire country. It is true that in the enthusiasm of the beginning of all these CHWs projects, the CHWs very easily accept working without claiming any rewards nor financial incentives, but it is also a fact that after few months or years, they do not have the same willingness to do the job without any compensation in cash or in kind. Some, but very few cases of drop-out have been registered in some experimental communes (see table 1.5 in appendix). Officially, this has not been because of the lack of financial incentive, but primarily because of migration for job seeking in big cities and even outside the country and secondarily because of non availability.

There is an urgent need for the health planners and policy makers to make a clear decision on whether to accept the strategy of CHWs and expand it to all the 3,378 villages of the country or to reject it definitely and withdraw it from the National Health System. To solve these problems, this research is proposed to design a study

for analyzing whether the CHWs programme is economically feasible or not and whether it is worthwhile to extend it all over the country. These major issues will be answered using economic tools to design a research of the economic analysis of the contribution of the CHWs in controlling some basic diseases at the village level (e.g. malaria); this includes:

- the analysis of CHWs' performance and the related factors, with an emphasis on whether or not there is any difference in the performance of CHWs with or without incentives in cash or in kind;
- the analysis of the costs, the benefits and the effectiveness of the contribution of the CHWs in malaria control at the village level, including the analysis of the difference between communes where CHWs get incentives and the communes where there is no incentive for CHWs.

1.2 Background

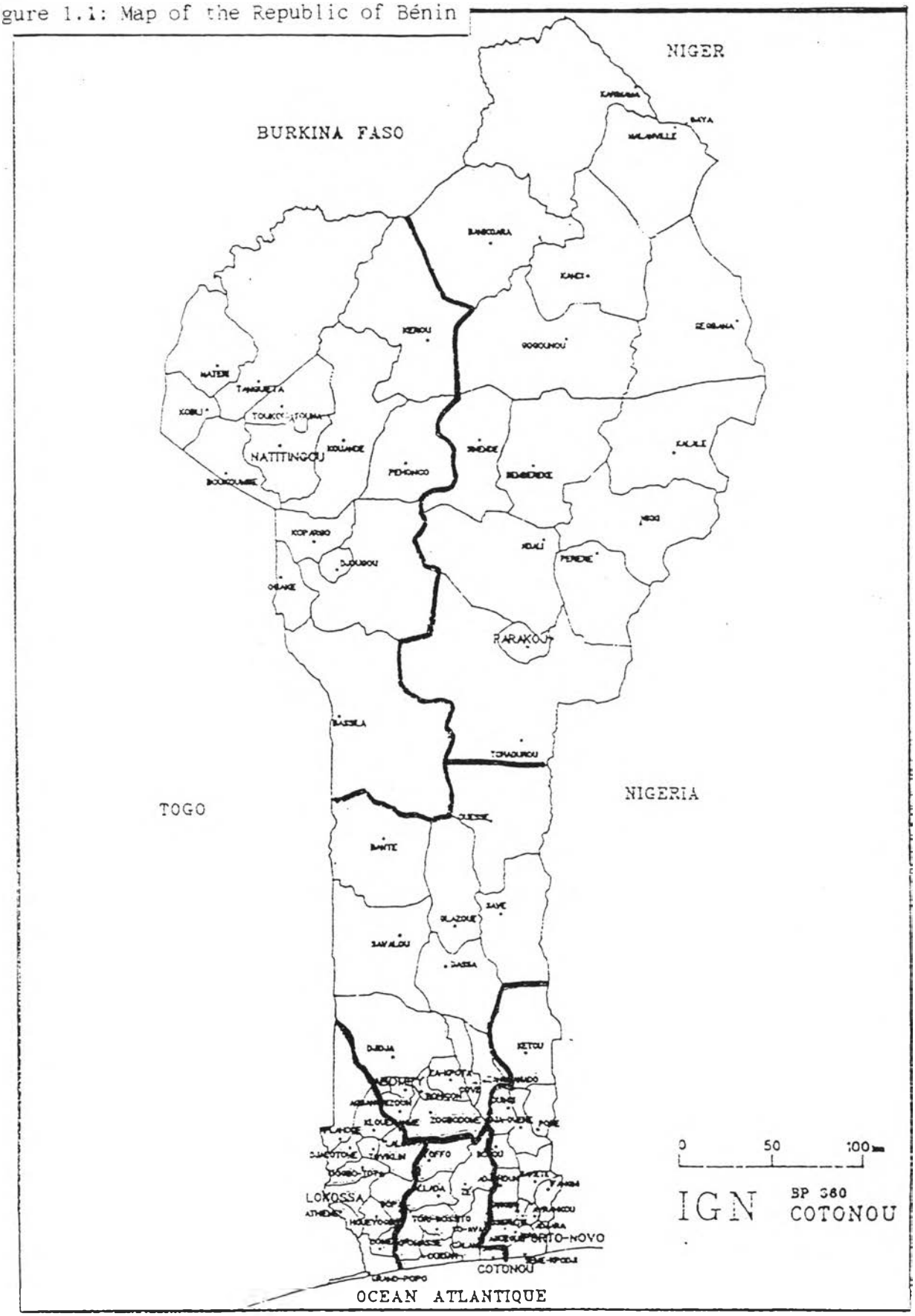
1.2.1 The Republic of Bénin

The Republic of Bénin is a West African tropical country with an area of 112,622 Km^2 and 5.239 millions inhabitants in 1995. It borders Nigeria in the east, Togo in the west, Niger in the north, Burkina Faso in the north-west and Atlantic ocean in the south. The country is divided into six provinces :
- Atacora (31,200km^2),
- Atlantique (3.222km^2),
- Borgou (51,000km^2),
- Mono (3,800km^2),
- Oueme (4,700km^2),
- Zou (18,700km^2).

Each of the provinces is divided into districts (77 total); the districts are composed of communes and the communes are composed of villages. There are 517 communes and 3,378 villages in the country. The six communes selected officially to experience the community health workers strategy are located in all the six provinces as shown in table 1.1 in appendix.

The following social and economic indicators describe the country (Unicef, 1996; PNUD, 1994; INSAE Bénin, 1993 and MSP Bénin, 1993):
- crude birth rate (1994): 49 per 1000;
- population growth rate: 3.0 %;
- mortality :
  crude death rate: 14.3 per 1000
  infant mortality rate (1994): 85 per 1000
  under five mortality rate (1994): 142 per 1000
  maternal mortality ratio: 1.6 per 1000
- life expectancy (1994): 54.3 years; life expectancy for females as a percentage of males (1994): 107;
- adult (percent of age 15+) literacy rate (1990):
  total: 30 %; male: 42%, female: 19 %;

Figure 1.1: Map of the Republic of Bénin



- GNP per capita in 1993 (US$): 430.
The change in the economic situation of the country from 1991 to 1993 is summarized in table 1.2 in the appendix.

1.2.2 From Primary Health Care to the Bamako Initiative

In early 1980s, the health system in Bénin was reoriented to match the new approach of **Primary Health Care** (PHC) which was universally agreed in 1978[1] as the vehicle through which the lofty goal of "Health for all by the year 2000" was to be achieved. The principles and components of PHC are summarized in the figure 1.2:

Principles of PHC	Components of PHC
1. Equity	1. Education concerning health problems and methods of preventing and controlling them
2. Self reliance	2. Promotion of food supply and proper nutrition
	3. An adequate supply of safe water and sanitation
3. Prevention	4. Maternal and child health care including family planning
	5. Immunization against major infectious diseases
	6. Prevention and control of local endemic diseases
	7. Appropriate treatment of common diseases and injuries
	8. Provision of essential drugs.

Figure 1.2: Principles and Components of Primary Health Care
Source: WHO, quoted by LaFond (1995, 16).

As that historical meeting in Alma Ata prescribed to countries to develop their own strategies and plans of action to achieve the goal of "Health for all by the year 2000", the first experience of community financing of health services at commune level, based on essential drugs delivery and community participation in the management and the decision making process of health services started at Pahou, a commune of south-Bénin in 1982. This was implemented along with experience of decentralization of health services down to the village level, using village volunteers as village health workers in the experimental commune of Pahou. Similar experiences started in Guinea, Nigeria and Zaire as well (CIE, 1990; WHO-UNICEF, 1989 and Kasongo Project Team, 1984).

In September 1987 at Bamako (Mali), the African Ministers of Health along with UNICEF and WHO acknowledged the experiences of

---

[1] The international conference on Primary Health Care was held at Alma Ata (ex USSR) in 1978, after the 30th World Health Assembly (WHA 30.43) at Geneva in 1977 adopted the concept of "Health for all by the year 2000".

community financing of health services at peripheral level, based on essential drugs delivery and community participation as a new strategy of self-financing to revitalize PHC in sub-Saharan Africa by generating funds for PHC in communities through the sales of drugs. The final resolution of that meeting was known as **the Bamako Initiative** (WHO and UNICEF, 1989, 6). This was launched in the context of severe economic crisis and the negative effects of the adjustment programmes on health, and the reluctance of donors to continue to fund recurrent cost of PHC programme (Hardon, 1990, 186). The Bamako Initiative stressed five key points: i) Strengthening of peripheral health structures, ii) Emphasis on Maternal and Child Health Care with iii) Community Financing of Health Services based on iv) Full Community Participation in all stages of the implementation and v) Essential or Generic Drugs (UNICEF CONAKRY, 1991). The strengthening of the peripheral health structures in Bénin means the reinforcement of the sub-prefectoral or district levels, which includes commune and village levels. The village level is the grass-roots level of health care delivery as shown by the table 1.1 of the health system and referral structure of Bénin.

Based on the full participation of the communities beneficiaries, different approaches of implementation of health and other related services have been experienced at the village level in Bénin: i) Community Health Workers (CHWs) and others such as village health workers and family health workers; ii) Community-based Information System (CBIS) for nutrition programme; iii) Village Committee for Water Management (VCWM) for water supply and sanitation programme.

The experimentation of CBIS and VCWM were derived from that of CHWs which is the most popular community participation experience in the country.

1.3 Research Questions

1.3.1 Primary question

Is the CHWs programme presently in the experimental stage at the village level in Bénin economically worthwhile to be expanded throughout the country?

1.3.2 Secondary questions

(i). How should the performance of CHWs in malaria control at the village level in Bénin be analyzed?

- What factors influence the CHWs' performance in malaria control at the village level?
- How do these identified factors influence the CHWs' performance at the village level?
- Are there any differences in the performance of CHWs if they receive incentives (in cash or in kind) or not?

(ii) How should the analysis of the cost and the outcomes (benefit and effectiveness) of the contribution of CHWs in malaria control at the village level be designed?

- What additional cost is needed per commune to implement at the village level malaria control by CHWs?
- What is the benefit of the CHWs contribution to malaria control at the village level ?
- What is the effectiveness of the CHWs contribution to malaria control at the village level ?

1.4 Research Objectives

1.4.1 General objective

To design an approach of economic analysis of the CHWs' performance in malaria control at the village level in Bénin.

1.4.2 Specific objectives

(i) To identify the possible factors that affect the CHWs' performance in malaria control at the village level and model how these factors influence the CHWs' performance in malaria control at the village level;

iii) To analyze the effect of rewards in cash or in kind on CHWs' performance in malaria control at village level;

iv) To design the analysis of the cost, the benefit and the effectiveness of the contribution of CHWs to malaria control at village level.

Table 1.1: Health System and Referral Structure in Bénin

Level	Health structure	Specialties (Level of care)	Personnel
1. National	University Hospital (1)	Medicine Paediatrics Surgery Gynecology and Obstetrics X-Ray ENT Ophthalmology Hematology Psychiatric Laboratory Others...	- Professors of Faculty of Medicine - Specialists - Doctors - Nurses - Midwives - Assistant-nurses etc...
2. Province	Regional Hospital (6)	Medicine Paediatrics Surgery Gynecology and Obstetrics X-Ray ENT Ophthalmology Laboratory Others	- Specialists - Doctors - Nurses - Midwives - Assistant-nurses etc...
3. District	District Hospital (84)	Medicine Surgery Maternity Laboratory Essential Drugs	± Specialists - Doctors - Nurses - Midwives - Assistant-nurses etc...
4. Commune	Health Centre (517)	Dispensary Maternity Essential Drugs	- Nurses - Midwives - Assistant-nurses
5. Village	PHC Unit (??)	First aid Normal delivery Kit of Essential Drugs	Community Heath Workers