



PROMOTING YOUTH ROLE IN RAISING COMMUNITY RESILIENCE TO CLIMATE CHANGE IN THE VIETNAMESE MEKONG DELTA (MEKONG DELTA CORE)

*Nâng cao Năng lực Thanh niên Ứng phó với Tác động
của Biến đổi Khí hậu tại Đồng bằng sông Cửu Long*



Cần Thơ, 10/2023



GROUP 1:
ART

HEY, MẶN!

CONTEXT

Salinity intrusion is a top concern among the impacts of climate change in the coastal area of the Mekong Delta. The consequences of salinity intrusion are soil and water salinity, causing degradation and reduced efficiency of use. In addition, it also affects people's livelihoods. Soc Trang is one of the provinces heavily affected by salinity intrusion. Specifically, it impacts the agriculture, fisheries, and livelihoods of the region. Therefore, the project team proposed to create a movie "Hey, Mặn!" aimed to raise awareness of young people in Soc Trang province in particular, the Mekong delta in general about the impacts of climate change and salinity intrusion. "Hey, Mặn!" is a story about 5 characters: Đất Đỉnh Đạt, Nước Núng Ninh, Lúa Lép Lép, Anh Nông Dân và Mặn with the content and message about salinity intrusion affecting the livelihoods of the community in Soc Trang. The project was implemented from June 2023 to August 2023. The project supports the community of Soc Trang people in particular and the Mekong Delta in general. The future results of the project will be a premise for developing and changing the perception of salinity intrusion for the young generation of Soc Trang as well as the Mekong Delta.

OBJECTIVES

Raising awareness and behavior of young people about the impact of climate change in general and salinization of surface water sources in particular in the Mekong Delta through short films about saline intrusion of surface water sources in the rivers of Mekong delta.

Creating a new perspective that is easy to receive information and be positive on the issue of salinity Intrusion

CONTENT

The story begins with five main characters: Lúa Lót Lép, Đất Đỉnh Đạc, Nước Núng Nính, Mr. Nông dân và Mặn who live in a rich land. They are close friends and famous in the area.

But recently, they found their situation changing. The rice became ugly and weak, the soil became infertile and depleted, and the river did not provide fresh water like before, making them feel weak and emaciated. They found Mặn, a new boy coming from distant place where the sea level is high. Mặn is criticized by Lúa, Đất và Nước, but Mr. Nông dân intervened and lifted Mặn out of the bad situation.

Mr. Nông dân decided to take Mặn out of his village, where everyone lived happily and united. Everyone gradually adapted to Mặn and wished Mặn to stay and live with everyone. Mặn has the option to stay. In the end, Mặn decided to visit his family and promised to come back after spending Tet holiday together with his new family. But before going, Mặn was careful to advise everyone to prepare food in advance, especially fresh water, for farming and daily use. When Mặn comes back, everyone can adapt and not be affected by Mặn. The whole village said goodbye to Mặn and hoped to see the boy again in the future.

HIGHLIGHT OUTCOMES

- **Creating a positive perspective on the problem of saline intrusion.**
- **Conveying and educating youth in the Mekong Delta creates inspiration for creating solutions towards sustainable development of the Mekong Delta.**
- **Promoting participation, contribution and the ability to make a positive impact on the community.**

MEMBERS' INFORMATION

- Le Thanh Duoc, student of Natural Resources and Environmental Management, Can Tho University
- Email: duocb2006807@student.ctu.edu.vn
- Phone number: 0763955733
- Nguyen Thi Ngoc Phuong, Institute of Climate Change Research, Can Tho University
- Email: ngocphuong1298@gmail.com
- Phone number: 0703337800
- Tran Nguyen Hoang Long, student majoring in Natural Resources and Environmental Management, Can Tho University
- Email: longb2006823@student.ctu.edu.vn
- Phone number: 032836279
- Nguyen Duc Trung, student of English Interpretation and Translation, Can Tho university
- Email: nguyenductrung.exchange@gmail.com
- Phone number: 0398708241

"EFFECT"

A documentary video

CONTEXT

Climate change has become one of the biggest challenges facing humanity. The impact of climate change on vulnerable people becomes even more serious as they often face negative impacts from the environment, especially in developing countries. With the desire to create positive changes in people's awareness of climate change, the documentary film "Effect" was created. The project will show real stories about people living under the impact of climate change, as well as the actions that need to be taken to minimize its impacts.

OBJECTIVES

The group's goals are

- Creating a 6-7 minute documentary film about how climate change negatively impacts people in vulnerable groups with a filming time of 2 to 3 months and a budget of 30 million.
- Propagating to high school students with the purpose of raising awareness about the negative impacts of climate change on people in vulnerable groups.
- Motivating them to participate in environmental protection activities and protect people in vulnerable groups.

CONTENT

A documentary video - "Effect": <https://youtu.be/AX69KQapnIs>

HIGHLIGHT OUTCOMES

The project team received positive feedback after the live communication session on September 17, 2023 in My Tu district, Soc Trang province. During the media session, the group was honored to welcome more than 60 high school students and representatives of the Youth Union of My Tu district, Soc Trang province.

The group received 50 responses after the communication session. To measure the results, the group used a Likert scale. Below, the group would like to present the outstanding results obtained, specifically as follows:

- Regarding the urgency of climate change, 90% of participants think this is very important and 10% of them think this is necessary.

- About the impact of the video on personal thoughts related to the issue of climate change: 52% of them said that the video had a very great impact on them, 44% of them said the film had an impact.

- About participating in a project related to climate change, 50% of participants said they were very willing, and 44% of them responded that they were willing to participate.

- Regarding the implementation of programs related to responding to climate change, 92% of participants think this is very necessary, 8% of them think this is necessary.

- Regarding the organization and management of the communication session, 60% of participants responded that they were very satisfied, and 30% of them felt satisfied.

MEMBERS' INFORMATION

- Nguyen Hoang Tan, student of Land Management
 - Tel: 0938979508
 - Email: tanb2009499@student.ctu.edu.vn
- Tang Thi Thu Em, student of Marketing
 - Tel: 0345623283
 - Email: emb2010100@student.ctu.edu.vn
- Nguyen Ngoc Minh Thu, student of Sociology
 - Tel: 0398661833
 - Email: thub2104980@student.ctu.edu.vn
- Nguyen Thi Kieu Lan, student of Sociology
 - Tel: 0767357358
 - Email: lanb2205099@student.ctu.edu.vn
- Le Nguyen Thanh Ngan, student of Sociology
 - Tel: 0987446709
 - Email: nganb2205148@student.ctu.edu.vn

The art of regeneration Sustainable environment (Green Foam Group)

CONTEXT

The Exhibition project titled "The Art of Regeneration - Sustainable Environment" comes from desire to limit people's current unreasonable use of foam boxes and contribute to conveying the message of change climate and gender equality to a wider community, especially young people in the Mekong Delta

OBJECTIVES

The group's goal is to encourage people to limit the use of foam boxes for storing hot food, replacing them with other items such as glass, stainless steel lunch boxes when buying food outside. People understand the impact of foam boxes on the environment such as their difficulty to recycle, and their impact on human health

CONTENT

The project wanted to use the theme of art by creating works of art from collected Styrofoam boxes, thereby hoping to gain a new perspective when combining art and conveying messages about the environment in the Mekong Delta.

HIGHLIGHT OUTCOMES

- More than 100 foam boxes were collected.
- More than 100 foam boxes have been cleaned at 3 locations in Can Tho city (Hau River Park, Ninh Kieu Wharf, Mac Thien Tich Embankment).
- 140 young people participated in the group's survey.
- 5 photos taken from women earning for living
- An exhibition took place.

MEMBERS' INFORMATION

1. Chau Gia Han, student of Information Technology (High-quality program) at Can Tho University, student of Multimedia at FPT Arena Can Tho.

Email: chaugiahan001@gmail.com

Tel: 0708091645

2. Ly Thoai Anh, student of International Business at Can Tho University.

Email: lythoaianh1781@gmail.com

Tel: 0837340452

3. Pham Thi Hong Hanh, student of Biology at Can Tho University.

Email: hanh.june03@gmail.com

Tel: 0774042093

4. Nguyen Hoang Lan Anh, student of Veterinary Medicine at Can Tho University.

Email: lananhvvv333@gmail.com

Tel: 0387441277

5. Phan Đang Thanh Tai, student of Law at Can Tho University

Email: phandangthanhtai@gmail.com

Tel: 0782899559

6. Tran Huyen Tran, student of Auditing at Can Tho University

Email: tranhuyentran01012003@gmail.com

Tel: 0927465293

7. Phan Gia Huy, student of University of Texas at Tyler, United States.

Email: kinousukephan@gmail.com

Tel: +1 214 779 6588



Y - CORE



**GROUP 2:
COMMUNICATIONS**

Community Flood Warning System Application (AFSC)

CONTEXT

Can Tho, which has a high rate of urbanization and is located in the south of the Hau River, is frequently affected by flooding in September and October. This phenomenon seriously causes health, economic, and environmental problems. Area 1, An Khanh ward, Ninh Kieu district, Can Tho city has a high urbanization rate and is often flooded by high tides from nearby canals in September and October of the lunar calendar. This causes serious health, livelihood, and environmental problems. Therefore, the project team proposed to apply a water level monitoring system to give early warning to people in Area 1, An Khanh ward, Ninh Kieu district, Can Tho city and minimize the impact of flooding on the economy and local people's property.

OBJECTIVES

Build a monitoring and warning system for flood levels to provide timely flood risk warning information and contribute to improving the community's flood resilience, especially at high tide times, thereby minimizing damage caused by flooding in the community



CONTENT

Build a monitoring and warning system for flood levels to provide timely flood risk warning information and contribute to improving the community's flood resilience, especially at high tide times, thereby minimizing damage caused by flooding in the community

HIGHLIGHT OUTCOMES

However, despite the negative impacts and having a relatively low level of education, people in Vinh Hai have taken adaptation and response measures such as using water filters, building fresh water tanks, maintaining dikes and forests, and finding alternative sources of income that help them create balance in their lives. In addition, measures to educate, provide health care services, promote research and development, and build diverse livelihood models should be implemented to protect health and enhance the antibacterial protection for women in saline environments.

MEMBERS' INFORMATION

- Tran Nguyen Hoang Long, student majoring in Natural Resources and Environmental Management, Can Tho University
- Email: longb2006823@student.ctu.edu.vn
- Phone number: 032836279
- Le Thanh Duoc, student of Natural Resources and Environmental Management, Can Tho University
- Email: duocb2006807@student.ctu.edu.vn
- Phone number: 0763955733
- Nguyen Hong Minh, student of Natural Resources and Environmental Management, Can Tho University
- Email: minh2113025@student.ctu.edu.vn
- SDT: 0949683298
- Duong Van Thanh Do, student of Biotechnology (Advanced Program), Can Tho University
- Email: dob2102316@student.ctu.edu.vn
- Phone number: 0868074504
- Nguyen Ngoc Minh Thu, Sociology student, Can Tho University
- Email: ThuB2104980@student.ctu.edu.vn
- Phone number: 0398661833

CTU GreenEng

“Enhancing English presentation skills of Can Tho University students on Environment and Climate Change issues” program

CONTEXT

Currently, the community in the Mekong Delta in general and the vast majority of young people in this region in particular are still quite shy when presenting and exchanging issues about climate change in English in relevant events. Therefore, there is a great need for a social action project that can help them both improve English presentation skills and provide more environmental knowledge for this community.

OBJECTIVES

This project has the following goals:

- Calling and increasing the participation of stakeholders at Can Tho University, especially students, to thereby improve students' English skills and stimulate interest in environmental issues.
- Creating a new, creative learning environment through workshops and competitions to develop the participants' English presentation skills and acquire more knowledge related to environmental topics and climate Change
- Creating a channel (CTU GreenEng on Facebook platform) and a network of the young community interested in environmental issues and climate change

CONTENT

CTU GreenEng's participants were the student community at Can Tho University and this project was deployed from June to August 2023. Through knowledge training sessions in a new educational way, an English practice environment and dynamic competitions, projects have helped participants become more confident when presenting in English and equipped them with more knowledge about the environment and climate change. The project still maintains and connects with participants through activities in English Clubs at Can Tho University.

HIGHLIGHT OUTCOMES

- There is a media page on Facebook called CTU GreenEng with 481 likes and 613 followers
- Successfully organizing 4 workshops with the dual goal of improving English presentation skills and providing knowledge about the environment, climate change, urban heat island, etc. to participants with sharing from experts and lecturers with environmental expertise
- Successfully organizing an English presentation competition on solutions to environmental problems in the Mekong Delta
- Contributing 4 interesting solution ideas from participants to the issues of fast fashion, land pollution, water pollution and urban heat island in Can Tho city in particular and the Mekong Delta in general .
- Creating media videos to propagate and call for people to pay more attention to environmental issues in Can Tho city and the Mekong Delta.
- Creating a network of young people with both good English proficiency and a willingness to participate in community activities in the spirit of active citizenship.



MEMBERS' INFORMATION

- Project leader: Nguyen Duc Trung, Third-year student - English Translation and Interpretation, Can Tho University
- Email: trungb2005062@student.ctu.edu.vn
- Phone number: 0398708241
- Full name: Phan Thi Thuy Hang, Student of course 46, majoring in Applied Biology, Can Tho University
- Email: hangb2005911@student.ctu.edu.vn
- Phone number: 0869251481
- Full name: Nguyen Tran Thai Duong, Student of course 46, CLC Banking and Finance major, Can Tho University
- Email: duongb2007280@student.ctu.edu.vn
- Phone number: 0907534696
- Full name: Tran Quoc Khang, Student majoring in English Education K45, Can Tho University
- Email: khangb1912433@student.ctu.edu.vn
- Phone number: 0812684452
- Full name: Van Duong Mai Thu, 8th grade student, Doan Thi Diem Secondary School
- Email: vdmthu09@gmail.com
- Phone number: 0907522608
- Full name: Le Duy Dat, English Language Student K45, Can Tho University
- Email: datb1909156@student.ctu.edu.vn
- Phone number: 0919805006
- Full name: Pham Truc Khue, Student majoring in English Education K45, Can Tho University
- Email: khueb1912437@student.ctu.edu.vn
- Phone number: 0968492459
- Full name: Nguyen Huy Vu, Computer Science student K47, Can Tho University
- Email: nguyenhuyvu0001@gmail.com
- Phone number: 0939242303

Plastic recycling machine (Re-Filament)

CONTEXT

Currently, the community is concerned about the issue of plastic, especially single-use plastic. We observed that the plastic used for the bottles of mineral water is a very large amount of trash. Additionally, in terms of technology, we realize that there is currently no personal technical solution (i.e. a solution that individuals can directly use without the need for third-party intermediaries) to convert plastic bottles into other technical materials directly.

OBJECTIVES

The function of a plastic spinning machine is to process raw plastic into flexible and soft plastic fibers that can be used in the manufacturing process. Through the process of pulling and stretching, plastic spinning machines help create uniform plastic fibers and achieve the thickness and softness required for different applications. The machine also plays an important role in the production of plastic products such as 3D printing plastic filaments, synthetic fibers, mesh, films and some other components.

CONTENT

- Phase 1: Market research and orientation for plastic recycling will mainly use single-use water bottles because the plastic composition and structure are compatible with 3D printed plastic.
- Phase 2: Researching the plastic fiber processing so that many people can access it through open source code.
- Creating the first prototype and investigating the plastic filament spinning mechanisms and appropriate temperatures to create plastic filaments compatible with 3D printers (plastic diameter 1.75mm).
- Phase 3: Based on the fabrication of the first prototype integrating a temperature treatment system structure before, during and after spinning the plastic fiber to increase quality and ensure the durability of the material.

HIGHLIGHT OUTCOMES

After research, we found a technical solution to optimize the plastic processing line in a streamlined way. Our model has been consulted by plastics experts and uses cryogenic techniques to process raw plastic into cylindrical plastic filaments, which can be used for 3D printers. Additionally, we found that using 3D printing can extend the life of plastics without using industrial chemical treatments, while still ensuring high material properties.

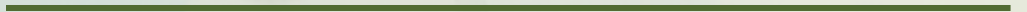
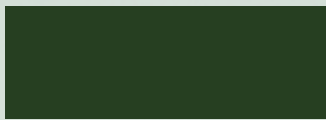


MEMBERS' INFORMATION

- Tran Xuan Khoa
 - Major: Mechatronics Engineering - College of Engineering Technology
 - Email: Khoab1806350@student.edu.vn
 - Phone: 0704897384
- Nguyen Huy Lam Anh
 - Major: Computer networks and data communications - School of Information and Communications Technology
 - Email: anhb2110959@student.ctu.edu.vn
 - Phone: 0812614494
- Le Lu Huyen Tran
 - Major: Software Engineering (CLC) – School of Information and Communications Technology
 - Email: tranb2203588@student.ctu.edu.vn
 - Phone: 0969652331
- Le Nguyen Anh Thu
 - Major: Banking and Finance (CLC) – School of Economics
 - Email: thuB2200974@student.ctu.edu.vn
 - Phone: 0833040704

PROJECT COLLABORATORS

- Chau Gia Han
 - Major: Information Technology (CLC) – School of Information and Communications Technology
 - Email: hanb2014913@student.ctu.edu.vn
 - Phone number: 0708091645
- Truong Hoang Ha Long
 - Major: Logistics and Supply Chain Management – College of Engineering Technology
 - Email: longb2203944@student.ctu.edu.vn
 - Phone number: 0931095096
- Luong Huu Trong
 - Major: Mechatronics Engineering - College of Engineering Technology
 - Email: Trongb2012546@student.ctu.edu.vn
 - Phone number: 0774020597
- Van Duong Mai Thu
 - Doan Thi Diem Secondary School
 - Email: vdmthu09@gmail.com
 - Phone number: 0907522608



MŨI
CÀ MAU
8°37'30" vĩ độ BẮC
104°43' kinh độ ĐÔNG



GROUP 3: SCIENCE

Building a set of Indicators to assess vulnerability due to the impact of salinity intrusion A case study in Ben Tre Province

CONTEXT

Reality shows that salinity intrusion has caused many serious consequences to the Mekong Delta, especially to coastal provinces. If sea levels rise by 1 meter, 45% of the land area in the Mekong Delta will be affected by salinity and about 85% of people in the Mekong Delta will need agricultural support. Starting from the above actual situation, assessing vulnerability due to salinity intrusion is truly an urgent issue. The seed fund will support the research team in implementing activities including developing a set of criteria and assessing vulnerability due to the impact of saltwater intrusion in Ben Tre province. This is a useful source of scientific information to help managers orient in planning land use planning policies in accordance with saline intrusion developments in Ben Tre province in particular and the Mekong Delta in general.

OBJECTIVES

1. General goal

- Developing a set of indicators to assess vulnerability due to the impact of saltwater intrusion in a case study in Ben Tre province, Vietnam.

2. Specific goals

- Identifying current water hazards and risks in the study area.
- Calculating vulnerability indices for each farming model affected by saline intrusion
- Analyzing potential links between household vulnerability and surrounding socio-ecological factors including land use practices, water infrastructure, road systems and economic conditions household health.

CONTENT

1. Interviewing farmers
2. Analyzing and calculating the social vulnerability index
3. Determining the variables of the vulnerability index



HIGHLIGHT OUTCOMES

The results show that agricultural cultivation models in Ben Tre province include a set of numerical vulnerability indicators for each model including 10 variables (1/Main labor, 2/Normal flooding form, 3/Progression from 1990 to present, 4/Decentralization of satisfaction in information sharing, 5/Information sharing in the community, 6/Decentralization of training, 7/Decentralization of loans (yes/no), 8/Decentralization of loans meet demand, 9/Year of saltwater intrusion, 10/Normal flooding depth). From this, it can be concluded that the above variables are specific to agricultural cultivation models to serve the assessment of the extent of impact caused by salinity intrusion because each model will have different levels of adaptation, resistance to salinity intrusion and measures to prevent and limit the effects of saltwater intrusion. The research team has evaluated and produced vulnerability results for various types of agricultural cultivation models to help local farmers limit the impact of saltwater intrusion, have more reasonable prevention measures and contribute to increasing the agricultural income of farmers in Ben Tre province.

MEMBERS' INFORMATION

- Huynh Thanh Nha, student
- nhab2009491@student.ctu.edu.vn,
- 0835231121
- Duong Co Hieu, student
- hieuduongpc@gmail.com
- 0947849474
- Nguyen Thi Hong Thuan, student
- thuanb2009502@student.ctu.edu.vn
- 0938147446
- Huynh Phuong Lan, student
- lanb2001825@student.ctu.edu.vn
- 0344355863
- Nguyen Quang Vinh, student
- vinhb2001879@student.ctu.edu.vn
- 0949661304

URBAN HEAT

CONTEXT

The project is conducted to assess the impact of extreme heat on specific groups of people (elderly people, indoor and outdoor workers), implemented in Can Tho city, from May July to August 2023. The project conducted interviews with 240 people from 3 target groups in areas where urban heat islands occurred.

OBJECTIVES

The project will help assess the impact of heat on each specific target group and gather people's acceptability and concerns about implementing the urban agriculture model at home. Through surveys, it can help people be aware of the impact of heat, and this is also a premise for future projects to deploy models to help reduce temperatures appropriately for people living in the areas affected by heat islands.

CONTENT

The study conducted calculations of land surface temperature (LST) of Can Tho city in order to serve the calculation of urban heat island (UHI) to identify areas affected by heat island and conduct interviews. After determining the interview area, the group conducted interviews with subjects on a number of issues such as:

- Personal information of survey participants (especially: living area, job)
- Does the interview participant have an underlying medical condition?
- Are survey participants aware of the issue of urban heat islands and urban agriculture?
- How does sunlight heat affect their health?
- For people, is the sunlight heat an urgent problem that needs to be solved today?
- What is the effect of trees in the area where they live?
- Feasibility of heat mitigation measures for people proposed by the group.

HIGHLIGHT OUTCOMES

Based on the results of the interview, it can be seen that 61.3% of the total votes showed that sunlight heat is becoming an urgent problem that needs to be solved. Besides, people's health is affected by hot weather when they are exposed to it. Common effects include dehydration, heat stroke, mental stress, fatigue and irritability. Additionally, many people also experience increased heart rate and respiration, skin swelling and irritation, as well as the risk of fainting. Of the three groups, the group working indoors was less affected by temperature. The main reason is because the majority of members in this group are between 20 and 50 years old and have no underlying diseases. Furthermore, they are not directly exposed to hot sunlight.

Most people agreed that planting trees is beneficial for the environment and their personal health. During the interview process, there were positive signs when some people managed to plant trees around their houses themselves. However, there are still many areas with low tree density or even no trees at all.

The study also surveyed people's opinions on implementing green measures to minimize the impact of sunlight heat. Among them, growing green plants indoors is considered the most feasible, with 45.23% of the total participants saying they are willing to grow green plants in their homes. Most of them belong to the group that works indoors. For those who disagree, the main reason is that their housing area does not have enough space or they do not have enough time to take care of the trees. This study also helps to better understand the impact of the current sunlight heat on people and their level of acceptance towards implementing green measures.

MEMBERS' INFORMATION

- Trần Gia Hồng
- Sinh viên ngành: Quản lý Đất đai K45
- Email: hongb1902572@student.ctu.edu.vn
- SĐT: 0961006745
- Nguyễn Kim Ngân
- Sinh viên ngành: Quản lý Công nghiệp K46
- Email: nganb2011645@student.ctu.edu.vn
- SĐT: 0775829680
- Nguyễn Quế Trân
- Sinh viên ngành: Quản lý Đất đai K46
- Email: tranb2009509@student.ctu.edu.vn
- Phạm Duy Tường
- Sinh viên ngành: Quản lý Đất đai K46
- Email: tuongb2001789@student.ctu.edu.vn
- SĐT: 0794977937
- Nguyễn Đức Toàn
- Sinh viên ngành: Khoa học Môi trường K47
- Email: toanb2101806@student.ctu.edu.vn
- SĐT: 0949648909

Estimation of greenhouse gas emissions on the current status of organic rice cultivation - A case study in Vung Liem district, Vinh Long province

CONTEXT

You cannot manage what you do not measure (IPCC,2022). Vinh Long province is a province with a natural area of 152,017.6 hectares, ranking 12/13 among the provinces and cities in the Mekong Delta (larger than Can Tho city). Agricultural land area is 118,918.5 hectares, accounting for 78.23%; In agricultural land, annual crop land is 72,565.4 hectares, accounting for 47.73% of the natural area; which is mainly rice land (71,069.2 hectares).

This means that emissions from rice cultivation in the area are higher than other agricultural land uses. These are the sources of GHG emissions that cause climate change, affecting people's living environment. Economic development must go hand in hand with environmental protection and reducing GHG emissions is an extremely urgent issue.

Estimating greenhouse gas emissions based on the current use of rice land helps us better understand the amount of emissions that are released into the atmosphere during rice cultivation. This helps find ways to reduce GHG emissions and provide reasonable land resource management measures.

OBJECTIVES

Estimating the amount of GHG emissions released into the environment from activities that create emissions on the organic rice farming model in Vung Liem district, Vinh Long province.

Calculating carbon emissions during the farming process as a basis for sustainable farming.

CONTENT

The research was conducted based on methods

1. Method of collecting and researching documents on natural conditions, soil, and calculation coefficients to calculate emissions as announced by state agencies.
2. Field investigation and interviews with experts on organic rice farming techniques.
3. Methods of synthesizing and processing data
4. Method of analysis and calculation of emission coefficients according to the National Greenhouse Gas Inventory guidelines (IPCC 2006).

HIGHLIGHT OUTCOMES

1. Direct emission source from fuel use from farming activities

During the farming process, the use of fuel-burning machinery causes direct emissions from three main processes: sowing, plowing (causing the most emissions) and harvesting over 30 hectares of organic rice. In 3 seasons, about 3,810 liters of gasoline were consumed, resulting in a total emission into the environment of about 0.19 tons of CO₂ equivalent, accounting for 1% of the total emissions. This is the direct source of CO₂ emissions from people using vehicles and machinery in the farming process and this source of emissions is unavoidable. Due to the fact that the shop cultivates the amount of straw in 3 crops to be sold and grows mushrooms as input materials for other processes, the source of emissions from burning fields and burning agricultural waste are almost non-existent.

2. Indirect source of CH₄ emissions from flooded rice cultivation

The investigation results show that the number of cultivation days and cultivation conditions for the ST25 rice variety are not the same, with an average total number of cultivation days of about 115 days for the winter - spring crop and 110 days for the summer- autumn ; autumn - winter crop. Indirect CH₄ emissions from rice cultivation into the environment from 3-crop organic rice cultivation are about 0.010856 Gg CH₄/year, equivalent to about 271.58 tons CO₂eq/year, accounting for 99% of total emissions.

According to the calculation results from direct and indirect emission sources calculated from the coefficient according to the region's farming conditions in 2022, it shows that on average, 30 hectares of 3-crop organic rice cultivation will emit about 271.60 tons of CO₂eq. /year including both indirect and direct sources and equivalent to the fact that 1 hectare emits an average of about 9.05 tons of CO₂eq/year.

MEMBERS' INFORMATION

- Nguyễn Duy Tân - student
- Email: tanb2009568@student.ctu.edu.vn
- Tel: 0899054496

- Huỳnh Thị Tươi - student
- Email: tuoi2009582@student.ctu.edu.vn
- Tel: 0339990820

- Lê Minh Trang - student
- Email: trangb2009575@student.ctu.edu.vn
- Tel: 0981341755

- Danh Tính - student
- Email: tinhb2101550@student.ctu.edu.vn
- Tel: 0911644487

Building a model of land crop rotation (Quinoa) combined with irrigation water management using Chameleon soil moisture sensors on saline rice soil in the Mekong Delta under net house conditions.

CONTEXT

Climate change has been causing salinity intrusion and serious irrigation water shortages in the Mekong Delta, causing farmers in the region to face adverse conditions more often. In recent years, there have been prolonged droughts, erratic changes in rainfall and an increase in the area affected by saline intrusion... At the same time, farmers' health is affected by environmental factors (residuals of pesticide), leading to migration to other places to find work or trying to stick to a farming style that is not adapted to current conditions.

OBJECTIVES

Evaluating the growth and development ability of Quinoa plants on rice land frequently affected by saline intrusion and the effectiveness of economical irrigation measures using Chameleon sensors in the nethouse.

Initial assessment of the potential for developing this crop variety in the Mekong Delta under saline drought conditions and diversifying crop varieties in the region.

Creating a premise for the deployment and replication of a new crop variety farming model (Quinoa) and a new economical irrigation method (Chameleon soil moisture sensor) to help farmers have many choices in dry season conditions, vacant farmland due to salinity and insufficient water for cultivation, as well as contributing to minimizing salinity in the soil. As a result, it contributes to increasing income and economic conditions for farmers, stabilizing their lives and minimizing migration when it is impossible to cultivate rice under climate change conditions, especially drought and saltwater intrusion in the Mekong Delta region.

CONTENT

- Content 1: Survey, collect soil samples and arrange the experimental area in the nethouse.
 - Soil samples were collected from Long Phu commune, Long Phu district - Soc Trang province. This is an area with great danger and risk due to salt water intrusion during the dry season. Soil was collected at a depth of 0-20 cm of topsoil. After that, the soil is transferred to the nethouse and processed. The soil is chopped into small pieces, about 1-2 cm in diameter, plant residue is removed, lime is spread, and pathogens are treated. The soil is dried outside the nethouse for 3 to 5 days. When the soil is completely dry, we mix it well and put it in a plastic pot to set up the experiment. Each experimental pot has 7-10 kg of soil.
 - After the soil sample is mixed well, a representative sample is collected to determine the properties of the soil at the beginning of the farming season. Soil samples were combined into a composite sample of about 0.5 kg and analyzed for nutrient composition. Characteristics to be measured include soil pH, EC, total N, available P and K. Soil sample analysis will be performed at the laboratory of the School of Agriculture, Can Tho University.
- Content 2: Survey the growth level of Quinoa plants on different salinity concentrations of irrigation water, along with evaluating the effectiveness of economical irrigation methods using the Chameleon humidity sensor.
 - The experiment was arranged randomly with 2 factors and 3 repetitions
 - Factor 1: Irrigation time and level: (1) watering according to the farmer (once a day), (2) watering according to the Chameleon humidity sensor (according to the color of the light on the sensor).
 - Factor 2: Salinity levels of irrigation water: (1) not saline, (2) saline 2‰, (3) saline 4‰, (4) saline 6‰.
 - Quinoa plants are watered with salt water from 1 month until their harvest. NPK fertilizer was applied according to the recommendations of the research team at the Department of Soil Science, School of Agriculture.
 - Monitor soil indicators: EC, pH, soil moisture, available nitrogen, available phosphorus.
 - Crop criteria: plant height at critical stages, biomass and grain yield at harvest.

HIGHLIGHT OUTCOMES

Evaluating the potential and appropriate methods of cultivating Quinoa plants on saline soil in the Mekong Delta region under net house conditions.

Evaluating the effectiveness of economical irrigation methods using Chameleon soil moisture sensors. (content clearly stated in the summary report)

MEMBERS' INFORMATION

- Moc Thi Thuy Kieu, Major: Land management and civil engineering.
- E-mail: kieu2102600@student.ctu.edu.vn
- Tel: 0352095467
- Huynh Thi Kim Ngan, Major: Land management and civil engineering.
- E-mail: nganb2109477@student.ctu.edu.vn
- Tel: 0779173359
- Nguyen Tran My Ngoc, Major: High-tech agriculture.
- E-mail: ngocb2106490@student.ctu.edu.vn
- Tel: 0335284252
- Nguyen Huu Tai, Major: High-tech agriculture.
- E-mail: taib2106507@student.ctu.edu.vn
- SĐT: 0328264326

Monitoring and assessing salinity on rice land -A case study in Chau Thanh district, Tra Vinh province

CONTEXT

Collecting timely and accurate salinity soil information has extremely important practical significance for the prevention and control of land degradation and ecological restoration in dry areas. Monitoring soil salinity using traditional methods such as field measurements and laboratory analysis hardly obtains salinity distribution information on a large scale, which is costly and time-consuming. The study proposed a method to establish a soil salinity map using freely provided remote sensing image data and build a webgis to observe the area and salinity on rice land to provide timely information to farmers about the situation of salinity intrusion, thereby helping farmers proactively plan and improving their capacity to respond to climate change as well as contributing to linking information from agricultural officials and farmers through accessible digital information tool.

The research area selected in Chau Thanh district, Tra Vinh province has a large rice growing area and is vulnerable to saline intrusion. Project implementation period is until the end of August 2023.

OBJECTIVES

Establishment of rice cultivation map in Chau Thanh district, Tra Vinh province.
Proposing a method to create soil salinity maps

CONTENT

The research was conducted to establish a map of the current status of the rice crop structure from multi-temporal Sentinel-1 satellite image data. Satellite images were extracted with VH polarization for each month to observe typical fluctuation values in the year of objects and have the controlled classification using the Random Forest algorithm. Next, soil salinity data at 70 rice soil survey points in the study area were collected to estimate and create a salinity map in rice soil using the inverse distance weight method (IDW) and multivariate logistic regression according to spectral channels of Sentinel-1, Sentinel-2 satellites and digital elevation model (DEM).

HIGHLIGHT OUTCOMES

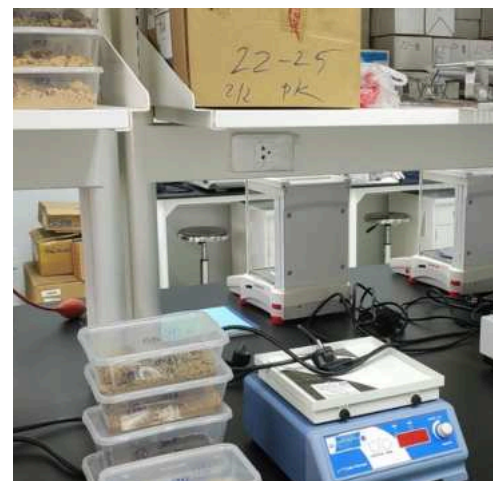
The study has built a map of rice crop structure in Chau Thanh district, Tra Vinh province including 03 current statuses: 3-crop rice, 2-crop rice, and shrimp rice. The reliability of the classification map is assessed at a high level with the global accuracy and Kappa coefficient, respectively 92.64% and 0.89,. Next, the study collected 63 samples corresponding to 63 rice soil survey points in Chau Thanh district, Tra Vinh province to analyze 02 soil indicators including pH and EC. Sample analysis results show that EC values range from 112.9 uS/cm to 1676.5 uS/cm, with an average value of 351.4 uS/cm. Additionally, soil pH values in the entire study area varied from 4.2 to 7.6, with an average value of 5.3.

Estimation of EC in soil was researched through the inverse distance weight (IDW) method and multivariate correlation regression. In particular, the inverse distance weight (IDW) method was used with data from 44 survey points (70%) and then compared with univariate correlation regression with 19 survey points (30%). The results show that the coefficient of determination R^2 is 0.42, and the correlation coefficient (r) reaches 0.64. On the other hand, the multivariate regression method is performed with input data including 44 survey points (70%), Sentinel-1, Sentinel-2 spectral channels and salinity indices (SI), through analysis of the BMA model, BIC coefficient that reached -41.64 and frequency of occurrence (post prob reached 15.6%). Next, we compare the univariate correlation regression with 19 survey points (30%). The results show that there is a correlation between the EC estimated by the multivariate regression method and the actual EC with the coefficient that determined R^2 to be 0.61, and the correlation coefficient (r) that reached 0.78

In addition, the study has built a WebGIS displaying rice crop structure maps and salinity maps estimated from the inverse distance weight (IDW) method and multivariate regression methods on the Google Earth Engine platform through the Earth Engine Apps tool.

MEMBERS' INFORMATION

- Nguyen Trong Nguyen – Land Management Engineer (CTU)
- ntnguyen08.work@gmail.com
- 0964874818
- Huynh Nhat Truong – Software Engineering student course 45 (CTU)
- truongb1906599@student.ctu.edu.vn
- 0971143578
- Nguyen Thi Truc Phuong – Student majoring in Multimedia Communications (FPT)
- phuongkame2107@gmail.com
- 0949565518



Assessing women's access to the socio-economic effectiveness of products from cork forest in Cu Lao Dung, Soc Trang province

CONTEXT

Cu Lao Dung, a district located in the marine economic zone of Soc Trang province and blessed by nature, fertile alluvium, temperate climate, has great geographical advantages, with 3 ecological zones: fresh and brackish, salty. Aquatic resources of cork forest are rich and abundant. Products include: ripe cork fruit, fish, clams, crabs, turtles, mudskippers, etc. Men participate in catching fish and crabs, while women and children catch crab fingerlings, goby fish, clams,.... Aquatic resources bring huge income to households in coastal villages. At the same time, this is also a place that brings value in terms of eco-tourism or community tourism to the locality.

It can be said that the issue of gender equality in Vietnam in general and Cu Lao Dung in particular has posed many challenges. Men and women have to take on different roles in agricultural households in rural areas. The story of improving women's access to the socio-economic effectiveness of products from cork forest in Cu Lao Dung, Soc Trang province needs attention and research. Therefore, this research needs to be conducted to review and understand women's access to the socio-economic effectiveness of cork forests in Cu Lao Dung to improve their access.

Hoa, N. V. (2021). Assessing the economic value of cork forest products in the Mekong Delta (Doctoral thesis). Department of Agricultural Economics, School of Economics, Can Tho University.

OBJECTIVES

- Objective 1: Assessing the current status of socio-economic efficiency of products from cork forest in Cu Lao Dung district, Soc Trang province;
- Objective 2: Assessing women's access to the socio-economic effectiveness of products from cork forest in Cu Lao Dung district, Soc Trang province;
- Objective 3: Proposing solutions to help improve women's access to the socio-economic effectiveness of products from cork forest in Cu Lao Dung district, Soc Trang province.

CONTENT

The project researched and assessed the current state of effectiveness in exploiting the socio-economic value of products from cork forests in Cu Lao Dung district, Soc Trang province. At the same time, the project also evaluated women's access to the socio-economic effectiveness of products from cork forests. Since then, research has been conducted to propose appropriate solutions to help women in Cu Lao Dung, Soc Trang province have better access to the socio-economic effectiveness of cork forest.

HIGHLIGHT OUTCOMES

Evaluation of women's access to the socio-economic effectiveness of products from cork forest in Cu Lao Dung, Soc Trang is a very new approach and has great significance in shortening the gender gap as well as maximizing the role of gender equality in the research area. The current socio-economic value of cork forests in the locality is very diverse and rich. Research results have shown that every year the cork forests provide a lot of resources for people in the area, including: ripe cork fruit, fish, clams, crabs, crabs, mudskippers, etc. Fishing is also diverse, suitable for each gender and age. Men participate in fishing for fish and crabs, while women and children catch crab fingerlings (baby crabs), goby fish, and clams,... At the same time, the results also show that the Sok forest brings value in terms of eco-tourism or community tourism to the locality.

Women in Cu Lao Dung, Soc Trang province are not well enough aware of the importance of assessing the socio-economic effectiveness of products from cork forests. Currently, women play a large role in housework activities at home, including cooking, washing, and taking care of children. The burden of unpaid care work has a negative impact on women's employment as well as their ability to access training and education. At the same time, research also shows that the accessibility of Khmer ethnic women is lower than that of the Kinh ethnic group due to language and education barriers. Therefore, the study has proposed a number of important solutions, especially from women. Local women desperately need the government's support to help them enhance their role and status. At the same time, localities need to have policies to encourage women to help them access the socio-economic effectiveness of products from cork forests in Cu Lao Dung, Soc Trang.

MEMBERS' INFORMATION

- Lu Pham Thien Duy, Student of School of Social Sciences and Humanities - Can Tho University.
• duyb2004929@student.ctu.edu.vn
• 0787972366
- Bui Quoc Khanh, Student of School of Social Sciences and Humanities - Can Tho University.
• khanhb2007417@student.ctu.edu.vn
• 0867207258
- Lam Thi Diem Thuy, Student, School of Economics, Can Tho University.
• thuyb1903302@student.ctu.edu.vn
• 0907105064
- Trang Doan Nhu Huynh, Student, School of Economics, Can Tho University.
• huynhb2009244@student.ctu.edu.vn
• 0855317933



Evaluating the impact of salinity intrusion on farming households' livelihoods - A case study in Tan Phu Dong district, Tien Giang.

CONTEXT

The study was conducted to evaluate farm household livelihoods and propose sustainable livelihood solutions in Tan Phu Dong district, Tien Giang province. This is a locality located far from the mainland with limited access to fresh water sources for irrigation and daily life, so it is heavily affected by climate change, especially increasing saline drought. .

Through a preliminary survey, there are currently many ineffective agricultural models in the district in an unsynchronized way between regions, and no in-depth research to analyze the local livelihood models (in terms of economy, nature, society, and environment...). Therefore, it is necessary to evaluate existing local livelihood models and propose appropriate farming models for each sub-region. The research results will be a scientific basis to help local officials develop measures and programs to adapt and minimize the impact of climate change on the livelihoods of farming households, contributing to helping coastal communities ensure sustainable livelihood.

OBJECTIVES

Analyzing the benefits and costs of local livelihood models.
Assessing the impact of salinity intrusion on livelihood changes.

CONTENT

Our research used multi-temporal Sentinel-1 satellite images to create a map of current land use status in Tan Phu Dong district, Tien Giang province according to the controlled classification method using the Random Forest algorithm and evaluating reliability through global accuracy and Kappa coefficient. In addition, we calculate the number of samples and sample locations based on the interpreted land use status, and establish an interview questionnaire to survey farmers on the current status. Finally, the study standardizes data and analyzes livelihood characteristics under the influence of saltwater intrusion through capital sources: human, natural, social, material, and financial.

HIGHLIGHT OUTCOMES

- The research has established a map of the current status of Tan Phu Dong district including 05 current statuses: rice, shrimp, lemongrass, other annual crops, perennial plants and aquaculture with global accuracy and Kappa coefficient of respectively 89.52% and 0.85
- The study established interviews for farming households that included information about the situation of salinity intrusion and sources of livelihood capital.
- It is conducted interviews with 113 farming households whose farming models are affected by saltwater intrusion, including lemongrass (25 farming households), cassava (17 farming households), rice and shrimp (12 farming households), and shrimp (26 farming households). , coconut (33 farmers)
- The results of analysis of livelihood capital sources show that human, financial and natural capital sources have an important influence on the livelihoods of farming households in the context of local salinity intrusion. In particular, natural capital plays an important role in the trend of changing local livelihoods. The lemongrass and shrimp farming model brings high economic efficiency and creates many sources of income for local people in parallel with farming.
- Under natural conditions of severe salinity due to the sea on all four sides, lack of water for daily use and irrigation, crops have had low productivity since 2015. This causes difficulties for agricultural livelihoods, households and hired laborers. Since 2015, under the efforts of the local government, dike systems as well as pipelines carrying fresh water and irrigation from the mainland into the area have been built to improve local agriculture. In addition, the development of salt- and drought-resistant plants such as coconut and lemongrass and adaptive models such as shrimp and shrimp rice models have been focused on to increase farm household livelihoods in recent years.

MEMBERS' INFORMATION

- Pham Hoang Tu – Land Management student K46 (CTU)
 - tub2001876@student.ctu.edu.vn
 - 0338966749
- Do Nguyen Tuan Anh - Land Management Student K46 (CTU)
 - anhb2009451@student.ctu.edu.vn
 - 0857553553
- Nguyen Van Hoang Thanh – Land Management Student K46 (CTU)
 - thanhb2001852@student.ctu.edu.vn
 - 0796889244
- Nguyen Hong Ngoc Ngan - Land Management Student K46 (CTU)
 - nganb2001833@student.ctu.edu.vn
 - 0914705027

Watergreen

CONTEXT

The reality of environmental pollution, especially water pollution, is increasing due to agricultural and industrial activities, especially domestic wastewater. From this phenomenon, the group proposed ideas for project development in order to limit water pollution. The project aims to provide knowledge and raise awareness for students in Can Tho city.

The project will survey and analyze the level of nitrite and phosphate pollution in wastewater at several locations in the inner city of Can Tho, thereby using microorganisms to reduce the amount of nitrite and phosphate in water, which are the main causes of pollution and algal blooms. The necessary research will be conducted in the Cellular and Molecular Biology laboratory, College of Natural Sciences, Can Tho University.

OBJECTIVES

Raise awareness of pupils and students, and provide knowledge and solutions to limit water pollution problems.

CONTENT

Quantifying nitrate and phosphate concentrations in two lakes in Can Tho City.

Investigating the ability of bacteria strains to grow and absorb phosphate and nitrate in wastewater samples.

Communicating the project by linking with projects within the framework of the program "Youth resilience to climate change in the Mekong Delta" (Y-CoRe) combined with posting project articles on social networking sites.

HIGHLIGHT OUTCOMES

Samples were collected and quantified the concentration of phosphate, nitrate and some physico-chemical characteristics of wastewater samples from Bung Xang lake and canal on Mac Thien Tich street, Can Tho city.

Tested the ability to absorb nitrate and phosphate of 4 strains of microorganisms under laboratory conditions at the molecular biology laboratory, College of Natural Sciences, Can Tho University.

Linked with the CTU GreenEng project within the framework of the program "Youth resilience to climate change in the Mekong Delta" (Y-CoRe) to carry out project communication.



MEMBERS' INFORMATION

- Duong Van Thanh Do, student of Biotechnology (Advanced Program), Can Tho University
- Email: dob2102316@student.ctu.edu.vn
- Phone number: 0868074504
- Le Thanh Duoc, student of Natural Resources and Environmental Management, Can Tho University
- Email: duocb2006807@student.ctu.edu.vn
- Phone number: 0763955733
- Tran Nguyen Hoang Long, student majoring in Natural Resources and Environmental Management, Can Tho University
- Email: longb2006823@student.ctu.edu.vn
- Phone number: 032836279
- Nguyen Ngoc Minh Thu, Sociology student, Can Tho University
- Email: ThuB2104980@student.ctu.edu.vn
- Phone number: 0398661833
- Nguyen Hoang Lan Anh, student of Veterinary Medicine, Can Tho University
- Email: anhb2109347@student.ctu.edu.vn
- Phone number: 0387441277
- Nguyen Hong Minh, student of Natural Resources and Environmental Management, Can Tho University
- Email: minhb2113025@student.ctu.edu.vn
- Phone number: 0949683298