

# Measuring the Success of Wildlife Utilization Interventions through Assessment of the Conservation and Livelihood Impacts over the Long Term

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## INTRODUCTION

On the one hand, wildlife trade benefits rural and urban livelihoods in terms of providing subsistence goods, services and income generation. On the other hand, wildlife trade has been placed alongside habitat loss and invasive species as the three major threats facing conservation of biodiversity and thus many livelihood provisions. Over the years, numerous wildlife access and trade regulations have been implemented in producing, transit and consumer countries, which aim to support legal and sustainable trade initiatives. The majority of these interventions are conservation-based and concerns have been raised that trade controls and resulting changes in the wildlife trade are having a negative impact on the livelihoods of those earning an income as a result of wildlife harvests, and specifically the rural poor. In some cases, these livelihood impacts may subsequently lead to inadvertent negative impacts on the very conservation objectives of the trade controls.

Although the rhetoric surrounding the need to secure basic benefits for people living close to wildlife has been expanding since the early 1990s, far less research attention has been given to the impacts on livelihoods or national economies of conservation-motivated trade controls such as those required under CITES. In 2001, the International Institute of Environment and Development (IIED) and TRAFFIC initiated a project to rectify this situation. In addition to a global overview concerning the livelihood impacts of wildlife trade regulation, IIED and TRAFFIC collaborated with TFCG to conduct a case study in the East Usambara Mountains.

Five villages in the vicinity of Amani Nature Reserve and Mtai Forest Reserve were selected for research since they provided an opportunity to research the links between wildlife trade regulations and rural livelihoods. The area is unique in terms of its biodiversity, local communities show a high degree of strong dependence upon the natural resources, and wildlife trade dynamics have been affected by numerous wildlife trade and access interventions. Research focussed on the impacts of trade regulation during the period from 1985 to 2001, and concentrated on wildlife products which are traded at local, national and international levels – timber, live animals for pet trade and dead invertebrates to specialist collectors. A variety of participatory techniques were employed in the villages to determine the importance of wildlife resources; the significance of wildlife trade as a livelihood activity compared to other activities; the impact that resource use and trade restrictions have had on local livelihoods. The villages remain anonymous in this report since information was gathered on sensitive issues including illegal trade and the purpose of the research was to understand livelihood dynamics rather than precipitate enforcement action.

This paper includes summary information regarding conservation, trade and livelihood impacts of wildlife trade interventions. The paper also highlights temporal issues related

to understanding impacts of trade regulations and access controls, and the implications for conservation and development. More details including specific recommendations can be obtained from the other papers in progress (see end of article).

#### WILDLIFE TRADE AND ACCESS REGULATIONS

The following are some major conservation-based interventions that have affected timber and live/dead animal trade dynamics in the East Usambara Mountains since 1985:

- 1986 - Temporary logging suspension via Administrative Order by Director of Forestry and Beekeeping
- 1987 - Logging from lowland forest at Kwamsambia ceased
- 1987 - East Usambara Mountains timber harvest ban
- 1989 - Pit-sawing ban in Amani Division
- 1990 - School Desk Concession permitting pit-sawing of trees felled before December 1990
- 1993 - Ban on national hardwood exports (Government Order), tree felling in catchment areas, riverbanks and valleys
- 1994 - Exports of Fischer's turaco *Tauraco fischeri* and brown-headed parrot *Poicephalus cryptoxanthus* banned
- 1994 - Revised national export quota system for live animals
- 1995 - Stricter airline company and importing countries' regulations for live animals
- 1997 - Amani Nature Reserve (ANR) gazetted
- 1998 - East Usambara Catchment Forest Project (FINNIDA assistance)
- 1999 - Increased timber license and permit fees

#### CONSERVATION, TRADE AND LIVELIHOOD IMPACTS

In summary, the following impacts have been recorded as a result of changes in trade dynamics and regulations:

##### *Conservation impacts*

- Little empirical evidence exists to show impacts of these regulations on the conservation status of species. Most biological surveys have been determining baseline -data only.
- Forest cover analyses show that large proportions of forest have been lost although recently the rate of forest loss has slowed.
- There is no evidence showing increasing volumes of harvestable, wild stands of commercially important timber species, although recent research indicates that the spread of exotic species is assisting the regeneration of indigenous timber species by creating the necessary shade,.
- According to villagers, returning forest cover has led to increases in other forest animals such as hornbills and primates. Populations of Fischer's turaco have reportedly recovered to higher levels than 1995. The availability of chameleons, most other reptiles, amphibians and invertebrates have reportedly not changed since 1990.

##### *Trade impacts*

- *Volumes:* Volumes of timber traded have declined between 1985 and 2001. For example, using estimations of weekly sales at different times of the year, one village reported approximately 41,600 planks sold in 1990 compared to only 3,640 planks sold in 2000 annually from the same village. Sales patterns of live/dead animals in the East Usambara Mountains closely match national export patterns, with both local trade and export volumes peaking in the mid-1990s. Bird sales from the East Usambara Mountains almost completely ceased after 1995, the same year that amphibians started to be traded.
- *Availability:* Timber species that have declined most in availability were the most exploited species during the 1980s and 1990s. With the exception of Fischer's Turaco *Tauraco fischeri*, trade dynamics do not seem to have been affected by changes in availability. Instead, regulatory and market changes have had the greatest impact.
- *Species:* In 1985, there was a close positive relationship between timber trade volumes and species value/price, although some lower value species are now traded in relatively high volumes. Previously undesirable tree species have also entered trade during recent years, including fruit trees; The number of live/dead animal species and classes traded has increased since 1990.
- *Prices:* The relative price of different timber and live/dead animal species has changed little between 1985 and 2001. Average timber prices have changed little in US\$ terms between 1990 and 2001, whilst live/dead animal prices have declined.

#### *Financial impacts*

- After large-scale commercial logging ceased in the mid-1980s, more local communities seemed to benefit financially in the short-term as they took advantage of direct access to the timber reserves and urban markets – albeit illegal in many cases. Previously, many outsiders were often brought in as cutters and carriers and there was limited scope for local people to be involved.
- Over the longer term, negative financial impacts to the communities living in the East Usambara Mountains have been caused by a combination of factors, including lower overall volumes of timber sold, a decrease in the number of people involved in timber trade, lower overall village incomes from the timber trade, a higher proportion of cheap timber species in trade, and both decreased size and quality of planks.
- Average incomes for timber traders in one village are currently US\$ 426 per capita, down from US\$ 10,557 in 1985. Similarly, average incomes for timber traders from another village have declined from US\$ 2,044 in 1990 to US\$ 173 per capita. Collective village incomes from the timber trade declined by 98% per cent and 88% per cent for these villages respectively.
- With respect to live/dead animals, villages in the East Usambara Mountains inadvertently benefited during the mid-1990s as market dynamics shifted demand from birds to many species of reptile and amphibian found in the area.
- Price declines, reduced demand in some species and access restrictions have caused profits to fall further since 1995. In one village, the average income from the trade in live and dead animals declined from US\$ 830 per capita in 1995 to

just US\$ 125 in 1998. At less than a quarter of the average household income, this led to many traders - both middlemen and collectors - stopping the trade altogether in 1998 and 1999. The number of traders has declined by two-thirds between 1995 and 1998, and collective village income from the live/dead animal trades has decreased by 95% per cent.

- Decreases in profits are reported to have heavily impacted collective money circulation and village tax revenues.

#### *Non-financial impacts*

- Following the timber trade harvest and export bans, there has been increased rainfall and available water as a result of regeneration of the forest. Villagers did not report any negative impacts related to water or rain. During the intense logging of the 1970 and 1980s, the montane forests were severely degraded, impacting and this had impacted on local climatic conditions. Whereas previously there had been three agricultural seasons coinciding with rainfall patterns, this had been reduced to two and the timing and duration of the rains had altered. In recent years, villagers noted that the agricultural seasons were gradually returning to normal and so food production had increased.
- Other positive, non-financial impacts include community organisations, greater conservation education and awareness on farming techniques, tree planting and energy-saving stoves; improved road conditions due to fewer heavy timber lorries; and benefits associated from the ANR including village income from tourism revenues and improved communications.
- On the other hand, reduced employment, market access and business opportunities have reduced individual and collective incomes with knock-on effects on their earnings have all resulted from changes in trade and access regulations, which in turn has had knock-on effects on ability to paying for other services and to the provision of important livelihood components, for example, purchasing medicines, paying school fees and purchasing land and housing materials.
- Trade-offs exist for many livelihood impacts. Whilst reduced forest loss has benefited agricultural output, villagers also noted that linked to the regeneration of the forest was an increase in wildlife and a subsequent increase in problem (crop raiding) animals – particularly baboons. – and this was having a negative effect on agricultural production since crops are destroyed and more time has to be spent chasing them away. However, this is only a temporary deterrent since villagers ve on subsistence agriculture means that this is not a satisfactory alternative for those who have moved to this from timber.
- Indeed positive and negative impacts exist for most of the different livelihood components. For example, while villagers complain that they can no longer access or afford timber for construction, they also note that as a result they have learned to build better, more durable superior houses from bricks.

#### TEMPORAL FACTORS ASSOCIATED WITH REGULATION

Experience from the East Usambara Mountains clearly shows a mixture of positive and negative monetary and non-monetary implications of wildlife access and trade

regulations at local, national and international levels. While the positive effects of regulation offset some negative impacts, the overall feeling in the villages studied is one of hardship since the trades started to decline. According to local perceptions, wildlife access and harvest regulations have had a greater overall impact than national and international trade regulations.

In general, the relative importance and weighting of positive and negative livelihood impacts of wildlife access and trade regulations remains a challenging task. In many cases, there is no direct or indirect financial value attached to livelihood impacts, which makes it even more difficult to rank their importance. A further difficulty lies in teasing apart the many different causal factors and cross-linked issues with respect to impacts of wildlife access and trade regulations. Market demand, access, local control and business acumen are also major factors influencing rural peoples' susceptibility to wildlife access and trade regulation.

The results of this work also highlights the need for monitoring conservation, trade and livelihood impacts over long time periods due to the varying temporal effects of regulation. Experience from the East Usambara Mountains shows how wildlife access and trade regulations not only cause varying degrees of livelihood impacts, but also produce both short-term and long-term effects. that may be felt at different time intervals after the regulatory measure is introduced In some cases, there are short-term and long-term trade-offs in the effects of trade regulation. Thus, a wildlife regulation may result in a direct, immediate livelihood impact (positive or negative), which is felt for a relatively long time. Alternatively, the impact may be only temporary, or perhaps felt some time after the regulation is introduced. The history of wildlife access and trade regulations in the East Usambara Mountains illustrates well these different scenarios.

- *Immediate, short-term positive impacts:* One of the clearest examples of an immediate, direct, positive benefit resulting from trade regulation came after the commercial felling of trees was banned from the East Usambara Mountains in 1987 leading to a. This led to the cessation of all activities by Sikh Saw Mills (SSM)., the only major sawmill in the area, whose unsustainable practices had led to a massive decline in forest cover. Since local villagers received only limited benefits during the operational period of SSM (mostly employment and firewood), they were able to benefit more directly after the ban as a result of increased open access to the forest timber resources, albeit mostly by illegal harvesting. After 1987, local villagers rapidly started to harvest and cut timber, mostly for markets in Tanga and Dar es Salaam. However, whilst local communities reaped the direct benefits in the late 1980s and early 1990s, unsustainable harvesting resulted in a continued decline in availability of the higher value timber species. Indeed, it could be argued that the unsustainable harvesting techniques used by the sawmill up to the harvest ban was a poor example to the local pit sawyers who replaced this niche thereafter. Thus, history has shown that the immediate positive impacts of this trade ban resulted in relatively short-term benefits with respect to timber trade opportunities.

- *Immediate, short-term negative impacts:* On the other hand, some villagers reported how certain negative impacts following wildlife regulations turned out to be positive in the longer-term. For example, following restricted access to timber resources, some households were forced to build their houses out of bricks instead. Whilst this was initially seen as a negative impact in terms of extra time and financial implications, their higher durability is now seen as having greater long-term benefits on the long term.
- *Delayed, long-term negative impacts:* All three villages demonstrated varying levels of illegal trade in wildlife products. Despite a whole series of trade-related regulatory measures, these trades have continued to operate informally or illegally with usually the knowledge and co-operation of the entire village. The significant profit margins provide the incentive to continue operating illegally whilst the relatively small size of most villages enables such informal trade to continue in a contained manner, largely unchecked by local government wildlife and forestry officers. It is evident that many of the villagers most sectors are involved in this illegal activity to some extent, including youth, which clearly has significant long-term social implications when large numbers of people operate in this fashion as a normal daily pattern. The precise, long-term social implications of this are unclear, however are uncertain.
- *Delayed, long-term positive impacts:* The gradual return of forest cover after the harvest ban resulted in a partial restoration of local climate patterns that are essential for subsistence agriculture. The benefits accrued to villagers in terms of improved agricultural output were felt some time after the ban, but nevertheless continue to be felt up to present times. Whilst independent studies also support both these findings, the continued decline in abundance of valued timber species and the stabilized climatic conditions do not at first appear compatible. This may be explained firstly by the fact that pit sawing techniques used since the late 1980s are less destructive to non-target species than large-scale clear felling. Secondly, the rapid growth and expansion of exotic timber species has also increased forest cover.
- *Regulation versus enforcement:* The negative deleterious livelihood impacts of gazetting Amani Nature Reserve in 1997 were reportedly not felt until at least a year after it was gazetted. This delayed impact was largely due to issues of enforcement of regulations which since strict enforcement of the ANR regulations only occurred from 1998 with the assistance of FINNIDA. Of course, both the levels of enforcement and the time delay between establishing regulatory measures and ensuring their enforcement are major factors in determining the temporal effect on peoples' livelihoods. Local regulations also serve to reinforce higher-level (national or international) regulations.

These few examples illustrate the importance of carefully evaluating and comparing positive and negative livelihood impacts over a relatively long period of time, since otherwise accrued and cumulative effects of regulation may not be fully realized. In

general, it is the longer-term and delayed livelihood impacts that are the most difficult to understand, quantify and predict. By better understanding not only the values and importance of natural resources to rural communities, but also the associated short- and long-term impacts of interventions, decision-makers will be better placed to achieve synergy between conservation and development goals.

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