

ECONADAPT

The Economics of Adaptation



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D9.1 Case study: International Development Support – Review Findings

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Executive Summary

The aims of Work Package (WP) 9, the *Case study: International Development Support*, are to:

- Undertake a case study on the economics of adaptation in the context of international development support.
- Undertake this work on a real case study example aligned to developing country adaptation flows and analysis.
- Consider lessons learned and transferability of the case study to methods and guidance.

This deliverable, D9.1 Review Findings, sets out the early progress on this work package. The aim of the deliverable is to set out the policy and decision contexts for the defined developing country case studies, and to establish and document this.

The WP started with an initial review of the context around the economics of adaptation to support international development assistance on adaptation, following the recommendations and policy framework from WP1C. Alongside this, the team held meetings with relevant European stakeholders, including DG DEVCO and Member State Overseas Development Assistance Agencies, including the UK's Department for International Development (DFID).

This review and discussion identified the key policy and economic needs as:

- i) Economic support for national adaptation plans, especially the steps on prioritisation of adaptation options and costing of plans;
- ii) Economic support for adaptation mainstreaming, particularly in Country sector development plans and international development assistance projects/programmes.

Following this, the WP identified practical and policy relevant case studies to test the methodological developments from WP2, 3, and 4. These case studies were identified, discussed and agreed during the reporting period.

The first case study will be undertaken in Rwanda, a highly climate vulnerable post-conflict country in Africa. This will work with a European international development assistance organisations (UK DFID) and its support for the Government of Rwanda, particularly in the mainstreaming of adaptation into the National Agriculture Sector Investment Plan and the linkages to the Rwandan national climate fund (FONERWA). Discussions were held with DFID, the FONERWA team and the Rwandan Ministry of Agriculture (MINIAGRI) during the reporting period to agree the case study, and early data collection is already underway. The aim of the case study is to provide an example of mainstreaming adaptation into sector development planning, focusing on the economic analysis.

The second case study will be undertaken in Zanzibar, in the United Republic of Tanzania, a small, developing-island, which has areas of high vulnerability to climate change. This will work directly with the Revolutionary Government of Zanzibar, helping to develop its Climate Change Action Plan (equivalent to a National Adaptation Plan), working on the economic prioritisation of options and the costing of these for potential international financing. The aim of the case study is to provide a prioritised and costed action plan. Discussions were held with the Government in autumn 2014 to agree the case study, and an initial mission and stakeholder visit (to meet various Government Ministries) was held in November 2014.

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Introduction

WP Description, Aims and Objectives

The objectives of WP9 - *Case study: International Development Support* - are to:

- Undertake a case study on the economics of adaptation in the context of international development support.
- Undertake this work on a real case study example aligned to developing country adaptation flows and analysis.
- Consider lessons learned and transferability of the case study to methods and guidance.

The WP description is outlined below.

Description of Work.

Consistent with international pledges, there will be very large increases in European overseas development assistance to developing countries, and a likely greater need to demonstrate that these financial resources are being used effectively. This assistance will be dispersed through bi-lateral and multi-lateral arrangements, and range from support for national processes through to individual projects. This work package will investigate the economics of adaptation in relation to these flows and policy contexts. The analysis will be undertaken in collaboration with developing country partners in real applications looking at project and programme level adaptation implementation. Two country studies are proposed, one at the project and one at the programme level.

Task 9.1: Finalisation of Case study Context (UBAH, PWA, BC3)

This task will establish the case study countries and sectors will be discussed and agreed with the European Commission (DG DEVCO, DG ECHO and DG Research) and relevant host governments. Adaptation prioritisation will directly benefit from the complementary stakeholder engagement activity planned in WP11. The study team is currently working in a number of developing countries on adaptation policy and has particularly strong contacts with the Governments in Tanzania, Rwanda, Ethiopia and Nepal. The project will pick two of these countries to work with. Given the challenges in these countries, the exact choice will be made at the time of the case study, based on country needs and interest at that time. These four countries are currently at different stages of developing and implementing the financial architecture of support for adaptation.

- Rwanda has published a Green Growth and Climate Resilience Strategy and has set up a climate basket fund (FONERWA) that is now operational. This would provide a case study for the economic analysis of project and/or programme applications to the funds.
- Ethiopia will shortly publish its Federal Climate Resilience Strategy, and is looking to progress the development of adaptation programmes through a “Sector Reduction Mechanism”. This provides a potential case study application of these sectoral-based programmatic flows.
- Tanzania has just published a National Climate Change Strategy and is investigating how to take this forward. Specific adaptation finance architecture has not yet been agreed.
- Nepal has a National Climate Change Policy and is progressing an advanced National Adaptation Plan of Action (NAPA). It has produced guidance on climate screening (from the National Planning Commission), and is implementing a large Strategic Program for Climate Resilience (SPCR).

Since this area of applied appraisal is fast-moving, we will undertake a review of the current status of practice in adaptation economics in developing countries, including the treatment of additionality, and the policy environment in relation to financial architecture.

Task 9.2: Case Study applications (PWA, UBAH, BC3, IIASA)

This task will undertake two case studies, examining the prioritisation of adaptation at the national programmatic and project levels, respectively. The analysis will be aligned to examples of programmes and projects that – as identified in Task 9.1 – are likely to emerge from international climate funds. These two areas therefore parallel those adopted in the case studies to be undertaken in WP6 and WP7. Common components of analysis include:

1. Policy-focussed framing of decision context, including a literature review and a policy dialogue (Link to WP1 and WP12).
2. Application of decision support tool; including identification of adaptation actions; Estimation of benefits (monetary and/or non-monetary); Estimation of resource costs (Inputs from WP1-2; providing input to WP10, WP12 and WPs1-4).
3. Assessment of application of decision rule(s) incorporating treatment of uncertainties (drawing on work from and providing information to WP4).
4. Application of transfer, scaling and aggregation protocols to national and regional contexts (drawing on work from and providing information to WP3).

However, the methods are unlikely to be identical: there will be a need to adapt these for the developing country context for a number of reasons. First, there is a much greater focus on addressing existing climate variability (the adaptation deficit) in developing countries. Second, there is a formal requirement to estimate the additionality of adaptation needs over development funding. Third, there are substantial challenges in terms of data availability, governance and institutional capacity in developing countries, which make the application of complex methods more difficult and the emphasis on streamlining and simplifying analytical methods and tools.

These analyses will further ground the macro-economic analysis of adaptation transfers to be undertaken in WP8, and so further inform the coalition modelling developed in WP2a.

Deliverable Number ⁶¹	Deliverable Title	Lead beneficiary number	Estimated indicative person-months	Nature ⁶²	Dissemination level ⁶³	Delivery date ⁶⁴
D9.1	Review findings	1	4.00	R	PU	18
D9.2	Case Study Findings	12	13.00	R	PU	30
D9.3	Report: Policy recommendations, lessons learned and guidance	1	5.00	R	PU	36
		Total	22.00			

As set out in the DOW, Deliverable 9.1 – Review Findings – has an objective to establish and document the policy and decision contexts for the defined developing country case studies. This deliverable is set out as follows.

The report first reviews and summarises the policy and decision context. This is followed by information and analysis on the two agreed case studies. Letters of support for these case studies are included in the Appendix.

Application of the ECONADAPT Policy-led Framework to Development Assistance

Work package 9 of ECONADAPT focuses on overseas development assistance for adaptation. The policy context and entry points for this are outlined below.

International Development Assistance for Adaptation in European Policy

In 2013, the EU published the EU Strategy on adaptation to climate change (EC, 2013a). The 2013 Strategy mentions the international aspects of climate change.

The strategy takes account of global climate change impacts, such as disruptions to supply chains or impaired access to raw materials, energy and food supplies, and their repercussions on the EU. The EU's dialogue and cooperation with neighbouring countries and developing countries on adaptation issues is channelled through the Enlargement and European Neighbourhood policies and EU development cooperation policy.

It is also clear that given the Copenhagen pledges, there will be large scale financing of adaptation from Europe via development assistance, from the EC (DG DEVCO – Development and Cooperation - EUROPEAID) and Member States, through multi-lateral and bi-lateral initiatives and international finance institutes.

Several Member States have set up large (earmarked) resources for climate change financing. As an example, the UK has set aside a £2.9 billion budget for fast track mitigation and adaptation finance (the ICF, International Climate Fund). This support aligns with the existing UNFCCC process for adaptation; this is focused on the **Least Developed Countries (LDCs)**. There are 50 countries defined as Least Developed Countries by the UN¹.

Applying the ECONADAPT Policy Framework

WP1 – the policy framework for the ECONADAPT project – recommended an adaptation-orientated, policy-first approach that includes:

- A move away from standard impact/vulnerability assessment towards adaptation assessment, i.e. where the overall analysis is framed from the objective of adaptation.
- The differentiation of adaptation (applications) into types of applications over time and scale, separating the current, short and longer-term, and addressing different objectives (e.g. mainstreaming resilience into ongoing activities versus targeting future climate change).
- The mainstreaming of adaptation in the current policy and development landscape, i.e. recognising that adaptation is not usually the primary driver for the decision and aligning the assessment to existing sectoral or development norms;
- The emergence of adaptive management and iterative climate risk management, which starts with the current adaptation deficit and then looks at future climate change under a framework of decision making under uncertainty. This also means a broader set of adaptation options,

¹ for a list, see http://unfccc.int/cooperation_and_support/lcd/items/3097.ph

including capacity building, the value of information, and options/processes that help address future uncertainty.

- The recognition of socio-institutional issues and the barriers to adaptation (i.e. adaptation as a process).

In the context of international development, two key areas of focus were identified.

National Adaptation Plans

The primary current policy focus in LDCs – as part of the UNFCCC process - is around the development of **National Adaptation Plans (NAPs)**. The national adaptation plan (NAP) process was established under the Cancun Adaptation Framework (CAF). It enables Parties to formulate and implement national adaptation plans (NAPs) as a means of identifying medium- and long-term adaptation needs and developing and implementing strategies and programmes to address those needs. It is a continuous, progressive and iterative process which follows a country-driven, gender-sensitive, participatory and fully transparent approach (UNFCCC²).

Through decision 1/CP.16, the Conference of the Parties (COP) has established the NAP process for least developed country (LDC) Parties. Under it, LDC Parties are invited to identify their medium- and long-term adaptation needs and develop and implement strategies and programmes to address these needs, building upon their experience in preparing and implementing national adaptation programmes of action (NAPAs).

The NAPs represent a major extension beyond the NAPAs, the latter being associated with a process for the LDCs to identify priority activities that respond to their urgent and immediate needs with regard to adaptation to climate change - those needs for which further delay could increase vulnerability or lead to increased costs at a later stage (UNFCCC³). The NAPAs have focused on the use of vulnerability assessment, and are project based and small-scale, with most countries listing a priority list of projects that total around £10 million (see the NAPA priority database⁴).

There are overview and technical guidelines for the NAP process, prepared by the Least Developed Countries Expert Group (LEG), and based on the initial guidelines adopted at COP18⁵. The agreed objectives of the national adaptation plan process are (LDC expert group, 2012a, b):

- (a) To reduce vulnerability to the impacts of climate change, by building adaptive capacity and resilience;
- (b) To facilitate the integration of climate change adaptation, in a coherent manner, into relevant new and existing policies, programmes and activities, in particular development planning processes and strategies, within all relevant sectors and at different levels, as appropriate.

The guidance is framed around a cycle of adaptation that is similar to the PROVIA outline above. The NAP process and the technical guidance (LEC, 2012) is based around four steps.

- A. Lay the groundwork and address gaps. This step involves stocktaking on available information and addressing capacity gaps, as well as understanding needs.

² http://unfccc.int/adaptation/workstreams/national_adaptation_plans/items/6057.php

³ http://unfccc.int/adaptation/workstreams/national_adaptation_programmes_of_action/items/7567.php

⁴ http://unfccc.int/adaptation/workstreams/national_adaptation_programmes_of_action/items/4583.php

⁵ http://unfccc.int/adaptation/workstreams/national_adaptation_programmes_of_action/items/7279.php

- B. Preparatory elements. This step centres on the analysis of current and future climate change scenarios and vulnerabilities, as well as identification, review and appraisal of adaptation options at various aggregation levels. It also involves integrating climate change into national and sectoral planning.
- C. Implementation Strategies. This step involves prioritisation of climate change adaptation in national planning, and development of long-term national adaptation implementation strategy. It also includes enhancing capacity.
- D. Reporting, monitoring and review.

Of particular relevance to ECONADAPT are steps B3 and C1 (LDC EG, 2012a):

Step	Key Questions	Indicative activities
B3 Reviewing adaptation options	<ul style="list-style-type: none"> • What are the costs and benefits of each adaptation option? • How best can the adaptation options be implemented, and what are the conditions for success? • Is it possible to identify co-benefits between the adaptation options and development? 	a. Appraise individual adaptation options, including economic, ecosystem and social costs and benefits, and possibilities for unintended (positive and negative) impacts of adaptation measures
C1 Prioritising climate change adaptation in national planning	<ul style="list-style-type: none"> • How can adaptation work best be prioritized for implementation at the national level considering development needs, climate vulnerabilities and risks as well as existing plans? • What criteria can be used to define priority actions? 	a. Define national criteria for prioritizing implementation based, inter alia, on: development needs, climate vulnerability and risk and existing plans b. Identify opportunities for building on and complementing existing adaptation activities

Mainstreaming into Development

Adaptation mainstreaming is the integration of adaptation into decision-making across a range of policy areas, rather than through the implementation of standalone adaptation measures.

Mainstreaming adaptation into policy-making is a continuing process, requiring integration into existing policy and project cycles. A key element of this is the integration of climate risks into the decision-support tools that are used in standard policy and project appraisal.

A key issue here relates to relevant entry points (OECD, 2009; UNDP-UNEP, 2012), i.e. the opportunities in the national, sector or project planning process where climate risk considerations can best be integrated.

At the national level, strategic decisions are taken that create the enabling environments for public- and private-sector actors, as well as communities and individuals. At the programme to project level, existing safeguard mechanisms, such as environmental impact assessment (EIA), provide a natural entry-point for considering whether projects are vulnerable to climate change or could exacerbate climate risks elsewhere.

Mainstreaming steps and entry points

<i>Relevant activities</i>	<i>Stage in Policy Cycle</i>	<i>Decision-making</i>
	National Strategy	<i>Strategic level decision making e.g. creating enabling environment</i>
<i>Mainstreaming in national level policies</i>	National (Action) Planning	<i>Initial prioritisation of policies and programmes</i>
<i>Mainstreaming in sector plans</i>	Sector Planning	<i>Impact assessment and prioritisation</i>
<i>Mainstreaming in sector programmes or projects</i>	Programmes and Projects	<i>Detailed (economic) appraisal</i>

In a developing country context, mainstreaming activities usually follow a slightly different path than in developed countries, with different entry points, reflecting the differences in national strategic planning. Many developing countries are producing National Adaptation Plans (NAP). The UN guidance for the development of NAPs outlines the need for mainstreaming in developing such plans - critical because of the strong overlap with existing development activities (LDC Expert Group, 2012a; 2012b). In this context, there are a different set of entry points for mainstreaming, outlined in the table below (UNEP, 2011) that often operate through different organisational leads. This structure closely parallels that outlined for environmental mainstreaming more generally (OECD, 2012).

In the climate change context, there has been progress in recent years, though countries have adopted a range of approaches to mainstreaming adaptation in national development strategies.

Possible entry points for mainstreaming in national strategic planning policy in developing countries

Planning level	Entry point
National government and cross sector ministries	<ul style="list-style-type: none"> • National development vision (long-term) • Poverty reduction strategy • National development plan (e.g. 5 year) • National budget allocation process or review
Sector ministries	<ul style="list-style-type: none"> • Sector development plans • Sector master plans • Sector budgets
Subnational authorities	<ul style="list-style-type: none"> • Decentralisation plans • District plans • Subnational budgets

Source: UNDP/UNEP (2011)

For example, countries already include “environment” as a cross-cutting theme in their national development vision, national development plans (e.g. medium-term plans, five year plans or poverty reduction strategies), and sector development plans. In a few countries, these activities are being integrated, or at least tracked, in the national budget allocation process and in sector budget activities. Such initiatives can be extended to include climate. An example is the Government of Rwanda, which has integrated climate change (with environment) as one of seven cross-cutting issues in national development and sector development planning (Republic of Rwanda, 2014). Furthermore, Rwanda is including related indicators in the budgeting process and public financial management.

Moving to the programme to project level, again there is the potential for using environment or other safeguard systems. For example, climate risk screening can be applied as a step in the policy-making process to identify where policies, programmes or projects may be particularly vulnerable to climate change. This has emerged strongly in relation to investment projects funded by the international finance institutions and multilateral development banks. For example, the African Development Bank (AfDB, 2011) has introduced a Climate Safeguard System that includes a traffic light system or scorecard to identify which projects may be highly vulnerable to climate risk and require a more detailed evaluation to consider integration of climate aspects into design and implementation. These tend to have a strong focus on enhancing the climate resilience of infrastructure or major investments.

Selection of Case Studies

Based on the discussion above, suitable case studies were sought in Least Developed Countries, with a focus on two case studies reflecting national adaptation planning and climate mainstreaming.

The first case study will be undertaken in Rwanda, a highly climate vulnerable post-conflict country in Africa. This will work with a European international development assistance organisations (UK DFID) and its support for the Government of Rwanda, particularly in the mainstreaming of adaptation into the National Agriculture Sector Investment Plan and the linkages to the Rwandan national climate fund (FONERWA). Discussions were held with DFID, the FONERWA team and the Rwandan Ministry of Agriculture (MINIAGRI) during the reporting period to agree the case study, and early data collection is already underway. The aim of the case study is to provide an example of mainstreaming adaptation into sector development planning, focusing on the economic analysis.

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More details – and initial review material - are presented in the subsequent chapters.

Rwanda

Situational Analysis

Rwanda is a small, land-locked and mountainous country in East Africa (the 'land of a thousand hills'). The country is one of the most densely populated countries in Africa.

It is a mountainous country with an average altitude of 900 m in south-west, 1500 to 2000 m in the south and the centre of the country, 1800 to 3000 m in the highlands of the north and the west and 3000 to 4500 m in the regions of Congo-Nile Crest and the chain of volcanoes. However, due to its temperature climate it is fertile.

The country has a population of 10.5 million people, but as there is an average of 415 inhabitants per square kilometre (RoR RPHC4, 2012), Rwanda is one of the most densely populated countries in Africa. The population is largely rural, with 83% living in rural areas, though urbanisation is happening quickly. The population is also young, and is growing at average annual growth rate of 2.6%. Poverty and inequality are high.

Rwanda has experienced high economic growth over most recent years, and GDP per capita is increasing (RoR, 2013). Over the last 5 years, poverty has fallen significantly from 57 percent to 45 percent, GDP per capita has risen to \$600pp, and there have been reductions in maternal and child mortality (though these are still above the MDG targets). Agriculture comprises 32% of GDP, though much of this is rain-fed, with services (tertiary sector) dominating at 46%, which includes tourism.

Development policy

The country has a long-term Vision (2020), for achieving middle income status with agricultural transformation, and a medium term plan (Economic Development and Poverty Reduction Strategy, EDPRS), currently in phase II (2013- 2018) (RoR, 2013). There are also sector development plans and district development plans that flow from, and align with, the EDPRSII.

Climate Policy

Rwanda has one of the most advanced climate policy frameworks in Africa. It published a National Strategy for Climate Change and Low Carbon Development in 2011 (RoR, 2011). This sets out the Vision for Rwanda to be a developed climate-resilient, low-carbon economy by 2050.

This Strategy aims to guide the process of mainstreaming climate resilience and low carbon development into key sectors of the economy. It provides a strategic framework (below) which includes a vision for 2050, guiding principles, strategic objectives, programmes of action, enabling pillars and a roadmap for implementation. Each Programme of Action has three to five focussed actions with a number of sub-actions. In order to achieve the strategic vision, 14 Programmes of Action are proposed, along with 5 Enabling Pillars, 'Big Wins' and 'Quick Wins'.

In 2012, the Government established an Environment and Climate Change Fund – FONERWA – a national basket fund through which environment and climate change finance is channelled, programmed, disbursed and monitored. This was capitalised (with around Euro 25 million) and the fund is being dispersed (initially) through a project application process (a demand-led challenge

fund). Applications are made by line ministries, Government agencies, Districts, civil society organisations (CSOs) (including academic institutions) and the private sector.

There has also been progress in mainstreaming climate into development strategy. The EDPRS2 has a number of cross cutting issues also included, which are mainstreamed in sector and district plans in the document. This includes climate:

Environment and climate change: major areas of attention will be mainstreaming environmental sustainability into productive and social sectors and reducing vulnerability to climate change.

Climate resilience/mitigation indicators are included explicitly in the budget circular.

Current vulnerability

Rwanda has a complex existing climate, with wide variations across the country and with very strong seasonality (RoR, 2006: 2013). The country has a particularly variable and complex pattern of rainfall, within large differences at the micro-scale. Average rainfall is around 1,250 mm per annum. In broad terms, the annual cycle is bimodal, with two wet seasons: the long rains from mid-September to mid-December and from March to May. The two wet seasons arise from the Inter-Tropical Convergence Zone (ITCZ) moving northwards and retreating southwards respectively. Overall, there are significant inter-annual and spatial variation in the strength and timing of these rains.

There are complex patterns of climate variability (RoR, 2006: 2013), which are due to many factors, notably the El Niño – Southern Oscillation (ENSO) events. El Niño is associated with anomalously wet conditions during the short rains and some El Niño events, such as 1997, lead to extreme flooding. La Niña conditions are associated with unusually dry conditions such as during the year 2000 drought.

Flooding is common during the wet seasons (river flooding, especially in the south, and flash floods in the north and west due to the steep terrain). Major recent flood events occurred in 1997, 2006, 2007, 2008, 2009 and 2011. In some regions of the country, there have also been periodic droughts, for example in 1999/2000 and 2005/6.

As well as these extreme events, there are also wider impacts from the climate variability. The inter-annual variability affects rain-fed agriculture, which dominates the sector. This also affects key agricultural exports. The strong rains, and hilly terrain, are a factor in soil erosion, which is high in Rwanda. Variability also has a role in hydropower, which is a major source (50%) of power generation - with the low rains in 2004 affecting generation (and requiring diesel back-up) (RoR, 2011).

Projections of climate change

Recent records (annual mean temperature) show a significant increase from 1970, at around 0.35°C per decade (for four met stations), very slightly higher than the global average (RoR, 2011). The Green Growth and Climate Resilience Strategy (RoR, 2011) reports no significant trend found for rainfall, but it is difficult to pick up robust signals because of the high inter-annual and inter-decadal variability.

Projections of future climate change in Rwanda are hampered by the high heterogeneity (terrain, climate) and the lack of long-term meteorological data.

Earlier studies (e.g. SEI, 2009) report there is a clear and consistent trend across the months of the year, though the level of increase varies with the models, from 1.6 to 2.8°C by mid-century (from control period). Changes in precipitation are more uncertain. Although the intensity, frequency and spatial distribution of precipitation are unknown, all the climate model scenarios show that average rainfall regimes will change. The majority of the projections indicate that average annual rainfall will actually increase, particularly in some seasons, indicating a potential strengthening of the rains. However, some models show reductions in rainfall in some months. The range of model results highlights the considerable uncertainty in predicting future rainfall changes.

The Green Growth and Climate Resilience Strategy took projections from 19 GCMs from the CMP3 for the A1B scenario, reporting temperature increases of up to 2.5°C by the 2050s and 4°C by the 2080s. It also highlighted the high uncertainty for future rainfall, with a large spread, though with central values of 20% by the 2050s and 30% by the 2080s.

The projection of future changes to meteorological extreme events (and associated floods and droughts) is much more challenging for the climate models, especially in East Africa, because of the influence of ENSO events. The 5th Assessment report (IPCC, 2013) reports that extreme precipitation events over most of the mid-latitude land masses and over wet tropical regions will very likely become more intense and more frequent by the end of this century, as global mean surface temperature increases. It also reports that due to the increase in moisture availability, ENSO-related precipitation variability on regional scales will likely intensify. However, natural variations of the amplitude and spatial pattern of ENSO are large and thus confidence in any specific projected change remains low.

Future climate change risks

The information base on the impacts/risks of future climate change is low. Changes in rainfall variability and increases in flood/landslide/soil erosion risk are perceived as the greatest risk, though increases in drought are also frequently cited (affecting agriculture and hydro). There have been some studies indicating changes to vector-borne disease (health), as well as changes to rainfall regimes and water supply, availability and demand.

In terms of key sector effects (summarising SEI, 2009):

- There are potentially large increases in the health burden of malaria in Rwanda. This arises because a large part of the rural population lives at higher elevations, where the disease is currently restricted by temperature. A new malaria risk model, based on altitude, found that climate change could increase the rural population at risk for malaria by 150% by the 2050s. There are also other vector borne human and livestock disease which are climate sensitive (e.g. tick borne disease). Changes in water borne disease, especially linked to extremes, are also highlighted.
- The impacts of climate change on agriculture in Rwanda are uncertain. Under some futures and with certain models, there are potentially important impacts on agriculture, but under other scenarios, there are modest effects or even benefits. However, the literature is primarily based on crop models, and thus does not take account of extreme events fully, or the effects of changing prevalence and range of pests and diseases (though they also do not take account of farm level adaptation or agricultural development). The green growth strategy cites Liu et al (2008) which projects that Rwanda could be a hotspot for food security, but this finding should be interpreted with caution, i.e. compared to other East African countries, the effects on the sector in Rwanda are likely to be more modest. The analysis of future drought risks are highly uncertain, and many models

project relative decreases in event frequency/severity with climate change, though the risk of more negative changes, especially from changes to ENSO cycles, is potentially possible.

- There are potential impacts to some of the major agricultural crop exports (coffee and tea) as these are both temperature sensitive crops. The areas currently suitable for tea and coffee are likely to shift with climate change. This implies reducing productivity/quality or else shifting production to higher elevations (though there are obvious issues around land and soil suitability from doing this). Sugar cane is also a major export crop (by land area), and has some potential vulnerability through water demand.
- There are cross-sectoral impacts from the changes in extreme events. As highlighted in the climate section, there are indications of increased heavy precipitation for the region (e.g. which could increase the intensity of 1 in 10 year events by 10 to 50%), which would translate into increased flood, landslips and soil erosion risks. They would also mean a reduction in the return period of larger events, i.e. more significant floods would occur more frequently. Vulnerability is likely to be heavily affected by socio-economic trends, notably the high population increases.
- There are risks to electricity supply, given the relatively high level of hydro generation in the future Rwandan electricity mix. This might primarily arise from increased flows (rather than droughts or low flows, though under some futures these could arise as well). Higher temperatures will also affect energy demand, though Rwanda's climate is temperate, and combined with low per capita income levels, the increased demand for cooling is likely to be modest.
- There are potentially large impacts on biodiversity and ecosystem services. Rwanda has exceptional biodiversity and ecosystem services are integral to the Rwandan economy, underpinning over 50% of GDP, as well as sustaining a very large proportion of the population. There are many stresses on these systems already and climate change will add to these pressures.
- Climate change is likely to have cross-sectoral effects on water. These could be to availability of supply (precipitation), water catchment and flow management (ecosystems) or demand (higher temperatures). These changes could be important, but are likely to be modest (in the immediate future) when compared to short-term socio-economic pressures and trends, e.g. rising water demand, population and socio-economic growth, land-use change.

Adaptation

The Green Growth Strategy (RoR, 2011) outlines potential adaptation options for Rwanda. There has been the early implementation of many of these options – at least at the project level – from the FONERWA climate fund.

A review of projects in the fund portfolio (20 projects) shows they include a wide range of activities, including capacity building and information, and soft and hard options. Early FONERWA rounds covered a range of projects, although many projects are actually undertaking similar activities, notably soil conservation /land management/terracing (6 of the 20 projects), rain-water harvesting (8 of the 20) and biogas (6 of the 20), and these initiatives appear in different windows. The fact that these options appear frequently is positive, as these all represent low regret options. However, the wider coverage of other options is low, because of the very wide remit of FONERWA across themes, sectors and types of activities. As examples, there has also been a lower focus on infrastructure, water management and (in relation to climate impacts) health.

FONERWA has covered the risks of current climate, particularly associated with rainfall variability and extremes (flood/landslide/soil erosion) comprehensively, thus it is targeting existing vulnerability and delivering high current benefits. There has, however, been a lower focus on drought related risks, which is a current problem that will continue/potentially increase with climate change. An analysis of the current projects also shows that most have no consideration of future climate change, i.e. how current risks may change. This omission is acceptable for short-term projects that focus on the current, but it is a potential problem for projects with longer-term aspects (e.g. urban planning, long-lived infrastructure):

Proposed Case Study

The first part of the case study explores a practical example of mainstreaming for the agriculture sector in Rwanda, aligning to Rwanda's Agriculture Sector Investment Plan (ASIP), which sets out the planned activities and investments over the next 5 years. The case study is applying the ECONADAPT framework to advance sector mainstreaming. The aim is to prioritise potential mainstreaming activities and to look at the costs and benefits, and look at the costing of plans for possible inclusion in the next budget revision process (in April 2016). This case study is being undertaken jointly with the Ministry of Agriculture (MINIAGRI) of Rwanda and also DFID Rwanda, who are providing support to the agricultural sector, and are developing a major programming to help provide technical assistance for climate mainstreaming in the sector.

Alongside this, some work is being undertaken to look at the prioritisation and cost-benefit analysis of options within the FONERWA fund itself, looking ex post to examine the current projects, and looking at whether there are additional priorities – particularly at the strategic level – that could be developed.

Early Activities and Next Steps

Discussions were held with the Government of Rwanda and DFID Rwanda in autumn 2014 to discuss the case study, and a signed letter of interest was agreed (see appendix).

An initial mission and stakeholder visit (to meet Government and development partners) was held in January 2014.

Early work on the mainstreaming tasks was undertaken. The first was to prioritise and map the current and future climate risks for the agricultural sector in Rwanda using an iterative risk framework. This identified the risks of current climate variability, including heavy precipitation (soil erosion), climate variability (rain-fed agriculture), and extremes (floods and droughts). It also identified a number of longer-term risks, related to water resource availability and shifting bi-climatic and agro-ecological zones, which are important in sector planning (e.g. for irrigation) and land-use development policy for long-lived activities (e.g. forestry management).

The case study used this information to undertake a high-level risk screening of the ASIP, mapping existing and future risks against the 24 programmatic and 300 sub-programme activities in the plan. This identified the actions and investment most at risk, i.e. early priorities, in terms of the existing adaptation deficit, long-lived activities (risks of lock-in) or long-term challenges.

The case study is currently using the ECONADAPT framework to test and develop the mainstreaming tool in two key areas. The first is looking at current climate variability, and planned activities for soil conservation and management in the ASIP. This involves the potential for low-regret adaptation

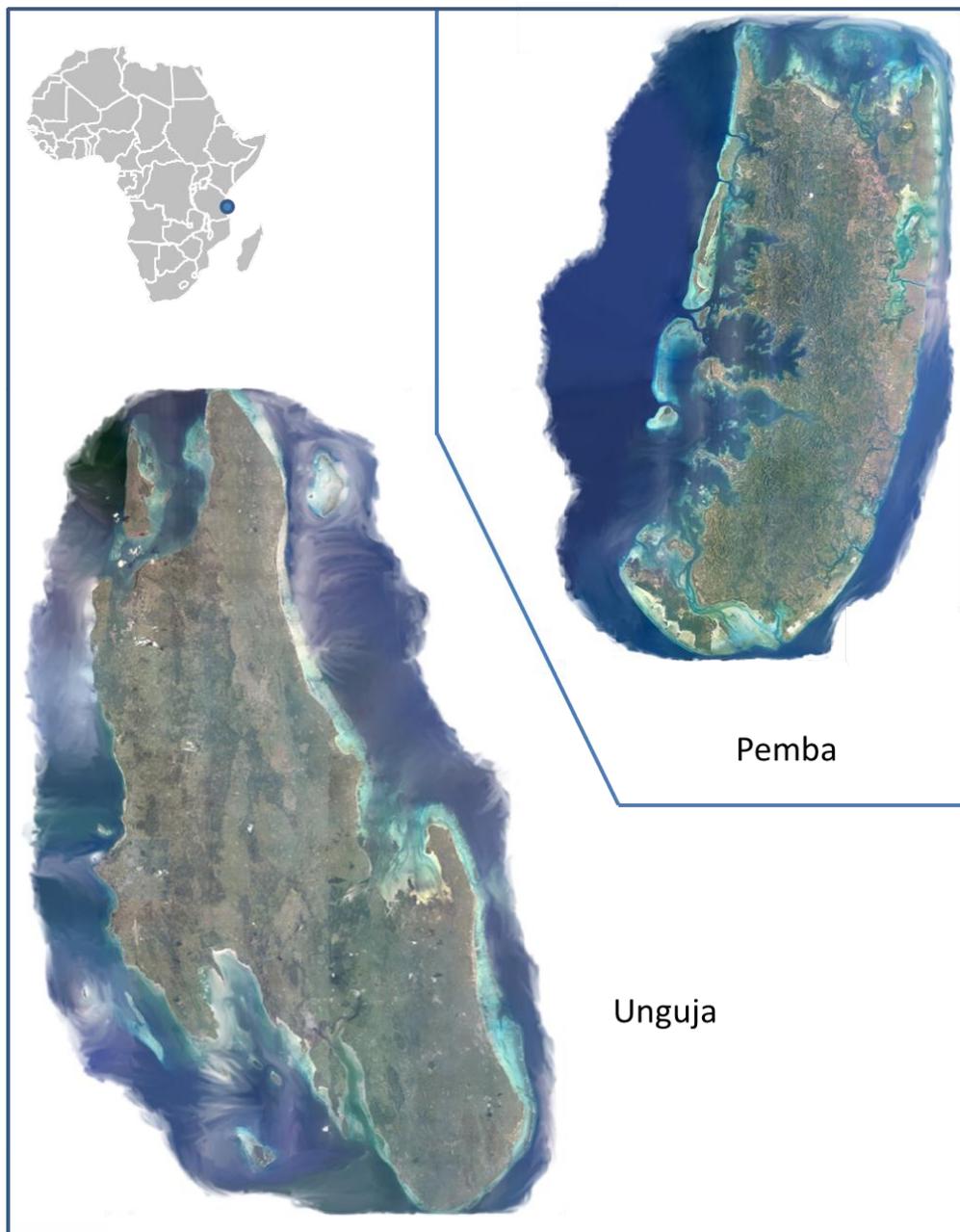
options, particularly climate smart agriculture. The second is looking over the longer-term at agricultural land-use planning under a changing climate. This is considering the future climatic suitability of different areas of the country for growing crops with high export value (tea, coffee), which is important given plans to expand production areas. Due to the potential risks of lock-in from land-use planning, and the longer growing cycle of these crops, some early analysis and planning is important.

Subsequent tasks will be to identify mainstreaming activities, and look at the economic analysis of these, with a view to applying the methods of WP2 to 4, and then developing costed estimates to deliver the mainstreaming priorities identified.

Zanzibar

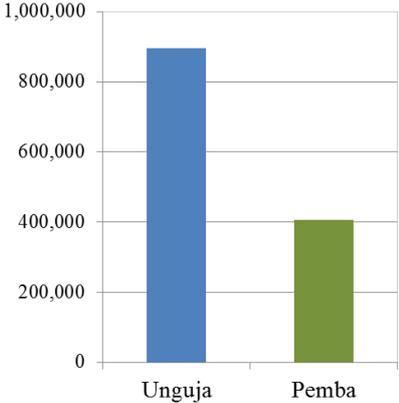
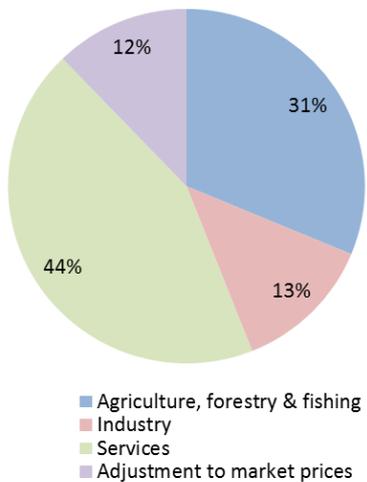
Situational Analysis

Zanzibar is one of the two countries that form the United Republic of Tanzania (URT). The Zanzibar archipelago comprises of two large islands (Unguja and Pemba) and a large number of small islands and islets. The islands are the home to a historical world heritage site (Stone Town), many unique cultural aspects and extensive coral reefs and other natural resources.



The two islands have important differences in their terrain, topography, land cover and resources. Unguja is flat and undulating, with large areas of coral rag scrub and underground aquifers, while

Pemba has a more hilly terrain, with steeper slopes and more surface water. Large areas of both islands, and nearly all the smaller islets, are low lying, and thus highly vulnerable to sea level rise.

Situational Analysis of Zanzibar: Key Facts and Figures											
Land Area and Elevation	<p>The total surface area of the islands is 2,654 km².</p> <p>Unguja is the larger of the two islands and has an area of 1,666 km² (approximately 88 kilometres (km) long (55 miles) by 37 km wide (23 miles).) The highest elevation point is approximately 119 meters above sea level (390 feet). While the west and northwest of the Unguja Island has a series of ridges rising above 60 metres above sea level (200 feet), around two thirds of the south and east are low-lying.</p> <p>Pemba is 988 km² (approximately 67 km long (42 miles) by 22 km wide (14 miles)). Pemba has a more rolling and hilly terrain, with 65% of the island having slopes steeper than 6%. The highest elevation point is approximately 95 meters above sea level (311 feet). Large areas near-shore and many of the surrounding islets are very low lying.</p> <p>Source: Zanzibar Statistical Outlook, RGZ, 2010.</p>										
Population	<p>Zanzibar: Total Population (2012) 1,303,569. The annual growth rate is 2.8%</p> <p>Male Population: 630,677 Female Population: 672,892</p> <p>Unguja Population: 896,721 Pemba Population: 406,848</p> <p>Number households estimated at 253,608. The household size at 5.1. Population density is around 530/km². The density in Zanzibar City municipal area (Mjini Magharibi) is 2,600/km².</p> <p>Source: 2012 Population and Housing Census</p>  <table border="1"> <caption>Population Data</caption> <thead> <tr> <th>Island</th> <th>Population (2012)</th> </tr> </thead> <tbody> <tr> <td>Unguja</td> <td>896,721</td> </tr> <tr> <td>Pemba</td> <td>406,848</td> </tr> </tbody> </table>	Island	Population (2012)	Unguja	896,721	Pemba	406,848				
Island	Population (2012)										
Unguja	896,721										
Pemba	406,848										
Economy	<p>GDP (at market prices) 1,354 Billion Tsh GDP per Capita (2012): TSH 1,003,000. GDP per Capita (2012): \$638. Average growth rate (2008-2012), 6.4%. GDP % breakdown, shown right, average 2008 – 2012 Agriculture (20%), livestock (4-5%) forestry (<0,5%), fisheries (5-7%) Export value 63 Billion TSh (2012), dominated by vegetable products (94%) (cloves, seaweeds, copra, clove stem etc). Number of international tourists Airport 124,062 (2012) Seaport 45,161 (2012) though excludes some domestic air arrivals.</p> <p>Source: Office of the Chief Government Statistician, Zanzibar: Socio-economic survey, 2013; Zanzibar Statistical Abstract of Statistics, 2012.</p>  <table border="1"> <caption>GDP % Breakdown</caption> <thead> <tr> <th>Sector</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Agriculture, forestry & fishing</td> <td>31%</td> </tr> <tr> <td>Services</td> <td>44%</td> </tr> <tr> <td>Industry</td> <td>13%</td> </tr> <tr> <td>Adjustment to market prices</td> <td>12%</td> </tr> </tbody> </table>	Sector	Percentage	Agriculture, forestry & fishing	31%	Services	44%	Industry	13%	Adjustment to market prices	12%
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Source RGZ, 2014.

Zanzibar has a very high population density – amongst the highest in Africa. The growing population is putting increasing pressure on natural resources. Population growth rates are high and are projected to increase rapidly, doubling by 2040, and exacerbating many existing problems.

Recent economic growth has been high and policies are in place to help future development. However, despite good progress, there remain high levels of poverty on the islands.

Development Policy

The development goals for the island are set out in the Zanzibar Vision 2020 (RGZ, 2000). The overall socio-economic development goals are to eradicate abject poverty and attain sustainable human development by 2020. In line with this Vision, the first three-year Zanzibar Poverty Reduction Plan (ZPRP) was launched in 2002. This was followed by the Zanzibar Strategy for Growth and Reduction of Poverty (ZSGRP), also known as the MKUZA (Mkakati wa Kukuza Uchumi na Kupunguza Umasikini Zanzibar) (RGZ, 2007). This set out the implementation plans to attain sustainable growth, reduce poverty and deliver the Millennium Development Goals (MDGs) through three clusters of: (i) growth and reduction of income poverty, (ii): social services and well-being, and (iii): good governance and national unity.

These plans were updated in the MKUZA II (2010-2015 (RGZ, 2010). Importantly, the update recognised the potential threat of climate change, and included activities / programmes on climate change, including strategies and operational targets. The potential threat to these strategic (the Vision) and implementation plans (MKUZAII) from climate change is also recognised in the recent MKUZA II Implementation Plan (2013).

Climate Policy

The First Vice President's Office – Department of Environment (FVPO-E) is the lead for climate change on Zanzibar, though there has been widespread engagement across Government. The Revolutionary Government of Zanzibar has implemented a number of climate initiatives. A road map towards a Zanzibar Adaptation Plan of Action (ZAPA) was undertaken (Niras, 2010). A pilot adaptation project on Unguja Island has been supported by the UNDP-AAP pilot project (and the Government of Japan), and built a new water pipeline to supply villagers in the Nungwi Peninsula whose traditional sources of fresh water have been affected by salt water intrusion. There is also a Productive Coastal Zones of Tanzania project, funded by the LDC fund, which is addressing the impacts of climate change (including a Zanzibar district), with rehabilitation of a sea wall in Unguja.

A detailed analysis of the potential Economic Impacts of Climate Change on Zanzibar (including impacts, adaptation and low carbon development) was undertaken for the Department of Environment by an international/local partnership team, supported by the Government of the United Kingdom through the Department for International Development (DFID) (Watkiss et al, 2012).

The Revolutionary Government of Zanzibar, through the First Vice President's Office (FVPO) and with support from other Government Ministries, has established the Zanzibar Climate Change Steering and Technical Committees to assist the Government to coordinate/facilitate the development of a comprehensive Climate Change Strategy and implement immediate initiatives on climate change.

Most recently, a Zanzibar Climate Change Strategy was published in 2014 (RGZ, 2014). The development of the Zanzibar Climate Change Strategy provided a framework to provide co-ordination, and to move the islands forward with a strategic plan. As part of the Strategy

development, an overall vision was developed to guide the process. The vision is to build a climate resilient and sustainable Zanzibar by 2030.

The Strategy provides a 'response framework' for addressing vulnerability, impacts and adaptation, for both current climate variability and future climate change, and to consider the potential opportunities for low carbon sustainable development, aligned with current and forthcoming Government development policies. This framework identifies strategic interventions, as well as sectoral, cross-sectoral and cross-cutting (e.g. gender) priorities.

Current climate variability

Zanzibar has a tropical climate, with fairly constant average temperatures across the year. It has relatively high levels of average precipitation, with strong rains in March to May, and shorter rains in November and December. However, there is variability across and between the two islands, and considerable variability in rainfall levels across years.

A large proportion of the GDP, employment and livelihoods of Zanzibar are associated with climate sensitive activities, including agriculture and tourism. The economy of the islands and the livelihoods of the people are thus dependent on weather and the climate.

Zanzibar already suffers major impacts from current climate variability (Watkiss et al., 2012: RGZ, 2014). It is periodically affected by the extremes associated with El Niño and La Niña years, with heavy precipitation (floods) and dry spells (droughts). These extremes have major economic costs on the islands. The islands therefore have a large existing adaptation deficit.

Analysis of historic meteorological data shows that the climate of Zanzibar is changing already (Watkiss et al, 2012). Observations show strong temperature increases over recent decades. Rainfall trends are more complex, although there are emerging trends on rainfall variability.

The islands are also very reliant on coastal, marine and terrestrial ecosystem services, which currently underpin around half of GDP and provide the majority of livelihoods. These natural systems are under existing pressures due to population and socio-economic pressures, but are also very vulnerable to climate variability and future climate change. Moreover, the marine and coastal climate is also changing (Shaghude and Dubi, 2008). There are observations of increasing wind speeds, with an increasing tendency of extreme wind events. This has been accompanied by an increase in wave heights and monthly high water levels and these are a factor in increasing coastal erosion saltwater intrusion. Sea surface temperatures have also been rising (Shaghude and Byfield, 2012), affecting seaweed farming, upon which many women depend.

Future projections of climate change

There are some current model projections for climate change in Zanzibar. Such modelling is challenging and results are characterised by uncertainty. Climate models project that future temperatures will continue to rise, with increases 1.5 to 2°C by the 2050s (2045-2065) and 2 to 4°C by the 2090s (2081-2100), relative to the baseline period (RGZ, 2014).

The changes in future precipitation are more complex. The rainfall regime of Zanzibar will change but the projections vary (Watkiss et al, 2012). Nonetheless, there are some indicative trends of increasing rainfall during the Mar-May wet season and decreasing rainfall during the dry season (June – October). These changes would exacerbate existing precipitation trends and water management issues, for floods and droughts respectively. The changes in future climate variability

are more uncertain, though increases in the intensity of rainfall are projected for the main wet season by many models.

In line with global trends, sea level is expected to rise, with increases projected of 0.2 and 1.0 metres of sea level rise over the next century, depending on the scenarios and assumptions of future ice sheet melt (IPCC, 2013). The increase in sea level will have potential effects for many low lying areas of the islands. Other changes in the marine environment are projected. These include higher sea surface temperatures and ocean acidification (IPCC, 2013), which are a concern for the extensive coral reefs and marine ecosystems around Zanzibar.

Future impacts of climate change

There are potentially large impacts from climate change on the coastal and marine environment, from a combination of sea level rise, storm surges and increased wind speeds, as well as sea surface temperature and ocean acidification. This will lead to coastal erosion and salt water intrusion, as well as flooding and loss of land. Zanzibar is particularly vulnerable because it has an extensive coast line and large low lying areas - around 20% of Unguja and 30% of Pemba is below 5 metres above sea level (Watkiss et al, 2012). There are already problems of salt water intrusion, with around 150 separate intrusion sites identified (RGZ, 2014). Possible adaptation options include enhanced capacity and monitoring, coastal buffer zones, protection structures and integrated coastal zone management.

Climate change will affect marine and coastal ecosystems, including fisheries and food production, seaweed farming, mangroves, seagrasses and corals, and the wider services these provide, e.g. coastal erosion protection. Zanzibar's extensive corals are particularly vulnerable, because of the risk of bleaching. There was mass bleaching of many of Zanzibar's coral reefs during the 1998 El Nino event, with 25-50% of corals bleached in Zanzibar (Obura, 2002), which led to a large economic loss to the tourism industry (Muhando, 2009)). Possible adaptation options include capacity and monitoring, increased protection and more sustainable natural resource management, and programmes for resilience.

Agriculture is another highly vulnerable sector, because of the dominance of rain-fed agriculture, and the high impacts of current climate variability as well as future change (Watkiss et al, 2012). The impacts of climate change on agriculture involve a range of complex factors, which will affect crops and farming systems differently, though there are important risks. Promising adaptation options include sustainable (climate smart) agriculture.

Tourism is a major economic sector for Zanzibar, and is growing rapidly. Climate change could impact on the sector by changing the suitability of the climate for tourists, as well as affecting key attractions (especially corals). A survey of tourist on Zanzibar (Gössling et al, 2006) found the climate is not the only factor shaping travel decisions to the islands, but did report that under a scenario of climate change, certain climate variables, such as more rain, storms, and higher humidity were likely to negatively influence travel decisions, rather than higher temperatures alone (which is not necessarily perceived as negative).

Climate change is also likely to increase electricity (cooling) and water demand on the islands, including for the tourist sector. On the supply side, climate change will lower rainfall in the months when demand is highest, and lead to higher rainfall during the rainy season which will increase flood risks (RGZ, 2014). A range of adaptation options are identified including better monitoring, early warning, energy and water efficiency measures (which closely align with sustainable tourism) and planning, including integrated watershed management and urban resilience.

Climate change will have effects on other sectors. There are risks for health, forests and terrestrial ecosystem (RGZ, 2014). A number of cross cutting issues are also important. Gender and distributional inequalities may be increased by future climate change, and as a response, there is a need for these issues to be considered in adaptation responses. Given the overall scale of possible impacts, it is also clear that climate change could affect the achievement of Zanzibar's long-term development and economic growth aspirations.

Adaptation

Recognising the need to prioritise, the ZCC Strategy (RGZ, 2014) produced a Strategic Climate Change Action Plan. This was produced following review and consultation, and set out early prioritised steps for developing a climate resilient, low carbon sustainable economy for Zanzibar.

The strategic priorities identified build on the concepts of iterative adaptive management. These include complementary areas for adaptation, including the need to build capacity, to implement low and no-regret (adaptation and low carbon) options, to mainstream climate change, and to start early actions to address future challenges. A number of sectoral/cross-sectoral specific priorities were identified, reflecting the major risks and opportunities for the islands. Five key themes were identified:

- information, capacity, disaster risk management and resilient settlements;
- resilient coastal and marine areas;
- climate smart agriculture and natural resource management;
- sustainable forests and energy; and
- sustainable and low carbon tourism.

Key cross-cutting issues were also identified, building on the Strategy principles. These included:

- consistency with Zanzibar's development objectives (including sustainable development);
- addressing gender and distributional inequalities (to ensure the Strategy reaches the most vulnerable); and
- ensure action at all levels from island wide through to local community based responses.

The Strategy used these to build a matrix to prioritise early strategic priorities and more comprehensive log frames, to provide a set of strategic action plans, summarised below.

Strategic Priorities

Sector Priorities	Building capacity	Low- and no-regret options	Main-Streaming	Address future challenges
Climate information, capacity, DRM and Sustainable Settlements	<ul style="list-style-type: none"> -Enhanced capacity & co-ordination (including community level). -Investment plans, climate finance & M&E. -Awareness raising. -Governance. -Education (+curriculum). -Enhanced met services. 	<ul style="list-style-type: none"> -Enhanced communication. -Enhanced forecasting. -Strengthening of DRM. -Enhanced EWS (including community level). 	<ul style="list-style-type: none"> -Enhanced climate risk screening. -Risk mapping & spatial planning including Zanzibar land-use plan. -Sector mainstreaming. 	<ul style="list-style-type: none"> -Enhanced research with linkages to URT, regional, SIDS and global. -Zanzibar NAP/NAMA/LAPA.
Resilient coastal and marine areas & ecosystem services	<ul style="list-style-type: none"> -Enhanced coastal and marine monitoring (data, physical, ecosystems). -Capacity and awareness (including community groups, policy makers). 	<ul style="list-style-type: none"> -Salt water intrusion programme. -Mangrove & shoreline restoration (inc COFM) -Enhanced conservation & fishery resource management (inc. community level). 	<ul style="list-style-type: none"> -Enhanced climate risk screening. -Strengthening Integrated coastal zone management / Community ICZ. 	<ul style="list-style-type: none"> -High resolution risk elevation mapping. -Research and pilot studies (e.g. cage-culture, livelihood diversification). Study on blue carbon.
Climate-smart agriculture and natural resource management	<ul style="list-style-type: none"> -Information support and awareness raising (e.g. extension service, indigenous knowledge, etc.). 	<ul style="list-style-type: none"> -Good practice (value chain). -SALM (e.g. soil management, agro-forestry, rain-water harvesting). 	<ul style="list-style-type: none"> -Sustainable land use planning. Integrated water management. 	<ul style="list-style-type: none"> -Research and pilots (e.g. new varieties, new practices, future risks such as cloves).
Sustainable forests and energy	<ul style="list-style-type: none"> -REDD+ extension. -Energy surveys. -Public/community awareness and education. 	<ul style="list-style-type: none"> -Scale-up community forest management. -Enforcement of forest protection -Improved cook-stoves. -Energy efficiency. -Solar water heating. -Renewable power. 	<ul style="list-style-type: none"> -Sustainable land use planning. -Standards and codes for development planning. 	<ul style="list-style-type: none"> -Sustainable energy for all. -Renewable energy development & studies. -Urban sustainable & resilience.
Climate resilient, low carbon tourism	<ul style="list-style-type: none"> -Survey/assessment/pilots -Awareness raising. -Analysis of sustainability criteria. -Capacity inc. community empowerment. 	<ul style="list-style-type: none"> -Energy and water efficiency programs. -Enhanced awareness and enforcement. 	<ul style="list-style-type: none"> -Investment and development planning controls. -Risk screening. 	<ul style="list-style-type: none"> -Long-term sustainable tourism planning. -Research on tourism development & climate change.
Cross-cutting elements				
<ul style="list-style-type: none"> -Ensure alignment with sustainable development objectives including emerging islands strategy. -Ensure that capacity, pilots and options consider gender and vulnerable groups. -Ensure focus on community based capacity, awareness raising and plans. 				

Proposed Case Study

A recommendation from the Zanzibar Climate Change Strategy was for the need to develop a comprehensive Zanzibar Climate Change Action Plan, for the period of five years (2015 – 2020) based on the strategic priorities and prioritized sectors outlined in the Zanzibar Climate Change Strategy of 2014 (as summarised above).

The specific objectives of the Zanzibar Climate Change Action Plan are to:

- Conduct a vulnerability assessment for the prioritized sectors outlined in the Zanzibar Climate Change Strategy by considering ongoing and planned initiatives.
- Identify and map adaptation and mitigation options.
- Develop a detailed costed Action Plan for the period of 2015 – 2020.
- Build capacity of relevant/selected staff of the Zanzibar Government on development of action plans.
- Align the action plan to the Zanzibar climate finance mechanism and develop a resource mobilisation plan, with the aim of funding the early actions identified.

The ECONADAPT case study will therefore work directly with the Revolutionary Government of Zanzibar, helping to develop this Climate Change Action Plan (equivalent to a National Adaptation Plan), working on the economic prioritisation of options and the costing of these for potential international financing. The aim of the case study is to provide a prioritised and costed action plan.

Recent Activities and Next Steps

Discussions were held with the Government of Zanzibar in autumn 2014 to discuss the case study, and a signed letter of interest was agreed (see appendix).

An initial mission and stakeholder visit (to meet various Government Ministries) was held in November 2014. This included meetings with:

- Vice President's Office – Environment
- Department of Environment
- Planning Commission
- Ministry of Agriculture
- Ministry of Finance
- UNDP, World Bank, DFID, Embassy of Norway, European Union Programme

This identified a number of key issues.

- The Mkuza II document will be reviewed over the first part of 2015, aligning to results from the household budget survey. As part of the review, there is an opportunity to consider climate resilience. This will provide a key route to mainstream climate change into development planning on Zanzibar, and into the next MKUZA.
- There has been a 'Tourism, business and natural resources Lab' held, which is leading to a tourism development programme. This provides a key route into a major sector.
- In terms of major infrastructure, there are a number of major projects, notably the Zanzibar urban project, the airport, a water supply project and the port.
- There is a greater focus on Disaster Risk Recovery on the islands, which will start to provide additional information of relevance for the Action Plan, including on flood risks.
- There is currently an agricultural sector review ongoing, which will look at the future strategic framework. This provides another sector entry point, especially focusing on value chains.

- Tanzania has developed a road map for climate finance (Framework for a National Climate Change Financing Mechanism (NCFM) for Tanzania). This will be of high importance for a similar mechanism on Zanzibar.
- There are a number of initiatives of relevance for Zanzibar, including the continuation of the World Bank Zanzibar urban project, a potential regional fishery programmes, and the ongoing scoping work on coastal resilience, as well as the EC Strategy work on Renewables and Energy Efficiency.
- There are also some initiatives of relevance through URT programmes, which are including climate mainstreaming, such as TASEF, various renewable programmes and initiatives.

A second detailed visit is planned for April 2015. The aim is to undertake the economic analysis and costing over 2015, and produce a draft climate change action plan by the end of 2015.

References

AfDB (African Development Bank Group) (2011). Climate Screening and Adaptation Review & Evaluation Procedures, AfDB, Tunis.

EC (2013a). An EU Strategy on adaptation to climate change. Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. European Commission, Brussels, 16.4.2013 COM(2013) 216 final.

Stefan Gössling, Paul Peeters, C. Michael Hall, Jean-Paul Ceron, Ghislain Dubois, La Vergne Lehmann, Daniel Scott (2012). Tourism and water use: Supply, demand, and security. An international review. Progress in Tourism Management, Volume 33, Issue 1, February 2012, Pages 1–15

IPCC (2013). Summary for Policymakers. Working Group 1 of the 5th Assessment Report of the Intergovernmental Panel on Climate Change. Alexander et al. September 2013.

Least Developed Countries Expert Group (2012a). The National Adaptation Plan Process: A Brief Overview. UNFCCC secretariat. Bonn, Germany. December 2012. Available at: http://unfccc.int/files/adaptation/application/pdf/nap_overview.pdf

Least Developed Countries Expert Group (2012b). National Adaptation Plans: Technical guidelines for the national adaptation plan process. UNFCCC secretariat. Bonn, Germany. December 2012. Available at http://unfccc.int/files/adaptation/cancun_adaptation_framework/application/pdf/naptechguidelines_eng_high_res.pdf

OECD (2009), Integrating Climate Change Adaptation into Development Co-operation: Policy Guidance, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264054950-en>.

Muhando, C.A (2009). Annual progress report (October 2008-September 2009) GEF/WB Coral Reef Targeted Research and Capacity Building for Management (CRTR) Project, East African Centre of Excellence, Zanzibar, Institute of Marine Sciences.

Niras (2010). Preparation of an Adaptation Programme of Action for Zanzibar (ZAPA). Ministry of Foreign Affairs, MFA, Finland, Ministry of Water, Construction, Energy and Land, Zanzibar, Ministry of Agriculture, Livestock and Environment, Zanzibar, Sustainable Management of Land and Environment II, (SMOLE II) 2010 - 2013. October 2010

Obura D (2002). Status of coral reefs in Eastern Africa: Kenya, Tanzania, Mozambique and South Africa. Australian Institute of Marine Science URI: <http://hdl.handle.net/1834/338> ISBN: 0-642-32216-3.

RGZ (2000), The Zanzibar Development Vision.

RGZ (2010), Zanzibar Statistical Abstract 2010, Office of Chief Government Statistician, Revolutionary Government of Zanzibar.

RGZ (2010). The Zanzibar Strategy for Growth and Reduction of Poverty: 2010-2015 (Zsgrp ii) MKUZA ii. A successor to the Zanzibar Strategy for Growth and Reduction of Poverty 2007-2010 . (ZSGRP). Revolutionary Government Of Zanzibar.

RGZ (2013). Zanzibar National Environmental Action Plan. Revolutionary Government of Zanzibar.

RGZ. (2014). Zanzibar Climate Change Strategy. Zanzibar: Revolutionary Government of Zanzibar.

RGZ. (2014b). The Proposed Zanzibar National Forest Resources Policy. Zanzibar: Department of Forestry and Non-Renewable Natural Resources, Ministry of Agriculture and Natural Resources, The Revolutionary Government of Zanzibar

Republic of Rwanda (2006). National Adaptation Programmes Of Action To Climate Change: NAPA-Rwanda. Ministry of lands. Environment, Forestry, Water and Mines. Republic of Rwanda. December 2006.

Republic of Rwanda (2011). Rwanda Green Growth and Climate Resilience (National Strategy for Climate Change and Low Carbon Development), 2011.

Republic of Rwanda (2012). Second National Communication Under The United Nations Framework Convention On Climate Change (U.N.F.C.C.C). Ministry Of Natural Resources. June 2012.

Republic of Rwanda (2012b). Disaster High Risk Zones on Floods and Landslides. Republic of Rwanda, Ministry of Disaster Management and Refugee Affairs, March 2012

RoR (2013). Statistical year book 2012. National Institute Of Statistics Of Rwanda. Republic of Rwanda.

RoR EDPRS (2013). Economic Development and Poverty Reduction Strategy 2013 – 2018: Shaping Our Development. Republic of Rwanda.

Shaghude, Y.W. and Dubi, A.M. 2008. Survey of beach erosion problems at La Gemma Dell'Est Hotel, Nungwi, Zanzibar. Report submitted to La Gemma Hotel, Nungwi, September 2008.

Shaghude, Y.W., and Byfield, V. (2012). Using sea surface temperature to assess coral bleaching risk. In "B.H.P. Maathuis and C.M.M Mannaerts (Editors)", GEONETCast-DevCoCast application manual, version 1, pp. 179-194, University of Twente, Enschede, the Netherlands.

UNDP (United Nations Development Programme)/UNEP (United Nations Environment Programme) (2011), Mainstreaming Climate Change Adaptation into Development Planning: A Guide for Practitioners, UNDP-UNEP Poverty-Environment Initiative, Nairobi.

Watkiss, P. et al (2012). The Economics of Climate Change in Zanzibar. Report to Development Partners Group and the UK Department for International Development. Available at: http://www.economics-of-cc-in-zanzibar.org/images/Final_Summary_vs_3.pdf

Appendix: Letters of Agreement



**REVOLUTIONARY GOVERNMENT OF ZANZIBAR
THE FIRST VICE PRESIDENT'S OFFICE**

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OMKR/U.54/2/VOL.1/40

12th November, 2014

Paul Watkiss,
Paul Watkiss Associates,
18 Islip Road, Oxford, Oxon, OX2 7SN,
United Kingdom.

REF: Zanzibar Action Plan: ECONADAPT case study

I have the honour to refer to the above subject.

The First Vice President's Office (FVPO) would like to thank you for your time and efforts taken to support the Zanzibar readiness programmes on addressing climate change impacts. The FVPO also acknowledge the fruitful discussion you had with her senior staff on 2nd October 2014 during your visit to Zanzibar, whereby the plans for the development of the Zanzibar Climate Change Action Plan (ZCCAP) was discussed.

While FVPO is looking for positive response from DFID to support the development of ZCCAP, the permission is granted to engage European Commission FP7 project, called ECONADAPT, which is looking for a case study to test the development and economic assessment (including costing) of national and sector adaptation plans, and we would therefore be extremely interested to allow you to use the ZCCAP as a case study for the project.

As outlined during the discussion, FVPO is expecting the project to provide support to the ZCCAP (from the ECONADAPT project) for the scoping and initial development of the action plan, from October to December 2014, including a case study visit in November, and then to provide some additional technical case study analysis (economic support) and inputs for the development of the costed national plan and sector plans.

FVPO is continuing to solicit co financing to cover the additional cost associated with the ZCCAP, including the financing of local teams and experts, the mentoring of RGZ sector staff, the stakeholder consultation activities, the development of finance mechanisms and mobilisation plans, or development of monitoring and evaluation plans, or inputs to the Local Adaptation Plan of Action.

We anticipate your usual cooperation,

Thank you

Yours sincerely

Dr. Omar D. Shajak,
Principal Secretary,
The First Vice President's Office,

ZANZIBAR.

Direct lines to:

Minister 024....., Principal Secretary 024, Deputy Principal Secretary 024.....



Department
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Paul Watkiss
Paul Watkiss Associates
18 Islip Road
Oxford
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10 December 2014

RE: Rwanda ECONADAPT Case Study

Dear Paul,

Thank you for your letter outlining your interest in using FONERWA (Rwanda's Environment and Climate Change Fund) as a case study to test the economic assessment of national and sector adaptation plans under the European Commission 'ECONADAPT' project.

As you know, DFID are a major contributor to FONERWA. Although we would not be able to contribute financially towards development of the case study, we would be happy to work with you on a technical level – participating in case study visits, and commenting on outputs etc. I agree that this work could be useful in informing the strategic prioritisation of projects under FONERWA, and providing analysis to support climate mainstreaming in the agricultural sector.

I look forward to our future engagement on this project.