Economic Incentives and Poaching of the One-Horned Indian Rhinoceros in Nepal

Overview

The one-horned Indian rhinoceros (Rhinoceros unicornis) is of global ecological importance, and also plays a key role in Nepal’s growing eco-tourism industry. The Nepalese Government and NGOs have invested heavily in conservation since the 1960s, taking a conventional approach to the protection of rhinos and their habitats. Although this has been successful, the once abundant one-horned rhino remains threatened, particularly by poaching for valuable rhino horn. Poaching continues, in part, because local people living in the ‘buffer zones’ surrounding national parks are losing more than they gain from rhino conservation. So-called ‘people-park conflicts’ have been triggered by a lack of access to natural resources (now within park boundaries), recurrent crop damage by rhinos, and insufficient local gains from eco-tourism. Faced with few other livelihood options, some marginalised groups have turned to rhino hunting.

This study examines how different policy options might reduce poaching, while at the same time alleviate poverty in the areas surrounding the Royal Chitwan National Park (RCNP). Although anti-poaching efforts will always have their place, a regulatory focus on its own is unlikely to be adequate. Instead, these measures should be combined with schemes that use park revenues to offer a variety of benefits directly to local households. Such policies would help achieve both conservation and poverty reduction objectives, and would also receive greatest local endorsement. Indeed, as long as all stakeholders are adequately and equitably supported (in particular, if alternative livelihood opportunities are given to impoverished groups of ‘would-be’ poachers), local people are more than willing to back Nepal’s rhino conservation efforts.

Study Area

Nepal’s mountainous, hilly and lowland terrain has made its economic development difficult, yet these same geographical features make it a treasure-trove of globally significant biodiversity. Biodiversity conservation began around 40 years ago, in response to the combined threats of habitat loss, population growth and poverty. Conservation was made a priority, not only to maintain healthy ecosystems but also to meet the country’s future socio-economic needs.

The main national parks in Nepal’s Terai region (bordering India) are the Royal Chitwan National Park (RCNP) and Royal Bardia National Park (RBNP). The RCNP was established in 1973, principally to conserve vulnerable species like the one-horned rhino; and it is here that the present day population of Nepal’s rhinos is concentrated. This park is one of the world’s unique conservation areas in terms of its abundance of endangered plants and animals, and its rich cultural heritage.

This policy brief is based on the PREM Working Paper, ‘Economic Incentives and Poaching of the One-Horned Indian Rhinoceros in Nepal’ by Bhim Adhikari, Duncan Knowler and Mahesh Poudyal. The full report is available online at: www.premonline.org
Issues facing policy-makers:

• What factors have influenced the level of poaching historically? Are these factors external (for example, the international price of rhino horn) or related to domestic policies (for example, the extent of anti-poaching efforts)?

• Who are the main stakeholders in the management of the one-horned rhino population? What do these stakeholders gain and lose under the current rhino management regime?

• Is community-based wildlife management liable to be more effective in combating poaching than conventional enforcement approaches?

• What alternative management options exist that incorporate incentives for communities to become involved in eradicating poaching and also help reduce poverty?

Rhino poaching

The protection of the one-horned rhino population in the RCNP has been called ‘one of the greatest conservation success stories’. Around 544 rhinos now live in and around the RCNP, compared to around 300 individuals in 1975 (two years after the RCNP was established), and only around 100 in the late 1960s. Despite this achievement, poaching continues to pose a serious threat to the park’s rhino population: 37 rhinos were poached in 2002, and 19 in 2003.

Several factors have influenced poaching levels over the last decades. Some are beyond national control. For example, there is a very high demand for rhino products in East Asia, where just one kilo of rhino horn can be sold for an estimated $20,000. Other factors are domestic in nature: the marginalisation of Nepal’s indigenous peoples has driven impoverished individuals from these communities to hunt rhino. The $150 they typically receive for poaching one rhino may seem trivial, but this can be equivalent to a whole year’s earnings.

Anti-poaching efforts also influence the numbers of rhinos killed annually. Anti-Poaching Units (APUs) were established in 1992 and have been particularly effective in controlling illegal rhino hunting (yet somewhat less so in recent years following the removal of key informants). Finally, since 1996, increased security risks created by the Maoist uprising in Nepal have limited anti-poaching efforts within the park.

Number of one-horned Indian rhinoceros poached in the Chitwan Valley, 1973 – 2003

Rhino conservation: who wins and who loses?

There are five main stakeholder groups associated with the RCNP: Government and NGOs, Tourists and non-users, Those working in tourism and related industries, Farmers and Landless/marginalized households.

The Government and NGOs (and to a certain extent non-users) represent national/international interests to conserve rhinos. As a group, they are concerned with i) protecting global biodiversity, ii) preserving Nepal’s natural heritage and iii) developing rhino-related tourism (which brings in much-needed revenue). Rhinos are a major ‘pull’ for eco-tourists visiting the RCNP, who value interacting with charismatic species. Indeed, of the 96,000 tourists that annually visit the RCNP, around 70% come mainly to see rhinos and tigers. As well as paying park entrance fees, visitors also support the local tourism industry. These first three groups of stakeholders largely benefit from rhino conservation initiatives.

Farmers and Landless/marginalized households in the ‘buffer zone’ gain less from rhino conservation. Although 50% of the RCNP’s revenues is spent on community development (school and road construction, electricity provision, skills development training etc.), the benefits of such programmes do not reach communities at the individual household level. These groups also
incur considerable losses associated with the park. Around 7% of the rhino population lives outside park boundaries, and they (along with other wildlife) damage crops and kill livestock. This presents a real problem for most ‘buffer zone’ farmers, who are not compensated by the RCNP for this damage.

When Nepal’s national parks were established, indigenous communities lost traditional rights over some of their territories. Now, landless and marginalised, they have few livelihood options. Many indigenous people illegally harvest forest products from the national park, and some have turned to rhino poaching. This group is perhaps the greatest loser in terms of Nepal’s conversation efforts, and in addition, represents a leading threat to rhinos. It is vital that their needs be addressed if both conservation and poverty reduction goals are to be achieved.

Policy recommendations

Policy-makers need to know whether community-based wildlife management would be more effective in combating rhino poaching than conventional enforcement approaches. In order to answer this question, researchers computer-simulated the outcomes of 4 hypothetical ‘policy scenarios’, predicting the interactions of various factors (such as the rhino population, poaching levels, tourist numbers, community funds and household income) over the period 2004 to 2013. Each scenario represented a different policy approach: one focused on greater anti-poaching efforts (i.e. a conventional approach), others on compensating communities for their losses and offering incentives for conservation at a household level (i.e. a community-based approach). The simulations had a limited focus: how should local communities best use park revenue funds to support themselves, and how do their choices affect the RCNP rhino population?

Alternative ‘win-win’ management options do exist. This research suggests that some further anti-poaching effort combined with a variety of household incentives for ‘buffer zone’ communities would be the most successful policy combination, and would receive the broadest local support.

Improving the efficacy of the Anti-Poaching Units will be crucial, as the lucrative international trade in rhino horn still provides strong incentives for poaching. Yet, although anti-poaching measures will always be an essential part of rhino conservation in the RCNP, they are unlikely to work alone without local community support.

Most local residents are positive about community development programmes and park revenue sharing mechanisms, and want these to continue. However, overall, policies that offer incentives at a household level are more popular amongst farming and landless communities. Household level income generation schemes would be particularly beneficial for marginalised stakeholders (indigenous, landless groups) who are in most need of assistance.

Household income can be raised through four key policy changes:

- Improved opportunities for local employment in the tourism sector: Currently only a small percentage of stakeholders gain directly from rhino-related tourism. Most residents support a policy scenario in which 5-15% of all jobs in the tourism industry are subsidised to local people.

- Direct financial support in the form of ‘micro-credit’ schemes: All stakeholders would value the introduction of such schemes. They are the most popular policy option for non-farming communities, who felt that 1000-2000 Nepalese rupees ($15-30) per recipient household would significantly raise their socio-economic status.

- ‘Income in-kind’ opportunities in the form of greater access to the RCNP’s natural resources: Access to the park’s resources is
Important for all ‘buffer zone’ communities. Local people already rely on the RCNP for many subsistence needs (fuel, animal food, building materials etc.), and would appreciate at least 7 days annual access to the park.

- Increased income from agriculture through compensation for damaged crops: Most stakeholders (particularly farmers) are in favour of some compensation for rhino-associated crop damages (a 10-25% compensation level may be adequate). However, farmers don’t prioritise high crop compensation at the detriment of other beneficial policy measures. This is important because crop compensation policies are somewhat difficult to implement in practice.

Finally, it is important to mention that these policy changes can only address domestic factors relating to rhino conservation. Variations in the international price of rhino horn, for example, are beyond national control. Equally, other important issues affecting the success of anti-poaching efforts (such as the ongoing Maoist uprising) may be more complex to resolve.

PREM: In brief

The Poverty Reduction and Environmental Management (PREM) programme aims to deepen and broaden the exposure of economic researchers and policy advisors in Africa and Asia to the theory and methods of natural resource management and environmental economics. It is anticipated that this will encourage policy changes that address both poverty reduction and sustainable environmental management.

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