

Project Title	Capacity building in specialist areas of young researchers in the Vietnamese government research institutes in aquaculture, and provincial extension authorities responsible for aquaculture extension
Code: 1.5	
Australian Personnel	Prof Sena De Silva and Assoc Prof Ian Robottom
Australian Institution	Deakin University
Vietnam Institution	Research Institutions for Aquaculture 1, 2 & 3
Project Duration	July 2000 to June 2002

Project Description

The project uses a dual approach which focuses on both the physical / scientific dimension of aquaculture and the educational / training dimension of aquaculture extension program development. This dual approach enables the improvement of aquaculture practises resulting from Dimension 1 to be consolidated and disseminated more broadly through provincial aquaculture communities per medium of the activities of Dimension 2. The project supports capacity building in both aquaculture management and aquaculture extension (community education).

Objectives

- a) Establish understanding of principals involved in experimental and scientific survey design, data handling and analysis
- b) Train two Vietnamese staff in the socio-economics of aquaculture and culture based fisheries to support the extension of research findings
- c) Disease surveillance: to establish a capability to design and implement surveillance systems which meet acceptable international standards of the Office International des Epizooties
- d) Capacity building of a critical mass of researchers, in all aquaculture research institutional in Vietnam, in fishery biology and the management of reservoirs
- e) Establish a research network of 8-12 provincial agricultural extension officers in Vietnam
- f) Enhance capacity in case study research skills
- g) Enhance capacity in short-course curriculum development
- h) Maximise project gains by disseminating project outcomes at a national conference

Outputs and Performance indicators

Outputs	Performance Indicators
<ul style="list-style-type: none"> ◆ Understanding of basic concepts on hypothesis development and testing; the need for controls in scientific testing etc. ◆ Data collation and entry; objectivity in data collation; need for replication; ◆ Sampling methods; sample size; ◆ Data handling; importance & relevance of statistical applications; basic statistics 	i) Demonstrated use of all basic concepts described
<ul style="list-style-type: none"> ◆ Train two researchers from VN in the technical aspects of aquaculture in an Australian Institute leading to a Graduate Diploma in aquaculture to enable effective incorporation of socio-economic aspects in future research programs 	i) The award of a Graduate Diploma in aquaculture to two Vietnamese staff members from the Research Institute of Aquaculture
<ul style="list-style-type: none"> ◆ Two training workshops each of two weeks duration and separated by 6-9 months. Provision of course material for the training workshops. Mentoring of trainees 	i) Completion by 12 participants of two workshops. Demonstrable capability of workshop participants to collect, collate and analyse disease surveillance information
<ul style="list-style-type: none"> ◆ Capacity building of 12 young career researchers in reservoir fish biology and management with specific expertise in the following areas: ◆ Training in water quality monitoring of reservoirs, and relevance of limnology to reservoir fishery biology & management. ◆ Importance of catchment features on reservoir productivity. Principals of stock and capture fisheries. ◆ Management of stock and capture fisheries; economics of stock and recapture. ◆ Use and limitations of introduced species; interactions between introduced and indigenous species. ◆ Identification of relevant areas of research for the improvement of culture based fisheries 	ii) Demonstrated understanding of and/or ability to undertake: <ul style="list-style-type: none"> ◆ Water quality monitoring that reflects an understanding of the physical properties of reservoirs and catchments ◆ Appropriate management responses for the sustainable production of reservoir and catchment systems ◆ Stock and capture fisheries principals ◆ Economics and management ◆ Management of exotic species ◆ Identifying emerging management needs and research responses
<ul style="list-style-type: none"> ◆ Network of provincial extension officers meeting six times to establish and maintain sustainable communication links 	iii) Network contacts between and among all Australian and Vietnamese participants on a fortnightly basis
<ul style="list-style-type: none"> ◆ Improved capacity of participants to carry out and undertake case study research within their context 	iv) Production of visual/written case studies by all participants
<ul style="list-style-type: none"> ◆ Ability of participants to develop curriculum material based on case study research 	v) Production of curriculum material by all participants and utilised in provincial contexts
<ul style="list-style-type: none"> ◆ Improved capacity on the part of participants reporting on the process and outcomes of case study research projects 	vi) Presentation by all participants at an organised forum such as a national conference

PROJECT COMPLETION REPORT

Executive Summary

The Project envisaged to provide young scientists employed in the institutions responsible for fisheries and aquaculture development in Vietnam with basic training on scientific methodology, aspects related to data collation, handling and analyses, followed by training in reservoir fisheries management and fish epidemiology. In addition, the Project set out to train extension officers, involved in fisheries extension, from two provinces in N. Vietnam, in preparation of extension curricula and material drawn from in situ practices. The Project objectives were fully accomplished, on schedule and on budget.

The Project has already resulted in significant spill overs, such as providing a nucleus of personnel for executing the recently adopted policy of the Government of Vietnam on reservoir fisheries development, with a view to increasing fish production and poverty alleviation in rural areas. A small number of trainees have embarked on further career development in their chosen fields, to which the Project contributed indirectly by enhancing their skill level and making them competitive.

The Project Team was drawn from the Lead Institution and a consultancy firm (at no cost) with considerable experience in the field of fish epidemiology in developing countries. The two groups worked well together, generating a fair quantum of synergy which was helpful in the successful completion of the Project. The Lead Institution permitted all Project Team to devote as much time as was required for learning and teaching material preparation, time in Vietnam, with out any salary compensation from the Project. The Lead Institution also provided back –up support for financial management and some cost for communications.

The partner institutions in Vietnam, in particular the Research Institute for Aquaculture No.1 (RIA 1), Hanoi, was responsible for all the logistics for all of the Project activities. RIA 1, consulted the other Lead Institutions involved in fisheries and aquaculture research and development in Vietnam, in the selection of the trainees, ensuring that there was wide participation from all institutions, and a reasonable gender distribution. RIA No.1 was able to harness the cooperation of the Fisheries Departments of the YenBai and ThaiNguyen Provincial Governments very effectively and purposefully, thus ensuring the success of the project component dealing with extension material. Most importantly, there was no excessive demands made on the Lead Institution and or the Project Leader, financially or otherwise, and the Vietnamese Institutions came forth with all what was agreed upon in the project document.

1. Project Description

1.1 Background and preparation

This project was conceptualised in the course of activities in Vietnam under the auspices of an ACIAR project, “ Reservoir Fishery Development and Management in the Northern Mid Highland Region- Vietnam- FIS/97/68”, headed by Prof. Sena S De Silva. Based on the success of this project the Vietnamese Government made a policy decision in 1999 to

develop reservoir fisheries with a view to increasing fish production and as a tool for alleviating poverty in the rural areas. However, it was felt that in order to achieve its proposed target of increasing the reservoir fish production in Vietnam to 250,000t by year 2010 that there is a need to build capacity in reservoir fisheries biology and management amongst the younger cadres of the research and development institutions in Vietnam.

In the above context a number of discussions were held during visits to Vietnam, associated with the ACIAR Project -FIS/97/68, between the ACIAR Project Leader and the Vietnamese counterparts of the Research Institutions for Aquaculture 1, 2 & 3 (Vietnamese institutions responsible for R & D in reservoir fisheries) on further training. As a sequel to these numerous discussions a plan was developed with regard to types of training needs.

As such background was set to launch in to a project, or seek funding from an appropriate body for the envisaged activities, and the CARD program was most suited for this purpose. In Australia, the Project Leader, Prof. S. De Silva liased (January/ Feb. 2000) with A/Prof. Ian Robottom who has had considerable experience on extension related work in South Africa and with Dr. Chris Boldock on fish disease epidemiology in developing countries, including Vietnam, and a draft proposal was prepared by the 15th of Feb. 2000, taking in to account the needs of Vietnam. The draft proposal was communicated to Vietnamese counterparts in late February and was endorsed by the Ministry of Fisheries Vietnam (03-03-00) and all three counterpart institutions in Vietnam.

The draft program was also tabled at a National Seminar on Reservoir Fisheries Development held in Hanoi in May 2000, and was endorsed by the participants drawn from all over Vietnam, representing a range of governmental organisations associated with reservoir management, in one way or the other.

The primary stakeholders in this project were the Research Institutions for Aquaculture No. 1 (Hanoi), No. 2 (Ho Chin Min City) and No. 3 (Nhatrang) and the only fisheries university in Vietnam, and the Provincial Government fisheries authority of Yen Bai Province, and ThaiNguyen Province, North Vietnam. On approval of the project and the funds becoming available Prof. De Silva and A./Prof. Robottom undertook a preliminary planning visit to Hanoi, in Nov. 2000, and met with representatives of all stakeholder groups. During this visit tentative dates for the different activities were scheduled, field visits to the provinces undertaken, teaching facilities required sorted out, and nominations of trainees were evaluated. The young trainees were drawn from the former institutions, and the trainees on extension methodologies were drawn from the latter. The direct beneficiaries of the project were trainees and it is expected that the final spill over from the project will benefit the fishers and the communities living in the vicinity of the reservoirs as the reservoir fisheries develop and fish production increases over time.

1.2 Context and rationale

The Project Team was satisfied with the in puts of RIA No.1, for managing and organising all the in country activities, and providing logistical support, and as such there was no apparent reason to search for other options in Vietnam. RIA No.1 has excellent relationships with the other key aquaculture institutions in Vietnam as well as the

Ministry of Fisheries of the Government of Vietnam. Equally, it cooperates effectively with the provincial governmental fisheries authorities who are responsible for reservoir fisheries activities in the provinces.

The project essentially operated independently. However, there were spill overs to the original ACIAR project FIS/97/68, and a new project FIS/2001/013 which commenced in October 2001. Four trainees under the CARD program are working as full time researchers for the latter, and the contacts established through the CARD program in Yen Bai and Thai Nguyen provinces have facilitated the execution of FIS/2001/013.

The CARD program also indirectly contributed to choosing RIA No.1 for two expert consultations on Aquaculture Education in the Asia- Pacific region under the auspices of APEC Aquaculture Education Project and the FAO funded consultation on aquaculture Education, in 11 to 15th May 2000 and 12th to 14th November 2001, respectively.

1.3 Project objectives and scope at design

The specific objectives of the project were:

- To establish an understanding of the principles involved in experimental and scientific survey designing, and data handling and analysis; Data collation and entry; objectivity in data collation; replication; sampling methods; data handling; importance & relevance of statistical applications; basic statistics (to ANOVA) when and how to use
- Train two researchers from Vietnam in the technical aspects of aquaculture in an Australian Institute leading to a Graduate Diploma in Aquaculture to enable effective incorporation of socioeconomic aspects in future research programs
- Disease Surveillance: To establish a capability to design and implement surveillance systems which meet acceptable international standards of the *Office International des Epizooties*
- Capacity building of a critical mass of researchers, in all aquaculture research institutions in Vietnam, in fishery biology and management of reservoirs
- Establish a research network of 8-12 provincial agricultural extension officers in Vietnam
- Enhance capacity in case study research skills
- Enhance capacity in short-course curriculum development

The above objectives conformed to the AusAID country strategies, as well as the Vietnam Government aspirations to capacity building in an area that has been recognised as pivotal to increasing fisheries production. Furthermore, the Vietnamese Government recognises that reservoir fisheries development is crucial to increasing animal protein supplies in rural areas, by virtue of the fact that reservoirs are almost always located in rural areas, and also indirectly to poverty alleviation in such areas. The capacity building amongst the young scientists in this field will contribute significantly to the sustainable management of the reservoir fishery resources in the long term, which is also a major aspiration of the partner government.

1.4 Implementation arrangements

Deakin University, Victoria collaborated with RIA No. 1 and the provincial fishery authorities of YenBai and ThaiNguyen Provinces, N. Vietnam in executing the project. The nominations of trainees were provided by the RIA No.1 and were scrutinised by the Australian counterparts, ensuring that there was a fair distribution amongst institutions, and a reasonable gender balance, as well as the prospective trainees were already engaged either in reservoir fisheries activities and/ or fish health management. All scientific group training programs were conducted at RIA No.1, with appropriate field trips being undertaken in N. Vietnam.

The extension trainees were drawn from the provincial fisheries authorities of YenBai and ThaiNguyen provinces, and it was ensured that these trainees were also involved in fisheries related extension work in their substantive positions. This component involved Project Team- Extension Officers- Farmer interactions, on three occasions, at each of the provinces.

2. Appropriateness of Project Design and Objectives

2.1 Appropriateness of Objectives

Objective Description	Rating
To establish an understanding of the principles involved in experimental and scientific survey designing, and data handling and analysis; Data collation and entry; objectivity in data collation; replication; sampling methods; data handling; importance & relevance of statistical applications; basic statistics (to ANOVA) when and how to use	4
Train two researchers from Vietnam in the technical aspects of aquaculture in an Australian Institute leading to a Graduate Diploma in aquaculture to enable effective incorporation of socio-economic aspects in future research programs	5
Disease Surveillance: To establish a capability to design and implement surveillance systems which meet acceptable international standards of the <i>Office International des Epizooties</i>	5
Capacity building of a critical mass of researchers, in all aquaculture research institutions in Vietnam, in fishery biology and management of reservoirs	5
Establish a research network of 8-12 provincial agricultural extension officers in Vietnam	5
Enhance capacity in case study research skills and enhance capacity in short-course curriculum development	4

2.2 Appropriateness of Design

Description of design features	Rating
<p>1. Through an intensive training program cum workshop build capacity in basic concepts on hypothesis development and testing; the need for controls in scientific testing, etc. This component included aspects on data collation and entry; objectivity in data collation; replication; sampling methods; data handling; importance & relevance of statistical applications; basic statistics (to ANOVA) when and how to use. Analysis of data from various research projects conducted by RIAs 1,2,3 through a workshop for young researchers.</p>	5
<p>2. Providing post-graduate training for two young socioeconomic researchers in aquaculture at Deakin University.</p>	4
<p>3. Developing the basic skills in fish disease surveillance methodologies through</p> <ul style="list-style-type: none"> • A thorough understanding and practical capability by key personnel of how to design and implement disease surveillance programs. • The basis of a national disease reporting system to meet reporting OIE requirements, and • A capability to train provincial fisheries officers in the collection of appropriate data in standard formats <p>In 12 young researchers. The capacity building in the researchers will be achieved through two workshops.</p>	4
<p>4. Capacity building of 12 young career researchers in reservoir fish biology and management with specific expertise in the following areas. Training in water quality monitoring of reservoirs, and relevance of limnology to reservoir fishery biology & management Importance of catchment features on reservoir productivity. Principles of stock and capture fisheries Management of stock and capture fisheries; economics of stock and recapture. Use and the limitations of introduced species; interactions between introduced and indigenous species. Identification of relevant areas of research for the improvement of culture based fisheries.</p>	5
<p>5. Establishment of a Network of provincial extension officers meeting six times and establishing and maintaining sustainable communication links.</p>	5
<p>6. Improved capacity of participants to carry out and undertake case study research within their context: to be achieved through two workshops on case study development, and develop the ability of participants to develop curriculum material based on case study research through direct involvement in data gathering and collation.</p>	4

3. Implementation Performance

3.1 Project Components and Outputs

Com p. No.	Component Description	Outputs	Performance Indicators	Rating
1.	Intensive training program cum workshop build capacity in basic concepts on hypothesis development and testing; the need for controls in scientific testing, etc.	Program held from 06 th to 19 th of January 2001 for 27 participants.	<ul style="list-style-type: none"> • Completion of the syllabus • Regular attendance • Evaluation by trainees 	4
2	Providing post-graduate training for two young socioeconomic researchers in aquaculture	Post-graduate qualifications	<ul style="list-style-type: none"> • Conferment of degrees (one due to complete in Nov. 2002) 	4
3	Developing the basic skills in fish disease surveillance methodologies	Completion of two workshops; 02 nd to 12 April 2001 & 01 to 24 th March 2002; provision of study materials	<ul style="list-style-type: none"> • Completion of the syllabus • Same group participating in both workshops • Evaluation by trainees 	4
4	Capacity building of 12 young career researchers in reservoir fish biology and management	Workshop 06 th to 24 th January 2002; provision of study materials	<ul style="list-style-type: none"> • Completion of the syllabus • Regular attendance • Evaluation by trainees 	4
5	Establishment of a Network of provincial extension officers	A network of eight extension officers has been established in Thai Nguyen and Yen Bai provinces.	<ul style="list-style-type: none"> • The project supported the establishment of e-mail based communications among the members 	4
6.	Improving the capacity of participants to carry out and undertake case study research within their context	Two workshops held in October 2000, four study sites (provincial fish farms) were identified and visited and used as the core material for the training.	<ul style="list-style-type: none"> • Developed ability of extension officers to undertake a key role in the gathering of case study data • Equipment purchased & distributed for data collection 	4

No changes were sought during implementation of the project..

3.2 Project Outcomes

- The most positive aspect of the project was that for each of the components the trainees remained unchanged, and our follow up inquiries show that the trainees are continuing to work in areas related to the training they obtained. Consequently, there will be two groups of young scientists who will continue to specialise in reservoir fisheries management and fish epidemiology in the different research organisations in Vietnam.
- Apart from the expected capacity building, among a significant quantum of young scientists in reservoir fisheries management and fish epidemiology, both crucial to the national governmental plans for fisheries research & development, the project also provided the impetus, as well as trained personnel, to embark on a new ACIAR funded program on Reservoir Fisheries Management and Development in Vietnam.
- Post Graduate degree conferment on two young scientists (Nguyen Hai Son and Thanh Binh Thai) from Deakin University (the latter is scheduled to complete in November 2002).
- The project also contributed, directly and indirectly, to the Vietnam Government decision to establish a specialised Reservoir Fishery Management Unit at RIA No. 1, which will be responsible for R & D activities in this area in the future.
- The project also stimulated an interest in fish epidemiology, for the first time amongst fisheries scientists in Vietnam, and its importance as a tool for curtailing spread of fish disease in the aquaculture industry.
- The effectiveness of the project was also felt by the fact that one of the trainees (Bui The Anh) in the Reservoir fisheries Management Component was awarded a John Allwright Fellowship to pursue a PhD program in reservoir fisheries management.
- Also the project was responsible for training extension staff in two provinces in data gathering, monitoring and preparation of extension material based on their own findings, for the first time in Vietnam. It is expected that this training will significantly impact extension of research findings in the fisheries sector in to rural areas in the ensuing years. The specific outcomes of this component were:
 - Production of community education materials will take the form of a CD and videotape available in both English and Viet Nam language versions, depicting 'best practice' aquaculture practice as a composite one-year case study drawing on examples of practice from each of the four study sites.
 - A network of four provincial extension officers in two northern Vietnamese provinces (Thai Nguyen and Yen Bai) together with a research assistant from RIA1 (Mr Mai Van Ha) and representatives of the Hanoi Institute for Socioeconomic Development Studies (HISEDS) was established in the first two visits in October 2000 and January 2001. Fishfarming families in each of the four study sites also contributed directly to the work of this network.
 - Enhanced capacity-building in case study research, through a series of workshops, field visits to study sites for discussions with all participants provision of equipment (cameras and film; modems; CD burner) and continuous support through e-mail communications.

- Enhanced capacity-building in report preparation and dissemination through the development of CD and videotape (English and Vietnamese versions).
- Countries such as Vietnam need a core group of researchers, at the PhD level or equivalent, in the major areas of development. Currently, however, there is a big vacuum in this regard at the middle scientific level. It would have been desirable if the capacity building could have been carried further; a half dozen of the best trainees were able to pursue for their higher degrees through research, who would act as nuclei for building appropriate research and development teams around them.

3.3 Sectoral Impact

The overall capacity building included six women scientists out of a total of 27. This proportion is considered to be higher than that in all the participating institutions.

It was unfortunate that the training of extension workers did not include any women, as in both Yen Bai and Thai Nguyen provinces there are no women employed as extensionists.

The project did not directly assist any minority groups and or any other disadvantaged group *per se*.

3.4 Costs and Financing

As discussed with the Project Manager, Ms. Megan Gilmour, this component will be dealt with when the final acquittal is made.

3.5 Monitoring of project

It is regrettable that there was no external, direct monitoring of the project which involved the Australian team. We were informed that a mid-term evaluation was conducted but no findings were made available to the Australian and/ or Vietnamese teams, and as such it was not possible to address any deficiencies, if there were any.

It was also disheartening that no feedback was received on the half yearly reports submitted and one is left to wonder whether the time spent on preparation of these reports was warranted or not, especially taking in to consideration that no salary compensation is provided for in the project funding.

Consequently, all monitoring was left to the team and the team endeavoured to assess the effectiveness of the delivery of components through questionnaires and so forth.

3.6 Technical Assistance, Training and Capacity Building

- The project has assisted in capacity building in three areas which have hitherto being relatively neglected. Firstly, the project assisted in capacity building amongst a group of young scientists in basic scientific methodologies, which often is taken for granted. Having laid this foundation, the project proceeded to build capacity in two areas of specialisation viz. Reservoir Fisheries Biology and Management and Fish Epidemiology, amongst the young researchers. Both these groups now form nuclei for continuing research and development activities in Vietnam, the efforts coming to fruition already. In the latter regard the project has provided a nucleus of trained personnel to execute new policy developments with relation to reservoir fisheries

development of the Government of Vietnam. It has also provided suitably trained personnel for the successful execution of other related projects such as the ACIAR funded project, FIS/2001/013. The capacity building triggered off from the project is being continued to a certain extent with some of the young scientists being sufficiently competitive to obtain open fellowships culminating in higher degrees by research, as in the case of Mr. Bui The Anh.

- The capacity building in the area of fish epidemiology is already being utilised by Vietnamese Institutions to monitor disease outbreaks in the shrimp culture industry, one of the significant foreign exchange earners for the Government.
- The capacity building of extension staff of the provincial governments of YenBai and ThaiNguyen Provinces was equally rewarding and useful. In most instances extension work is carried out based on materials developed elsewhere. The project trained the extension staff to develop its own extension material, based on *in situ* experiences, and therefore of more relevance to the immediate farming/ fishing communities. It is expected that other Provincial Governments would follow this example.
- The Project Team was drawn from Deakin University and Ausvet, a freelance consortium with considerable experience in developing countries, including Vietnam. In general, the Project Team met all expectations. However, two members found it a bit strenuous and the work load excessive, and dropped out of the second assignment. The trainees appreciated the working ethos of the Project Team, in particular the relatively informal atmosphere that prevailed. Consequently, the trainees were very forthcoming and a useful dialogue developed, which in all probability helped the team to cover the study areas fully.
- The relationship between the Lead Institution and the Vietnamese partner institution(s) were cordial, fruitful and purposeful. These partnerships have been established prior to the CARD project through the ACIAR Project FIS/97/68, and the APEC Aquaculture Education Project, both headed by Prof. De Silva, of the Lead Institution, and the CARD Project enabled a further strengthening of these relationships, which are being continued.
- The Vietnam Lead Institution, RIA No.1, should be commended for its inputs; the organisational skills of the counterparts were such the project did not lose even a half day due to logistical reasons. RIA No. 1 provided all the back up support in terms of personnel, equipment, transport of the Project Team, organising field trip, provision for translation when and if required and so on, and consequently the task of the team was made that much easier.

3.7 Management of Constraints, Issues, Risks and Change

This project involved a lot of pre-preparation of teaching and learning materials that had to conform to the requirements of a relatively alien clientele. This work had to be undertaken in conjunction with the day-to day duties of the Project Team and as such stretched the Project Team to a maximum. As a result, some members of the original Project Team opted out of the follow up activities, and the Project Leader was burdened with finding suitable replacements. Had AusAID permitted some degree of salary compensation, and permitted suitable budgetary provisions at project formulation, to the

Project Team (to be administered by the Lead Institution) for material preparation and report writing, mobilisation of Project Team and retaining continuity would have been that much easier, and overall more productive to the Project.

Although the present Project did not suffer significantly due to the above constraint, it is very unlikely that this experienced Project Team would endeavour to be engaged in similar activities in the future, unless the situation is rectified.

It is also important to note that the burden laid on the Project Leader(s) is excessive, especially in the context that the duties have to be performed in addition to those of the substantive post(s) held.

3.8 Project Management

- Vietnamese Partner Institution- 5: All logistical support, including computer and photo copying facilities, and transport for field trips, trainee accommodation etc.
- Lead Institution- 5: Project Team time; some costs towards communications and printing, computer facilities

4. Performance and Outcomes

4.1 Assessment of Performance Against Objectives and Design

Overall, the project activities were conducted on schedule and all the expected outcomes were satisfactorily accomplished. The project has already resulted in further spill overs, as detailed previously, particularly in regard to further personal development of some of the trainees, and most importantly providing a nucleus for trained personnel to facilitate a new policy development of the Ministry of fisheries of the Government of Vietnam. It is also thought that the project also would have contributed indirectly to this important policy development of the Government of Vietnam.

The training of extension staff accomplished through the Project would have positive influences in the future. This training will enable them to prepare extension material based on their own experiences and not use material which are alien to them, as well as the end users. It is believed that the adoption of this form of training of the extension staff in other Provinces will take time, but once accomplished will change the attitude of extension of officers, and lead to a use of more effective extension materials.

As indicated previously the project would have liked to have feed back from the donor agency and/ or the management organisation as the project proceeded, particularly in response to the half yearly progress reports. As it is the Project Team has to thus far depend on its own assessment and some feed back from the partner institutions and or trainees, which are considered to be relatively semi formal.

4.2 Sustainability

The project is aware that the learning and teaching materials used in the Project are being translated in to Vietnamese language, and the Partner Institution is envisaging to distribute the translated material countrywide. The trainees from the different research institutions and the universities, as far as the Project Team is aware, continue to work in one of the

two fields which each opted for. This is, we believe, is a very good indicator of the sustainability of the outcomes of the Project.

Overall, we would consider the sustainability to be Fully Satisfactory (4), and even marginally a Best Practice.

4.3 Development Impact

The likely impacts include:

- Providing a nucleus of trained personnel capable of executing and facilitating the newly developed policies of the Government of Vietnam in respect of Reservoir Fisheries Development in Vietnam. It is expected that some of the trainees will continue to develop their skills and expertise in Reservoir Fisheries, and would become major scientific figures, perhaps lead figures in research and development, in this area of specialisation in Vietnam. In this regard already one of the trainees has been awarded a fellowship to study for a PhD, and when completed will be the first fully trained researcher in reservoir fisheries management in Vietnam.
- The impact of fish epidemiology training will not be apparent immediately, but will be so with time, with the ever increasing disease problems encountered by the shrimp industry. It is expected that the impacts of this training will be felt mostly in new areas of shrimp farming activities such as in the Haiphong region, N. Vietnam.
- The long term impacts of material and curricula preparation for extension activities are likely to take root from about a years time, when the material used in the project is disseminated to other provinces, and through national workshops and other project activities.

5. Conclusions

5.1. Overall assessment

The Project was able to achieve all its planned objectives almost fully. One of the key elements for this success is believed to be the close contacts which the partner institutions have developed prior to the commencement of the Project, and the familiarity of the Australian Lead Institution and the Project Leaders of the working conditions in Vietnam, and the general level of competence of the young scientists employed in the different institutions in Vietnam. This enabled the Project to make more meaningful and effective preparation of learning and teaching materials, to suit the clientele.

Apart from accomplishing the planned outcomes, primarily revolving around capacity building, some of the built capacity is already beginning to impact development through the provision of a nucleus for executing new policy developments of the Government of Vietnam, in regard to reservoir fisheries development; such immediate impacts on development and policy execution from a Project of the size of the current one is not common, if not very rare.

The design used in the execution of the Project was arrived at in consultation with the Vietnam counterparts, well in advance of the project formulation. The need for the type of training provided for in the Project has been the subject of discussion and consultations

between the Project Leader and the Vietnam authorities, in the context of a ACIAR project which was ongoing. Consequently, the final Project design adopted is thought to have been the most appropriate one for achieving the objectives, and any change if at all would have been to rotate the components between institutions in Vietnam. However, this might not have been cost effective, and the logistics would not have been easy to handle.

It is the view of the Project Team that capacity building in the agriculture sector in Vietnam needs to be continued, if development is to be sustained in the context of maintaining environmental integrity. Most development activities do not take in to account environmental impacts to the desired level, and young scientists have limited knowledge and or concerns in regard to integration amongst different primary resource uses. To put the latter in the context of reservoir fisheries development in Vietnam the next logical step will be to provide the knowledge base and develop the skills for the need for a watershed approach rather than a reservoir *per se* approach, finally leading to an integrated development and management of the water resources.

5.2. Lessons Learned

Although the Project accomplished its planned objectives, it was done at a relatively high cost to the Project Team. The Project design was such that the amount of time spent on preparation of learning and teaching materials was considerably higher than envisaged at the planning stage, and was addition to the time spent in Vietnam. The time spent on the Project activities was in addition to the normal duties of the Project Team, and the strain was felt by some members of the team, particularly those who have not been involved in similar work in the developing world. However, it is believed that if some salary compensation (to the Lead Institution and not to individuals) was made for by AusAID in lieu of the inputs of the Project Team the strain on individuals would have been reduced, and most of all it would have been possible to maintain continuity of the team throughout the life span of the Project.