

## Completion Report

This project completion report form must be used by research projects that have finalized implementation of project activities. The reporting covers results of the project, the partnership experiences, dissemination of results, publications, impact of the research activities, etc.

**Carefully comply with the instructions provided in the left side of the form.**

Please save your input continuously to avoid losing data. There are "Save changes below" and "Save changes above" buttons at the top and the bottom of the page, respectively. When you use these, you save only the current step of the form.

You can access your report at any time via the "Edit" link, save, close, and continue work at a later stage. In order to share the reporting task with your research partners, please give them access to the report by providing them with your login username and password.

R410-A30.185

# Step 1

## Basic info

Report for the years

**Report for the years:** 2012-2016

Project title

**Project title:** Climate Change-Induced Water Disaster and Participatory Information System for Vulnerability Reduction in North Central Vietnam (CPIS)

DFC file no.: 11-P04-VIE

**Project Coordinator:** Prof. Dr. Phan Van Tan

E-mail

**Responsible institution:** VNU Hanoi University of Science (HUS)

**Research partner(s)**

**Project start and end date:** October 2012 to October 2015

**Adjusted project period with date of approval by DFC, if applicable**

End of July 2016

Research partner(s)  
Project start and end date

All name and address fields must be completed before the report can be submitted.

**\*\*\*Report\*\*\***

**Report for the years**

**Project title**

**DFC file no.**

**Project Coordinator**

**First name**

**Last name**

**E-mail**

**Responsible institution**

**Research partner(s)**

**Must be completed.**

Indicate for each partner institution the name of main partner researcher, e-mail of the main partner researcher, department, institution and country.

**Project start and end date**

**Must be completed.**

Indicate the start and end date of the project according to the Letter of Commitment.

**Adjusted project period with date of approval by DFC, if applicable**

# Step 2

## Management

**Conditions set at the approval of the midterm report, if applicable**

PhD students status

Project website

**Conditions set at the approval of the midterm report, if applicable**

**Must be completed.**

Explain the actions taken to meet the conditions.

An Extended Project Period was approved by DFC via document signed on 16<sup>th</sup> September 2015. The new closing date of the project is 31<sup>st</sup> July 2016

**PhD students status**

**Must be completed.**

Status of each PhD student including name of PhD student, university, and time of thesis submission.

Include similar status of MSc students, if applicable.

Four PhD and four Master students have been involved in the project. Their status are as following:

- 1) PhD student Le Nhu Quan  
Date of enrolment: December 2010  
University: VNU Hanoi University of Science, Faculty of Meteorology, Hydrology and Oceanography  
Activities: The student was involved in WP3 of the project (Assessment of Climate Change and Extreme Climate Events). His main activity was to simulate and to project the changes in extreme rainfall events overall Vietnam using the Regional Climate Models. In 2015 he was supported by the project to carried out an internship of one month (02-28 August) at Cologne University, Germany,  
Study period: Four years (December 2010-December 2014)  
Supervisor: Prof. Dr. Phan Van Tan  
Current status: Dissertation has been successfully defended. He got already PhD certificate. Dissertation is available at <http://danida.vnu.edu.vn/cpis/en/cat/23>
- 2) PhD student Ngo Thi Thanh Huong  
Date of enrolment: December 2012  
University: VNU Hanoi University of Science, Faculty of Meteorology, Hydrology and Oceanography  
Activities: The student was involved in WP3 of the project (Assessment of Climate Change and Extreme Climate Events). Her main activity was to investigate the summer monsoon changes over Vietnam.  
Study period: Four years (December 2012-December 2016)  
Supervisor: Assoc. Prof. Dr. Vu Thanh Hang  
Current status: The dissertation is in process of assessment (There are three assessment steps of the PhD's dissertation in HUS: Faculty/Department level, HUS level and VNU level. She has submitted her dissertation and is waiting for the first step)
- 3) PhD student Nguyen Duc Hanh:  
Date of enrolment: December 2014  
University: VNU Hanoi University of Science, Faculty of Meteorology, Hydrology and Oceanography  
Activities: The student was involved in WP4 of the project (Water Disaster Assessment and Analysis). His main activity was to simulate hydro-dynamical and sedimentary processes. In 2015 he was supported by the project to carried out an internship of one month (15 Mar - 13 Apr) at Kyoto University, Japan.  
Study stays: Three years (December 2014-December 2017)  
Supervisor: Assoc. Prof. Dr. Tran Ngoc Anh  
Expected time of dissertation submission: End of 2017
- 4) PhD student Ngo Chi Tuan:  
Date of enrolment: December 2014

University: VNU Hanoi University of Science, Faculty of Meteorology, Hydrology and Oceanography

Activities: The student was involved in WP4 of the project (Water Disaster Assessment and Analysis). His main activity was to assess the vulnerability of land surface in river basins in Central Vietnam for flood prevention planning. In 2015 he was supported by the project to carry out an internship of one month (15 Mar - 13 Apr) at Kyoto University, Japan.

Study period: Three years (December 2014-December 2017)

Supervisor: Assoc. Prof. Dr. Nguyen Thanh Son

Expected time of dissertation submission: End of 2017

5) MSc student Le Ha Phuong

Date of enrolment: December 2011

University: School of Graduate Studies, VNU

Activities: The student was involved in WP5 of the project (Impact and Vulnerability Assessment). Her main activity was to assess the impacts of and vulnerability to climate change on aqua-agriculture in Quang Ninh district, Quang Binh province.

Study period: Two years (December 2011-December 2013)

Supervisor: Prof. Dr. Phan Van Tan

Current status: Thesis has been successfully defended and is available at <http://danida.vnu.edu.vn/cpis/en/cat/23>

6) MSc student Le Van Hoan

Date of enrolment: December 2012

University: VNU Hanoi University of Science, Faculty of Geography

Activities: The student was involved in WP5 of the project (Impact and Vulnerability Assessment). His main activity was to assess the impacts of natural disasters on agriculture in Vo Ninh commune, Quang Ninh district, Quang Binh province.

Study period: Two years (December 2012-December 2014)

Supervisor: Assoc. Prof. Dr. Tran Anh Tuan

Current status: Thesis has been successfully defended and is available at <http://danida.vnu.edu.vn/cpis/en/cat/23>

7) MSc student Nguyen Xuan Hau

Date of enrolment: December 2012

University: School of Graduate Studies, VNU

Activities: The student was involved in WP5 of the project (Impact and Vulnerability Assessment). His main activity was to assess Climate Change Impacts on flood/flooding over Nhat Le river basin, Quang Binh province.

Study period: Two years (December 2012-December 2014)

Supervisor: Prof. Dr. Phan Van Tan

Current status: Thesis has been successfully defended and is now available at <http://danida.vnu.edu.vn/cpis/en/cat/23>

8) MSc student Nguyen Kim Ngoc Anh

Date of enrolment: December 2013

University: VNU Hanoi University of Science, Faculty of Meteorology, Hydrology and Oceanography

Activities: The student was involved in WP4 of the project (Water Disaster Assessment and Analysis). Her main activity was to estimate the water balance of the Lam river basin, Nghe An province.

Study period: Two years (December 2013-December 2015)

Supervisor: Assoc. Prof. Dr. Tran Ngoc Anh

Current status: Thesis has been successfully defended and is now available at <http://danida.vnu.edu.vn/cpis/en/cat/23>

### **Project website**

Must be completed.

Update the link to the project website, if changed since the mid-term reporting.

<http://danida.vnu.edu.vn>

### **Substantial changes in the project (content and/or persons), if applicable**

Specify and explain the changes in the project which, according to the General Conditions, are required to be reported.

Indicate date of approval from DFC.

There were some changes had been approved by DFC/MFA in 2013/2014:

- 1) First, two Danish key researchers (Dr. Jan Andersen and Dr. Henning Schroll) were replaced by a new one (Dr. Paul Stacey). As a result, the project budget was relocated.
- 2) Second, one Vietnamese key researcher (Dr. Tran Anh Tuan) was replaced by another (Dr. Man Quang Huy).
- 3) Third, one Danish key researcher (Dr Paul Stacey) was replaced by another (Dr. Mette Fog Olwig).

# Step 3

## Partnership

Partnership experiences

Joint research activities

Partnership lessons

National and international cooperation

### **Partnership experiences**

Must be completed.

Reflections on the cooperation and collaboration, including participation and engagement of all project partners (achievements, challenges, and constraints).

At the very beginning of the project the mechanism of collaboration between Danish and Vietnamese members has been agreed for all join actions of project implementation. Both sides considered that the open and timely exchange information for planned

activities (field works, workshops/seminars, discussion via email etc.) is needed and data sharing and international joint publications are among the most important dissemination activities of those plans. Consequently, two international peer-reviewed joint articles have been published (<http://danida.vnu.edu.vn/cpis/en/cat/31>). With the participation of Danish members two international workshops have been organized. The first one, entitled “Participatory Information System (PIS) and User-needs: A Tool Linking Scientists, Authorities and Communities”, was held in Ha Tinh City on December 08<sup>th</sup>, 2014 (<http://danida.vnu.edu.vn/cpis/en/content/workshop-on-pis-at-ha-tinh-city.html>). The information about the workshop was disseminated on the Vietnam News Agency (TTXVN) Television channel at 19:00, December 16<sup>th</sup>, 2014. The second workshop was held in Vinh City on 18<sup>th</sup> and 19<sup>th</sup> December 2015, where all project results were presented and discussed with the participation of provincial, district and communal representatives from NHQ, and of the Danish and Vietnamese scientists as well as a number of invited experts (<http://danida.vnu.edu.vn/cpis/en/content/final-workshop.html>). The event's information was disseminated on the VTC14 Television channel at 19:00 December 19<sup>th</sup>, 2015.

### Joint research activities

Must be completed.

List the joint activities, e.g. fieldwork, publications, and PhD supervision.

#### 1) Joint fieldworks between the Vietnamese and Danish researchers:

<i>No</i>	<i>Time</i>	<i>Content</i>
1	December 2012	Overview field trip for selecting the study sites
2	November 2013	Field work for household surveys
3	March 2014	Field work for household surveys
4	May 2014	Additional field work for household surveys
5	October 2014	Additional field work for household surveys
6	April 2015	Additional field work for household surveys
7	July 2015	Additional field work for household surveys

(1) December 2012: Overview field trip for selecting the study sites

(2) November 2013: Field work for household surveys

(3) March 2014: Field work for household surveys

(4) May 2014: Additional fieldwork for household surveys

(5) October 2014: Additional fieldwork for household surveys

(6) April 2015: Additional fieldwork for household surveys

(7) July 2015: Additional fieldwork for household surveys

- 2) The Vietnamese and Danish teams were co-organizers of two workshops: (1) The “Participatory Information System (PIS) and User-needs: A Tool Linking Scientists, Authorities and Communities”, was held in Ha Tinh City on December 08<sup>th</sup>, 2014; and (2) The final workshop in Vinh City on 18<sup>th</sup>-19<sup>th</sup> December 2015.

- 3) Two joint scientific articles were published (<http://danida.vnu.edu.vn/cpis/en/cat/31>)

### **Partnership lessons**

**Must be completed.**

Explain main challenges, lessons learned and recommendations for future projects/other project teams.

- 1) For various reasons it was difficult to organize joint fieldwork sessions between the Danish and Vietnamese teams. However, we did as best as we could to ensure that all field trips would be implemented with the participation of appropriated resources. When the Danish scientists arrived in Vietnam for fieldwork, the workshops/seminars/meetings have been set up so that researchers from both sides were able to discuss and exchange information to each other.
- 2) In terms of joint publications, due to different incentive structures and different academic backgrounds our joint publications were very time consuming. Especially when dealing with social sciences it took much more time for data collection and furthermore, for peer-reviewing and revision required by international journals. All this made it impossible to achieve a substantial publication record within the time frame of the project. Consequently, several publications planned in our project will only appear with considerable delay behind the end of the funding. It could make sense to set an additional small funding for those publications.
- 3) The communication was often hampered by language and culture barriers. In actual practice many connections with potential relevance to the research are not being developed or not being used sufficiently, to the effect that the communication may have relatively few channels and does not achieve a real network structure. It may be advisable to experiment with different projects and subgroup structures during the course of the project, as well as to assure professional translation/communication competencies in the secretariat to make sure that the research and knowledge of every participant is adequately exploited for the benefits of the project.

### **National and international cooperation**

**Must be completed.**

Explain possible cooperation with national/international partners, etc.

The following international collaborations under the framework of the project activities have been established and maintained:

- 1) A working Team consisting of scientists from HUS, IMHEN and CSIRO who were involved in the project entitled "High Resolution Climate Projection for Vietnam" (<http://vnclimate.vn/>)
- 2) The International Network of South East Asia Regional Climate Initiative (SEARCHI, <http://meteo.edu.vn/seaclid/index.php>)

### **Co-financing in other research projects**

State whether your FFU project, or part(s) of it, has been used as co-financing in on-going research projects funded by other donors/funders. If so, please indicate the title of project, donor/funder, total budget, and share of the FFU project used for co-financing.  
No

# Step 4

## Results

Short summary of the project objectives, outputs and outcomes  
Obtained results in relation to the projects objectives, outputs and outcomes  
Communication and outreach  
Research capacity building  
Major lessons learned

## Project Achievements

**Short summary of the project objectives, outputs and outcomes**

Max characters 1,000 - Used 0 - 0%

Must be completed.

The obtained results fully reflect the project objectives and outputs. The project has successfully set up an interdisciplinary research team in terms of climate change (CC) induced water disaster issues in NHQ. The implication of multi-stakeholder approach has mobilized many natural and social scientists who have been working closely with the local people in the studied areas. The project results have considerably contributed to reveal the overall picture of CC and its impacts in Vietnam. The working model that has been built is recommended to be replicable in reality. Human resources development is an important outcome when young Vietnamese researches have been strongly involved in implementing the project and closely cooperating with Danish researchers. The developed PIS now can be used as an efficient tool for vulnerability reduction to CC at the different levels. The high number (21) of the published scientific papers should be considered as a highlight achievement of the project.

## Possible deviations

Max characters 1,000 - Used 0 - 0%

Explain and justify possible deviations from the original proposal.

Deviation of the project outputs, in comparison to the original proposal (WP7), is PhD training. Although project had enrolled 4 PhD students (3 students in the original proposal) involving in the project, only one of them successfully defended his dissertation. Three others couldn't complete their ones. The reason is, all graduate



students must be enrolled in a graduation institution but not directly by the project. The procedures of enrollment are: Each applicant must have a research proposal and at least two recommendation letters, and have to pass an examination assessed by an enrollment committee. Applicants can be enrolled twice a year in the Spring or Fall and will know the result at the end of the year. This means project did not have any opportunity to enroll PhD students before they were admitted by the graduation institutions. Consequently, project had to either select PhD students before project proposal has been approved, or one year after the project has been kicked off.

### **Obtained results in relation to the projects objectives, outputs and outcomes**

Max characters 3,000 - Used 0 - 0%

**Must be completed.**

Describe the obtained results in relation to the projects objectives, outputs and outcomes.

Must be written in a popular scientific manner.

It will be used for the Danida Research Portal and made available to the Danish Embassy in the partner country/countries.

The identified objectives of the project are: 1) To assess impacts of climate change (CC) on water disasters (WD) on aqua-agriculture in the NHQ; 2) To develop an integrative working model for indigenous and scientific knowledge integration; 3) To establish a Participatory Information System (PIS) for scientific research, decision making processes and local community needs; and 4) To develop human resources. After three years of implementing, the project had fulfilled a huge amount of works and having achieved all expected results and outputs to reach these objectives.

- 1) The project has been successful in setting the team working model with win-win mechanism in which stakeholders-beneficiaries including scientists, decision makers and local communities co-worked to cover all stakeholder's needs and requirements.
- 2) Based on data and materials collected, terrain missions and using numerical modeling approach, the project has drawn out a detailed and adequate picture of observed and projected changes in temperature, rainfall and extreme climate events and related water disasters as well as their impacts on agriculture and aquaculture production systems in NHQ during the last decades and during the near (2011-2030), mid (2031-2050) and far (2080-2099) future periods.
- 3) A PIS has been built, in which multi-disciplinary knowledge, indigenous knowledge were integrated with computational and GIS tools. This PIS was transferred to local stakeholders, including training workshops and can be used as an efficient tool for vulnerability reduction to CC at the different levels and for reinforcing the resilience of local community in project areas. The PIS has been highly appreciated by the local people in NHQ (video at <http://danida.vnu.edu.vn/cpis>).
- 4) In terms of human resource development, 4 MSc and 4 PhD students have been involved in the project, among them 4 MSc students and 1 PhD student have successfully defended their thesis/dissertations, 1 PhD student has submitted the manuscript of the dissertation to her supervisor and is waiting for evaluation; 9

training workshops on PIS has been carried out for local communities. Project also funded for 3 PhD students to do internship at the Universities in Japan and in Germany, and for 10 scientists to participate and give presentations at international workshops/conferences. The mechanism of sharing data, knowledge, experiences and international joint publications have been setup between the Danish and Vietnamese researchers. Thanks to that, young Vietnamese researchers have been improved their knowledge through joint field works, workshops/seminars and discussions via emails with the Danish scientists.

- 5) One of the outstanding results of the project is the high number of 21 academic articles, among which 10 papers have been published in ISI international journals and 10 proceeding papers in international workshops and conferences.

### **Communication and outreach**

Max characters 2,500 - Used 0 - 0%

**Must be completed.**

Describe the communication and 'outreach to stakeholders' activities and explain how these activities have had or are expected to lead to impact/effect.

Multi-stakeholder engagement and involvement are one of specificities of the project with which we have successfully set up the network of scientists, local decision makers and communities for an efficient operation. Under the governance of Project Management Board the scholars are able to frequently and closely get the local decision makers and local communities in involved in discussion, in information exchanges. Thanks to their support all required information, data and materials have been delivered when needed. From the other side, the interaction between the Vietnamese and Danish scientists during terrain missions and/or seminars, workshops and even personal contacts have help to provide the basic knowledge on climate change, its expression and impacts that helped them to increase their awareness on climate change in the study sites from different points of views. The scientists-members coming from different disciplines such as meteorology, hydrology, geography and social and economic science have created a working team of multi and interdisciplinary character, thereby they have shared knowledge and experiences to each other. Briefly, this multi-disciplinary and multi-sectorial mechanism must be considered as the milestone harmonizing project activities aiming to set up an efficient and operational PIS.

The academic articles published by project researchers should be the highlighting point in scientific communication and dissemination of the project. The fact that, the articles published in the peer review ISI journals and in the international conference proceedings contributes not only to disseminate the scientific findings but also build the image of our working team in academic community worldwide.

Project website (<http://danida.vnu.edu.vn/>), where both popular and scientific knowledge on climate change science and related water disasters and their impacts on agriculture and aquaculture, indigenous knowledge of local people in NHQ in response to natural disaster are available, can be considered as a pathway of impacts of the project. The project visibility has been spread by the Vietnamese official media, namely by of the Television channels of Vietnam News Agency (TTXVN) and VTC14 broadcast at 19:00,

December 16th, 2014 and 19:00 December 19th, 2015, respectively, which helps the project to reach a wider audience.

### **Research capacity building**

Max characters 2,500 - Used 0 - 0%

Must be completed.

Describe the research capacity building obtained through the project.

The project has supported 4 Master and 4 PhD students in providing them all the data available in the project, the funding for their terrain missions, and their internship in Japan and Germany. The project has funded their research and their publications. Among them, 4 Masters and 1 PhD have graduated, and another PhD student, Ms. Ngo Thi Thanh Huong, has submitted the dissertation manuscript to her supervisor.

The project has supported 10 scientists to participate in international conferences and workshops. Nine (9) different training workshops for PIS use for local people including both decision makers and community have been also organized by the project. The indigenous knowledge learned during these exchanges are then used for integration into scientific knowledge transferred by project researchers to local people. This is helpful for enhancing the practical know-how of the people in project areas and increasing their resilience capacities for climate change induced water disaster adaptation. Their involvement in establishment of PIS from the beginning for the designed purposes helped them to have a better use of the system.

It is well recognized that capacity building is a process, and it was taken as learning by doing both at institutional and individual levels. As young and future scientists, PhD and MSc students have been able to improve their knowledge and academic skills through the interdisciplinary working teams. This will positively reinforced their CV and positively affect their future scientific carrier in applied research. By the end of project when the scientists are capable to publish their articles/theses/dissertations that is the time they can understand how to work with communities in the terrain and how to write the scientific papers. With regard to the community, it is clear that they are now capable to understand the impacts of climate change not only because of the intervention of scientists during the project but mainly through their involvement in project implementation. Our laboratory has gathered a huge amount of data and information thanks to the collaboration with different institutions and local agencies. All of these, with the developed computing models have contributed the improvement of the research facilities for our future works. This will, in turn, help to contribute to the development of technology resources and human's well-being.

### **Major lessons learned**

Max characters 1,000 - Used 0 - 0%

Must be completed.

Communication with local people is one of the most impressive lessons learned for the scientists in the project. It well reflects the pertinence of the communication methods

that were used to create the link among stakeholders. This allowed them to join and to share the ideas and knowledge during the whole project. We believe that the project activities have been successfully accomplished and there is no doubt about their positive effect on future works, both in Vietnam and in Denmark. In terms of scientific contributions, 21 scientific articles have been published. This is beyond our expectation and helps to diffuse the project results to a wider scientific audience. The PIS set up was thought to be a tool for vulnerability reduction to climate change-induced water disasters. But in reality, this system is also to serve for decision-making support, link stakeholders, and increase the community awareness of climate change impacts and improve their adaptive capacity as well.

**The project progress on each of project objectives, outputs, and outcomes must be entered into the logframe matrix (Appendix 1) and uploaded to the report in Step 7.**

# Step 5

## Methods

Exit strategy, including handing over of equipment, etc.  
Actual/anticipated employment of the researchers educated  
Ability to attract other funding for the research and facilities enhanced  
Other specific actions taken to secure the sustainability of the capacity built

**Exit strategy, including handing over of equipment, etc.**  
Must be completed.

To meet the requirements of local communities from NHQ provinces and being permitted by HUS, the project website and PIS will be continuously maintained and updated, especially the weather forecast information webpage. Potentially but quite realist and feasible, through its exploitation the system would be replicated for other locations in NHQ and for other provinces thanks to funding form NGOs, MOST, MONRE and MARD.

The Project Office along with REMOCLIC settled at HUS still in operation to assure the normal functioning of the materials provided by the project. REMOCLIC's members are and will be working to maintain the system and to continuously use the project data and information for the purpose of added values creating.

**Actual/anticipated employment of the researchers educated**

Must be completed.

All the PhD and MSc students participants in the project already got jobs and are now working at different institutions: One PhD, Mr. Le Nhu Quan is working in the Department of Science and Technology, under the National Assembly of Vietnam, 3 other PhD students are permanent staffs of HUS and MONRE, 2 MSc now are working in the NGOs, 1 MSc obtained his PhD fellowship in Taiwan and 1 MSc is contractual at HUS.

### **Ability to attract other funding for the research and facilities enhanced**

Must be completed.

The National Science and Technology Program for “Climate Change Adaptation, Natural Resource and Environmental Management” funded by the Vietnamese Government is launched for 2016-2020. This is a good opportunity from which the project team would potentially obtain the fund for further research with wider scale in other locations in NHQ provinces after closing project in 2017 or 2018.

### **Other specific actions taken to secure the sustainability of the capacity built**

Must be completed.

With regard to the responsible institution of the project, HUS, the staffs who participated and were trained during the project implementation are lecturers and researchers. Together with the collected data and equipment of the project, they will be able to continue contributing to research and teaching career, with new practical knowledge and applied research skills obtained through the project. In terms of decision makers and community in NHQ, the maintenance of the project website and PIS helps them to keep in touch with and consult the experts from Hanoi and to continuously get updated information for their needs.

# Step 6

Abstract  
and Good Story

Brief popularized abstract

Good story

### **Brief popularized abstract**

Max characters 1,200 - Used 0 - 0%

**Must be completed.**

The abstract of the obtained results must be suitable for publication to a general audience and include:

The main purpose of project is to assess the impacts of climate change (CC) induced water disasters and establish a participatory information system (PIS) for enhancing the resilience of people in NHQ to CC vulnerability. The obtained results showed that the observed rainfall tends to decrease but its trend and related extreme events in mid and end of the 21st century are projected to be increased in rainy season. This would cause the increase the flood disaster. In dry season, the river water level decline combined with sea level raise in the future would cause the increase of saltwater intrusion. Actually, the local people are carrying out land conversion to create new adaptive livelihoods. The noteworthy social impact of the project is the functioning of the PIS. Ten ISI papers are good scientific impact indicator. The integration and sharing of indigenous knowledge into smart adaptation to CC using PIS are considered as optimal solutions and can be applicable for others cases in Vietnam. Project gives opportunities for facilitating and boosting new proposal to the National Program for CC Adaptation, Natural Resource and Environmental Management funded by Vietnamese government.

### **Good story**

Max characters 2,000 - Used 0 - 0%

**Must be completed.**

The good story could be a story from your research partnership, an achievement and/or impact of the project, successful outreach to stakeholders (users, policy makers, private sector, others), a workshop or a conference, or a field trip.

The story must be written in a popular scientific manner for possible posting on the DFC or Danish Embassy website.

Photos accompanying the story are encouraged (can be uploaded in step 9).

We have spent a lot of time finding out the way on how to handle the project long ago before we have really attacked scientific issues of project. We are happy to recognize that it is quite normal and classic as we come from different research cultures, especially when going down to the terrain, where we face to local culture. It is good and interesting exercise to work in multicultural context such as we have had in Central Vietnam. For the first time we are able to mobilize key leaders of provinces to sit down along with the farmers to listen to their concerns on the impacts of climate change (CC) induced water disaster (WD) and both sides come to a consensus perception on specific CC impacts on their territory.

Local authorities and farmers have actively participated in building PIS from the beginning, as they said, for their own sake. That is the reason they have been taking part throughout the whole process of conceptualization, data and information collecting and

setting up the PIS. During the seminars we have organized in the provinces, the presence of multi-layer audience of the stakeholders such Vietnamese, Danish scientists, representative people from provincial decision making sectors and local farmers witnessed the commitment to successfully carry out our project.

One of the interesting stories happened during a project workshop, which was organized in Ha Tinh City on December 08<sup>th</sup>, 2014. It was a multi-stakeholder meeting with participants from Quang Binh, Ha Tinh and Nghe An represented for three social classes of high rank officers, technical staffs and farmers. One farmer from Ha Tinh said that for the first time he had chance to be so close to the Vice Chairman of the People of Ha Tinh Province and could talk in person with him. It was so surprised to see the participants from Quang Binh, Ha Tinh and Nghe An talking to each other friendly, discussing about the impacts of climate change in their locations, though they did not know each other before.

**The research results should be published in open access formats whenever possible. A Policy Brief (Appendix 3b), and a publication and dissemination list (Appendix 3c) must be uploaded in Step 7.**

# Step 7

## Document upload

The following five appendices (3a, 3b, 3c, 3d, and 3e) must be uploaded to the report.

### Appendix 3a – LogFrame Matrix

Template available as Appendix 3a to the General Conditions must be used and uploaded to the report.

	List approved objectives/outputs/outcomes	Indicators and means of verification	Progress/results achieved
<b>Objective # 1</b>	To assess impacts of Climate Change (CC) on Water Disaster (WD) and consequently on aquaculture/agriculture in Central	<ul style="list-style-type: none"> <li>• Reports on the assessment of CC</li> <li>• Flood Maps</li> <li>• Drought index Projections</li> <li>• Results of saline intrusion</li> </ul>	<ul style="list-style-type: none"> <li>• Reports on the assessment of CC in the past and in the future over NHQ, including trends for some climate variables and their extremes, have been done</li> <li>• Required historical flood maps in 2010 and 2013, and</li> </ul>

	<b>List approved objectives/outputs/outcomes</b>	<b>Indicators and means of verification</b>	<b>Progress/results achieved</b>
	Vietnam (Nghe An, Ha Tinh and Quang Binh provinces - NHQ)	<ul style="list-style-type: none"> <li>projections</li> <li>• Reports on the impacts of WD on aquaculture, agriculture</li> </ul>	<ul style="list-style-type: none"> <li>projected flood maps corresponding to two CC scenarios have been conducted</li> <li>• Projected drought indices are being finalized</li> <li>• The model outputs of saline intrusion projection in NHQ corresponding to the CC scenario have been obtained and analyzed</li> <li>• Reports on the extent of damage caused by WD to economy and society, in general, and to aqua-agriculture, in particular, in NHQ have been done</li> </ul>
<b>Objective # 2</b>	To develop a working model of scientists, authority and local community representatives for indigenous and scientific knowledge integration	<ul style="list-style-type: none"> <li>• Participatory research approach, theoretical framework, and toolkits</li> <li>• Joint field surveys and working discussions with the attendance of multi stakeholders</li> <li>• Writing joint publications</li> <li>• Team working with participation of Vietnamese and Danish researchers and local people</li> </ul>	<ul style="list-style-type: none"> <li>• Reports on research approach, theoretical framework, and toolkits have been done</li> <li>• The mechanism of team working with participation of Vietnamese and Danish researchers, and local authorities and communities has been established and applied to joint fieldworks, seminars, workshops, meeting discussions, writing scientific papers and especially to the Participatory Information System (PIS) development</li> <li>• Frequently exchange information among WPs and contact persons from NHQ</li> </ul>
<b>Objective # 3</b>	To establish an Information System for scientific research, decision making process and community needs in vulnerability reduction and to transfer the	<ul style="list-style-type: none"> <li>• Web-based PIS with 3 functions of (i) storage of various data; (ii) data analysis; and (iii) information communication which will be transfer to the local</li> </ul>	<ul style="list-style-type: none"> <li>• The PIS has been constructed and transferred to the NHQ local community and authority as end-users</li> <li>• Local communities as end-users, including provincial, district and communal levels was equipped the computer stations with PIS installed and</li> </ul>



	<b>List approved objectives/outputs/outcomes</b>	<b>Indicators and means of verification</b>	<b>Progress/results achieved</b>
	technology to local authorities and community	<p>governments and communities</p> <ul style="list-style-type: none"> <li>• Equip computer stations with PIS installed and Internet connection for local communities, including provincial, district and communal levels</li> <li>• Training workshops on PIS for local people in NHQ</li> </ul>	<p>Internet connection and other accompanying accessories</p> <ul style="list-style-type: none"> <li>• Training workshops on PIS for local people in NHQ at different levels have been held</li> </ul>
<b>Objective # 4</b>	To develop human resources in the field of CC	<ul style="list-style-type: none"> <li>• Master and PhD student training</li> <li>• Internship abroad for PhD students</li> <li>• Establish interdisciplinary working team</li> <li>• Training local people</li> </ul>	<ul style="list-style-type: none"> <li>• Four Master students have been directly involved in project activities under the supervision of project key researchers, and they all successfully defended their thesis and graduated.</li> <li>• Four PhD students have been screened and worked in the project. One of them defended successfully his dissertation and graduated, another one submitted the dissertation to her supervisor.</li> <li>• Three PhD students have been sent to abroad (two to Kyoto University, Japan, and one to Cologne University, Germany) for one month internship.</li> <li>• Many national and international meetings and seminars between Vietnamese and Danish scientists with different scientific areas were held to exchange experiences and knowledge. By that way, a team working mechanism has</li> </ul>

	List approved objectives/outputs/outcomes	Indicators and means of verification	Progress/results achieved
			<p>been setup</p> <ul style="list-style-type: none"> <li>• Many seminars, workshops, meeting discussions have been organized in which local communities participated to exchange experiences and indigenous knowledge with scientists</li> <li>• Training workshops for local people, including provincial, district and commune levels, on PIS and its application have been carried out.</li> </ul>
<b>Output # 1</b>	An integrative working model to establish the information system: Multi-stakeholder participatory mechanism involving scientists, local authorities and community representatives	<ul style="list-style-type: none"> <li>• Number of joint field surveys and working discussions with the attendance of multi stakeholders</li> <li>• Number of joint publications</li> <li>• Data sharing mechanism</li> <li>• Team working</li> <li>• National and international seminars, workshops, conferences</li> </ul>	<ul style="list-style-type: none"> <li>• 7 joint fieldworks were carried out</li> <li>• 2 joint papers have been published</li> <li>• Website and ftp-server for data sharing</li> <li>• Team working between Vietnamese and Danish researchers, closely connections between scientists and local contact persons and communities</li> <li>• Many seminars and workshops was held with participation of the Vietnamese and Danish researchers and of the local authorities, including two international workshops in Ha Tinh City on 08<sup>th</sup> December 2014 and in Vinh City on 18<sup>th</sup>-20<sup>th</sup> December 2015</li> </ul>
<b>Output # 2</b>	A Participatory Information System (PIS) for vulnerability reduction and resilience enhancement: Knowledge Base, Geo-Database,	<ul style="list-style-type: none"> <li>• A web-based Participatory Information System (PIS) mentioned above</li> </ul>	<ul style="list-style-type: none"> <li>• The PIS has been constructed and transferred to the local people as end-users, including computer stations with PIS installed</li> </ul>

	List approved objectives/outputs/outcomes	Indicators and means of verification	Progress/results achieved
	Series of tools		
<b>Output # 3</b>	Human resources: Intensive courses for young scientists; Training PhD and MSc students; Skillfulness of researchers and local officials in integrating indigenous and scientific knowledge; local officials participating in system setup and trained for CC impact assessment to aqua/agriculture; Increased awareness of coastal and lowland community; Improved preparedness and enhanced resilience capacity of local community	<ul style="list-style-type: none"> <li>• Number of PhD and Master students</li> <li>• Number of internships abroad</li> <li>• Number of participants attending international conferences/workshops</li> <li>• Number of local peoples, officials attending the training workshops on PIS</li> </ul>	<ul style="list-style-type: none"> <li>• 4 PhD and 4 MSc students have been involved in the project, in which 4 MSc and 1 PhD students successfully defended their thesis/dissertation and graduated</li> <li>• 3 PhD students were one month internship in Japan and in Germany</li> <li>• 4 key researchers, 3 MSc students and 7 other members of project participated international workshops in Myanmar, Cambodia, Philippines, Vietnam; 2 France MSc students (come to Vietnam), and 1 Canada MSc student (uses data to write report)</li> <li>• Many local people, including farmers and authorities participated meeting discussion with scientists, especially delegates from NHQ who are representative of provincial, district, communal and village levels participated the workshop on PIS at Ha Tinh City on 8th December 2014, and workshop at Vinh City on 18th-20th December 2015.</li> </ul>
<b>Output # 4</b>	Publications, documentation, conference/workshop, communication materials, website, papers, books and scientific articles	<ul style="list-style-type: none"> <li>• Number of publications, conferences, workshops</li> </ul>	<ul style="list-style-type: none"> <li>• 10 peer reviewed international articles (ISI)</li> <li>• 1 peer reviewed international article (Non ISI)</li> <li>• 10 international workshop/conference proceedings and working papers</li> <li>• Many meeting discussion</li> </ul>

	List approved objectives/outputs/outcomes	Indicators and means of verification	Progress/results achieved
			<p>between Vietnamese and Danish scientists and local people from NHQ had been held</p> <ul style="list-style-type: none"> <li>• 1 project website</li> <li>• 1 ftp server with huge amount of data</li> <li>• Large amount of thematic and fieldwork reports</li> </ul>
<b>Output # 5</b>	Reinforced collaboration and cooperation between Natural Scientists, Aqua/Agriculturists, Soco-economists and institutions in Vietnam and Denmark as well	<ul style="list-style-type: none"> <li>• Number of meetings between WPs, experts, Danish partner</li> <li>• Number of seminars, workshops among groups</li> <li>• Number of joint fieldworks</li> </ul>	<ul style="list-style-type: none"> <li>• Many meetings, seminars, workshops, discussions during project implementation, at which scientists from different areas participated and gave presentations, including Danish researchers</li> <li>• 7 joint fieldworks had been carried out</li> </ul>
<b>Outcome # 1</b>	Developing a multi stakeholder participatory approach in reducing vulnerability to climate change for local development	<ul style="list-style-type: none"> <li>• Responses from local governments and communities after the meeting discussions, workshops</li> </ul>	<ul style="list-style-type: none"> <li>• Local peoples are willing to participate the meeting discussions and happy to express their ideas, opinions on how to construct and involve in the PIS</li> <li>• Through the events at which key leaders of provinces, districts sit down along with the farmers to listen to their concerns, both sides come to a consensus perception on the CC induced WD on their territory</li> </ul>
<b>Outcome # 2</b>	Increasing resilience capacity of policy/decision makers and local community to climate change impacts	<ul style="list-style-type: none"> <li>• Integration of project outputs to socio-economic development planning</li> </ul>	<ul style="list-style-type: none"> <li>• Provincial and district level leaders are now using PIS as tools of decision making support for their socio-economic development planning processes</li> <li>• All local peoples are now using PIS as tools for their natural disaster prevention,</li> </ul>

	List approved objectives/outputs/outcomes	Indicators and means of verification	Progress/results achieved
			<p>increasing their adaptive capacity and resilience to CC impacts</p> <ul style="list-style-type: none"> <li>Both local authorities and communities are expecting the PIS will be maintained after closing project</li> </ul>
<b>Outcome # 3</b>	Contributing to the implementation of Activities 4.1, 4.4 and 4.5 of the National Target Program to Respond to CC (NTP) in NHQ provinces	<ul style="list-style-type: none"> <li>The way that local people use project outputs</li> </ul>	<ul style="list-style-type: none"> <li>Detailed present and future climate information is needed in activities that aims at responding to CC which are now available on project website, ftp server and PIS for users from not only in NHQ but also in all country</li> <li>Peoples from NHQ can use information of CC impact and CC-induced WD assessments for their preparedness and response activities to natural disaster prevention</li> <li>Indigenous knowledge from different locations will be shared for other communities</li> <li>All collected data are available for sharing among stakeholders</li> </ul>

### **Appendix 3b – Policy Brief**

Instruction available as Appendix 3b to the General Conditions must be followed.

Climate Change-Induced Water Disaster and Participatory Information System for Vulnerability Reduction in North Central Vietnam (CPIS)  
 DFC file no.: 11-P04-VIE

#### **Executive summary**

Extreme climate events relating to climate change are identified as a major current and future threat to Vietnam’s socio-economic development, with a potential heavy impact

on particularly the livelihood security of the poorest rural population segments depending on income from agriculture and aquaculture. Studying the North-Central Vietnamese provinces of Nghe An, Ha Tinh and Quang Binh (NHQ) with a joint population of 5.2 million and a total 350 km of coastal line towards the East Sea, the project has highlighted the occurrence, scope and impacts of disasters such as typhoons, floods, droughts, inundation and salinity intrusion.

By combining natural and social sciences, and bringing together a wide range of approaches across conventional disciplinary boundaries to analyzing the vulnerability of local communities in the studied provinces, the project aimed at building new and trustworthy data material. A detailed picture of observed and projected changes in temperature, rainfall and extreme climate events and related water disasters was established for short-, mid- and long-term periods. In addition to meteorological and hydrological data modelling water disasters were also closely studied in a complex real life context, where impacts from increased climate variability interact with ongoing industrialization, land use change and infrastructure construction works including dams and dikes on the one hand, and general socio-economic change associated with economic development, marketization and globalization on the other hand.

Based on a wide variety of local data collection and on-the-ground fieldwork in the three provinces, the project has shown that despite climate-related hazards appearing with increased occurrences in coastal areas they rarely affect all equally and do not seem to upset general income growth. Existing differences in key socio-economic variables across provinces and communities and among households appear to matter greatly for vulnerability. Vietnam's transformation process towards market-driven forms of production has provided many new opportunities and generated impressive growth rates, but has also produced new stresses in the form of insufficient land, water and capital, and a range of new inequalities relating to income, land and labour. Thus vulnerability varies not only according to differences in exposure to climate related hazards, which currently receives the greater attention from the Vietnamese government, but to a much broader scope of disparities. Vulnerabilities clearly showed to have multiple facets, since communities and individual households are subject to a wide range of stresses, which in addition to those stemming from climate variability and natural hazards may relate to the general economic transformation process, various branches of policy-making and state interventions.

Consequently, the projects identified a need for broad-based and disaggregated policies in reducing vulnerability to climate-induced disasters. The concern for future vulnerability to climate-induced disasters should extend beyond a focus on natural hazards from climate change (or environmental degradation) to encompass changes in Vietnam's socio-economic fabric.

Apart from its independent scientific and academic achievements, the project has developed advanced data material and tools for local authority and policy makers. It has further set up a Participatory Information System enabling local communities to access a wide variety of data as well as to contribute to policy and planning with the local

knowledge, weather sensibility and enduring adaptation potential inherent to farming communities.

## **Introduction**

The research design operated with four main hypotheses/assumptions in mind and with clear objectives formulated for each.

1) Water related extreme events will be intensified by climate change and have critical negative impacts on the production systems of agriculture and aquaculture in NHQ. A solid understanding of these impacts will, if effectively communicated, contribute to minimizing the vulnerability and increasing the resilience capacity of the coastal and lowland communities in NHQ.

- The research objective was to assess the impacts of climate change on water disasters and consequently on aquaculture and agriculture in the NHQ region;

2) The impact of water related extreme events may be born disproportionately by vulnerable groups in terms of loss of livelihoods, assets and employment. Such groups may be identified both socially and spatially.

- The research objective was to carry out local research into the potential of indigenous knowledge for vulnerability reduction and develop an integrative working model of scientists, policy/decision makers and local community representatives for indigenous and scientific knowledge integration.

3) There is a local demand for a Participatory Information System (PIS) that integrates the multi- and inter-disciplinary scientific and technological knowledge with indigenous experiences. Such integration can provide an effective tool for increasing community resilience towards climate change impacts, and facilitating local sustainable development practices by means of mass participation.

- The research objective was to establish a functioning Participatory Information System for scientific research, decision-making processes and local community needs in Vulnerability Reduction and to support the capacity of local authorities and communities in applying the technology.

4) The impacts of climate change should be analysed in a broader, interacting relationship with other socio-economic and environmental factors. Thus climate change adaptation efforts need to be holistic in orientation, including evaluation of conventional resource management practices, and support to sound environmental management.

- The objective was to conduct on-the-ground socio-economic and interdisciplinary research in the NHQ region as well as to develop human resources in the field of local climate change adaptation and policy making.

## **Background**

Climate change, especially extreme climate events, are currently a major threat to Vietnam's socio-economic development, with potentially heavy impact on particularly the livelihood security of the poorest rural population segments. Nghe An, Ha Tinh and

Quang Binh provinces (NHQ) have a population of about 5.2 million inhabitants of which 70% are living in the coastal and lowland areas. Most of these inhabitants depend more or less on revenues from the agriculture and aquaculture sectors. With about 350 km of coastal line open to the East Sea, the coastal and lowland areas of these provinces are inherently affected by severe disasters such as typhoons, floods, droughts, inundation and salinity intrusion.

## **Results**

After running for three years, the project has carried out a huge amount of work and has fulfilled all expected outputs. Key results are:

- Based on data and materials collected, terrain missions and using numerical modeling approach, the project has drawn out a detailed and adequate picture of observed and projected changes in temperature, rainfall and extreme climate events and related water disasters as well as their impacts on agriculture and aquaculture production systems in NHQ during the last decades and during the near (2011-2030), mid (2031-2050) and far (2080-2099) future periods.
- A principal finding of the project is that, while the observed rainfall in NHQ decreased slightly, the projected rainfall trend in the middle and end of 21st century is a significant increase in the months of rainy season (summer and fall). On the other hand, the decline of river water level during dry season in combination with a future the sea level rise might cause an increase in saline intrusion. Although salinization thus affects agricultural production due to shrinking cultivated land, local people as an adaptive response have already begun to turn these challenges into opportunities for increased income by means of transforming conventional farming into aquaculture, animal husbandry and worm breeding.
- Six coastal villages (two in each province) were thoroughly surveyed and subsequently studied by means of qualitative fieldwork. In addition, all relevant local actors and authorities were interviewed and consulted. Using this broad data material, a range of socio-economic aspects of vulnerability to disaster were researched, described and analyzed. A comprehensive picture of the stresses that play a part in vulnerability at local level was established, and preconditions were outlined for communities and households to uphold their resilience. A fieldwork component specifically addressed the extent and significance of local and indigenous knowledge in coastal communities.
- A PIS has been built, in which multi-disciplinary knowledge, indigenous knowledge were integrated with computational and GIS tools. This PIS was transferred to local stakeholders, including training workshops and can be used as an efficient tool for vulnerability reduction to CC at the different levels and for reinforcing the resilience of local community in project areas. The PIS has been highly appreciated by the local people in NHQ (video at <http://danida.vnu.edu.vn/cpis>).
- The project has been successful in establishing a teamwork model with win-win mechanisms, in which stakeholders-beneficiaries including scientists, decision makers and local communities cooperated to cover all stakeholder's needs and requirements.



- Among the noteworthy results of the project is the high number of academic articles and papers, 21 in total, including 10 articles published in ISI international journals, 1 article published in non ISI journal and 10 proceeding papers in international workshops and conferences.

### **Conclusions**

Despite ongoing industrialization, agriculture and aquaculture will remain key production systems in the studied provinces, with significant contributions to the livelihood of their rural populations. Since both systems rest on water resources, climate change induced water disasters are likely to exacerbate the vulnerability of rural people. At the same time, previous experiences accumulated in coping with disasters and the indigenous knowledge of the coastal and lowland communities continue to play a role in securing livelihoods. However, a range of naturally and socially produced stresses combines in diverse patterns across communities and between households, calling for a higher degree of disaggregated disaster prevention models and sensitivity to the needs of weaker population segments.

Due to their complex and interdisciplinary nature, both climate change research and adaptation programs in Vietnam are still facing serious challenges. These include the lack of a scientifically well-argued background for understanding the complex interaction between nature and society in the context of climate change, qualified human resources, inter-sector collaboration, and especially the lack of efficient tools for local policy-making processes such as the Participatory Geographical Information System. The project has made significant inputs to meeting these challenges and has provided models for the effective exchange of information, knowledge and perspectives between researchers, provincial and local authority, and local people, which potentially is applicable to a wide range of contexts.

### **Implications & Recommendations**

- First, the project recommends even stronger emphasis on multi-dimensional approaches in any aspect of future climate change adaptation - and disaster mitigation research.
- Secondly, the project advocates an increased emphasis on disaggregated adaptation policies because natural hazards impact different parts of Vietnam unequally, and because differences in provinces' and communities' socio-economic profiles lead to different vulnerability outcomes.
- Thirdly, the project recommends government to pursue policies that not only address the physical exposure to natural hazards, but simultaneously address those more deep-rooted development issues such as poverty, inequality, household composition and access to quality housing, which are highly likely to impact vulnerability to climate-induced disasters – irrespectively of the type and variation of natural hazards.
- Fourthly, the project has reinforced the international collaboration between Vietnamese and Danish researchers which in turn opens more opportunities with the researchers from others countries working in climate change impacts and

vulnerability. Yet, the project outcomes have contributed to validate the models worldwide used

### Appendix 3c – Publication and dissemination list

Template available as Appendix 3c to the General Conditions must be used and uploaded to the report.

APPENDIX TO COMPLETION REPORT: Publication and dissemination of results	Details of publication or dissemination	Status	Link
<b>Publications in international peer-reviewed journals</b>	Title of journal, issue, title of paper, pages no., authors	Paper published, accepted, submitted, or in preparation	Link to publication
<b>1</b>	Haemmerli, G., Bélanger, D., Fleury, C. and Bich Ngoc, L., <b>2016</b> : Perturbations environnementales et migrations au Vietnam. <i>The Canadian Geographer / Le Géographe canadien</i> . doi: 10.1111/cag.12330	Published	<a href="http://onlinelibrary.wiley.com/doi/10.1111/cag.12330/abstract">http://onlinelibrary.wiley.com/doi/10.1111/cag.12330/abstract</a>
<b>2</b>	Ole Bruun and Olivier Rubin, <b>2015</b> : Introduction: The Social Dimensions of Disasters. <i>Asian Journal of Social Science, Volume 43, Issue 6, pp. 671-683</i>	Published	<a href="https://www.deepdyve.com/lp/brill/introduction-jycj6zKkrv">https://www.deepdyve.com/lp/brill/introduction-jycj6zKkrv</a>
<b>3</b>	Ole Bruun and Mette Fog Olwig, <b>2015</b> : Is Local Community the Answer? The Role of "Local Knowledge" and "Community" for Disaster Prevention and Climate Adaptation in Central Vietnam. <i>Asian Journal of Social Science, Volume 43, Issue 6, pp. 811-836</i>	Published	<a href="https://www.deepdyve.com/lp/brill/is-local-community-the-answer-Fw5t5jaXgO">https://www.deepdyve.com/lp/brill/is-local-community-the-answer-Fw5t5jaXgO</a>
<b>4</b>	Casse Thorkil, Anders Milhøj, Thao Phuong Nguyen, <b>2015</b> : Vulnerability in north-central Vietnam: do natural hazards matter for everybody? <i>Nat Hazards (2015) 79:2145–2162</i>	Published	<a href="http://link.springer.com/article/10.1007%2Fs11069-015-1952-y">http://link.springer.com/article/10.1007%2Fs11069-015-1952-y</a>
<b>5</b>	Mogens Buch-Hansen, Luu Bich Ngoc, Man Quang Huy and Tran Ngoc Anh, <b>2015</b> : The Complexities of Water Disaster Adaptation Evidence from Quang Binh Province, Vietnam. <i>Asian Journal of Social Science, Volume 43, Issue 6, pages 713 – 737</i>	Published	<a href="http://booksandjournals.brillonline.com/content/journals/10.1163/15685314-04306004">http://booksandjournals.brillonline.com/content/journals/10.1163/15685314-04306004</a>
<b>6</b>	Tan Phan-Van, Long Trinh-Tuan, Hai Bui-Hoang, Chanh Kieu, <b>2015</b> : Seasonal forecasting of tropical cyclone activity in the	Published	<a href="http://www.int-res.com/abstracts/cr/v62/n2/p115-129/">http://www.int-res.com/abstracts/cr/v62/n2/p115-129/</a>

	coastal region of Vietnam using RegCM4.2. <i>Climate Research, Vol. 62: 115-129</i>		
<b>7</b>	Rubin, O, <b>2014</b> : Social vulnerability to climate-induced natural disasters: Cross-provincial evidence from Vietnam. <i>Asia Pacific Viewpoint, Vol. 55, Issue 1, pp. 67-80</i>	Published	<a href="http://onlinelibrary.wiley.com/doi/10.1111/apv.12037/abstract">http://onlinelibrary.wiley.com/doi/10.1111/apv.12037/abstract</a>
<b>8</b>	Tan Phan Van, Hiep Van Nguyen, Long Trinh Tuan, Trung Nguyen Quang, Thanh Ngo-Duc, Patrick Laux, and Thanh Nguyen Xuan, <b>2014</b> : Seasonal Prediction of Surface Air Temperature across Vietnam Using the Regional Climate Model Version 4.2 (RegCM4.2). <i>Advances in Meteorology. Volume 2014, Article ID 245104, 13 pages.</i>	Published	<a href="http://www.hindawi.com/journals/amete/2014/245104/">http://www.hindawi.com/journals/amete/2014/245104/</a>
<b>9</b>	Ngo-Duc, T. , C. Kieu, M. Thatcher, D. Nguyen-Le, and T. Phan-Van, <b>2014</b> : Climate projections for Vietnam based on regional climate models. <i>Climate Research, Vol. 60:199-213</i>	Published	<a href="http://www.int-res.com/articles/cr_oa/c060p199.pdf">http://www.int-res.com/articles/cr_oa/c060p199.pdf</a>
<b>10</b>	Vu-Thanh H., T. Ngo-Duc, and T. Phan-Van, <b>2013</b> : Evolution of meteorological drought characteristics in Vietnam during the 1961-2007 period. <i>Theoretical and Applied Climatology, Volume 118, Issue 3, p367-375</i>	Published	<a href="http://link.springer.com/article/10.1007%2Fs00704-013-1073-z">http://link.springer.com/article/10.1007%2Fs00704-013-1073-z</a>
<b>Publications in other scientific journals</b>	Title of journal, issue, page no., title of paper, authors	Planned, published, accepted, submitted, or in preparation	Link to publication
<b>1</b>	Thao Phuong Nguyen, Thanh Thi Ha Nguyen and Huy Quang Man, <b>2016</b> : Assessing Adaptive Capacity to Flood in the Downstream Communities of the Lam River. <i>Journal of Geography, Environment and Earth Science International, Vol. 5 (3), pp.1-13</i>	Published	<a href="http://sciencedomain.org/issue/1617">http://sciencedomain.org/issue/1617</a>
<b>Presentations at international conferences</b>	Name of conference, date and title of presentation	Conference held or planned	Link to programme or proceedings
<b>1</b>	Luu Bich Ngoc, Bui Thi Hanh, <b>2015</b> : Indigenous Knowledge – A Human Capital for Response to Climate Change in Agriculture at North Central region, Vietnam. <i>2st International Conference on Social-Economic Issues in Development Venue: Grand Convention Hall (Level 2, Building 10), NEU, Vietnam May 25-26, 2015</i>	Conference held	<a href="http://danida.vnu.edu.vn/cpis/files/Publications/41%20-%20IK%20ung%20pho%20thuy%20tai%20do%20BDKH%20trong%20SX%20NN%20o%20Bac%20Trung%20Bo_Eng%20(1)_Lbn_19.5.2015%20">http://danida.vnu.edu.vn/cpis/files/Publications/41%20-%20IK%20ung%20pho%20thuy%20tai%20do%20BDKH%20trong%20SX%20NN%20o%20Bac%20Trung%20Bo_Eng%20(1)_Lbn_19.5.2015%20</a>

			copy.pdf
<b>2</b>	Huy Man Quang, Thanh Bui Quang, <b>2014</b> : Developing GIS Decision Support to Stakeholders on Agricultural Land Use Planning in Ha Tinh Province, Vietnam. <i>Proceeding of the 35th Asian Conference on Remote Sensing, Nay Pyi Taw, Myanmar 27- 31, October 2014</i>	Conference held	<a href="http://danida.vnu.edu.vn/cpis/files/Publications/OS-210%20Man%20Quang%20Huy%20fullpaper%20to%20ACRS2014.pdf">http://danida.vnu.edu.vn/cpis/files/Publications/OS-210%20Man%20Quang%20Huy%20fullpaper%20to%20ACRS2014.pdf</a> <b>And:</b> <a href="http://www.a-a-r-s.org/acrs/index.php/acrs/acrs-overview/proceedings-1?view=publication&amp;ask=show&amp;id=1479">http://www.a-a-r-s.org/acrs/index.php/acrs/acrs-overview/proceedings-1?view=publication&amp;ask=show&amp;id=1479</a>
<b>3</b>	Bui Quang Thanh, Nguyen Quoc Huy, Nguyen Trung Kien, Pham Van Cu, Pham Minh Hai, <b>2014</b> : Web-based Participatory Information System for Vulnerability Mapping in Central Provinces of Vietnam. <i>The GIS-IDEAS Conference on "Geoinformatics Education and Capacity Building for Urban Management and Smart Cities", December 6 - 9, 2014, Danang City, Vietnam</i>	Conference held	<a href="http://danida.vnu.edu.vn/cpis/files/Publications/Bui-QuangThanh.pdf">http://danida.vnu.edu.vn/cpis/files/Publications/Bui-QuangThanh.pdf</a> <b>And:</b> <a href="http://gisws.media.osaka-cu.ac.jp/gisideas14/viewabstract.php?id=484">http://gisws.media.osaka-cu.ac.jp/gisideas14/viewabstract.php?id=484</a>
<b>4</b>	Nguyen Phuong Thao, Nguyen Thi Ha Thanh, Man Quang Huy, <b>2014</b> : Adaptive capacity to flood of communities in North Central Vietnam. Case studies in Yen Ho commune, Duc Tho district, Ha Tinh province and Hung Nhan commune, Hung Nguyen district, Nghe An province. <i>Proceeding of SEAGA2014 (Southeast Asian Geography Association), Geography that matters: unraveling the destiny, environment, society and people in Asia, co-organised by Royal University of Phnom Penh and Southeast Asian Geography Association, held in Cambodia, 25-28th November, 2014, pp.48-49</i>	Conference held The paper is awarded "political geography paper award", sponsored by the Journal Political Geography.	<a href="http://danida.vnu.edu.vn/cpis/files/Publications/Thao_Adaptive capacity to flood of communities in North Central Vietnam.pdf">http://danida.vnu.edu.vn/cpis/files/Publications/Thao_Adaptive capacity to flood of communities in North Central Vietnam.pdf</a>
<b>5</b>	Nguyen Duc Hanh, Tran Ngoc Anh, Shinichiro Onda, Luong Phuong Hau and Nguyen Kien Dung, <b>2014</b> : Three-dimensional numerical simulation and analysis of flows around a series of reverse circulation structures in a channel bend. <i>Proceedings of the 19th IAHR-APD Congress, 21-24 September 2014, Hanoi, Vietnam. ISBN: 978604821338-1.</i>	Conference held	<a href="http://danida.vnu.edu.vn/cpis/files/Publications/Hanh_IAHR-APD2014-FullpaperNDHanh et al copy.pdf">http://danida.vnu.edu.vn/cpis/files/Publications/Hanh_IAHR-APD2014-FullpaperNDHanh et al copy.pdf</a>
<b>6</b>	Hang Vu-Thanh, Thanh Ngo-Duc, and Tan Phan-Van, <b>2013</b> : An analysis of meteorological drought features in Vietnam	Conference held	<a href="http://danida.vnu.edu.vn/cpis/files/Publications/Hang_et_al_M">http://danida.vnu.edu.vn/cpis/files/Publications/Hang_et_al_M</a>

	during the 1961-2007 period. <i>The 3rd International MAHASRI/HyARC workshop on Asian Monsoon and Water Cycle, August 28-30, 2013, DaNang, Vietnam. P 117-124.</i>		ahasri.pdf And: <a href="http://www.amo.gov.vn/content/mahasri2013/listen.asp">http://www.amo.gov.vn/content/mahasri2013/listen.asp</a>
<b>7</b>	Thanh Ngo-Duc, Huong Ngo-Thi-Thanh, Hue Nguyen-Thanh, Trung Nguyen-Quang, <b>2013</b> : Summer Monsoon Onset over Vietnam for the Period of 1961-2000 using RegCM4.2. <i>Proceeding: The second International Workshop on Climatic Changes and Their Effects on Agriculture in Asian Monsoon Region, 4-6 March, 2013, The Forest Lodge, Camp John Hay, Baguio City, Philippines</i>	Conference held	<a href="http://danida.vnu.edu.vn/cpis/files/Publications/Thanh_et_al_Summer%20Monsoon%20Onset%20over%20Vietnam%20for%20the%20Period%20of%201961-2000%20using%20RegCM4.2.pdf">http://danida.vnu.edu.vn/cpis/files/Publications/Thanh_et_al_Summer Monsoon Onset over Vietnam for the Period of 1961-2000 using RegCM4.2.pdf</a> And: <a href="https://grene.agrid.org/htdocs/?page_id=130">https://grene.agrid.org/htdocs/?page_id=130</a>
<b>8</b>	Huong Ngo-Thi-Thanh, Hue Nguyen-Thi-Thanh, Hang Vu-Thanh, Thanh Ngo-Duc, <b>2013</b> : A study on rainy season onset dates over Vietnam for the period 1951-2007 using the APHRODITE data. <i>The 3rd International MAHASRI/HyARC workshop on Asian Monsoon and Water Cycle, August 28-30, 2013, DaNang, Vietnam. P 201-208</i>	Conference held	<a href="http://danida.vnu.edu.vn/cpis/files/Publications/Huong_et_al_Mahasri.pdf">http://danida.vnu.edu.vn/cpis/files/Publications/Huong_et_al_Mahasri.pdf</a> And: <a href="http://www.amo.gov.vn/content/mahasri2013/listen.asp">http://www.amo.gov.vn/content/mahasri2013/listen.asp</a>
<b>9</b>	Quan Le-Nhu, Tan Phan-Van, Trung Nguyen-Quang, Thanh Ngo-Duc, <b>2013</b> : Trends in extreme rainfall events over Vietnam: Historical data and model verification. <i>The 3rd International MAHASRI/HyARC workshop on Asian Monsoon and Water Cycle, August 28-30, 2013, DaNang, Vietnam. P 209-216</i>	Conference held	<a href="http://danida.vnu.edu.vn/cpis/files/Publications/Quan_et_al_Mahasri.pdf">http://danida.vnu.edu.vn/cpis/files/Publications/Quan_et_al_Mahasri.pdf</a> And: <a href="http://www.amo.gov.vn/content/mahasri2013/listen.asp">http://www.amo.gov.vn/content/mahasri2013/listen.asp</a>
<b>10</b>	Tran Ngoc Anh, Shinichiro Onda, Nguyen Duc Hanh and Nguyen Thanh Son, <b>2013</b> : 3D Simulation of Flows Around Hydraulic Structures. <i>The 14th Asian Congress of Fluid Mechanics - 14ACFM October 15 - 19, 2013; Hanoi and Halong, Vietnam</i>	Conference held	<a href="http://danida.vnu.edu.vn/cpis/files/Publications/Ngoc_Anh_Published_ACFM14_AnhTN,OndaS,HanhND,SonNT.pdf">http://danida.vnu.edu.vn/cpis/files/Publications/Ngoc_Anh_Published ACFM14 AnhTN, Onda S, Hanh ND, SonNT.pdf</a>
<b>11</b>	Phan Van Tan, 2014: Impact Assessment Studies & Regional Climate Change Scenarios Data Requirements in Vietnam. <i>The 2nd Southeast Asia Regional Climate Downscaling (SEACLID)/ CORDEX Southeast Asia Workshop, Ramkhamhaeng University, Bangkok</i>	Workshop held on 9-10 June 2014	<a href="http://www.cordex.org/index.php?option=com_content&amp;view=article&amp;id=199:cordex-seaclid&amp;catid=117&amp;Itemid=735">http://www.cordex.org/index.php?option=com_content&amp;view=article&amp;id=199:cordex-seaclid&amp;catid=117&amp;Itemid=735</a>
<b>Presentations at national conferences, lectures etc.</b>	Name of conference, and title of presentation	Planned, or carried out (date)	Link to programme or proceedings, if available
Lectures, training courses	Information, results and outputs of the project have been disseminated through the lectures for the Master students of		

	Climate Change Master Program under the VNU, and for the participants of training courses on the Climate Change impacts and adaptations in other provinces outside NHQ		
<b>Publication or mentioning in the mass media</b>	Name and type of media (radio, TV, Internet, newspapers etc.)	Planned, or carried out (date)	Link to programme or clip, if available
Information on the workshop on "Participatory Information System (PIS) and User-needs: A Tool Linking Scientists, Authorities and Communities"	News Program on the Vietnam News Agency (TTXVN) TV channel	19:00 16 <sup>th</sup> December 2014	No longer available
Information on the final workshop of project	News Program on The National News and Weather (VTC14) TV channel	19:00 19 <sup>th</sup> December 2015	<a href="https://www.youtube.com/watch?v=P9QyAmJ1v54&amp;feature=youtu.be">https://www.youtube.com/watch?v=P9QyAmJ1v54&amp;feature=youtu.be</a> OR: <a href="https://www.youtube.com/watch?v=2Qv1zzWn8T0&amp;list=PLP2uWpYxMAPFzWeS9eFI BvAC4s41zt-bT&amp;index=29">https://www.youtube.com/watch?v=2Qv1zzWn8T0&amp;list=PLP2uWpYxMAPFzWeS9eFI BvAC4s41zt-bT&amp;index=29</a>
<b>Meetings/ interaction with international research institutions/ networks</b>	Description	Planned, or carried out (date)	
Meetings, Seminars	There were many meetings, seminars have been organized at project office, where the information of the project implementation and results were introduced to the international networks, institutions and guests, such as SEARCI team, visiting scientists, etc	Many time	
<b>Presentations to policy makers, ministries, the private sector, other development actors, end users and other relevant local actors and potential users of the research findings</b>	Description	Planned, or carried out (date)	
Introduction to the PIS and its	Many meetings, seminars and workshops between project researchers and local	Many times	

applications	leaders with the participation of civil service cadres was held at NHQ, including provincial and district levels, at which the following information have been introduced, discussed and commented: 1) PIS functions and its applications, 2) All available database on the website can be shared, including materials, documents, videos, project results, etc 3) Mechanism of exchange/feedback information, 4) etc		
<b>Communication to/ meetings with embassies/sector programmes</b>	Description	Planned, or carried out (date)	
Research Progress Meeting	A research progress meeting with MFA/FFU's representatives at HUS	17th April 2013	
Annual report	A research progress meeting with DFC's representatives at Melia Hotel, Hanoi	28th April 2014	
Research Progress Meeting	A research progress meeting between the DFC's representatives and project researchers with presence of the representatives of HUS and VNU was held at the project office. All project activities, results and outputs have been presented and discussed.	3th July 2015	
Research Progress Meeting	A research progress meeting between the DFC's representatives, MFA/FFU's representative and project researchers with presence of the representatives of HUS and VNU was held at the project office. All project activities, results and outputs have been presented and discussed.	16th May 2016	
Annual Meeting	A research progress meeting with the DFC's representatives, MFA/FFU's representatives at the Danish Embassy in Hanoi	18th May 2016	

### **Appendix 3d – Signed document of hand-over of equipment, if applicable**

A signed document of listing equipment handed over from the project to the institution (South) must be uploaded and submitted with the report. No template available.

### **Appendix 3e – Signatures**

Template available as Appendix 3e to the General Conditions must be used and uploaded to the report.

The total volume of the appendices must not exceed 25 MB.

You have attached 0 document(s).

Select a pdf-, jpg- or xls/xlsx-file, and press 'Upload'.

**You have uploaded 0 figure(s) (.jpg), max. 6**

**You have attached 0 document(s) (.pdf .xls .doc), max 12**