Phụ lục 1

List of the Second Batch Research Programs

No.	Program title	General objective(s)	Specific objectives	Program duration *(max. 36 months)*	Total budget *(USD)*	Program outputs
Agriculture						
1	Application of genetic and breeding technologies for new livestock varieties with improved quality and adaptability to climate changes and other environmental stresses (A-4)	To improve productivity and product quality of animals under the conditions of climate changes as well as to increase the competitiveness of animal products on markets.	1. To create 1-2 poultry lines with typical characteristics for the MDR. 2. To evaluate the adaptability and productivity of the imported Japanese quail lines. 3. To develop potential gene resources for commercialization.	36 months	75,000	– Number of international peer-reviewed papers/total published paper (30%/100%): 6/15 – Number of published books: 2 – Number of conferences/workshops: 3 – Number of new technologies: 1 – Number of new technologies applied: 0 – Number of patent applications: 1 – Number of PhD degrees obtained from/involved in the program: 1 – Number of graduate students involved in the program: 10 – Number of short trainings: 1 – Number of trainees: 50 – Others: 0
2	Studies on insect pests and diseases and development of alternative plant protection technologies (A-6)	To enhance the capacity in research and application of environmentally friendly strategies for management of insect pests and plant diseases on rice in the MD of Vietnam, from which provides the best means of sustainable and integrated plant protection strategies, and thus elevates the competitiveness for agricultural	1. To study biology, ecology and management of panicle rice mite, *Steneotarsonemus spinki Smiley* (Acari: Tarsonemidae) in the Mekong delta. 2. To apply potential biocontrol agents for management of the Rice Leaf Folder, *Cnaphalocrocis medinalis.* 3. To study plant extract in control bacterial leaf blight caused by *Xanthomonas oryzae* pv. *oryae* and blast disease caused by *Pyricularia oryzae* of rice in Mekong delta. 4. To study the combination different biological control agents for management of some important pests and diseases on rice.	36 months	75,000	– Number of international peer-reviewed papers/total published paper (30%/100%): 6/15 – Number of published books: 1 – Number of conferences/workshops: 2 – Number of new technologies: 2 – Number of new technologies applied: 1 – Number of patent applications: 2 – Number of PhD degrees obtained from/involved in the program: 2 – Number of graduate students involved in the program: 12 – Number of short training: 5 – Number of trainees: 60 – Others: 0

No.	Program title	General objective(s)	Specific objectives	Program duration *(max. 36 months)*	Total budget *(USD)*	Program outputs
		products on national and international markets. In addition, to enhance research capacity of staffs in area plant protection such as biology and ecology of pest, on biological control and other friendly environmental methods for controlling pest and diseases on rice in Mekong delta.				
3	Studies on bio-remediation of MDR problem soil under impacts of climate change (A-7)	To apply the microbial technology to mitigate soil/sediment pollution, and stimulate plant growth for sustainably agricultural production.	1. To study microbial degradation of pesticides, dioxin, halogenated organic compounds and transformation of heavy metals in soils under the influence of microbes. 2. To develop the microbial enzyme technology for the degradation of pesticides and other organic pollutants and plant growth stimulation. 3. To develop and apply bio-fertilizers and organic fertilizers.	36 months	75,000	– Number of international peer-reviewed papers/total published paper (30%/100%): 6/15 – Number of published books: 2 – Number of conferences/workshops: 3 – Number of new technologies: 2 – Number of new technologies applied: 1 – Number of patent applications: 2 – Number of PhD degrees obtained from/involved in the program: 2 – Number of graduate students involved in the program: 10 – Number of short trainings: 2 – Number of trainees: 60 – Others: 0
4	Improve animal production systems for higher quality and safety of products (A-9)	To study and apply new technologies to improve animal performance, product quality as well as to mitigate	1. To apply bio-product additives on the indigenous chicken to improve efficiency of feed use, environmental protection and food safety. 2. To develop grassland systems and fodder	36 months	75,000	– Number of international peer-reviewed papers/total published paper (30%/100%): 6/15 – Number of published books: 1 – Number of conferences/workshops: 3 – Number of new technologies: 2 – Number of new technologies applied: 1

No.	Program title	General objective(s)	Specific objectives	Program duration *(max. 36 months)*	Total budget *(USD)*	Program outputs
		greenhouse gas emission and environmental pollution	trees for farm animals. 3. To study feeding strategies for cattle to improve performance and reduce greenhouse gas emission.			– Number of patent applications: 2 – Number of PhD degrees obtained from/involved in the program: 1 – Number of graduate students involved in the program: 10 – Number of short trainings: 1 – Number of trainees: 50 – Others: 0
5	Microbial and pharmaceutical studies for animal disease treatment (A-11)	To study strategies for prevention of microbial diseases and to develop pharmaceutical sources for animal and poultry treatment.	1. To study epidemiology and immunology of diseases caused by microbial pathogens and assess host-pathogen interactions. 2. To identify sources of pathogenic genes, antibiotic resistant genes transferred from animals to human in order to find control methods, and improve quality of food originated from animals. 3. To select new materials including medical plant and determine antimicrobial effectiveness of those materials for the prevention and treatment of domestic animal diseases.	36 months	75,000	– Number of international peer-reviewed papers/total published papers (30%/100%): 6/15 – Number of published books: 1 – Number of conferences/workshops: 2 – Number of new technologies: 1 – Number of new technologies applied: 0 – Number of patent applications: 1 – Number of PhD degrees obtained from/involved in the program: 2 – Number of graduate students involved in the program: 12 – Number of short trainings: 2 – Number of trainees: 50 – Others: 0
6	Simulation of metal-organic frameworks (MOFs) (A-12)	To develop techniques in simulation of metal-organic frameworks applied in advanced agriculture.	1. To describe/predict the structures and characterize electronic, mechanical properties of the material. 2. To examine the interactions between the material with nitrogen (N) and phosphorus (P) fertilizers. 3. To investigate the nature of N and P mineral release from the material.	36 months	25,000	– Number of international peer-reviewed papers/total published papers (30%/100%): 4/8 – Number of published books: 0 – Number of conferences/workshops: 1 – Number of new technologies: 1 – Number of new technologies applied: 0 – Number of patent applications: 1 – Number of PhD degrees obtained from/involved in the program: 0 – Number of graduate students involved in the program: 0 – Number of short trainings: 0 – Number of trainees: 0

No.	Program title	General objective(s)	Specific objectives	Program duration *(max. 36 months)*	Total budget *(USD)*	Program outputs
						– Others: 0
7	Agricultural machineries (A-13)	To develop machinery and equipment systems applied for agricultural production in Mekong Delta.	1. To survey soil characteristics (soil hardness) for designing farm machineries in Mekong Delta. 2. To develop a high capacity sprayer and a weed control equipment for large transplanted rice field. 3. To conduct a farming management system for rice production in Mekong Delta.	36 months	40,000	– Number of international peer-reviewed papers/total published paper (30%/100%): 4/6 – Number of published books: 0 – Number of conferences/workshops: 2 – Number of new technologies: 1 – Number of new technologies applied: 1 – Number of patent applications: 1 – Number of PhD degrees obtained from/involved in the program: 1 – Number of graduate students involved in the program: 10 – Number of short trainings: 2 – Number of trainees: 100 – Others: 0
Aquaculture and Fisheries						
8	Environmental monitoring for aquaculture and fisheries (F-5)	The overall objectives are to enhance capacity in monitoring and managing the aquatic environment in order to ensure sustainable development of aquaculture in the Mekong Delta.	1. *Study on zoning and mapping for water quality and disease epidemic management in the Mekong Delta.* Objective is to monitor, assess and manage the water quality and disease epidemic in the aquaculture areas including inland areas (Can Tho City, An Giang and Dong Thap provinces where freshwater aquaculture is more developed) and coastal areas (Soc Trang, Bac Lieu and Ca Mau provinces where shrimp culture is more developed and intensified) for sustainable aquaculture development. 2. *Study to apply macroinvertebrates based bio-monitoring procedure in monitoring and managing water environment of the Mekong Delta.* Objective is to diversify and enhance the efficiency of monitoring and management of	36 months	180,000	– Number of international peer-reviewed papers/total published paper (30%/100%): 10/32 – Number of published books: 3 – Number of conferences/workshops: 4 – Number of new technologies: 4 – Number of new technologies applied: 3 – Number of patent applications: 0 – Number of PhD degrees obtained from/involved in the program: 4 – Number of graduate students involved in the program: 14 – Number of short trainings: 2 – Number of trainees: 120 – Others: 0

No.	Program title	General objective(s)	Specific objectives	Program duration *(max. 36 months)*	Total budget *(USD)*	Program outputs
			aquatic environment in the Mekong Delta in supplementing to the existing chemical monitoring approach. 3. *Study to apply technically supporting tools in assessment and management of water quality in the Mekong Delta* Objectives are (i) to study and apply the potential monitoring tools (modelling and mathematic models) in monitoring, assessing water quality; (2) to provide monitoring tools (modelling and bio-monitoring procedure) to the local officers for improving and strengthening their capacity in monitoring and management of water quality in order to increase the efficiency of environment monitoring and management for the sustainability of aquaculture and aquatic resource management. 4. *Study to apply beneficial bacteria in water quality treatment and management in aquaculture systems(especially shrimp and pangasius catfish culture) for sustainable development of aquaculture in the Mekong Delta.* Objectives are (i) to investigate the most beneficial bacteria flora in aquaculture systems to develop as microbial products (bio-degradation such as Bacillus spp.); (ii) to apply microbial products in water quality treatment and management to contribute to the sustainable development of aquaculture in the region.			
9	Engineering and information technology development and	The overall objectives are to study, develop and apply of engineering	1. *Acquiring the pond environment parameters for shrimp farming management* This study aims to develop an automatic	36 months	50,000	– Number of international peer-reviewed papers/total published paper (30%/100%): 1/4 – Number of published books: 0 – Number of conferences/workshops: 3

No.	Program title	General objective(s)	Specific objectives	Program duration *(max. 36 months)*	Total budget *(USD)*	Program outputs
	application in aquaculture and fisheries (F-7)	technology and IT for sustainable development of shrimp farming in the Mekong Delta.	information collection system to acquire dissolved oxygen, pH, COD, and COD data of a shrimp pond. Then the collected data is built into 3D graphs (include area and depth of the pond) to monitor the pond. This database is also transferred to the eExpert system for analysis and diagnosis the state of the shrimp pond. 2. *eExpert System development for Aquaculture Extension on Mobile Communication Networks.* This study aims to develop an eExpert system for (i) serving technical answers and (ii) transferring database or expert consultation to shrimp pond farmers via mobile communication networks. 3. *Using of renewable energy in shrimp ponds* This research aims to evaluate the potential use of solar energy in shrimp ponds and to propose technical solutions for effectively using of this power source to continuously supply for pond data acquisition systems. 4. *Building an Information system for Aquaculture and Fisheries management* This research aims to develop an information system to effectively store, manage, and retrieve the aquaculture and fisheries databases, e.g., information, images, growing locations, etc to support the *eExpert system*.			– Number of new technologies: 3 – Number of new technologies applied: 3 – Number of patent applications: 0 – Number of PhD degrees obtained from/involved in the program: 1 – Number of graduate students involved in the program: 7 – Number of short trainings: 2 – Number of trainees: 90 – Others: 0

No.	Program title	General objective(s)	Specific objectives	Program duration *(max. 36 months)*	Total budget *(USD)*	Program outputs
10	Fisheries socioeconomics and management (F-8)	Objectives (i) to evaluate socio-economic current status and roles of shrimp industry; (ii) to analyze shrimp value chain and to propose upgrading strategies for shrimp value chain; and (iii) to determine the roles and effect of regulations and policies to sustainable development of shrimp industry in the Mekong Delta.	1. *Quality management of shrimp industry in the Mekong Delta.* Research objectives: (i) to determine current status and roles of shrimp industry; (ii) to evaluate small-scale shrimp production models in the Mekong Delta ; (iii) to analyze quality management processes in shrimp value chain in the Mekong Delta; and (iv) to built upgrading strategies for shrimp value chain in the Mekong Delta.	36 months	50, 000	– Number of international peer-reviewed papers/total published paper (30%/100%): 2/6 – Number of published books: 1 – Number of conferences/workshops: 1 – Number of new technologies: 0 – Number of new technologies applied: 0 – Number of patent applications: 0 – Number of PhD degrees obtained from/involved in the program: 1 – Number of graduate students involved in the program: 4 – Number of short trainings: 1 – Number of trainees: 30 – Others: 0
Environment						
11	To study potential mitigation strategies to eliminate impacts of natural disasters on agriculture, aquaculture and water supply (including both urban and industry	Study and develop solutions to mitigate impacts of natural disasters for sustainable development of agriculture and aquaculture in the Mekong delta.	*1.Study and propose farming systems coping with environmental changes and climate changes for sustainable development of agriculture, aquaculture in the Mekong delta* The aims of study are: To identify all possible vulnerabilities due to upstream and/or tidal flooding and saline intrusion and other natural disasters affected	36 months	60,000	– Number of international peer-reviewed papers/total published paper (30%/100%): 4/13 – Number of published books: 1 – Number of conferences/workshops: 1 – Number of new technologies: 1 – Number of new technologies applied: 0 – Number of patent applications: 0 – Number of PhD degrees obtained from/involved

No.	Program title	General objective(s)	Specific objectives	Program duration *(max. 36 months)*	Total budget *(USD)*	Program outputs
	sections) (E-5)		to the agriculture and aquaculture productions and water supply in the urban and rural areas of the Mekong Delta's coastal provinces. To review all research results of Delta's climate change projection senarios (in terms of weather's componebts as air temperature, abnormal percipitation, saline intrustion, riverbank and coastal erosion, wind direction and speeeds, …) from present time up to 2030s. To find and suggest for available sustaninable agriculture and aquaculture farming systems and domestic water supply under the contexts of climate change response in the coastal areas in the short term and long term as well. *2. Application of telecommunication and smart water management technologies in rice production to adapt with climate change in the Mekong Delta, Vietnam* The aims of study are (i) To evaluate current status of water use in rice production to determine problems and challenges in agricultural water management in the Mekong Delta, (ii) To develop and apply a model of water management based on rice's water demands using informatics and telecommunication to deal with climate change and environmental changes and (iii) To simulate and predict further scenarios for agricultural water management using GIS tool to propose measures for improving water use efficiency and farmers' net income.			in the program: 1 – Number of graduate students involved in the program: 2 – Number of short trainings: 1 – Number of trainees: 40 – Others: 0
12	To study the planning and managing mechanism of rural,	Planning and establish solutions of community based on natural resources	*1. Evaluation of the state flooding forest and suggestion of the solution to reduce forest degradation in Mekong Delta by using*	36 months	108,000	– Number of international peer-reviewed papers/total published paper (30%/100%) : 9/30 – Number of published books: 1 – Number of conferences/workshops: 1

No.	Program title	General objective(s)	Specific objectives	Program duration *(max. 36 months)*	Total budget *(USD)*	Program outputs
	urban and industrial zones to eliminate the pollutant added to the environment (including GHG) (E-8)	management for reduction of environmental and resources deterioration.	*management tool and role of communities.* The aims of study are to evaluate the actual state of flooding forest and suggest solutions to reduce mangrove and melaleuca forest degradation in consideration of social econimic, land use and community effect; and to analyze the role and effect of community in management activities (use of natural resource, pollutant emissions, local management policies) and suggest solutions to eliminate pollutants added to the environment and forest degradation as well. *2. To determine greenhouse gas sources emission in the city and recommend to create a green and natural environment for urban environment.* The purpose of the study aims to apply remote sensing for identifying urban change and to estimate urban GHG emission sources and develop greening solutions based on determined GHG sources. As a result, an urban greening solution in Can Tho city is developed as a case study. *3. To determine urbanization and land use planning impacts on environment and recommend solution to mitigate environment impacts on human health in Can Tho City.* The purpose of this study aims to identify urbanization process and land use planning in Can Tho city and determine related environmental emissions (COD, CO_2^{eqv}). In addition, it is probably to recommend suitable solutions to mitigate these impacts on human. *4. To study reduction and reuse of nutrients from the effluent of aquaculture in order to*			– Number of new technologies: 1 – Number of new technologies applied: 1 – Number of patent applications: 0 – Number of PhD degrees obtained from/involved in the program: 1 – Number of graduate students involved in the program: 6 – Number of short trainings: 4 – Number of trainees: 60 – Ohters: 0

No.	Program title	General objective(s)	Specific objectives	Program duration *(max. 36 months)*	Total budget *(USD)*	Program outputs
			eliminate eutrophication This study aims to determine global and local emissions of organic matters, NO_X, CO_2^{eqv}., and PM from VACB (garden – fish pond – pigs husbandry – biogas digester) which is one good example of farming systems with biogas plant in Vietnam, especially in Mekong Delta. The effluent waste that contains abundant nutrients (including nitrogen and phosphorus) can be reused and recycled by using residue composting and directly disinfected effluent within farming system effectively to eliminate eutrophication in water body. *5. To build-up a typical urban 3R model (reduce, reuse, recycle) in Mekong Delta based on best practice and lesson learnt from previous 3R application in Vietnam* The aims of this study are to review the experiences from recently unsuccessful applied 3R project in Vietnam as good lesson learnt for improving municipal solid waste management in the Mekong Delta region. A community based waste municipal waste management for urban area will be developed suitable for local conditions of provincial waste management. New urban 3R based community and local condition *6. Applying bioreactor landfill to municipal waste dumpsite in the Mekong Delta to eliminate green house gases and other pollutants to the environment* This study aims to evaluate quantitatively and qualitatively the biodegradation of municipal solid waste landfill in terms of emissions			

No.	Program title	General objective(s)	Specific objectives	Program duration *(max. 36 months)*	Total budget *(USD)*	Program outputs
			(including GHG as CH_4 and CO_2) into bioreactor landfill in lab-scale and pilot scale. Based on this study results, the total emission from MSW landfill in the Mekong Delta will be fully estimated. The technical and managing solutions will be suggested to eliminate these emissions as well.			
13	To study possible solutions to protect the existing biodiversity and natural resources (E-9)	Study on status of biodiversity of the Mekong delta to establish the determinants for conservation and appropriate natural resources management under recent disturbances (Climate changes and Human activities).	*1. Developing biodiversity database framework of the Mekong delta, using Mo O - Soc Trang province as the pilot study site.* The aims of this study are to determine the physical characters (soil, water, ecosystems) and biodiversity (bird, fish, flora, fauna, insects etc.) distribution of the Mekong delta, using the mudflat in Mo O - Soc Trang as a pilot study site to develop a sample tool (sampling, characters, database) for ecosystem management and conservation under recent disturbances (Climate changes and Human activities). *2. Using biological indicators to evaluate the biodiversity conservation in the Mekong delta under climate threats.* The aims of this study are to use appropriate biological indicators (flora and fauna species) to set up of typical ecosystem parameters for the evaluation of environmental management/conservation in the Mekong delta under recent disturbances (Climate changes and Human activities). *3. Effects of disturbances (Climate changes and Human activities) on the diversity/distribution of flora in the Mekong delta.* The aims of this study are to assess the	36 months	120,000	– Number of international peer-reviewed papers/total published papers (30%/100%):10/35 – Number of published books: 2 – Number of conferences/workshops: 2 – Number of new technologies: 2 – Number of new technologies applied: 2 – Number of patent applications: 0 – Number of PhD degrees obtained from/involved in the program: 1 – Number of graduate students involved in the program: 6 – Number of short training: 5 (method of sampling and data management/analysis training for each research project) – Number of trainees: 50 (student = 5 and local authorities = 5 for each research project) – Others: 0

No.	Program title	General objective(s)	Specific objectives	Program duration *(max. 36 months)*	Total budget *(USD)*	Program outputs
			negative impacts of climate changes (temperature & rainfall), disasters (drought, salinity, typhoons) and land uses/construction to the diversity and distribution of flora in the Mekong delta *4. Effects of disturbances (Climate changes and Human activities) on the diversity/distribution of soil fauna in the Mekong delta.* The aims of this study are assess the negative impacts of climate changes (temperature & rainfall), disasters (drought, salinity, typhoons) and land uses/construction to the diversity and distribution of soil fauna in the Mekong delta. *5. Effects of disturbances (Climate changes and Human activities) on the diversity/distribution of fresh water fish in the Mekong delta.* The aims of this study are assess the negative impacts of climate changes (temperature & rainfall), disasters (drought, salinity, typhoons) and land uses/construction to the diversity and distribution of fresh water fish in the Mekong delta			
14	To study the socio-economic feasibility of the (above) solutions (E-10)	Study on the socioeconomic feasibility of the proposed/ potential options and solutions in the context of extreme weather events and environmental degradation.	*1. Feasibility study of installing biogas from husbandry waste with supplement of agricultural or household biomass in the Mekong Delta* This study aims 1) Describe the current states of pig production, kinds and sources of biomass, biogas technologies and installation options (technologies), sources of household energy consumption and the various uses of biogas in the Mekong Delta; 2) Conduct	36 months	144,000	– Number of international peer-reviewed papers/total published paper (30%/100%): 12/42 – Number of published books: 2 – Number of conferences/workshops: 1 – Number of new technologies: 0 – Number of new technologies applied: 0 – Number of patent applications: 0 – Number of PhD degrees obtained from/involved in the program: 1 – Number of graduate students involved in the

No.	Program title	General objective(s)	Specific objectives	Program duration *(max. 36 months)*	Total budget *(USD)*	Program outputs
			economic efficiency of using biogas for energy and slurry for fertilizers ; 3) Investigate farmers' knowledge, attitudes and barriers in relation to expanding the use of biogas for household energy and fertilizer purposes; 4) Identify factors affecting the willingness and incentives to install biogas digesters and modes to transfer this technology to stakeholders (local authorities, extension workers, biogas installers, financial supporters and farmers); 5) Propose policy implication to increase economic efficiency of biogas uses and stakeholders' acceptability. *2. Assessments of socio-economic feasibility of agricultural models under climate change in the Mekong delta* This study aims 1) Investigate current socio-economic agricultural models in the Mekong delta, 2) Analyze cost, benefit and assess adaptation of socio-economic agricultural models under effects of climate change, 3) Propose feasible socio-economic agricultural models to mitigate impacts of climate change on agricultural activities in Mekong Delta. *3. Feasibility study of the proposed farming systems in the context of extreme weather events and environmental degradation.* This study aims 1) to identify options in the proposed farming systems to cope with the extreme events and environmental degradation, 2) to conduct ex-ante assessment of these options in terms of technical, economic, environmental feasibility and social acceptability. The proposed farming systems include rice, fruits, cash crops, husbandry and aquaculture.			program: 7 – Number of short trainings: 1 – Number of trainees: 30 – Others: 0

No.	Program title	General objective(s)	Specific objectives	Program duration *(max. 36 months)*	Total budget *(USD)*	Program outputs
			4. Feasibility study of pollution options from air, water, soil and waste management This study aims 1) identify pollution drivers from air, water, soil and wastes, 2) conduct ex-ante assessment of these options in terms of technical, economic, environmental feasibility and social acceptability. *5. Feasibility study of a solid waste treatment plant* This study aims 1) to determine the current status of solid waste management in the Mekong Delta; 2) identify total economic benefits and costs of solid waste management improvement and building a plant to convert organic waste into fertilizer by using the approach of stated preference techniques or benefit transfer method; 3) analyze some indicators and sensitivities of cost and benefit analysis for a solid waste treatment plant an propose some policy implications to make the project more economically feasible.			
15	To study on the resilience of different farming systems in the context of extreme weather events and environmental degradation (E-11)	Study of establishment of solutions coped with environmental changes and climate changes for sustainable development of agriculture and aquaculture at a small scale in Mekong Delta .	*1. Risk assessment of typical agriculture and aquaculture farming systems under projection of climate patterns in 20130s.* The aims of study are: 1) To characterize the risk components (in terms of hazards, exposure, and vulnerability) of typical agriculture and aquaculture farming systems in the coastal areas of the Vietnamese Mekong Delta at the time being, 2) To review physical threats related to climate change in the future scenarios (projected to 2030s), 3) To quantify the risk components (in terms of hazards, exposure, and vulnerability for	36 months	96,000	– Number of international peer-reviewed papers/total published paper (30%/100%): 8/26 – Number of published books: 1 – Number of conferences/workshops: 1 – Number of new technologies: 0 – Number of new technologies applied: 0 – Number of patent applications: 0 – Number of PhD degrees obtained from/involved in the program: 2 – Number of graduate students involved in the program: 5 – Number of short trainings: 2 – Number of trainees: 30 – Others: 0

No.	Program title	General objective(s)	Specific objectives	Program duration *(max. 36 months)*	Total budget *(USD)*	Program outputs
			more extreme saline intrusion) of selected agriculture and aquaculture farming systems in the coastal areas of the Vietnamese Mekong Delta. *2. Evaluation of soil degradation under effecting of climate change (as salinity intrusion, inundated sate, drought state) of agriculture and aquaculture farming systems at the selected areas in Mekong Delta.* The aims of study are: 1) To determine the state of the effective factors as salinity water intrusion, inundation sate, drought state by using the qualitative and quantitative analysis, 2) To evaluate the soil degradation under effecting of each factor by using soil properties analysis, 3) Propose the best solutions for land use of different farming systems. *3. Assessing the role of communities and institutions in developing policies for water management of farming systems in the context of severe weather and environmental destruction* The aims of study are: 1) Determine the current status of institutional and community role in groundwater management policies and surface water in Households', 2) Determine total economic values of preserving water resources by using the approach of stated preference techniques or benefit transfer method, 3) Identify some factors affecting households' motivation for protecting water resources by			

No.	Program title	General objective(s)	Specific objectives	Program duration *(max. 36 months)*	Total budget *(USD)*	Program outputs
			applying the approach of OLS regression, 4) Propose some feasible policy implications to protect water resources *4. Estimate change in income of households of the rice based - farming systems due to the impact of climate change* The aims of study are: 1) To identify the response of climate change on the rice, the fruits and the aquaculture based farming systems, 2) Estimate the income change due to the climate change to the rice, the fruits and the aquaculture based - farming systems, 3) Recommendations to reduce the impacts of climate change to the household income of the rice, the fruits and the aquaculture based - farming systems.			
16	To study on the adaptation strategies on sustainable uses of natural resources in the context of climate change and environmental degradation (E-12)	The goal of the project are to suggest national and regional policies on natural resources governance changes to adapt the existing farming systems changes on in the VMD under climate change.	*1. Strategies to the engagement of key stakeholders in land resources management in coastal areas of the Vietnamese Mekong Delta* The main objective of the study is to assess saline intrusion in the coastal areas under the present and the future conditions due to climate changes (flowrate of the Mekong river, dynamics of sea levels) and their impacts on productions systems of forestry-agriculture and agriculture. The specific objectives include: - To evaluate historical changes of land use patterns of the study area and realize the roles of different driving factors in the processes, including: relevant stakeholders and physical resources changes. - To project changes of the future socio-	36 months	64,000	– Number of international peer-reviewed papers/total published paper(30%/100%): 5/18 – Number of published books: 1 – Number of conferences/workshops: 1 – Number of new technologies: 0 – Number of new technologies applied: 0 – Number of patent applications: 0 – Number of PhD degrees obtained from/involved in the program: 1 – Number of graduate students involved in the program: 4 – Number of short trainings: 1 – Number of trainees: 30 – Others: 0

No.	Program title	General objective(s)	Specific objectives	Program duration *(max. 36 months)*	Total budget *(USD)*	Program outputs
			economic and physical settings of the study area and the mutual interaction between different driving factors. - To propose strategies to the engagement of key stakeholders in land resources management in coastal areas of the Vietnamese Mekong Delta. *2. Surface water governance challenges in the Vietnamese Mekong Delta at the time being and future physical changes* The main objective of the study is to study changes on the current surface water resources governance (in terms of efficiency, effectiveness and transparency) in the coastal zones of the Vietnamese Mekong Delta and to propose changes to meet the current and future challenges. The specific objectives include: - To understand the surface water governance at the time being in coastal areas of the VMD. - To identify gaps in the existing surface water resources governance. - To propose solutions to enhance surface water resources governance, looking at future changes. *3.The development of a decision support system for groundwater management in coastal areas of the Vietnamese Mekong Delta* The main objective of the study is to develop a decision support system (DSS) for groundwater management in coastal areas of the VMD. The specific objectives include: - To understand the current base for groundwater resources decision in coastal areas of the VMD.			

No.	Program title	General objective(s)	Specific objectives	Program duration *(max. 36 months)*	Total budget *(USD)*	Program outputs
			- To evaluate groundwater using for agriculture and aquaculture. - To map groundwater resource changes under the projection of groundwater extraction and the distance of pumping wells. - To develop a groundwater management DSS for better decision making, especially in the context of groundwater resources changes and groundwater related policies evolution. *4. Strategies for environmental disaster management in the Vietnamese Mekong Delta* The main objective of the study is to propose strategies for environmental disaster management, including a natural selected disaster (flood, intrusion or drought) and a selected anthropological case. The specific objectives include: - To assess the existing condition (i.e. institutional arrangement) of the environmental disaster management (including, pre-, during and post- events) in a specific condition of the Vietnamese Mekong Delta. - To realize the possibilities to enhance the current system. - To realize the roles of different stakeholders, especially local residents, in each phase of the disaster management processes. - To propose a suitable strategies for environmental disaster management in the Vietnamese Mekong Delta.			