



Oxford Policy Management

# **Climate finance and water security**

## Zambia case study

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29 June 2015

## Acknowledgements

This study was commissioned by WaterAid. We would like to thank Priyanka R. Patel and colleagues at WaterAid Zambia, Jacob Chisha, and all key informants for their support and contributions to this study.

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## Table of contents

Acknowledgements	i
List of tables and figures	iii
List of abbreviations	iv
1 Introduction	1
2 Water security and climate change	2
2.1 Water security	2
2.2 Observed and projected climate trends	4
2.3 The climate change and water security nexus	6
3 Climate finance	8
3.1 Climate policy architecture	8
3.1.1 Sixth National Development Plan (SNDP)	9
3.1.2 National Climate Change Response Strategy (NCCRS)	9
3.1.3 Interim Inter-Ministerial Climate Change Secretariat (IIMCCS)	9
3.2 Climate finance architecture	10
3.3 Climate finance to date	10
4 Climate finance for water security	13
4.1 WASH and water-related activities	14
4.1.1 Project for support of the national roll-out of the Sustainable Operation and Maintenance Programme (SOMAP3) (Category A)	15
4.1.2 Adaptation to the effects of drought and climate change in agro-ecological zones 1 and 2 (Category B)	16
4.2 Future scope for water projects	17
5 Conclusions and policy recommendations	18
5.1 Conclusions	18
5.2 Recommendations	18
References	20
Annex A List of CFU projects	22
Annex B List of stakeholders consulted	23

## List of tables and figures

Table 1	Impacts of climate-related threats .....	6
Table 2	Main institutions involved in managing climate-related investments .....	8
Table 3	Funds accessed, key aspects of operation and observations .....	10
Table 4	Public and private climate inflows, 2009 – 2011 (US \$ million) .....	11
Table 5	Distribution of climate finance by funder .....	12
Table 6	Distribution of climate finance by project categories.....	14
Table 7	List of project outcomes and outputs .....	16
Figure 1	Trends in water coverage by area (1990, 2000 and 2012).....	3
Figure 2	Trends in sanitation coverage by area (1990, 2000 and 2012) .....	3
Figure 3	Agro-ecological zones in Zambia .....	5
Figure 4	Distribution of climate finance by focus .....	11
Figure 5	Distribution of climate finance by type of instrument .....	12

## List of abbreviations

AfDB	African Development Bank
CCFU	Climate Change Facilitation Unit
CDM	Clean Development Mechanism
CFU	Climate Funds Update
CIF	Climate Investment Funds
DMMU	Disaster Management Mitigation Unit
ENSO	El Niño Southern Oscillation
FAO	UN Food and Agriculture Organisation
FDI	Foreign Direct Investment
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environmental Facility
IFC	International Finance Corporation
IIMCCS	Interim Inter-Ministerial Climate Change Secretariat
IPCC	Intergovernmental Panel on Climate Change
ISTC	Inter-Sectoral Technical Committee
IWRM / WE	Integrated Water Resources Management and Water Efficiency
JICA	Japan International Cooperation Agency
JMP	WHO / UNICEF Joint Monitoring Programme
LDC	Least Developed Country
LDCF	Least Developed Countries Fund
MoEWD	Ministry of Energy and Water Development
MoFNP	Ministry of Finance and National Planning
MoLGH	Ministry of Local Government and Housing
MoLNREP	Ministry of Lands, Natural Resources and Environmental Protection
MoTENR	Ministry of Tourism, Environment and Natural Resources
MoU	Memorandum of Understanding
NAPA	National Adaptation Programme of Action

NCCDC	National Climate Change Development Council
NCCP	National Climate Change Policy
NCCRS	National Climate Change Response Strategy
NDA	National Designated Authority
NGO	Non-Governmental Organisation
NLTV	National Long Term Vision
NRWSSP	National Rural Water Supply and Sanitation Programme
NWRDP	National Water Resources Development Project
OD	Open Defecation
ODA	Official Development Assistance
OECD DAC	Organisation for Economic Development and Cooperation – Development Assistance Committee
OECD CRS	Organisation for Economic Development and Cooperation – Creditor Reporting System
OPM	Oxford Policy Management
O&M	Operation and Maintenance
PPCR	Pilot Programme for Climate Resilience
REDD+	Reducing Emissions from Deforestation and Forest Degradation
RoZ	Republic of Zambia
SNDP	Sixth National Development Plan
SOMAP	Sustainable Operation and Maintenance Programme
SPCR	Strategic Program for Climate Resilience
UK	United Kingdom
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children’s Fund
US	United States
WASH	Water Supply, Sanitation and Hygiene
WRM	Water Resources Management

WHO	World Health Organisation
ZCCN	Zambia Climate Change Network
ZEMA	Zambian Environmental Management Agency

# 1 Introduction

This Zambia case study has been developed for the project '**Research on climate finance and water security**', funded by Water Aid. The project aims to identify the type and scale of national and sub-national programmes and projects that have been funded by climate finance and how they relate to local water security.

The methodology and definitions used are fully explained in the Inception Report and so are not repeated in this assessment, but are referenced where appropriate. This report is based on:

1. A review of the secondary literature;
2. Key informant interviews with water and climate change stakeholders in Zambia; and
3. Project-level data from the Climate Finance Update (CFU) and the OECD Creditor Reporting System (CRS).

This case study is structured as follows:

- [Section 2](#) reviews the evidence base on water security and climate change for Zambia, and explores the nexus between the two thematic areas;
- [Section 3](#) reviews the policy and institutional frameworks for climate finance in Zambia, and sets out an analysis of the reported climate finance funds flowing from international donors (as reported by the CFU);
- [Section 4](#) sets out an analysis of the identified climate finance flows categorised in terms of their relevance to a hierarchy of water security issues;
- [Section 5](#) presents the conclusions and recommendations.

The [Annexes](#) contain the complete list of climate finance projects for Zambia, together with a list of all stakeholders interviewed. A total of 14 key stakeholders, including donors, government parties and national climate change agencies, were interviewed. Summary notes for these KIIs can also be found in the Annexes. Fieldwork was undertaken by Federica Chiappe of OPM and Jacob Chisha in January 2015.



## 2 Water security and climate change

### 2.1 Water security

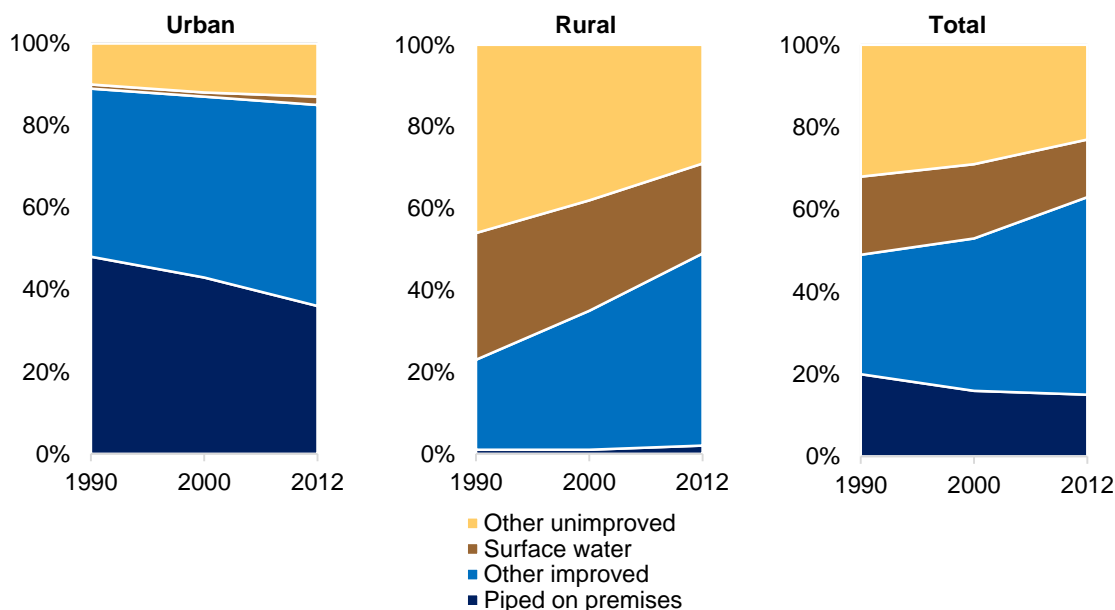
Zambia lies within two large river basins: the Zambezi River basin and the Congo River basin, and it is known as one of the most water secure countries in Sub-Saharan Africa. The country has several major rivers, including the Zambezi and its tributaries (Luangwa and Kafue), Chambeshi, and Luapula – the Kafue River basin is one of the most developed in the country, supporting about 40% of its total population (Frenken, 2005; RoZ, 2008). However, surface water resources tend to be unevenly distributed across the country, with the South experiencing local water shortages (Ibid, 2008).

Due to the unequal surface water distribution, groundwater is also a major source in some areas of the country. Although RoZ (2008) did not find evidence of groundwater depletion, it did indicate that the Lusaka aquifer was at a heightened risk of pollution and over-abstraction for agricultural use. Indeed, both surface water (especially in the Kafue basin where many industries are located) and groundwater have been found to be at risk of pollution from dumping of solid waste, the release of dissolved substances from industrial activity, and poor sanitation.

Estimations for 2000 indicate that the majority of total water withdrawal is used for hydropower generation (90%), with the remaining distributed between agriculture (8%), domestic use (~ 2%), and industry (RoZ, 2008). Zambia experiences high inequities in access to both improved drinking water and sanitation. Figure 1 shows the trends in the coverage of drinking water between 1990 and 2012. Coverage of piped water has decreased in the past decades from 20% in 1990 to 15% in 2012. There is basically no coverage of piped water in rural areas (2% in 2012), and while 36% of the urban population had access to piped water in 2012, coverage decreased from 48% in 1990. Access to other improved water sources has also decreased in urban areas, with more people now relying on unimproved sources and surface water – this may be explained by poor water quality or the unreliability of water supplies. On the contrary, rural households have reduced their dependency on both surface water and unimproved sources (from 77% to 51%), having more access to improved drinking water. At the national level, there is still a relatively high dependency on surface water and other unimproved sources.

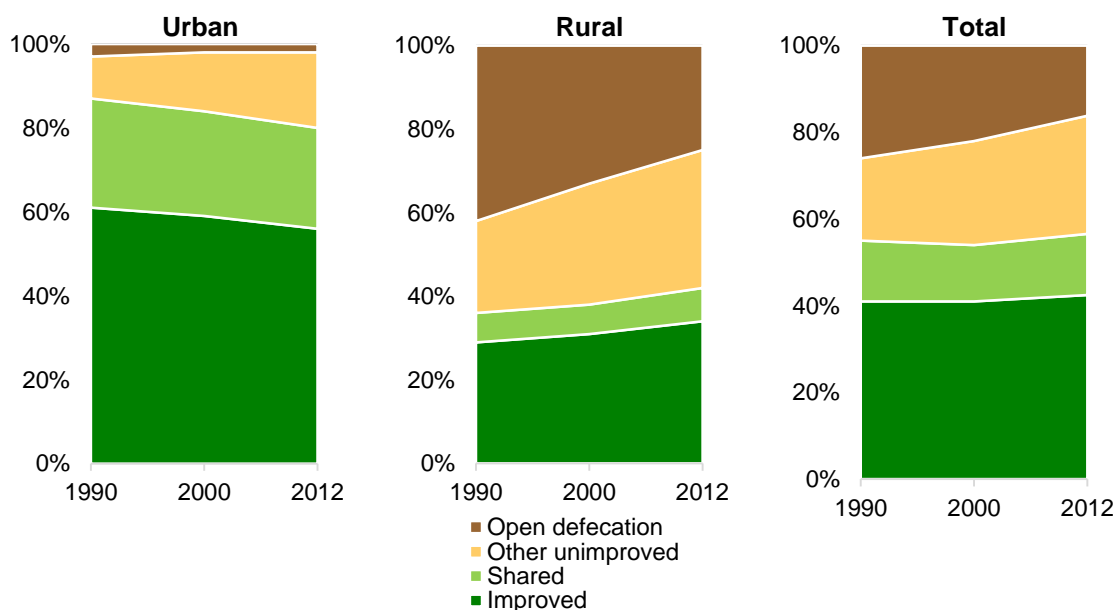
Turning now to sanitation coverage, Figure 2 shows that around 80% of the urban population used either an improved or shared sanitation facility in 2012, with the remaining 20% relying on unimproved facilities (18%) and open defecation (OD, 2%). On the contrary, only 42% of the rural population had access to an improved or shared facility, with 33% using unimproved facilities and 25% practicing OD. Overall, 27% of the population relied on unimproved sanitation, while 16% practiced OD. The use of unimproved sanitation and practice of OD pose an important threat to the maintenance of water quality, and hence access to safe water resources.

**Figure 1 Trends in water coverage by area (1990, 2000 and 2012)**



Source: WHO / UNICEF JMP (2015).

**Figure 2 Trends in sanitation coverage by area (1990, 2000 and 2012)**



Source: WHO / UNICEF JMP (2015).

Although the responsibility for water is quite fragmented across different ministries and agencies, the institutional framework for ensuring water security is relatively developed in the country, with different policies and programmes launched across the years, including some specifically designed to address transboundary issues, e.g. the Revised Protocol on Shared Watercourses in the Southern African Development Community. Among the most recent is the 2007-2030 Integrated Water Resources Management and Water Efficiency (IWRM / WE) Plan that aims to address four key areas: (1) the enabling environment; (2) institutional roles; (3) management mechanisms; and (4) infrastructure for water resources management and development. Its ultimate goal is to guarantee water security, described as follows:

*“support economic growth and improve livelihoods through sustainable water resources development with equitable provision of water in adequate quantity and quality for all competing groups of users, at reasonable cost, with security of supply under carrying conditions”* (pp. x; RoZ, 2008).

## 2.2 Observed and projected climate trends

### Observed climate trends

Zambia has a tropical climate, with temperatures remaining relatively cool throughout the year due to the high altitudes of the East African Plateau. Mean annual temperature varies from 18-20°C, and the country experiences two broad seasons: a rainy season (November to April) and a dry season (May to October). The hot summer months are very dry, and the country receives very little rainfall between June and August. The wet season rainfalls are mainly determined by the tropical rain belt, bringing rain between October and April of 150-300mm per month (McSweeney et al, 2010; MoLNREP, 2014).

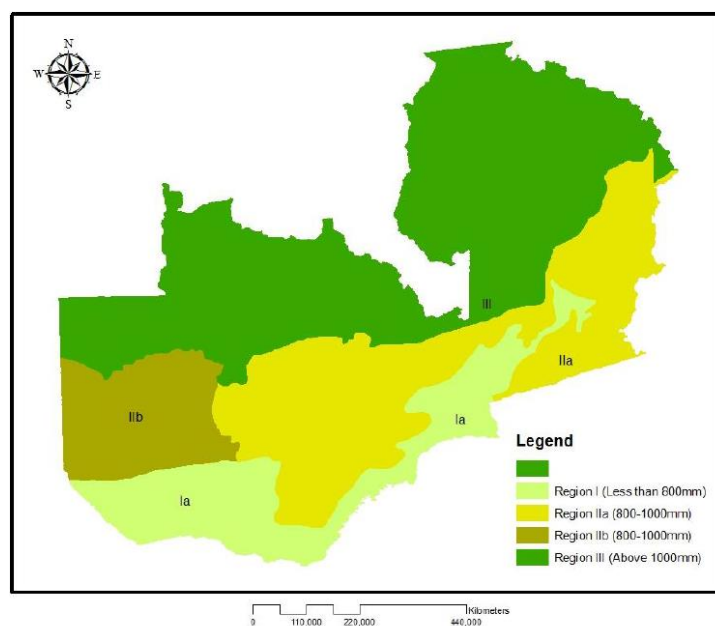
Mean annual rainfall is about 1,000mm, ranging from 600mm in the South to 1,400mm in the North (RoZ, 2008). Rainfall is strongly influenced by ENSO, which causes further inter-annual variability. El Niño conditions (warm phase) bring drier than average conditions in the wet summer months in the Southern half of the country, whilst the North of the country experiences significantly wetter conditions. The reverse pattern occurs with La Niña (cold phase) episodes (McSweeney et al, 2010).

Estimations suggests that mean annual temperature has increased by 1.3°C since 1960, with an increased frequency in the number of hot days and hot nights across all seasons. Mean annual rainfall has also decreased by an average rate of 1.9mm per month since 1960 (McSweeney et al, 2010). Zambia has also experienced a number of climatic threats over the past few decades. The most frequent and serious have been drought, floods, extreme temperatures and dry spells. Droughts and floods have increased in frequency, intensity and magnitude over the last two decades, having a negative impact on both food and water security (MoTENR, 2007).

At a sub-national level (as shown in Figure 3), and based on data for 1940-2000, a slight increase in temperature has been observed across all agro-ecological zones. Regarding rainfall, region I was found to be tending towards dryness, experiencing a significant decline in rainfall throughout 1970-2000. This region was found to be the most vulnerable to climate change. There were no indications of declining rainfall in region II, while region III was found to be the most stable (MoLNREP, 2014).

### Projected climate trends

McSweeney et al (2010) estimate that annual temperature in Zambia will increase by 1.2-3.4°C by the 2060s, and by 1.6-5.5°C by the 2090s. Warming will be more rapid in the Southern and Western regions of the country as compared to the Northern and Eastern regions, with a significant increase in the number of hot days and nights. At a sub-national level, projections by MoLNREP (2014) up to 2070 indicate that region I is more likely to experience droughts and extreme temperatures, region II will increasingly experience a decline in rainfall and higher temperatures, and region III will experience a slight variation in rainfall (see Figure 3).

**Figure 3** Agro-ecological zones in Zambia

Source: MoLNREP (2014).

### Climate change impacts

The IPCC 5<sup>th</sup> Assessment indicates that, through its interaction with non-climate change drivers (e.g. urbanisation, population growth), climate change will increase the vulnerability of agricultural systems in Africa, especially in semi-arid areas. Climate change will also act of a compounder of existing health vulnerabilities, including access to safe water and adequate sanitation, and food insecurity. In particular, the IPCC suggests that climate change is a key hazard for small-scale farmers in Zambia, given their low adaptive capacity to cope with climate variability (Niang et al, 2014).

The Strategic Program for Climate Resilience (SPCR) further summarises the expected impacts across key sectors: agriculture, infrastructure, natural resources, and health. The agriculture sector has been identified as the most vulnerable, given the predominance of small-scale and rain fed practices. Indeed, past floods have led to widespread crop failure due to water logging and erosion, while droughts have been associated with delays on the onset and length of the growing season. Rainfall deficits and flash floods have also led to production shortfalls, having a negative impact on food security (RoZ, 2011). The high vulnerability of agriculture to climate change was confirmed by the Zambia Climate Change Network (ZCCN), which expressed concerns with (1) the high dependence of agriculture on rainfall (95% of agriculture is rain fed); (2) the lack of adequate systems for water storage, and, more broadly, (3) the lack of mechanisms to cope with droughts and floods (R. Chimambu, personal communication, 28 January 2015). The potential loss of agriculture due to climate variability has been estimated to be between US \$2.2 to \$3.1 billion of GDP (MoTENR, 2010).

Infrastructure vulnerabilities and impacts are mainly related to the low level of development in the sector, with previous floods causing significant damage to roads and bridges. Natural resources, including wildlife, forests and fisheries, are already being affected by climate change due to land degradation, loss of soil moisture, wildfires, and changes to the nutrient composition of lakes and rivers. Finally, climate change is expected to have an effect on the prevalence of vector-borne and water-borne diseases, especially malaria and diarrhoea. Livestock health is also likely to be affected (RoZ, 2011).

Estimations by the Ministry of Lands, Natural Resources and Environmental Protection (MoLNREP) suggest that total GDP loss due to climate change may amount to US \$4.3 – 5.4 billion in the next decade, equivalent to a loss of 0.9 – 1.5% in GDP growth (MoTENR, 2010; RoZ, 2011; van Rooij, 2014).

Table 1 summarises some of the potential impacts associated with climate-related threats across different sectors. As described above, the majority of the effects are related to lower agricultural output, and thus a heightened risk of food insecurity and loss of income.

**Table 1** Impacts of climate-related threats

Drought	Floods	Extreme heat	Shorter rainy season
Crop damage leading to food scarcity	Crop damage leading to food scarcity	Loss of life	Increased risk of crop failure
Water shortages	Increase in diseases	Increase in diseases	Crop damage
Income loss	Destruction of infrastructure	Decreased human capacity to do work	Income loss
Increase in diseases	Loss of life	Crop damage	Reduced forest regeneration
Decreased water quality	Interference with energy production due to change in water flows	Reduced water quality	
Increased soil erosion			
Decreased soil fertility			

Source: MoTENR (2007).

## 2.3 The climate change and water security nexus

Projections from the IPCC 5<sup>th</sup> Assessment indicate that climate change will likely amplify existing water stress in Africa. In particular, droughts are expected to intensify in Southern Africa due to reduced rainfall or increased evapo-transpiration. Freshwater ecosystems are particularly at risk from changes in land use, over-abstraction of groundwater, diversion of rivers and lakes, and increased pollution and sedimentation (Niang et al, 2014).

Although Zambia has abundant surface water and groundwater resources, communities living in arid parts of the country are likely to experience water shortages during the dry season. Population growth in urban centres has already put pressure on groundwater resources by increased pollution and over-abstraction, and climate change, via droughts, may put additional pressure by leading to inadequate recharging, lowering of the water table, and drying of boreholes and rivers (MoTENR, 2007).

Droughts and floods in recent years have also had negative effects on the ability of the country to generate hydro-electric power. A potential increase in the number of dry years could result in reduced runoff and reservoir storage, which may further reduce power generation capacity (MoLNREP, 2014). The increased frequency and severity of floods has also has an effect on Zambia's existing and planned infrastructure. Estimations suggest that over the last three decades Zambia has lost around US \$13.8 billion in GDP due to floods and droughts (Watson, van Rooij & Nakhooda, 2013).

The hazards identified above were confirmed by key informants. On one hand, the ZCCN mentioned issues around water degradation and pollution, and water availability. Water degradation is an important problem in the Copperbelt and Northwestern provinces due to the exploitation of natural

resources, e.g. uranium and heavy metals (R. Chimambu, personal communication, 28 January 2015). Similarly, GIZ identified issues with rainfall uncertainty and the consequent risk for the sustainability of agricultural livelihoods (C. Sonderegger, personal communication, 28 January 2015).

### 3 Climate finance

#### 3.1 Climate policy architecture

Zambia ratified the UNFCCC in 1993, and recently submitted its second national communication in November 2014. As a former least developed country (LDC), Zambia also submitted a National Adaptation Programme of Action (NAPA) in 2007 that contained 10 projects, of which only one has been fully financed due to the lack of detail in relation to the project concepts themselves (each project was presented with a one page summary), and constraints around funding availability. It should be noted that one of the concepts was a programme to support climate proofing sanitation in urban areas (No. 10). This programme was to be led by the Ministry of Local Government and Housing (MoLGH), potentially alongside the pre-paid urban water supply scheme.

The Ministry of Lands, Natural Resources and Environmental Protection (MoLNREP) is currently the official focal point for climate change, in particular through the Department of Environment and Natural Resources. MoLNREP also provides a secretariat for the National Designated Authority (NDA) for the Clean Development Mechanism (CDM) and is responsible for Zambia's National Communications to the UNFCCC, with the Zambian Environmental Management Agency (ZEMA) conducting the analysis. In addition, the Ministry of Finance and National Planning (MoFNP) and the Disaster Management Mitigation Unit (DMMU) in the Office of the Vice President have assumed central roles in Zambia's climate change response. For example, MoFNP coordinates Zambia's participation in the Pilot Programme for Climate Resilience (PPCR). A brief description of the roles of the key institutions involved in climate related investments are set out in Table 2.

**Table 2 Main institutions involved in managing climate-related investments**

Institution	Role
<b>Ministry of Finance and National Planning</b>	Responsible for managing national budgets, and the conduit for all international climate-related financial inflows.
<b>Disaster Management and Mitigation Unit</b>	Responsible for mobilising and managing resources for disaster response and rehabilitation – most disasters are related to climate variability.
<b>Ministry of Lands, Natural Resources and Environmental Protection</b>	Receives the majority of donor support for REDD+ funding.
<b>Ministry of Agriculture and Livestock</b>	The largest sector allocation for climate change programmes from national budgets between 2007 and 2012 went to agriculture. It has also received substantial climate-related donor funding.
<b>Ministry of Energy and Water Development</b>	Substantial climate-related partner support has been provided to both energy and water.
<b>Ministry of Local Government and Housing</b>	Likely to be instrumental in enhancing access of sub-national governments to climate finance.
<b>Ministry of Transport, Works, Supply and Communication</b>	Oversees the construction and maintenance of public facilities (e.g. roads, schools, meteorological equipment). It is involved in some of the projects funded by the PPCR.

Source: van Rooij (2014).



### 3.1.1 Sixth National Development Plan (SNDP)

In the domestic context, climate change is increasingly being seen as a development issue within the Zambian government rather than a solely environmental consideration, i.e. climate change is being mainstreamed into national development policy. The National Long Term Vision (NLTV) to 2030 is being implemented by a number of national development plans. The current SNDP includes environment and climate change as a cross-cutting issue, with some sectors developing specific strategies (e.g., energy and infrastructure) and others introducing climate change into their policy objectives. The key strategies of the SNDP will be interfaced with key climate change related strategies under infrastructure, growth sectors (energy, agriculture, mining, manufacturing and tourism), and rural development. The Disaster Management Act also references climate change.

### 3.1.2 National Climate Change Response Strategy (NCCRS)

In 2010, Zambia drafted a National Climate Change Response Strategy (NCCRS), the vision of which is 'a prosperous climate change resilient economy' (p. ii, MoTENR, 2010). The draft NCCRS aims to ensure that vulnerable sectors of the economy (i.e., agriculture, tourism, infrastructure, health, forestry, water, and energy) are "climate proofed" and follow a low carbon development pathway. These sectors are broadly aligned with those in the Sixth National Development Plan and Long Term Vision. The NCCRS's medium term goal is to ensure climate change is mainstreamed in these sectors by 2015 and that the objectives related to nine priority sectoral adaptation and mitigation actions (in land use, water, health and social infrastructure, physical infrastructure, transport, energy, mining, governance, and mainstreaming) are met. The draft NCCRS outlines a number of possible projects and programmes for different sectors, also identifying relevant organisations, cost estimates and output timelines. However, these activities need to be elaborated before they can be implemented.

The NCCRS further proposed a new institutional structure for climate change coordination in addition to priority interventions. The National Climate Change and Development Council (NCCDC) was suggested both to coordinate climate change activities across government and to involve external stakeholders (e.g., NGOs, private sector).

The draft NCCRS was not submitted to Cabinet for approval because the Policy Advisory Committee recommended that a National Climate Change Policy (NCCP) be adopted first. Both the strategy and the policy were therefore to be approved concurrently. A zero draft of the NCCP was circulated to a number of stakeholders for comments in 2012. We understand, however, that neither have been adopted and that both remain in draft, and the reasons for the delay are not clear.

### 3.1.3 Interim Inter-Ministerial Climate Change Secretariat (IIMCCS)

In the absence of permanent institutional arrangements, an Interim Inter-Ministerial Climate Change Secretariat (IIMCCS) was established under MoFNP in 2012, with a view to overseeing all climate change related initiatives in Zambia. The IIMCCS served as a follow on to the Climate Change Facilitation Unit (CCFU), which ran from 2009-2012 and was responsible for research and coordination. The unit is primarily a coordinating structure, with activities left to line ministries or other decentralised structures. However, it also maintains responsibility for direct implementation of a number of projects (including the PPCR), which has provided the majority of its funding since 2012 (total budget of US \$9.6 million over five years). The Government of Zambia is meeting a small but rising proportion of costs (US \$1.5 million in 2015), and eventually expects to take the main institutional funding responsibility. The IIMCCS has 8 representatives from different national ministries who are attached, rather than seconded to the structure. There is currently no representation from local or subnational levels. Its institutional attachment to MoFNP allows it



convening power across government. The establishment of the IIMCCS was supported by an Inter-Sectoral Technical Committee (ISTC), including private sector and NGO representation, which developed its terms of reference. Since its establishment, the Secretariat has represented Zambia in the GCF and its members participate in UNFCCC negotiations.

### 3.2 Climate finance architecture

There is no formal climate finance structure in Zambia. The draft NCCRS has five core pillars, one of which is a finance and investment framework that deals with the identification of sources and mobilisation of financial resources. Under this pillar, the national budget, international climate funds, private sector and Foreign Direct Investment (FDI), and carbon markets, are seen as sources of funds for climate change activities. Table 3 describes the multi-lateral climate funds that Zambia has accessed to date.

**Table 3 Funds accessed, key aspects of operation and observations**

Fund	Amount	Key aspects	Observations
<b>Climate Investment Funds / PPCR</b>	US \$86m approved & US \$7m disbursed (3 different components)	Support to institutional coordination arrangements; MoUs with sub-national and intra-ministerial units	Need to achieve broader buy-in and sustainability; IIMCCS closely associated and funded primarily by the PPCR
<b>Global Environmental Facility</b>	US \$8m approved & disbursed (3 projects)		Funding predominantly for electricity.
<b>LDCF</b>	US \$18m approved & US \$4m disbursed (5 projects)	Diverse implementing partners; supported NAPA development	Limited support for coordination arrangements.

Source: van Rooij (2014).

The PPCR is the largest climate fund under implementation in Zambia. It has three components, including participatory adaptation, climate resilient infrastructure and strategic program support (providing direct support to government) (M. Sishekanu, personal communication, 28 January 2015). Field interventions target two priority sub-basins of the Zambezi River (Barotse – managed by the World Bank – and Kafue – managed by the African Development Bank). The International Finance Corporation (IFC) is also supporting private sector engagement and leading institutional and policy support. The PPCR also provides direct support to the Interim Inter-Ministerial Climate Change Secretariat.

Zambia is also working with the United Nations Environment Programme (UNEP), United Nations Development Programme (UNDP) and the Food and Agriculture Organization (FAO) on a national REDD+ initiative.

### 3.3 Climate finance to date

Zambia has been relatively successful in accessing some of the dedicated climate finance available from the public and the private portfolio. However, tracking climate finance inflows is very difficult due to fragmented policies and procedures on climate change management, general knowledge issues, and oversights in the national budget process. In addition, given that climate finance

addresses development issues that are simultaneously being dealt with by official development assistance (ODA), public records do not at this time differentiate between these two types of resources. Tracking is even harder for private inflows, given the multiplicity of entry points and the general lack of willingness and incentives for private sector stakeholders to disclose financial statements (Mulenga, 2013). Key stakeholders confirmed the difficulties in tracking climate finance due to the lack of a clear cut between adaptation and general development funds, and the complexity of disbursement chains, e.g. from donor to MoFNP and then to implementers (P. Patel and S. Khan, personal communications, January 2015).

Nonetheless, by identifying climate finance activities that have been “mainstreamed” in national budgets, and using both OECD CRS data and the Zambia Development Assistance Database, Mulenga (2013) was able to estimate public (including mainstreamed activities and ODA climate finance) and private climate finance inflows, as shown in Table 4. Considering total climate finance allocated to the country between 2009 and 2011, 89% (US \$2.3 billion) is estimated to come from private sources, with only 11% (US \$0.3 billion) being given by public or international stakeholders. The majority of public / international resources have been allocated to disaster risk management, followed by environmental and natural resources, energy and water, and agriculture.

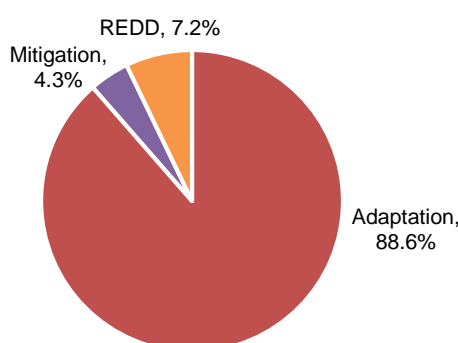
**Table 4 Public and private climate inflows, 2009 – 2011 (US \$ million)**

	2009	2010	2011	Total	%
<b>Public / international climate finance</b>	<b>112</b>	<b>88</b>	<b>86</b>	<b>287</b>	11.1
Dedicated climate finance	3	10		13	0.5
ODA climate finance	109	78	86	274	10.6
<b>Private climate finance</b>	<b>561</b>	<b>1,100</b>	<b>645</b>	<b>2,306</b>	88.9
<b>Total</b>	<b>673</b>	<b>1,188</b>	<b>731</b>	<b>2,593</b>	100.0

Source: Mulenga (2013).

Focussing on international resources, Climate Funds Update (CFU) project-level data indicates that only US \$105.31 million have been approved since 2003<sup>1</sup>. As shown in Figure 4, of the total funds approved to date, the majority are being targeted to adaptation activities (89% or US \$93m), followed by REDD+ (7% or US \$8m), and mitigation (4% or US \$5m).

**Figure 4 Distribution of climate finance by focus**



Source: CFU (2014).

<sup>1</sup> The CFU database is cumulative since 2003, and tracks all multilateral-governed funds focussed on climate finance. Data also contains information about major bilateral initiatives and some national climate change funds, but coverage is not universal. For more information, please refer to <http://www.climatefundsupdate.org/about/data-figures-notes>.

Table 5 shows the distribution of climate finance by funder. The main contributor to date is the Pilot Program for Climate Resilience (72%), through which three major projects for strengthening climate resilience are being developed, followed by the Least Developed Countries Fund (LDCF, 17%). However, only the GEF Trust Fund and UN-REDD have fully disbursed the funds committed to date, with the PPCR having disbursed only 6% of resources (a bit under the disbursed amount reported in Table 3) and the LDCF 21%<sup>2</sup>.

**Table 5** Distribution of climate finance by funder

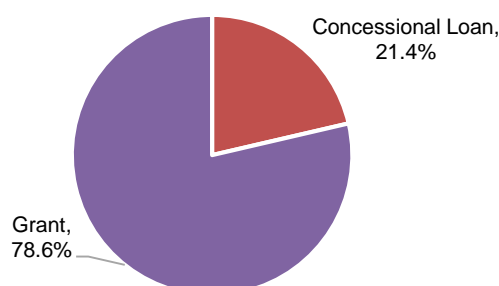
Funder	% of total funds approved	Funds approved (US million)	Funds disbursed (US million)	Funds disbursed (% of funds approved)
GEF Trust Fund (GEF 4)	4%	\$4.5	\$4.5	100%
Germany's International Climate Initiative	3%	\$3.0	\$-	0%
Japan's Fast Start Finance	0%	\$0.0	\$-	0%
Least Developed Countries Fund (LDCF)	17%	\$17.8	\$3.7	21%
Pilot Program for Climate Resilience (PPCR)	72%	\$75.5	\$4.3	6%
UN-REDD	4%	\$4.5	\$4.5	100%

Source: CFU (2014).

Low disbursement figures may be partly explained by data quality issues related to the frequency of updates to the CFU database, specifically with regards to the proportion of funds disbursed for each project. It is unclear if projects are systematically tracked by the CFU or if project-level data is entered on a one-time basis. Lack of implementation capacity may also help explain the low disbursement rates, but this was not confirmed by any of the stakeholders interviewed.

Finally, Figure 5 shows the distribution of climate finance by type of instrument. The majority of resources have been given in the form of grants (79% or US \$83m), with the remaining funds being approved as concessional loans (21% or US \$23m). This is consistent with the focus on adaptation in Zambia (see Figure 4 above). The IIMCCS also suggested that there is a preference for grants at this stage, but with the expectation of having a more balanced portfolio in the future between grants and loans (M. Sishekanu, personal communication, 28 January 2015).

**Figure 5** Distribution of climate finance by type of instrument



Source: CFU (2014).

<sup>2</sup> The CFU defines approved funds as those that have been “officially approved and earmarked to a specific project or programme”. Disbursed amount refer to funds that have been officially spent.

## 4 Climate finance for water security

Following the methodology presented in the Inception Report, we have categorised CFU project-level data to have a better idea of the amount of funding directed towards water security or related activities. Using the OECD Creditor Reporting System (CRS) coding, as well as project-specific documentation, projects have been distributed in the following water security categories:

- **Category A** includes projects that are primarily related to Water Supply, Sanitation and Hygiene (WASH);
- **Category B** includes projects pertaining to ‘natural security resources’ that are inter-related to water security, such as integrated water resources management (IWRM), agricultural water resources, and water-related energy security;
- **Category C** encompasses projects that are indirectly related to water security – mainly those activities that present potential co-benefits or trade-offs from mitigation activities, such as forestry; and
- **Category D** includes climate finance projects that are not related to water security.

For Zambia, the CFU database has records for a total of 12 projects. We did a search for each of these projects in the OECD Creditor Reporting System from 2008 (the date of approval of the earliest CFU project) until 2013 (the most recent year in OECD CRS) to be able to attach a specific CRS code to each of them. 8 of these projects were found in the CRS, indicating a cross-over between ODA and climate finance as listed in the CFU database. To categorise the remaining 4 projects, and given issues with the CRS categorisation<sup>3</sup>, we carried out a rapid review of project-specific documentation to either confirm or re-classify projects to different sectors. The full list of projects, along with CRS codes and final categorisation is reported in Annex B.

Table 6 shows the final distribution of climate finance across the different categories. Out of 12 projects, only 1 is directly related to WASH (Category A), which accounts for a negligible amount of total resources (US \$0.03m), and 1 is directly related to other water security activities (Category B), encompassing 3% of total climate finance approved to date (or US \$3.5m). Four projects were found to be indirectly related to water security (Category C), including the PPCR projects for strengthening climate resilience as well as reforestation and conservation projects that may present co-benefits. The remaining 6 projects were found to be unrelated to water (Category D), including projects for the expansion of the electricity network, the strengthening of information and early warning systems, and the development of national policy and programmes (e.g. NAPA). Most Category D projects are national-level activities, with the majority of projects in all other categories directed towards specific areas or regions, or being piloted in several communities to be expanded in the future to broader areas.

<sup>3</sup> For instance, the project “Adaptation to the effects of drought and climate change in agro-ecological zones 1 and 2” has been categorised by the CRS as “multisector aid”, so we used project documentation to be able to have more clarity on the activities funded and proceed with the categorisation. Similarly, PPCR projects have been classified as “education facilities and training” and “transport policy and administrative management”, which would be allocated to Category D, but given that these projects have some investments in flood protection, which is clearly related to water security, we have re-classified them as Category C.

**Table 6** Distribution of climate finance by project categories

Project categories	% of total funds	Funds approved (US million)	Funds disbursed (US million)	No. of projects
Water supply and sanitation activities (A)	0%	\$0.03	\$-	1
Other water-related activities (B)	3%	\$3.5	\$3.5	1
Indirectly related to water (C)	77%	\$80.9	\$3.0	4
Not related to water (D)	20%	\$20.9	\$10.5	6

Source: CFU (2014).

It should be emphasised that Table 6 only includes climate finance from the CFU. Arguably, some other activities could also be included, but these are not in the CFU database and so do not fall under the definition of climate finance used in our methodology. Compared to Mulenga (2013), we have captured all the projects funded by public and international resources with the exception of the PPCR project in the Barotse River sub-basin. The Government of Zambia is also implementing a National Water Resources Development Project (NWRDP) – funded by the World Bank – that aims to support the development of IWRM to enhance economic growth, poverty reduction, and climate resilience. This project has three key components: (i) water resources management, (ii) water resources development, and (iii) institutional support. The project was approved in 2013 (which may explain why it is not included in the CFU database) and is worth US \$50 million (C.D. Nundwe, personal communication, 27 January 2015).

Finally, GIZ is also working on ways to integrate climate change into water resources management, providing a technical assistance module worth US \$3.3 million, and setting up hydrological and meteorological information systems to develop Zambia's hydrological network (in partnership with the Department of Water Affairs). They are also developing an international stewardship programme that brings together the private sector, civil society and government stakeholders to jointly address water-related risks. This programme is funded by the Climate Investment Funds (CIF) (C. Sonderegger, personal communication, 28 January 2015).

To have a better understanding of the types of WASH and water-related projects that are financed by climate finance, the following section provides a brief description of the two projects categorised as A and B.

## 4.1 WASH and water-related activities

Given the multi-sectoral nature of climate change impacts, RoZ (2011) suggests that sector-specific interventions are unlikely to be successful in fully decreasing community vulnerability, as people not only need to become climate resilient but also have the ability to cope with general livelihood and welfare challenges (e.g. nutrition, access to basic services). In particular, the following adaptation projects have been recommended for the energy and water sectors (MoLNREP, 2014):

1. Inter-basin water transfer;
2. Development of alternative energy resources;
3. Water management;
4. Development of early warning systems;
5. Demand-side management for energy;
6. Development of efficient irrigation technologies; and
7. Development of conservation agriculture and wastewater recycling.

The ZCCN also highlighted the urgent need for an adequate framework for the management of extreme events, not only at the country level, but at the broader regional level, especially given the transboundary nature of Zambia's main surface water resources (R. Chimambu, personal communication, 28 January 2015).

Given the recommendations above, the WASH and water-related activities described below, although sector-specific, do contribute to better water management and the sustainability of livelihoods for vulnerable populations, especially within the agriculture sector. Moreover, the 'Adaptation to the effects of drought and climate change in agro-ecological zones 1 and 2' project is specifically targeted to the most vulnerable regions as described in Section 2.2).

#### 4.1.1 Project for support of the national roll-out of the Sustainable Operation and Maintenance Programme (SOMAP3) (Category A)

##### Project characteristics

<b>Funders</b>	Japan International Cooperation Agency (JICA)
<b>Focus</b>	Adaptation
<b>Financial instrument</b>	Grant
<b>Project cost</b>	US \$0.03m (JICA contribution)
<b>Approval / closing year</b>	2011 / 2016
<b>OECD CRS coding</b>	n. a.

Source: CFU (2014) and JICA (n. d.).

##### Context

Given the large proportion of the rural population that relies on unimproved sources or surface water for drinking, the Japanese government has been supporting the construction of water supply facilities since the 1980s. Since 2005, the Japanese government has also been supporting RoZ in the establishment of adequate O&M systems to ensure the sustainability of water supplies in rural areas through its "Sustainable Operation and Maintenance Programme (SOMAP)". The first phase of SOMAP was piloted in Monze and Mumbwa during 2005-2007, and given the positive effects in the reduction of the downtime of water supply systems, SOMAP2 was implemented in 4 additional districts during 2007-2010.

SOMAP has significantly contributed to the design of national O&M guidelines, which are currently embedded in the 2006-2015 National Rural Water Supply and Sanitation Programme (NRWSSP).

##### Project objectives

This project aims at supporting the national roll-out (54 districts) of SOMAP to improve both access to safe water in rural areas and the operational rate of water supply systems.



## 4.1.2 Adaptation to the effects of drought and climate change in agro-ecological zones 1 and 2 (Category B)

### Project characteristics

<b>Funders</b>	Least Developed Countries Fund (LDCF)
<b>Focus</b>	Adaptation
<b>Financial instrument</b>	Grant
<b>Project cost</b>	US \$13 million
<b>Approval / closing year</b>	2006 / 2015
<b>OECD CRS coding</b>	43010

Source: CFU (2014) and Zeidler (2013).

### Context

Many farmers in Zambia are highly vulnerable to the effects of climate change and rainfall variability, lacking the financial resources, human capacity and knowledge to adapt to unforeseen events, such as floods, droughts and dry spells.

### Project objectives

This project aims at reducing the vulnerability of communities in the agro-ecological zones 1 and 2 to climate change effects (see Figure 3), integrating adaptation activities in agricultural planning at national, district, and community levels. Table 7 shows the full list of project outcomes and outputs associated with this project.

**Table 7 List of project outcomes and outputs**

Outcomes	Outputs
<b>Outcome 1:</b> Climate change risks integrated into critical decision making processes for agricultural management at the local, sub-national and national levels	<b>Output 1.1:</b> Institutional capacity to support climate risk management in the agriculture sector at the national, district, village level developed
	<b>Output 1.2:</b> Effective EWS(s) developed to enhance preparedness and reduce climate related risks
	<b>Output 1.3:</b> Economic impact assessment of the value of climate risk information to farmers
<b>Outcome 2:</b> Agricultural productivity in the pilot sites made resilient to the anticipated impacts of climate change	<b>Output 2.1:</b> Techniques for soil and water conservation as well as soil improvement tested for their ability to improve the productivity of small-scale agriculture
	<b>Output 2.2:</b> Crop diversification practices tested for their ability to improve resilience of farmers to drought
	<b>Output 2.3:</b> Alternative livelihoods tested for their ability to diversify incomes away from maize production
	<b>Output 2.4:</b> Community-based water capacity and irrigation systems improved or developed to test their ability to raise agricultural productivity
<b>Outcome 3:</b> National fiscal, regulatory and development policy revised to promote adaptation responses in the agricultural sector	<b>Output 3.1:</b> Awareness of climate change risks and to the economic value of adaptation responses raised among policy- and decision-makers
	<b>Output 3.2:</b> National policy dialogues conducted to discuss project findings in relation to cost-effectiveness of piloted adaptation options
	<b>Output 3.3:</b> Policies that require adjustments to promote adaptation identified and reviewed

**Outcome 4:** Lessons-learned and knowledge management component developed

**Output 4.1:** Knowledge and lessons learned to support implementation of adaptation measures compiled and disseminated

Source: Zeidler (2013).

## 4.2 Future scope for water projects

Despite the strong linkages between water and climate change risks and vulnerabilities, projects seem to be focussed on enhancing food and energy security rather than water security. Although the IWRM / WE Plan was introduced in 2008, stakeholders believe that water security is still a new area, so further work on developing policy instruments, and legal frameworks and institutions is required. In addition, although there are guidelines for mainstreaming climate into development projects and national plans, there are no guidelines for mainstreaming climate specifically within the water and WASH sectors (M. Shadunka, personal communication, 26 January 2015).

Another issue in going forward is the lack of coordination across different institutions, and more importantly, the segmentation between WASH (under MoLGH) and IWRM (under MoEWD) at national and sub-national levels. This is compounded by the lack of local capacity (e.g. poor financial and accountability mechanisms; deficient implementation) and the high turnover of experts (P. Patel, C. D. Nundwe, S. Khan, C. Sonderegger, personal communications, January 2015).

Moreover, there is no clear framework to identify the areas and types of investments to be prioritised. The PPCR uses broad eligibility criteria, including reductions in vulnerabilities, accountability of implementers, and use of demand-driven approaches, among other, but there does not seem to be a similar guideline for project selection and implementation at national and sub-national levels. The Department of Water Affairs suggests that the eligibility criteria for Zambia should consider location of water bodies, vulnerability to seasonal and climate variations, patterns of water use and sensitivity of ecosystems (C. Siwale, personal communication, 24 June 2015).

Finally, on the financial side, there are concerns with encouraging the participation of the private sector, which is likely to get involved in large projects for hydropower generation, but not in WASH, where the 'public good' element is more important (S. Khan, personal communication, 27 January 2015). Commitments to the Green Climate Fund also remain uncertain, and these will only start to materialise once the structures and agreement modalities are in place (C. Sonderegger, personal communication, 28 January 2015).



## 5 Conclusions and policy recommendations

### 5.1 Conclusions

1. Zambia has significant water resources, but these are unevenly distributed, with a large number of farmers relying on rain fed, rather than irrigated agriculture. Water is viewed by the government as a strategic energy resource, due to the high level of hydropower. In terms of climate, temperatures are increasing and projected to continue to do so. Precipitation in the South of the country has witnessed a drying trend, with projections indicating that this will also continue, while the North experiences higher variability of rainfall.
2. The institutional and policy frameworks for climate change remain relatively under-developed in Zambia. The Ministry of Finance and National Planning and Ministry of Lands, Natural Resources, and Environmental Protection are the key institutions. The National Climate Change Response Strategy and the National Climate Change Policy remain unapproved by government several years after they were first developed. The Interim Inter-Ministerial Climate Change Secretariat acts as an interim structure, bringing together key ministries to support mainstreaming and coordination.
3. WASH is not currently part of the mainstreaming discussion on climate change within Zambia. While there are broad guidelines on how to mainstream climate change in national plans, there are no guidelines for doing this in the water sector. WASH lies under the Ministry of Local Government and Housing (MoLGH), while responsibility for WRM lies with the Ministry of Energy and Water Development (MoEWD). MoLGH staff are not currently attached to the IIMCCS, creating an institutional barrier to accessing finance.
4. While there is no formal climate finance structure in Zambia, climate finance activities are coordinated through MoFNP, which has taken direct operational control of the PPCR, hosts the IIMCCS, and was chosen as the National Designated Authority for the Green Climate Fund (GCF). Readiness efforts are currently underway to support access to the GCF, particularly in the choice of National Implementing Entities.
5. Zambia's pipeline of climate change projects and programmes, to date, has been largely supported by international agencies and development partners and capacity needs exist to develop ideas into tangible projects. The Pilot Programme for Climate Resilience is the largest initiative (c. US \$75 million) with a focus on agriculture and infrastructure resilience. Other smaller initiatives include REDD+ (supporting forestry) and the Least Developed Countries Fund (supporting adaptation planning and programming). There are only a small number of projects identified in the CFU that have a direct water security profile.

### 5.2 Recommendations

1. WaterAid should seek to engage with and support ongoing and emerging climate finance policy processes, such as the National Climate Change Policy (NCCP) and the draft National Climate Change Response Strategy (NCCRS), the Interim Climate Change Secretariat, and the ongoing efforts of the Pilot Programme on Climate Resilience (PPCR). By doing this, they could raise the profile of water security considerations, and in particular WASH, in the policy debate.
2. WaterAid should consider supporting the Ministry of Local Government and Housing (MoLGH), which has responsibility for WASH, to become fully engaged in the institutional climate finance structure. This may include ensuring good cooperation with the Ministry of

Energy and Water Development on water security issues, supporting MoLGH to engage with IIMCCS, and ensuring that the Ministry engages with the Green Climate Fund readiness process in Zambia to attain National Implementing Entity status.

3. WaterAid should seek to promote better understanding of the linkages between climate change and WASH, and encourage mainstreaming in this area. There is scope to establish sector guidance for the identification and development of climate change-related water projects. Participatory approaches could identify local-level as well as national-level needs, fostering collaboration in project development. Advocacy could engage with Parliamentarians, NGOs, academia and other research bodies.

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## Annex A List of CFU projects

ODA	OOF	CRS Code	Climate tag	OPM category	Project	Focus
Y		43010	N	B	Adaptation to the effects of drought and climate change in Agro-ecological Zone 1 and 2 in Zambia	Adaptation
Y		31163	Y	D	Climate Resilient Livestock Management Project	Adaptation
Y		41030	Y	C	Conservation of the Miombo Dry Forest Through the Enlargement and Improved Management of Existing Protected Areas	REDD
Y		23010 / 23040 / 23067 / 23065	N	D	Increased Access to Electricity Services	Mitigation
				D	Preparation of the National Adaptation Programme of Action (NAPA)	Adaptation
				A	Project for Support in National Roll-out of Sustainable Operation and Maintenance Programme (SOMAP 3)	Adaptation
Y		31210	Y	C	Promoting Climate Resilient Community-based Regeneration of Indigenous Forests in Zambia's Central Province	Adaptation
Y		41010	Y	D	Strengthening Climate Information and Early Warning Systems in Eastern and Southern Africa for Climate Resilient Development and Adaptation to Climate Change - Zambia	Adaptation
Y		11220 / 21010	Y	C	Strengthening Climate Resilience in Zambia	Adaptation
				C	Strengthening Climate Resilience in the Kafue Sub-Basin	Adaptation
Y		31210 / 41020	Y	D	UN-REDD national programme - Zambia	REDD
				D	Design of national Strategic Programs for Climate Resilience (SPCR) (Phase 1)	Adaptation

## Annex B List of stakeholders consulted

The following stakeholders were interviewed as part of the country case study.

ID	Name and position	Organisation	Date
1	<b>Priyanka Patel</b>	WaterAid	26 Jan 2015
2	<b>Matilda Shadunka</b> , Programme Support Manager	WaterAid	26 Jan 2015
3	<b>Stephen McCluskey</b> , Engineering Advisor Infrastructure Section	EU Delegation	26 Jan 2015
4	<b>Cecil Dulu Nundwe</b> , Water Resource Specialist	World Bank	27 Jan 2015
5	<b>Wanupu Akapelwa</b> , Deputy Head M&E	Ministry of Finance	27 Jan 2015
6	<b>Sabera Khan</b> , Director	Green Knowledge Institute, and African Carbon Credit Exchange	27 Jan 2015
7	<b>Martin Sishekanu</b> , Participatory Adaptation Specialist	Interim Inter-Ministerial Climate Change Secretariat, Min of Finance	28 Jan 2015
8	<b>Milandu Dubeka</b> , Financial Management Specialist	PPCR, Ministry of Finance	28 Jan 2015
9	<b>Robert Chimambu</b>	Zambia Climate Change Network	28 Jan 2015
10	<b>Christof Sonderegger</b> , Project Manager Water Reform Sector	GIZ	28 Jan 2015
11	<b>Lewis Bangwe</b> , Senior Agriculture Officer	AfDB	29 Jan 2015
12	<b>Ngosa H. Mpamba</b> , Ag. Director	Department of Water Affairs	29 Jan 2015
13	<b>Sepo Sitali</b> , National Expert Climate Finance	GIZ – Financial Governance in Zambia	30 Jan 2015
<b>Follow-up interviews</b>			
14	<b>Chisanga Siwale</b> , Senior Hydrologist	Department of Water Affairs	24 Jun 2015