

### LIWALE WMA

Magingo WMA is located south-east of Selous Game Reserve in Liwale District, Lindi Region. It was registered in 2009 and received user rights in 2010. According to WMA's Resource Zone Management Plan its eight member villages are Mirui, Naujombo, Kimambi, Kikulyungu, Barikiwa/Chimbuko, Mlembwe, Ndapata and Mpigamiti. They are home to ca. 13,000 people, mainly of the Ngindo tribe, who under GTZ's and WWF's guidance have set aside 3,442 km<sup>2</sup> for wildlife conservation purposes.

### The PIMA project dissemination note

The Poverty and ecosystem service Impacts of Tanzania's Wildlife Management Areas (PIMA) project is an international research collaboration involving University College London, the University of Copenhagen, Imperial College London, Edinburgh University, the Tanzania Wildlife Research Institute, the UNEP World Conservation Monitoring Centre, and the Tanzania Natural Resources Forum. PIMA collected household-level information on wealth and livelihoods through surveys and wealth ranking exercises, supplemented with WMA- and village-level information on WMA governance, including revenue distribution. This information was gathered in 42 villages, both inside and outside six WMA areas, in north and south Tanzania. Wealth ranking covered over 13,500 households. Wealth, assets, and livelihood strategies from both before and after the WMA were surveyed for men and women in nearly 2,000 households (status in 2014-15 at the time of the PIMA surveys; and in 2007, based on recall). Comparing changes over time in WMA villages with similar non-WMA villages allows us to know whether changes are caused by the WMA or not (Fig 2).

### Revenues in LIWALE WMA

- WMA revenues from different types of fees are meant to be distributed according to the Wildlife Regulations 2008 and 2012 (Fig 3)
- A share of tourism revenues goes to central (*black*) and district (*white*) government
- The rest is returned to the WMA, which can keep half (*hatched*) and distributes the rest among the member villages (*light grey*)
- WWF (2014) reports annual WMA revenues spanning from USD 15,732 to 4,814 between 2008 and 2012. These revenues are shares from government-run hunting blocks. In 2013 and 2014 around USD 1,000 were distributed to each village by the District.

### Map of Liwale WMA



Fig. 1: Map of Liwale WMA (white). Based on GIS shapefiles from WWF. Compiled by J. Bluwstein

### Fact box: LIWALE WMA

Region	Lindi
Member villages	8
Population	13,000
Area	3,442 km <sup>2</sup>
Year registered	2009
Authorised Association (AA)	Magingo

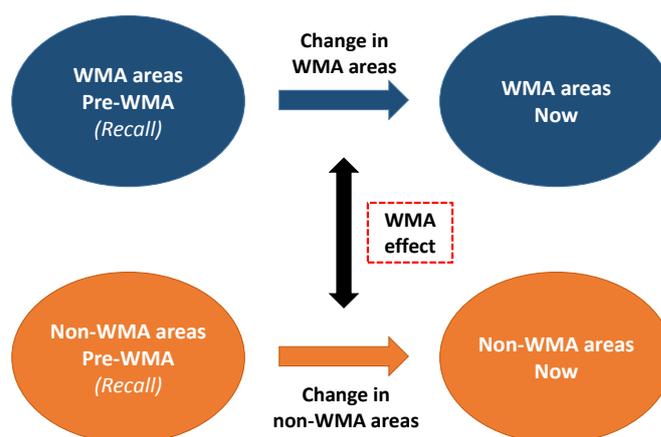


Fig. 2: How PIMA can tell what changes WMAs caused

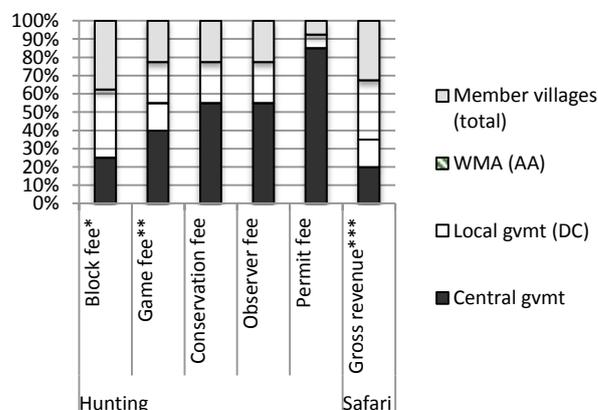


Fig. 1: allocation of total income from hunting and photographic tourism fees according to Wildlife Utilization Regulations 2008 and Wildlife Regulations 2012

\* The WMA can negotiate higher block fees, of which it can keep 100% of the premium they negotiate. \*\*The highest game fees are for elephant trophies: between US\$10,000 - US\$25,000, depending on the size. \*\*\* collected by central government through CITES, and then distributed to WMA after taxation. Fees include concession fees, bed fees, wildlife activity fees, vehicle entry fees, etc.

## Livelihood changes in Liwale WMA

### Wealth

- Based on local perceptions, Liwale households were ranked as 'very poor', 'poor', 'normal' and 'rich' for 2014 and (by recall) for 2007
- On average households have increased their wealth in 2014 compared to 2007, and in WMA villages this increase was larger than in non-WMA villages
- More households that were 'very poor' in 2007 have increased their wealth in WMA villages than in non-WMA villages (Fig 4)
- Most of the households that were 'rich' in 2007 are still 'rich' in 2014 (in both WMA and non-WMA villages)

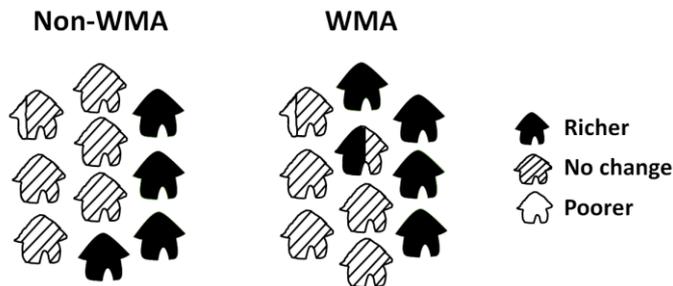


Fig. 4: Changes in wealth between 2007 and 2014. For every 10 households, approximately 4 have become richer and 0.5 poorer in non-WMA areas. In WMA areas approximately 4.5 in 10 households have become richer.

### Access to NRs and environmental income

- Access to natural resources (NRs) means the extent to which rules and regulations constrain or help households' use of firewood, poles, honey, wild foods etc for consumption or sale. 'Environmental income' means income from collection and/or sale of NRs
- In WMA and non-WMA villages, income from firewood, construction material, wild fish, timber, honey and wild vegetables and fruits has decreased between 2007 and 2014, relative to other environmental goods (Fig 5)
- WMA villages experienced a more severe decrease of environmental income from firewood and construction materials compared to non-WMA villages (Fig 5)
- Access to fishing, honey, firewood, timber, construction material and water has deteriorated over time in both WMA and non-WMA villages
- Access to construction material seems to be worse in WMA compared with non-WMA villages

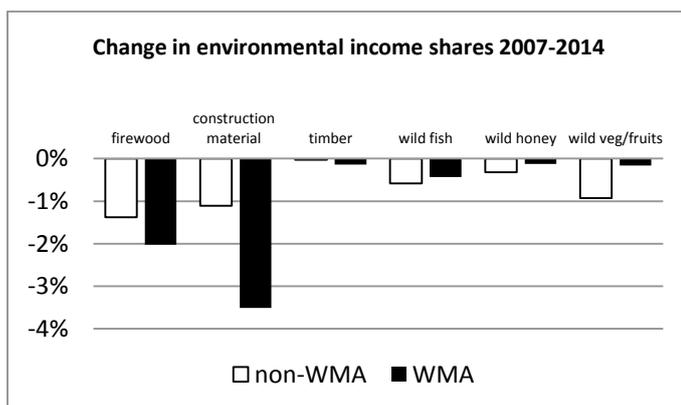


Fig. 5: Environmental income in WMA and non-WMA villages, in 2007 and 2014.

### Livelihoods

- NR-based activities (e.g. agriculture, livestock keeping, wild products) made up 79% total income of Liwale WMA households and 83% for non-WMA households. Wild products include firewood, construction materials, timber, wild fish and honey, etc. (Fig 6)
- Crop cultivation, livestock, wild products and wages contributed less to total income in 2014 than in 2007 in WMA and non-WMA villages (Fig 7)
- In WMA villages income from remittances and businesses increased, but did not offset the decrease in income from land-based activities (Fig 7)

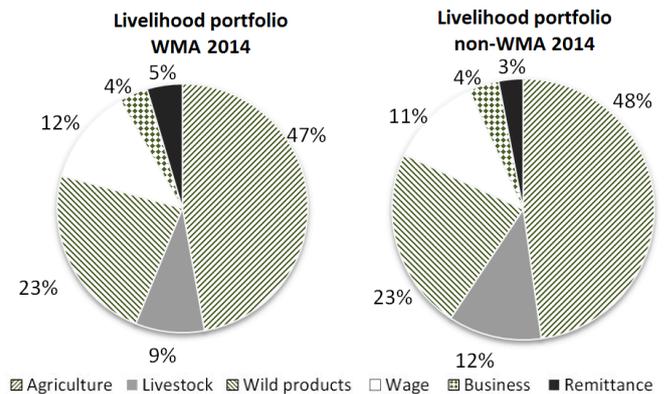


Fig. 6: Shares (%) of total income (full circle) earned from different activities in Liwale villages in 2014

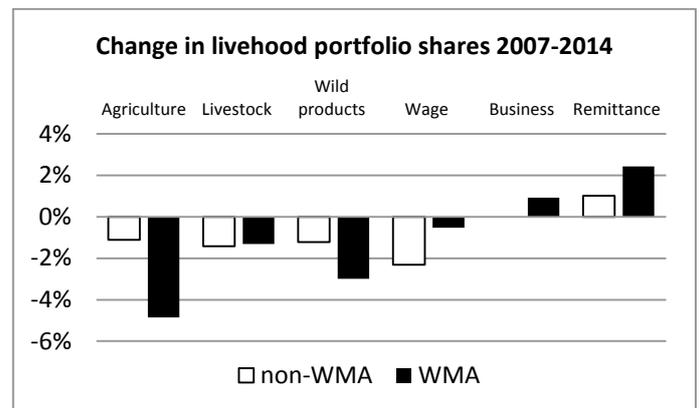


Fig. 7: Change in livelihood portfolio contributions from 2007 to 2014 in WMA and non-WMA villages

### Farmland

- Agricultural land is measured relative to household size and composition, and reported in terms of area per 'adult equivalent' (AE)<sup>1</sup>
- People in WMA villages on average have less farmland per adult-equivalent (WMA: 1.3 acres/AE, non-WMA: 1.5 acres/AE)
- In both WMA and non-WMA villages, people have more cultivation land per adult-equivalent in 2014 than in 2007

### Grazing land

- There have been no changes in access to grazing land
- Respondents report that access to grazing is no worse in WMA than in non-WMA villages

## Livestock

- The term 'livestock' includes all domestic animals but poultry. But to make it easier to compare holdings made up of different types and sizes of livestock (e.g. goats, calves, cows) PIMA converts them to the equivalent number of 'livestock units' (LUs)<sup>2</sup>
- Livestock holdings in Liwale WMA and non-WMA villages are small, on average below one livestock unit
- In WMA villages the average amount of livestock owned has decreased between 2007 and 2014, while in non-WMA villages it has on average increased fourfold
- The main reasons given for lower livestock holdings are cash needs



Fig. 9: Average value of crop loss per household in WMA and non-WMA villages. Note: Based on estimated area affected, amount of crops in the area and estimated sales value of that amount of crop .

## Human - wildlife conflict in Liwale WMA

- Human-wildlife conflict means human and livestock injury and death because of wildlife, as well as crop raids and property damage. This imposes large costs
- In both Liwale WMA and also non-WMA villages, between 6 and 10 out of 10 households have experienced crop damage (Fig 8)
- Neither WMA or non-WMA households reported changes in crop raids between 2007 and 2014
- The cost to households from crops lost to wildlife is higher on average in WMA villages (Fig 9), but not significantly so.

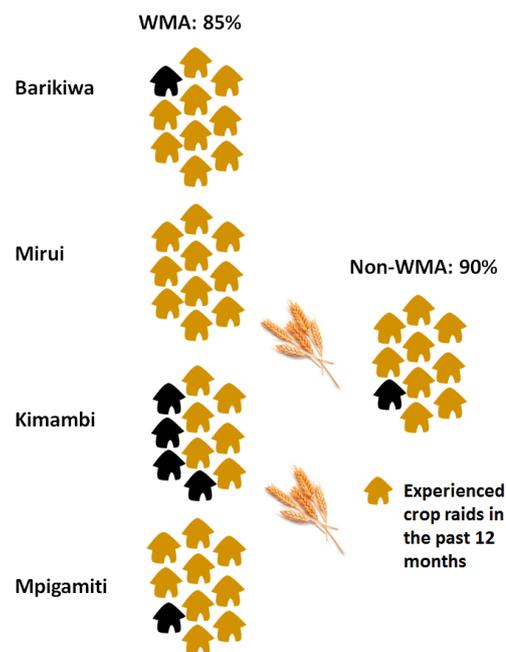


Fig. 8: Averaged proportions of households in WMA (85%) and non-WMA (90%) villages that have experienced crop damage by wildlife in the 12 months prior to survey

## Conclusion

Our wealth rank data suggests a slightly move positive development in WMA villages compared to non-WMA villages, but this cannot be attributed to WMA revenues. The difference is small and historically – before WMA implementation - there was a mix of money flows into Liwale villages, due to Selous Conservation Program in the 1990s and the overlap with government-run hunting blocks. The central government share parts of hunting revenues with the communities while the hunters and conservation NGOs donated money and gifts in kind from time to time to ensure a good relationship with local people. Towards the end of PIMA's research period the WMA had still not secured viable tourism investments to generate its own revenues. The central government and donors have continued investing in WMA villages with money and in kind contributions. In the past (1990s to 2007) Liwale villages had a resident hunting scheme for bushmeat called "Mradi kula".

The village natural resource committee was responsible for selling bushmeat in the village at affordable price. The money generated was used for different development projects in the village and for running the office. When the WMA became operational, the AA sold the resident hunting quota to generate WMA revenues. According to AA and village authorities, all locally available guns were taken away during Operation Tokomeza. The VGS now have no guns to deal with problem animals and protect residents from wildlife raiding their crops and attacking them or their property. Proximity to the Selous makes protection necessary for farmer's crops, but the WMA cannot provide this unless crop protection by WMA village game scouts is prioritised and the WMA can generate substantial revenues to compensate people for their crop losses.

## Notes

<sup>1</sup> In these findings, farm land is related to household size and composition, because men, women, and children of different ages need different amounts of food, and so the same area of land means very different levels of food provision for different households. Using a standardised system, we add up household members to a total in terms of 'adult equivalents', which makes it easier to compare household farmland relative to consumption needs.

<sup>2</sup> Just as PIMA uses a standard 'adult equivalent', we use 'livestock units' to make it easier to compare herds made up of different numbers and sizes of different kinds of livestock, and their food energy needs. One livestock unit is equal to a mature cow of 250kg. A goat or sheep, for example, is calculated as equivalent to around one-tenth of a cow.

## Acknowledgements

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This note was prepared by S. Funk on the basis of analysis of data collected under PIMA. A. Keane, M. Reinhardt Nielsen, J. Friis Lund, J. Bluwstein and K. Homewood jointly developed PIMA's socioeconomic research design, analyses and interpretation. J. Olila managed the field team. M. Msuha and N. Burgess managed the wildlife data.

## References

WWF (2014): Tanzania's Wildlife Management Areas, 2012 Status Report.



Fig. 10: Picture by J. Friis Lund



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