



# ICMP / CCCEP PHASE I: FINAL REPORT

Integrated Coastal and Mangrove Protection in the Mekong Provinces  
for the Adaptation to Climate Change /  
Climate Change and Coastal Ecosystems Programme

Implemented by **giz** Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (GIZ) GmbH



# CONTENTS

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<b>1. Executive summary</b>	<b>4</b>
Programme description	5
Major impacts	8
<b>2. General information</b>	<b>10</b>
Programme partners and donors	11
Background: The Mekong Delta	12
Objectives of the programme	12
Programme set-up	14
<b>3. Working areas</b>	<b>16</b>
Area Management	17
Sustainable Livelihoods	25
Environmental Awareness	29
Coastal Governance	31
Additional activities	36
<b>4. Indicators</b>	<b>38</b>
<b>5. Lessons Learnt from Phase I</b>	<b>42</b>
<b>6. Outlook</b>	<b>44</b>



# 1. EXECUTIVE SUMMARY

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Programme description  
Major impacts

## Programme description

The Mekong Delta is home to 17 million people and is Viet Nam’s most important agricultural region. Producing 55% of the country’s rice, the Mekong Delta feeds more than 145m people, roughly the population of France and Germany combined. The region is the reason that Viet Nam, which once suffered from famines, is now the world’s second largest exporter of rice.



But the Mekong Delta is facing existential threats. Climate change is leading to rising sea levels, and according to official studies, 38% of the Mekong Delta could be underwater by the year 2100. Already today, some areas of the coast are eroding by 50 metres a year. The mangrove forests along the coast which can protect the hinterland from floods and storms are in dramatic decline. At the same time, floods and storms are likely to increase considerably in the future. Furthermore, rising levels of saltwater intrusion lead to saline soils which pose considerable challenges to rice production. Apart from climate change, the natural ecosystems of the Mekong Delta have seen large-scale change. This has occurred through the clearing of coastal

forests, the alteration of natural waterways and the adoption of intensive agriculture and aquaculture industries. These changes threaten the future of the Mekong Delta and its ability to provide the essential ecosystem services that the communities of the Delta depend on.

The challenges that the Mekong Delta faces are diverse and closely interlinked. For example, mangroves are an integral part of coastal protection; coastal protection plays an important role in controlling soil salinity; the salinity of the soil impacts on agricultural production; the management of saline waters for agriculture and

### Fast Facts

<b>NAME</b>	Integrated Coastal and Mangrove Protection in the Mekong Provinces for the Adaptation to Climate Change / Climate Change and Coastal Ecosystems Program (ICMP/CCCEP)
<b>EXECUTING AGENCY</b>	Ministry of Agriculture and Rural Development of Viet Nam (MARD)
<b>DONORS</b>	Australian Department of Foreign Affairs and Trade (DFAT) – Australian Aid German Federal Ministry for Economic Cooperation and Development (BMZ)
<b>IMPLEMENTING AGENCY</b>	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
<b>GEOGRAPHICAL SCOPE</b>	National level, Soc Trang, Bac Lieu, Ca Mau, Kien Giang, An Giang
<b>DONORS</b>	Australian Department of Foreign Affairs and Trade (DFAT) – Australian Aid German Federal Ministry for Economic Cooperation and Development (BMZ)
<b>IMPLEMENTING AGENCY</b>	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)
<b>GEOGRAPHICAL SCOPE</b>	National level, Soc Trang, Bac Lieu, Ca Mau, Kien Giang, An Giang

aquaculture needs is often complex and results in conflict between farmers with competing water needs – to mention just a few of the interconnections.

This is why the governments of Australia, Germany and Viet Nam have jointly launched the integrated development programme ICMP/CCCEP\* in 2011 to make the coast of the Mekong Delta more resilient against climate change. The objective of the first phase (2011 – 2014) of ICMP/CCCEP was to achieve the efficient management and protection of coastal ecosystems for the mitigation and adaptation to environmental hazards related to climate change. The activities were carried out at the national level and in five provinces in the Mekong Delta: Soc Trang, Bac Lieu, Ca Mau, Kien Giang and An Giang.

The core areas of the programme were area management, sustainable livelihoods, environmental awareness and coastal governance. In these areas, the programme has been able to achieve a number of successes to make the coast more resilient against environmental change.

## Area management

### Stopping the loss of land and forests

- **Breakwater fences:** The programme has developed an innovative, cost-effective and eco-friendly solution to stop the loss of land\* to the sea of up to 30 metres per year, and to even reverse this trend by winning back from the sea up to 180 metres of land in two years, thereby making 40,000 people safer against extreme weather events such as storms and floods.
- **Rehabilitation of mangroves:** The programme has been successful in rehabilitating mangroves, including on barren land on which before no trees could be grown. The technique is now used by Vietnamese foresters.
- **Co-management:** The programme has pioneered a model in which the local population shares the responsibility to actively manage mangrove forests with the authorities, in exchange for the right to use the forests for their livelihoods.
- **Coastal Protection Decision Support System:** First steps have been undertaken to introduce methods to assess the past and present situation along the coastline to ensure that better investment decisions are made for coastal protection measures.

### \* Land or no land?

At the coast of the Mekong Delta, it is often hard to tell where the land ends and the sea begins. In this report, “land” is used equivalent to “land on which mangroves can grow”, which is possible when the land is high enough above sea level and thus has a sufficiently compact structure so that the soil is not washed away by the sea. Erosion is defined as the loss and sedimentation as the gain of such land.

## Sustainable livelihoods

### Farming techniques for a changing environment

- **Livelihoods:** The programme has introduced a number of livelihood measures that are adapted to the changing environment of the Mekong Delta. More than 8,500 farmers have been directly engaged, and continue to spread the methods with the support of local authorities.
- **AWD:** For instance, the introduction of the Alternate Wetting Drying (AWD) rice production technique has decreased the use of water and pesticides by 30% while raising the profit for farmers by up to 40%.
- **Mangrove aquaculture:** Improved techniques for farmers who keep mangroves in their shrimp ponds have raised their profits by 27%, have made shrimp less vulnerable to diseases and have contributed to protecting mangroves at the coast.
- **Aquaculture value chain assessment:** The value chain for certified and uncertified environmentally friendly shrimp has been assessed to better provide advice in the development of a marketing strategy in Phase II of the programme.

## Environmental awareness

### Understanding the importance of nature

- **Awareness:** The programme has initiated a wide array of activities to strengthen environmental awareness in the Mekong Delta in order to lay the foundation for the future protection of the ecosystem.

\* ICMP stands for “Integrated Coastal and Mangrove Protection in the Mekong Provinces for the Adaptation to Climate Change”. CCCEP stands for “Climate Change and Coastal Ecosystems Program”.

- **School books and curricula:** Most importantly, environmental and climate change related issues were mainstreamed into lesson plans of elementary, secondary and high schools in several Mekong Delta provinces, and a number of school books have been developed.
- **Teachers:** In total, more than 25,000 teachers have been engaged, more than half of them through trainings on how to convey environmental issues in class – an innovation in the Mekong Delta.
- **Water management:** A number of measures have supported authorities to make better decisions on planning and management of fresh, brackish and salt water and associated infrastructures in the Mekong Delta, for a more productive and sustainable agriculture production.
- **Planning and budgeting:** The programme has started to support the development of an enabling public climate finance architecture through analysing the gaps between national and provincial strategies and real climate relevant expenditures at local level.

## Coastal governance

### Turning local solutions into national policies

- **Policies:** The programme has managed to transform its experiences on the ground into policies and regulations that are currently being drafted at the national level, which lays the basis for introducing the techniques nationwide wherever they are suitable.
- **Forest management:** A package of four policies will allow more efficient management of coastal forests to be achieved through (amongst other initiatives) closely involving the local population and by setting better standards in mangrove rehabilitation – closely informed by the experiences of the programme in the provinces.

This approach of institutionalising the technologies developed by the programme will be one of the guiding factors for the second phase of the programme from 2014 to 2017. In Phase II, the programme will focus on scaling up the technologies in order to realise their full impact on a broader scale. This includes translating innovations into policies and regulations, establishing new partnerships that help to create synergies, and strengthening the technical and financial capacities of authorities to implement the changes that are necessary to make the Mekong Delta more resilient against environmental change, to sustain livelihoods and to promote sustainable growth.



Rice field in the Mekong Delta

Major impacts

# Higher resilience against climate change on the Mekong Delta coast through...

## Area management:

- **10 hectar** (20 football fields) of land **re-gained** from the sea
- **99%** of the coastline of Soc Trang and Bac Lieu now without waves directly affecting the dyke
- **603 hectars** of mangrove forests **rehabilitated**
- **Co-management model** successfully introduced in Viet Nam
- **40.000 people safer** against extreme weather events



### Coastal governance:

- Policy package on forest management expected to have a positive impact on **3,200 km of coastline** in Viet Nam and benefit **8.7 m people**
- Policy package on irrigation management expected to be used by **11,000 water associations** and benefit more than **300,000 hectares** of agriculture and aquaculture area

### Environmental awareness:

- More than **25,000 teachers** reached
- **Environmental issues included** in official school lesson plans and endorsed by the Ministry for Education and Training
- **93%** of polled **primary school students** in Kien Giang stated that they have changed their behaviour towards the environment

### Disaster prevention and risk mitigation:

- More than **27,000 people** less vulnerable against extreme weather events
- **17 schools, 9 bridges, 5 rural roads** and **2 clinics** re-built after a major flood in An Giang in 2011

### Sustainable livelihoods:

- **22 livelihood** models for **8,500 households** that reduce environmental pressure and increase income by 20 – 80%
- AWD rice production technique: **30% less water and pesticides**, up to **40% more income**
- Mangrove aquaculture techniques: less pesticides, **income increased by 27%**

### Additional funding:

- The programme supported Vietnamese authorities to access **USD 32.5 m** of loans and grants for additional projects relating to the core areas of the programme (see page 37 more details)



## 2. GENERAL INFORMATION

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Programme partners and donors

Background: The Mekong Delta

Objectives of the programme

Programme set-up

## Programme partners and donors



### MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT OF VIET NAM (MARD)

The Ministry of Agriculture and Rural Development of Viet Nam (MARD) is responsible for performing nationwide state management functions in the fields of agriculture, forestry, irrigation/water services, rural development and other. MARD is the executing agency of ICMP/CCCEP; correspondingly, MARD and its subsidiary bodies at the provincial level (Department of Agriculture and Rural Development, DARD) are the most important partners for implementation. Within MARD, the programme is institutionally anchored with the Forestry Projects Management Board.



### GERMAN FEDERAL MINISTRY FOR ECONOMIC COOPERATION AND DEVELOPMENT (BMZ)

The German Federal Ministry for Economic Cooperation and Development (BMZ) develops the guidelines and concepts on which German development policy is based. These are the foundations for developing shared projects with partner countries and international development organisations.

Since 1990, Germany has provided more than 1.8 billion Euros for Viet Nam, mostly in the form of loans for joint programmes. The core areas of the bilateral cooperation with Viet Nam are environment (coastal management and biodiversity), energy and vocational training.



### AUSTRALIAN DEPARTMENT OF FOREIGN AFFAIRS AND TRADE (DFAT) – AUSTRALIAN AID

The Australian Government's overseas aid programme is a Federal Government funded programme that helps reduce poverty in developing countries. The Department of Foreign Affairs and Trade – Australian Aid manages the programme. Australia, through Department of Foreign Affairs and Trade – Australian Aid, works with other governments, the United Nations, Australian companies and non-government organisations to design and set up projects which tackle the causes and consequences of poverty in developing countries.

The Viet Nam country programme focuses on progressing Viet Nam's greater economic integration in the region through support for transport infrastructure and economic reforms; strengthening Viet Nam's human resources; and improving environmental sustainability.



### DEUTSCHE GESELLSCHAFT FÜR INTERNATIONALE ZUSAMMENARBEIT (GIZ) GMBH

The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH is a German federal enterprise providing technical assistance for political, economic and social change processes in international and development cooperation. It operates in 130 countries worldwide on behalf of the German government, other donors and selected clients from the private sector.

In this function, GIZ is the implementing agency of ICMP/CCCEP. Having worked in Viet Nam for more than 20 years, GIZ currently has around 250 specialist staff deployed across the country, including national and international personnel, development workers and international experts.

## Background: The Mekong Delta

The Mekong Delta is home to 17 million people and is Viet Nam's most important agricultural region. Producing 55% of the country's rice, the Mekong Delta is the reason that

Viet Nam, which once suffered from famines, is now the world's second largest exporter of rice. In addition, the Delta is the country's third largest industrial region, trailing only the metropolitan areas of Ho Chi Minh City and Hanoi.



But the Mekong Delta is facing existential threats. Climate change is leading to rising sea levels, and according to studies, 38% of the Mekong Delta could be underwater by the year 2100. Already today, in some areas the coast caves in by 50 metres – per year. The mangrove forests along the coast which can protect the hinterland from floods and storms are in dramatic decline, while floods and storms will increase considerably in the future. Furthermore, the rising levels of saltwater intrusion lead to salient soils which pose considerable challenges to rice production. Apart from climate change, improper agricultural practices – amongst others the wrong use of chemicals – are leading to an imbalance of the coastal ecosystem. The future of the entire Mekong Delta is threatened.

Yet, the country's institutions do not have sufficient capacity to halt these trends. Government institutions at the national and provincial level lack the strategic and technical know-how as well as the financial means to prepare the coast of the Mekong Delta for a changing environment. Moreover, the different actors on the national

and provincial level have the potential to cooperate more closely in order to implement solutions which have already been identified as suitable. The “implementation gap” between national strategies and action on the provincial level is a major challenge in Viet Nam.

All of this not only poses a daunting outlook for the environment of the Mekong Delta, but has much more immediate economic consequences. In a region that largely depends on agriculture (especially rice and fruit farming) and aquaculture (fish and shrimp farming), it is of crucial importance that the soils and ecosystems can sustain such practices – otherwise, millions of people are faced with lower or no income.

In a region where one rice field and shrimp pond borders the next, the loss of land to the sea by erosion means that economic and social pressures multiply. Viet Nam, in the midst of a transition from a developing to an emerging country, needs to sustain its growth rates in order to keep the economic momentum high.

In this context, the continuous degradation of ecosystems is only one problem. Another grave threat for the Mekong Delta is a possible extreme weather event, especially a major storm flood. In case of such a storm flood, big amounts of water could flow over the dyke at different places and could form one big water expanse which reaches 20 – 30 km inland, with no way to drain off. Such an event would add significantly to the salinisation of the soil and destroy vast parts of agricultural harvests, putting the livelihoods of tens of thousands of farmers at risk.

## Objectives of the programme

The purpose of the programme is to strengthen the coast of the Mekong Delta by making it more resilient against climate and environmental change. The objective of the first phase (2011 – 2014) was to achieve the efficient management and protection of coastal ecosystems for the mitigation and adaptation to environmental hazards related to climate change. This included the protection of the Mekong Delta as an economic region which ensures the livelihoods of its people.

Managing the threats for the coast of the Mekong Delta is not feasible with a one-dimensional sectoral approach. The very nature of the problem is that many different issues are interlinked, such as water management, forestry, dykes, aquaculture and agriculture. For many of these issues, different Vietnamese authorities are responsible, with a low degree of coordination.

This is the reason for the cross-sectoral and vertical approach of ICMP/CCCEP, spanning across the four thematic areas: area management, sustainable livelihoods, environmental awareness and coastal governance, and covering both the national and provincial level. Only by combining these fields – for instance by feeding the experiences from provincial area management into the national coastal legislation, or by creating awareness for environmental changes in order to motivate farmers to adapt their techniques – the programme was able to attain its objectives.

In line with the Government of Viet Nam’s institutional, legal and strategic framework, all programme activities were aimed at supporting the national and provincial authorities in four areas which are closely linked to the challenges that the Mekong Delta is facing:

**Area Management**

- Stopping the erosion along the coast
- Rehabilitating mangrove forests as a natural protection of the land
- Developing and introducing new methods to support decisions for more effective and efficient coastal protection

**Sustainable Livelihoods**

- Supporting rice and shrimp farmers to use more sustainable and effective techniques in order to adapt to a changing environment and gain a higher income

**Environmental Awareness**

- Building an understanding of environmental interconnections and of the benefits of sustainable behaviour

**Coastal Governance**

- Turning local solutions into national guidelines, regulations and standards that can be applied wherever they are appropriate



## Programme set-up

ICMP/CCCEP is a programme of the government of Viet Nam, funded by the governments of Australia, Germany and Viet Nam and implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

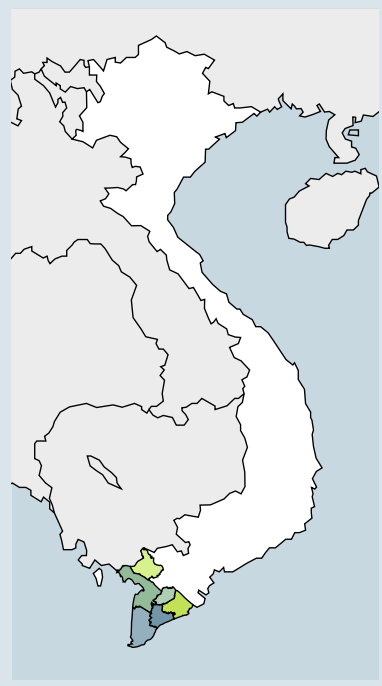
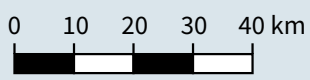
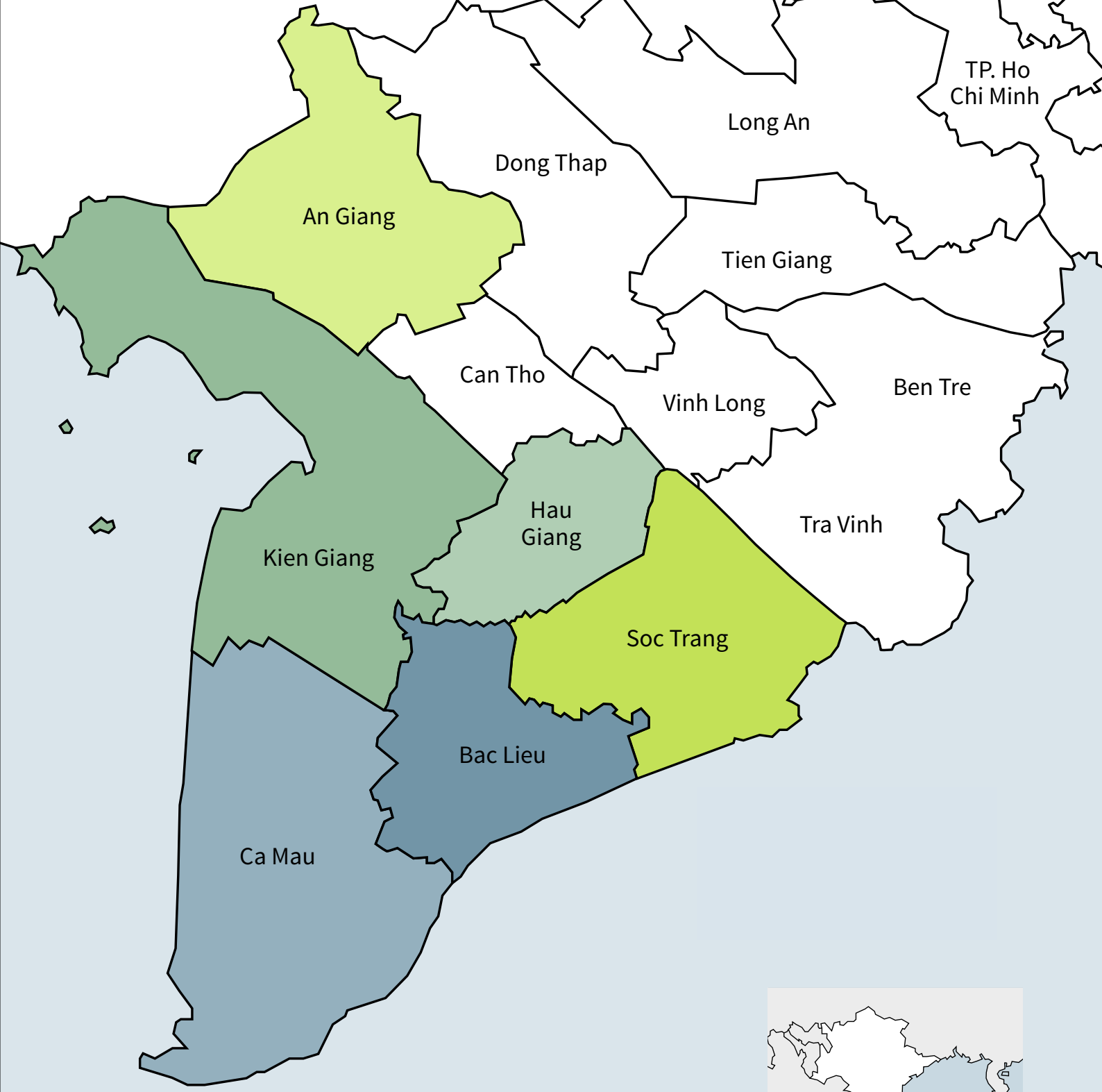
In Phase I, the programme consisted of a national component, based in Hanoi, and five provincial components, based in the five Mekong Delta provinces of Soc Trang, Bac Lieu, Ca Mau, Kien Giang and An Giang. The sub-projects in the provinces of Soc Trang and Bac Lieu had received independent financing from the German Ministry of Economic Cooperation and Development (BMZ) and the German Ministry of Environment (BMU) respectively.

The Ministry for Agriculture and Rural Development (MARD) is the executing agency of the programme and the most important implementation partner, together with its subsidiary bodies at the provincial level (Department of Agriculture and Rural Development, DARD) and the Provincial People's Committees (PPC). The PPCs play a decisive role in the development and distribution of guidelines and ordinances on the implementation of sustainable and climate-resilient practices.

The programme is working together with multiple institutions affiliated with MARD.

- The Programme is institutionally anchored with the Forestry Projects Management Board (FPMB), under MARD's Directorate of Forestry (VNForest). The FPMB is responsible for implementing the financial cooperation and programmes.
- The Water Resource Directorate (WRD) under the MARD is an implementation partner at the national level. The WRD is responsible for the development and implementation of national policies within the areas of irrigation management and systems, dyke planning and management, and flood and disaster prevention.
- VNForest is an additional implementation partner at the national level. VNForest is responsible for the development and implementation of national policies, amongst others with regards to forestry management, including co-management and coastal forest protection and management.
- A 20-member steering committee chaired by the MARD Vice-Minister is handling the overall programme management.

In addition, the programme is cooperating with other ministries, including the Ministry of Natural Resources and Environment (MONRE), the Ministry of Planning and Investment (MPI), the Ministry of Finance (MOF) and the Ministry of Science and Technology (MOST). These ministries and their subsidiary bodies at the local level play a key role in the creation of relevant policies, development plans and guidelines, as well as the implementation of on-ground activities.





## 3. WORKING AREAS

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- Area Management
- Sustainable Livelihoods
- Environmental Awareness
- Coastal Governance
- Additional activities





## Area Management

### Stopping the loss of land and forests

#### Snapshot

Area management is a core working area of the programme, and one that has received significant attention, leading to dozens of visits by international and national politicians, practitioners, academia and media. The reason: the programme has pioneered low-cost, sustainable solutions for some of the most crucial problems of the Mekong Delta coast – the loss of land to the sea and the decline of robust mangrove forests.

#### Problem

When sailors shipped along the coast of the Mekong Delta 100 years ago, they could see nothing but trees. A belt of mangrove forests, 800 to 1200 metres thick, stood between the sea and the land and acted as a natural buffer against floods and storms.

Today, the mangrove belt between water and land is shrinking from two sides. From the land side, farmers want to claim the valuable forest grounds for rice fields and shrimp ponds, and local inhabitants or landless people cut the wood and sell it for income or use it as firewood. Further stress comes from irrigation canals that let water flow in two directions: from the Mekong river into the sea, and from the sea into the shrimp and fish ponds on land. Where the canals discharge into the sea, erosion often occurs.

Such erosion – the loss of land to the sea – is the main threat for mangroves from the sea side, and a huge challenge for the population of the coast: erosion of up to 50 metres per year means that without intervention, houses that lie 500 metres from the sea today would be at the seashore in 10 years.

One such intervention is dykes. The artificially constructed dams prevent sea water from flowing inland in case of floods. Theoretically, dykes would be sufficient to protect the hinterland from floods, if it was not for their weaknesses: dykes not only disturb the natural coastal ecosystem, they are also very expensive and complicated to build and maintain.

The consequence is that a combination of well-designed dykes, protected mangrove forests and innovative techniques to stop erosion is the most appropriate solution for protecting the land from the sea in areas like the Mekong Delta. The way it works: breakwater fences (see below) reduce the wave power, enable sedimentation and restore the lost floodplains so that mangroves can grow. The mangrove trees are the first line of defence for floods and storms by effectively reducing the wave-surge energy; the dykes act as a last barrier that only considerable floods can surpass.

This cost-benefit advantage of mangroves in relation to dykes is quantifiable. In Northern Viet Nam – where the coastal zone is different from the Mekong Delta, but may still serve as a reference – mangroves have been rehabilitated in front of the dyke, thus lessening the pressure on the dyke and reducing costs for dyke maintenance. According to a study by the Red Cross, “an initial investment of 1.1m USD for mangrove rehabilitation in northern Viet Nam saved 7.3m USD annually for dyke maintenance” (Source: Evaluation report of the Danish and Japanese red cross funded disaster preparedness/mangrove forestation programme 2005). A scientific, quantitative cost-benefit analysis which has reviewed ICMP/CCCEP’s activities in Soc Trang has found that the ecosystem-based approach to coastal management is 5 times cheaper than upgrading and maintaining a dyke without additional ecosystem-based approaches, like mangroves in front of the dyke.

Besides its benefits for coastal protection, mangroves also significantly contribute to biodiversity and the economy – 70 – 80% of all fish caught offshore spend a part of its lifecycle in the mangroves. Accordingly, each hectare of mangroves that is cut down equals the loss of more than a ton of fishing in the coastal area, roughly equalling 37,500 USD (source: Scripps Institute of Oceanography).

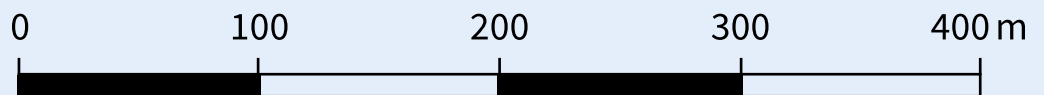
#### Solutions

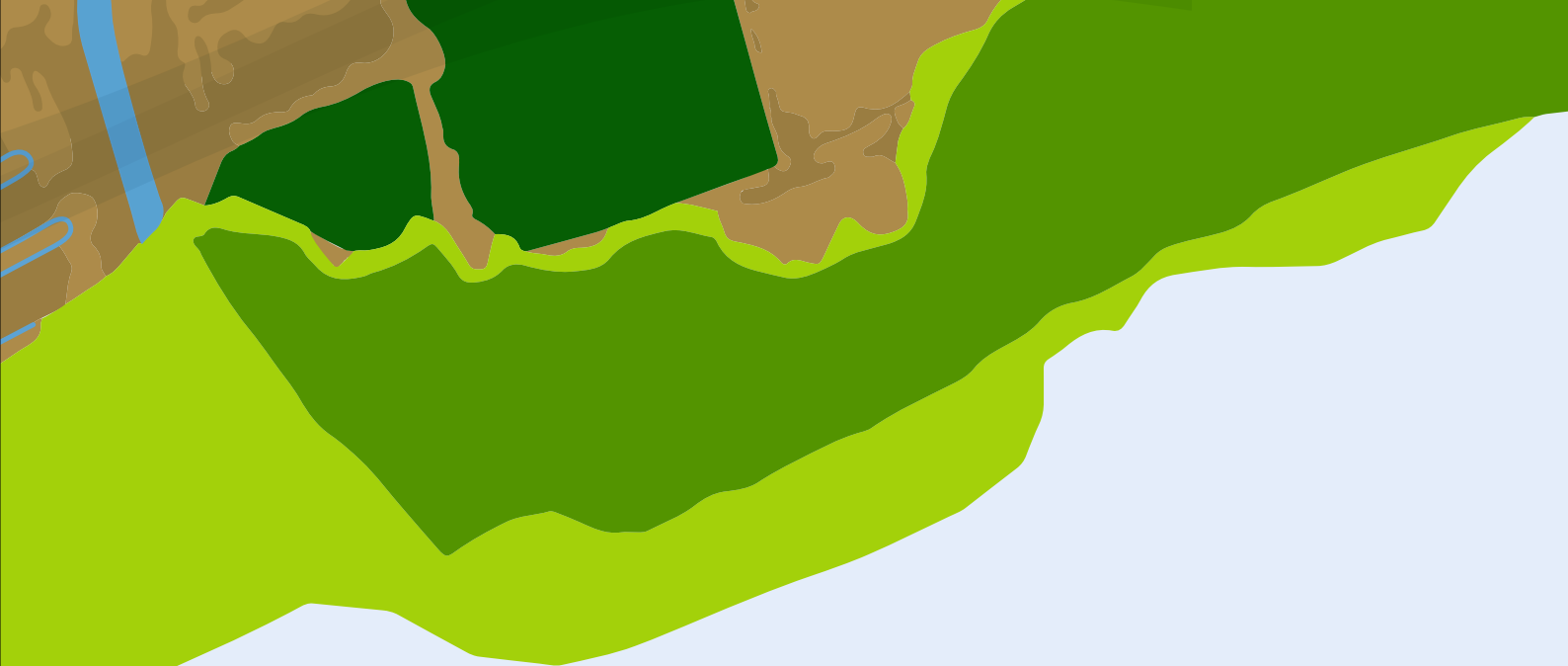
##### Breakwater fences: stopping erosion and rehabilitating mangroves

The introduction of breakwater fences (sometimes also called T-Fences due to their often T-shaped structure) is one of the prime accomplishments of ICMP/CCCEP. While comparable structures have been used in Europe

**Legend**

- Forest and barren land
- Restoration of barren land by the programme
- Mangrove rehabilitation on mudflat (planted)
- Natural regeneration of mangroves (after planting)
- Water





1



**BEFORE**

Barren land on which no trees can grow



**AFTER 20 MONTHS**

Barren land restored

2



**BEFORE**

Erosion site with first new sedimentation due to breakwater fences and some planted mangrove seedlings



**AFTER 23 MONTHS**

180 metres of land with abundant vegetation re-gained from the sea, reaching much farther than the breakwater fences and the planting site

for more than 400 years, the programme has pioneered the use of breakwater fences in Viet Nam. Subsequently, the model has been replicated both nationally and internationally and has received considerable attention from practitioners, academia and the media. Its key for success is the combination of complex hydrological modelling and simple bamboo fences, resulting in a reversion of erosion and a rehabilitation of mangroves.

The fact that the sea is swallowing ever more land in the Mekong Delta is due to several factors. Firstly, rising sea levels lead to stronger waves which cause erosion. Secondly, past mangrove rehabilitation attempts have used inappropriate species which cannot protect the land from erosion; for instance, the often-planted mangrove species *Rhizophora* is not suitable at the seaward edge and therefore is not the best choice to prevent erosion. A third potential cause is the change of sediment discharge by the Mekong River.



The breakwater fences are usually T-shaped bamboo fences. Based on complex hydrological studies on tidal currents, bathymetry and wave-height, the breakwater fences are designed and placed at severe erosion sites in front of the dyke. The fences stand in the sea and lessen the force of the waves hitting the coast by wave transformation, i.e. by diffraction, reflection, refraction and deformation of waves. This wave transformation leads to the settlement of transported sand and mud particles: as the waves lose some of their force, the sand and mud particles they carry settle on the ground and create sedimentation.

On these newly created mudflats, mangroves can naturally grow within months. Mangrove rehabilitation can be also supported by planting the 'right' (resilient) species at the right place. Within months or years, depending on the site, the sites are completely transformed, with the land (mud flats or flood plains) reaching much further into the sea, often covered by dense vegetation.

The programme has set up and maintained such breakwater fences on an overall length of 10.85 km, which includes river protection measures introduced in An Giang, the only programme province which does not lie at the coast. These fences have been constructed at the most vulnerable sites in the coastal provinces, especially where the erosion had already approached the dyke, without any mangroves left to lessen the impact of the sea on the dyke. In Bac Lieu and Soc Trang, 99% of the coast are no longer directly threatened by water at the dyke – with the exception of sites where due to the soil structure or water current pattern, breakwater fences could not be deployed.

The breakwater fences have not only stopped the loss of land to the sea of up to 30 metres per year, but have completely reversed this trend by winning back land: at one site 180 metres of land has been regained from the sea in two years. In total, the programme has been able to win back land from the sea on an area of 10

hectares, which equals 20 football fields. This new land consists of mud flats where mangroves and other plants can grow.

Technically, this success has been achieved due to a vertical sedimentation of up to 120 cm, which means that the soil is 120 centimetres higher than before and is therefore above water level, except during flood. This higher floodplain has created a natural protection of the dyke toe and for recruiting mangroves. The inundation periods of near-dyke areas are considerably reduced, and so is the maximum wave height at the dyke toe.

Behind the protection measures natural regeneration has occurred, while in some provinces this has been complemented by mangrove planting. Monitoring has shown that the natural biodiversity had been recovered by 70% after four years. In one province, the diversity of species was comparable to a natural forest after 18 months.

The breakwater fences have been replicated by other organizations, amongst others by IUCN (International Union for Conservation of Nature) which is building such fences in Viet Nam and Indonesia.

### Mangrove rehabilitation: bringing forests back by imitating nature

While the breakwater fences are one major instrument to rehabilitate mangroves, another important field of action was to strengthen areas where mangroves forests have either been cut down or have not developed their full natural strength. In both cases, the programme has developed successful solutions to bring back strong and diverse mangrove forests by imitating nature.

In nature, forests are diverse ecosystems, consisting of trees and other plants of different age, size and variety. This is what makes forests strong: if faced with calamities such as floods, storms or diseases, the variety of forests ensures that while some trees may die, others will survive.

In contrast, the mangrove forests planted by the Vietnamese authorities are not diverse, but rather a monoculture. This is due to strict standards and cost-norms that only allow for the standardised planting of the same species of trees in long rows. While this approach is useful for planting a large number of trees for comparatively little money in a rather short time span, this is not practicable for mangrove forests. The resulting forests are often weak, with trees not growing very high and not being resilient to extreme weather.

The programme has developed a number of approaches to turn such uniform, artificial and weak forests into diverse, strong and natural forests that better protect the coast. One such approach is to imitate the natural rejuvenation process of forests: usually, some very large trees in a forest tend to fall from time to time, creating gaps in the



canopy and destroying smaller trees and plants nearby and encouraging the growth of new trees in these gaps.

The programme has mimicked this natural process by cutting gaps of 80 – 100 m<sup>2</sup> in the monoculture forests and planting other trees and plants in these gaps. The result is a gradual transformation and strengthening of the forest. This approach is even more successful when another natural tendency of forests is followed: trees usually don't grow in uniform distance from one another as in forest plantations, but new trees rather usually grow close to established trees and trunks. By using this pattern when planting new trees, the resulting forests are more resilient and more diverse.

But in the end, the mangrove rehabilitation efforts of ICMP/CCCEP can only be a first step to a change in the Vietnamese system. This is why it is important that the techniques are adopted by the forestry authorities. Furthermore, the programme has worked to change the existing cost-norms for planting mangrove trees in order to allow for higher spending per hectare, reflecting the need not just for more, but for more diverse forests.

### Breathe new life into barren land

While transforming an existing forest is ambitious, the biggest challenge for foresters is to revive barren land where no plants are growing. Such areas are abundant in provinces with a strong aquaculture industry: if aquaculture ponds are not managed sustainably, they deplete the soil and are filled up with earth after their use. The soil on such former aquaculture ponds offers very little nutrients to plants, resulting in barren land. Even worse, these barren areas usually lie in the middle of mangrove forests, diminishing their protection capacity.



The programme has developed a technique to revive such areas by restoring their hydrology. By digging canals into the ground, water can enter the fields, bringing with it sediments. This has reduced the salt concentration in the soil from 60 per mill to less than 20 per mill.

On this restored land, the programme has planted new trees with the “mimic nature”-techniques described above, resulting in an unusually high tree survival rate of 60 – 70% on a total area of 25 hectares. The Forestry Department of Bac Lieu – which had no success in reviving barren land with the previous techniques – has now adapted the approach and has used its own budget to employ it at appropriate sites.

Similar approaches in Kien Giang province have resulted in 17 hectares of mangrove diversity plantations on elevated barren land and 7 hectares of pioneering-species plantations on mudflats, fulfilling the gaps within 170 hectares of coastal protection forest in the province.

#### **Ensuring biodiversity by creating natural gene banks**

Biodiversity is declining rapidly in the Mekong Delta, as natural forests give way to farmland and newly planted forests often consist of only one species of tree. This is why the programme has taken a number of steps to preserve some of the biodiversity in the programme provinces, amongst others by setting up a natural “gene bank”.

Such a bank exists in a 5 hectares large area in Bac Lieu which has been developed into an arboretum, a protected site in which 16 different mangrove varieties are growing today, all of which are endemic to Bac Lieu but some of

which had been extinct in the area. The area is actively managed by the forest rangers and can be used in the future to plant the trees in different spots in the province and beyond in order to add structure and biodiversity to the forests.

Similar efforts have been undertaken in Kien Giang, including the support of a 50 hectare zone for the conservation of a rare mangrove species (*Lumnitzera littorea*) in Phu Quoc National Park. A major success for higher biodiversity in Kien Giang has been the support for the U Minh Thuong National Park. The national park had suffered from a decreasing presence of birds due to water shortage. A new water management system increased the bird population by 33% from 2011 to 2013. Due to programme support, the park has gained international recognition as an ASEAN Heritage Park, only the fifth in Viet Nam.

#### **Melaleuca forests**

Besides mangroves near the coast, the programme has supported the management of melaleuca forests and peatland which is especially abundant in Kien Giang. Through programme efforts, the PPC of Kien Giang has recognised the environmental importance of melaleuca forests to the ecosystem. Several reports and demonstrations, including a report on the melaleuca value chain, were used as the basis to finance and build a melaleuca timber processing plant. The plant will be built at a cost of 57 billion VND, and Kien Giang province has committed to grow an additional 30,000 hectares of forest to supply the plant.

## Co-management

The efforts of ICMP/CCCEP to rehabilitate mangroves – through T-Fences and other measures – are not sustainable if the local population does not respect sites where young mangrove trees need protection.

Co-management or shared governance is a partnership agreement in which the local population gets the right to sustainably use natural resources like forests, fish and shellfish, along with the responsibility to sustainably manage and protect these resources. It addresses the problem of unsustainable use of resources from the destruction of mangrove forests. It is for people living along the coast who are dependent on the collection of natural resources from mangrove forests for their livelihood. The programme has so far established three co-management sites, while a fourth one is under way.

The problem that co-management is tackling is simple to understand but not easy to solve. Local communities use mangrove forests in order to get timber, to fish and to collect clams and other seafood. This human interference disrupts the natural rejuvenation process of mangrove forests, for instance when fishing nets carry away mangrove seeds. For successful mangrove rehabilitation, this has to stop – and mangrove rehabilitation is in the interest of the local communities, because more mangroves mean more fish, seafood and even timber.

This is where the co-management approach comes in. The idea is to allow local communities to use the mangrove forests which are owned by the state for their livelihoods. In return, local communities take over a part of the responsibility to protect the forests. Instead of dis-

putes between the forest rangers and the local communities as in the past, co-management establishes a system of shared governance between the state and the communities. Amongst others, local communities respect that at certain times, they may not enter certain protection zones.

The results of the approach are considerable. The local communities develop a strong sense of ownership for protecting the forest. Most importantly, they directly experience the benefits of protecting the forest, including a higher income.

The co-management approach has been widely observed and has been transferred to a number of different sites. Amongst others, the World Bank has included co-management in a project in the Mekong Delta, and the government of Viet Nam has issued a guideline on co-management that recommends the use of the technique.

### Payment for environmental services

One of the success factors of co-management is the inclusion of a component for the payment for environmental services. This is necessary because ecosystems have a certain value, but it is not always the people who reap the benefits who are also involved in protecting the environment. To protect and maintain ecosystems and their services, the programme identified the beneficiaries of ecosystem services, namely clam cooperatives that need a functioning mangrove forest in order to be able to farm and collect clams. On the other hand, it is the local population who protects and manages the coastal wetlands. This is why the programme initiated a benefit sharing scheme whereby clam cooperatives pay for their benefits from a well-maintained and protected mangrove forest. The money goes to the members of the co-management groups.

But even beyond this direct payment, a sustainable resource use benefits the local population as well as the environment. Only if people see it in their interest to protect the forest, they refrain from harmful practices. This is the reason why education and training is of crucial importance to communicate knowledge on greater environmental processes and on why sustainability is in everyone's interest in the end.



Local population collecting snails in a co-management area

## Decision support toolkit

In order to support decision makers for planning and prioritizing coastal protection measures based on latest evidence, several methods were developed and tested in different provinces. Along 400 km shores at the coast of the Mekong Delta, ‘coastal numerical modelling’ and some recent investigations on currents, waves and tides have shown where breakwater fences are an appropriate solution to halt erosion and where other solutions are needed.

The ‘video shoreline assessment’ is an in-expensive method to gather up-to-date information on threatening erosion hot spots and shoreline condition. With this tool, more than 470 km of coast in Kien Giang and Ca Mau have been classified as stable or in different stages of erosion. ‘Historical mapping’ looks back into the course of

the shoreline about 130 years ago and was piloted in Soc Trang. This tool helps decision makers to understand the natural dynamics of the coastline and its dramatic retreat during this period. The ‘sea-dyke quick scan assessment’ is another example how up-to-date information about the state of the sea-dykes (in Ca Mau in this case) is supporting the authorities in provinces and national ministries to prioritize sea-dyke construction in a resourceful and sustainable way.

The results of all these decision support tools are an essential pre-condition for the planning of the coastal protection system, which consists of the elements of fore-shore stabilisation, mangrove forest and sea-dykes. First steps were taken to make the entire toolkit easy accessible by creating a GIS enabled coastal database and thus to initiate up-scaling and institutionalising.

## Area Management: Major Impacts

PROBLEM	SOLUTION	OUTCOME	IMPACT
Erosion of up to 30 metres per year	Breakwater fences	Erosion stopped Sedimentation of up to 180 metres 10 ha of land re-gained from the sea 99% of the coastline in Soc Trang and Bac Lieu now without wave surge directly affecting the dyke	40,000 people safer against extreme weather events Solutions turned into national policies Saves up to 80% of costs for the maintenance of sea dykes
Robust coastal forests in decline	New mangrove rehabilitation techniques	603 ha of mangrove forests rehabilitated 42 hectares of barren land rehabilitated	Developed solutions taken up by Vietnamese authorities and international actors
Local population inflicts harm on the coastal ecosystem	Co-management	3 co-management sites established Strengthened collaboration between local people and authorities Abundance of fish and shell fish increased	Increased income of 85 USD per month for local households Rehabilitation of mangroves increased Involving the population in the management of forests is integrated into several national policies Developed method used as basis for a Prime Minister’s decision and taken up by the World Bank



## Sustainable Livelihoods

### Farming techniques for a changing environment

#### Snapshot

As the environment in the Mekong Delta changes, farming techniques have to adapt, which means using resources more efficiently and stopping harmful practices. The idea of the programme: linking sustainable techniques to higher income for farmers.

With rice being the dominant economic factor in the Mekong Delta, several programme interventions are based on rice and selected other crops. But aquaculture – which in the Mekong Delta means mainly shrimp and fish farming in ponds – is a growing industry which often brings higher returns on investments than agriculture, but is at the same time threatening for the region's ecosystem. In total, more than 8,500 households have been reached through the programme, resulting in increased income of 20 – 80%, depending on the livelihood measure.

#### Problem

The changing environment of the Mekong Delta is a challenge for economic development. The Mekong Delta is the region of Viet Nam with the highest agricultural output, but with a changing climate and other environmental pressures, conventional techniques often do not anymore bring the expected yields. At the same time, farmers often contribute to the degradation of the ecosystem by harmful practices, for instance by using too many pesticides or by depleting the soil.

In rice production, a lack of efficiency leads to both high costs and a heavy burden on the environment, especially due to extensive water use. Even more pressing, the increasing salinity of the soil – which is mostly due to salt water intrusion – makes it harder to plant traditional rice varieties.

In aquaculture, one of the key challenges is to improve the farming techniques for mangrove aquaculture, a technique in which shrimp farming and other aquaculture practices are allowed within mangrove forests in order to strike a compromise between preserving trees and enabling economic activity. Furthermore, especially small-scale farmers applying “organic” production modes need

to be linked with the value chain to ensure stable income opportunities and also sustain incentives to not switch to intensive shrimp production.

#### Solutions

##### Saving water with Alternate Wetting and Drying (AWD) rice

Alternate Wetting and Drying (AWD) is a rice farming technique which was piloted by the programme in the Mekong Delta and is now part of the government-led Large Scale Field programme, which means that it will in the future be applied by a large number of farmers.

AWD is a scientifically grounded, evidence-based method that has been introduced by the International Rice Research Institute's (IRRI) CLUES project (Climate Change affecting Land Use in the Mekong Delta) which, as ICMP/CCCEP, has received funding from the Australian government. ICMP/CCCEP has been a major partner of IRRI in order to disseminate the technique and for ensuring that it is widely used in the Mekong Delta.

AWD is based on the observation that many rice farmers use far more water than necessary, which is detrimental for a number of reasons. Firstly, water resources even in the Mekong Delta are scarce in some periods, and high water use by rice farmers intensifies water conflicts with other user groups – especially as climate change and upstream water resource development (e.g. in China or Lao) may change the water flows in the Mekong River. Secondly, using a lot of water is costly for the farmers because they have to pump the water from canals into their



This tube is used for measuring the water level in an AWD rice field.

ponds, with high costs for the diesel pumps and negative impacts on the environment.

Using the AWD technique, farmers after sowing first flush their fields with water and then let the fields dry out, until the water stands 15 cm below the soil surface. Then, the water level is raised to about 5 cm above the surface, and the process is repeated. The measurements are made with a simple field water tube and according to a manual provided by the programme.

1,100 farmers, including 94 women, have benefitted from this approach not only by having lower pumping costs, but also by needing less pesticides and fungicides, with positive impacts for their purse and the environment. As a result, farmers make 20 – 40% more profit per rice harvest, which are at least 200 USD per hectare and harvest.

Due to the positive experiences within ICMP/CCCEP, the AWD technique has now been employed in MARD's Large Scale Field programme, covering 440 hectares. The technique is highly relevant for rice farmers all across the Mekong Delta and beyond.

### Salt-tolerant rice varieties

One of the gravest consequences of the changing environment of the Mekong Delta is the increasing salinity of the soil. Across the Mekong Delta, there are numerous areas where rice does not grow anymore due to the high degree of salt in the soil. With increasing salt water intrusion, aquaculture and some agricultural practices which all deplete the soil, it can be expected that soil salinity will remain a central problem for the Mekong Delta in the future.

The programme has responded to this challenge by introducing salt-tolerant rice varieties to 240 farmers. These varieties – also tested by the CLUES-project – secure high yields even in salty environments. After extensive testing with different varieties, the Ministry of Agriculture and Rural Development has now approved one variety as especially suitable in the Mekong Delta. A further expansion of the variety is expected.

### Floating rice

Floating rice is a traditional farming practice that is almost lost from the Mekong Delta. Prior to 1975, the vast majority of rice production in the Delta was of floating

rice (500,000 hectares). Now, all but one variety of floating rice has been lost, and its production area has been reduced to just 40 – 60 hectares in An Giang province.

Floating rice is a rice variety that is adapted to flood and therefore is more in-tune with the natural flood conditions of the region. The seed is sown in dry ground just before the flood season, and with rising flood waters, the plant is able to grow at very fast rates (up to 10 cm a day) to reach a length of up to 7 metres, which lets it survive in water as deep as 4 metres and keep above the flood level, hence its name floating rice.

Floating rice is considered a healthy product since there is little or no need for farm chemicals, the flood waters bring nutrients to the rice fields and control pests. Farmers that grow floating rice can also catch wild fish that come into the field with the flood waters. The fish are an important source of protein for the community.

The provincial government of An Giang province recognises the importance of conserving the floating rice farming practice. Together with stakeholders from the Netherlands, IUCN and the Vietnamese business community, the programme has initiated an action plan for the conservation and expansion of floating rice into the future.

### Mangrove aquaculture

Apart from rice, shrimp farming is a major driver for the economic development of the Mekong Delta. As land for aquaculture is sparse and mangrove forests have to be protected, Vietnamese authorities in many coastal provinces of the Mekong Delta have introduced a system in which the state offers farmers to use mangrove forests for aquaculture, as long as 60% – in some areas 70% – of the mangrove trees remain standing (the so-called 60/40 or 70/30 rule).

The result is a growing silvo-aquaculture industry where mangrove trees form part of the ponds in which shrimp are bred. The potential benefits are high: the mangroves filter the water and offer shade, which means that the water warms less quickly, so the ponds have to be less deep which saves pumping costs. Most importantly, silvo-aquaculture is extensive by nature, with significantly less shrimp per cubic metre. This makes silvo-aquaculture a practice that is much more environmentally sound than conventional shrimp farming.



This tube is used for measuring the water level in an AWD rice field.

The problem is that most farmers in the Mekong Delta lack experience with this complex farming environment and act on a trial-and-error basis, with low yields and profits. This is why the programme, in cooperation with the Aquaculture Research Institute, has developed best management practices and guidelines that give farmers more orientation – for instance by showing that shrimp, crabs and fish can all be mixed in the same pond if their proportion is adequate, or by giving advice on feeding techniques that do not lessen the water quality. Another important factor is the planting of additional fruit trees on the farms in order to diversify farmers’ income.

The techniques have significantly improved the income of 442 farmers, including 180 women – while a considerable scaling up effect can be expected due to the close collaboration of farmer interest groups. The programme has achieved an average income raise of 250 USD per farmer, while at the same time farmers have to use less chemicals and antibiotics.

The techniques have also made aquaculture more resilient against disasters: when in 2012 the white-spot disease infected many shrimp ponds in Bac Lieu, not a single intensive shrimp farm could make a profit, while every

silvo-aquaculture farm was in the black, as their more balanced technique inhibited the rapid spread of the disease. Nowadays, even intensive shrimp farms use mangrove aquaculture on a part of their area – as an insurance in case their mass production fails due to disease.

### Organic shrimp production, value chain integration and marketing in Ca Mau

Small-scale farmers in the Southern districts of Ca Mau province predominantly produce black tiger shrimps under the canopy of the mangroves without additional feed and other pesticides or antibiotics. Approaches to certify farmers as e.g. “organic” have not yet led to higher demands and higher incomes. Therefore the programme supported the analysis of the value chain and further supports certification processes. The aim is a better marketing of the province and its products with international wholesalers and retailers to sustain this environmentally friendly production mode, resulting in a better world market integration of shrimp farmers in the Mekong Delta.



### Other livelihood activities

#### Revolving fund: micro-credits for women

Together with the Viet Nam Women’s Union, the programme has built a micro credit scheme for women in Bac Lieu and Soc Trang. The scheme offers credits for around 100 USD that enable women to finance small vegetable gardens or sales booths on wheels. With a payback rate of 99%, the scheme was very successful; only one person had once not paid back a given credit.

The scheme had started with 120 women, and as these women have paid back the credit with interest, the fund

has grown and currently benefits 180 women. This scheme of “revolving fund” is seen by the Ministry of Agriculture and Rural Development as a model that should be applied more widely.

#### Targeted livelihood measures scaled up in Kien Giang

In Kien Giang province, the approach to strengthening livelihoods was guided by the attempt to initiate small but targeted interventions that can then be scaled up by the province itself. This approach of triggering external resources worked especially well in three domains:

- The programme supported the farming of a high-quality variety of shellfish in mangrove forests. Originally established with 20 farmers in 2011, over 200 farmers have joined this system by 2013.
- Similarly, a livelihood model developed for raising Sac Ran fish in melaleuca forests has expanded from 25 farmers in 2012 to 100 farmers in 2013.
- Finally, an integrated farming system for vegetable and rice was introduced to 39 poor women, boosting their income by 80%. Subsequently, two additional clusters were established in other villages.

## Livelihoods: Major Impacts

PROBLEM	SOLUTION	OUTCOME	IMPACT
Farmers not adapted to a changing environment	22 livelihood models (see examples below)	8,500 households implement the new farming techniques	Less environmental damage Income increased by 20 – 80%
High water and pesticide use in rice production	Alternate Wetting and Drying (AWD) technique	1,110 farmers trained (among them 94 women)	Water use reduced by ca. 30% Income increase by up to 40% Technique adopted by MARD’s Large Scale Field programme
Lack of professional techniques for mangrove aquaculture	Best practices for mangrove aquaculture	442 farmers trained (among them 180 women)	Income increased by 27% Less pesticides Less vulnerable against diseases Technique spread by itself to new farmer groups

## Environmental Awareness

### Understanding the importance of nature

#### Snapshot

Climate change is one factor threatening the ecosystems of the Mekong Delta, however many problems are also man-made – be it unsound agricultural practices, be it cutting mangrove trees for income or other unfavourable behaviours.

The reason behind these actions is often a lack of understanding in the ecology of the Mekong Delta.

Environmental issues are rarely discussed at school, especially with regard to the impacts humans have on the environment. Among the local population, there is little awareness of the complexity of environmental interactions and the links to human wellbeing.

The programme has addressed this issue with a two-step approach. Firstly, the programme has brought environmental issues into lesson plans of schools in several coastal provinces of the Mekong Delta. Secondly, the programme has moved beyond education to create broader environmental awareness of the general public and public servants at local level.

#### Environmental education

In 2011, the programme started to put together groups composed of local teachers to develop environmental materials for secondary and high school. The teachers have integrated environmental and climate change related content into the lesson plans of geography, biology and civic education and have developed locally relevant teaching materials to support the content. After testing the materials in selected schools, the Ministry for Education and Training has approved and endorsed the materials, which paves the way for their further use. Additionally school and working books for primary schools were developed. All materials are designed in such a way that they can be combined into a “Teacher Tool Kit” which fol-

lows the concept of a ring binder. The tool kit allows each teacher, school or province to expand and adapt the material to their local and specific needs.

The programme has given workshops to teachers in the five programme provinces to disseminate the school-



Teachers developing an environmental schoolbook

books and materials developed in recent years. In total, more than 25,000 teachers were engaged; 14,100 of them through training and 9,000 through the distribution of the developed school books.

A highlight of this field of activity is that when developing the materials, the local teachers went beyond the conventional Vietnamese teaching styles, consisting mostly of lecturing by the teacher. For environmental education, the teachers experimented with new teaching techniques, including a more interactive and discussion-centred approach and the use of creative materials such as posters or taking photos of the immediate environment of the school and discussing them in class.

In Kien Giang province, environmental education has already been integrated into four subjects of the Kien Giang Vocational College. Interviews with 40 teachers and 240 students show that 92% of correspondents strongly agreed or agreed with the approach, content and usefulness of the programme to improve environmental awareness for both teachers and students at the College.

## Environmental Awareness: Major Impacts

PROBLEM	SOLUTION	OUTCOME	IMPACT
Environmental issues not discussed in school	School books developed by local teachers and international experts  Lesson plans adapted	Nearly 100,000 books printed for environmental education  More than 25,000 teachers reached  Environmental issues introduced into the subjects biology, geography and civic education	Adapted lesson plans and teaching materials have been officially adopted by the Ministry of Training and Education  Materials were used by 1,300 teachers in Kien Giang, An Giang, Long An and Dong Thap and in all 90 secondary and high schools in Bac Lieu  Study in Kien Giang shows: 96% of polled primary school teachers have gained more knowledge about the environment; 93% of polled primary school students have changed their behaviour towards the environment  Environmental issues to be officially integrated into the curricula in 2015/2016
Lack of awareness on environmental issues in the population	Awareness raising techniques	24 events hosted at local level  9 drawing competitions  9 TV channels have produced thematic broadcasts	More awareness on environmental issues in the five programme provinces

## Environmental Awareness

Beyond the introduction of environmental issues into formal education efforts, the programme also organized extra-curricular activities such as drawing competitions for primary, junior-high and high school pupils focused on environmental protection and sustainable resource use. The best drawings were used for creating desk calendars – including a drawing in which a student drew the connections between sea, mangrove forests, livelihoods and the protection of the local population, thus proving his deep understanding of some of the interlinkages tackled by the project.



Furthermore, environmental awareness raising was carried out through a roadshow. The roadshow took place in different villages to inform people about climate change and the importance of the mangrove forests. The

activities of the roadshow were centred on quiz shows, interactive games, presentations and screenings of educational films.



## Coastal governance

### Turning local solutions into national policies

#### Snapshot

Complementing the on-the-ground activities of the programme, the working area of coastal governance aims to strengthen the legal basis for coastal management. By helping to introduce new policies and regulations, the programme ensures that the findings from the activities in the provinces are formalised and scaled up so they can be applied across the whole of the country wherever they are suitable.

This refers especially to two major domains: the management of coastal forests and irrigation management. While many of the regulations have not yet been formally ratified, the projected impacts are far-reaching. According to official government documents, more than 8.7m people shall benefit from the policies outlined below.

A special strength of the working area of coastal governance is its focus on cross-provincial cooperation – a necessary but lacking ingredient for the climate-resilient development of the Mekong Delta.

#### Problem

The working area coastal governance addresses three major problems: the management of coastal forests, water and irrigation management and cross-provincial coordination.

#### The decline of coastal forests

Coastal forests in Viet Nam are in decline, but the government has increasingly become aware of the benefits of coastal forests, especially for coastal protection. One of the core assumptions of ICMP/CCCEP – that a robust ecosystem is the most effective, most cost-efficient and most environmentally friendly protection against storms and floods – is increasingly influencing policy makers in Hanoi.

One of the core challenges for preserving coastal forests is the question: who manages the forests, and how? In Viet Nam, coastal forests span across an enormous length of nearly 3,200 km, and it is very difficult for the state to actively manage and even monitor such a big area. At

the same time, local communities living in or close to the forest have an intrinsic interest in preserving the forest, so one question is how to better involve non-state actors in making sure that no harm is done to the forests, for instance by preventing illegal logging. The challenge is to finance such supporting tasks by the population. In this respect, ICMP/CCCEP has piloted the co-management approach, where the beneficiaries of the forests, especially aquaculture companies, are charged.

Another challenge that the programme has faced in the provinces is the strict regulations for planting new mangrove trees. The amount of money earmarked by the government for planting coastal forests is simply too low to plant robust, diverse forests. On the other hand, some conventional techniques that are used are more expensive than necessary, for instance using diggers to loosen the earth.

#### Irrigation management in the Mekong Delta at a crossroads

The challenges in the area of irrigation are of a different nature. The Mekong Delta is an agricultural region that is crisscrossed by thousands of big and small canals, all of which receive their water from the Mekong river, and many of which also carry salty or brackish water, depending on the tide, the time of the year, the distance to the coast and the needs of the water users. These canals provide water for the hundreds of thousands of agriculture and aquaculture farms.

But irrigation management in the Mekong Delta is under pressure. Firstly, studies forecast that the amount of water coming down the Mekong river will decrease in the future due to developments in upstream countries, including a higher usage of water and new infrastructure projects like dams. The question of how to nourish the Mekong Delta with less water is of crucial importance. In addition, recent climate change scenarios indicate an equally likely chance of either increased flows or decreased flows due to changes in seasonal rainfall in the upper catchment. These factors add to the challenge of managing water resources in the face of a changing environment.

Irrigation management is challenged by a second factor: saline intrusion due to sea level rise and an increase in aquaculture farming. Conflicts between agricultural farmers who need fresh water and aquaculture farmers

who need water with a higher salt levels currently result in a complicated system in which different kinds of water flow through the canals at different times, both due to irrigation management decisions and the forces of nature. These challenges form the backdrop for the irrigation management regulations of the programme.

### **Cross-provincial coordination: key for an integrated management of resources and ecosystems**

Below the national level, Viet Nam is composed of 63 provinces, most of which have less than 2m inhabitants. As a comparison, Germany – a country of comparable size and population – is composed of 16 provinces, averaging a population of nearly 6m. But although the area of influence of a single province in Viet Nam is limited, cooperation between provinces is low, and provinces tend to place their own particular interests above the interests of an entire region like the Mekong Delta.

This fragmentation impedes the socio-economic development of the Mekong Delta. On the one hand, while actions of one province often have effects on other provinces, these effects are frequently not taken into account – be it with regard to irrigation management, to coastal protection measures or to spatial planning. On the other hand, the Mekong Delta would be more attractive for foreign direct investment if the regional development were more coordinated, as cross-provincial infrastructure planning would facilitate trade and as foreign investors could better align their plans with regional spatial planning in order to ensure that they are making their investments at exactly the right place.

## **Solutions**

### **Policy package on forestry management**

The policy package on coastal forestry management responds to the decline of coastal forests, which is to a large part due to ineffective management. The package consists of four policies and regulations which are closely interlinked. The core ideas are to increase the capacities of current forest managers and to involve more actors in forest management, including local communities.

### **Prime Minister Decision on coastal forest management and utilization**

This Prime Minister Decision, which is still under examination as of September 2014, aims to improve the management mechanisms for coastal forests. The regulation acts as an umbrella for other more specific regulations and addresses a range of different issues, including:

- guidelines for foresters on how to deal with degraded forests, stop illegal logging and timely initiate stabilising measures in the case of erosion
- guidelines for the interaction of state actors (such as forest managers) and non-state actors (such as local communities) in taking care of forests, including schemes for financial compensation

According to official Vietnamese government documents, the decision will impact 8.7m people living in coastal areas, amongst others by stabilizing or increasing the income of nearly 1m people. The decision will affect 3,200 km of coastline in Viet Nam, increasing the existing coastal forest area by 13% to 406,000 hectares between 2014 to 2020, which equals nearly twice the size of Luxembourg.

### **Regulation on coastal afforestation technical guidelines and financial norms**

The regulation on coastal afforestation is directly linked to findings and solutions of ICMP/CCCEP at the provincial level. Working with foresters at the local level, the need for reforms in mangrove afforestation and rehabilitation became apparent, and the regulation addresses many of the shortcomings encountered in the provinces and solutions developed by ICMP/CCCEP (see also page 21).

Most importantly, the regulation reconsiders the price limits for planting mangroves, which means that not only the cheapest, but rather the most appropriate mangrove species can be planted in the future. Furthermore, it specifies the techniques and characteristics of planting mangroves at different sites and in different regions, for instance taking into account specificities of high erosion or sedimentation sites. In general, the regulation is expected to increase the survival rates of newly planted mangrove forests from 50% to more than 80%.

### **Prime Minister Decision on mangrove co-management**

Building on the success of the co-management sites piloted by ICMP/CCCEP (see page 23), the Prime Minister's





Decision on mangrove co-management offers a step-by-step description of how to set up, operate and monitor co-management sites in all of Viet Nam. Thus, the regulation is a prime example of scaling up successful programme activities.

The innovative aspect of co-management is that it gives the population an important role in managing forests, including clear responsibilities and financial compensation. The political relevance of this approach is stressed by the fact that this regulation is signed directly by the Prime Minister, which underlines that Viet Nam is aware of the need for innovative approaches in forest management.

**MARD’s Decision on the Pilot of Payment for Forest Environmental Service in aquaculture**

Closely linked to co-management is MARD’s Decision on the payment for environmental services in aquaculture – another regulation that draws from ICMP/CCCEP’s experiences in the provinces, especially with the payment

scheme involving clam cooperatives in Soc Trang (see page 23).

The idea is that many aquaculture producers benefit from forests, especially as they ensure a high water quality due to the filtering function of trees. These benefits of the services provided by forests should now translate into a payment by aquaculture producers to those who ensure that the forests are maintained and will continue to provide their beneficial effects. Especially for local communities, this can prove to be an interesting concept, adding to their income, but also to their responsibilities. Last but not least, prices for resources that have previously been free of charge will motivate aquaculture producers to act more resource-efficient, especially with regard to saving water. Millions of households living nearby or inside forests are expected to enjoy benefits from this policy due to the benefit-sharing mechanism.

## Policy package on water and irrigation management

The policy package on water and irrigation management addresses what may be the most crucial factor for the future of the Mekong Delta: water. Few areas in the world have a more widespread, but also more complicated irrigation system than the Mekong Delta. One problem is the rising salinity of the water, which – broadly speaking – is beneficial for aquaculture, but poses a considerable challenge for crop production. These kinds of conflicts arise both between water users in one province and across borders between provinces. Therefore, a coordination mechanism between the concerned provinces is of crucial importance for managing trade-offs in water and irrigation management – an issue that is even more pressing due to the stresses of seasonal and extreme floods.

Faced with the prospect of less fresh water coming down the Mekong river and more salt water coming from the sea, partly due to sea level rise, authorities in the Mekong Delta need to find new approaches to managing how water is used and distributed. The policy package supports the authorities to jointly make these decisions. Yet, the full application of all measures described below may take several years, and many of the activities are extended into Phase II of the programme.

### Water resource information system

The water resource information system is a comprehensive IT system that will give decision makers an overview of the status and performance of all water infrastructure available in Viet Nam. The system will give insights on the water needs of different users, the availability of water and ways to provide water to the users. Potentially, this information will then be the basis for the overall water, irrigation and agriculture planning and management in Viet Nam.

In its first phase, ICMP/CCCEP has started to support the setting up of the water information system, and it will continue to do so in the next phase. Nevertheless, the scope of the water information system is such that significant financial contributions from third parties – for instance from financial cooperation – are necessary to render the system fully operational, especially with regard to data collection and necessary infrastructure instalments such as a water monitoring network that covers all 110 large irrigation systems in Viet Nam.

### Operation procedure for Quản Lộ – Phụng Hiệp irrigation system

The next step down from the overall irrigation management in Viet Nam is the management of the big regional irrigation systems, such as the Quản Lộ – Phụng Hiệp irrigation system between Ca Mau, Bac Lieu and Soc Trang. This is why an operational regulation for this irrigation system has been supported by the programme. In the form of a legal document, the regulation guides water managers on how to operate the hydraulic structures (such as dams, sluice gates, pump stations etc.) in ways that maximize the benefits and minimize the costs of all concerned water users. This regional solution requires a strong and close cooperation between the concerned provinces. The policy intervention is expected to benefit more than 300,000 hectares of agriculture and aquaculture area.

### Participatory irrigation management manual

Another step down the ladder of irrigation management are the guidelines on participatory irrigation management which provide guidance on how water can be managed at field-level. This guideline (in form of a manual) gives standard procedures and supporting tools to stakeholders on how to promote and efficiently implement participatory irrigation. This contributes to improving the efficiency and sustainability of participatory irrigation management in Viet Nam. Currently, there are approximately 11,000 water use associations which will benefit from this manual nationwide, including representatives of beneficiary communities and staff of agriculture and irrigation authorities.

### Circular on the regular maintenance of hydraulic works

The only part of the policy package on water and irrigation management that has already been finalized within the first phase of ICMP/CCCEP is the circular on the regular maintenance of hydraulic works. The circular lists measures which are necessary for the maintenance of the irrigation system, as well as their costs.

## Coastal governance on the sub-national level

Coastal governance below the national level has been a special focus of the programme due to its activities in five provinces in the Mekong Delta. While some of the activities refer to the strongly needed interprovincial coopera-

tion, other activities give an insight of what provinces can do to strengthen their coasts.

### **Cooperation mechanism among Mekong Delta provinces**

A Memorandum of Understanding for the cross-provincial cooperation in the Mekong Delta is currently being prepared and will be signed in the next phase of the programme. This interprovincial coordination mechanism would constitute one of the biggest achievements of the programme, as lacking cross-provincial cooperation is one of the most notorious barriers to the climate-resilient development of the Mekong Delta.

The cooperation mechanism will at first focus on the integrated coastal management of the five programme provinces, with which consultations have already taken place. Other coastal provinces of the Mekong Delta may join at a later stage. At the center of the cooperation mechanism is the South-West Steering Committee, a regional body of the Communist Party of Viet Nam.

### **Cooperation agreement on water management in the Long Xuyên quadrangle between An Giang and Kien Giang**

Closely linked to the policy package on water and irrigation management, the cooperation agreement on water management in the Long Xuyên quadrangle is a major step towards a joint approach to water management between the neighbouring provinces of An Giang and Kien Giang. As a follow-up of the agreement, the programme will in the next phase support the drafting of new operational regulations for the management of the irrigation system in the Long Xuyên quadrangle.

In the Long Xuyên quadrangle, the programme aims to address the challenge of maximising irrigation efficiency while managing issues of seasonal and extreme flood, salt water intrusion and competing demands for water, including wetland requirements.

The programme has successfully brought together two provinces through a legally binding water management agreement with a set of objectives to improve the management of water resources across the quadrangle and promote a more sustainable and integrated approach to land and water resource development.

A central concern of the coastal province of Kien Giang is the increasing salt water intrusion from the sea side. This

can be countered if more fresh water is coming down the canals from An Giang, so this fresh water can push back the salt water and flush the canals. Furthermore, Kien Giang needs more information on when and how much water will come from An Giang in order to accordingly adjust their cropping calendars. Much of this information will be provided by a hydrological model, a first version of which has been developed by ICMP/CCCEP.

### **Integrated coastal management plans in Soc Trang and Kien Giang**

The programme has supported the development of an integrated coastal management strategy for Soc Trang province. The first draft of the strategy has been presented in July 2014, and it is expected that the final draft will be ready by the end of 2014.

As one of the pilot provinces selected by the central government, Soc Trang will for the first time use the strategy to implement a coherent management of the coastal zone, involving a range of different topics (such as forestry, coastal protection, water management and others) as well as a number of different departments. This approach can then be used as a model for other provinces.

Similarly, the support of the integrated coastal management plan in Kien Giang province has proven to bring considerable advantages, as the plan has been used to justify a 5m USD grant by the Asian Development Bank for an early warning system for Kien Giang. The plan and other programme support has also helped to secure a 2m USD grant by the Korea International Cooperation Agency (KOICA) for developing an integrated urban planning strategy to make Rach Gia a green city. The grants have already been approved.

### **Planning of Đông Hồ lagoon, Kien Giang province**

The programme supported the development of guidelines for an integrated management plan for Dong Ho Lagoon which underlined the need for a holistic management of this landmark site in Kien Giang. The plan includes guidelines both on ecosystem management and the development of the lagoon's tourism potential. The document was used for receiving an 8.2m USD loan from the Asian Development Bank for the "Greater Mekong Subregion Tourism Infrastructure for Inclusive Growth Project" (2014 – 2019).

## Coastal governance: Major Impacts

PROBLEM	SOLUTION	EXPECTED IMPACTS (ACCORDING TO OFFICIAL GOVERNMENT DOCUMENTS)
Decline of robust coastal forests	Policy package on forest management	<p>Positive impact on 3,200 km of coastline in Viet Nam</p> <p>Increase the existing coastal forest area by 13% to 406,000 hectares between 2014 and 2020</p> <p>Benefit 8.7m people living in coastal areas</p> <p>Create an income for nearly 1m people</p> <p>Increase the survival rate of newly planted mangrove forests from 50 – 80%</p>
Irrigation management in the Mekong Delta under pressure	Policy package on water management	<p>Benefit 11,000 water use associations</p> <p>Bring benefits to more than 300,000 hectares of agriculture and aquaculture area</p>
Lack of cross-provincial coordination	Several agreements, amongst others including the South-West Steering Committee	Improved cross-provincial coordination

### Cross-border fisheries management agreement between Kien Giang and Kampot (Cambodia)

Highlighting the need for increased cross-provincial and even cross-national cooperation, the neighbouring provinces of Kien Giang (Viet Nam) and Kampot (Cambodia) have signed a cross-border fisheries management agreement with the support of ICMP/CCCEP. The agreement aims to raise the communities' awareness of fisheries policies of the two provinces and the need to protect the aquatic resources from overexploitation as well as to develop and share marine management experiences.

## Additional activities

### Capacity development

A major working field of the programme that spans across all thematic areas has been capacity development for Vietnamese decision makers. Considerable resources have been given to the development of technical, managerial and leadership skills of Vietnamese officials. Amongst others, the programme has organised study tours to Australia, Germany, Brazil and the Netherlands that have

offered the participants an in-depth understanding of state-of-the-art coastal management.

Another important activity aimed at increasing the capacity of Vietnamese decision makers has been a seminar on leadership and management, made up of several modules and conducted mostly by world-class coaches from Europe.

Yet, capacity development goes further than this. A large number of workshops, national and international conferences, trainings, assignments of short-term experts as well as the continuous advisory services of the programme's long-term experts have all contributed to strengthening capacity for the Vietnamese institutions – at a systemic, organisational and personal level. While the impacts of this achievement are too diverse to be monitored and reported, capacity development has been one of the most important contributions of ICMP/CCCEP in Phase I of the programme.

## Disaster prevention and reconstruction

Thanks to financing from the European Development Fund, ICMP/CCCEP was able to considerably reduce the vulnerability of the population to extreme weather events. Especially in An Giang, the programme was able to rebuild 17 schools, 9 bridges, 5 rural roads and 2 clinics that had been destroyed by a major flood in 2011, making the province more resilient against future disasters. In total, the programme’s activities reduced the vulnerability of more than 27,000 people.

## Supporting additional funding

Apart from its own activities, the programme supported Vietnamese authorities to access 32.5m USD of loans and grants for additional projects relating to the working areas of the programme, amongst others by working directly with other donors. ICMP/CCCEP and its activities have contributed to the formulation of the following projects:

### Supporting additional funding

PROJECT	DONOR	VALUE (USD)	RELATING ACTIVITIES BY ICMP/CCCEP
Establishment of a Water Resources Monitoring Network in the Lower Mekong and a Water Resources Information System for the Viet Nam Part of the Lower Mekong	World Bank	17.3m	Cooperation agreement on water management between An Giang and Kien Giang Water information system
Early warning system for Kien Giang	Asian Development Bank	5m	Kien Giang integrated plan for coastal area
Greater Mekong Subregion Tourism Infrastructure for Inclusive Growth Project (Kien Giang component)	Asian Development Bank	8.2m	Guidelines for the integrated management plan for Dong Ho Lagoon Guidelines for Integrated Tourist Management in Kien Giang
Integrated planning for Rach Gia city to become a Green City	Korea International Cooperation Agency	2m	Kien Giang integrated plan for coastal area Guidelines for the integrated management plan for Dong Ho Lagoon Guidelines for Integrated Tourist Management in Kien Giang



## Media attention

The programme has raised considerable media attention, with 10 national and international documentaries showcasing the successes of the programme. Highlights include broadcasts by the BBC, the German channel SWR and the Swiss channel SRF2.

The VTV Can Tho documentary “Planting trees to keep the land” on the Hon Dat mangrove rehabilitation demonstration site received the gold medal in National Film Festival in 2012. Other broadcasts were made by Bloomberg, VTV2, VTC16, HTV7 and VTV Soc Trang.



## 4. INDICATORS

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The target indicators of the programme were originally designed for the entire duration of the programme from September 2011 to August 2017 with intermediary targets for August 2014. As most indicators have been revised from Phase I to Phase II in line with programme reviews and evaluations, this report on Phase I presents the final achievements of the programme for some of the indicators.

### Indicator 1

**Indicator (for August 2017):**

MARD ratifies and implements a coherent national policy framework on coastal ecosystems in relation to mangrove rehabilitation, erosion protection, the management of wetlands, water management and sustainable livelihoods. In addition, a contribution is made to shaping the national policy framework on environmental education, integrated coastal zone management and development planning via MARD and the provinces together with the Ministry of Natural Resources and Environment, the Ministry of Education and Training, the Ministry of Planning and Investment and the Ministry of Science and Technology.

**Status (as of August 2014): On track**

As per the intermediary target, two holistic policy packages were developed up to a draft version under the leadership of MARD: one in cooperation with VNForest for the management of coastal forests, the other with the

Water Resources Department for irrigation management (see pages 32 – 34).

### Indicator 2

**Indicator (for August 2017):**

Gender-specific vulnerabilities are understood in the context of the ecosystem approach to adaptation to climate change and incorporated into the Socio Economic Development Plans (SEDPs) of the provinces.

**Status (as of August 2014): On track**

As per the intermediary target, interprovincial and national dialogue fora about gender and climate change and the possibility of reflection in essential framework policies with regard to planning and management of coastal ecosystems are conducted. On this basis, action plans for the integration of gender were elaborated with relevant government stakeholders (MARD, DARD, MONRE, DONRE, MPI, DPI, MOF, DOF, South-West Steering Committee, PPCs).

### Indicator 3

**Indicator (for August 2017):**

The total area of protected forests (including mangroves, melaleuca forests, etc.) in the pilot provinces has remained at least the same compared with the baseline survey in 2011.

### Indicator 3: Area of protection forest 2011 and 2014

	AREA OF PROTECTION FOREST 2011 (IN HECTARES)	AREA OF PROTECTION FOREST 2014 (IN HECTARES)	DIFFERENCE (IN HECTARES)
Soc Trang	4,341	4,657	316
An Giang	12,207	-	
Bac Lieu	2,660	2,805	145
Ca Mau	26,977	26,075	-902
Kien Giang	4,830	4,782	-48
Total			-489

**Status (as of August 2014): Partly completed**

The table shows that in Soc Trang and Bac Lieu, there has been an increase in the area of protection forest from 2011 to 2014, while in Kien Giang there has been a slight decrease and in Ca Mau a considerable decline. This reflects the duration of project activities: already prior to the programme start in 2011, coastal protection and mangrove rehabilitation measures have been implemented in Soc Trang (since 2007), in Kien Giang (since 2008) and Bac Lieu (since 2009). Due to the delayed start of programme activities in Ca Mau, no coastal protection and mangrove rehabilitation measures have been implemented there yet. With ongoing programme implementation in all provinces, it can be expected that the target would be met by 2017. However, the indicator is not anymore part of the programme planning for Phase II.

**Indicator 4****Indicator (for August 2017):**

The inter-provincial coordination and cooperation mechanisms for initiatives to adapt to climate change are established and institutionalised.

**Status (as of August 2014): On track**

As per the intermediary target, the South-West Steering Committee (SWSC) in cooperation with MARD and the provinces is developing a Memorandum of Understanding for cross-provincial coordination with regard to integrated coastal management among all programme provinces. Furthermore, cross-provincial irrigation management has been advanced through the cooperation agreement between An Giang and Kien Giang and through the irrigation operational regulations between Ca Mau, Soc Trang and Bac Lieu.

**Indicator 5****Indicator (for August 2017):**

Alternative income-generating activities, adapted to climate change, lead to an increase in incomes for the target groups by 7.5%.

**Status (as of August 2014): Partly completed**

The target envisaged for the end of Phase I was partly met. Although individual measures have been introduced with a high level of success, there continues to be a lack of extensive application within a province, or transfer to other provinces. The most promising approach in this direction is the adoption of the AWD rice production technique by MARD's Large Scale Field programme which includes a large number of rice farmers in the Mekong Delta.

**Indicator 6****Indicator (for August 2017):**

Initiatives for adaptation to climate change are provided for in the annual provincial plans with an annual budget increase of 10% and are included in the SEDP 2016 – 2021, with resources allocated.

**Status (as of August 2014): On track**

The target envisaged for the end of Phase I was met. In order to prepare for climate-related budget planning and reporting, the programme reached an agreement upon detailed procedural steps with the partners, particularly in Ca Mau Province, so that climate change as well as gender aspects can be incorporated into the provincial SEDP as a type of marker. Starting in 2014, provincial authorities were supported in introducing a marker system that determines the percentage of investments in climate change adaptation measures with regard to overall spending.







## 5. LESSONS LEARNT FROM PHASE I

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Broad-scale impact needs...

... institutionalisation

... cross-provincial cooperation

... more and more diverse actors

... international coordination

## Broad-scale impact needs institutionalisation

While the programme has developed a number of effective solutions in Phase I, it has become apparent that these solutions can only be implemented at a broad scale when they are part of the Vietnamese government system. So far, many of the solutions could be applied in the framework of a development programme, because current rules for Vietnamese authorities do not always allow such measures – for instance regarding mangrove rehabilitation, where current cost-norms force foresters to plant the cheapest mangrove varieties which are often not suitable for the areas they are planted in.

This is why in Phase II, the programme will put even more emphasis on the question how the Vietnamese authorities can put the developed solutions into action. One central mechanism for this is to take the learnings from the local level and to turn them into national policies, which then can be applied wherever they are suitable. This approach has already been followed with the aforementioned cost-norms for mangroves, which are currently being revised, with a Prime Minister decision on breakwater fences, and with a Prime Minister Decision on mangrove co-management.

## Broad-scale impact needs cross-provincial cooperation

Although ICMP/CCCEP itself was active in five different provinces in the Mekong Delta, it has proven to be difficult to initiate a regular dialogue between the provinces, even though many pressing questions – most notably water management – cannot be solved without stronger cross-provincial cooperation. While the programme has already initiated several measures in this regard, cross-provincial coordination needs to be an even bigger focus in the next phase. Similarly, also the management structure of ICMP/CCCEP itself will focus less on single provinces and more on a comprehensive approach which profits all provinces.

## Broad-scale impact needs more and more diverse actors

Phase I of the programme has shown that in order to achieve broad-scale impact, interventions in the Mekong Delta cannot be limited to government institutions. Especially the private sector plays a crucial role for the future of the Me-

kong Delta, and this is why the programme in the future will increasingly focus on cooperating with private businesses.

One example for this approach is the planned cooperation with the agricultural industry, for instance in the context of the Better Rice Initiative Asia (BRIA) or by initiating an aquaculture roundtable for the Mekong Delta. Other potential actors include energy companies that operate directly at the coast.

Civil society organisations also represent considerable un-tapped potential for the Mekong Delta. This is why the programme supports NGOs and NGO networks to raise their voice in the climate adaptation discussion and to get more involved when it comes to reducing the vulnerability of the poor against the impacts of climate change.

## Broad-scale impact needs international coordination

The Mekong Delta has received increasing attention from international actors in recent time. This focus from the international community offers an immense potential for the climate-resilient development of the Mekong Delta, especially if the efforts of international actors are not only coordinated with the Vietnamese government, but also coordinated within the international community.

The Mekong Delta Roundtable, initiated by the World Bank and the Dutch government, is an appropriate forum for such coordination and has contributed significantly to the alignment of different strategies by supporting the Mekong Delta Plan, a forward-looking strategy for the Mekong Delta. Yet, Phase I of the programme has shown that the roundtable as well as other coordination fora need a more systematic coordination mechanism, amongst others by better linking bilateral technical assistance to multilateral loans.

This has direct implications for ICMP/CCCEP. Broad-scale impact depends not only on the available policies and regulations, but also on the means to implement new approaches. With the comparably limited budget of a technical cooperation programme, ICMP/CCCEP does not have the resources to implement the developed measures wherever they are needed. This means that even more focus than in the past has to be put on supporting Vietnamese authorities in allocating and accessing the funding necessary for the climate-resilient development of the coast of the Mekong Delta.



## 6. OUTLOOK

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Transition to Phase II (2014 – 2017)

## Outlook

In its first phase (2011 – 2014), ICMP/CCCEP has achieved a number of successes, including the development of technologies and solutions for some of the most pressing problems of the Mekong Delta. These solutions now have to be scaled up in order to realise their full impact on a broader scale. This is the purpose of the second phase of the programme (2014 – 2017) which builds on the experiences and successes of the first phase.

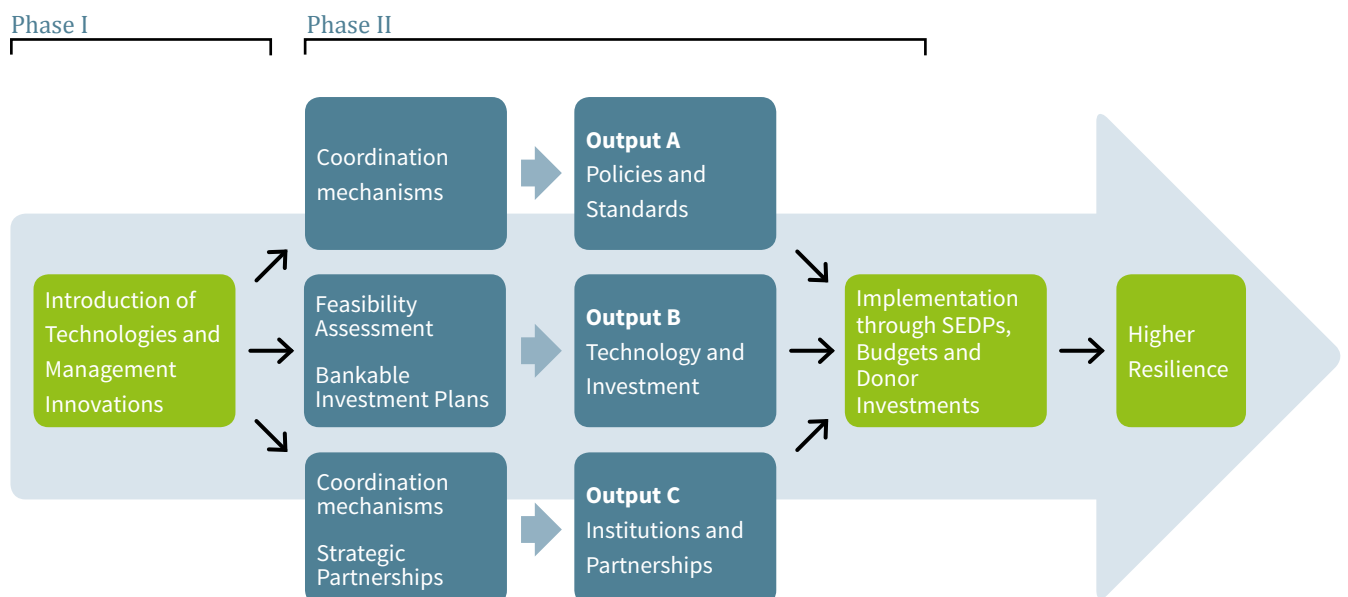
There are two major changes from Phase I to Phase II of the programme:

- From geographical to impact-driven orientation:** While in the first phase, the programme was organised according to the provinces (and the national level) where the programme activities took place, the programme in the second phase will be structured according to impacts and technical areas, assuring that solutions in one technical field (such as agriculture) can be applied in all appropriate provinces.
- From development of technologies to institutionalisation and scaling up:** In Phase I, the programme focussed on the development of technologies to cope with a changing climate and environment in the Mekong Delta. While these solutions have success-

fully been applied in several locations, for Phase II a stronger focus is necessary on institutionalising and scaling up these technologies in order to facilitate systemic (and not just selected) changes towards a climate-resilient development of the Mekong Delta.

This is why in Phase II, the programme will shift focus from developing new technologies to institutionalising these solutions, for instance by introducing policies, cross-provincial coordination, strategic partnerships and the preparation of new measures by drafting feasibility studies and investment plans. This will then lead to the scaling up of the technologies developed in Phase I.

The institutionalisation and scaling up of the successes of Phase I is at the core of Phase II (see graph): To achieve higher resilience, innovations (Phase I) need to be successfully translated into policies which become binding (Output A). On the other hand, the implementation of innovations through policies need sound institutional support not only to create appropriate procedures but also to foster and establish partnerships which help to create synergies (Output C). Finally, both forms of institutionalisation can only be capitalised if technical, managerial and financial capacities are further enhanced (Output B).







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