

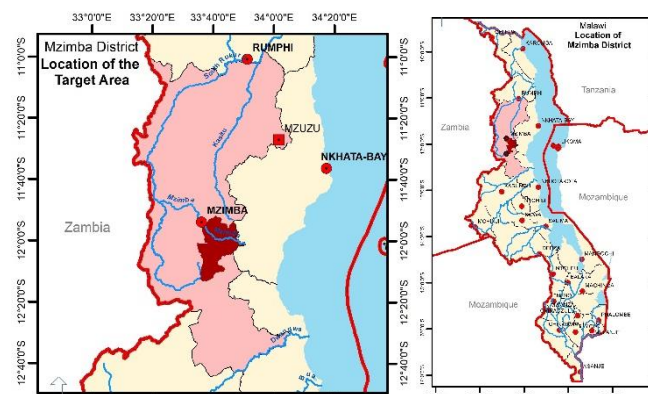
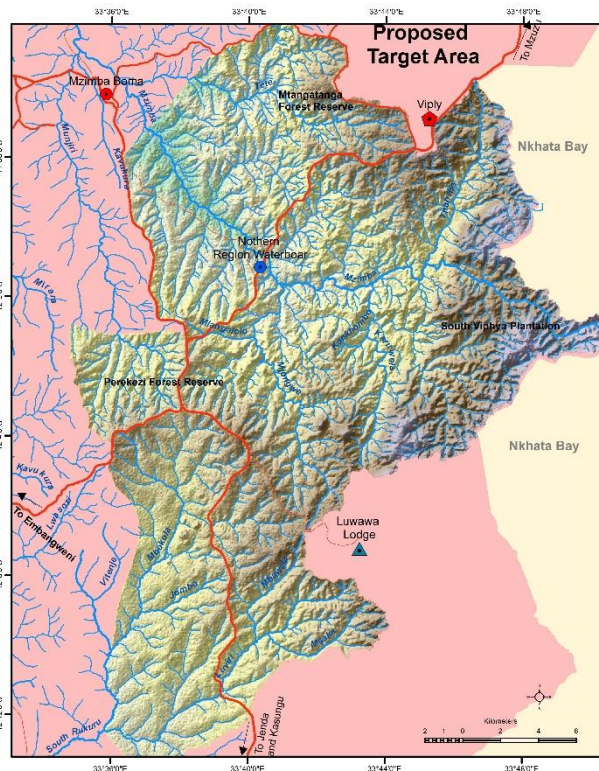
# 100 Water & Climate projects for Africa



Incubation led by: Total LandCare

Version 2022-04-12

## PROJECT LOCATION MAP



## COUNTRY

Malawi

## PROJECT TITLE

Integrated Watershed Management of Upper Mzimba-South Rukuru River Catchment

## GEOGRAPHICAL LOCATION

The target area is located on the central eastern side of Mzimba District, Northern Malawi. It lies between latitudes 11° 45' 00" and 12° 15' 0" South and Longitudes 33° 30' 0" and 33° 45' 0" East. It falls west of Mzimba town.

## PROJECT THEMATIC AREAS

- Protection and management of ecosystems and natural resources
- Climate change adaptation
- Local governance of the watershed
- Farm productivity, production, diversification and profitability



## LOCAL CONTEXT AND CLIMATE

The targeted catchment is a source of two major river systems in the Northern Region of Malawi; the South Rukuru and the Mzimba Rivers. The Mzimba River catchment forms the bigger portion of the targeted area with about 42,513.02 hectares against about 16,260 for the South Rukuru Catchment, totalling 58,773 ha.

The topography of the area is very undulating with about 40.33% of the total area having Moderately Steep slopes (>13 – 25%). The major soils include Haplic Lixisols which are generally deep, well drained with pH between 5 and 6.5. However, they have low (5-10 me/100g) to very low (<5 me/100g) Cation Exchange Capacity (CEC).

The large proportion of the targeted area is under forest cover. The forests include the natural woodland in communal lands which are heavily degraded, the two forest reserves (Mtangatanga and Perekezi), and the South Vipha plantation. Communal land ownership is an aggregation of farming areas and some communal forests. The land under cultivation constituted about 26.07% in 2016 and increased to 31.32% in 2021. While total land under forest reduced from 63.03% to 49.38% within the same period. The regenerants in the degraded communal forest are continuously being harvested for firewood and other uses like making mop handles for the growing population of Mzimba town

The other major land use in the catchment is agriculture. The major crop grown is maize (*Zea mays*). Other crops include Soya beans, common beans, irrigated vegetables (mostly tomato, cabbage and onion), Irish potato, groundnuts, finger millet (mainly under the practice of shifting cultivation), and sunflower.

Analysis of 2 satellite images for 23rd June 2016 and 8th May 2021, show a shift in the land use practices. The land under cultivation constituted about 26.07% in 2016 and increased to 31.32% in 2021. While total land under forest reduced from 63.03% to 49.38% within the same period. Land under degraded forest increased significantly which confirms increased uncontrolled human activities<sup>1</sup>.

The major climatic factor assessed is rainfall. Communities in the catchment have observed that there is an increasing delay in the on-set and early tailing off of the planting rains. This results into an increase in the shortening of the growing season. Further, analysis of the 60-year rainfall characteristics of the Mzimba weather station shows that the total annual rainfall amount is generally decreasing over the years since 1960. The rainfall during this period fluctuated between an annual total of approximately 1336.4 mm (highest) in 1998 and about 594.6 mm (lowest) in 1993.

### Local issues

- Decreasing quality and abundance of surface and ground water from soil and forest degradation; leading to siltation of river courses
- Frequent dry spells across the catchment area
- Declining agricultural productivity and production from over-cultivation, poor farming practices and loss of topsoil from surface run-off and erosion leading to food, nutrition insecurity and poverty. The socio economic survey of the target area established that on average, 7 out of 10 households in both Champhira and Kazomba face food shortages from around October to April every year.
- Encroachment into Perekezi Forest Reserve and Mtangatanga and Luwawa Forest Plantations for illegal logging, farming and charcoal burning
- Increasing shortages of wood for fuel and construction due to degradation in the cover and composition of natural vegetation from uncontrolled tree cutting, bush fires and opening of land for agricultural purposes

---

<sup>1</sup> Total LandCare: Mzimba and South Rukuru Upper Sub-Catchments Bio-Physical Characteristics, Mzimba, Northern Malawi. Lilongwe. 2021.

- Rising scarcity of certain indigenous plant and animal species, including premium hardwoods, fruit trees, medicinal plants, and animals. Loss of biodiversity
- Lack of access to safe drinking water: Access to water is a prerequisite for improved livelihood. The official Government of Malawi target for access to safe drinking water is to provide at least one water point for every 250 people within 500 meters of the home<sup>2</sup>. However, the village and water point study<sup>3</sup> found a lot of challenges regarding access to safe drinking water in the catchment area. These include long distances to water points compounded by dissected terrain; lack of capacity by the communities in the management and maintenance of the available water supply points; dysfunctional water points; poor water quality; and degraded catchments. Regarding quality, a study by the National Statistical Office in 2021<sup>4</sup> found that 93% of household population nationally had E. coli in household drinking water. This problem stems more from how water is transported and managed at household level which could also mean that households require more training in WASH.
- Weak policies and structures for local governance of land, forest, and water resources
- Escalating health risks from the increasing incidence of malaria, HIV/AIDS, respiratory ailments, Schistosomiasis, Covid-19, etc.

## PROJECT GOAL

The goal is to contribute towards increasing environmental sustainability (Enabler 7 of the Malawi 2063) for adapting to climate change in the Upper South Rukuru and Mzimba River Watersheds. Agriculture is a key point to improve livelihoods of smallholder farmers, landscape restoration and resilience to climate change. Increasing agricultural productivity and commercialization is Pillar 1 of Malawi 2063.

The project impact objective will be achieved through five interlinked Outcomes and associated Outputs as presented below;

### 1. Increased resilience to climate change :

#### ✓ At the household and community level :

- Output 1.1: Rural communities have participatory community adaptation plans
- Output 1.2: Increased adoption of landscape restoration practices

#### ✓ For a sustained agriculture production and diversification

- Output 1.3 : Promote soil and water conservation practices including irrigation development
- Output 1.4 : Enhance knowledge and skills of farmers and front line extension workers in climate resilient agriculture
- Output 1.5 : Support diversification with a focus on drought tolerant and nutritious crops, and small ruminants

### 2. Improved Governance and participatory management of natural resources

- Output 2.1: Strengthened and inclusive community governance structures

<sup>2</sup> Stoupy O. and Sugden S. (2003b): Halving the Number of People without Access to Safe Water by 2015 – A Malawian Perspective. Part 2: New Indicators for the Millennium Development Goals. A WaterAid report

<sup>3</sup> Total LandCare: Village and Water-Point Mapping, South Rukuru and Mzimba Rivers Upper Sub-Catchment, Mzimba, Northern Malawi. Lilongwe. August 2021.

<sup>4</sup> National Statistical Office: Multiple Indicator Cluster Survey 2019-20, Zomba, Malawi. December 2021.

- Output 2.2: Enhanced Co-management of Perekezi Forest Reserve
- Output 2.3: Community based carbon benefits strategy developed

### **3. Improved access to safe drinking water**

- Output 3.1: Strengthened governance structures for the management and maintenance of available and future clean water points
- Output 3.2: Rural households/communities have improved knowledge and skills in WASH

## **PROJECT COMPONENTS, KEY ACTIONS/ACTIVITIES AND RESULTS**

The Project Outputs with actions and key activities to be undertaking are presented below;

### **Outcome 1: Increased resilience to climate change**

#### **✓ At the household and community level**

The aim is to improve absorptive, adaptive, and anticipatory capacities of the targeted communities and households against impacts of climate change. The project will raise awareness among the communities in the targeted project sites about the impacts of weather and climate related disasters, shocks, and stresses, and environmental degradation (soil erosion, depletion of soil fertility, loss of water quantity and quality, loss of forest cover, etc.) from population pressures and poor land-use practices. Subsequently, under this Outcome the project will promote interventions focused on environmental conservation including natural regeneration in communal and individual forest areas and tree planting. Key as well under this outcome is improving the access to credible information on weather and related information including disaster warnings. The outcome will be achieved by three interlinked outputs as below.

#### **➔ Output 1.1 Rural communities have participatory watershed management plans**

The project will develop participatory watershed management plans that clearly show the state of the problem; resource availability; bio-physical characteristics; land use cover (preferably showing time series); current efforts; actions/interventions to be implemented; roles and responsibilities of the communities, Project implementation partners, and relevant stakeholders. The project will support local governance structures such as village natural resource management committees (VNRMCs), Village development committees (VDCs) to develop sub-catchment management plans for each village or catchment. The plans will detail the types of adaptation measures (natural tree regeneration, tree planting, stream-bank protection, contour hedgerows of vetiver and trees) to be implemented, roles and responsibilities of the project and those of the communities, timelines, and resources needed to implement the agreed plans. Improved cook-stoves which save wood use and labour by 60-65% with immediate impacts on reducing deforestation will also be promoted. The project will use an integrated catchment management approach based on the Malawi National Guidelines: Integrated Catchment Management and Rural Infrastructure developed by the Ministry of Agriculture under the Shire River Basin Management Program (SRBMP).

Key activities: a) Conducting community sensitization meetings at VDC level on integrated catchment management; b) Delineate selected catchments; and c) Facilitate formulation of community watershed plans; d) Train households in construction, usage and maintenance of energy efficient cook stoves.

#### **➔ Output 1.2: Increased adoption of landscape restoration practices**

Community participation in undertaking and adoption of key practices on sustainable management and conservation of natural forest areas will be an integral part to conserve and restore the health, productivity and watershed functions of forests on customary lands. From the formulated community watershed plans, the project will promote Assisted Natural Regeneration (ANR) on communal or individual forest areas, Farmer Managed Natural Regeneration (FMNR), Tree planting and other suitable natural resource management practices based on the sub-catchment management plans.

For proper management of community forest areas, the project will facilitate demarcation and measurement of identified areas, development of by-laws and management plans for these demarcated areas, and registration of the areas with the districts council as village protected areas.

Key activities: a) : a) Sensitization and awareness meetings on agroforestry, tree planting, and natural forest regeneration; b) Train and support households to implement ANR, FMNR, tree planting; c) Identification, demarcation, management and registration of Village/Individual forest areas.

✓ **For a sustained agriculture production and diversification :**

The project will embrace Climate Smart Agriculture in the production of any promoted value chains. An assessment of farmer needs and gaps will be done to understand key areas of production requiring training. Climate smart agriculture (CSA) practices promoted will include conservation agriculture (CA), Irrigation, soil and water conservation (SWC), water harvesting, agro-forestry, farmer managed natural regeneration (FMNR), and integrated livestock management. Besides these CSA practices, the project will train farmers in seed multiplication to address gaps in seed availability in remote areas, as well as an enterprise. The outcome will be achieved by the following three outputs as below.

➔ **Output 1.3: Promote soil and water conservation practices including irrigation development**

The output is aimed at up scaling uptake of a wide range of soil and water conservation practices across the targeted catchment areas which if implemented in combination can bring lasting impacts on improving soil health and water conservation thus conserving ecosystems hence increasing productivity and production of key crops and building resilience to climatic variability in the long term.

Key activities; a) Soil and water conservation, mainly establishing contour lines, establishment of vetiver grass nurseries and gully reclamation, swales; b) Production of organic manure; c) Support rehabilitation or establishment of small scale irrigation schemes

➔ **Output 1.4: Enhance knowledge and skills of farmers and frontline extension staff in climate smart agriculture practices**

Most farmers engage in production of crop and livestock value chains with limited knowledge and skills in improved production technologies and practices, use poor quality seeds, and handle harvest poorly which results in significant losses of an average of 30% of their production annually. The program will attempt to address low and unsustainable agriculture productivity, through promoting Good Agriculture Practices (GAP) under the framework of Climate Smart Agriculture, solar irrigation, multiplication of seed locally, and imparting knowledge, skills and technologies to reduce post-harvest losses. However uptake of these CSA these practices by farm households depends on their level of knowledge, skills and mindset, and most importantly on the capacity of available Extension workers to impart the right knowledge using the most effective methods the farmers. The project through this output will therefore through Training of Trainers (ToT) trainings, aim at building the capacity of both Government and Project Front Line Extension Officers in a range CSA practices and technologies with a focus on Conservation Agriculture, Agro-forestry, irrigation and integrated livestock management. The project will further support these the extension workers with training materials and inputs for demonstrations to further train the farmers. Farmers Field Schools (FFS), Lead Farmer, and Village-based extension approaches will be used in training the farmers.

Key activities: a) Train MoA frontline extension staff and TLC staff in CSA technologies using Governments approved manuals<sup>5</sup>; b) Train farmers in CSA technologies; c) Set-up village CA demos; and d) Provide start-up inputs for Seed multiplication.

➔ **Output 1.5: Support agriculture diversification with a focus on drought tolerant and nutritious crops, and small ruminants**

---

<sup>5</sup> Malawi Climate Smart Agriculture Training Manuals, Malawi National Guidelines: Integrated Catchment Management and Rural Infrastructure, CA Guidelines, and Agroforestry guidelines

While maize is the predominant food crop in the area and will be prioritized, the project will also introduce drought tolerant and nutrient rich varieties of maize, Cassava and Orange Fresh Sweet Potatoes (OFSP) for diversification. The project will also promote soya, cow-peas, iron-rich beans and groundnuts which are of high nutritional value, and are also in high demand on the market and can be grown as cash crop for earning income. In addition, the project will small livestock, goats and chickens under pass-on program. Because of the lower cost, fast growth and reproduction of goats and chickens, these small livestock will provide an easy entry point for resource poor farmers to acquire and raise livestock as a source of household income and nutrition.

Key activities: a) Train farmers in the production of Cowpeas as a relay crop with Maize; b) Train farmers in improved technologies for Groundnuts and Soya Bean production; c) Establish demonstration plots of high nutritive crops; d) Form/strengthen and train nutrition care groups; and e) Set up home gardens.

## **Outcome 2: Improved Governance and participatory management of natural resources**

### **➔ Output 2.1: Strengthened and inclusive community governance structures for the Watershed**

The project will establish/revamp local structures in forest management such as VNRMCS and build their technical and governance capacity. The project will also promote inclusion on these governance structure to ensure that women and youth have active roles. Local leaders will also be targeted to be included in these capacity building actions.

Key activities; Training VNRMCS and local leaders in natural resource management; b) Train local governance structures in gender and gender roles; c) Facilitate reviews of constitutions of local governance structures for women and youth inclusion; d) Support VNRMCS/local structures and communities with manuals on natural resource management

### **➔ Output 2.2: Enhanced Co-management of Perekezi Forest Reserve**

The lack of coordination and joint action between Forest Management Units, community groups (VNRMCS, VDCs etc.) NGOs, District Councils, and ministerial representatives exacerbates the lack of protection and increase the risk of active destruction of forests. Through this Output the project will foster community participatory management of the Perekezi Forest Reserve.

Key activities: a) Support the development and reviewing of Forest and Block Management Plans for Perekezi Forest Reserve; b) Support quarterly coordination meetings between Department of Forestry, District council, local community structures, traditional leaders, and NGOs/other stakeholders.

### **➔ Output 2.3: Community based carbon benefits strategy developed**

The natural resource management activities (ANR, FMNR, and Tree planting) which will be undertaken by the project have a potential to generate carbon revenues for the benefit of the communities. In that regard, the Project will assess the potential for the alternative revenue stream for the community.

Key activities; a) Undertake a feasibility study for carbon revenue generation based on land restorations to be implemented; b) Participatory development of a carbon benefits sharing strategy

## **Outcome 3: Improved access to safe drinking water**

Improving access to water and sanitation has a number of health, nutrition and livelihoods benefits, the key one being reduction in the incidences of cholera, diarrhoea, dysentery, and other water-borne diseases. Close proximity to water points has the added advantage of reducing child labour especially among girls who normally walk long distances to fetch water. The project will support communities to access safe drinking water through the following Outputs:

In view of the challenges highlighted under local issues, the project will support communities to access safe drinking water. This will be achieved by 3 outputs as described under project goal goals, namely, a) Management and maintenance of the available and future clean water supply points; b) Improving the governance structure for the management and maintenance of water points; and c) Improving knowledge and skills of rural households/communities in WASH. The main activities to achieve the outputs will include a) Detailed assessments of existing water points in terms of condition and water quality based on the village water point study highlighting what needs to be addressed by the project and the communities; b) Identify communities with no access to water points and establishing and providing support for the type of water points that may suit their contexts; c) facilitation the resuscitation or formation of water point committees with clear by-laws for the management and maintenance of water points; and d) training households in WASH.

➔ **Output 3.1: Strengthened governance structures for the management and maintenance of available and future clean water points**

Key activities: a) Detailed assessments of existing water points in terms of condition and water quality based on the village water point study highlighting what needs to be addressed by the project and the communities; b) Identify communities with no access to water points and establishing and providing support for the type of water points that may suit their contexts; c) facilitation the resuscitation or formation of water point committees with clear by-laws for the management and maintenance of water points.

➔ **Output 3.2: Rural households/communities have improved knowledge and skills in WASH**

Key activities: a) Identify and train community individuals as WASH Champions to provide WASH such as fixing water points and installing eco-friendly pit latrines; b) Training households in WASH; c) Support households with eco-friendly pit latrines

## PROJECT RESULTS

The project key results for each Outcome/Output are detailed in the table below;

Outcome	Expected Concrete Outputs	Key stakeholders
<b>Outcome 1: Increased resilience to climate change</b>		
- <b>At the household and community level</b>	a) Participatory sub-catchment management plans developed b) Natural Resource Management practices (ANR, FMNR, Tree Planting) promoted	Area Development Committees; District Executive Committee; Dept of Forestry; Land Resources Conservation Dept; Dept of; Environmental Affairs Department; NGOs
<b>For sustained agriculture production and diversification</b>	a c) Soil and water conservation practices promoted d) Front Line Extension Workers capacitated in CSA Practices e) Climate Smart Agricultures practices promoted through Extension Services	Land Resources Conservation Dept, Dept of Irrigation Dept of Agriculture Extension Services; Dept Agricultural Research Services; Dept of Nutrition



	Diversification of drought tolerant and nutrient dense food and small livestock promoted	and HIV & AIDS, Dept of Animal Husbandry
<b>Outcome 2: Improved Governance and participatory management of natural resources</b>	<ul style="list-style-type: none"> <li>a) Strengthened and inclusive community governance structures for the watershed</li> <li>b) Co-management plan developed</li> <li>c) Community based carbon benefits strategy developed</li> </ul>	DEC; ADCs' Forestry Dept, VNRCs; Terra Global Capital
<b>Outcome 3: Improved access to safe and drinking water</b>	<ul style="list-style-type: none"> <li>a) Governance structures for the management and maintenance of water points strengthened/established</li> <li>b) WASH practices promoted</li> </ul>	District Water Supply; Northern Region Water Board; NGOs

### Women and Youth Empowerment

The project will implement activities deliberately aimed at increasing women and youth participation in economic empowerment activities, access to services and involvement in decisions. The project will train existing farmer groups and governance structures in gender and gender roles to create opportunities for women and youth to take up leadership positions. The project will particularly train women and youth farmers in production of different value chains, and deliberate efforts will also be made to establish women and youth led SMEs especially in agro processing.

### Target group/Beneficiaries

The primary beneficiaries of the action are smallholder farmers and local communities in the sub-catchments of South Rukuru and Mzimba rivers. The area has a population of between 20,000 and 30,000 inhabitants whose livelihood is dependent on the natural resources within the watershed. Most households are farmers growing various types of food and cash crops. The project will therefore primarily target approximately 5,000 – 6,000 small-holder farming households in organized groups, and local leaders of various governance structures. Approximately 60 % and 20% will be women and youth beneficiaries respectively. Women and youth representation/involvement will be of special interest to build a strong base for both current and future generations in management of the catchments. The project will also include people living with albinism, disability, HIV and Aids, and other marginalized groups among the targeted population.

Other beneficiaries from the action will include Mzimba District Council, government and NGO front-line extension workers, the private sector service providers (Northern Region Water Board, off-takers, financial service providers, etc).

### Implementation approach

TLC will use an integrated participatory approach with organized groups of farmers to promote diverse interventions to increase the productivity, profitability, and self-sufficiency of livelihoods with enhanced resilience to climate change. Vetting of program interventions, selection of beneficiaries and planning of field activities will be done through District Agriculture Extension Services System (DAESS) and Ministry of Local Government platforms. Interventions will be implemented through a landscape approach (catchments and sub-catchments) using the principle of co-location and following the Malawi Climate Smart Agriculture Training Manual, and the Malawi National Guidelines: Integrated Catchment Management and Rural Infrastructure Volumes I and II.

Extension and training services will be delivered through Farmer Field Schools (FFS) combined with a village/sub-catchment-based, and Lead Farmer approach. Demonstrations will be mounted at the Farmer Field School and at village level for experiential learning by all interested farmers. The FFSs will



be delivered alongside Farmer Business/Market Schools (FBS/MS) as beneficiaries graduate into entrepreneurs.

### Project stakeholders

Key project stakeholders are as tabulated in the table below;

Outcome/Outputs	Key stakeholders
<b>Outcome 1: Increased resilience to climate change</b>	
✓ <b>At the household and community level</b>	
Output 1.1: Rural communities have participatory community adaptation plans	Area Development Committees; District Executive Committee; Environmental Affairs Department
Output 1.2: Increased adoption of land restoration practices	Dept of Forestry, Land Resources Conservation Dept; NGOs
✓ <b>For a sustained agriculture production and diversification</b>	
Output 1.3: Promote soil and water conservation practices including irrigation development	Land Resources Conservation Dept, Dept of Irrigation
Output 1.4: Enhance knowledge and skills of farmers and front line extension workers in climate resilient agriculture	Dept of Agriculture Extension Services; Land Resources Conservation Dept; Dept Agricultural Research Services
Output 1.5: Support diversification with a focus on drought tolerant and nutritious crops, and small ruminants	Dept Agricultural Research Services, Dept of Nutrition and HIV & AIDS, Dept of Animal Husbandry
<b>Outcome 2: Improved Governance and participatory management of natural resources</b>	
Output 2.1: Strengthened and inclusive community governance structures for the watershed	DEC; ADCs
Output 2.2: Co-management of Perekezi Forest Reserve enhanced	Forestry Dept, VNRCs
Output 2.3: Community based carbon benefits strategy developed	Terra Global Capital
<b>Outcome 3: Improved access to safe and drinking water</b>	
Output 3.1 Strengthened governance structures for the management and maintenance of available and future clean water points	District Water Supply; Northern Region Water Board. NGOs
Output 3.2 Rural households/communities have improved knowledge and skills in WASH	District Water Supply

### Estimated cost of the project

The total Project cost is EURO 4 million broken down as presented below;

Outcome	Budget Allocation	Percentage
Outcome 1	€ 2,600,000.00	65%
Outcome 2	€ 700,000.00	17.5%

Outcome 3	€ 700,000.00	17.5%
<b>Total</b>	<b>€ 4,000,000.00</b>	<b>100%</b>
<b>Duration of the project</b>		
5 years (2022-2027)		