

Ex post evaluation – Bolivia



Sector: Biodiversity (CRS 4103000)
Project: Cooperative Programme – Sectoral Programme for Biodiversity and Protected Areas (BIAP II, BMZ No. 2004 66 458)*
Implementing agency: Servicio Nacional de Areas Protegidas (SERNAP)



Ex post evaluation report: 2018

		Project A (Planned)	Project A (Actual)
Investment costs (total)	EUR million	5.10	5.81
Counterpart contribution	EUR million	1.10	1.30
Funding	EUR million	0.00	0.00
of which BMZ budget funds	EUR million	4.00	4.51

*) Random sample 2016

Summary: The protected areas (PAs) of Amoro, Apolobamba, Cotapata, Madidi, Manuripi, Pilón Lajas, Sajama, Tariquía and TIPNIS were supported with the FC contribution. Measures included improvement of infrastructure and equipment for the PAs, in addition to support for projects in the PAs and neighbouring areas to promote sustainable resource management and alternative income opportunities (agroforestry business, organic farming, eco-tourism), and safeguard ownership and usage rights with land titling and land use planning. The programme was implemented in parallel to the “Management of Nature Conservation Areas and their Buffer Zones” (MAPZA) German Technical Cooperation project.

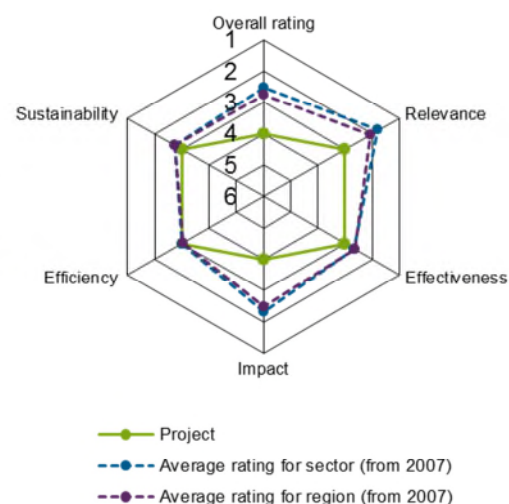
Development objectives: The project was an open programme intended to contribute towards conserving biodiversity, restoring environmental services and reducing greenhouse gas emissions (impact). The aim was for this overarching objective to be achieved by instituting effective protected area management and creating additional, environmentally friendly sources of income for the population in the project area (outcome).

Target group: The target group was the population living in and around Bolivia’s PAs (around 8,000 families within the PAs alone, of whom 42% are indigenous). These include groups that still have some traditional societal structures and economic systems, along with population groups that have immigrated (“colonos”). A global benefit is gained from the reduction in CO₂.

Overall rating: 4

Rationale: The project was initially relevant to the extent that it supported the Bolivian government’s efforts to agree upon poverty alleviation and environmental protection. In recent years, it increasingly lost political support, as economic development came to the fore. Today, 60-70% of the income creation measures still generate income for the families involved, though the protected area plans need to be updated and the staff in the PAs must be increased to guarantee effective protection. Nonetheless, the project contributes to global climate protection by saving 57.9 megatonnes of CO₂ emissions per year. The Bolivian government bears a larger proportion of the PAs’ costs at present than it did at the start of the project, although the PAs’ financial sustainability is not yet secure.

Highlights: In 2017, the Bolivian government overturned the TIPNIS National Park’s “untouchable” status (declared as such in 2011), in order to build a national highway through the FC-supported PA. In addition, it approved the extraction of oil and gas reserves in PAs in 2015, in addition to a dam in the Madidi PA, which has the highest level of biodiversity in the world.



Rating according to DAC criteria

Overall rating: 4

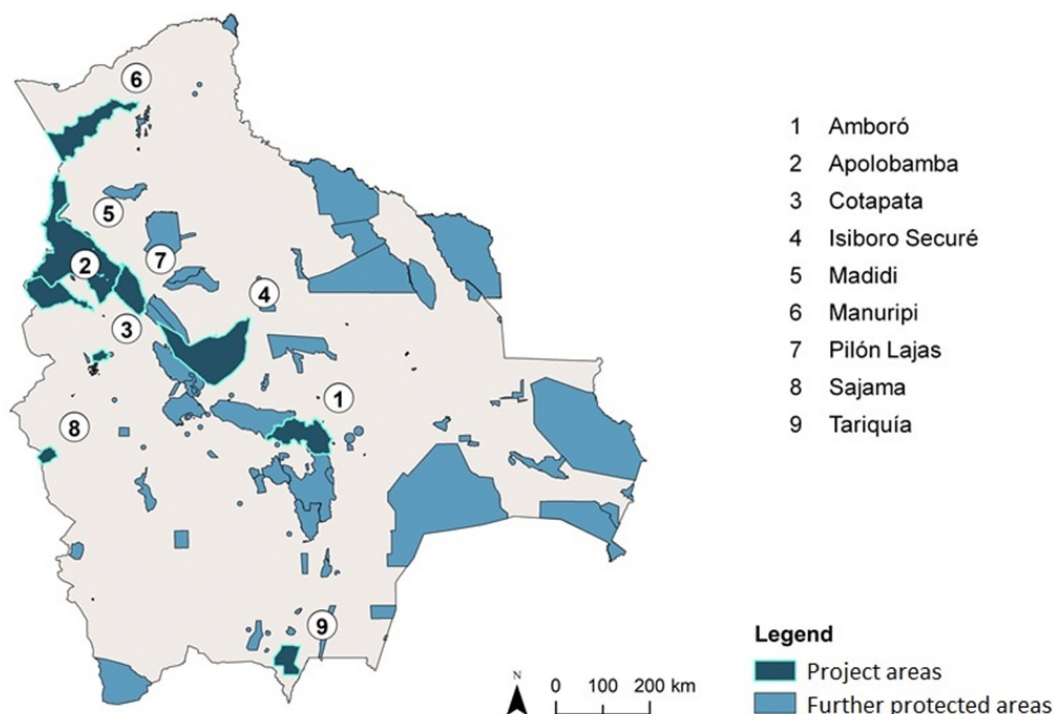
Ratings:

Relevance	3
Effectiveness	3
Efficiency	3
Impact	4
Sustainability	3

Relevance

The project was active in an area of tension in development policy: how can poverty be alleviated (including in the short term) while safeguarding natural resources at the same time? Poor countries and the low-income sections of their populations are frequently reliant on natural resources for their incomes, while the international community wishes to promote conservation of tropical forests. Simultaneously conserving the forest and boosting the income of residents in an environmentally sound manner would, at least theoretically, create a situation where all parties benefit. Consequently, the Biodiversity and Protected Areas II (BIAP II) project set out to achieve this double aim. The protected areas (PAs) were spread throughout the country. The decision was made at the programme appraisal to initially concentrate on the West of the country close to the capital city of La Paz, and to establish models there that would then be replicable in the other PAs.

Protected areas (“project areas”) supported in the project



Internally prepared. Data sources: project and protected areas. UNEP-WCMC and IUCN (2017), Protected Planet: The World Database on Protected Areas (WDPA) [Online], 06/2017, Cambridge, UK: UNEP-WCMC and IUCN. Available at www.protectedplanet.net

At the time of the project’s planning, the double aim of conservation and sustainable use of the natural resources for income support was highly relevant. Two-thirds of the total of 22 national natural conservation areas in Bolivia were established in the 1990s. Once these were set up, 0.5% percent of the Bolivian pop-

ulation of 6.9 million people found themselves overnight in a nature conservation area with strong restrictions affecting usage. The project was relevant to this extent and the measures designed were fundamentally suitable as a means of compensating for the lost income with income creation measures, calming popular discontent, creating identification with the PAs and contributing to conservation at the same time by supporting the PAs.

The project is still in line with the objectives of the Bolivian government today, which supports economic development in harmony with nature as per the constitution, Law No. 071 “of the Rights of Mother Earth” and Law No. 300 “of Mother Earth and Holistic Development for Living Well” (Spanish: *La Ley Marco de la Madre Tierra y Desarrollo Integral para vivir bien*). Despite the environmentally friendly political discourse, economic development has taken considerable precedence over conservation in recent years.

The Bolivian President Evo Morales has repeatedly accused industrialised Western nations of driving a form of “ecological neocolonialism” in Bolivia which is only interested in conserving nature but not in the economic development of the low-income population of the parks. In 2017, the Bolivian government overturned the TIPNIS National Park’s “untouchable” status (declared as such in 2011), in order to build a national highway through the FC-supported protected area. In addition, it approved the extraction of oil and gas reserves in protected areas in 2015, in addition to a dam in the Madidi protected area, which has the highest level of biodiversity in the world.

The causal relationships used as a basis for the project’s design were sound under the assumption of continued political support and a sufficient income base. The grant funds (input) financed buildings, furniture and equipment for protected area management and land titling. They also financed agricultural production resources and buildings (outputs). Instituting effective protected area management and increasing agricultural yields in the project area (outcome) were intended to make a contribution to conserving biodiversity, restoring environmental services and reducing greenhouse gas emissions (impact).

The project involved the target group to a large degree in park protection, demarcation and the income creation measures, and closely coordinated the activities with the executing agency SERNAP and the other donors in the environment sector with regular meetings. However, the change of government in 2006 resulted in political changes in the country. The government took protests by the target group in the TIPNIS nature conservation area against the construction of a national highway through the PA as a threat to stability, on the grounds that they repeatedly led to protest marches to La Paz by indigenous peoples and road blockades. At the same time, the PA’s integrity is increasingly threatened by large-scale government projects, such as the planned dam in the Madidi National Park and a law adopted in 2015 which permits oil and gas extraction in PAs. This has resulted in successive donors withdrawing from the environment sector.

In terms of the key development policy question of keeping conservation and poverty alleviation in agreement, the double aim made sense and was promising at the time of the project’s design. However, other approaches to conservation have a higher chance of succeeding today due to the change in the general political conditions, such as closer guidance for large-scale infrastructure projects concerning environmental practices.

Relevance rating: 3

Effectiveness

The project objectives (outcomes) were to institute effective protected area management and create additional, environmentally friendly sources of income for the local population living in the PAs and their buffer zones. Attainment of the project’s objectives is measured by the following indicators:

Indicator	Ex post evaluation
(1) Properly implementing the specifications for the protected areas in question resulting from the management and work plans.	Partially achieved. Management plans were developed and implemented in line with the funding levels at hand. However, under the policies of the Plurinational State of Bolivia, the plans would have to be revised in 2017 and adjusted to the new constitution, Law No. 071 of the Rights of Mother Earth and Law No. 300 of Mother Earth

	<p>and Holistic Development for Living Well (“<i>vivir bien</i>”). This has not yet occurred.</p> <p>As of 2017, Bolivia has a total of 307 park rangers who work in the 22 nature conservation areas. There were 124 buildings constructed for them in the PAs, of which six administrative buildings and 14 ranger stations were financed in the park with the support of BIAP II and the preceding BIAP I project. This led to an increase in the presence of rangers in the parks.</p>
(2) Consolidation and improved management of the areas placed under protection.	Partially achieved. Nine PAs with an area of 5,789,000 ha directly benefited from improved management under the project; 13 other PAs with an area of 17 million ha benefited indirectly as improved management plans were also extended to other PAs that were not supported in the project.
(3) Reduced number of fires each month and smaller population exposed to forest fires in the project area.	Impossible to state due to a lack of historical data.
(4) Effective monitoring & follow-up.	Partially achieved. Sajama: 100,000 ha. (six park rangers patrolling the park.) Cotapata: 40,000 ha. (nine park rangers patrolling the park; sanction against gold mine polluting the river) Madidi: 1,896,000 ha. (26 park rangers patrolling the park.)
(5) Land use is monitored in line with the land use system.	Partially achieved. There are nine local divisions of INRA that monitor the PAs (albeit under financial constraints). Altogether, there are disputes over 3% of the plots of land to which title was assigned (3.2 million ha), since their boundaries have not been accepted by all parties.
(6) Existing infrastructure is used.	Achieved. Infrastructure is used by the park management and is in good condition. A refuge hut was heavily damaged by an unusually high flood in 2013. The impact of climate change is apparent in the unusually high water level, according to an informant.
(7) The balance of operating costs uncovered by the areas’ own revenues is met from other funding sources.	Not achieved. Reliance on external funding sources is high (63% in 2016). At present, running up to 2018, the EU sectoral programme PAPS BIO (potentially continuing in 2018) and DANIDA are the largest individual external funding sources for the Bolivian protected area system. However, government funding has increased from 1% in 2005 to 20% in 2016. Additionally, tourism revenue covers around 23% of SERNAP’s budget in total. Among the PAs that were supported, tourism made up 42% of Madidi’s revenues, 29% of Sajama’s and 21% of TIPNIS’ in 2016. The other PAs either have no revenue system or collect unofficial admission fees, as in the case of the residents along popular trails in Cotapata. Even though Madidi and other parks generate large revenues, these are too low on average to cover the operating costs of the nine parks that were supported.
(8) The PAs are demarcated.	Achieved. INRA demarcated almost the entire habitable area of

	<p>Bolivia between 1996 and 2017 (106 million ha or 97% of the country's total area of 109 million ha)</p> <p>(1) There is a legal foothold in Law 3545 of 2006 and the INRA Law 1715.</p> <p>(2) Three categories of territories were demarcated:</p> <ul style="list-style-type: none"> a. Individual plots b. Collective plots c. Indigenous territories and protected areas <p>Only 34% (or EUR 269,000) of the EUR 790,000 in costs envisaged within the project was used due to political delays. Nevertheless, the objective of demarcation was achieved from today's perspective.</p>
(9) Dispute resolution mechanism is institutionalised and in use.	<p>Achieved. Dispute resolution mechanism is in place at the INRA body. In 2017, disputes remained unresolved in 3% of plots titled. The Cotapata nature conservation area has the largest number of unresolved disputes.</p>
(10) Income growth for the target group (EUR/year).	<p>Partially achieved. In the case of the Tomarapi Ecologde in Sajama National Park, the project continues to generate EUR 208 per month for each of the 24 families involved in the project. In the case of vicuña wool processing, the project only produces around EUR 12 per family per month. On the other hand, Café Madidi in the Madidi National Park (production, marketing to Café Alexander chain and local café) generates around EUR 338 per month for the 120 participating families. The projects benefit 47% of the families in the Sajama National Park (94 of 200 families) and 22% in Madidi (150 of 670). Altogether, around 18% of the families living the PAs still benefit today from the income creation measures.¹</p>

Three of the ten total indicators were achieved. These relate to land titling, demarcation and use of the park infrastructure. Six of the indicators were partially achieved; this included the quality of protected area management needing to improve, though a lack of data made it impossible to provide information about a reduction in fires. The effectiveness of the project falls short of expectations, but the positive results do dominate as explained below.

With regard to protected area management, there are detailed management plans, although these need to be revised as per more recent policies. Park patrols are carried out, yet there is still a need for waste disposal, monitoring of fauna and flora, and penalties. Plants and animal species are only monitored in the Madidi PA. In Madidi, illegal production tools (chainsaws, etc.) are being confiscated and a trial resulting from illegal killing of protected pumas by Chinese traffickers is being held.

The infrastructure created as part of the project is predominantly in use. Buildings, solar energy system, motorcycles, mattresses, boats and outboard motors, GPS and radio devices are used and maintained as intended. But problems do exist when batteries need to be replaced, such as on the solar energy system, and funds for this are lacking. A small hydroelectric power plant is not in use.

According to the project objective, environmentally sound sources of income for the population living in the protected areas and buffer zones were intended to contribute to environmental protection and create alternative sources of income. Between 60% and 70% of the measures initiated in the project still today

¹ These assumptions are based on extrapolating the random sample to the other projects. During implementation, around 30% of in-park resident families benefited from the income creation measures, according to the consultant. Given that around 60% of projects visited generate revenue, this produces an extrapolated average of 18%.

generate an income for around 18% of the park residents. For the Tomarapi Ecolodge, these income effects amount to EUR 156 for each of the 24 families who jointly run the small hotel. This means that in the Tomarapi Ecolodge's case, the project has brought significant income increases for the villagers. Under the assumption that villagers on average earned half of the Bolivian minimum wage before the measures, the Tomarapi Ecolodge doubled the income of the families involved and decreased the need for logging or poaching in the National Park. However, this is not true for inhabitants and nearby residents who were not directly involved in the project.

The organisation FUNDESAP (Fundación para el Desarrollo del Sistema Nacional de Áreas Protegidas), which was intended to manage a fund for sustainable financing of the protected areas, continues to exist and support the protected area system, albeit to a minor degree and depending on donors still active in the sector. The fund's intended purpose of putting the protected area system on a sustainable financial footing ceased to exist in 2007, as the Bolivian government decided to transfer this function to the Ministry of Environment.

On a national level, 97% of the land titling was completed. Funds for this measure were reduced from EUR 790,000 to EUR 269,000, meaning that only 34% of the funds planned for this measure were used. Other income creation measures were financed from the remaining funds. In total, EUR 1.1 million was invested in infrastructure and equipment for the PAs, along with EUR 1.5 million to support local and nearby residents. In addition, EUR 68,000 was directed to supporting the local and nearby resident committees, EUR 16,000 to improving the income situation of the PAs, EUR 1.3 million to consulting and fund management (FUNDESAP), and EUR 270,000 to overlapping activities.

Effectiveness rating: 3

Efficiency

The start of the project was delayed by a year and its conclusion was delayed by four years. As a result of the political shift in 2006, the funds had to be transferred to SERNAP (Ministry of Environment). The necessary ministerial decisions were delayed by several years. The delay to the project's conclusion coincided with increasing costs for the consultant, which were comparatively high, making up a quarter of the project costs.

The allocation efficiency is rated as unsatisfactory, as the protected area system lacks political support and the relevant institutions have been weakened. Nonetheless, four years after the project concluded, the park infrastructure is still in use, there is title to almost all of the country's land, and between 60% and 70% of the income creation measures continue to create income for the target population.

In the case of the "income creation measures for the local population", both their income effects and their profitability (taking account of investment costs) are of interest. In terms of the income effect, the investment costs are excluded if the investments were financed from the FC grant. The theoretical average annual return for the Ecolodge, measured by the internal rate of return (IRR), is above expectations at more than 5%, whereas the production project for vicuña wool has a negative IRR.

Overall, the efficiency is still rated as satisfactory, as the investments have created an improved relationship between the PA residents and the PA, with protection of the areas having improved and alternative income opportunities having been created for the target group.

Efficiency rating: 3

Impact

The project's ultimate objective was to make a contribution to conserving biodiversity, restoring environmental services and reducing greenhouse gas emissions.

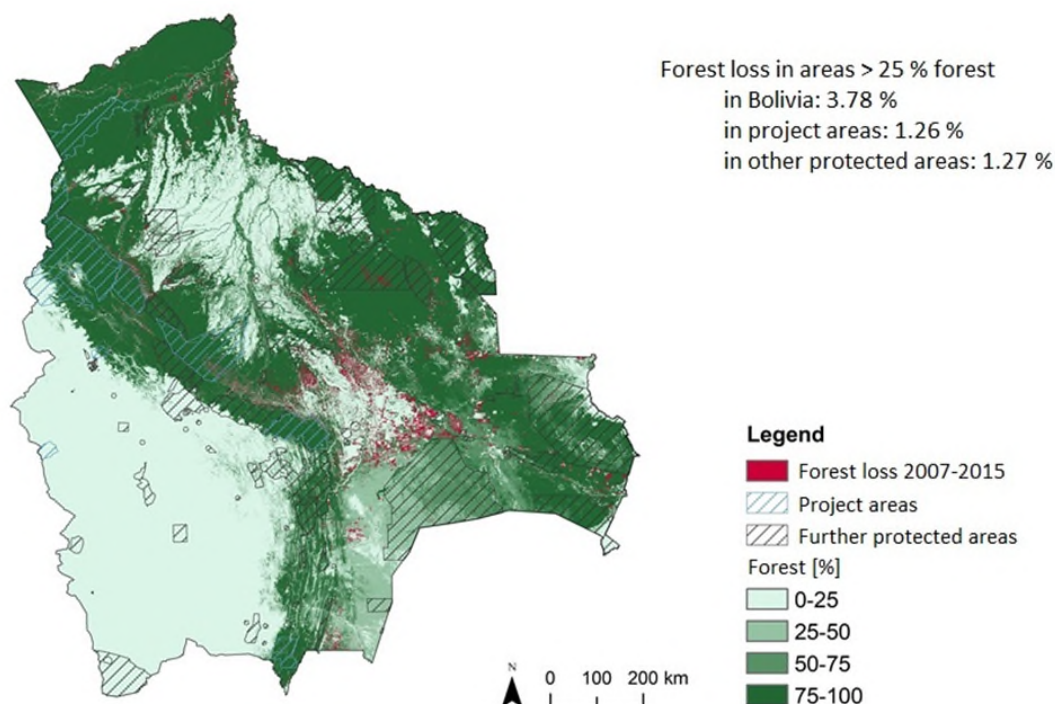
Indicator	Ex post evaluation
(1) The quantities and conditions inside the protected areas in the SNAP (vegetation/key species) are stable. (Annual comparison of compliance in %)	Not achieved. Information about vegetation and key species was only collected for the Madidi PA. According to statements and documentation from the Wildlife Conservation Society (WCS), which carries out monitoring in the Madidi National Park, fauna and flora have worsened since 2015. The prevalence of pumas has decreased in the last two years, for instance, which is an indication that the ecosystem in general has deteriorated to some extent.
(2) Carbon sinks included/developed in the project / CO ₂ eq emissions avoided	The nature conservation areas avoid 57.9 megatonnes of CO ₂ emissions each year in comparison with unprotected areas. ²
(3) Income effects relating to the project ³	In the case of the Tomarapi Ecolodge and Café Madidi, the positive income effects remain in place, amounting to EUR 208-339 per family per month. This is considerably more than the monthly minimum wage of EUR 179.
(4) Change in deforestation in the project area vs. comparison areas/nationwide	<p>Deforestation was reduced in one of nine PAs. Internal evaluations of satellite data produce a nationwide annual deforestation rate of 0.47% between 2007 and 2015. According to the FAO, the national deforestation rate was 0.5% a year between 2010 and 2015. This is a 52% rise from between 2000 and 2005.</p> <p>By comparison, the area deforested in the nine PAs that were financed fell from 57,489 ha in the 1990s to 23,814 ha in the 2000s; a 59% drop. This is due to a dramatic decrease in the Apolobamba PA. Excluding this from consideration, the deforestation in the other eight PAs over the same period increased from 6,595 ha to 29,023 ha – more than quadrupling. There was no significant difference between the deforestation in the supported and unsupported PAs in Bolivia.</p>

At impact level, the indicators point to a deterioration in forest conservation. For instance, the key species of fauna have declined in the last two years, according to reports from the Wildlife Conservation Society (WCS), and deforestation has increased in all the protected areas except for Apolobamba. Taken as a whole, however, deforestation has fallen in the PAs by around 5,000 ha since 1990.

² The deforestation avoided was calculated from the difference in the nationwide deforestation rate and the deforestation registered in the PAs. In a second step, this deforestation rate difference was applied against the PAs' area and the CO₂ stored within it. Sources for the deforestation rates: FAO, World Bank, FAN Amigos de la Naturaleza, CEDIB, IMAZON and internal QGIS calculations. Given that the PAs are evenly distributed around the country for the most part, a basic assumption is that they reflect the national deforestation hazard profile.

³ Projects relating to nature conservation are characterised by a potential clash of objectives between the protection of resources and alleviation of poverty. Regardless of the project objectives, this indicator is used for information purposes.

Illustration of deforestation in Bolivia and forest loss between 2007 and 2015



Internal analysis and preparation. Definition of forest cover in the data used here (Hansen et al., 2013): tree above 5m in height and at least 25% tree canopy cover, which is measured at 30m x 30m resolution. Data sources: project and protected areas. UNEP-WCMC and IUCN (2017), Protected Planet: The World Database on Protected Areas (WDPA) [Online], 06/2017, Cambridge, UK: UNEP-WCMC and IUCN. Available at www.protectedplanet.net Global Forest Change. Hansen/UMD/Google/USGS/NASA [online]. Available at <https://earthenginepartners.appspot.com/science-2013-global-forest>

In summary, we therefore consider the overarching developmental impacts to be unsatisfactory. The result is significantly below expectations, with negative results dominating despite discernible positive results on account of the lack of political support.

Impact rating: 4

Sustainability

As in the cases of the Tomarapi Ecolodge and Café Madidi, the BIAP II project has successfully created an alternative livelihood for 18% of protected area residents in both parks. Due to the data situation, it is not possible to draw a conclusion about other projects that were not visited during the course of the evaluation. Income creation measures still generate income for the participating families four years after the project's conclusion. Between 60% and 70% of the measures are still running. The creation of alternative sources of income is particularly important in light of climate change, which is leading to drought and heavy floods in Sajama, as well as adversely affecting the coffee harvest in Cotapata (fungal infestation resulting from warmer climate). Thinking ahead, the younger generation is leaving rural areas in order to earn higher incomes in urban areas, meaning that investment decisions in this area will need to be re-analysed in the future. We could therefore venture to suppose that large-scale urbanisation in Latin America could have positive impacts on environmental protection if the opportunity is seized and the integrity of a nature conservation area such as Madidi is not threatened by the construction of a dam or by extractive industries.

Bolivia's protected area system continues to exist and is funded by the Bolivian government to a larger degree than it was at the start of the project. However, the funding remains reliant on assistance from abroad, which is not guaranteed given the political situation. The political attitude towards the use of natural resources instead of their conservation is reflected in the increase in the area deforested, alongside the fact that around half the area of an association football pitch is legally deforested every five seconds in Bolivia. As a result of deforestation and thermal electricity generation, Bolivia is one of the nations that

generates as much in CO₂ emissions per head of population as a country like Germany. Owing to the impacts of climate change, Bolivia has already lost half of its glaciers within the last 20 years, with negative consequences for the availability of drinking water.

Looking ahead, we can note the many local initiatives and local government assistance to protect individual areas locally. For instance, in 2017, two local areas were placed under protection. The higher pollution levels for air in larger urban areas and pollution of surface water creates dissatisfaction among the population, causing a move away from use of raw materials.

Sustainability rating: 3

Notes on the methods used to evaluate project success (project rating)

Projects (and programmes) are evaluated on a six-point scale, the criteria being **relevance, effectiveness, efficiency** and **overarching developmental impact**. The ratings are also used to arrive at a **final assessment** of a project's overall developmental efficacy. The scale is as follows:

Level 1	Very good result that clearly exceeds expectations
Level 2	Good result, fully in line with expectations and without any significant shortcomings
Level 3	Satisfactory result – project falls short of expectations but the positive results dominate
Level 4	Unsatisfactory result – significantly below expectations, with negative results dominating despite discernible positive results
Level 5	Clearly inadequate result – despite some positive partial results, the negative results clearly dominate
Level 6	The project has no impact or the situation has actually deteriorated

Rating levels 1-3 denote a positive assessment or successful project while rating levels 4-6 denote a negative assessment.

Sustainability is evaluated according to the following four-point scale:

Sustainability level 1 (very good sustainability): The developmental efficacy of the project (positive to date) is very likely to continue undiminished or even increase.

Sustainability level 2 (good sustainability): The developmental efficacy of the project (positive to date) is very likely to decline only minimally but remain positive overall. (This is what can normally be expected).

Sustainability level 3 (satisfactory sustainability): The developmental efficacy of the project (positive to date) is very likely to decline significantly but remain positive overall. This rating is also assigned if the sustainability of a project is considered inadequate up to the time of the ex post evaluation but is very likely to evolve positively so that the project will ultimately achieve positive developmental efficacy.

Sustainability level 4 (inadequate sustainability): The developmental efficacy of the project is inadequate up to the time of the ex post evaluation and is very unlikely to improve. This rating is also assigned if the sustainability that has been positively evaluated to date is very likely to deteriorate severely and no longer meet the level 3 criteria.

The **overall rating** on the six-point scale is compiled from a weighting of all five individual criteria as appropriate to the project in question. Rating levels 1-3 of the overall rating denote a "successful" project while rating levels 4-6 denote an "unsuccessful" project. It should be noted that a project can generally be considered developmentally "successful" only if the achievement of the project objective ("effectiveness"), the impact on the overall objective ("overarching developmental impact") and the sustainability are rated at least "satisfactory" (level 3).