



WWF

BRIEF

ZM

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KAFUE FLATS, ZAMBIA: WATER IN THE ECONOMY

IMPORTANCE OF THE KAFUE RIVER TO ZAMBIA

The Kafue River is the largest tributary to the Zambezi River, contributing 9 per cent of the flow^{1, 2}. The river traverses Copperbelt, Central, Southern and Lusaka provinces, where major commercial, agricultural, industrial and mining activities are concentrated. The Kafue river represents approximately 20 per cent of Zambia's total land area, and is the only basin that falls only within Zambia.

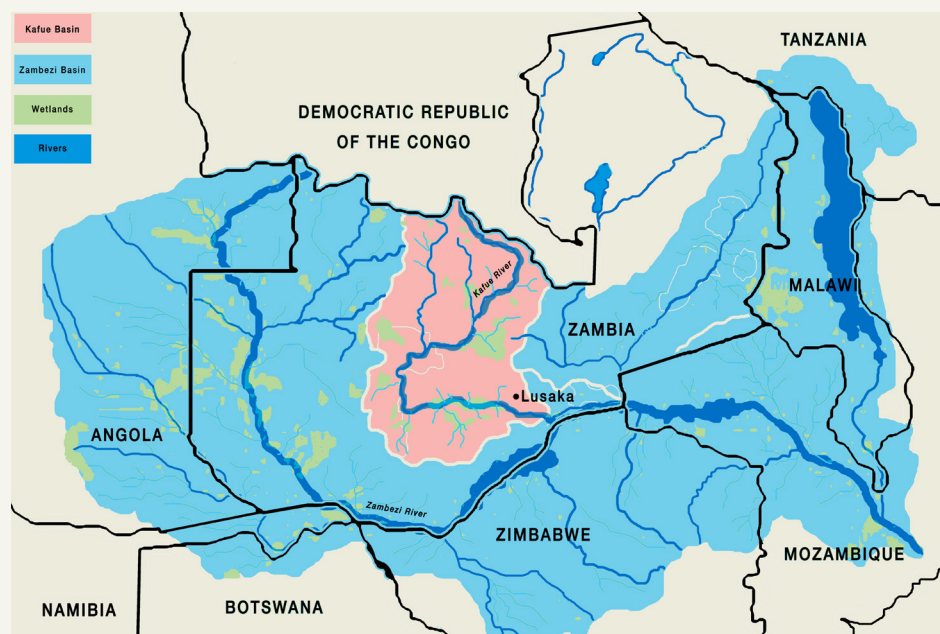


Figure 1. The Kafue and Zambezi river basins

1 Figure source: http://webworld.unesco.org/water/wwap/wwdr/wwdr3/case_studies/pdf/Zambia_National_Water_Resources_Report.pdf

2 http://siteresources.worldbank.org/INTAFRICA/Resources/Zambezi_MSIOA_-_Vol_3_-_State_of_the_Basin.pdf

LOWER KAFUE: THE BLUE HEART OF ZAMBIA'S ECONOMY

The Lower Kafue generates 50 per cent of Zambia's national hydroelectricity supply through the Kafue Gorge Dam, and 44 per cent of water used in Lusaka is drawn from the basin. It is estimated to support the livelihoods of more than 900,000 people. It is also home to an estimated 20 per cent of the national herd (290,000 cattle), grazing on the Kafue Flats near Namwala in the dry season. Once believed to be one of Zambia's most productive fisheries, the fisheries of the Kafue Flats are under threat.

This has significant livelihood impacts in rural areas in particular. Major agriculture, particularly irrigated sugar, takes place near Mazabuka. In addition to these social and economic provisions, the river supports and sustains vital ecological systems like wetlands, game reserves and bird sanctuaries. Blue Lagoon and Lochnivar national parks, and the Lower Kafue Game Management Areas draw growing numbers of tourists. Each sector plays an important role in Zambia's economy, whether directly through contribution to GDP or indirectly through employment.

The specific zones of interest of the Lower Kafue and the Kafue Flats are shown in the following figure.

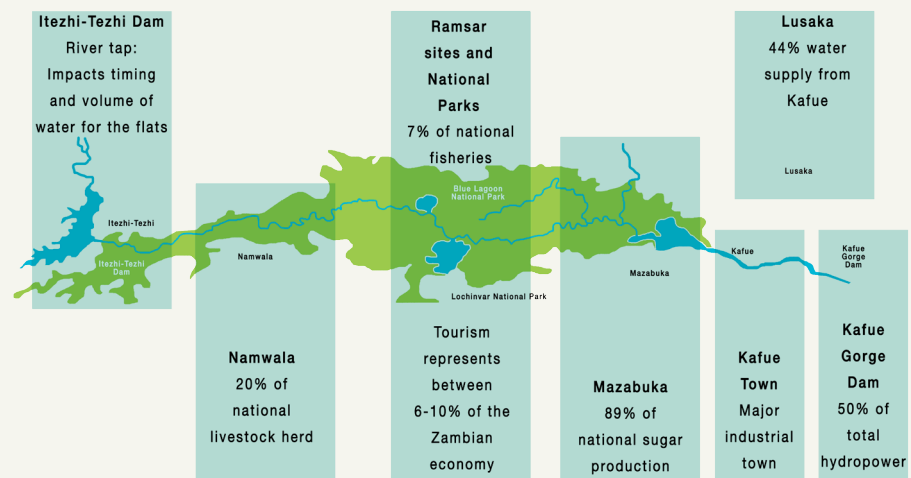


Figure 2. Specific zones of interest in the Lower Kafue Sub-Basin

WATER IS POWER

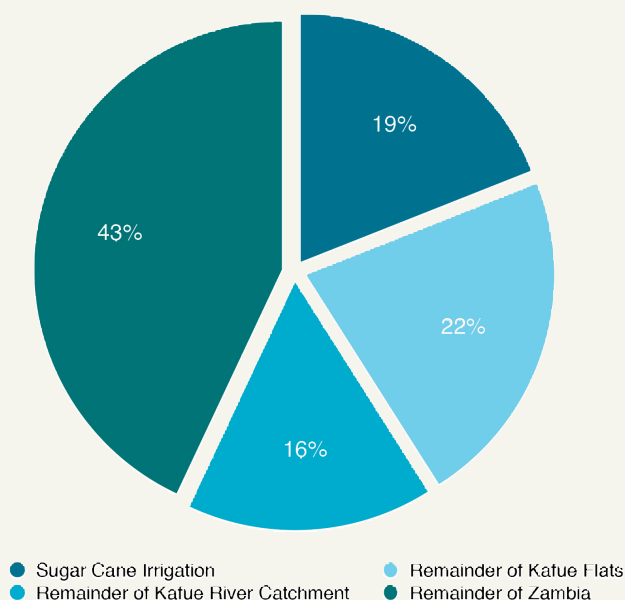
Hydropower represents 90 per cent of all electricity produced in Zambia; therefore water underpins every economic activity in Zambia that uses electricity. The Kafue Gorge Dam accounts for half of total hydropower production.

The stability of water supply to drive the turbines is of paramount importance to the country. Cheap hydropower is a main strategy of the government to drive energy-intensive development for the future.

The mines are the major consumers of electricity, accounting for 68 per cent followed by households, which use 19 per cent. The remaining electricity is consumed by agriculture and forestry (2 per cent), government and services (7 per cent) and commerce and industry (4 per cent). Mining represents approximately 80 per cent of all export earnings, and is therefore a critical sector to grow and develop for Zambia. The embedded water of hydropower links the mines into the Lower Kafue. As a result, they have a vested interest in ensuring optimal water resources management of the basin³.

However, there are challenges in meeting all of the demand of the mining sector. Zambia has a low electrification rate, with the majority of energy coming from biomass through wood or charcoal. Such reliance on biomass has detrimental effects on the environment, including deforestation and increased siltation in the Lower Kafue. This, in turn, negatively affects hydropower generation. If access to electricity is to be expanded without triggering power cuts, Zambia must increase its capacity to generate electricity. With the World Bank (2010) predicting that hydropower production in the Zambezi river basin will be severely (20-30 per cent) affected by climate change, it is clear that trade-offs will be necessary. They must be considered in an integrated and balanced manner, factoring society's need for energy, water, economic opportunity and a healthy environment.

WATER IS AGRICULTURE



Agriculture represents 73 per cent of all water withdrawn in Zambia. The estimated total irrigated area in the Kafue constitutes 81 per cent of the formal national irrigated area, with the Lower Kafue alone accounting for 64 per cent of this total. Most of this water is used to grow sugar cane⁴.

In addition to sugar, the Lower Kafue is home to the largest concentration of cattle in Zambia, the largest area of maize planted (mostly by smallholders) and barley. The floriculture and horticulture industries, albeit small but growing, are also based in the basin. Companies such as Zambeef, Zambia Breweries, Parmalat and Coca-Cola source large proportions of their inputs from the region. The agricultural and agro-processing sector offers significant opportunities to Zambia if cultivated and expanded further. These include supporting smallholder farmers and increasing the country's food security, in addition to increased employment.

Figure 3. Irrigation in Zambia

³ Central Statistics Office: Environment Statistics in Zambia – Energy, 2007

⁴ GIZ Water Abstraction Study, 2013.

WATER IS CITIES

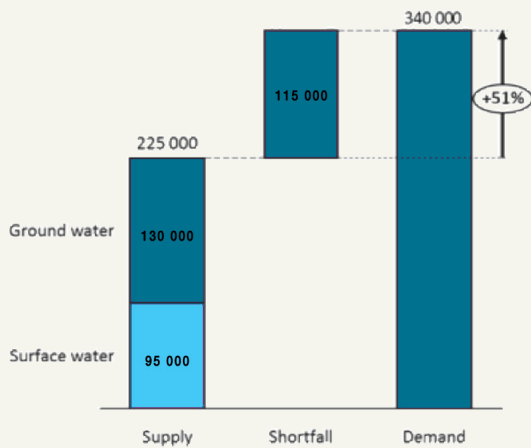


Figure 4. Demand for water in Lusaka outstrips supply

Lusaka is the capital and largest city of Zambia, as well as its chief administrative, financial, and commercial centre. It is a sprawling city located in a productive farming area with a population of over 1.7 million (13 per cent of total population) in the 2010 census, and was considered one of the fastest growing (in terms of population) cities in Africa. Its population nearly tripled in the immediate post-independence era⁵. The population of the broader province of Lusaka is 2.2 million.

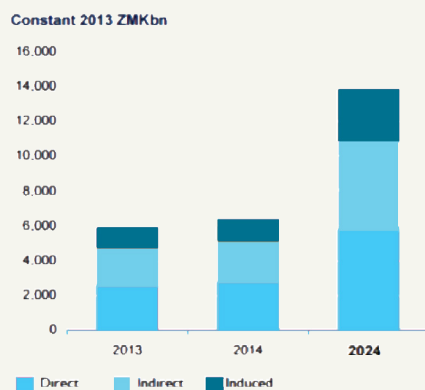
Situated within the Kafue Basin, the city is dependent on an offtake pipe from the Lower Kafue for 46 per cent of its water supply. However, a large amount of water is lost and wasted through almost 50 per cent of non-revenue water use and losses⁶. As the majority of the losses through leakage occur through pipelines, it is assumed that the majority of the losses stem from the substantial pipeline transporting water from the Kafue River to Lusaka. Domestic demand is projected to grow considerably, putting further pressure on the surface water abstraction from the Lower Kafue.

Within Lusaka, 54 per cent of households use charcoal, 44 per cent electricity, and the remainder kerosene and firewood. The demand for electricity in Lusaka, has been in excess of 100 per cent since 1993. The city consumes in excess of 1.8 Mwh, representing approximately 30 per cent of Zambia's electricity production. The majority of electricity consumption is for domestic use.

Food grown in the Kafue is largely consumed in Lusaka. As one of the closest sources of water for agriculture, a large proportion of food grown in the basin is transported to the city for consumption.

WATER IS LIVELIHOODS

ZAMBIA: TOTAL CONTRIBUTION OF TRAVEL & TOURISM TO GDP



¹ All values are in constant 2013 prices & exchange rates.

Figure 5. Direct, indirect and induced tourism GDP earnings

The Lower Kafue is home to 9 per cent of the Zambian population (1.3 million people). A large proportion of this population (73 per cent) is rural, and directly dependent on the ecological function and flow regime of the Lower Kafue River. Livelihoods are supported primarily through smallholder maize production, cattle rearing and fisheries. Each of these sectors has distinct ecological and hydrological requirements to support livelihoods in the basin. Hydrological processes such as annual flooding are critical in regenerating fish populations, while the receding flood line is an important area for grazing cattle. Both high and low water levels are critical to ensure optimal ecosystem function to support livelihoods.

⁵ <http://www.newworldencyclopedia.org/entry/Lusaka>

⁶ <http://www.lwsc.com.zm/wp-content/uploads/2014/02/LWSC-AT-GLANCE.pdf>

WATER IS WILDLIFE

The Kafue Flats is a Ramsar wetland of international importance, rich in biodiversity endemic to the region and in particular to the wetland ecosystem. The Lower Kafue is home to the endemic Kafue lechwe and congregations of key bird species such as the wattled and grey crowned crane.

The two national parks situated within the Lower Kafue have been mentioned alongside Greater Livingstone and the Northern Region in the sixth National Development Plan as key focal areas. The national parks in the basin are major tourist attractions due to their proximity to Lusaka and connectivity with Kafue National Park and Victoria Falls.

The tourism sector is one of the fastest growing economic sectors in the country. Competitive labour costs, low power tariffs and abundant water supply are mentioned as drivers of tourism investments in Zambia⁷. The total contribution of tourism represents 5.2 per cent of GDP and is forecast to double (Figure 3)⁸. Total employment through tourism currently represents 3.6 per cent of jobs in Zambia. This is projected to grow to 4.5 per cent by 2024.

The tourism potential in the Lower Kafue is fundamentally dependant on the flow regime through the biodiversity and ecological processes that the variable hydrology supports. This is especially pertinent due to the sensitive ecosystems, natural reserves and game management areas, including Lochnivar National Park and Blue Lagoon National Park. managed by a single institution alone; they require collective action. Activities may start as technical projects, such as on-site efficiency measures, but should evolve into collective action projects at basin level, bringing perspectives and activity from a range of stakeholders.



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⁷ <http://ab-network.jp/wp-content/uploads/2014/07/Tourism-Sector-Profile.pdf>

⁸ <http://www.wttc.org/-/media/files/reports/economic%20impact%20research/country%20reports/zambia2014.pdf>

THE NEED FOR COLLECTIVE ACTION AND WATER STEWARDSHIP

“Water risks cannot be managed by a single institution alone, and require collective action from a range of actors.”

Companies globally are beginning to recognize that water risks are real and require actions not only within internal value chains, but also at production sites or at basin scale. They are increasingly contributing to responsible, sustainable management of freshwater resources by looking outside of individual water use statistics and considering the broader system of the catchment. A framework has been developed by WWF to outline the steps toward collective action and better water stewardship.

There are two elements of critical importance in the Lower Kafue Sub-Basin: the timing of flows managed through Itezhi-Tezhi Dam and the allocation of water resources to major sectors. The associated water risks and opportunities cannot be managed by a single institution alone; they require collective action. Activities may start as technical projects, such as on-site efficiency measures, but should evolve into collective action projects at basin level, bringing perspectives and activity from a range of stakeholders. The adjacent figure indicates the kind of activities that can comprise a water stewardship journey.

A CALL TO ACTION AND NEXT STEPS

WWF together with key stakeholders that include civil society, private companies and government institutions have collectively come together in an effort to better understand the risks facing the Lower Kafue Sub-Basin.

The group understands that the challenges and opportunities that exist within the basin cannot be harnessed alone. Throughout this brief, selected strategies have been suggested for government as key action points. These are in addition to the action steps highlighted alongside the adjacent WWF water stewardship steps.

WWF STEWARDSHIP STEPS

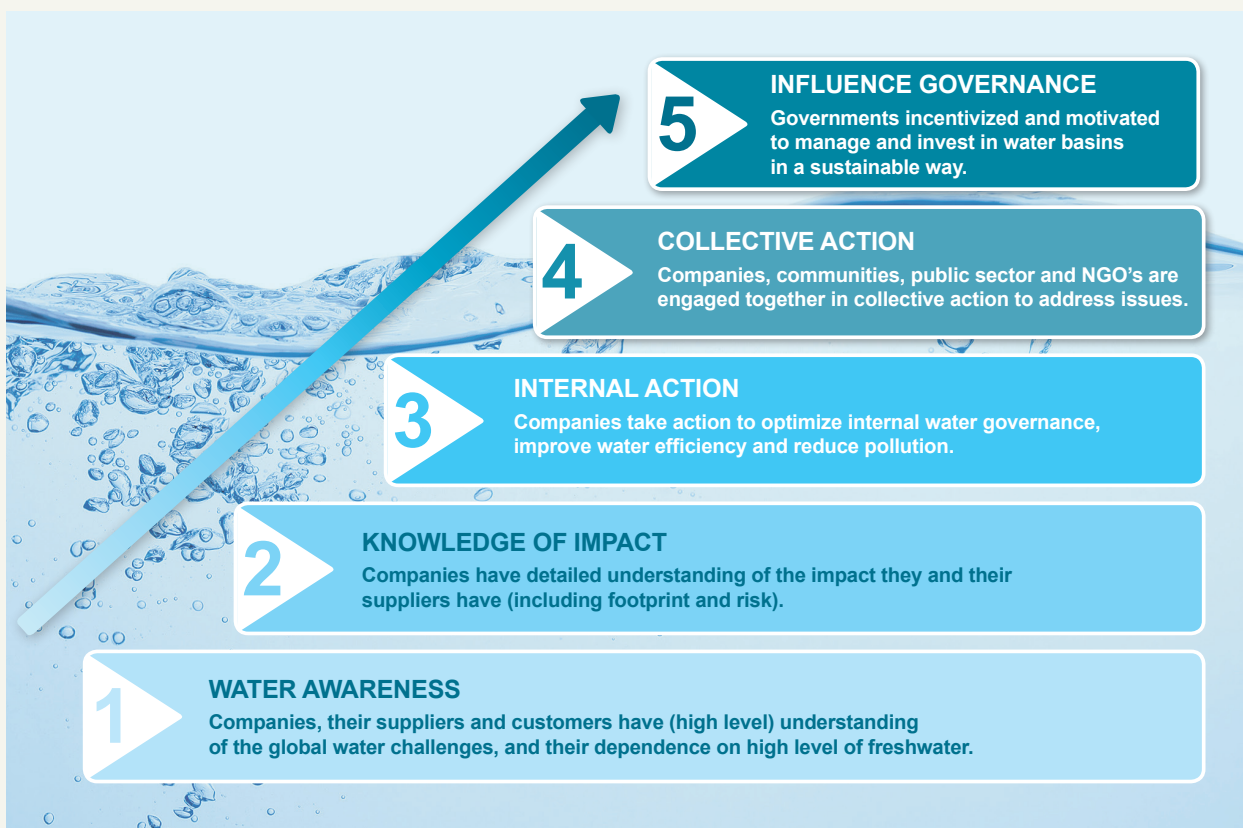


Figure 6. WWF Water Stewardship Steps ©Odellus & Co/In A Box AB

Kafue Flats in numbers

44%

The Kafue River supplies 44% of Lusaka's domestic and industrial water

50%

The Kafue Gorge dam accounts for 50% of total hydropower production in Zambia



1 MILLION

Almost 1 million people depend directly on the Kafue Flats for their livelihoods

1 CLICK

The WWF Water Risk Filter can be accessed at: <http://waterriskfilter.panda.org>



Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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