

Financial Investments in protected areas: Methodology, Findings, Caveats

1. Methodology

1.1. Estimating Financing to Conservation and Protected Areas at the Global Level

A literature review summarizing the results of previous efforts to estimate global conservation spending was assembled by Almeida Dohrn Consultaria. It presents different sources from the literature that attempt to quantify protected area, conservation, or biodiversity related spending at the global level. As part of this review we also sought to understand the levels of current funding to different models of conservation such as indigenous and local conservation efforts vs. government-managed protected areas.

To calculate a US\$/hectare/year estimate, the team relied on methods and analysis used in *Waldron et al. (2013)*¹. Accordingly, US\$17 billion could be traced to “official sources” including government, international NGOs, and multilateral and bilateral donors; the remaining US\$4.5 billion (marked unknown) likely stems from about US\$2.5 billion in public spending by Mediterranean countries and US\$2 billion attributable to community contributions. To obtain a global estimate for public spending, community contributions (US\$2 billion) were subtracted from US\$21.5 billion and the resulting value was divided by the total land area included in Waldron’s study.²

1.2 Estimating Community Investments in Conservation in Low and Middle-Income Countries

Case-study data on community investments (financial and labor) in forestry, wildlife tourism, and protected area buffer zone management were collated by Almeida Dohrn Consultaria to provide a proxy on community investment in conservation activities in low and middle-income countries. In all, 14 new case studies with estimates for Asia, Africa, and Latin America were identified. To assess the reliability of the emerging dataset, the team used figures from “Who Conserves the World’s Forest” (2004), and the data derived from the 15 case studies used to develop that analysis (for a total of 29 case studies from 14 countries).

Case study data was disaggregated as follows: total used area for the community forestry or conservation enterprise (ha), initial investment (US\$), re-investment (US\$), and indirect investments (e.g. labor costs) (US\$). To estimate a total dollar value for community investments in LMICs, annual investment data from the 2004 and current analyses were tabulated, excluding statistical outliers (by removing data points that were outside of the first and third quartiles; the upper end and lower end was determined to be \$32.14/ha/year and \$16.14/hectare/year respectively) from the case studies, and then identified the minimum, median, mean, and maximum dollar value from the range of case study data points. Numbers reported in these case studies and used in this analysis were taken at face value and were not adjusted for inflation.

To obtain total aggregate contributions for different tenure regimes, community US\$/hectare/year values were multiplied against seven different estimates of area under local or indigenous management contained in RRI’s forest and land area tenure databases. The seven area estimates are as follows:

1. RRI’s Low and Middle Income Countries (LMIC) Forest Tenure Data: Category 2
2. RRI’s LMIC Forest Tenure Data: Category 3
3. RRI’s LMIC Forest Tenure Data: Category 2 + Category 3
4. RRI’s LMIC Land Tenure Data: Category 2

5. RRI's LMIC Land Tenure Data: Category 3
6. RRI's LMIC Land Tenure Data: Category 2 + 3
7. World Database on Protected Areas (WDPA) recorded value of protected areas known to be governed by Indigenous Peoples and/or local communities³

Typology of lands officially recognized by national governments:

RRI Tenure Tracking Forest Database categorization:

- **Category 2: Forest land designated by governments for Indigenous Peoples and local communities:** Ownership of forest land under this category remains claimed by the state but some rights have been recognized by governments on a conditional basis for Indigenous Peoples and local communities. While rights-holders have some level of “control” exercised through management and/or exclusion rights over forests, they lack the full legal means to ensure the security of their claims to forests (i.e. having all three rights to exclude, to due process and compensation, and to retain rights for an unlimited duration).⁴
- **Category 3: Forest land owned by Indigenous Peoples and local communities:** Forests are considered to be “owned” where communities have full legal rights to secure their claims to forests, defined in this analysis as areas where community tenure is unlimited in duration; they have the legal right to exclude outsiders from using their resources; and they are entitled to due process and compensation in the face of potential extinguishment by the state of some or all of their rights. In this analysis, alienation rights are not considered to be essential for full community ownership.⁵

RRI Tenure Tracking Land Database categorization:

- **Category 2: Land that is designated for Indigenous Peoples and local communities:** Land in this category is governed under tenure regimes that recognize some rights on a conditional basis for Indigenous Peoples and local communities. While rights-holders have some level of “control” exercised through use, management, and/or exclusion rights over land, they lack the full legal means to secure their claims to those lands (i.e. they do not have all rights required under the “ownership” designation: the right to exclude, to due process and compensation, and to retain rights for an unlimited duration).⁶
- **Category 3: Land that is owned by Indigenous Peoples and local communities:** Land is considered to be “owned” where states have formally recognized that communities have certain rights which strengthen the security of their claims to land. It is defined in this analysis as an area where community tenure is unlimited in duration; communities have the legal right to exclude outsiders from using their resources; and communities are entitled to due process and compensation in the face of potential extinguishment by the state of some or all of their rights. In this analysis, alienation rights are not considered to be essential for community ownership.⁷

A note on adding Category 2 and 3 categories of land and forest data: these categories were summed based on the assumption that conservation activities still occur in areas where communities have less strong rights (Category 2) although community investment most likely occurs at a higher rate in areas where communities own their land (Category 3).

1.3 Estimate of Conservation Investments by “official sources” within countries

To estimate conservation investment within countries, the team replicated the methodology developed by Waldron and colleagues (2013). Three primary funding categories from “official sources” were identified, including domestic government contributions, private foundations, and bilateral and multilateral contributions. The six countries included in this analysis were Brazil, Kenya, India, Tanzania, Peru, and Indonesia. Except for Peru, data for the selected countries was collated from primary and secondary sources, as described below. For Peru, the team used data aggregated by Lam (2017),⁸ using Waldron’s methodology. Again, estimates derived from this analysis were not adjusted for inflation.

Domestic Contributions

National data was collected online from a variety of sources, including public agency reports from ministries or departments responsible for the environment, natural resources, forestry, and the treasury. The team used secondary sources from relevant research to complement official data and where available, multi-year data was collected and annualized.

Private Foundations

Publicly available data was collected online from the Foundation Center database and Maps platform, which hold data for philanthropic organizations worldwide. The team collected data on projects committed for Indonesia, Kenya, Tanzania, India, and Brazil for the years 2010-2016, including information about donor and recipient organizations. Only projects labeled as “Wildlife Biodiversity” or “Forest Preservation” were included in the estimate. Duplicates were removed and the resulting data were annualized.

Bilateral and Multilateral Contributions

Data on bilateral and multilateral contributions was collected using the AidData database (Version 3.1), which includes information on project title, description, the project start and end date, funding source, committed amount, and disbursed amount. To extract data on conservation funding in the selected countries (excluding Peru) AidData was included in this analysis if: it aligned with the same time period of identified domestic government investment, up to the most recently available year: 2013; AidData coded the entries with the Coalesced Purpose Name “Bio-diversity” and/or “Biosphere protection;” and if reviewed project descriptions indicated that funds were used in conservation or protection area specific sectors, citing common keywords such as “biodiversity,” “wildlife,” “park,” “protected area,” “natural resource management,” and any species-targeted wildlife conservation (e.g. elephant, tiger, orangutan, bird sanctuaries, etc.).

Calculation of US\$/hectare investment by “official sources” within countries

To calculate the US\$/hectare invested by official sources within each of the six countries included in the sample, the team summed each of the annualized data points identified in sources for government, multilateral and bilateral donors, and private foundations. Next, the sum was divided by the total land area designated as “protected” in the country. The designated protected area in

each of the countries in the sample was identified in the January 2018 update of the World Database of Protected Areas.⁹

2. Results

Table 2.1: Case Studies of Community Investment (used as a proxy for investment in conservation activities)

Region	Country	Community & Location	Market Segment	ANNUAL total investment/ha (used area)	Daily Community Investment (US \$/day/ha)
Latin America	Brazil	Ambé (PA) - Tapajós National Forest	Timber (High, medium, and low value) (Logging)	102.43*	3.02
Latin America	Brazil	ACAF (Community Agriculture and Forest Extraction Association) (AM) - Boa Vista do Ramos municipality	Timber (High, medium, and low value) (Logging)	511.63*	1.40
Latin America	Brazil	Mamirauá (AM) - Mamirauá Sustainable Development Reserve	Timber (High, medium, and low value) (Logging and boards)	731.95*	2.01
Latin America	Mexico	States of Campeche, Chiapas, Chihuahua, Durango, Guerrero, Jalisco, México, Michoacán, Oaxaca, Puebla, Quintana Roo, and Veracruz (30 CFEs/ case studies)	Timber	260.58*	0.71
Latin America	Honduras	ULAKUAS Agroforestry Cooperative (CAIFUL), (Río Plátano Biosphere Reserve, Honduras)	Timber	3.63	0.01
Latin America	Nicaragua	Indigenous Mayangna of Awas Tingni (North Atlantic Autonomous Region, Nicaragua)	Timber	100.62*	0.28
Africa	Cameroon	Analyses of the financial, social, and environmental performances of community forests in Cameroon	Timber	0.22	0.00
Africa	Kenya	Kalama	Tourism	31.17	0.09
Africa	Kenya	West Gate Community Conservancy	Tourism and livestock market	358.43*	0.98

Africa	Botswana	Review of 17 active community based organizations (CBOs) who responded to questions on revenues and expenditures	-	n.d	n.d
Asia	Philippines	Ngan, Panansalan, Pagsabangan Forest Resources Development Cooperative (NPPFRDC)	Logging industry (smartwood-certified)	5.45	0.01
Asia	Vietnam	Thuy Yen Thuong Community Forestry	The timber from Thuy Yen Thuong was exempt from duty because it was only approved for sale within the village boundaries	15.56	0.04
Asia	Nepal	Bardia National Park Buffer Zone	-	17.49	0.05
Asia	Nepal	Shey Phoksundo National Park Buffer Zone	-	2.59	0.01
Latin America	Guatemala	Maya Biosphere Reserve	-	0.41	0.00
Latin America	Mexico	El Balcon	-	13.8	0.04
Latin America	Mexico	Oaxaca	-	2	0.01
Latin America	Honduras	COAHLAHL	-	3.12	0.07
Latin America	Bolivia	Agroforest	-	3.51	0.01
Africa	Cameroon	Ngola Achip	-	3.17	0.01
Africa	Gambia	Bulanjor	-	0.55	0.00
Africa	Gambia	Dobo, Batending, Kafuta, Kandonk, Kanuma	-	1.96	0.01
Africa	Nepal	Chaubisi	-	13.39	0.04
Asia	Nepal	Bel Juice	-	10.3	0.03
Asia	Philippines	Ngan Panansalan Pagsabangan Forest	-	0.24	0.00
Asia	India	Veljhar and Umarvaonachik joint forest management (JFM)	-	14.12	0.04
Asia	India	Rampuri and Patiakuwa JFM	-	15.52	0.04

Asia	India	Bapda and Kaidipada JFM	-	25.75	0.07
Asia	India	Falwa and Bajujinawada JFM	-	1.84	0.01

Note: Outliers not included in this analysis are marked with a *. These values were excluded in the analysis because they fell outside the third quartile of estimates and represent highly commercial community forests in Brazil and Mexico that harvest and process finished timber products as well as a large community conservancy in Kenya.

Table 2.2: Estimate of investment per hectare in conservation by “official sources” in six countries

Country	Annual Investment by “official sources” (US\$)	Total Protected Land Area (hectares) ¹⁰	Investment/total protected land area (US\$/ha)
Brazil	\$153,272,973 ^{11,12}	246,849,300	\$0.62
India	\$73,876,818 ^{13,14}	18,264,700	\$4.04
Indonesia	\$208,450,000 ^{15,16}	22,625,000	\$9.21
Kenya	\$78,167,80 ^{17,18}	7,254,400	\$10.78
Peru	\$104,318,571 ¹⁹	27,619,200	\$3.78
Tanzania	\$102,023,918 ^{20,21}	36,133,500	\$2.82

Table 2.3: Estimates of community investment in conservation per hectare per year in LMICs

Community Investment Range (\$/ha/yr)	Min	Median	Mean	Max
	\$0.22	\$3.57	\$8.45	\$31.17

Table 2.4: Estimate of annual community investment in conservation in LMICs (\$/yr)

Area	Total annual investment (based on min unit investment value)	Total annual investment (based on max unit rate of investment)	Total annual investment (based on mean unit rate of investment)	Total annual investment (based on median unit rate of investment)
Forest designated for Local Communities and Indigenous Peoples (2013)	21,553,350.55	3,011,845,386.53	815,998,847.02	344,927,509.96
Forest owned by Local Communities and Indigenous Peoples (2013)	85,086,881.60	11,889,962,593.52	3,221,345,893.38	1,361,681,847.68

Land designated for Local Communities and Indigenous Peoples (2013)	87,781,608.10	12,266,521,197.01	3,323,366,862.87	1,404,806,711.28
Land owned by Local Communities and Indigenous Peoples (2013)	197,663,096.55	27,621,259,351.62	7,483,423,911.77	3,163,287,283.16
Forest designated for and owned by Local Communities and Indigenous Peoples (2013)	106,640,232.15	14,901,807,980.05	4,037,344,740.40	1,706,609,357.64
Land designated for and owned by Local Communities and Indigenous Peoples (2013)	285,444,704.65	39,887,780,548.63	10,806,790,774.64	4,568,093,994.43

3. Caveats

3.1 Lack of available data on conservation investment

One-year snapshots may not be representative of overall financing trends

For Brazil, India, and Tanzania, financing data was only available for a one-year period. These one-year “snapshots” may not be representative of overall trends in contributions from governments, donors, and foundations.

Data from 1999 continues to be cited in most recent research on this topic

Many of the estimates of worldwide investment toward conservation in the literature are based on dated analyses (James, Green, & Paine, 1999²², Balmford, Gaston, Blyth, James, & Kapos, 2003²³, Mansourian & Dudley, 2008²⁴). Literature published more recently (Hein, Miller, & de Groot, 2013²⁵, Waldron et al., 2013²⁶) on this topic references data that was collected in 1999 or refers to more recent publications that cite these same 1999 data sets.

Lack of data from international NGOs

Data on investment from international NGOs, which represent a significant source of financing in species rich countries (The Nature Conservancy, World Wildlife Fund, Conservation International, Wildlife Conservation Society) was excluded from this analysis due to lack of publicly available sources. For TNC, WWF, CI, and WCS, investment data was reported at a regional level (e.g. Sub-Saharan Africa) and could not be traced to country-level activities.

Lack of data from private investors

Private investment was also not included in the country-level estimates due to a lack of data. Private investment has been quantified at the global level, but is not transparent in the countries included in the sample.

Lack of data on tourism's contributions to conservation

Investments in protected areas that stem from tourism were similarly left out as there was a lack of data. Some data was identified for individual protected areas but the sample was too small to extrapolate a country-wide estimate.

3.2 Over and Under Estimates

3.2.1 Overestimates

No established and consistent definition of what constitutes spending on biodiversity conservation

The countries included in the sample categorize different activities under “conservation” or “environmental” that may not directly affect biodiversity or protected areas. The team narrowed the activity criteria for the generated estimates as much as possible, though in some instances it was not possible to strictly identify investment contributing to biodiversity or protected areas. Thus, the values may be inflated as they could include activities such as “waste management” or “land restoration.”

In addition, the value calculated for global investment in conservation by official sources/per hectare is likely overestimated as Waldron, et al. (2013) took the approach of counting spending devoted to the conservation of biodiversity in the strict sense of genes, species, and ecosystems and state that much of the spending categorized as being targeted toward biodiversity do not meet these criteria. Waldron et al. (2013) also collected data on spending likely to have a relatively direct impact on biodiversity conservation.

Bias in community conservation initiatives

Estimates provided for community investment are most likely high due to bias in community conservation initiatives profiled in the available case studies (often seen as “flagship” or the most successful examples). However, we were only able to identify the 29 case studies included in this analysis in the literature.

Equal investment across community-managed land

These calculations assume that communities invest equally across all hectares they have access to, which is unlikely as some of the land they manage is used for housing, rangeland, agriculture, etc.

3.2.2. Underestimates

Lack of data on investment by “official sources”

Estimates of investment by official sources provided for the six countries in this analysis are likely underestimated due to the lack of data on investment that coming from multiple sources that were

excluded due to a lack of data from international NGOs, domestic governments, tourism, the private sector, and foundations.

The value included in this analysis for investment in protected areas per hectare by official sources (US\$7.06) is likely underestimated as it is well-documented that the overall trend in investment in protected areas has increased since Balmford et al.'s study was completed in 2003. However, this estimate represents the best available data.

Monetary inflation

Monetary values included in this analysis were shown as they were reported in the literature and in the aggregated case studies and were not adjusted for inflation.



¹ Anthony Waldron, Arne O. Mooers, Daniel C. Miller, Nate Nibbelink, David Redding, Tyler S. Kuhn, J. Timmons Roberts, John L. Gittleman, Targeting global conservation funding, Proceedings of the National Academy of Sciences Jul 2013, 110 (29) 12144-12148; DOI:10.1073/pnas.1221370110

² Ibid.

³ IUCN, 2013. "Protected Planet Report 2012". https://cmsdata.iucn.org/downloads/protected_planet_report.pdf page 32.

⁴ Rights and Resources Initiative, 2014. "What Future for Reform?". https://rightsandresources.org/en/publication/what-future-for-reform/#.Wzljc_kzqUk

⁵ Ibid.

⁶ Rights and Resources Initiative, 2015. "Who Owns the World's Land?". <https://rightsandresources.org/en/publication/whoownstheland/#.WzjofkzqUk>

⁷ Ibid.

⁸ Nakamura Lam, K.S. (2017). *Mapping the funding landscape for Biodiversity Conservation in Peru*. (Unpublished master's thesis). University of Illinois at Urbana-Champaign, Urbana, Illinois.

⁹ Protected Planet, World Database of Protected Areas, <https://www.protectedplanet.net/c/monthly-updates/2018/january-2018-update-of-the-wdpa>

¹⁰ Ibid.

¹¹ Government of Brazil: Office of the President, 2017. "Diario Oficial: N° 62-A, quinta-feira, 30 de março de 2017" <http://pesquisa.in.gov.br/imprensa/jsp/visualiza/index.jsp?data=30/03/2017&jornal=1000&pagina=2&totalArquivos=8>

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- ¹² Tierney, Michael J., Daniel L. Nielson, Darren G. Hawkins, J. Timmons Roberts, Michael G. Findley, Ryan M. Powers, Bradley Parks, Sven E. Wilson, and Robert L. Hicks. 2011. More Dollars than Sense: Refining Our Knowledge of Development Finance Using AidData. *World Development* 39 (11): 1891-1906. Updated in: AidData. 2017. AidDataCore_ResearchRelease_Level1_v3.1 Research Releases dataset. Williamsburg, VA: AidData. <http://aiddata.org/datasets>.
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- ¹⁴ Tierney, Michael J., Daniel L. Nielson, Darren G. Hawkins, J. Timmons Roberts, Michael G. Findley, Ryan M. Powers, Bradley Parks, Sven E. Wilson, and Robert L. Hicks. 2011. More Dollars than Sense: Refining Our Knowledge of Development Finance Using AidData. *World Development* 39 (11): 1891-1906. Updated in: AidData. 2017. AidDataCore_ResearchRelease_Level1_v3.1 Research Releases dataset. Williamsburg, VA: AidData. <http://aiddata.org/datasets>.
- ¹⁵ Indonesian Biodiversity Strategy and Action Plan 2015-2020, <https://www.cbd.int/doc/world/id/id-nbsap-v3-en.pdf>
- ¹⁶ Tierney, Michael J., Daniel L. Nielson, Darren G. Hawkins, J. Timmons Roberts, Michael G. Findley, Ryan M. Powers, Bradley Parks, Sven E. Wilson, and Robert L. Hicks. 2011. More Dollars than Sense: Refining Our Knowledge of Development Finance Using AidData. *World Development* 39 (11): 1891-1906. Updated in: AidData. 2017. AidDataCore_ResearchRelease_Level1_v3.1 Research Releases dataset. Williamsburg, VA: AidData. <http://aiddata.org/datasets>.
- ¹⁷ Government of Kenya, Category Budget: 2018-2007." The National Treasury. Accessed March 27, 2018. <http://www.treasury.go.ke/budget.html>.
- ¹⁸ Tierney, Michael J., Daniel L. Nielson, Darren G. Hawkins, J. Timmons Roberts, Michael G. Findley, Ryan M. Powers, Bradley Parks, Sven E. Wilson, and Robert L. Hicks. 2011. More Dollars than Sense: Refining Our Knowledge of Development Finance Using AidData. *World Development* 39 (11): 1891-1906. Updated in: AidData. 2017. AidDataCore_ResearchRelease_Level1_v3.1 Research Releases dataset. Williamsburg, VA: AidData. <http://aiddata.org/datasets>.
- ¹⁹ Nakamura, K. 2017. "Mapping the Fundamental Landscape for Biodiversity Conservation in Peru." Annex A: Table A.2, page 59.
- ²⁰ Jepson, P. et al. 2015. A Framework for Protected Area Asset Management.
- ²¹ Tierney, Michael J., Daniel L. Nielson, Darren G. Hawkins, J. Timmons Roberts, Michael G. Findley, Ryan M. Powers, Bradley Parks, Sven E. Wilson, and Robert L. Hicks. 2011. More Dollars than Sense: Refining Our Knowledge of Development Finance Using AidData. *World Development* 39 (11): 1891-1906. Updated in: AidData. 2017. AidDataCore_ResearchRelease_Level1_v3.1 Research Releases dataset. Williamsburg, VA: AidData. <http://aiddata.org/datasets>.
- ²² James, A.N., Green, M.J.B. and Paine, J.R. 1999. A Global Review of Protected Area Budgets and Staffing. WCMC – World Conservation Press, Cambridge, UK. Vi+ 46pp.
- ²³ Balmford, Andrew, Kevin J. Gaston, Simon Blyth, Alex James, and Val Kapos. 2003. Global variation in terrestrial conservation costs, conservation benefits and unmet conservation needs. *PNAS*, 100(3): 1046–1050.
- ²⁴ Mansourian, Stephanie & Dudley, Nigel. (2008). Public Funds to Protected Areas. 10.13140/RG.2.1.3869.5286.
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- ²⁶ Waldron et al. 2013. Targeting global conservation funding to limit immediate biodiversity declines. *PNAS*, vol. 110, no. 29. Available at: <http://www.pnas.org/content/pnas/110/29/12144.full.pdf>.