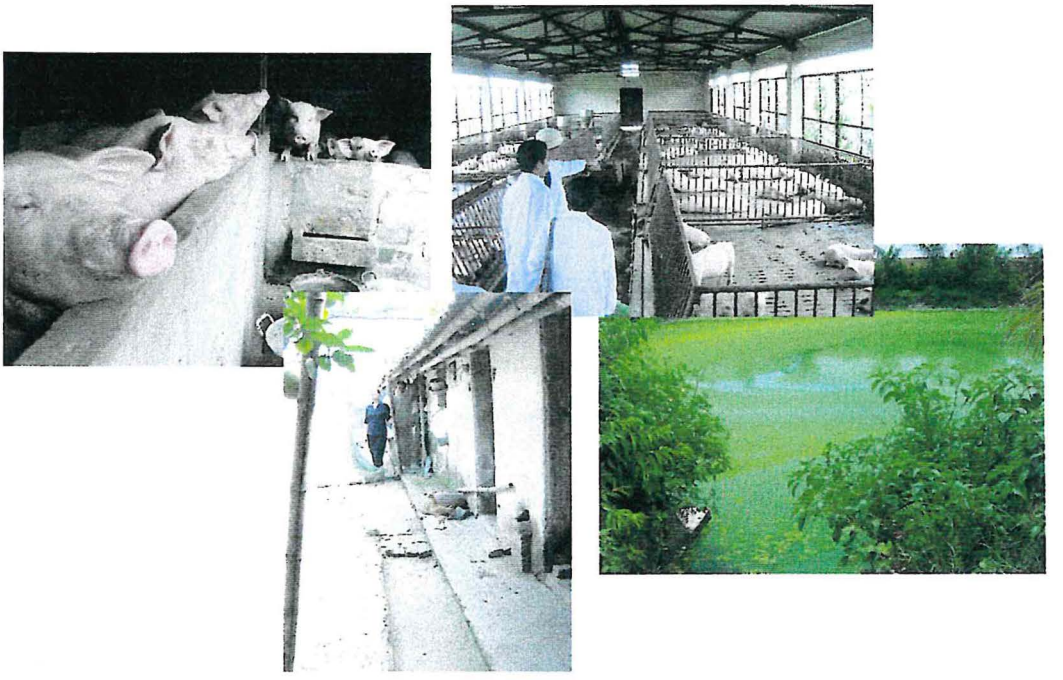
"Animal production intensification in Vietnam and Environmental protection: a diagnostic to promote a sustainable pig production development"

Asia Pro Eco Programme - European Commission



Internal Evaluation Report

June 2006

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N° 06/024

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Acronyms and abbreviations

ADP II: Agriculture diversification programme II

AFD: Agence française pour le développement

CIRAD: Centre international de recherché en agronomie pour le développement

Cy: Thai Bihn Provincial Animals Breeding Joint Stock Company

EC: European Commission

ECD: European Commission Delegation

E3P: The present project: Animal production intensification in Vietnam and Environmental protection: a diagnostic to promote a sustainable pig production development

GIS: Geographical Information System

IFPRI: International Food Policy Research Institute

NIAH: National Institute of Animal Husbandry

NIRS: Near infra red spectrometry

NISF: National institute for soils and fertilizers

OVI: Objectively Verifiable Indicator

PACT: Pro-Active Conciliation Tool

UN: United Nations

VTGeo: Institute of geomatic and remote sensing

Summary:

This internal final evaluation of the Diagnostic E3P Project aims both to asses the value of the project outputs and to propose the ways to implement project findings. The E3P project has the objective to increase pig production, and livestock production broadly speaking. As the animal effluents represent an important risk of water pollution, the E3P project aimed to design a Geographical Information System (GIS) as a diagnostic tool which will locally assess the surpluses of animal wastes, the needs for nutrients by crops and fish ponds, and planed to define a more reliable manure management and technologies options.

In terms of relevance, the evaluation mission noted the succeed sensitisation of provincial policy makers, who formally asked to the team project to go on with a 2-3 years phase for testing pilot treatment schemes. It also noted the relevance of the scale of work (Province and Communes) and the multidisciplinary approach (soils, animal husbandry, sociology, aquaculture, economy, GIS, etc.) despite some discrepancies and weakness regarding some water pollution, human health and extension activities to farmers.

In terms of efficiency, the E3P activities were generally very efficient to obtain the expected results. As far as the four planned results were obtained, the activities may thus be also considered as properly implemented. The relationships with local Authorities and their availability were good. Farmer cooperation and counterparts' involvement were effective. The remote sensing data were available. These main assumptions at this level were thus fulfilled. The extra inputs povided (NIRS clabiration for manure, environmental risk assessemnt methodology at farm evel, PACT transfered to local insitution) were relevant and would therefore be considered as good project adaptation. On the other hand, training activities were not fully efficient and the project didn't succeed to extend them to final benificiaries. The material has been nevertheless transfered to local staff who could proceed to extension activities. The economocial investigations would be much more efficient when working on the setting up of a pig effluent commodity chain and the fertilizing uses for crops and aquaculutre activities seems to have had a limited efficiency.

In terms of efficacy, the accountability of environmental issues of pig production intensification looks to have been effectively done trough the project products and results for policies makers and Cy. For the farmers, we may expect that it will be done in the near future trough the extension activities to be done by Provincial and communal staff after its introduction into the local policies. For the organisations oriented toward an industrialisation process it also may be expected to be effective with the combined sensitisation by Authorities and the Cy. The project efficacy may thus be highlighted. The main assumption mentioned, which was the understanding and the concern of stakeholders, can be considered as fulfilled. Nevertheless, such a sensitisation and an improved accountability don't make sense if we can not propose adequate technical responses co-constructed with concerned stakeholders.

In terms of impacts, the animal production intensification is a strong trend all over Asia, driven by an increasing demand for animal products wich is linked to the increase of GDP (incomes), the urbanisation process, the decrease of food prices and the changes in nutritional habits. As such, the diagnostic and modelling tool is of great interest for this huge area and may have very important impacts, even if the tool remains to be simplified and standardized with regards to the acquired experience. This work has to be done in parallel with the search of solutions in the Thai Binh Province in order to optimize the project impact. Such a tool may also be very reliable for the environmental monitoring of the development projects involving animal production.

In terms of sustainability, besides the monitoring of environmental effect of livestock development, the project findings have to be recognized at the highest political level to be adopted broadly and to be thus really efficient on a sustainable way. Even if the local authorities' sensitisation succeed, the sustainability at a policy level cannot be effective if not integrated in national's environmental regulations and policies. If the results are quiet well disseminated within the Vietnamese scientific community, the transfer of knowledge is not fully completed. On the whole, the mission considers that the sustainability of the project is effective at a financial, institutional and policy level.

Conclusions and recommandations:

The E3P is considered as a success: the planned results and purposes were raised. The overall objective is partially reached with the policy makers' sensitisation on animal effluents management for environmental protection. The multidisciplinary approach and the two scales of work are clearly the E3P strengths.

The evaluation mission recommends to simplify and standardize the methodology in order to allow its dissemination in other areas.; and to go on with the researches identified as necessary to clear the bottlenecks in order to improve the tool produced by the E3P (fertilization with manure, aquaculture) and in order to facilitate the solutions which will be proposed..

The evaluation mission recommends to avoid the dissemination of the results to final beneficiaries (farmers) under the scientists' responsibility and to let the local Authorities and/or the extension services to manage this issue if they consider it as opportune.

As the main identified risks of the increasing quantities of effluent are water pollution and the its consequences on human health, it is recommended to disseminate the E3P results among the responsible in charge of human and animal health in order to establish with them common research and application programmes.

The relevance and efficiency of the tool for the whole South-East Asia during he next decades and its usefullness for the environmental monitoring on livestock development projects in Asia, the evaluation mission recommends, after simplification mentioned here above, to present it to all the stakeholders involved in the development (Ministries, funding agencies, Ngo's, consulting firms...) as a real expertise acquired by the E3P and available for further uses.

The critical point of the E3P is that the problems highlighted are not solved. This was a diagnostic and research project with a limited time and funding (0.5 M€) framework. It is also evident that the E3P impact will be totally relevant, efficient, recognized and sustainable only if the tool set up may be associated with adequate and proven solutions. however, the funding support to finalise these solutions doesn't exist yet even if the strong request from local Authorities has been generated. The evaluation mission recommendations are thus:

- For the scientists and the local Authorities, i) to prepare together and to present for external funding sources the project of applications/solutions to be tested on the field, as already identified during the E3P and ii) to develop all the possible joints efforts to gain this external support whatever is its origin.
- For the EU, to identify for programmes or lines similar to Asia Pro Eco links or procedures which allow the valorisation under the other European cooperation programmes of the results obtained.

I. INTRODUCTION

I.1 Project context

The Asia Pro Eco Programme is European Union initiative, launched with the target to adopt policies, technologies and practices that promote cleaner, more resource efficient, sustainable solutions to environmental problems in Asia.

The E3P project is located in the Thai Binh Province, in the Red river delta of Northern Vietnam. The province is overpopulated (1 400 inhabitants per square kilometre) and has the objective to increase pig production, and livestock production broadly speaking, at a rate of 13% a year during the next years (12.5% effective in 2005). Such a terrific livestock production increase is usual in South East Asia, in suburban or populated areas, to answer to a tremendous growth of the demand in animal products. This growth of the demand is expected to last at least during the 20 next years all over Asia. The related livestock development production generates new and huge challenges for the environmental protection against livestock production externalities.

In Thai Binh Province like in the 17 other Provinces belonging to the Red river Delta, the animal effluents represent an important risk of water pollution. Due to the difficulties to transform and to transport the large amounts of effluents generated, their use as organic matter fertilizer is not yet environmental friendly organised although the liquid animal wastes are actually for an important part thrown away in the rivers and water canals.

I.2 Project description

The E3P project aims to design a Geographical Information System (GIS) as a diagnostic tool (integrating notably the planned pig production development) which will locally assess the surpluses of animal wastes, the needs for nutrients by crops and fish ponds. Moreover it plans to define a more reliable manure management and technologies options.

The proposed diagnosis will support policies to the agricultural production intensification through the more adapted spread of animal waste in the fields according to the fertilizing requirements and thus to an income-generating activity in rural areas. It will also allow protecting threatened environment and natural water resources in deltaic area. The project addresses policy makers responsible for agricultural development policies at the national and provincial levels. It involves the provincial livestock breeding company, farmers and producers organizations. The main activities planned were benchmarking works and surveys focusing on local intensifying agricultural systems, with a spatialized and pro-active approach of the pig, crops and aquaculture production sectors. A preliminary appraisal of appropriate pig manure processing and Training program were also planned. The project detailed logical framework is attached in annex 5.

The direct beneficiaries are:

- **Provincial services in Thai Binh**, as policy makers responsible for the provincial agricultural development plans, investments and regulations; **Agricultural Department** and **Natural Resources and Environment Department** are concerned.
- **Provincial animal production company** as an executive structure responsible for extension, production organization and marketing.
- **Farm households** as basic units with whom every activity will be carried out. Considering the large and traditional implication of women in pig, fish and crops production, women are especially targeted in this project. One hundred (100) farrow-to-finish pig farmers are now identified by the MARD 2003-2006 project, 60% of the existing producers are women (with an average age lower than 45). In addition, 400 new farmers, especially young entrepreneurs, will be involved directly.

Indirect beneficiaries will be the other small-scale producers of the 9 districts already involved in the intensification process through individual initiatives. By focusing on rural development and protection of natural water, indirect beneficiaries are the 1.8 millions of people from Thai Binh province who are strongly dependent for water supply on these natural water resources; this problematic is also relevant for the 18 millions of inhabitants of the Red River Delta's provinces.

I.3 Objective and methodology of the evaluation

This internal evaluation occurs at the end of the project and aims both to asses the value of the project outputs and to propose the ways to implement project findings.

Its terms of reference are presented hereafter in annex 1; the persons met; the time schedule and the consulted documentation in Annex 2, 3 and 4 respectively. The evaluation experts' curricula are in annex 5.

The evaluation followed the logical framework methodology with a check up of all the planned OVI which is detailed in Annex 8. They were checked trough the formal interview of the targeted beneficiaries and the project reports. The mission implemented thus field visits and discussions with some farmers and communal Authorities. Discussions were also undertaken with the responsible of the Provincial animal production company; the mission attended the final restitution to the Provincial services in Thai Binh too and holds discussion with these Policy makers. Lastly the mission discusses the project results and follows up with the responsible of the national technical institutes. These observations and findings were than translated under the classical EC criteria for project evaluation.

II. Evaluation findings

II.1 Relevance

Regarding the overall objectives and the project purpose, the E3P concept was very effective and relevant with regard to the Provincial policy makers' sensitisation because they formally request investments in manure processing technologies. They thus fully understood the importance of the problem and the necessity to implement corrective measures. The mission attended the final restitution meeting with the Thai Binh Provincial Animals Breeding Joint Stock Company (Cy) and the Provincial Authorities. Beside the comments on the diagnosis phase undertaken during E3P, they formally asked the project team to go on the work by a 2 – 3 years phase for testing pilot treatment schemes. The Province and Cy agreed to invest themselves according to their resources availability which means by providing workforce and land. Sensitisation looks thus to be fully reached.

As a result of the succeed sensitisation of the local authorities, the project fulfilled its target of better dialogue improvement between policy makers and official services. Therefore, the project broadly and directly allowed a better understanding and highlighting of the 3 beneficiaries levels constraints and needs.

The search of funding partners for such a future investment programme was the second OVI and is clearly the next phase. Some contacts have already been established by the mission and the diagnosis tool set up by E3P is definitively a good support for such contacts. Nevertheless it is not during a one week mission that such a funding agreement may be definitively set up although no preliminary sensitisation of funding agencies was implemented. A weakness of E3P concept is probably to have not been associated at the beginning with the potential broader investment lines or agencies. Pollution prevention alone (without economical development prospect) is not a usual field for the most important cooperation donors. EU for example doesn't have any possibility for the financial support to such a project, as mentioned at the Delegation level.

Regarding the technical products, the E3P strength is definitively to have worked at the most relevant scales: the Province and the Communes. Decision makers at these two levels are probably the most relevant for investments in livestock effluent management and in water pollution control. At communal level, they have to manage all the social problems occurring among neighbours with animal effluents (smell, hygiene...). They are thus used and empowered to manage the social externalities of livestock and to translate the proposed technologies at farm level. At provincial level, they have to implement development plans nationally decided and thus to manage pollution coming from the planned industrialization of livestock production. Regarding water pollution prevention and the related policies these are clearly the levels where decisions are taken and ordered. Other interventions in the field of water management are usually working on physical scale like river watershed or even broader scale (e.g. all the Asian areas providing water to the Sea of China to prevent sea pollution). These scales of work are probably more relevant for a better scientific understanding of ecological phenomena but to prepare effective control field measures the E3P scales are definitively the best adapted. Even if we work at national level with the relevant ministries the translation of global decision would be done trough the provincial and communal authorities within communist countries like Vietnam and China.

The originality of E3P approach (and its other main strength) was to be multidisciplinary. The project gathered specialists of soils, animal husbandry, sociology, aquaculture, economy, fruit production, GIS.... The results came from the conjunction of all these scientific inputs. The good coordination and the organisation of the inputs into a GIS product avoided any break up. Nevertheless, the levels of knowledge in the various sciences and the qualification of the respective scientists were not always the same. These differences were not anticipated during the project preparation. Some discrepancies in the utility and or in the consideration of the results

occurred among the various specialities involved. On the opposite, the E3P allowed to highlight these weaknesses and indicated some specific scientific programmes to be set up as priorities.

One of the main concerns regarding water pollution by animal effluents in the Red River delta is probably human (but also animal) health issues which were not taken into consideration by the project investigations. The E3P and the produced diagnostic tool are clearly oriented on the quantification and the management of animal effluents. Nevertheless, thanks to the high human population densities, thanks to the lack of used water management system, thanks to the imbrications of animals and men, human health is rightly highlighted in the project document as the most important danger coming from the animal production development. The E3P would have been fully justified as a support component of a human health or a water sanitation project. On the same way, animal health risk analysis of the current practices of effluents management would have been fully justified within an epidemiological project. The avian influenza crisis (which started apparently in Thai Binh Province in Vietnam) strengthens this consideration. It was not possible within the framework of such a short and a limited funded project but these two fields have absolutely to be also investigated to justify and to design further investments for animal effluents management.

The E3P design proposed also to undertake some extension activities directly to farmers (training sessions, TV broadcasting). This was clearly not the job of a diagnostic project and the project duration was clearly too short to produce both the scientific conclusions and their extension. Even if the project fully succeeded to transfer knowledge to Vietnamese scientists and to decision makers, the broader extension was not relevant in the E3P framework.

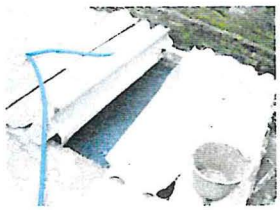
II.2 Efficiency

The E3P activities were generally very efficient to obtain the expected results. As far as the four planned results were obtained, he E3P activities may thus be also considered as properly implemented.

The relationships with local Authorities and their availability were good. Farmer cooperation and counterparts' involvement were effective. The remote sensing data were available. These main assumptions at this level were thus fulfilled.

The activities even overran those initially planned. Namely the project produced a NIRS calibration for manure and a quick environmental (pollution) risk assessment methodology at farm level; the PACT was transferred to local institutions. All these extra inputs were nevertheless useful and relevant for the E3P implementation. They would thus have been considered since the project design and their implementation must be considered as good project adaptations.

For the reasons mentioned here above the training activities were not fully efficient and broadly speaking the project didn't succeed to extend its training to the farmers who are considered as final beneficiaries (see result N° 3). Moreover the lack or weakness of some data (e.g. technical references for the use of manure as fertilizer) jeopardized this set of planned activities. Nevertheless, according to the broad transfers operated to local partners and national scientists, we can consider that all the stuffs are in place. The additional inputs may be considered as coming from other sources (investigation to be conducted on the fertilizing power of manure). The extension tasks are now those of the local staffs in charge of extension activities and trained by the project; we thus can expect that they will be executed later on by themselves.



As far as there is no effluents treatment in place for the project purpose (transport and spreading of effluents to the areas where they are lacking), there is not an important trade of these animal effluents. The economical investigations don't thus appear to have been very efficient for the expected results. They have been properly and successfully implemented and the work done is not the concern. Nevertheless, before to work on

the setting up of a new commodity chain we need to secure and standardize the product and its uses. It means that these investigations and this kind of inputs would be more efficient as soon as some pilot schemes for effluents treatment will be in operation.

Two crucial other sets of activities look also to have had limited efficiency thanks to the lack of knowledge and/or management decisions: the investigations of fertilizing uses for crops and those in aquaculture. They produced both enough standard data to allow the baseline references (result N°1) and the GIS tool (result N°2). Nevertheless, the effective fertilizing power of manure looks quiet far from its potential (chemical value) and the technical references for accurate advice on their uses as fertilizer are lacking within the Vietnamese context. For aquaculture species choices and pond management look not fully relevant with the local conditions and the performance of animal effluents use is thus not optimized. It is clear that improved knowledge and management in these fields may allow more accurate baseline reference and may optimize the GIS tool produced.

It is thus important that the results of further investigations or changes in practices will be introduced in the tool. This tool evolution will probably require some additional external supports (when opportune) as far as its setting up is not fully acquired by the local scientists. The E3P workshops look indeed to focus more on results dissemination and information than on training.

II.3 Efficacy

The accountability of environmental issues of pig production intensification looks thus to have been effectively done trough the project products and results for policies makers and Cy. For the farmers, we may expect that it will be done in the near future trough the extension to be done by Provincial and communal staff after its introduction into the local policies. For the organisations oriented toward an industrialisation process it also may be expected to be effective with the combined sensitisation by Authorities and the Cy. The project efficacy may thus be highlighted. The main assumption mentioned, which was the understanding and the concern of stakeholders, can be considered as fulfilled.

Nevertheless, such a sensitisation and an improved accountability don't make sense if we can not propose adequate technical responses co-constructed with concerned stakeholders. Regarding the potential solutions the E3P final publication emphasizes the existence of various potential processes and their high probability to be adaptable to local conditions. It also underlines that these adaptations need to be tested on pilot plots and that some specific investigations and researches (see II.2 above about fertilizers and aquaculture) need also to be implemented. To be efficient the proposed solutions have to cover three different situations: i) small farmers' associations within a village, ii) individuals using biogas as a first step and iii) bigger industrialized plants in specific zones out of the villages. These situations were the specific requests of the Provincial Authorities and the mission approves their analysis.

The involvement of the farmers has been efficient to gather all the field data but they didn't benefit of the training and specific technical support as expected (see justification above). Nevertheless the stakeholders, notably the farmers, have been largely consulted within the framework of the perceptions analysis of the effluent management in the Thai Binh Province. Through this consultation, they provided a lot of information related to their practices and to their perception of the situation and issues, which contributed to the elaboration of the final products.

The perception analysis through the PACT method enhances and hierarchies various type of problems linked to the pig effluent production. It is clear that the human health and environment deterioration are the most important causes for concern.

Indeed, the activities related to the PACT method have been efficient within the limit of a diagnostic project. If the institutional analysis and possible ways of initiating a process of change

were performed by the project, concrete actions remain to be implemented within the framework of another project. The issues revealed by the PACT method could be from today studied by local actors in order to initiate and draft socially acceptable solutions in terms of economy and organisation (time, work, hardness,...) .

However, these ways of organisation and co-construction of new practices cannot be isolated of technical input issued of the pilot plots. Moreover, the technical practices to be tested within the three pilot plots are linked to social conflicts, land tenure and land use (access and availability) pressures. In consequences, these two components should be implemented together with team working in close collaboration even if these actions could be initiated at different time.

Lastly, as also mentioned above, an answer will be efficient only if it is economically attractive, sustainable and socially adopted. The adequate and efficient commodity chain of treated animal effluents setting up is thus conditionality for success. Such a commodity chain can not be created by decrees or rules but is strongly linked with private sector's interest even if it will probably need some legal supports. Some more investigations in economics and probably some more advices regarding policies will be required as soon as the technical solutions will be identified.

Although such a project may be considered as a success according to its design, these considerations illustrate clearly the limits of the funding tool: for a short period and disconnected from any development fund as mentioned in § II.1. The two main risks in terms of efficacy are thus that i) the scientists are unable to propose adapted technical solutions and ii) the targeted beneficiaries are unable to mobilize external funding to implement the solutions.

II.4 Impacts

The project worked in a limited Province and was probably in its designers' mind considered as a step to the proposal of solutions and the test of a new policy at the same scale. Nevertheless, 17

other Provinces are also involved in the Red River delta management as mentioned in the project proposal. Moreover, other areas have concerns with animal production intensification and waste management for water protection in the central Provinces and in the South of Vietnam (HCV and Mekong Delta). Actually, the animal production intensification is a strong trend all over Asia, driven by an increasing demand for animal products. This raising demand is linked to the increase of GDP (incomes), the urbanisation process, the decrease of food prices and the changes in nutritional habits. These trends and processes have been described, documented and analyzed by IFPRI and is now commonly adopted by the economical community under the label of the "Livestock Revolution". The E3P concerns are thus also those of Southern China, South East Asia broadly speaking, Indonesia, Philippines, etc. Moreover, the E3P result was set up on the basis of pig production but is able to integrate poultry, cattle, buffaloes and human effluents.

As such the diagnostic and modelling tool produced by the E3P is of great interest for this huge area and may have very important impacts, bigger than those initially planned. Nevertheless the tool has to be simplified and standardized with regards to the acquired experienced during the E3P in order to be adaptable and transferable out of the Thai Binh Province. This work has to be done in parallel with the search of solutions in the Thai Binh Province in order to optimize the project impact. The E3P impact would thus be potentially enormous. Moreover such a tool may also be very reliable for the environmental monitoring of the development projects involving animal production all over the country and South-East Asia.

Indeed, the environmental problem cannot be treated and solved at a provincial level. It is therefore important to integrate and customise the decision making tool within project development implementation in other concerned areas which could highlight the livestock production consequences and the environmental situation at a larger level. Moreover, the

recommendations issued of the scenarios analyses should be taken into account and integrated at a national policy level in order to be translated into decrees or rules applied on the field.

Lastly, it is clear that the use of such a tool is strongly linked to the accessibility of reliable information and the collaboration of local authorities and beneficiaries as mentioned as assumptions in the E3P logical framework. The broadening of the impact is linked to the same assumptions. But the success in one Province would be a good and convincing argument. Besides the re-shaping of the diagnostic and modelling tool, it is thus also important in terms of impact to succeed with the proposed solutions.

With these two conditions, a proper dissemination would probably ensure an up scaling and a great impact to the E3P results.

II.5 Sustainability

As far as the "Livestock Revolution" will go on, the E3P results and the diagnostic/modelling tool will remain pertinent. The trends on livestock development in Asia are supposed to be strongly effective for at least the twenty next years. The E3P tool would thus have a really sustainable interest.

The risks mentioned in the E3P logical framework (Economic crisis, political instability, natural disasters and epidemic outbreak) would of course jeopardize the E3P results sustainability. But if they happen all the development strategy would have to be reviewed. Moreover the trends mentioned as the basis of the "Livestock Revolution" are supposed to be very strong even if some delays may occur. IFPRI has tested some scenario (like economic crisis) and showed that the trends would remain into force.

Nevertheless, besides the monitoring of environmental effect of livestock development, the project findings have to be recognized at the highest political level to be adopted broadly and to be thus really efficient on a sustainable way. To do so the mission is convinced that it has to be associated with effective solutions to the problems monitored and modelled. The next phase in the Thai Binh Province (still to be funded), which has to adapt existing technologies to solve the constraints and to test them within local conditions, is thus of crucial importance.

Even if the local authorities' sensitisation succeed, the sustainability at a policy level cannot be effective if not integrated in national's environmental regulations and policies. Moreover, taking the emergency to manage the intensification of pig production within its environmental and socio-economical global context, the national authorities should rapidly take suitable measures to be applied on the field, notably by the whole concerned stakeholders.

Regarding the final beneficiaries (the populations living within the areas under an intensive livestock development) it is clear that the main concerns are finally human health with the provision of good quality water and animal health with the prevention of epidemic diseases including zoonosis. The mission is thus convinced that the E3P approach has to be integrated in a broader framework to be really effective and sustainable.

Lastly, if the results are quiet well disseminated within the Vietnamese scientific community, the transfer of knowledge would have been completed in order to ensure the sustainability. Training has been provided on GIS technologies but the modelling process not yet. Moreover the data base built up during the E3P is still belonging to the French partner. The transfer of this material should improve the institutional sustainability, although the mission considers that the project really succeed in terms of institutional reinforcement, human resources and curriculum development (research and academic trainings, teaching, technical transfers, field missions, etc.).

In conclusion, the mission estimates that the sustainability of the project is broadly effective at a financial, institutional and policy levels.

III. Conclusions and Recommendations:

The E3P is considered as a success: the planned results and purposes were raised. The overall objective is partially obtained with the policy makers' sensitisation on animal effluents management for environmental protection; it is clearly too early to have already obtained secured investments for this purpose which are the second part of the overall objective.

The multidisciplinary approach and the two scales of work (Province and Commune) are considered as particularly relevant and are clearly the E3P strengths. They are the basis of the success of the E3P. This concept has nevertheless faced some difficulties due to the lack of basic data (fertilizers), some mismanagement habits (aquaculture) and the difficulties to anticipate the proposed solutions effects (economics).

The evaluation recommendations are thus both:

- **To simplify and standardize the methodology in order to allow its dissemination in other areas.** This part of the job may be done with the lessons drawn from the E3P, by the scientists involved and without any specific additional input.
- **To go on with the researches identified as necessary to clear the bottlenecks in order to improve the tool produced by the E3P (fertilization with manure, aquaculture) and in order to facilitate the solutions which will be proposed.** The requirements, the capacities and partly the protocols and methodologies have been identified during the E3P implementation. Their implementation request additional financial support which can be assumed separately by discipline or within a same big research project. The necessary amounts are probably not very important.

The project results were quiet well disseminated among the stakeholders and the French and Vietnamese scientific communities. Nevertheless the project design made the provisions for the dissemination among the extension services and by this way to the farmers. This was not effective. The evaluation mission considers that i) scientists are certainly not the most appropriate to assume this kind of dissemination, ii) all the elements are in the hands of the relevant local Authorities to assume this dissemination if opportune and iii) a diagnosis and modelling tool for policy makers is probably not the best material to support messages to the root level. The recommendation is thus for this kind of project **to avoid the dissemination of the results to final beneficiaries (farmers) under the scientists' responsibility and to let the local Authorities and/or the extension services to manage this issue if they consider it as opportune.**

The entry gate for the animal effluents management and environment protection was the very important development and intensification of the animal production in Thai Binh Province. But the main identified risks of these growing quantities of effluents were water pollution and its consequences for human health. The same mention was done for the risks for animal health with epizootics and by this way also human health with zoonosis. The E3P issues are thus not only livestock issues and are critical for human and animal health (see avian influenza). The recommendation is **thus to disseminate the E3P results among the responsible in charge of human and animal health in order to establish with them common research and application programmes.**

The E3P products is mainly a tool for the diagnostic of the effluents produced by all the species, for the capacities of the surrounding environment to absorb smoothly these effluents including with exchanges among the neighbouring areas and for the modelling of the trends of the environmental problems of effluents generated by the animal production intensification. This tool is in itself very relevant and efficient for the whole South-East Asia and during decades. It can also be very useful for the environmental monitoring on a lot of livestock development project projects in Asia. The evaluation mission recommendation is thus that after the simplification mentioned here above **this tool has to be presented to all the stakeholders involved in the development (Ministries,**

funding agencies, Ngo's, consulting firms...) as a real expertise acquired by the E3P and available for further uses.

The critical point of the E3P is that the problems highlighted are not solved. This was a diagnostic and research project with a limited time (1 year) and funding (0.5 M€) framework. Besides the planned tool for diagnostic and modelling the E3P only identified the potential solutions for the problems. These solutions have still to be adapted and tested under local conditions; that is clearly the willingness and the commitment of local decision makers. It is also evident that the E3P impact will be totally relevant, efficient, recognized and sustainable only if the tool set up may be associated with adequate and proven solutions. But the funding support to finalise these solutions doesn't exist yet even if the strong request from local Authorities has been generated. The evaluation mission recommendations are thus:

- **For the scientists and the local Authorities, i) to prepare together and to present for external funding sources the project of applications/solutions to be tested on the field, as already identified during the E3P and ii) to develop all the possible joints efforts to gain this external support whatever is its origin.**
- **For the EU, to identify for programmes or lines similar to Asia Pro Eco links or procedures which allow the valorisation under the other European cooperation programmes of the results obtained.**

IV. Annexes

Annex 1 - Terms of reference

INTERNAL EVALUATION OF THE ENVIRONMENT PROTECTION & PIG PRODUCTION (E3P) DIAGNOSTIC PROJECT VN/Asia Pro Eco/02(91211)

1. BACKGROUND

The Asia Pro Eco Programme is a five-year European Union initiative, launched in 2002, based on the experience and the inputs provided by the Asia Eco Best Programme. With a budget of €31.5 million, the main target is to adopt policies, technologies and practices that promote cleaner, more resource efficient, sustainable solutions to environmental problems in Asia. The Programme provides support through grants to policy reinforcement, operational & practical dialogue, diagnostic studies, technology partnerships and demonstration projects in the field of the environment. The implementation will concentrate on specific projects under the Call for Proposals mechanism accessible to public or non profit organisations in Asia and the EU.
The E3P project is located in an overpopulated rural province of Northern Vietnam, and aims to design a Geographical Information System (GIS) as a diagnostic tool dedicated to the pig production's development; it will assess the surpluses of animal wastes, the needs for nutrients by crops and fish ponds, and it will define the more reliable manure management and technologies' options. This diagnosis will support the agricultural production intensification as an income-generating activity in rural areas and protect threatened environment and natural water resources in deltaic area.The project addresses policy makers responsible for agricultural development policies at the national and provincial level, and involves the provincial livestock breeding company, farmers and producers organizations. The main activities will be benchmarking works and surveys focusing on local intensifying agricultural systems, with a spatialized and pro-active approach of the pig, crops and aquaculture production sectors. A preliminary appraisal of appropriate pig manure processing and Training program are also planned.

2. DESCRIPTION OF THE ASSIGNMENT

BENEFICIARIES

Targeted groups are:

- **Provincial services in Thai Binh**, as policy makers responsible for the provincial agricultural development plans, investments and regulations; **Agricultural Department** and **Natural Resources and Environment Department** are concerned.
- **Provincial animal production company** as an executive structure responsible for extension, production's organization and marketing; and
- **Farm households** as basic units with whom every activity will be carried out. Considering the large and traditional implication of women in **pig, fish and crops** production, women are especially targeted in this project. One hundred (100) farrow-to-finish pig farmers are now identified by the MARD 2003-2006 project, 60% of the existing producers are women (with an average age lower than 45). In addition, 400 new farmers, especially young entrepreneurs, will be involved directly. Indirect beneficiaries will be the other small-scale producers of the 9 districts already involved in the intensification process through individual initiatives. By focusing on rural development and protection of natural water, indirect beneficiaries are the 1.8 millions of people from Thai Binh province who are strongly dependent for water supply on these natural water resources; this problematic is also relevant for the 18 millions of inhabitants of the Red River Delta's provinces.

GLOBAL AND SPECIFIC OBJECTIVES

The growth of the pig production foreseen by a 2004-2007 Vietnamese-funded development project in a overpopulated province of Northern Vietnam (Thai Binh in Red River Delta) occurs with a minimum environmental negative impacts on natural water resources. The project purpose is to improve the accountability of socio-economic and environmental performances in the pig production sector in Thai Binh and its possible links with crops and fish production by provincial

and national policy makers, farmers and production organizations oriented toward an industrialization process.

REQUESTED SERVICES

Evaluation experts are intended to:

- implement an internal evaluation of the studies, results and outputs regarding the initial action framework;
- evaluate the project functioning and internal management of activities;
- Produce reports and synthetics papers.

EXPECTED RESULTS

The expected results will be a detailed report that provides detailed evaluation of the implemented studies and obtained results regarding the initial working plan and activities" frameworks.

3. EXPERT'S PROFILE

EDUCATION, EXPERIENCE, REFERENCES AND CATEGORY OF THE EXPERT

PhD experts with a previous expertise in Agricultural & Livestock production systems in Tropics.

WORKING LANGUAGE

English is the working language of the ASEAN countries and therefore all team members should be proficient in English. French language is an additional asset.

4. LOCATION AND DURATION

STARTING & FINISHING DATE OF THE ASSIGNMENT

The project will start on March 1st, 2005 to February 28th, 2006. Extension has been accepted till June 30th 2006.

SCHEDULE AND NUMBER OF DAYS FOR THE ASSIGNMENT PER EXPERT

Internal evaluation will occur in the field from June 23 to 28th, 2006.

Working schedule will be defined after a preliminary work with the supervision team, but, are already planned:

	Morning	Lunch	Afternoon
J0 : 23 juin	-	-	18:45 Arrivée à Hanoi par le vol AF 174 Installation à l'hôtel
J1 : 24 juin	10:30 Séance de travail avec V. Porphyre		Préparation visites
J2 : 25 juin	Trajet Hanoi -TB (3h) Mission terrain Thai Binh / visite d'exploitation, Vu Thu district		Mission terrain Thai Binh / visite d'exploitation, Thai Thuy district Nuit sur place
J3 : 26 juin	Réunions avec les responsables de la Province, des Districts et des Communes		Retour sur Hanoi (3h)
J4 : 27 juin	NISF, Dr Tran Duc Toan		Univ. S&Techno, Pr Pham Van Cu
J5 : 28 juin	RDV EC, Anne Claire LEONG RDV AFD, Didier Baillet		P.Salgado, JC.Maillard, Debriefing G.De Taffin / 20 :00 retour, vol AF

LOCATION OF THE ASSIGNMENT

The short-term missions will include Hanoi and 2-days field trip in Thai Binh province.

5. REPORTING

CONTENT, LANGUAGE, FORMAT AND NUMBER OF REPORTS

A report will be prepared in English language and in electronic format

DATE OF SUBMISSION

The report and synthetic papers will be submitted to Vincent Porphyre, co-supervisor of the project, before July 15th 2006.

Annex 2 – Persons met

Name	Position	Organism
BAILLET Didier	Chargé de mission	AFD
GERLACH Dirk	Team Leader – Rural Development & Environment	ECD
GIRARD Pol	Consultant	ADP II identification
NGO HONG NAM	Vice president	Popular Comity - Commune of Vu Thien
NGUYÊN DUY HINK	Director	Chamber of agriculture of Thai Binh Province
NGUYÊN HIEU KONG	Vice president	Department of agriculture Thai Binh Province
PORPHYRE Vincent	Co-Director of the Environment protection & pig production (E3P) diagnostic project	CIRAD
THIN	Extension services	Thai Bihn Provincial Animals Breeding Joint Stock Company
TOAN	Head of veterinary services	Commune of Vu Thien
TRAN DUC Toan	Vice Director	NISF
TRAN DUY KHANH	Director	Thai Bihn Provincial Animals Breeding Joint Stock Company
TRINH QUANG HIÊP	Vice President	Thai Bihn Provincial Animals Breeding Joint Stock Company
VU CHE KONG	Director	National Intsitute of Animal Husbandry (NIAH)
NGUYEN QUE COI	Co-Director of the Environment protection & pig production (E3P) diagnostic project	NIAH

Annex 3 – Time schedule

Date	Activities
23 June (Friday)	Arrival in Hanoi at 18h45 with flight AF 174
24 June (Saturday)	E3P Co-supervisor, Vincent Prophyre : work session to organise the mission and the field visits
25 June (Sunday)	Trip Hanoi-Thai Binh (3 hours) / Various field visits (farms, semi-industrial exploitations, etc.) Vu Thu and Thai Thuy Districts: - Tran Duc Toan, Vice Director, NISF - Trinh Quang Hiêp, Vice President, Thai Bihn Provincial Animals Breeding Joint Stock Company - Thin, Extension services, Thai Bihn Provincial Animals Breeding Joint Stock Company - Ngo Hong Nam, vice President, Popular Comity - Commune of Vu Thien - Toan, Head of veterinary services, Commune of Vu Thien - Vincent Prophyre, E3P Co-supervisor
26 June (Monday)	Meeting with the local authorities (province, district and communes) : - Tran Duy Khanh, Director, Thai Bihn Provincial Animals Breeding Joint Stock Company - Trinh Quang Hiêp, Vice President, Thai Bihn Provincial Animals Breeding Joint Stock Company, Department of agriculture Thai Binh Province - Nguyên Duy Hink, Director, Chamber of agriculture of Thai Binh Province - Nguyên Hieu Kong, Vice President, Trip Thai Binh-Hanoi (3 hours)
27 June (Tuesday)	Meeting with the partners institutions : - VU CHE KONG, Director, NIAH - NGUYEN QUE COI, Co-Director of the Environment protection & pig production (E3P) diagnostic project, NIAH
28 June (Wednesday)	Meeting with Didier Baillet, chargé de mission, AFD Debriefing with Dirk GERLACH, Team leader and Hoang THANH, Programme Officer – Rural Development and Environment Co-operation Section, EC Delegation Meeting with Pol Girard, consultant, ADP II Project identification Debriefing with the CIRAD team
29 June (Thursday)	Departure to Paris

Annex 4 – project logical framework

Overall objectives	The growth of the pig production foreseen by a 2004-2007 Vietnamese-funded development project in a overpopulated province of Northern Vietnam (Thai Binh in Red River Delta) occurs with a minimum environmental negative impacts on natural water resources	The provincial policy makers are alerted about the environmental issue and support farmers through direct consultation and collaboration, investments plans and environmental regulation Investments in manure processing technologies and specific training programs are focusing on environmental protection through a cleaner and integrated farming system at the farm and provincial level.	Monitoring against water pollution and pig production growth statistics available in the province (i.e. publications, official reports, information systems on water quality and pig development, banks and credit agencies)	*Accessibility to reliable information and data, and co-operation with beneficiaries, administrative and extension services are a critical prerequisite.* *The following risks have to be considered: Economic crisis / local political instability / natural disasters and especially floods / epidemic outbreak*
Project purpose	Improved accountability of socio-economic and environmental performances in the pig production sector and its possible links with crops and fish production by provincial and national policy makers, farmers and production organizations oriented toward an industrialization process	Benchmark for Production / Demand for animal waste nutrient (maps, baseline studies) Different preliminary scenarios of future development / GIS / Atlas / Training workshops / recommendations for cleaner breeding & feeding systems	Publications / Workshop with stakeholders / Final technical report / Project website and MARD website (http://www.agroviet.gov.vn)/ Persons trained in province and in partner institutes / National & provincial TV/ Information Center of MARD (ICARD)	*Understanding and being concerned for stakeholders*
Expected Results	1) **Baseline references** on local pig production systems, crops and fish ponds requirements for OM, stakeholders in concerned commodity chains, and general situation in the studied area;	Provincial services and animal production company recognise and accept the diagnostic results and use them as a basis to develop long term strategies based on improved environmental performances	Publications Final technical report	
	2) a **ProEco/GIS gathering collected data as a static decision support tool** to appraise balance between impacts of current and possible development strategies for intensified pig production in the province;	Provincial policy makers acknowledge, test and use GIS as a decision support tool to define pig development plans and support investments; Results generated by the project is incorporated into the current planning process for the provincial pig production development program funded by the Vietnamese Ministry of Agriculture; Information is widely disseminated and used in decision making and planning.	Final conference Provincial and national master plans	

	3) **Technical specifications, Training & curriculum reinforcement program** for local partners and project beneficiaries about "environment and animal production"	Training workshops in Hanoi and in Thai Binh / Moreover, stakeholders start requesting information or acknowledging its value in a decision they made **in their farming system**	Farmers & Workshop proceedings / Partners and beneficiaries trained during the project / Project Website where the technical sheets will be available to download	
	4) An illustrated atlas to extend the results of the project to a wider public	300 Atlas in paper version	Illustrated Atlas & its wide diffusion to partners & instit.	
	The ***Provincial authorities*** have a better accountability of the **current situation of the environmental/animal development issue and support environmental measures to protect environment** The ***Animal production company*** has at its disposal the more reliable specifications about **manure management and technologies** to reduce the quantities of animal-waste and limit the pollution ***Farmers*** take into account in their production system of possible innovation in nutrition, zootechnical practices, investments in manure processing & storage, economic strategies for pig-crop-fish integration or spreading sustainable programmes. Managerial and technical capacities of local institutions, farmers and partners improve on environment protection and especially with a integrated animal wastes management	An **environmental directive is** introduced at the province level to regulate the swine development growth considering environmental impacts / **Environmentally-friendly investment plans are proposed to farmers** **Animal production company** uses the project's results in their extension activities, farmers training and development programs **Training materials** (1000 items) and **technical specifications are used and meet the demand of farmers**	Project progress reports to the donor / steering committee comments / project planning meetings: internal review / external review; /analytical results reports / Website frequenting;	*Policy and legal framework for multiple stakeholder interactions exist and are in place to encourage networking and dialogue* *Information that exists is readily available and uncensored; and stakeholders are willing to invest in training and uptake interest of a monitoring network* *Stakeholders' consultations are intense and awareness of project purpose and output high in the selected province. Further we assume that there will be a high level of cooperation based on existing networks individual partners*

Activities	**Activity 1 : Baseline study on Animal waste organic matter production by pig farms and existing pig manure treatment technologies**			
	A1.1 – Preliminary census and an official data at the level of the province A1.2 – Field Data collection a. characterisation of the swine population, farming systems / construction of an operational typology / assess the opportunity costs / quantify each pig farmers' categories at the provincial level b. Benchmark for existing manure technologies / Analyse of rejected effluents c. Collective identification of individual constraints / Pro-Active Conciliation Tool (PACT) method	***Personnel:*** *salaries (local)= 4800€ / Salaries (external)=93300€ / Salaries (junior expert) = 2400€ / Translators=6000€ (+coordination) + PD in Vietnam by local staff = 1540€ +* PD by external staff=2970€ + Travel int. = 9000€ ***Budget:*** *Equipment and supplies=6128€ / Local office and transportation means (project vehicle)=23200€ / 1 training workshop* on Environmentally-friendly breeding management & animal manure technologies *(100 farmers, 50% are women) = 1000€ / Analyses of rejected effluents = 1000€/* ***Deliverables:*** *official statistics' analysis* and georeferenced census of the existing pig farm-units and expected/possible development areas / *Operational typology* and distribution of different pig farmers' categories at the province level / *current manure technologies / Specifications on pig manure quality* and influence of current manure technologies and practices / PACT report on local stakeholders perception of the environmental issue*:*	***Project's website*** */ mid-term and final reports* *final seminar / SC reports /* ***project Atlas***	*Good relations between Vietnamese counterpart in the project with provincial administration; and the availability of trained counterpart personnel at the provincial level.* *Farmers cooperation in the interviews; good existing networks exist between project personnel and project beneficiaries to allow for easy access to information and cooperation; availability of trained counterparts*

	Activity 2 : Demand and requirements of nutrients for crops and for aquaculture - Economic and technical diagnostic in Thai Binh province			
	A2.1 - Space distribution of the crops and the fishponds A2.2 – **Surveys and expert interviews** to collect relevant data on fish and crops production systems; A2.3 - Farming scale requirements for the crops and for nutritional needs for aquaculture A2.4 - **cost/benefit analysis** for pig manure vs commercial mineral fertilizers and fish feedstuffs A2.5 - Identify the spreading area	***Personnel:*** ***salaries (local)= 7200€ / Salaries (external)=43200€*** */ Salaries (junior expert)=3600€ /* ***Interpreters=3000€ / Perdiems in Vietnam by local staff = 2540€ / Perdiems by external staff=5544€ / Travel intenational = 10500€*** ***Budget:*** ***Equipment and supplies=4728€ / 1 workshop = 1000€ / local office & transportation = 4800€*** ***Deliverables:*** ***Baseline studies*** *on aquaculture and crops spatial features and requirements in the province* *200 Technical sheets on feed and fertiliser procurement = 200€ / 200 technical sheets on management of animal wastes for fish pond manuring* *2* ***training workshops*** *on "animal waste use in aquaculture" & "specifications of animal waste fertilizers", with 100 farmers and fish producers from Thai Binh.*	*Baseline study on aquaculture and crops spatial features and requirements in the province.* *Publications on crops requirements in organic material* *Publications on nutritional requirements& production systems in aquaculture*	

Activities	**Activity 3:** Spatial analysis **and Representation of current & possible animal-waste organic matter's flows at the provincial level**			
	A3.1 - Remote Sensing and Land Use Mapping	***Personnel:*** *salaries (local) = 4800€ / Salaries (external) = 40700€ / Salaries (junior expert)=1200€ /PD in Vietnam by loc. staff = 400€ + PD by ext. staff=2960€ / Travel int. = 4200€* ***Budget:*** *Equipment and supplies=6028€ + 1 training workshop in Vietnam (5 counterparts) = 1000€ / ASTER & LandSat images = 8450€ / software licenses = 4500€ / **local office & transportation = 3200€*** ***Deliverables:*** *static GIS / 10 Thematic Maps / Landuse evolution map of the region / Scenarios for an environmental-friendly development of pig production*	*Publications / Trained counterparts / project Atlas / final conference*	*Remote sensing Data and maps are available in Vietnam*
	A3.2 - Mapping of organic matters production sites			
	A3.3 - Construction and implementation of static GIS			

Annex 5 – Evaluators

1. **Family name:** **RENARD**
2. **First names:** **Jean-François**
3. **Date of birth:** 13/07/1955
4. **Nationality:** Belgian
6. **Education:**

Institution [Date: from – to]	*Degree(s) or diploma(s)obtained:*
Université Catholique de Louvain–IAG–Belgium: 1997-2000	Postgraduate diploma in management
Faculté universitaire des Sciences agronomiques de Gembloux - Belgium: 1973-1978	Agronomist (engineer) specialised in livestock production

7. **Language skills:** Indicate competence on a scale of 1 to 5 (1 - excellent; 5 - basic)

Language	*Reading*	*Speaking*	*Writing*
French	Mother language		
English	2	2	3

10. **Present position: Business Development Manager of CIRAD-EMVT / Livestock expert**
11. **Years within the firm: 7**
12. **Key qualifications:** (Relevant to the project)

Identification, study, supervision, evaluation, organisation and management of livestock projects, rangeland management projects, farms and rural development projects;

Agrostology and tropical livestock sector / Economy of livestock productions in the tropics / Management of agro-industrial plants / Analysis surrounding factors, both technical and socio-economical, relevant to development programmes or investments in livestock / Research management and development in livestock sector for tropical areas

14. Professional experience

Date:	*Location*	*Company*	*Position*	*Description*
Since Mai 1999	France – Worldwide	CIRAD-EMVT	Business Development Manager	• Business development of research in animal health and production for tropical areas • Short term expertise's • Teaching & research in tropical livestock production
1999	Belgium	Free lance consultant	Expert	Various expertise's on short term basis
1980 - 1998	Congo & Belgium	Compagnie Jules Van Lancker	Livestock manager / general technical manager	Technical responsible technique for the company own farms and for the company consulting activities
1978 – 1980	Gembloux (Belgium)	Faculté des Sciences agronomiques	Assistant professor	• Training and researches on nutrition, zootechny, and tropical forages management • Teaching and research in tropical livestock production

Specific experience in non-EU member countries:

Country	*Date:*	*Name and brief description of the project*
Vietnam, Burkina Faso, Madagascar, Cabo Verde, Ivory Coast, China, Maurice, Senegal, Mali, Chad, Kenya Ethiopia, Zimbabwe, Sudan, Cambodia, Burundi, Rwanda, Gabon, Congo, Zaïre	1981 up today	35 technical missions and expertise's (short term assignment) in all the fields mentioned in § 12 (List on request)
Lao PDR, Cabo Verde, CAR, Burundi, Burkina Faso, Ivory coast, Gabon, Guinea Conakry, Mali, Congo, Zaïre	1982 to 12/98	Technical and organisational management of 14 development projects (livestock & rural development sectors), list on request, including a lot of technical support missions & backstopping to the TA teams
Congo Kinshasa	12/80 to 12/90	Ranch de Kolo & Ranch de Mushie: technical management of extensive beef production, pig & poultry farms & cultivated forage production management
Togo; Guinea Conakry	78-79	2 missions (6 months) for the feasibility studies of ranching projects

1. **Family name:** **VANDER STUYFT**
2. **First names:** **Sandra**
3. **Date of birth:** 12/04/1973
4. **Nationality:** Belgian
6. **Education:**

Institution [Date: from – to]	*Degree(s) or diploma(s)obtained:*
Université Libre de Bruxelles – Belgium : 1995-1996	DEA in social sciences.
Université Libre de Bruxelles – Belgium : 1995-1996	Agrégation en sciences sociales et politiques
Université Libre de Bruxelles – Belgium : 1991-1995	Master in social and cultural anthropology

7. **Language skills:** Indicate competence on a scale of 1 to 5 (1 - excellent; 5 - basic)

Language	*Reading*	*Speaking*	*Writing*
French	Mother language		
English	1	2	2
Spanish	1	3	3

10. **Present position: Business Development Manager / Socio-anthropologist**
11. **Years within the firm: 3**
12. **Key qualifications:** (Relevant to the project)

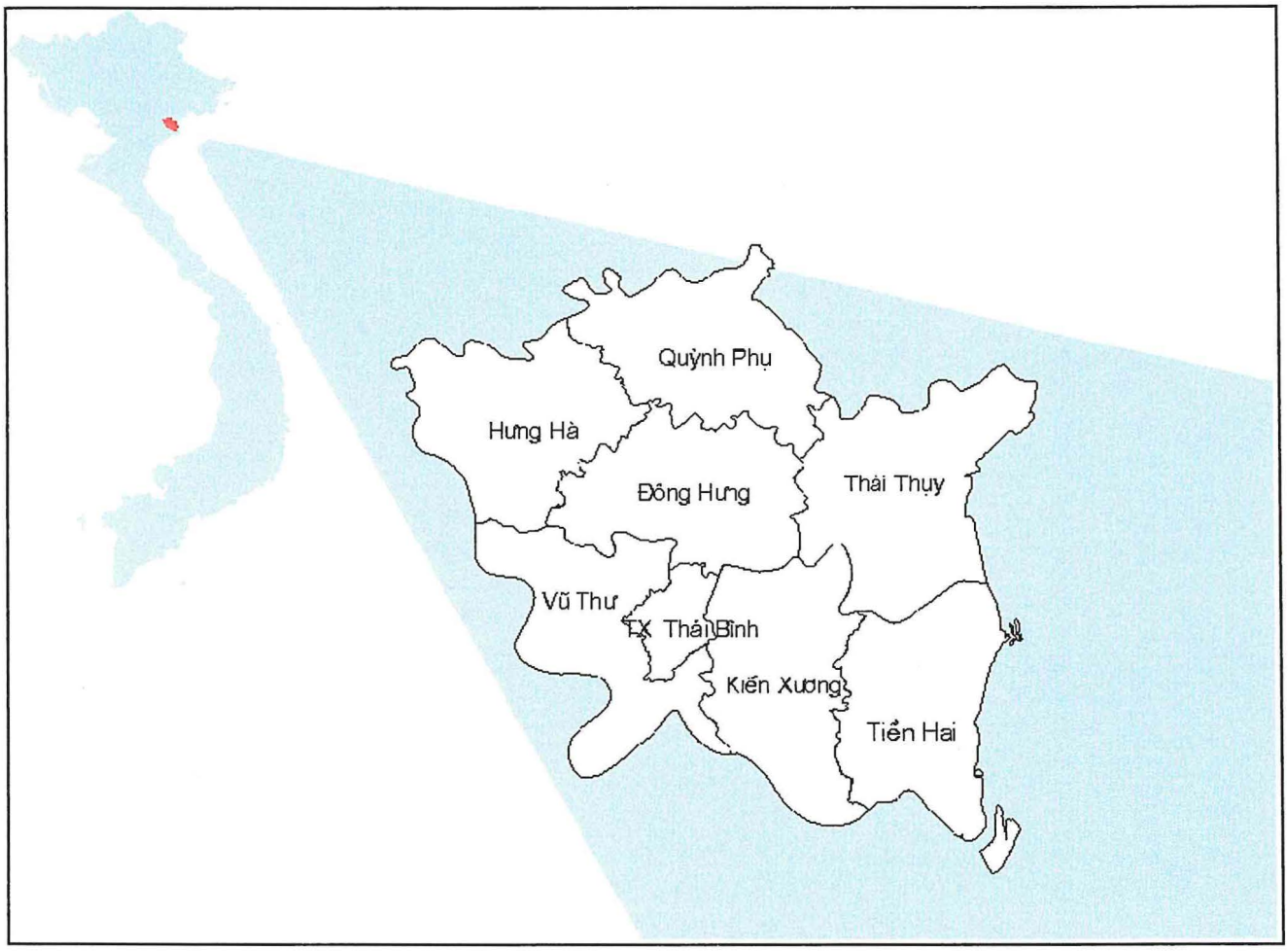
Administration and management : Knowledge of EC procedures, office and financial management, budgets, production of work plans, preparation and updating of annual project work plans and budgets ; Human resources management, Project design, preparation, implementation, management and evaluation (ex-ante, mid-term, final)

Socio-anthropological surveys: Needs and constraints analyse of the local populations (protected areas, buffer zones...). Socio-economics impacts studies, perception analyses.

14. Professional experience

Date:	*Location*	*Company*	*Position*	*Description*
Since July 2003	France – Worldwide	CIRAD-EMVT	Business Development expert / Socio-anthropologist	• Conception of project – Financial and managerial support to the searchers. • Ex-ante, mid-term and final evaluations of socio-economic development projects.
2000	France - Worldwide	SECA	Project officer	Tenders preparation – Experts follow-up – short term missions organisation – Project and Human resources management
1999 – 2000	Belgium	EC-SCR/B	Project manager	Project management funded under Environment and Tropical Forests Budget lines and EDF.
1999	Cameroon	EC - SCR/B	Project manager	Administrative and financial review of the KORUP and Forestry resources management projects / Backstopping missions.
1999	Gabon/Eq Guinea	EC - SCR/B	Project manager	Smallgame farming project review (Gabon) Insitutional review of the PRGIE Project.
1998 – 1999	Belgium – Botswana	Tractebel Dev S.A. / EC DG VIII & SCR	Anthropologist	Environmental & tropical forest projects management Field missions & review: natural resources management in Serowe; assessment of the San livelihoods in the Central Game Kalahari Reserve : Sustainability review
1997 – 1998	Belgium	Catermill Int / EC DG IA and DG XXIII	Assistant	*Action for Cooperation in Economics Programme*: Processing of information requests - Phare & Tacis; Euro Info Centre Network : Support to the Information Officers in the field of cultural European policy & external cooperation
1996	Bolivia-Peru	ULB / Région Wallonne de Belgique	Searcher	PNUCID project analyse : *Alternative development project to coca production Chapare / Bolivia* • Field surveys / social, economic and cultural data processing. • Analyse of the perceptions & representations of the coca/cocaine problem. • Socio-economic impact assessment of the project on the *cocaleros* and farmers livelihoods.

Annex 6 – Map of the project area



Annex 7 – OVI check up

LOGICAL FRAMEWORK		EVALUATION	
Intervention logic	**OVI forseen**	Checked OVI	Comments
Overall objectives			
The growth of the pig production foreseen by a 2004-2007 Vietnamese-funded development project in a overpopulated province of Northern Vietnam (Thai Binh in Red River Delta) occurs with a minimum environmental negative impacts on natural water resources	The provincial policy makers are alerted about the environmental issue and support farmers through direct consultation and collaboration, investments plans and environmental regulation ***OIV 1:*** Official reports and policies Investments in manure processing technologies and specific training programs are focusing on environmental protection through a cleaner and integrated farming system at the farm and provincial level. ***OIV 2:*** Banks' programmes for treatment technologies; investment in research activities focusing on environmental protection	***OIV 1:*** ***Effective*** ***OIV 2:*** ***Not yet effective***	***OIV 1:*** Official request of the provincial authorities about regulations, experimental manure processes and project proposal for dissemination/sensibilisation among farmers ***OIV 2:*** FFEM, WB, EC, AFD contacted and interested

LOGICAL FRAMEWORK		EVALUATION	
Intervention logic	**OVI forseen**	Checked OVI	Comments
Project purpose			
Improve accountability of socio-economic and environmental performances in the pig production sector in Thai Binh and its possible links with crops and fish production by provincial and national policies makers, farmers and production organisation oriented toward an industrialisation process. This purpose will be achieved by: ▪ Identifying and promoting an environmentally-friendly economic development in an overpopulated province of South East Asia (SEA) where swine production is considered as a priority sector ▪ Highlighting environmental negative impacts due to pig raising in order to protect threatened natural water resources; ▪ Providing European and regional experience methods to help collectively with farmers and organizations in managing animal-waste pollution; ▪ Alerting the policies makers about the environmental issue and support them through direct consultation and collaboration to (1) coordinate economically-sustainable development strategies, and (2) define regulations limiting the social and environmental negative impacts on common goods (water, soils, employment).	***OVI 1:*** Benchmark for pig, crops and fish Production ***OVI 2:*** Preliminary scenarios of future development: GIS	***OVI 1: Effective*** ***OVI 2: Effective***	

LOGICAL FRAMEWORK		EVALUATION	
Intervention logic	**OVI forseen**	Checked OVI	Comments
Expected results			
1) **Baseline references** on local pig production systems, crops and fish ponds requirements for OM, stakeholders in concerned commodity chains, and general situation in the studied area;	OIV: reports and databases (see above for details)	**- Effective**	- Database including 1000 surveyed farms within 4 districts
2) a **ProEco/GIS** gathering collected data as a static decision support tool to appraise balance between impacts of current and possible development strategies for intensified pig production in the province;	OIV: - 1 GIS applied on several thematic layers of Thai Binh, managing basic databases on pig, crop and fish production - several simulation models - reports on spatial & temporal evolution in TB agriculture	**- Effective** **- Effective** **- Effective**	
3) **Technical specifications, Training & curriculum reinforcement program** for local partners and project beneficiaries about "environment and animal production"	- 4 Training workshops in Hanoi and in Thai Binh - 1000 technical sheets - 10 Partners training with spatial approach in diagnostic - Moreover, stakeholders start requesting information or acknowledging its value in a decision they made in their farming system	**- Effective** **- Not Effective** **- Effective** **- Effective**	- Workshops focused on results dissemination and information, but not on training - stakeholders at provincial and commune levels
4) An illustrated **atlas** to extend the results of the project to a wider public	310 Atlas in paper version / electronic version available in pdf format	**Effective** (see above for details)	

LOGICAL FRAMEWORK		EVALUATION	
Intervention logic	**OVI forseen**	Checked OVI	Comments
Activities			
<u>Activity 1</u> : Baseline study on Animal waste organic matter production by pig farms and existing pig manure treatment technologies			
A1.1 – Preliminary census and an official data at the level of the province A1.2 – Field Data collection a. characterisation of the swine population, farming systems / construction of an operational typology / assess the opportunity costs / quantify each pig farmers' categories at the provincial level b. Benchmark for existing manure technologies / Analyse of rejected effluents c. Collective identification of individual constraints / Pro-Active Conciliation Tool (PACT) method	**Deliverables:** ***OV I1.1:*** - Official statistics' analysis and georeferenced census of the existing pig farm-units and expected/possible development areas: 1 report; 1 thematic maps ***OVI 1.2***: - Operational typology and distribution of different pig farmers' categories at the province level: 1 report; thematic maps ***OVI 1.3:*** - current manure technologies & Specifications on pig manure quality and influence of current manure technologies and practices : 1 report; 1 Database - 400 technical sheets = 800€ ***OVI1.4:*** PACT report on local stakeholders perception of the environmental issue: 1 report; 1 article ***OVI1.5:*** Training sessions: 100 farmers, broadcasting to the province through TV	***OVI 1.1:*** ***Effective*** - Chapter 2 of the final report and a CD-Rom presenting the thematic maps - 2 report's missions ***OVI 1.2:*** ***Effective*** - Typology : chapter 5 of the final report and 1 master report - Thematic maps : available on the CD-Rom ***OVI 1.3:*** ***Effective:*** - Manure specifications: chapter 7 of the final report: - Database: ***Effective*** - Technical sheets : ***Not effective*** ***OVI 1.4:*** ***Effective***: Chapter 4 of final report and master and missions reports. ***OVI 1.5 :*** Not effective	***OVI 1.2:*** <u>In addition</u>, the team project provided a quick environmental (pollution) risk assessment methodology at a farm level ***OVI 1.3:*** <u>In addition</u>, NIRS calibration for manure and farm assessment quantities outputs; scientific publication in preparation; scientific poster for the final workshop Weakness of technical references and technical processes still to be adapted ***OVI 1.4:*** <u>In addition</u>, the PACT tool is transferred to local institutions and public conference was hold in Thai Binh on 24 August 2005 (50 attendants) ***OVI 1.5 :*** Problems of weakness of existing technical references. Remained to be completed by local authorities

LOGICAL FRAMEWORK		EVALUATION	
Intervention logic	**OVI forseen**	Checked OVI	Comments
<u>Activity 2 :</u> Demand and requirements of nutrients for crops and for aquaculture - Economic and technical diagnostic in Thai Binh province			
A2.1 - Space distribution of the crops and the fishponds A2.2 – Surveys and expert interviews to collect relevant data on fish and crops production systems; A2.3 - Farming scale requirements for the crops and for nutritional needs for aquaculture A2.4 - cost/benefit analysis for pig manure vs commercial mineral fertilizers and fish feedstuffs A2.5 - Identify the spreading area	**Deliverables:** ***OIV2.1:*** Baseline studies on : - Aquaculture: 1 report - Crops spatial features and requirements in the province : 1 report; - 300 Technical sheets on feed and fertiliser procurement = 600€; - 300 technical sheets on management of animal wastes for fish pond manuring; - Publications on crops requirements in organic material ; - Publications on nutritional requirements - Publication on production systems in aquaculture ***OIV2.2:*** - Report on "cost/benefit analysis"; - 1 article ***OVI2.3:*** - Training sessions on "animal waste use in aquaculture" & "specifications of animal waste fertilizers": 100 farmers and fish producers from Thai Binh - Broadcasting to the province through TV,	***OIV2.1:*** Effective - Aquaculture : chapter 6 of the final report and 6 missions reports from international and national stakeholders; - Crops: Chapter 8 of the final report; integrated data in GIS and 1master report. Technical sheets : not effective Publications : effective (see above) ***OIV2.2:*** Effective - Chapter 9 of the final report - Master report ***OIV2.3:*** Training sessions : - aquaculture effective on 9 May 2006, 41 attendants - Waste fertilizer : effective on 13 May 2006, 49 attendants Broadcasting : - Not effective	Weakness of technical references and technical processes still to be adapted ***OIV2.3:*** Problems of weakness of existing technical references. Remains to be completed by local authorities

LOGICAL FRAMEWORK		EVALUATION	
Intervention logic	**OVI forseen**	Checked OVI	Comments
<u>Activity 3:</u> Spatial analysis and Representation of current & possible animal-waste organic matter's flows at the provincial level			
A3.1 - Remote Sensing and Land Use Mapping	Deliverables: ***OIV3.1:*** Static GIS with databases (maps, data from Activities 1&2)	***OVI 3.1 :*** Effective using excel for statistics in routine and MapInfo	***OVI 3.1:*** Database located at CIRAD level remains to be transferred to national partners and institutions.
A3.2 - Mapping of organic matters production sites	***OIV3.2:*** Trained counterparts to GPS use and spatial approach for diagnostic	***OVI 3.2 :*** Effective on 2 April 2006, 15 attendants (field staff and national experts) of VTGeo;	
A3.3 - Construction and implementation of static GIS	***OIV3.3:*** Project Atlas with Thematic Maps / Landuse evolution map of the region / Scenarios for an environmental-friendly development of pig production;	***OVI 3.3:*** 1500 atlas produced and published (500 in Vietnamese and 1000 in English); 40% of the Vietnamese version and 30% of the English version already distributed to the relevant targets: communes, districts, province, ministries, local research institutions, universities, main funding agencies, UN agencies, documentation centers, etc.	

Annex 8 - Visibility and publications

All the following documents clearly mention European Commission financial contribution and the notice related to the restriction of the European Commission responsibility.

- ***"Pig production development, animal waste management and environment protection – A case study in Thai Binh Province, North Vietnam"***. Vincent Porphyre and Nguyen Que Coi. 2006. PRISE Publications – CIRAD: 1000 versions in English and 500 in Vietnamese ;
- 2000 CD-Rom gathering the here above publication, maps collections and illustrations edited in 2006 by PRISE publications – CIRAD. http://pigtrop.cirad.fr/en/worldwide/asie_VN_Asiaproeco_BOOK.htm
- Reports and publications are posted on the PigTrop website (http://pigtrop.cirad.fr) which totalised 14000 visits a month (username : guest / password : asiaproeco) http://pigtrop.cirad.fr/en/worldwide/asie_VN_Asiaproeco.htm
- 5 masters thesis provided within the framework of the project
- 4 Student thesis provided within the framework of the project
- 5 scientific publications under preparation
- Communications to international congress :
    - Tran Duc Toan, B. Hillion, Nguyen Que Coi, V. Porphyre, J.M. Médoc, 2005. Nitrogen balance between animal wastes production, crops and fish ponds demand at commune level in Thai Binh province, Northern Vietnam. In AHAT BSAS Conference 'Integrating Livestock-Crop Systems to Meet the Challenges of Globalisation', November 14-18, 2005; Khon Kaen, Thailand.
    - Porphyre V., 2005. Pig production development and environment protection: a multidisciplinary appraisal in Thai Binh province, Red River Delta, Northern Vietnam. In International Conference 'Enhancing the Contribution of Smallstock to the Livelihoods of Resource-poor Communities. 13-15 September, PieterMaritzburg, South Africa.
    - Rajesh Bahadur THAPA, Pham Van CU, Huy Chu Xuan, Frederic BORNE, and Vincent PORPHYRE, 2005. Satellite based spatio-temporal environmental momentum in Thai Binh province, Vietnam. 26th Asian Conference on Remote Sensing; 7-11 November, 2005, Melia Hanoi Hotel, Hanoi, Vietnam
    - Rajesh Bahadur THAPA, Frederic BORNE, Pham Van CU and Vincent PORPHYRE (2005). Environmental change analysis using satellite imageries: case study of Thai Binh province, Vietnam. Map Asia 2005, 22-25 August 2005, Jakarta, Indonesia. (through budget reallocation in agreement with EC Delegation)