

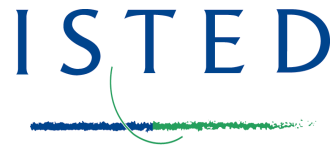
# **ISLAND**

Information Systems for Local Authorities Needs to face Disasters

VN/Asia-IT&C/01  
(88121)

## **Final report**

Gilles Morel – ISTED – September 2007 – revised version 12/09/07



Institut des Sciences et Techniques de l'Equipement et de l'Environnement pour le Développement

|                                  |  |
|----------------------------------|--|
| Asia programme:                  | Asia IT&C  |
| Contract ref:                    | VN /Asia-IT&C/01 (88121)   |
| Project title:                   | ISLAND<br>Information Systems for Local Authorities Needs to face<br>Disaster  |
| Beneficiary:                     | ISTED Institut des Sciences et Techniques de<br>l'Equipement et de l'Environnement pour le<br>Développement, F-92055 Paris La Grande Arche, France |
| Report period:                   | Nov 2004 to May 2007   |
| Due date:                        | June 2007  |
| Project budget:                  | 500,000 Eur  |
| Funds disbursed by EC to<br>date | 320,000 Eur  |
| Expenditure incurred to<br>date: | 498,489.12 Eur (99.7%)   |

## 1. Introduction

This final report on the ISLAND project is intended to provide both a summary and set of conclusions, in as much as all of the project's activities and detailed results are covered by the interim reports and their annexes, including the last four months:

- Year 1 (November 2004 – October 2005) is covered by 3 quarterly reports and an annual interim report (Interim 1).
- Year 2, perturbed by the death of the initial project manager, is covered by an initial report for the period November 2005 – June 2006 and then a second annual interim report (Interim 2) for November 2005 – October 2006.
- Lastly, the 7-month extension (up until the end of the project) is covered by two quarterly reports, the first covering the period November 2006 – January 2007 and the second covering the four last months of the project (February 2007 – May 2007). In particular, this last quarterly report can be considered to be a detailed end-of-project report.

ISLAND's initial objective was to develop innovative, ICT-based solutions for improving risk information for local authorities and rural populations in Vietnam, Cambodia and Lao PDR. In order to fulfil this mission, the work plan was generated via a "bottom up" approach, enabling analysis of the situation and identification of the local communities' needs in the field, with a view to providing appropriate solutions for the local context and constraints.

At the end of this process (summarized in § 2) and based on field surveys and analysis of the existing infrastructure and organisations, an experimental ICT prototype for facilitating information communication between the stakeholders at different levels of scale (from national to local) was designed, developed and evaluated in the three Asian partner countries. It was planned to adapt this generic platform to the various different local contexts. It has been successfully field-tested in Vietnam (Hai Duong Province). Its evaluation and adaptation for use in provinces in Cambodia and Laos has been initiated via national organisations located in the capital cities, Phnom Penh and Vientiane.

The principle behind the tool has been welcomed by the local stakeholders, since the system markedly improves both the transmission speed and the quality of the information and, more generally, the flow of data between the different stakeholders in risk prevention and crisis preparation & management. These stakeholders, particularly in Vietnam, have already formulated a number of suggestions for improving the tool. In any case, after the end of the ISLAND project, the work is likely to continue in order to transform this promising prototype into a fully operational tool with a mid- and long-term future.

## 2. Implementation of Activities versus Work Plan and Logical Framework

On the whole, the ISLAND project's work plan (composed of steps and tasks) has been adhered to and the project goals have been met. The implementation of this programme has been fully described in the interim reports (in which the reader will also find references to the technical annexes). Here, we summarize the programme's main steps and particularly focus on the main difficulties encountered and how they have been resolved.

## **2.1. Preparatory steps– steps 1 and 2 (Year 1)**

### **2.1.1. Work performed**

During the first year of the project, the preparatory steps (steps 1 and 2) took place unhindered and according to the planned project schedule, although there was a slight time lag which has since been rectified in the modified schedule dated September 2006.

Step 1 consisted in promoting dialogue between the European and Asian partners and preparing the subsequent field-based steps in Asia, notably with the final choice of pilot sites and a first overall evaluation of local contexts, before starting the detailed surveys in step 2. This step closed with a European expert mission to Asia (March 2005) and systematic visits to the pilot sites in the three Asian partner countries. These visits and dialogue enabled the partners to form an initial vision of the existing organisations and their shortcomings in terms of risk management and communication.

Step 2 concerned essentially of the in-depth field surveys of the local authorities and populations by the project partners, who already had good knowledge of the countries and regions in question. These surveys enabled us to better understand not only existing practice in terms of risk prevention & management but also the shortcomings & weak points likely to prompt concrete proposals for ICT tools - the project's ultimate objective.

These in-depth, relatively exhaustive surveys were performed in order to address the need for communication tools, notably by reviewing all the potential risks to which the populations of the Mekong (Laos and Cambodia) and Vietnam (Red River delta) are exposed: flooding, drought, pollution, disease, etc.

### **2.1.2. Choice of pilot sites and results of field surveys in the three Asian countries**

#### **VIETNAM**

In Vietnam, the **Tu Ky district** was chosen in agreement with MARD's Dept of Dyke Management and Flood Control (CCFSC/DMC) and **Hai Duong** provincial Water Resources dept. In this area, many problems arise from the drainage system being overloaded in case of heavy rains and high sea tide, with a need for better co-ordination of many local partakers and inputs from hydrologic and meteo forecasting and warning systems.

The field survey report (see annex 1a) presents the flood risks and stakes, the infrastructure (dyke system, hydro and meteo stations) and the organisation to cope with floods (monitoring, broadcasting, dyke management, crisis management), discusses the measures against floods (preparedness, crisis, post-crisis) and makes suggestions for improvements, analyses the forecasting practice and effectiveness, the information flows and makes propositions to improve the information system.

About risks related to water, it distinguishes the risk of dyke breaching, said also flood risk, in the first specific chapter and waterlogging, said also inundation, together with water pollution (both related to the configuration and operation of the hydraulic system inside the dykes) in the second chapter. But it also examines a wide range of different kinds of risks that communities are facing and provides the hierarchy of priorities according to the perception of the interviewed inhabitants: top priority among risks is dyke breaching with destructive flooding, then water logging (inundation) inside the polder and water pollution, and drought does not appear as a risk because water is always available so near from the sea. However

the problems of salt intrusion during droughts should be analysed, and also the storm surge in case of tropical depression which could worsen the impact of waves on the dykes during storms.

### LAO PDR

In Lao PDR, the district of **Champasak** was chosen after a visit in 2005 of the project manager to Champasak province with the LNMC and the MRCS Technical Support Division. In this area, the most relevant villages for the project appeared to be :

- along the Mekong river : *ban* Tha Deua, *ban* Tha Teng, *ban* Hai (in the ancient Champasak city archeological area)
- and *ban* Houay Hai in the floodplain near the district center.

Each village has a flood map and a VDPU (village disaster protection unit) trained in CBDM (community-based disaster mitigation), but no access to quick information : they rely upon listening to the radio and observing certain plants (using their indigenous knowledge) to have an idea of the duration and height of the flood.

The main conclusions of the fields surveys (see annex 1b) led by the GRET were :

1. Forecasts for floods and droughts are not yet available, or not reliable and not properly disseminated for many reasons, ranging from the breakdown of responsibilities between regional (MRC), national, provincial and local levels, to the very limited local budgets and the lack of communication between the different departments at the same level, with sometimes unclear and overlapping responsibilities.
2. Therefore the improvements would probably be more important for the crisis management and response phases than for the early warning; this would need a minimum of structuring and storing information for better efficiency with GSM technology (simple table filling, XML file for transmitting and keeping trace); but a prerequisite would be more disaster preparedness training and strengthening of the district and village disaster management units.
3. The specifications of the communication platform must be discussed with the ITC team, including the choice of most suitable media : the local enquiries cannot take into account the new developments of IC technologies which people never heard of; in proposing such new tools we should concentrate on the method to use them in order to offer higher added-value in data management for the needs of local communities

### CAMBODIA (see annex 1c)

In Cambodia, the districts of **Peam Ro** and **Ba Phnom** were chosen in agreement with MOWRAM's Dept of Hydrology and River Works and **Prey Veng** provincial dept of Hydrology, after a visit to 4 districts with the project manager.

After visits on the field in 2005, some communes in Peam Ro and in Ba Phnom districts were pre-selected for their interested context: subject to drought and flood, lack of communication means, existing project of the Cambodian Red Cross (CRC) with available data and action plans ...

The field surveys have been implemented in 8 villages by CEDAC NGO in close coordination with GRET team leader (see annex 1c)

While the risks of flooding and pollution are given high priority by the interviewees in Vietnam, in Cambodia the problem of droughts is much more acute. Drought management has also been recognized as a priority by the MRC flood forum for the middle Mekong river basin. But devising the information system to convey useful information to local communities in case of drought is different from the experience of OSIRIS partners about the management of inundation risk in Europe: discussions with Cambodian Red Cross in Phnom Penh have emphasized the need for better meteorological information targeting farmers.

In liaison with existing local initiatives, it also seemed obvious that the ISLAND project should take advantage of the starting CRC-CBDM project (2006-07) to join efforts with CRC, NCDM and MOWRM in order to improve the meteorological and hydrological information targeting the rural communities.

## GENERAL CONCLUSIONS OF THE SURVEYS

The synthetic conclusions triggered by the field survey results and summarized in the first Interim Report are as follows:

- Hydrological risk (flooding and drought) is present in the three countries but there are relatively distinct situations when comparing the Mekong basin (fairly standard hydrological configuration – major drought) and the Red River basin (little drought but a very complex hydrological and hydraulic context).
- For a communication system to be viable (and independently of the financial aspects), it must be used daily by the community and not only in a warning/crisis context; hence the necessity to circulate other types of messages that deal with the locals' everyday life.
- The future system must simultaneously favour "top-down" transmission of information (from the national to the regional level and then on to the local level) but also exploit this "general" information by local field-based information (the principle behind OSIRIS: local scenarios linked to a real-time forecast).
- A multi-risk management system must be based on a range of sources of information.
- In order that it can be understood by as many people (villagers) as possible, the system must deliver messages in an easily accessible format, in particular by basing itself on visual and audio formats and by limiting the written content.

### ***2.2. Transition problems with the technical phases of Step 3 (Year 2 – Q1&2)***

Difficulties started to appear after the end of the field surveys and the transition to step 3, which aimed at developing the ICT tools.

First of all, it was initially planned to adapt tools developed as part of the European OSIRIS project to the context and needs of the Asian pilot sites. It turned out that these tools, even after adaptation, required extensive technical data which were not available at the pilot sites (notably maps); generation of these data would have significantly exceeded the bounds of the ISLAND project in terms of deadlines and on-site technical resources. We thus had to

envisage a new type of tool which would be less data-hungry and more oriented towards the transmission of existing data rather than the constitution of local databases.

In terms of the communication technologies, concrete activities were launched and pursued in late end 2005 and early 2006, notably with the delivery of equipment and Internet connections to one pilot site but also the supply of a innovate information transmission platform developed by the MICA.

It was during Year 2 that the work faltered in terms of the content and services to be supplied to the local authorities (which started from a blank page). In fact, the results of the field surveys were very useful but also very general; they suffered from a lack of synopsis and thus could give rise to a multitude of interpretations and proposals in terms of communication tools. Before moving on to the detailed specification step, it was necessary to choose between the many possibilities and give clear, targeted orientations; this initially posed problems with the partners (late 2005) in both technical and managerial terms.

In view of this blockage, the European partners present in Paris in December 2005 (and in particular the partners from the OSIRIS project) asked the project manager (who was set to return to Asia) to form country-specific working groups to discuss these choices and then to come back to Paris in spring 2006 with detailed proposals for finalizing the objectives in terms of the tools and their technical specifications at each pilot site.

At the workshop (which indeed took place in Paris in April 2006, in the presence of the European partners and representatives of the Asian partners), it became clear that application of these instructions (which sought to relaunch the tool definition process (end of step 2, start of step 3) had been perturbed by the project manager's poor state of health, which ultimately led to his passing away in early April.

Despite the death of the project manager and the difficult progress of the work in Asia, this workshop was an opportunity to truly start defining the content of the risk tools for Vietnam, Cambodia and Laos, with a general consensus on keeping flooding as the priority.

As a result, the meeting was devoted to building up the overall specification file for the flooding risk for the three countries and their pilot sites (see details in annex 2), in the presence of a national representative and a local representative. The general specification was elaborated on a common framework (proposed by OSIRIS experts) for the three countries and gives the main orientations for further detailed specification that had to be developed in each Asian country in coordination with MICA before the end of 2006.

### ***2.3. Reorganisation of the project management system, adaptation and relaunch of the project schedule (Year 2 – Q3&4)***

By the end of the first year of the project, the ISLAND project manager at ISTED (Mr de Rouvre) had prepared a modified budget distribution which took into account the project's changing needs, notably in terms of the ICT equipment. His death in April 2006 (prior to validation of this modification) forced us to completely reorganize the project's organisational structure (a process which took place between May and September 2006) and which covered the following points:

- a) Management structure and organisation: the project had previously been based on centralised management via the project manager who was located in Asia from much of the year and regularly visited the three partner countries. The project was then

reorganised on a different basis, with a management and decision-making structure in France (ISTED in Paris) and relays present in Asia, notably with the reinforcement of the MICA's role in order to perform the coordination with the pilot sites (via the short-term engagement of a junior consultant). This new organisational structure has worked relatively well - very well in Vietnam with the physical presence of the MICA as a relay in Hanoi and less well in Cambodia and Laos, due to their distance from the MICA and the absence of equivalent organisations in these countries. Having a strong relay organisation in each Asian partner country (on both the technical and organisational levels) would have been preferable but was impossible from the budgetary standpoint. Furthermore, recovery of the project's general and scientific management was made possible (within the scope of the initial budget) thanks to the CETMEF's secondment of G. Morel to the ISTED. Hence, G. Morel performed this additional task along with the CETMEF's initial duties as a project partner, in close collaboration with the ISTED project assistant.

- b) Adaptation of the schedule and budget: following June 2006's project reorganisation mission to Asia, the ISTED and the new project manager suggested modifying the work plan in order to take account of the new situation: a forced change in management, accumulated delays, modification of the technical objectives and needs at the end of the initial stages and a new budget distribution. Beyond the modified management structure, these changes essentially concerned extension of the project duration by 7 months and simplification of the end of the programme (fusion of the last two steps and of some of the tasks) so that the project could be completed in the allocated time. The modified schedule and budget were approved by the EU delegation in Hanoi in October 2006.
- c) Preparation of the effective implementation of the modified programme in Asia: firstly during the special mission to Asia in June 2006 and then by e-mail, the new project manager engaged in communicating with all the partners in order to help them prepare this implementation prior to the arrival of an Asia-based junior consultant who would perform liaison activities and monitor the work packages as a whole (see below).

By the official end of the project's second year and following proposal of the above-mentioned modified schedule, ISTED's efforts to effectively relaunch the project concerned two axes.

On the budgetary level, the ISTED gathered all the budgetary documents from the project manager and all the project partners and then updated the reports' financial annexes accordingly.

On the scientific and organisational level, the project relaunch was mainly based on hiring a junior consultant (S. Despres) and his implementation of the modified work plan in Vietnam, Lao PDR and Cambodia. This person (who had already worked within the project at MICA) was hired as early as August 2006 but was not able to leave for Asia until early November 2006 for purely administrative reasons - this is what created an additional time-slip which has nevertheless been compensated for by intense activity over the 7 last months of the project.

## **2.4. Implementation of the modified schedule in Asia (3rd year – a 7-months extension)**

When the modified programme was effectively relaunched in Asia upon arrival of the junior consultant, we only had 7 months to implement a very dense programme, which notably had to include:

- Finalisation of the objectives and specifications for the ICT tools (in the 3 countries).
- Development of a generic prototype, its application to at least 1 pilot site and its presentation to all the project partners via a workshop.
- Implementation and effective testing of the experimental device on at least 1 pilot site and an evaluation for future adaptation to the other pilot sites.
- Organisation of a closing seminar and dissemination of the project results.

### **2.4.1. As has been reported in the last two quarterly reports, these objectives were achieved thanks to particularly intense working and certain drastic choices. Finalization of ICT platform and experimentation in Vietnam**

Work on the detailed specifications of the ICT tools was able to start in September-October 2006 in France, thanks to collaborative work between the junior consultant (prior to his departure for Hanoi) and the CETMEF, which managed these tasks in view of its past and present experience of the OSIRIS project. This work then continued in Asia, in particular as part of a close collaboration between the MICA and the Vietnamese partners (the MARD and local representatives of the CSFS and the city of Hai Duong).

Specification of the content of the risk information services was pursued by the MICA, with the development of this content for the pilot site in Vietnam and adaptation of the generic ICT platform (see annex 3a), whose general architecture had (in part) been foreseen in 2005.

This platform and its adaptation to the Vietnamese site were presented at a workshop in Hanoi in late January 2007 (see annex 3b). The partners worked together to draw up roadmaps for the evaluation and the adaptation of this tool in the three pilot Asian countries and over the four remaining months of the project.

In Vietnam, on-site implementation (in Hai Duong Province and the Tu Ky district) and testing were successfully completed in a relatively short time, thanks to strong commitment and good collaboration between the MICA and the various Vietnamese partners (see annex 3c). Following presentation of the device during the partners' last mission to Hai Duong, the partners and Vietnamese users of the tool expressed their satisfaction and their wish to pursue this cooperation and its further development after the official end of the ISLAND project. In this respect, the MICA has submitted a project proposal to the Franco-Vietnamese Hasoan programme and other sources of funding are being looked at so that this promising work can be pursued.

### **2.4.2. Limitation of the prototype tests in Cambodia and Lao PDR**

At the end of 2006 and once again at the last workshop, it had been decided to focus the main effort for ICT development and implementation towards the Vietnamese pilot site, since the whole process of adaptation and validation could not be fully led by the MICA (ISLAND technological partner in Asia) in the three Asian countries in less than 4 months.

In Cambodia and Lao PDR, the prototype ISLAND has been implemented in the capitals (see §2.4.3 and 2.4.4) but could not be tested on pilot sites for several reasons :

- a) The reorganisation of the project in 2006 (see the report of the mission of June 2006 in Asia) already mentioned the necessity to limit the number of actual sites of implementation and to possibly focus to one country, taking into account the limited remaining budget (especially missions), time (about 6 months) and operational resources in Asia (one technical team in Hanoi). ISLAND partners realized that the initial objective of several pilot sites in 3 countries was realistic for field surveys (and a success) but not for the implementation where heavy technical needs and assistance are required, involving an operational team in each country
- b) Internal means of our Asian partners in Cambodia and Lao PDR were not sufficient to lead and support the implementation, without the presence of an external team like MICA.
- c) In Lao PDR, the ISLAND innovative prototype proved not really adapted to the current context, but a more simple system of communication has been actually implemented and used with success in pilot villages (see details in § 2.4.3)

However, a final mission was organised to the capital cities of Cambodia and Lao PDR with the main national partners, in order to install the existing demonstrator, show it to the main correspondents and evaluate with them perspectives for adapting and deploying the device in their countries after the end of the ISLAND project.

#### 2.4.3. Actions performed in Lao PDR

##### **Implementation of the ISLAND prototype**

At the January last workshop, it had been decided not to implement the advanced ICT system directly in the Lao pilot site (premature for different reasons), but to transfer the tool to our relay in this country, LNMC, in the perspective of a continuation of the cooperation after ISLAND's end.

Since LNMC was very busy with the organization of other important events, a mission of MICA in Vientiane has finally been organized after the ISLAND final seminar. During the seminar and especially after the demonstration of the Vietnamese prototype in Hai Duong province, Lao partners have confirmed their strong interest in implementing the system in Lao and to continue the cooperation, especially with the assistance of Vietnamese and European partners.

The mission of MICA at the end of May (see annex 4a) permitted to implement the Vietnamese demonstrator at the central level, to show it to a panel of Lao representatives and then to discuss with LNMC the possible evolutions of the tool to fit the Lao context. The prototype has been partly translated in Lao language directly during the mission, showing the capacity of the tool to easily adapt to national Asian languages.

##### **Implementation of a communication tools, a simplified ICT system**

Field surveys in Lao PDR (2005) had revealed a lack of basic telecommunication tools to achieve the goal of improving the data flow between the different levels of responsibility : national, province, district, commune, village.

Since the use of a very innovative tool was premature in this country (problems of implementation and maintenance), it had been decided to firstly provide the district of Champassak (3 villages) with a minimum of ICT infrastructure and device and to train local staffs to use these equipments. Computers with Internet connexions and mobile phones had already been provided in 2005 (see annex 4b) in order to improve communication between the capital and the district (thanks to Internet) and then from the district to the communes and villages (thanks to mobile phones). This networking between partakers has been recently completed with loudspeakers that enable the village chief to communicate the information received by mobile phone to the population (for flood alert or other issues).

These equipments, completed with training courses for local staffs, have already led to improvements in the operational information transmission chain from the national level down to the very local district and village level. These components, still very rare in countries such as Laos, have enabled us to raise the field-based stakeholders' awareness of the potential benefits of ICT and may thus constitute an essential intermediate step before envisaging subsequent supply of more specialised services, whose deployment outside major urban centres still appears to be premature.

LNMC turns out to be a major motivated partner in Asia, who is very satisfied by ISLAND results and perspectives and wishes to elaborate a new proposal to continue the development of ISLAND approach and tools in Lao PDR (see also annex 4c: LNMC final report – ISLAND results and perspectives in Lao PDR)

#### 2.4.4. Actions performed in Cambodia

At the last January workshop, it had been assessed both a potentially interested context for ISLAND in Cambodia but in the same time a lack of availability of the institutional partner (ministry of Water Resource), and the impossibility to implement the ICT tool on the field in the short term and before ISLAND official end.

Then, a strategy of middle-term perspective for ISLAND in Cambodia had been elaborated with our local partner GRET, and the two main expected actions have been successfully led before the final seminar:

- a) The ISLAND system has been implemented at the Regional Flood Mitigation and Management Center (RFMMC) in Phnom-Penh, in the perspective of a future integration of ISLAND results in MRC large programs for the Mekong countries. RFMMC who already collaborates with the Red Cross and other major regional actors agreed to work with ISLAND leaders on a continuation of ISLAND in the framework of their own program. The presentation of ISLAND results at the MRC flood forum confirmed this position and reinforced the contacts between ISLAND partners and Cambodian partners.
- b) A mission of our partner GRET was organized to evaluate the perspectives of an adaptation and deployment of the ISLAND prototype (the existing Vietnamese version) in Cambodia. The conclusions of this mission (see annex 5) will help us to elaborate the next proposal for this country.

#### **2.5. Dissemination of the results (last quarter)**

In the last step of the project, dissemination of results was accomplished via four main actions:

1. Organisation of the closing seminar (see annex 6), which was again held in Hanoi (from May 14<sup>th</sup> -16<sup>th</sup> 2007) essentially for logistic and budgetary reasons, even though it had initially been planned for Pakse, in Lao PDR. Beyond the project results mentioned above, the seminar was also an opportunity to broaden the dialogue between Europe and Asia, via presentation of other projects in the field of risk management by ISLAND partners and also external guests.
2. Production of a brochure (see annex 8) presenting the project and its results, which was widely distributed in Europe and Asia.
3. Generation and presentation of a communication at the Annual Forum of the Mekong Committee on May 18<sup>th</sup> 2007 (see annex 3b and 7)
4. Updating of the project website, which notably enabled the project's main documents and results to be downloaded following approval by the partners concerned (see at <http://www.isted.com/programmes/island/anglais/homepage.htm>)

### 3. Partnership

In fact, it is possible to draw up an instructive overview of the Europe–Asia cooperation and the advantages and problems of managing project activity in this particular international context.

In terms of project management and overall organisation, we were prompted to implement two very different systems, in view of the death of the first project manager halfway through the project. It must be remembered that the test sites were situated in South-East Asia and so, in theory, it was preferable to locate the logistic and technical resources in the same geographical area, as back up for the pilot sites.

The first system consisted in having an autonomous project manager present in the three Asian partner countries for much of the year. This enabled permanent and direct dialogue, notably with the institutional partners in Vietnam, Cambodia and Laos. The large quantity of information transmitted from Asia by the project manager enabled the European partners to get involved and know how the project was progressing.

In the second part of project, the management structure was located in Paris, with remote management of the partners and particular use of "relay" partners in Asia, who were to interface between the project manager in France and all the Asian partners, at both the national and local levels. Thanks the ease of Internet-based communication, this approach turned out to be relatively efficient wherever strong, reliable relays could be set up - notably in Vietnam, with the MICA and MARD partners. Given the very tight project timeline and budget restrictions, it was not possible to set up similar resources in Cambodia and Lao PDR, which led to greater inertia in progressing dialogue and work with the institutional partners in these countries. Nevertheless, one can conclude that the remote management of an Asia-based project from Europe is possible, as long as there are competent, motivated, reliable and responsive relays in partner countries – this must be planned into the project from its inception.

In fact, the project's success relied on the local availability in Asia of competent, relatively autonomous teams who were ready to tackle the major tasks set out in the main steps of the project. In particular, the role of the GRET (a French NGO present in Cambodia) has been decisive in the success of the field surveys and the needs analysis (step 2) in Cambodia and

Lao PDR. In the following technical steps, it was the MICA (the technology partner in Vietnam) which took the lead and was ultimately able to produce an ICT tool that takes account of the field-based constraints and needs (notably in Vietnam). Ideally, we should have had a second technological relay located nearer to Cambodia and Laos, since the MICA does not have enough resources to cover the three countries in parallel with the same budget.

In terms of the Asian institutional partners who should have played a key role, the end result is somewhat mixed. In the first part of the project, they were all very present and active, thanks notably to good relationships with the Asia-based project manager. Certain Asian partners then progressively disinvested from the project and participated less in the work. However, there may be two explanations for this, which are related to the reasons mentioned above. The first relates to the death of Mr de Rouvre, whose presence in Asia and a certain natural authority encouraged commitment by his correspondents. The second is without doubt linked to the decision (taken at the end of Year 1) to transfer part of the staff budget initially attributed to the Asian partners to the equipment budget. However, relations remained very good, notably with the provincial authorities in Vietnam and Laos, as well as with the Laotian national partner LNMC, which remained active throughout the project. Links have been maintained with at least one national or local partner in each Asian country, and all wish to continue the collaboration at the end of the project, indicating a positive overall end result in terms of cooperation.

The case of the Mekong Committee is somewhat different. This is a major international organisation whose collaboration is very valuable. In the second part of the project, it was represented by its office in Phnom Penh, which is responsible for flood forecasting (the RFMMC). This office was very responsive and was notably involved in evaluation of the results and the deployment perspectives in the Mekong river basin.

In terms of the European partners, the ISTED coordinated the project management whilst adapting itself to a sometimes difficult context. The project management team, composed of a project manager and a project assistant, worked very well. The CETMEF has been very active and has greatly exceeded its initially planned workload, with active management of the second part of the project in terms both of technical support for MICA and general project coordination in support of the ISTED. The other European partners (SOGREAH, CNR and TNO) fulfilled their roles as experts, with more occasional but always effective and complementary interventions.

#### **4. Methodology and effectiveness**

Items concerning project management are detailed in §3, "Partnership".

Concerning the scientific methodology, it should be remembered that the work plan was largely inspired by the European OSIRIS project (2000–2003, FP5); ISLAND was supposed to transpose both its overall approach and technical solutions.

This was firstly a "bottom-up" approach and thus involved an analysis of the true context in the field, in order to better define the needs for ICT tools. This principle was strictly adhered to, with an approach which did not make any prior assumptions concerning the existing organisations & methods and featured an in-depth analysis of the needs of local partners, with their strong involvement in the first two steps of the project. Indeed, this objective appraisal of the field-based situation prompted us to abandon the initial idea of simply

"adapting" the existing OSIRIS tools. We chose to focus on innovative and more appropriate solutions which could more easily meet the needs and suit the constraints at the pilot sites, notably in terms of available data and knowledge.

The overall method and the suggested phasing are, in fact, fairly standard for an IT project: needs analysis, specification, development, testing and validation. As explained in § 2.2, the main difficulty encountered (as was the case in OSIRIS) was the transition between the conclusions of the needs analysis and the technical specification step for the tools – especially in view of the "blank page" after abandoning the OSIRIS tools.

This obstacle was in part overcome (again, as in OSIRIS) by replacing a very linear process by a more incremental process which consists in defining and offering successive models and prototypes for comment, and engaging the end users in the design process. This should initially have been done on the basis of the existing "OSIRIS-Inondation" tool but the latter turned out to be too far removed from local issues. From this point on, trying to get the users to collaborate together around a blank page did not work... The user dialogue process had to be initiated by a proposal from the technical partners (MICA, CETMEF, SOGREAH, etc.) and already included visual interfaces. This proposal-testing-adjustment cycle has worked well but had to be performed late and over a very short period at the end of the project. It should really have been executed in parallel in the three Asian countries, with the goal of converging on operational tools which were appropriate for each context. A new project could be built on this basis, with the starting point no longer the OSIRIS prototype but the new ISLAND prototype, the testing of which has nevertheless been successfully performed at the pilot site in Vietnam and has thus generated solid foundations for a potential follow-on project.

## 5. Impact to date

The specific results achieved for each country and pilot site have been widely developed in section 2.4.

The ISLAND project has sustainably created or reinforced cooperation between the European and Asian project partners. In addition to mere technology transfer, it has implemented a scientific and technical cooperation where the Asian partners have played an active role in the innovation process. The clear desire from some of the Asian partners to pursue this cooperation demonstrates both their satisfaction with the generated results and their appreciation of this type of project.

The effective benefits for the Asian partners are as follows:

- Better knowledge of ICT (training on generic technologies and specific tools) and the possibility of improving their organisation and internal & external communications with these technologies.
- Initiation of international cooperation, not only with European partners but also with neighbouring Asian countries (ex: Laos' request to Vietnam for assistance and collaboration on the ISLAND device).
- Experience of active participation in a high-level project requiring imagination, thought and creativity.
- For the target populations and institutional partners, access to tools for efficiently improving the provision of risk and crisis information - for some, this means basic

but operational tools and for others this means experimental tools with perspectives for future development and deployment.

In particular, the Asian ISLAND project partners who have explicitly requested continuation of the collaboration are as follows:

- The CFSC (a regional committee in Vietnam) which has benefited from testing of the ISLAND prototype in its offices and wishes to pursue the development in a broader, operational context.
- The LNMC (the representative of the Mekong Committee in Lao PDR) and the Champassak district, which received ICT equipment and training on Internet technologies and which also wishes to continue in this direction, both with the European partners and support from Vietnam and the latter's experience with the ISLAND prototype.
- The Regional Flood Mitigation and Management Center in Phnom-Penh (a branch of the Mekong River Committee) also wishes to pursue the cooperation as part of its new programme for circulating flood information to the population, using the technological component provided by ISLAND

For the European partners (and in particular those previously involved in the OSIRIS project), the ISLAND project was an opportunity to test their procedures and tools in a context which was sometimes comparable but sometimes very different from that of European countries in terms of organisational structures, needs, data and technical constraints. This experience enriched their viewpoint and generated new ideas for using ICT to satisfy the needs of local stakeholders and populations. Some of these ideas could be adapted for use in Europe, notably in terms of communication with the population. Beyond ISLAND and its objectives, this dialogue also constituted an opportunity for the European partners to forge new links and consider new cooperations for both research projects and private contracts.

Knowledge and technology transfer between Europe and Asia has occurred at two levels:

- The actual technology transfer was performed between the European partners and a mixed Franco-Vietnamese organisation located in Hanoi (the MICA).
- This structure passed on its know-how to Asian partners (users) so that the latter could master the ICT tools (at least in terms of their installation, configuration and use). It could also occur at a more technical level with a public- or private-sector organisation seeking to develop and distribute the product.

(see also §7, "Sustainability")

## 6. Links with other projects/programs

The links between ISLAND and other programmes in South-East Asia with similar or related objectives have been promoted throughout the project, with a view to perpetuating the cooperation and the results. In fact, one way to ensure the pursuit of the cooperation and work initiated by ISLAND is to insert this follow-on into an existing international operational programme in South-East Asia which matches ISLAND's objectives and results.

Thanks to a policy of openness and active communication in Asia, the ISLAND project, its partners and its approach became well known and respected by major Asian stakeholders in

risk management, such as the ADPC (Asian Disaster Preparedness Center of Bangkok), the UNDP (United Nation Disaster Program), the Red Cross, the Mekong Committee, etc. This network of contacts boosts the likelihood of long-term cooperation, either as part of EU programmes or other Asia-focused international programmes. Various possibilities for inserting ISLAND follow-on activity into existing international programmes are being examined, with notably:

- The Vietnamese programme dealing with natural risk management, a programme financed by the World Bank and implemented by the MARD (an ISLAND partner).
- The programme run by Mekong Committee and the RFMMC (an ISLAND partner), focused on providing information to local populations, in collaboration with the ADPC and the Red Cross.

## 7. Sustainability

The sustainability of the communication tool developed in the ISLAND project is based on (i) the ability to transform an innovative prototype into an operational tool and (ii) the regional and local stakeholders' capacity to adopt this tool and integrate it into their everyday, official organisational structures.

The pilot site testing of this tool by field-based stakeholders in Vietnam constitutes a first step in this direction. The principle of the tool has been validated and positively welcomed by the users. In Lao PDR, simpler tools have been used for risk communication but the feedback is also very positive, with strong demand.

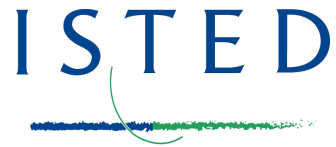
Final reports of ICT implementation in each country, whether on pilot sites or in the capital, suggest some proposals to improve or adapt these tools to the local context in the future (see annex 3c for Vietnam, 4a and 4c for Lao PDR, 5 for Cambodia).

The analysis performed in Cambodia suggests that this type of device (initially dedicated to risk management) can be extended to a more general device for communicating information to the local authorities. The possibility of a transfer to a private company (which would distribute a derivative of the product) has been looked at, notably with the MC&D company in Phnom Penh, but the question is still premature.

In the mid-term, continuation of the work resulting in an operational, wider-scale implementation requires adoption of the tool by a major regional stakeholder and its integration into a programme with funds available, such as the World Bank programme with the MARD in Vietnam or that of the Mekong Committee in Cambodia and Laos. This is the path which will be investigated in depth in the months following the end of the ISLAND project in order to prompt the implementation and long-term deployment of the ISLAND device with local populations and authorities.

In terms of the sustainability of the cooperation, the MICA (a French partner located in Hanoi) should be able to facilitate pursuit of the cooperation and the relationship between European and Asian partners. In a transition period, the cooperation should at least be pursued by France and Vietnam, thanks notably to specific French funding for Franco-Vietnamese cooperation (the Hoasen programme).

In the mid-term, pursuit of a broader collaboration between Europe and South-East Asia (as successfully initiated in ISLAND) will require new modes of funding which have not yet been



Institut des Sciences et Techniques de l'Équipement et de l'Environnement pour le Développement

found at the time of this report (several opportunities are being studied). In 2006 and Q1 2007, the partners ISLAND monitored new EU programmes likely to fund an ISLAND follow-on. During this period, very few calls for proposals corresponding to our themes and objectives were identified for Asia-focused programmes like "EuropAid/Asia" and "ECHO".

## **8. Other issues**

None.

## 9. List of annexes

1. Field survey reports :
  - a. Survey report Tu Ky district, Hai Duong province, Vietnam ; Dang The Phong, Bui Quoc Tuan et Tran Anh Dung, Water Resource Research Institute (VIWR), August 2005.
  - b. Survey report Champassak district, Laos ; Tifenn Gaudin, GRET, September 2005.
  - c. Survey report , Ba Phnom et Peam Ro districts, Prey Veng province, Cambodia, CEDAC, November 2005.
2. "ISLAND solution data Sheet" by all partners – General specification for improving flood information in Vietnam, Cambodia and Lao PDR - 2006
3. Documents about the ISLAND prototype and its implementation in Vietnam
  - a. "Presentation of ISLAND system" : technical document from MICA / Sébastien Desprès – Specification of ISLAND prototype (general and Vietnamese case) - 2006
  - b. Presentation of the ISLAND Vietnamese prototype at the final seminar and at the MRC flood forum (MICA) - 2007
  - c. Report of VIWR on the implementation of the ISLAND prototype in Hai Duong province - 2007
4. Reports about the project's results in Lao PDR
  - a. Report of MICA mission in Lao for the implementation of the ISLAND system
  - b. "ISLAND in Champassak district" - Presentation from LNMC : assessment and perspectives of ISLAND tools in Laos PDR - 2006
  - c. LNMC final report: ISLAND in Lao PDR – 2007
5. Perspectives for the ISLAND prototype in Cambodia – GRET – 2007
6. Final seminar agenda
7. Morel G., Desprès S., 2007 – *ISLAND: improving the communication of information on flooding and other risks to local communities in South East Asia* - Proceedings of the 5<sup>th</sup> MRC Annual Flood Forum – Ho Chi Minh City – 17-18 mai 2007.
8. ISLAND leaflet.