

Figure 50.

## **Conclusions: Future opportunities**

This report brings together national malaria databases from the six countries comprising the Greater Mekong Subregion of Southeast Asia in regional geographic context. Sharing malaria data in this way marks the starting point for building an ongoing regional malaria database that will facilitate concerted planning and action leading to improved malaria control.

The use of retrospective data gives confidence in the sharing process and sets the scene for future prospective data collation. The use of yearly data gives a broad overview, but to provide a basis for more effective action it will be necessary to consider more frequent reporting on a regional basis in future, eventually in a monthly format. This might of course strain present human resources but would bring great advantage if appropriate regional planning and funding are possible to achieve.

Given the rapid simplification of information technology, mechanisms are available to facilitate on-line data compilation and analysis. At the central level this is fine, but the collection and transmission of primary data from more remote areas on which the mapping depends is more problematic in terms of frequent data collection and collation. However the potential advantage of regular analysis of frequently updated national and regional databases is that this process can provide an early warning system for rapid action to contain focal outbreaks. Much can be learned from the experience of the communicable disease surveillance system in China (Chen, 1992) that collates regular data on a wide range of communicable diseases and has appropriate, rapid follow up mechanisms in place to cope with outbreaks. In regional terms concerted action across international borders can be enhanced, with hot spot identification and joint responses.

In this respect the GIS tools can both provide the macro view depicted here and focus down to very local levels at which transmission intervention must take place. An example of very micro focusing is given in Figure 51, which shows village data on bed net use at the individual household level. Any area of the regional map, including international border areas can be magnified for this purpose. The limiting factors are data collection, data entry, computer access/networking and suitably trained, committed personnel.

Regional database handling can be performed in a single location or in multiple locations, depending on the logistics of data sharing. It would be advantageous, for example, to use the internet as a regional data distribution mechanism, subject to confidentiality considerations. Mapping

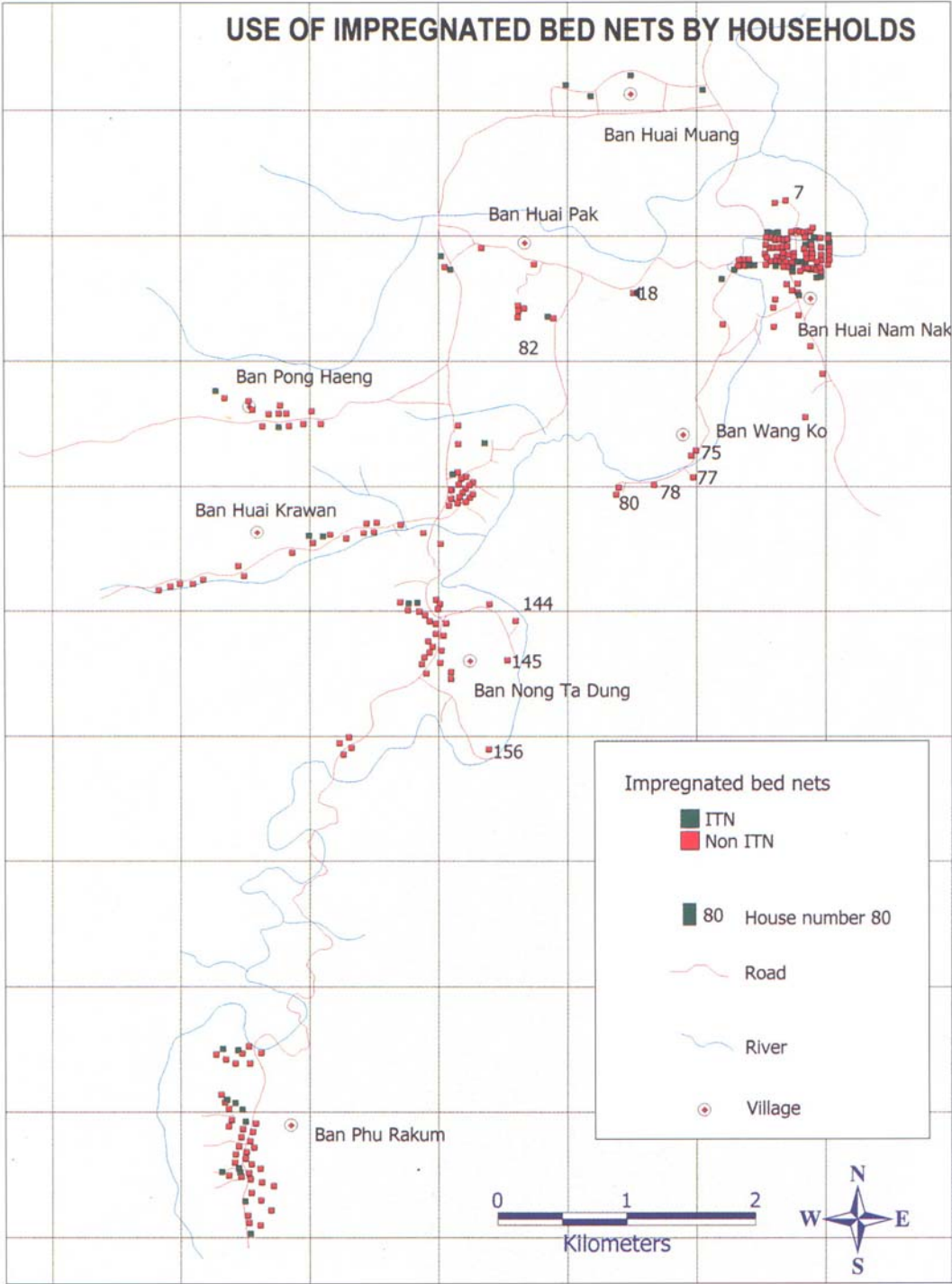


Figure 51.

can be done centrally or in multiple centers, depending on human resources available and on the most desirable distribution mechanism.

The impact of malaria and of malaria control on individuals, on communities, on the countries and on the region as a whole must be seen both from a health systems viewpoint and from an economic viewpoint. So too malaria management must be seen in the context of overall economic demands. It presents a challenge to both health planners and economic planners. Geographic delineation provides a perspective for both groups to use in consort. To assist this consultative process a beginning has been made to introduce some economic and social profiles alongside the disease data. While there are limitations to regular collection of economic and social data, even periodic information in this category serves a useful purpose, since planning malaria control requires a multi-sectoral perspective and realistic resource utilization.

The apposition of disease databases with economic, demographic, social and environmental databases in a geographic context allows integration of information on resources and trends with health services needs. Indeed this monograph was originally proposed as a first step in the context of developing a broad health, economic, environmental and disease network (HEEDnet). To do this in a regional context is particularly valuable in that it provides perspective across borders. When a malaria network is fully functional it should be feasible to move quickly to include other high priority communicable diseases.

Further, the impact of economic change is critical to forward planning. The inclusion of maps summarizing regional development programs is intended to provide a starting point for integrating the environmental impact on malaria patterns and for assessing the impact of malaria on the developmental process. These maps give an overview: the need is for project by project analysis in the broader context in order to promote joint evaluation: focused research utilizing the databases can assist in this process. Some of the economic changes will bring benefits to malaria control, e.g. improved telecommunications networking. Others have mixed effects, e.g. improved surface transport systems may facilitate access to health care centers but at the same time accentuate disease transmission by increased population mobility and by impact on the physical environment affecting vector distribution.

Regarding the quality of the malaria data, the regional perspective shows considerable diversity with respect to administrative unit area case numbers, incidence and extent of species specific diagnostic confirmation. It is necessary firstly to work with what resources are presently available: