

ENDUIMET WMA

Enduimet WMA is located in Longido district, north-west of Mt. Kilimanjaro and extending along the Kenya border. It was granted official WMA status in 2007. Its nine member villages are: Olmolog, Sinya, Kitendeni, Tinga Tinga, Elerai, Ngereiyani, Lerang'wa, Irkaswa, and Kamwanga. Most people are Maasai pastoralists whose cattle share extensive arid and semi-arid rangelands with wildlife. Introducing limits to livestock grazing has been a contentious issue since the implementation of the WMA. So far Enduimet villages have succeeded in maintaining full access to grazing pastures. Wildlife populations migrating between Kilimanjaro and Amboseli National Park in Kenya move through Enduimet. The WMA is therefore considered important for conservation, and also has a large tourism potential. Currently there is one hunting operator, as well as two lodges and one campsite. The WMA's conflict with one lodge and tour operator remains highly contentious and entrenched in a legal battle, jeopardizing the WMA's revenue production, despite repeated local protests channelled through the District government and the MP.

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 Enduimet 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 government (*white*)
- The rest is returned to the WMA, which can keep half (*hatched*) and distributes the rest among the member villages (*light grey*)
- Fig. 4 shows the actual sums that Enduimet CBO received, spent, and shared with member villages 2007-2015. Most is spent on office and conservation expenditures, the rest is distributed to the member villages. Annual revenue for each village increased from ~ USD 1,200 in 2008 to ~ USD 8,250 in 2015.

Map of Enduimet WMA

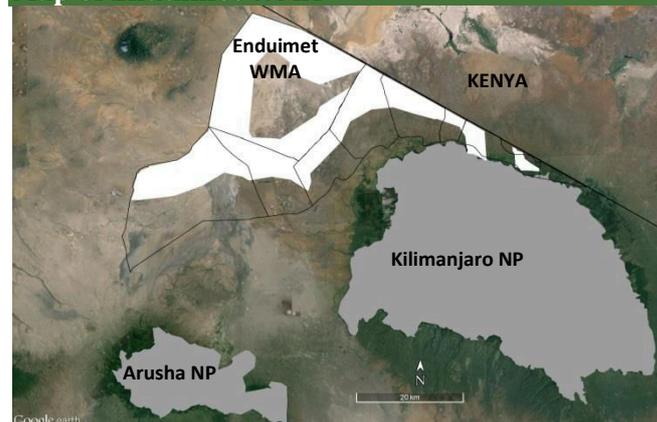


Fig. 1: Map of Enduimet WMA (white). Village borders are estimates, based on georeferenced village maps, GIS shapefiles from NBS, WWF, TANAPA. Compiled by J. Bluwstein.

Fact box: Enduimet WMA

District	Longido
Member villages	9
Population (PHC 2002)	17,585
Area	750 km ²
Year registered	2007
CBO	Enduimet
WMA Income 2014/2015 (USD)	173,422

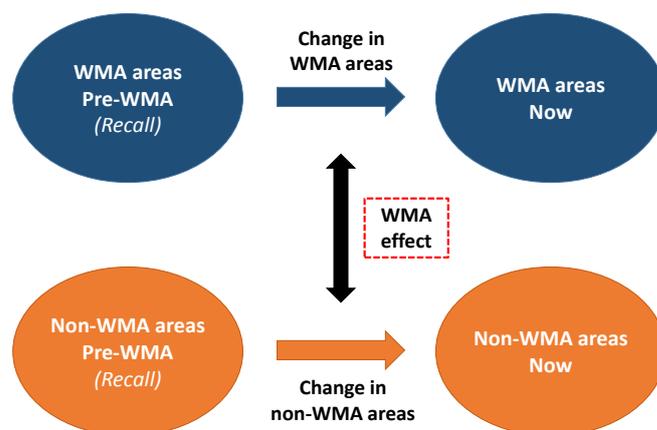


Fig. 2: How PIMA can tell what changes WMAs caused

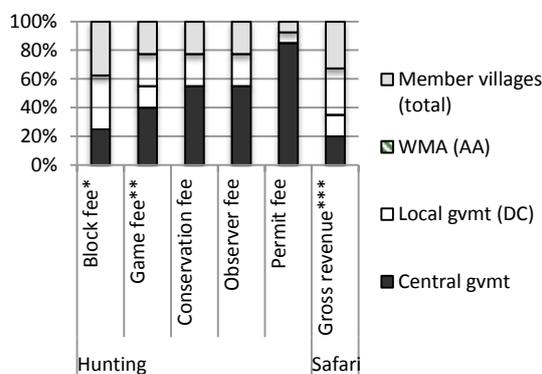


Fig. 3: allocation of total income from hunting and photographic tourism fees according to Wildlife Utilization Regulations 2008 and Wildlife Regulations 2012.

* 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\$15,000 - US\$20,000, depending on the size. ***Collected by central government through CITES, and then distributed to WMA. Fees include concession fees, bed fees, wildlife activity fees, vehicle entry fees, etc., and are negotiable between the investor and the AA.

- Sinya village joined the WMA under pressure as the last village in 2009
- Before the WMA, Sinya had a lucrative contract with a tourism operator, earning the village nearly 30,000\$ annually in 2002-2004 (Trench et al. 2009).
- Taking into account inflation and depreciation, Sinya's current share is a fraction of what it would be earning had its former contract continued. Despite contributing much land and hosting most wildlife, Sinya receives only its equal share of total WMA revenue passed to villages.
- This remains a source of considerable discontent. Tensions are made worse by the refusal of one lodge owner to make an appropriate contract with the WMA and by the failure of WMA and/or state to enforce compliance.

- WMA and non-WMA villages reported similar changes in environmental income shares for firewood (increase) and charcoal (decrease) (Fig 6)
- Income from construction material has decreased in WMA villages and increased in non-WMA villages. No use of timber, wild fish or bushmeat was reported
- Although environmental income has changed, rules of access to environmental goods seem to have stayed much the same for Enduimet WMA households (except for charcoal)

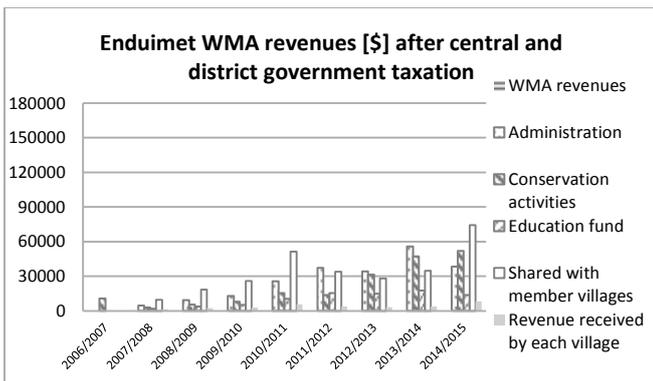


Fig. 4: WMA revenues and expenditures in Enduimet WMA. Source: Enduimet WMA Financial Report 2014. Currency exchange rate adjusted at end of each fiscal year

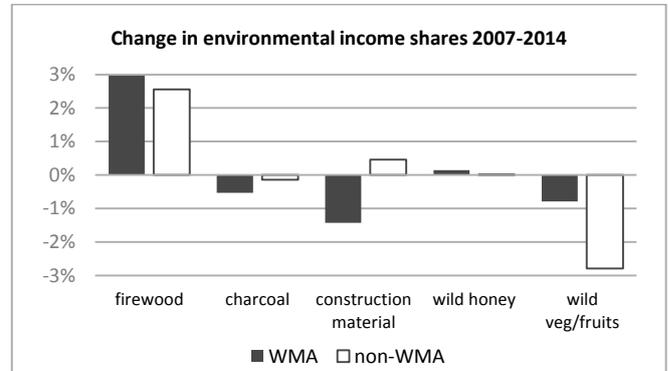


Fig. 6: Environmental income in WMA and non-WMA villages, in 2007 and 2014.

Livelihood changes in Enduimet

Wealth

- Based on local perceptions, Enduimet households were classed into 'very poor', 'poor', 'normal' and 'rich' wealth ranks for 2014 and (by recall) for 2007
- Fewer households in the 'poor' category increased their wealth between 2007 and 2014 in WMA compared to non-WMA villages
- On average, fewer households have become richer between 2007 and 2014 in WMA villages than have become richer in non-WMA villages (Fig 5).

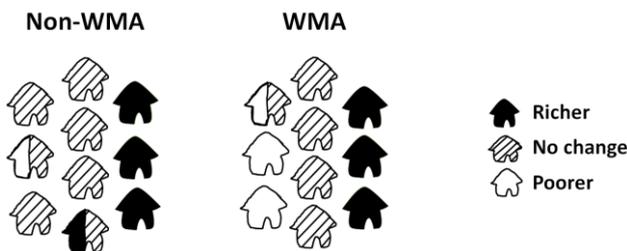


Fig. 5: Changes in wealth between 2007 and 2014.

Livelihoods

- NR-based activities (agriculture, livestock keeping, wild products) contributed 66% to total income of Enduimet WMA households and 73% in non-WMA households (Fig 7). Environmental income from wild products includes firewood, construction materials, timber, wild fish and honey, etc.
- The contribution from NR-based activities (agriculture, livestock and wild products) decreased from 2007 to 2014 in both WMA and non-WMA villages (Fig 8)
- In WMA households remittances and wages contributed more to total income in 2014 than in non-WMA households
- WMA implementation may have restricted natural resources-based livelihoods (though these still make up 2/3 of household income) encouraging off-land wage work and dependence on remittances

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

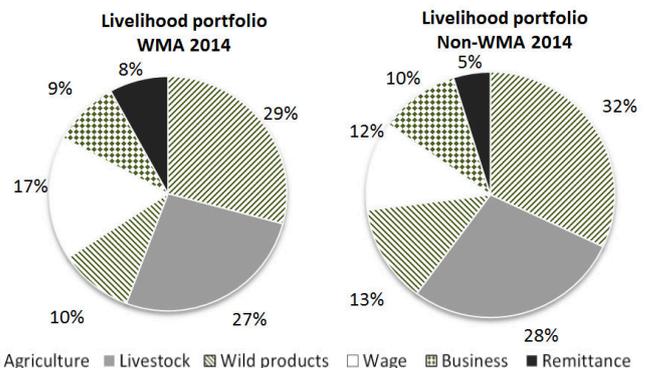


Fig. 7: Shares (%) of total income (full circle) earned from different activities in Enduimet WMA villages in 2014

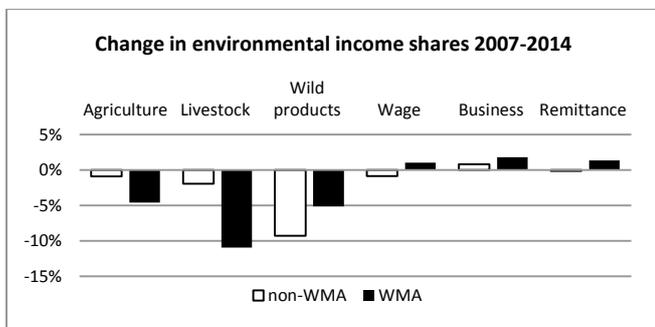


Fig. 8: Change in livelihood portfolio contributions from 2007 to 2014 in WMA and non-WMA villages

However, Enduimet WMA villages (Longido District) may have been worse affected by the 2009 drought than the non-WMA villages (mostly Monduli District) causing the decline in NR-based livelihoods for WMA households (Goldman and Riosmena 2013).

Farmland

- Agricultural land is measured relative to household size and composition, and reported in terms of area per 'adult equivalent' (AE)¹
- People in WMA and non-WMA villages on average have a similar amount of farmland per adult-equivalent (WMA: 0.65 acre/AE, non-WMA: 0.56 acre/AE)
- In WMA villages, people have slightly more land for cultivation in 2014 than they did in 2007 (0.59 acre/AE), while in non-WMA villages there is no change

Grazing land

- In Enduimet, 4 out of 10 respondents said that grazing is possible inside the WMA area in certain seasons, and 6 out of 10 said it was possible any time during the year
- 3 out of 10 respondents in Enduimet villages think that access to grazing land has become worse since 2007, but did not think that changes in access to grazing land were related to the WMA
- In non-WMA villages, 5 in every 10 respondents said that access to grazing land has become worse

Livestock

- The term 'Livestock' includes all domestic animals but poultry. 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)²
- Between 2007 and 2014 numbers of livestock units per household nearly halved on average in Enduimet villages (Fig. 9).
- Sinya suffered the biggest drop in livestock numbers. On average, households today own 72 livestock units fewer than in 2007
- On average the changes in livestock holdings are much larger in WMA than non-WMA villages. In some non-WMA villages, people hold more LUs than in 2007, in others less or the same.
- Drought was the biggest problem in Enduimet villages: half of all households had lost livestock to drought, especially the extreme drought of 2009 (see Goldman and Riosmena 2013).

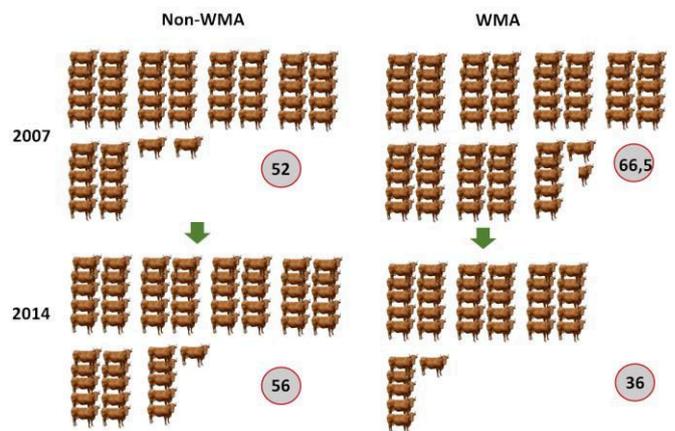


Fig. 9: Numbers of livestock units owned per household in WMA and non-WMA villages in 2007 and 2014

Human – wildlife conflict in Enduimet 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
- There are large differences between Enduimet WMA villages in the share of households that experienced crop raiding (Fig. 10)
- Kitenden village is most affected, probably wildlife moves through it between Kilimanjaro NP and Amboseli NP in Kenya
- Sinya village is very arid, and households there are mainly pastoralist (6% of total income is generated through agriculture). Only four households reported crop damage in the past 12 months
- Most respondents in both WMA and non-WMA villages reported similar or increasing levels of crop damage since 2007. A few experienced less crop damage now
- The average value of crops lost per household in the past 12 months is significantly higher in WMA than in non-WMA villages (Fig. 11)
- In WMA villages, households also face more severe predator attacks than in non-WMA villages: WMA households on average lost 1.6 livestock units, where non-WMA households on average lost 1 livestock unit in the most recent predator attack

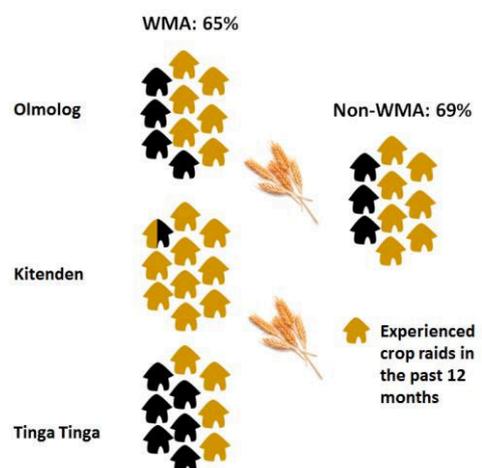


Fig. 10: Averaged shares of households in WMA (65%, excl. Sinya) and non-WMA villages (69%) that have experienced crop damage by wildlife in the 12 months prior to survey

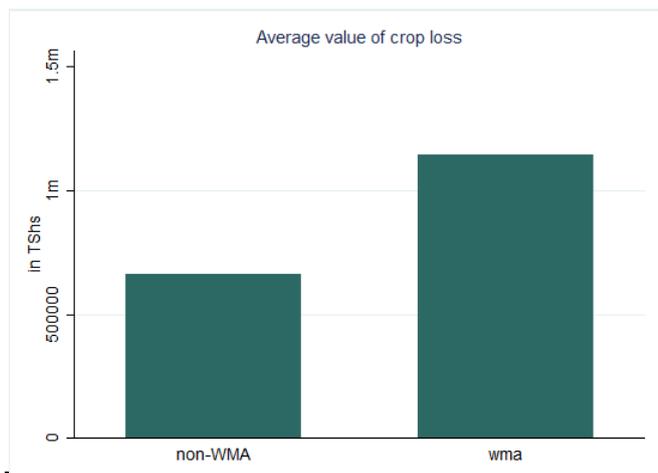


Figure 12: Photo by J. F. Lund

Fig. 11: Average value of crop loss per household in WMA and non-WMA villages. Note: Based on estimated area affected, crop yield, and estimated sales value of the harvest

Conclusion

At first sight, Enduimet WMA offers ideal conditions for community conservation, where communities can benefit from wildlife conservation by making use of the high tourism potential. However, the large share of revenue taken by central government and WMA administrations, WMA restrictions on communities' access to key resources, the lack of enforcement for non-compliant operators, and increased crop raiding all undermine this otherwise promising WMA. One village was able to make more lucrative arrangements directly with tour operators prior to the WMA. Villages contributing large areas to the WMA, and with such a high density of wildlife that no cultivation is possible, feel it is unfair they should share WMA revenue equally with villages that contribute less land, have less wildlife, and which are able to cultivate large areas outside the WMA. The impact of the 2009 drought on livestock holdings was worse than that of the WMA.

Notes

¹In 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' (AE), which makes it easier to compare household farmland relative to consumption needs.

²Just as PIMA uses a standard 'adult equivalent' (AE), 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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