

13 CLIMATE  
ACTION

INGENIØRER  
UDEN GRÆNSER



**CLIMATE  
ADAPTATION  
INTERVENTION  
CATALOGUE**

**DEVELOPED BY:**

**ENGINEERS WITHOUT BORDERS, DENMARK**

**CLIMATE RESILIENCY WORKING GROUP**

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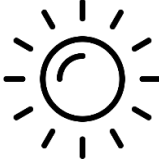


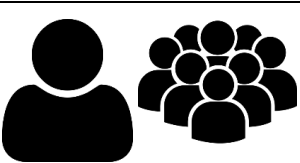



# PREFACE

This catalogue aims at presenting adaptation initiatives with a strong focus on the community to ensure a participatory approach for the design and implementation of the proposed initiatives. These initiatives are well-aligned with the Sustainable Development Goals (SDGs).

Multiple options are suggested in this catalogue and organized within six main categories: (1) disaster risk reduction, (2) vegetation planting, (3) room for rain, (4) waste management, (5) production of combined sand and plastic products and (6) production of plastic products.

For each initiative, pictograms representing the natural hazard to be mitigated, the business potential and organisational strategy are displayed as well as key information on the initiatives. These are further explained in the Pictogram Descriptions and Catalogue Design Description.

# PICTOGRAM DESCRIPTIONS

|   |   |
|---|---|
|    | <p><b>Drought</b>, if the symbol is displayed it means the activity intend to promote preservation of water, rainwater harvesting and moist soils as well as minimizing risk of erosion and small-scale landslides.</p> |
|    | <p><b>Flooding</b>, if the symbol is displayed it means the activity has a positive effect, minimizing the risk and related negative impacts when heavy rain increases the risk of flooding.</p>                        |
|    | <p><b>Heat</b>, if the symbol is displayed it means the activity mitigate the effects of heat, by providing cooling, shading and sheltering from the wind.</p>  |
|   | <p><b>Business opportunity</b>, if the symbol is displayed it means the activity intend to promote a business opportunity allowing for small scale income generation.</p>   |
|  | <p><b>Costs</b>, if the symbol is displayed an indication is given whether the activity requires initial costs, operational costs and/or maintenance costs.</p>   |
|  | <p><b>Organization</b>, if the symbol is displayed it indicates that organization is important and specifies the number of people identified to carry out the activity.</p>   |
|  | <p><b>Time</b>, if the symbol is displayed it indicates the activity is time consuming and/or has a long-term effect.</p>   |
|  | <p><b>Training</b>, if the symbol is displayed it indicates whether training will be given or is needed.</p>  |
|  | <p><b>Health</b>, if the symbol is displayed it indicates the skills required, especially in terms of physical health and well-being.</p>   |

# CATALOGUE DESIGN DESCRIPTION

| <b>HEADLINE – ADAPTATION INITIATIVE</b>   |   |
|---|---|
|   | PICTOGRAMS  |
| <b>WHY?</b><br><i>WHY IS THE INITIATIVE RELEVANT?</i><br><i>HOW DOES IT HELP?</i>   | NATURAL HAZARD<br><br>BUSINESS OPPORTUNITY<br><br>ORGANIZATION<br><br>INITIAL AND MAINTENANCE COSTS<br><br>TIME CONSUMING<br><br>REQUIREMENTS AND SKILLS<br><br>LEVEL OF PHYSICAL FITNESS |
| <b>WHAT?</b><br><i>DESCRIPTION: WHAT IS THE ACTIVITY?</i>   |   |
| <b>HOW?</b><br>HOW TO IMPLEMENT THE INITIATIVE?<br>REQUIREMENTS   |   |
| <b>ORGANIZATIONAL STRATEGY</b><br>WHO WILL SUPPORT THE IMPLEMENTATION?<br>HOW WILL THE SUPPORTING GROUP BE ORGANIZED?           |   |
| <b>ADAPTATION INITIATIVE SYNERGIES</b><br>WORK WITH<br>“OTHER SUITABLE ACTIVITIES/MITIGATION MEASURES IN THE CATALOGUE”         |   |
| <b>COMMUNITY RESILIENCY</b><br>BENEFITS – LIVELIHOOD IMPROVEMENT  |   |
| <b>SOCIAL</b><br>GENDER EQUALITY, COMMUNITY UPGRADE, COMMUNITY COHERENCY, EDUCATIONAL OPPORTUNITY, CULTURE                      |   |
| <b>ECONOMICAL</b><br>ECONOMIC PROSPERITY, REDUCING UNEMPLOYMENT, INCREASING/GENERATING INCOME                                   |   |
| <b>ENVIRONMENTAL</b><br>IMPROVING ENVIRONMENTAL CONDITIONS – HABITATS, MORE BIODIVERSITY, BETTER CONDITIONS FOR FLORA AND FAUNA |   |






# LISTING ADAPTATION INITIATIVES

|  |    |
|--|----|
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# EARLY WARNING SYSTEMS


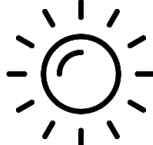




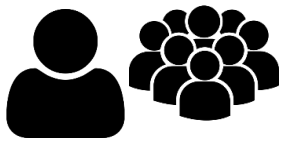
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|---|--|---|--|--|--|
|   |  | PICTOGRAMS  |  |  |  |
| <p><b>WHY?</b></p> <p>Setting up an early warning system with adequate time to disseminate the message and respond to it minimizes loss of lives and material goods during a flood event.<br/>A successful implementation will allow for hazard detection and message dissemination, allowing the community to prepare and respond, increasing the coping capacity.</p>   |  | <br>FLOOD HAZARD         |  |  |  |
| <p><b>WHAT?</b></p> <p>Early warning systems can be implemented as a chain of information communication systems and comprise sensors, event detection and decision subsystems. They work together to forecast and signal disturbances that adversely affect the stability of the physical world, providing time for the response system to prepare for the adverse event and to minimize its impact.</p>  |  | <br>TIME CONSUMING       |  |  |  |
| <p><b>HOW?</b></p> <p>Enhancing the capacity of national hydro-meteorological (NHMS) institutions to monitor extreme weather and produce sector tailored weather forecasting through training and technology transfer.</p> <p>Ensuring efficient and effective use of hydro-meteorological information for generating early warnings through training and giving responsibility to key persons to ensure the management of early warning systems and communication when these are activated</p> |  | <br>EDUCATIONAL TRAINING |  |  |  |
| <p><b>ORGANIZATIONAL STRATEGY</b></p> <p>This activity will require the management of two components: (1) the improvement of weather forecasting technologies and (2) the integration and better dissemination and use of these weather forecast tools in early warning systems. Once, early warning systems are in place, in case of event, a coordinating group in charge of monitoring early warning systems should communicate with the emergency response entity.</p>                      |  | <br>GROUP EFFORT         |  |  |  |
| <p><b>ADAPTATION INITIATIVE SYNERGIES</b></p> <p>Work with “disaster response and evacuation plans”.</p>  |  |   |  |  |  |
| <b>COMMUNITY RESILIENCY</b>   |  |   |  |  |  |
| SOCIAL  |  |   |  |  |  |
| ECONOMICAL  |  |   |  |  |  |
| ENVIRONMENTAL   |  |   |  |  |  |

# DISASTER RESPONSE AND EVACUATION

|  |  | PICTOGRAMS   |  |
|--|--|--|--|
| <p><b>WHY?</b></p> <p>Making a Disaster Response Plan is practical to have when you are vulnerable to natural hazards and other negative effects of climate change.</p> <p>Having a plan about evacuation when there is a flood will help everyone in the community to know what to do in a crisis, where to go and how to act.</p> <p>This will increase the whole community's coping capacity, and it will minimize casualties and fatalities during a crisis.</p>   |  |  <p>FLOOD PREVENTION</p>  |  |
| <p><b>WHAT?</b></p> <p>Creating a Disaster Response Plan includes the following activities:</p> <ul style="list-style-type: none"> <li>• Identify the possible risks in the area</li> <li>• Assess who is exposed to the risks</li> <li>• Assess and decide what actions are needed to keep everyone safe</li> <li>• Create an Evacuation Plan and decide meeting point</li> <li>• Create action plans for each risk</li> </ul> <p>A Disaster Response plan will also include First Aid Training for at least one in each household.</p>   |  |  <p>INVESTMENTS NEEDED</p>  <p>TIME CONSUMING</p>    |  |
| <p><b>HOW?</b></p> <p>Risk Identification and assessment requires:</p> <ul style="list-style-type: none"> <li>• Local knowledge and supervision by an EWB/WHI member.</li> <li>• Identifying a local coordinator</li> <li>• Certain measurements (rainfall, heat, etc).</li> </ul> <p>Evacuation planning requires:</p> <ul style="list-style-type: none"> <li>• Assigning a meeting point</li> <li>• Describing how to communicate</li> <li>• Decide how vulnerable people are cared for and included in the evacuation</li> </ul> <p>First Aid training requires:</p> <ul style="list-style-type: none"> <li>• Professional training from a competent first aid instructor.</li> </ul> |  |  <p>EDUCATIONAL TRAINING</p>  <p>GROUP EFFORT</p> |  |
| <p><b>ORGANIZATIONAL STRATEGY</b></p> <p>This activity will demand a coordinator during the creation of the response plan. It demands identification of coordinating group in case of a crisis. This group will be in charge during a crisis and inform everyone in the community what to do. Important here is to ensure that everyone in the coordinating group knows their role and what to do.</p>   |  |  |  |
| <p><b>ADAPTATION INITIATIVE SYNERGIES</b></p> <p>Work with “early warning systems”.</p>  |  |  |  |
| <p><b>COMMUNITY RESILIENCY</b></p>   |  |  |  |
| SOCIAL   |  |  |  |
| ECONOMICAL   |  |  |  |
| ENVIRONMENTAL  |  |  |  |



# FRUIT TREE PLANTING

|  |  | PICTOGRAMS   |
|--|--|--|
| <p><b>WHY?</b></p> <p>Planting of fruit trees will allow for soil preservation, conservation and slope stabilization. It will provide shade, and potential decrease the temperature locally. Potentially provide income if fruits are sold or ensure food on the table.</p>  |  |  <p>TREE PLANTING</p>   |
| <p><b>WHAT?</b></p> <p>Planting of fruit trees on private and/or communal land.</p> <ul style="list-style-type: none"> <li>• Identify available land</li> <li>• Sort of owner rights</li> <li>• Create ownership - nursing agreements</li> <li>• Find fruit tree supplier(s)</li> </ul>  |  |  <p>HEAT</p>  <p>BUSINESS OPPORTUNITY</p>                  |
| <p><b>HOW?</b></p> <p>Dig a hole, buy a tree and make sure to water it. Minimum watering twice a week. it will take 2-3 years before fruits will appear...</p> <p>This can be done individually or as a group activity.</p> <p>Necessary tools:</p> <ul style="list-style-type: none"> <li>• Shovel</li> <li>• Water bucket</li> </ul> |  |  <p>INVESTMENTS NEEDED</p>  <p>EDUCATIONAL TRAINING</p>  |
| <p><b>ORGANIZATIONAL STRATEGY</b></p> <p>Important to create and take ownership. A planting strategy and coordination is needed.</p> <ul style="list-style-type: none"> <li>• Identify who is responsible, who will benefit, who carry out the tasks etc.</li> </ul>   |  |  <p>GOOD HEALTH</p>  <p>INDIVIDUAL OR GROUP EFFORT</p> |







## ADAPTATION INITIATIVE SYNERGIES

Fruit tree planting work well with other climate adaptation initiatives such as canal digging,






## COMMUNITY RESILIENCY

|               |  |  |  |  |  |
|---------------|--|--|--|--|--|
| SOCIAL        |  |  |  |  |  |
| ECONOMICAL    |  |  |  |  |  |
| ENVIRONMENTAL |  |  |  |  |  |

# FRUIT BUSHES AND VEGETABLE GARDENS





|  |  |  |  |  | PICTOGRAMS  |
|--|--|--|--|--|---|
| <p><b>WHY?</b><br/>Planting fruit bushes and other plants will help cool the environment, increasing vegetation and a simple and effective way to reduce urban heat islands.</p>   |  |  |  |  | <br>Vegetation Planting          |
| <p><b>WHAT?</b><br/>Planting fruit bushes on hillsides and growing vegetation in gardens/roofs.</p>  |  |  |  |  |   |
| <p><b>HOW?</b><br/><i>Fruit bushes:</i><br/>Identify which fruit bushes can grow on hillsides.<br/>Agree on specific locations to plant fruit bushes.<br/>Select a group of people to plant fruit bushes on agreed location and ensure that they will water them as needed.</p> <p><i>Vegetable garden:</i><br/>Identify households with gardens/roofs.<br/>Train selected households on gardening.<br/>Provide seeds for plantation in selected households.</p> |  |  |  |  | <br>HEAT                         |
|  |  |  |  |  | <br>BUSINESS OPPORTUNITY         |
|  |  |  |  |  | <br>INVESTMENTS NEEDED          |
| <p><b>ORGANIZATIONAL STRATEGY</b><br/>Identify people with access to hillside that will plant and take care of the fruit bushes.<br/>Identify households with gardens/roofs that will plant and take care of appropriate vegetation.</p>   |  |  |  |  | <br>EDUCATIONAL TRAINING       |
|  |  |  |  |  | <br>INDIVIDUAL OR GROUP EFFORT |
| <p><b>ADAPTATION INITIATIVE SYNERGIES</b><br/>Fruit bushes, vegetable gardens and low land scrubs work well with other climate adaptation initiatives such as canal digging and gardening boxes.</p>   |  |  |  |  |   |
| <b>COMMUNITY RESILIENCY</b>  |  |  |  |  |   |
| SOCIAL   |  |  |  |  |   |
| ECONOMICAL   |  |  |  |  |   |
| ENVIRONMENTAL  |  |  |  |  |   |

# DRAINAGE CANAL DIGGING






|  |  | PICTOGRAMS  |
|--|--|---|
| <p><b>WHY?</b></p> <ul style="list-style-type: none"> <li>- Minimize the flood risk</li> <li>- Water conveyance</li> <li>- Minimize health risks</li> </ul>  |  |  <p>FLOOD PREVENTION</p>   |
| <p><b>WHAT?</b></p> <p>Identify flow paths and low-lying areas.<br/>Canals are small slim depressions made in the ground.</p>  |  |  <p>TIME CONSUMING</p>   |
| <p><b>HOW?</b></p> <p>Dig drainage channels with a shovel, to convey excess rain during the rainy season.<br/>Use locally produced tools.</p>  |  |  <p>EDUCATIONAL TRAINING</p>   |
| <p><b>ORGANIZATIONAL STRATEGY</b></p> <p>Set up a coordinator.<br/>Teach about how deep and where to dig the canals.<br/>NSP buys the locally produced tools.<br/>The optimal places for the canals will be identified with a “software tool” by EWB-DK and WHI.</p> |  |  <p>GOOD HEALTH</p>  <p>GROUP EFFORT</p> |
| <p><b>ADAPTATION INITIATIVE SYNERGIES</b></p> <p>Work with “tree and vegetation planting” and “collecting and sorting waste”</p>   |  |   |

| <b>COMMUNITY RESILIENCY</b> |  |  |  |  |  |
|-----------------------------|--|--|--|--|--|
| SOCIAL                      |  |  |  |  |  |
| ECONOMICAL                  |  |  |  |  |  |
| ENVIRONMENTAL               |  |  |  |  |  |

# SAND AND GRAVEL MINING

|   |  | PICTOGRAMS  |  |  |  |
|---|--|---|--|--|--|
| <p><b>WHY?</b><br/>Sand contributes about 99% to the housing and road constructions in Sierra Leone. Thus, it can be a resource for smaller and larger construction projects.</p> |  |  <p>FLOOD PREVENTION</p>     |  |  |  |
| <p><b>WHAT?</b><br/>Identify where (if) sand and gravel are of the correct type for construction.</p>   |  |  <p>TIME CONSUMING</p>       |  |  |  |
| <p><b>HOW?</b><br/>Use shovel to dig sand and gravel from identified areas.<br/>Buy local tools.<br/>Transport the sand designated destinations.</p>                              |  |  <p>EDUCATIONAL TRAINING</p> |  |  |  |
| <p><b>ORGANIZATIONAL STRATEGY</b><br/>Set up a coordinator.<br/>Planning of transportation of the resources.</p>  |  |  <p>GROUP EFFORT</p>        |  |  |  |
| <p><b>ADAPTATION INITIATIVE SYNERGIES</b><br/>Work with “bricks”, “floor tiles” and “road maintenance filling”.</p>   |  |   |  |  |  |
| <p><b>COMMUNITY RESILIENCY</b></p>  |  |   |  |  |  |
| SOCIAL  |  |   |  |  |  |
| ECONOMICAL  |  |   |  |  |  |
| ENVIRONMENTAL   |  |   |  |  |  |

# COLLECTING AND SORTING WASTE

|  | PICTOGRAMS   |
|--|--|
| <p><b>WHY?</b></p> <p>Collecting and sorting plastic and organic waste from other waste types can provide the community with cheap resources/materials. Plastics can effectively be recycled into new products. Organic waste can be utilised for compost to grow crops later on. Avoiding plastic waste in the streets makes the canals function optimal. *See the page about Canal Digging.</p>  |  <p>FLOOD PREVENTION</p>  |
| <p><b>WHAT?</b></p> <p>The activity has potential to involve the entire community. The community needs to collect and sort the plastic waste. The collected plastic creates a business opportunity for melting the plastic into new products.</p>  |  <p>BUSINESS OPPORTUNITY</p>  |
| <p><b>HOW?</b></p> <p>Identify a waste management group. Teach communities/waste management group about different waste types: 1. Plastic, 2. Organic, 3. Others. Identify specific buckets/places for the sorted plastic (close to the new production facility). Making compost in households for growing crops.</p>  |  <p>TIME CONSUMING</p>  |
| <p><b>ORGANIZATIONAL STRATEGY</b></p> <p>NSP will select waste management group and teach them about the three waste types (including what you can do with the different fractions) and include them in the decision making of how to handle the sorted plastic (logistics) and where to place it.</p> <p>The group should agree on a place for the sorted plastic until the recycling facility is ready for utilisation.</p> <p>NSP will use waste sorting materials provided by IUG Denmark.</p> |  <p>EDUCATIONAL TRAINING</p>  <p>GROUP EFFORT</p> |






## ADAPTATIONS INITIATIVE SYNERGIES






Work with “fruit tree planting”, “fruit bushes and vegetable gardens”, “production of material with plastics” and “digging canals”

## COMMUNITY RESILIENCY



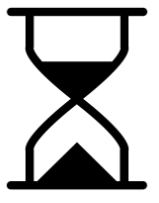

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|---------------|--|--|--|--|--|
| SOCIAL        |  |  |  |  |  |
| ECONOMICAL    |  |  |  |  |  |
| ENVIRONMENTAL |  |  |  |  |  |

# PRODUCTION - BRICKS

|   |  | PICTOGRAMS   |  |  |  |
|---|--|--|--|--|--|
| <p><b>WHY?</b></p> <p>Plastic can be used together with sand in order to make bricks for houses. It allows low-income households to build their houses at a lower price using recycled material while reducing plastic waste.</p>   |  |  <p>FLOOD PREVENTION</p>      |  |  |  |
| <p><b>WHAT?</b></p> <p>Supporting local entrepreneurs to produce bricks out of sand and plastic waste building on existing methods locally and internationally.</p>   |  |  <p>BUSINESS OPPORTUNITY</p>  |  |  |  |
| <p><b>HOW?</b></p> <ul style="list-style-type: none"> <li>• Research existing businesses producing bricks with sand and plastics regionally and internationally and prepare a guide on the process of transformation of plastic etc.</li> <li>• Support local entrepreneurs to develop business plans</li> <li>• Support local entrepreneurs to implement the systems</li> <li>• Acquire necessary equipment</li> </ul>                           |  |  <p>TIME CONSUMING</p>        |  |  |  |
| <p><b>ORGANIZATIONAL STRATEGY</b></p> <ul style="list-style-type: none"> <li>• Group of researchers to study the different methods used to produce bricks with sand and plastic waste</li> <li>• Local entrepreneurs that would be interested in making the product</li> <li>• Engineers to set up the processes and develop the product</li> <li>• Training team to ensure the products are safely developed and meet local standards</li> </ul> |  |  <p>EDUCATIONAL TRAINING</p> |  |  |  |
| <p><b>ADAPTATION INITIATIVE SYNERGIES</b></p> <p>Work with “collection, cleaning and sorting plastic”.</p>  |  |  <p>GROUP EFFORT</p>        |  |  |  |
| <b>COMMUNITY RESILIENCY</b>   |  |  |  |  |  |
| SOCIAL  |  |  |  |  |  |
| ECONOMICAL  |  |  |  |  |  |
| ENVIRONMENTAL   |  |  |  |  |  |

| <b>PRODUCTION - FLOOR TILES</b>  |  |  |   |  |  |
|--|--|--|---|--|--|
|  |  |  | PICTOGRAMS  |  |  |
| <b>WHY?</b><br>Plastic can be used together with sand in order to make floor tiles for houses. It allows low-income households to build their houses at a lower price using recycled material while reducing plastic waste.  |  |  | <br>FLOOD PREVENTION       |  |  |
| <b>WHAT?</b><br>Supporting local entrepreneurs to produce floor tiles out of sand and plastic waste building on existing methods used locally and internationally.   |  |  | <br>BUSINESS OPPORTUNITY   |  |  |
| <b>HOW?</b> <ul style="list-style-type: none"> <li>• Research existing businesses producing floor tiles with sand and plastics regionally and internationally and prepare a guide on the process of transformation of plastic etc.</li> <li>• Support local entrepreneurs to develop business plans</li> <li>• Support local entrepreneurs to develop the product and processes</li> <li>• Provide necessary equipment</li> </ul>                    |  |  | <br>TIME CONSUMING         |  |  |
| <b>ORGANIZATIONAL STRATEGY</b> <ul style="list-style-type: none"> <li>• Group of researchers to study the different methods used to produce floor tiles with sand and plastic waste</li> <li>• Local entrepreneurs/SMEs that would be interested in making the product</li> <li>• Engineers to set up the processes and develop the product</li> <li>• Training team to ensure the products is safely developed and meets local standards</li> </ul> |  |  | <br>EDUCATIONAL TRAINING |  |  |
| <b>ADAPTATION INITIATIVE SYNERGIES</b><br>Work with “collection, cleaning and sorting plastic”.  |  |  |   |  |  |
| <b>COMMUNITY RESILIENCY</b>  |  |  |   |  |  |
| SOCIAL   |  |  |   |  |  |
| ECONOMICAL   |  |  |   |  |  |
| ENVIRONMENTAL  |  |  |   |  |  |
| <br>GROUP EFFORT  |  |  |   |  |  |



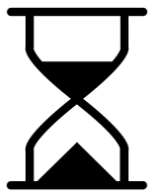


# PRODUCTION - ROAD MAINTENANCE FILLING

|  |  | PICTOGRAMS  |  |
|--|--|---|--|
| <p><b>WHY?</b></p> <p>The lack of road maintenance increases the risks of flooding as these are supporting the drainage processes and water accumulate in potholes. However, Road maintenance filling with asphalt is very costly and require heavy construction equipment which are pollutant for the environment. Repairing or constructing roads with plastic material is already implemented in <a href="#">India</a>, <a href="#">Scotland</a> and <a href="#">several companies</a> worldwide are working on developing new ways to produce road with plastic materials.</p> |  |  <p>FLOOD PREVENTION</p>       |  |
| <p><b>WHAT?</b></p> <p>Developing business opportunities to produce road maintenance filling with plastic waste and sand building on existing methods used locally and internationally.</p>  |  |  <p>BUSINESS OPPORTUNITY</p>   |  |
| <p><b>HOW?</b></p> <ul style="list-style-type: none"> <li>• Research existing businesses producing road maintenance filling with sand and plastics regionally and internationally and prepare a guide on the process of transformation of plastic etc.</li> <li>• Support local companies to develop business plan</li> <li>• Support local companies to develop the product and processes</li> </ul>  |  |  <p>TIME CONSUMING</p>        |  |
| <p><b>ORGANIZATIONAL STRATEGY</b></p> <ul style="list-style-type: none"> <li>• Group of researchers to study the different methods used to produce road maintenance filling with sand and plastic waste</li> <li>• Local companies that would be interested in making the product</li> <li>• Engineers to set up the processes and develop the product</li> <li>• Training team to ensure the products is safely developed and meets local standards</li> </ul>  |  |  <p>EDUCATIONAL TRAINING</p> |  |
| <p><b>ADAPTATION INITIATIVE SYNERGIES</b></p> <p>Work with “collection, cleaning and sorting plastic”</p>  |  |   |  |
| <b>COMMUNITY RESILIENCY</b>  |  |   |  |
| SOCIAL   |  |   |  |
| ECONOMICAL   |  |   |  |
| ENVIRONMENTAL  |  |   |  |



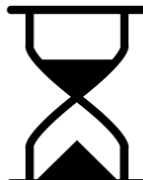


| <b>PRODUCTION - ROOF TILES</b>  |  |  |   |  |  |
|---|--|--|---|--|--|
|   |  |  | PICTOGRAMS  |  |  |
| <b>WHY?</b><br>Plastic can be to make roof tiles for houses. It allows low-income households to build their houses at a lower price using recycled material while reducing plastic waste.   |  |  | <br>FLOOD PREVENTION       |  |  |
| <b>WHAT?</b><br>Supporting local entrepreneurs/businesses to produce roof tiles out of plastic waste building on existing methods used locally and internationally.   |  |  | <br>BUSINESS OPPORTUNITY   |  |  |
| <b>HOW?</b> <ul style="list-style-type: none"> <li>• Research existing businesses producing roof tiles with plastics regionally and internationally and prepare a guide on the process of transformation of plastic etc.</li> <li>• Support local entrepreneurs/companies to develop business plan</li> <li>• Support local entrepreneurs/companies to develop the product and processes</li> <li>• Provide necessary equipment</li> </ul>          |  |  | <br>TIME CONSUMING        |  |  |
| <b>ORGANIZATIONAL STRATEGY</b> <ul style="list-style-type: none"> <li>• Group of researchers to study the different methods used to produce roof tiles with sand and plastic waste</li> <li>• Local entrepreneurs/SMEs that would be interested in making the product</li> <li>• Engineers to set up the processes and develop the product</li> <li>• Training team to ensure the products is safely developed and meets local standards</li> </ul> |  |  | <br>EDUCATIONAL TRAINING |  |  |
| <b>ADAPTATION INITIATIVE SYNERGIES</b>  |  |  |   |  |  |
| <b>COMMUNITY RESILIENCY</b>   |  |  |   |  |  |
| SOCIAL  |  |  |   |  |  |
| ECONOMICAL  |  |  |   |  |  |
| ENVIRONMENTAL   |  |  |   |  |  |
| <br>GROUP EFFORT   |  |  |   |  |  |



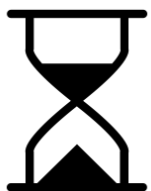


# PRODUCTION - GARDENING BOXES

|  |  | PICTOGRAMS  |  |  |  |
|--|--|---|--|--|--|
| <p><b>WHY?</b><br/>Plastic can be transformed to make gardening boxes for households or organised garden communities to exploit urban areas for vegetable and crop production in small scale.</p>  |  | <br>BUSINESS OPPORTUNITY   |  |  |  |
| <p><b>WHAT?</b><br/>Supporting local entrepreneurs/businesses to produce gardening boxes out of plastic waste building on existing methods used locally and internationally.</p>   |  |   |  |  |  |
| <p><b>HOW?</b></p> <ul style="list-style-type: none"> <li>• Research existing businesses producing gardening boxes of plastics regionally and internationally and prepare a guide on the process of transformation of plastic etc.</li> <li>• Support local entrepreneurs/companies to develop business plan</li> <li>• Support local entrepreneurs/companies to develop the product and processes</li> <li>• Provide necessary equipment</li> </ul> |  | <br>COSTS                  |  |  |  |
| <p><b>ORGANIZATIONAL STRATEGY</b></p> <ul style="list-style-type: none"> <li>• Group of researchers to study the different methods used to produce gardening boxes of plastic waste</li> <li>• Local entrepreneurs/SMEs that would be interested in making the product</li> <li>• Engineers to set up the processes and develop the product</li> <li>• Training team to ensure the products is safely developed and meets local standards</li> </ul> |  | <br>TIME CONSUMING         |  |  |  |
|  |  | <br>EDUCATIONAL TRAINING |  |  |  |
|  |  | <br>GROUP EFFORT         |  |  |  |
| <b>ADAPTATION INITIATIVE SYNERGIES</b>   |  |   |  |  |  |
| <b>COMMUNITY RESILIENCY</b>  |  |   |  |  |  |
| SOCIAL   |  |   |  |  |  |
| ECONOMICAL   |  |   |  |  |  |
| ENVIRONMENTAL  |  |   |  |  |  |






# PRODUCTION - SMALLER BRIDGE PASSAGES

|  |  |   |  |  |  |
|--|--|---|--|--|--|
|  |  | PICTOGRAMS  |  |  |  |
| <b>WHY?</b><br>To make it possible to cross water canals in different areas for people and smaller equipment (wheelbarrow, bikes, etc.) to enhance mobility and accessibility while potentially the canals will be expanded.   |  | <br>BUSINESS OPPORTUNITY   |  |  |  |
| <b>WHAT?</b><br>Supporting local businesses or households to produce bridges out of plastic waste building on existing methods used locally and internationally.   |  | <br>COSTS                  |  |  |  |
| <b>HOW?</b> <ul style="list-style-type: none"> <li>• Research existing businesses producing products of waste plastic</li> <li>• Support local businesses to integrate into other plastic production in a business plan and support households to do produce for improving the local community mobility</li> <li>• Support local businesses to develop the product and processes</li> <li>• Provide necessary equipment</li> </ul>             |  | <br>TIME CONSUMING        |  |  |  |
| <b>ORGANIZATIONAL STRATEGY</b> <ul style="list-style-type: none"> <li>• Group of researchers to study the different methods used to produce plastic products of waste plastic</li> <li>• Local entrepreneurs/SMEs that would be interested in making the product</li> <li>• Engineers to set up the processes and develop the product</li> <li>• Training team to ensure the products is safely developed and meets local standards</li> </ul> |  | <br>EDUCATIONAL TRAINING |  |  |  |
| <b>ADAPTATION INITIATIVE SYNERGIES</b><br>Work with “collection, cleaning and sorting plastic”, “bricks”, “floor tiles”, “roof tiles” and “gardening boxes”  |  | <br>GROUP EFFORT         |  |  |  |
| <b>COMMUNITY RESILIENCY</b>  |  |   |  |  |  |
| SOCIAL   |  |   |  |  |  |
| ECONOMICAL   |  |   |  |  |  |
| ENVIRONMENTAL  |  |   |  |  |  |

# PRODUCTION – TUB FOR CARRYING WATER

|  |  |   |  |  |  |
|--|--|---|--|--|--|
|  |  | <b>PICTOGRAMS</b>   |  |  |  |
| <b>WHY?</b><br>Make tubs for carrying water more accessible to improve daily life of households to collect water, washing cloth, dishes etc.   |  | <br>BUSINESS OPPORTUNITY   |  |  |  |
| <b>WHAT?</b><br>Make local entrepreneurs and companies able to produce plastic tubs out of waste plastic.  |  | <br>COSTS                  |  |  |  |
| <b>HOW?</b> <ul style="list-style-type: none"> <li>• Group of researchers to study the different methods used to produce plastic products of waste plastic</li> <li>• Local entrepreneurs/SMEs that would be interested in making the product</li> <li>• Engineers to set up the processes and develop the product</li> <li>• Training team to ensure the products is safely developed and meets local standards</li> </ul>                    |  | <br>TIME CONSUMING         |  |  |  |
| <b>ORGANIZATIONAL STRATEGY</b> <ul style="list-style-type: none"> <li>• Group of researchers to study the different methods used to produce plastic products of waste plastic</li> <li>• Local entrepreneurs/SMEs that would be interested in making the product</li> <li>• Engineers to set up the processes and develop the product</li> <li>• Training team to ensure the products is safely developed and meets local standards</li> </ul> |  | <br>EDUCATIONAL TRAINING |  |  |  |
| <b>ADAPTATION INITIATIVE SYNERGIES</b>   |  | <br>GROUP EFFORT         |  |  |  |
| <b>COMMUNITY RESILIENCY</b>  |  |   |  |  |  |
| SOCIAL   |  |   |  |  |  |
| ECONOMICAL   |  |   |  |  |  |
| ENVIRONMENTAL  |  |   |  |  |  |

# PRODUCTION - TOILET FLAP

|  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|
|  |  |  |  |  | PICTOGRAMS   |  |
| <b>WHY?</b><br>Current flaps are made of concrete, thus, difficult to clean due to the coarse surface. A plastic cover to the concrete will improve the cleaning of toilets and eventually the hygienic conditions will be better.   |  |  |  |  | <br>BUSINESS OPPORTUNITY  |  |
| <b>WHAT?</b><br>Make local entrepreneurs able to produce toilet flaps of plastic/waste plastic and developing suitable forms.  |  |  |  |  | <br>COSTS                 |  |
| <b>HOW?</b> <ul style="list-style-type: none"> <li>• Group of researchers to study the different methods used to produce plastic products of waste plastic</li> <li>• Local entrepreneurs/SMEs that would be interested in making the product</li> <li>• Engineers to set up the processes and develop the product</li> <li>• Training team to ensure the products is safely developed and meets local standards</li> </ul>                    |  |  |  |  | <br>TIME CONSUMING        |  |
| <b>ORGANIZATIONAL STRATEGY</b> <ul style="list-style-type: none"> <li>• Group of researchers to study the different methods used to produce plastic products of waste plastic</li> <li>• Local entrepreneurs/SMEs that would be interested in making the product</li> <li>• Engineers to set up the processes and develop the product</li> <li>• Training team to ensure the products is safely developed and meets local standards</li> </ul> |  |  |  |  | <br>EDUCATIONAL TRAINING |  |
| <b>ADAPTATION INITIATIVE SYNERGIES</b>   |  |  |  |  | <br>GROUP EFFORT        |  |
| <b>COMMUNITY RESILIENCY</b>  |  |  |  |  |  |  |
| SOCIAL   |  |  |  |  |  |  |
| ECONOMICAL   |  |  |  |  |  |  |
| ENVIRONMENTAL  |  |  |  |  |  |  |