



DISASTER RISK MANAGEMENT AND COMMUNITY-BASED ADAPTATION TO CLIMATE CHANGE



GLOBAL ENVIRONMENT FACILITY
INVESTING IN OUR PLANET



CONTRIBUTING TO CAPACITY BUILDING, MANAGEMENT AND SUSTAINABLE DEVELOPMENT OF SLOPING LAND IN CAM THUY DISTRICT

Project number: VNM/SGP/OP5/Y4/STAR/2014/01
Project owner: Association of Water Resources of Thanh Hoa Province
Project budget: 141,992 USD of which 24,380 USD is counterpart funding from the new rural construction program
Project location: Cẩm Tâm, Cẩm Châu and Cẩm Vân communes, Cẩm Thủy district, Thanh Hóa Province

1. PROJECT BACKGROUND

- Cẩm Tâm, Cẩm Châu and Cẩm Vân communes are located in the mountainous midland of Cẩm Thủy district, Thanh Hóa province. In addition to hills and limestone mountains, most of the project land is sloping land of up to 20% grade or more, which is often affected by erosion and landslides during rainy season and by drought in dry season. The lowlands along the Mã River are often flooded.
- Total natural area: 7,397.51 hectares; Of which: (i) Agricultural land: 3,554.43 ha; (ii) Forest land: 2,783.11 ha; And (iii) Non-agricultural land: 1,143.13 ha; Wet rice land only occupies 10.17% of the natural area, but annually around 1 ha is affected by landslide and pebble gravel accretion due to the impact of flash floods and flooding. In addition, due to continual drought, the watersheds are depleted and the groundwater levels are too low. Therefore, some of the land in the project area becomes arid and there is a risk of desertification. The forest resources and water



resources of the locality are increasingly depleted, agricultural production becomes unsustainable, and the livelihood of the community is increasingly threatened.

- Total population of the three communes: 18,436 persons / 4,400 households; Of which: Mường people (48.47%); Dao people (9.73%). Total number of labor: 10,847 people, of which women accounted for 49.67%. Due to the poor land and bad weather conditions, the economy in the project area is under-developed. The percentage of poor households is high (accounting for 34.01% on average).
- To overcome the existing problems of natural conditions and impacts of climate change in order to stabilize the livelihoods of the community, especially the ethnic minority communities of the project area, the Small Grants Program, the Global Environment Facility, and the United Nations Development Program (UNDP / GEF SGP) supported the project: “Modeling the Application of Technical Solutions for Vulnerability Reduction and Enhancement Adaptability in addressing natural disasters / extreme weather events (flash floods and droughts) in Cẩm Tâm Commune, Cẩm Thủy District, Thanh Hóa Province” (CBA Cẩm Tâm) for the period 2010 - 2012. *Highlight results include: building water storage tanks; constructing level ditches in combination with afforestation to limit flash floods; conversion of crop structure to drought-tolerant varieties; raising awareness and understanding of local authorities and people on the impacts of climate change on sustainable development; successfully developing models for the application of technical advances to limit the*



impact of droughts and flash floods through increased protection and sustainable use of water resources (surface and rainwater storage); land (limited land degradation); and agricultural biodiversity (using local drought-tolerant varieties).

- In order to develop and expand models of high efficiency as well as to raise awareness and capacity building for the community, Thanh Hóa Water Resources Science Association has implemented the project: “Developing and expanding effective models at Cẩm Tâm CBA project, contributing to improving management capacity and sustainable use of sloping land in Cẩm Thủy district” in three communes: Cẩm Châu, Cẩm Tâm and Cẩm Vân in Cẩm Thủy district for 2 years (2015-2016).



2. PROJECT OBJECTIVES





3. APPROACHES

- **Application of participatory approach, ensuring equity, openness and transparency:** people are directly involved in all aspects of the process of establishment, implementation, management, monitoring and results evaluation.
- **From the planning stage, local people and stakeholders** are involved in analyzing negative impacts caused by climate change, offering the best solutions to the socio-economic conditions and circumstances of each residential area, and finally, demonstrating the environmental efficiency and immediate economic benefits.
- **The design of the project** is open and actually empowers local people to directly and indirectly benefit from project support. They are given the choice to decide on which model to participate in and what livelihood activities are most suitable to escape and sustainably reduce poverty. Community involvement will increase the responsibility as well as the contribution of the people, reduce project cost and increase the sustainability of the project activities.
- **Through training and awareness raising activities,** local people understand the purpose and requirements of the project and for ensuring the adaptation measures are based on their interests and needs. In addition, there is support in communication, training, and technology transfer from current models. In addition, the Commune Women's Union is responsible for managing the project's revolving funds.

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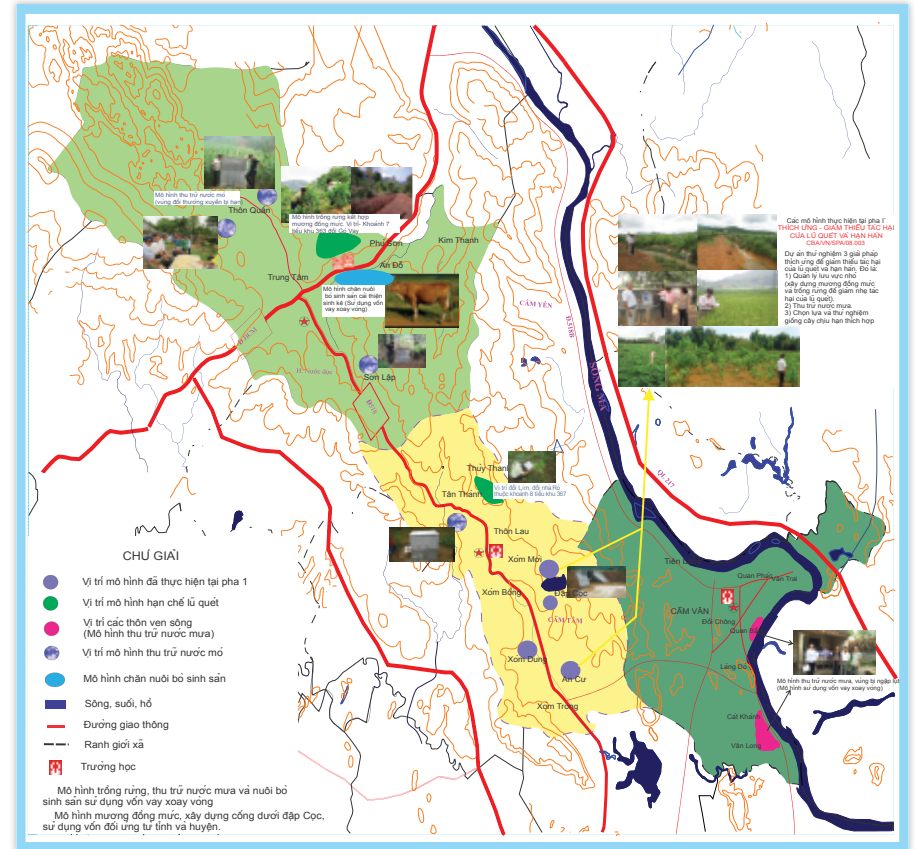
APPLIED INNOVATIONS AND SOLUTIONS

The project has been piloted into models for sustainable use of land and water resources and sub-basin management in sloping lands (contour level construction and reforestation to reduce the impact of flash floods); rainwater harvesting for use in drought season incorporates local knowledge of climate change adaptation communities.



- **Community-based water management model:** water storage, rainwater and water distribution in the community from water storage tanks
- **Sustainable management / use of land resources and biodiversity model:** afforestation of mixed level ditches and grass planting for cattle, intercropping of maize or cassava
- **The model of crop structure conversion,** sugarcane cultivation on the land currently cultivating an inefficient rice crop, the conversion to drought- and inundation-tolerant crop varieties, etc
- **Livelihood development model:** breeding cows, raising freshwater fish
- **Organizational model / revolving loan fund** in the models of water storage, forest plantation against flash floods, and breeding cows
- **Mobilize financial resources** from the new rural construction program

PICTURES OF PROJECT ACTIVITIES



The map of the project



4. HIGHLIGHT RESULTS

4.1 ON AWARENESS RAISING, CAPACITY BUILDING AND COMMUNICATION

750
participants

Communication and dialogue on climate change in the 3 participating communes, along with primary and secondary schools in the area: 750 participants including 600 local people, 150 students and teachers (43.9% female).

310
participants

Training on sustainable management of water resources, capacity building for planning with community participation and agriculture-forestry-fishery encouragement for 310 people.

300
participants

Consultation on natural disaster risk management and response to climate change integrated into the socio-economic development plan of the 3 communes with 300 people.

130
participants

Workshop on community-based water management model and agro-forestry-fishery model, visit the model of agriculture with 130 of people.

400
publications

Dissemination of 200 copies of the agro-forestry-fishery model handbook; 100 copies of the manual on exploitation and use of water; 100 Lessons Learned Community Based Water Management.



Project documentation including guide on water management; guide on agro-forestry demonstration models



4.2 DEVELOPING MODELS



- **Developing water storage models:** 15 water entrepots are operating effectively in Cam Chau commune for 53 households (4 villages); 2100m of water pipeline from the forest to stable operation in Cam Tam commune for 20 households in 2 villages; 15 effective water storage tanks (inox) for 15 households in villages 7, 10A, 10B have been funded.
- **Planting, caring and protecting 46.8 ha of forest (glue) against landslides and flash floods** in Cam Chau and Cam Tam commune, with 64 households in 4 villages supported with loans and techniques of planting and tending trees.
- **Cattle breeding in Cam Chau:** five households were provided with loans to buy five breeding cows.
- **Construction of new sluices below Coc dam** in Cam Tam contributing to water regulation in Coc reservoir, along with irrigation, flood reduction and aquaculture; constructing a contingency system at Cam Chau, contributing to the protection of residential areas and the primary and secondary schools at the foot of the hill. This funding is reciprocal from the provincial and district People's Committees through the new rural construction program.

RESULTS OF DEVELOPING MODELS

30 water entrepots

are operating effectively

2100 meters

of water pipeline from the forest

46.8 hectares of forest (glue)

are planted against landslides and flash floods



5. IMPACTS

5.1 ECONOMIC, SOCIAL AND ENVIRONMENTAL IMPACT

- **Economic impact:** The maize or cassava planting model has high economic efficiency. The economic efficiency of sugarcane cultivation on previously monoculture land for a rice crop has been increased. The cattle breeding model and freshwater fish culture in Hồ Cọc dam is effective when the locality has many favorable conditions for food and breeding facilities. With access to more effective technical measures, agricultural and forestry production goes into intensive farming, increasing economic efficiency per unit of cultivated area.
- **Social impact:** the selection of models suitable for local needs and objectives plays a major role in solving problems such as flooding of residential areas and landslides on roads (namely Ho Chi Minh Highway). Initiating clean water for the community during the dry season (Cắm Châu, Cắm Tâm or when flooding (Cắm Vân commune). In addition, the active participation of the community in all project activities contributes to poverty alleviation and new rural construction, raising awareness in production, economic development, equity and equality.
- **Environmental impact:** effectively promoting adaptation models and mitigating adverse impacts of climate change: creating aquatic life, improving the climate and water resources for production (Cọc reservoir), preventing erosion and landslides (afforestation). Facilitating the stabilization of agricultural land for more efficient crop transformation, while contributing to global environmental benefits through increased carbon stocks due to increased planted forest area.

5.2 SUSTAINABILITY AND REPLICATION POSSIBILITY

- The replication possibility of the project is high when many localities in the district have similar natural-social conditions. Some neighboring localities have consulted and wished to apply the effective models and techniques of the project.
- The new rural co-ordination office of Thanh Hóa province has adopted the technical package of the project (including revolving loan mechanism) in the new rural construction plan in the midland and mountain areas of Thanh Hóa in the coming years (estimated at 5 communes, about 3 billion VND).
- Based on the effectiveness of the project, with simple and applicable techniques, it can be widely implemented to other midland and mountainous areas other than Thanh Hoá province.



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