Ex post evaluation – Caucasus

››› Project of the International Climate Initiative (IKI)

IKI funding area: funding area 2: adapting to the impacts of climate change and funding area 3: conserving natural carbon sinks/REDD
Project: Responding to the Impacts of Global Climate Change on Forests in the Southern Caucasus* (project no. 209810359, BMUB reference 08_II_030_KAUKAS_Wiederherstellung von Wäldern)
Implementing agency: WWF Germany
Countries: Armenia, Georgia, Azerbaijan

Ex post evaluation report: 2017

		Project A (Planned)	Project A (Actual)
Total costs	EUR million	4.825	4.825
Counterpart contribution**)	EUR million	0.00	0.20
Funding	EUR million	4.825	4.825
of which IKI budget funds	EUR million	4.825	4.825

*) Project in the random sample 2017
**) EUR 0.2 million counterpart contribution from WWF Germany and 30 ha restored by the Armenian forestry operation

Summary: Between October 2008 and March 2011, a total of 1,430 ha of floodplain forests (Georgia, Azerbaijan), low mountain forests (Georgia, Armenia) and high mountain forests (Armenia) were afforested, natural regeneration was supported and forest management measures were undertaken. The implementing agency, the *World Wide Fund for Nature* (WWF), chose a close-to-nature "Forest Landscape Restoration" approach which involved the local population in site selection and silvicultural work and aimed to secure ecosystem services in the long term.

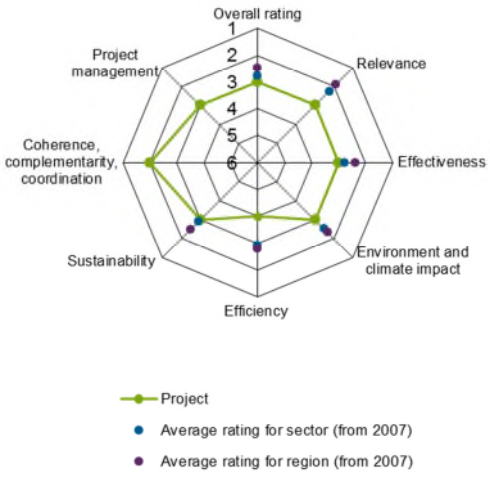
Objectives: The overall objective was to mitigate the impact of climate change by improving ecosystem services: a) carbon storage and b) increased resilience to extreme weather events (adaptation to climate change). Project objectives were a) rehabilitation of forest areas, b) registration as *Clean Development Mechanism* (CDM) and c) capacity-building for more sustainable forest management strategies in the three countries.

Target group: The target groups were residents in the project areas of the three countries, forest authorities, forest operations and environment ministries as well as those affected by global climate change.

Overall rating: 3

Rationale: The scope of the rehabilitated forest areas was larger than planned. The costs per hectare were very high by international standards, and the survival rates were satisfactory. A limited amount of carbon storage was achieved, and a suitable mix of tree species for adaptation to climate change was successfully established in some locations. CDM registration was not pursued due to insufficient profitability. In view of weak national forest authorities and a low level of activity in the forestry sector, project experience has so far only been replicated to a limited extent beyond the pilot areas.

Highlights: -.



Overall rating: 3

Lessons learned

- Natural rejuvenation is significantly more cost-effective than afforestation. However, the climate adaptation objective of boosting the resilience of forest systems to extreme weather events also required targeted afforestation with selected species of trees appropriate to the location.
- A project term of 2.5 years is too short for a forest project if the aim is to safeguard the investment with adequate maintenance measures.

Methodology of the ex post evaluation

The ex post evaluation (EPE) applied the methodology of a contribution analysis and ascribes impacts to the project through plausibility considerations which are based on a careful analysis of data, facts and impressions, eliminating contradictions and filtering out similarities. The analysis is based on assumed interdependencies, the impact matrix created during project appraisal and updated during the ex post evaluation. In this evaluation report, arguments are presented as to why which influencing factors were identified for the observed impacts and why the appraised project likely made which contribution. The evaluation is based on the project documents, literature and Internet research, standardised questionnaires and an on-site evaluation mission which took place in Georgia and Armenia from 26 June to 1 July 2017. Semi-structured interviews were conducted with those responsible for management and implementation at KfW, WWF Germany, local WWF offices, the *Armenia Tree Project* and with UNDP experts and sector heads, the national forestry authorities, the Faculty of Forestry in Yerevan as well as occasionally with representatives of local communities and project participants from the local population. During the EPE, around 40% of the demonstration areas were visited in the Armenian Lori region at Tsakhaber, Jrashen and Spitak, and the floodplain forest areas in Chiauri in eastern Georgia as well as an adjacent comparison area.[1]

The project countries at a glance

	Armenia	Azerbaijan	Georgia
Country area	2,980,000ha	8,660,000ha	6,970,000ha
Forest area (percentage of country area)	327,800ha (11%)	1,212,400ha (14%)	2,788,000ha (40%)
Population / population growth	3.0 million (+0.4%; 2015)	9.7 million (+1.2%; 2015)	4.0 million (-0.3%; 2015)
Gross domestic	USD 3,489 (2015)	USD 5,497 (2015)	USD 3,757 (2015)

1 The following project sites were not visited: Georgia: Kharagauli; Azerbaijan: Ismailly, Gabala, Sheki, Gakh; Armenia: Arjut, Katnajur, Ghursali, Gukark.

product (GDP) per capita			
Human Development Index	0.743 (ranked 84; 2015)	0.759 (ranked 78; 2015)	0.769 (ranked 70; 2015)
Carbon emissions per capita	1.8t	3.8t	2.0t

Sources: EIU Country Risk Reports, World Bank WDI.

Forest loss between 2008 and 2015 in Armenia was around 0.27% (1,442ha) of the forest areas, in Azerbaijan 0.02% (4,072ha) and in Georgia 0.11% (5,411ha) of the forest areas.[2] Annual deforestation has been decreasing in Armenia since 2013, in Georgia since 2010 and in Azerbaijan since 2002, but forest degradation is on the rise.

General conditions, classification of the project and project measures

Geographically and biologically, the Caucasus with its eight different ecoregions is an important melting pot of influences from Asia, Europe and some from North Africa. As part of WWF's "Global 200" project, the forests of the Caucasus are ranked among the 200 most important areas of global biodiversity. In addition, forest products are used by the poor rural population in the form of wood as an energy source or for construction, and to a certain extent also as a food source from forest by-products and thus also have socio-economic significance. They also provide natural protection against natural disasters and capture greenhouse gases. Climate change poses a threat to forests with stronger squalls and heavy rainfall, which drive the loss of forest quality. Infrastructure projects, overgrazing and illegal logging are the main drivers of deforestation.

The following measures were implemented:

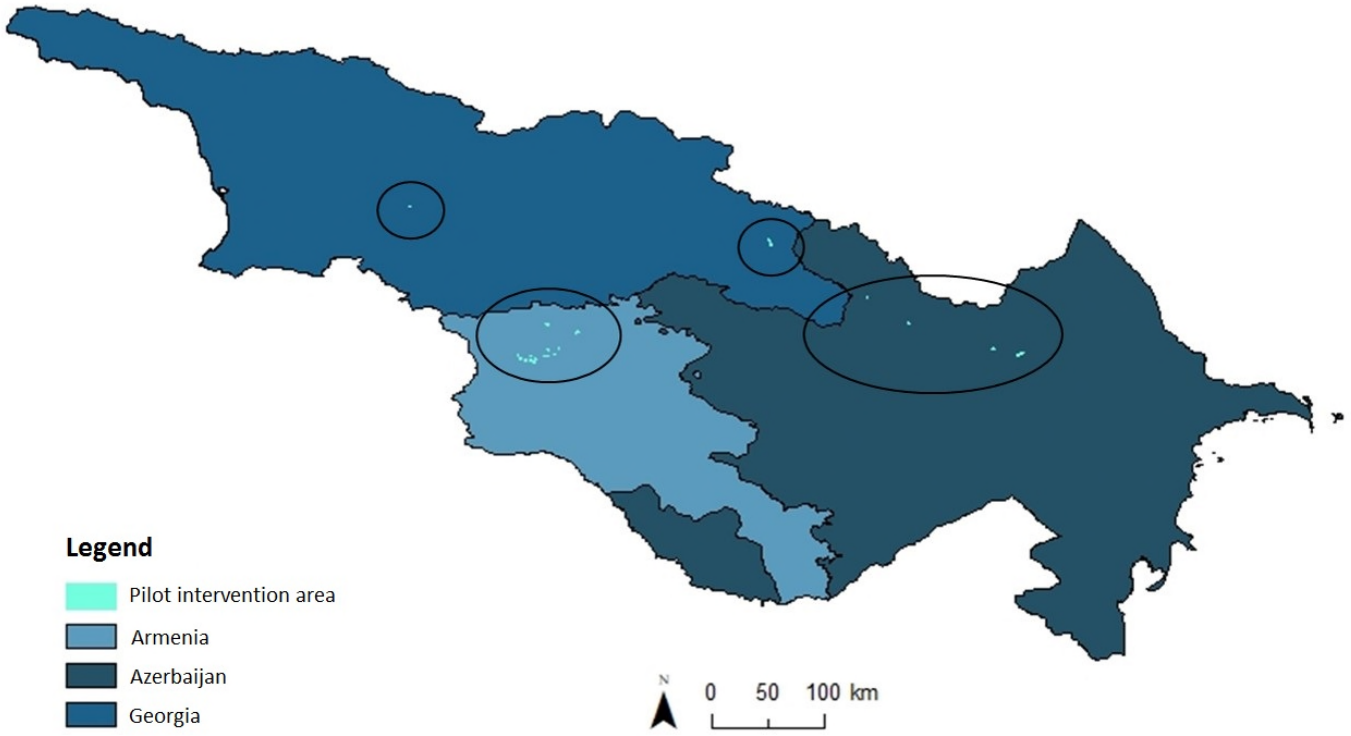
- Reforestation or support for natural forest rehabilitation on demonstration areas (total of 1,415ha) in Georgia, Armenia and Azerbaijan.
- Training courses on close-to-nature forest management for forest workers, for a plant nursery in Georgia as well as for forest authorities, and awareness-raising campaigns on climate change for the local residents.
- Development of a "Guide to Sustainable Forest Management" and a "Strategic Guideline for Adapting to the Impacts of Global Climate Change for Forests in the South Caucasus".

Implementing agency was the *World Wide Fund for Nature* (WWF Germany) with branch offices in the three countries. WWF acted as project manager and contracting authority for individual international consulting assignments. The demonstration areas were owned by the national forestry authorities. In Armenia, two thirds of the land were municipal forest areas managed by the non-governmental organisation *Armenia Tree Project* (ATP) under a lease agreement.

2 Identification of forest losses through an analysis of the satellite data prepared by Hansen/UMD/Google/USGS/NASA. Pixel size: 30m*30m = 900m^2. Forests are defined as land with vegetation greater than 5 metres in height and canopy density of 25% or more. Corresponding forest cover was present in the areas in the past. Evidence of forest cover has no longer existed since one of the years of the period specified. Reasons for forest loss are not identified by remote sensing.

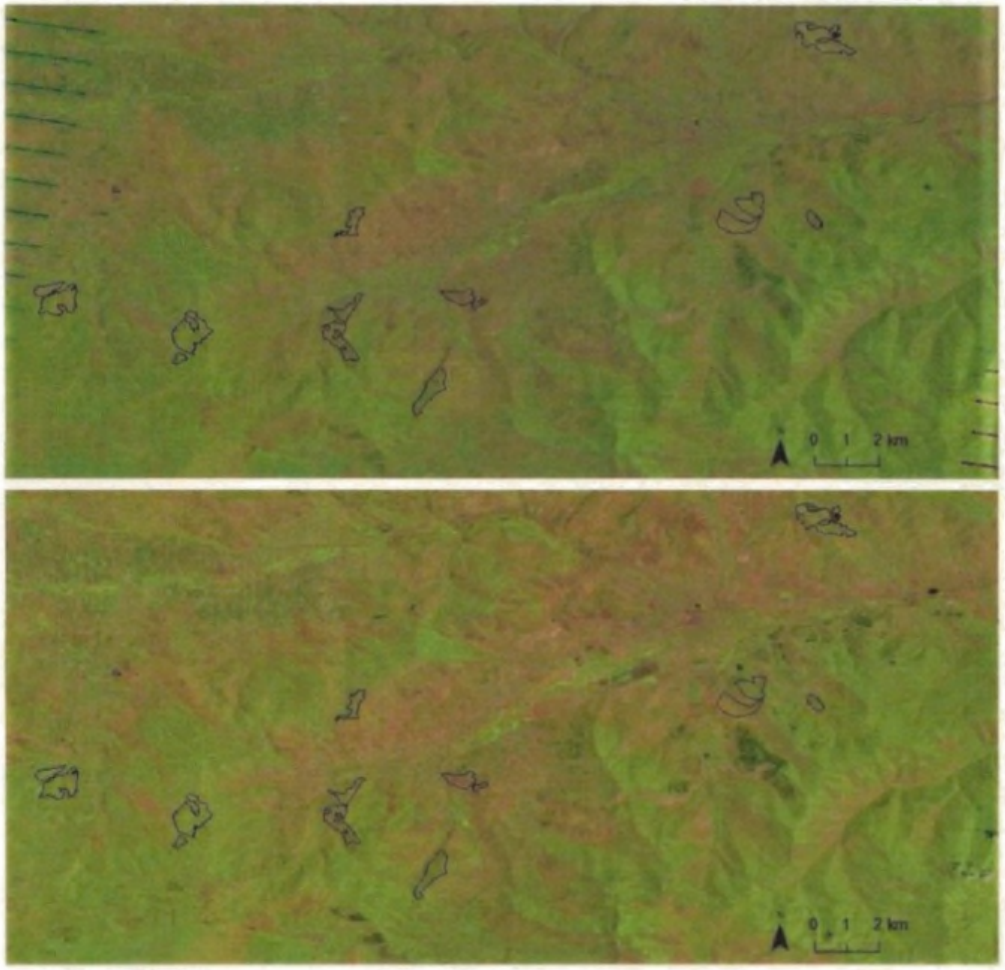
Map of the project area

Figure 1



Source: Internal analysis and preparation.

Figure 2



Satellite data (Landsat 7 and 8) from 14 out of 21 pilot intervention areas in Armenia from July 18th, 2008 (top) and July 16th, 2016 (bottom)

Source: Internal analysis and preparation.

Relevance

The project aimed to secure ecosystem services such as carbon storage by restoring forest areas. This was to be achieved sustainably by creating forest ecosystems that are sustainably managed and better adapted to the predicted increasing aridity caused by climate change. In addition, the lessons learned in the project were to be incorporated into more sustainable national forestry strategies. The complex objectives presented a challenge including the selection of land and tree species.

The chosen "forest landscape restoration" approach was generally suitable for achieving the project's objectives, since the local population, which has traditional rights to use the forests in the South Caucasus and therefore cannot be ignored, is involved in area selection and management. This approach was intended to ensure that those areas are selected that conflict least with other land use interests. However, individual pilot areas and no contiguous forest areas were selected.

Carbon sequestration played a minor role in the selection of areas. The original goal of registering individual areas as *Clean Development Mechanism* (CDM) or *Verified Carbon Standard* (VCS) projects and generating revenues through emission certificates trading seemed to be a possibility to generate profits from afforestation or additional funds for further reforestation at the time of the project proposal. However, the areas in the Armenian Lori region were unsuitable for this due to the very low growth of biomass. In addition, the small total area of the project areas made CDM registration unlikely already during the planning phase due to its high fixed costs.

A tree species selection appropriate to the location as envisaged by the project increases the resistance of tree plantings to extreme weather conditions.

The approach of supporting both natural regeneration and afforestation generally represents a good balance between increasing the area and promoting climate-adapted species and is to be viewed positively.

The project was in line with IKI's objectives. In addition, afforestation was also part of national forest strategies at the time of the project proposal. However, as part of their communication under the International Framework Convention on Climate Change (*Intended Nationally Determined Contributions*, submitted in 2015), afforestation was not a priority for the three countries. Only Armenia has defined a target for the forestry sector: depending on the availability of donor funds, the country's forest cover ratio is to be increased from 11% to a remarkable 20.1% by 2050.

The regional approach is consistent with the policy guidelines of the German Federal Government's "Caucasus Initiative" and WWF's intervention logic in the Caucasus, which takes account of cross-border ecosystems. However, since the intervention areas were small and the project experience in the three countries was not transferable due to different local conditions in the areas according to information provided, the regional approach would not have been absolutely necessary here. Regional implementation was facilitated and most likely accelerated by the choice of the regionally represented WWF as KfW's contract partner and implementing agency. The responsibility of the national forestry authorities could have been strengthened, also with regard to forest management in order to safeguard the investment, if they had been financing contract partners and implementing agencies with clearly agreed long-term obligations. In Azerbaijan, this was achieved through an agreement between WWF and the forestry division of the Azerbaijan Ministry of Ecology and Natural Resources.

At the start of the project, the project objectives were not sufficiently clear and, in some cases, too ambitious, which means that the intervention logic is only partially conclusive. The project

term was too short and the size of the land area too small to have a substantial impact on national forestry policies.[3] In response to the influence of WWF and KfW, the project objective was focused on climate adaptation during project implementation.

Relevance rating: 3

Effectiveness

Project objectives were a) rehabilitation of forest areas, b) registration as Clean Development Mechanism (CDM) and c) more sustainable forest management strategies in the three countries. Sub-objective c) was re-worded over the course of the project to "capacity-building for development of forest management strategies". The achievement of the project objectives is summarised as follows:

Indicator	Target value Project appraisal	Ex post evaluation			
(1) Afforested/rejuvenated/naturally regenerated area	Target value: 1,030 ha	in ha	Georgia	Armenia	Azerbaijan
		Afforestation	162	630	121
		Rejuvenation	19	0	52
		Regeneration	54	0	392
		A total of 1,415 hectares were afforested/rehabilitated, of which 30 hectares as a counterpart contribution by the Armenian forestry authority.			
(2) % of the intervention area that is still managed according to project standards	2014 (3 years after the end of the project): 90%	Georgia: 0% Armenia: approx. 65% (mostly ATP areas) Azerbaijan: 100%			
(3) Survival rate of the plants (%)	n.a.	Average survival rate weighted by area[4]: Georgia: 38% Armenia: 60% Azerbaijan: 72%			

The quantity target for afforested and rehabilitated forest areas was exceeded with a total of 1,415 hectares. The condition of the areas visited during the EPE was heterogeneous especially in terms of survival rate, plant growth rate and choice of tree species:

3 The short project term had already been highlighted as the main risk in the project proposal. In order to counteract this risk, the project concept included an application for additional funds for a second phase.

4 According to data and estimates of the local WWF offices and ATP. Estimates/data for Azerbaijan are from September 2010.

The inspected areas in Chiauri, eastern Georgia, had inhomogeneous but dense forest vegetation. Planted and naturally rejuvenated areas were no longer distinguishable. The height increase was clearly more pronounced for naturally rejuvenated pioneer tree species such as poplars and willows than for the planted hardwoods (oak, ash, maple, wild fruit). This has created a dominance of pioneer tree species.

Unlike the areas in eastern Georgia, the areas in the Armenian Lori region are located in more arid mountain climates and are thus exposed to more severe weather extremes, such as winter frost and summer drought. Soil quality is also poorer on Armenian land than on Chiauri land. Survival rates at the time of the EPE varied between 15% and 87%, with higher success rates on ATP areas due to better and more regular care[5]. In view of the prevailing site conditions, survival rates of more than 50% can be rated positively.

The project proposed planting and seeding methods with different equipment and demonstrated these methods in Chiauri, whereas in Armenia both contracted actors used their own equipment. The planting spade and planting hoe proposed by the technical advisers were not used at the time of the EPE. The use of seeds as a reforestation technique has not proven effective according to the local forestry technicians because, in dry years, the acorns planted were eaten by mice to an extent that made reforestation impossible.

No significant damage or traces of (small) livestock were found on any of the inspected areas. This is noteworthy, since overgrazing is one of the main threat factors for Caucasian forests, but the fences' maintenance status was very good only in the ATP areas, while the fences on other areas were rotten due to, among other things, low quality of the wood used for the posts. ATP continues to maintain the fences and currently replaces rotten wooden posts with more durable concrete posts. Successfully preventing grazing damage at the visited sites is likely also due to the fact that the local residents largely accept the agreed areas for forests on the one hand and pastures on the other. In Kharagauli, the second project location in Georgia, however, inhabitants showed greater resistance to abandoning pastureland.

The goal of CDM and VCS registration was not achieved, as transaction costs for registration processes exceeded expected revenues. The market for carbon certificates had already collapsed at the beginning of the project. Greenhouse gas storage was estimated using a simplified method.

The originally planned protected area in Chiauri was not created. The reasons cited were lack of time, low expected benefits and lack of agreement from the central government. Since the measure was not crucial to achieving the objectives and the nearby game park probably would have been the main beneficiary, the decision to abandon the measure in favour of additional afforestation is viewed positively.

There are no comprehensive national forest inventories in Georgia and Armenia, which would be the first step in formulating strategic forest development goals. An "Afforestation Guide" was developed during the project, translated into the three national languages and is known to actors in the afforestation sector. This guide was incorporated into the Georgian Directive 241 on forest management. It can therefore potentially be applied to other areas, but only to a limited extent, as the planned national afforestation projects in Georgia will amount to only 50 ha per year in the next five years. The strengthening of capacities in the forestry authorities is being hampered by the low numbers of personnel with a forestry background and high staff turnover.

Not all project objectives were achieved. However, given the ambitious objectives, the overall results are considered satisfactory.

Effectiveness rating: 3

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5 Replantings also took place after the end of the project.

Overarching climate and environmental impacts

The overall objective was to mitigate the impact of climate change by improving ecosystem services: a) carbon storage and b) increased resilience to extreme weather events (adaptation to climate change). The achievement of the overarching project objectives is summarised as follows:

Indicator	Target value project appraisal	Ex post evaluation
(1) Cumulative carbon sequestration for 20 years on the regenerated areas	Cumulative carbon sequestration of 95,000 t	41,369 t of carbon after 20 years[1] according to the model developed in the project; difference due to a lower growth rate of forest plants than expected
(2) Replication of the approach [ha]	Indicator added during EPE	The Forest Landscape Restoration approach and the proven planting methods have been replicated in individual cases, but not systematically. A similar approach was used for reforestation of 60 ha after forest fires in Borjomi, Georgia, in an UNDP project. ATP is applying the lessons learned from the project and is planting 150,000-200,000 trees annually in Armenia. In Azerbaijan, the approach is replicated in current afforestation projects on areas adjacent to the project areas.
(3) Income effects relating to the project[2]		Temporary positive income effects were achieved.

1) Note: This is a calculated value, only 7 years have passed since the end of the project.

2) 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 therefore used for information purposes.

In addition to the overall target achievement shown in the table, the achievement of the climate adaptation objective is described here in qualitative terms. The **adaptations to climate change** have not been achieved to the planned extent at the various sites visited, as the targeted diversity of tree species to ensure the adaptation of forest stocks could not be achieved everywhere.

Global climate change is affecting site conditions, whereby it is estimated for the Caucasus region on the basis of climate models that most of the ecosystems will be impacted by lower

groundwater levels. According to the model, the future potentially natural vegetation would be dominated by stocks of "dry woodlands"[6].

In Georgia and Azerbaijan, the dry forest tree species were not given special consideration, while in Armenia, oak, a dry forest tree species, was planted. The choice of tree species is thus consistent with the objective of creating climate-adapted forest types only in parts of the three countries. Ideally, demonstrated measures in the pilot areas will be replicated on larger areas in the future. In this regard, a demonstration of planting on potential "dry woodland" sites would have been useful.

On the areas in the Armenian Lori region, mainly pine and deciduous trees such as oak, ash and maple were used for afforestation. The different species are mixed by area — i.e. a larger area of one species next to a larger area of another species — which is detrimental to vegetation cover if one species fails as an open space is created. ATP, on the other hand, primarily planted ecologically more valuable hardwood. Overall, combining species on a small scale would have been more effective in terms of resilience to climate change impacts. In the floodplain forests in eastern Georgia, the above-mentioned dominance of poplars and willows meant that the desired adaptability was not achieved.

Although the intervention areas visited showed no evidence of previous damage caused by erosion, future erosion will be reliably prevented by the now stabilised forest stocks. Efforts are also underway to prevent top soils from drying out, especially in mountainous areas. The restoration of forest cover in floodplain forests has thus stabilised the ecosystem.

The intended multiplier effect of transferring the project experience to other areas was limited, above all, by small and inadequately funded national reforestation and forest rehabilitation programmes. In Armenia, for example, only 526.7 ha were afforested in the five years after the end of the project. The Armenian Forestry Authority uses 100% of the state budget allocations for personnel costs, funds for silvicultural activities are generated by revenues only to a very limited extent. In Azerbaijan, national forestry activities were much more extensive than in Georgia and Armenia: between 2008 and 2016, around 3,000 hectares were afforested annually and about 7,000 hectares fenced in to promote natural regeneration.

The project has produced positive socio-economic "co-benefits". Since the collapse of the Soviet Union, the rural population in the southern Caucasus has again become heavily dependent on subsistence farming and wood as a fuel. Opportunities to earn money through wage labour are very rare in rural areas. Paid work for plant and forest care has created temporary income. According to information provided, Armenian workers, for example, were thus able to forgo seasonal work in Russia during project implementation. The income generated by project employment was used for regular living expenses. As far as is known, no investments were made that would improve long-term living conditions.

The sporadic introduction of wild fruit trees led to greater acceptance of forests among the local population as it will be possible to use forest by-products in the near future.

In summary, it can be said that positive impacts have been achieved for ecosystem services and local communities, but not to the extent originally envisaged. The overarching impacts on climate are assessed as satisfactory.

Overarching climate and environmental impacts rating: 3

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6 These include *Juniperus spp.*, *Pistacia mutica*, *Pinus eldarica, Carpinus orientalis*, *Paliurus spina-christi* - and in Georgia *Zelkova*, in Armenia *Parrotia persica*, *Quercus castaneifolia* and *Quercus pedunculiflora.* In all countries, it is likely that the percentage of *Betula spp.*, *Capinus caucasia, Castanea sativa* and *Picea orientalis* and *Abies nordmanniana* in the total tree species composition will significantly decline. See study created during the project: WWF Caucasus Programme Office, “Strategic Guidelines for Responding to Impacts of Global Climate Change on Forests in the Southern Caucasus”, 2011.

Efficiency

In order to assess **production efficiency**, the costs of seedlings, wages for planting and care in the first two years, as well as transport were expressed in relation to the outcome, the area afforested and the survival rate. In order to compare reforestation and natural regeneration, the calculation does not include the costs for fencing incurred in both cases.[7]

If the survival rate is not factored in, reforestation costs are EUR 1,755 per ha of intervention area in Armenia, EUR 5,624 per ha in Georgia and EUR 7,975 per ha in Azerbaijan. According to information provided, the differences are mainly due to significantly lower prices for seedlings in Armenia and higher labour costs in Azerbaijan, which appear to be project-specific. In Armenia, seedlings are produced directly for the intervention areas by both ATP and the state forestry authority Hayantar, while in Georgia and Azerbaijan, it was reported that the supply of seedlings in sufficient quality was low and expensive. The different tree species mix was partly reflected in the costs: the Armenian forestry authority planted 90% pine trees according to Soviet tradition, which meant lower seedling costs and less maintenance effort. Taking into account the survival rates weighted by individual area, a theoretical provisional calculation shows significantly higher costs of EUR 2,945 per ha with a 100% survival rate in Armenia and EUR 14,878 per ha in Georgia. Production efficiency for planted land in Armenia was therefore good and appropriate when compared internationally with low-wage countries. Production efficiency in Georgia, on the other hand, was inadequate. By way of comparison, it should be mentioned that in Germany the afforestation of one hectare costs about EUR 15,000.

In the case of natural rejuvenation, the above-mentioned costs do not apply. Costs for fencing are incurred for both methods if there is a risk of damage from cattle or game, and fences or natural boundaries are not already in place. On the positive side, where possible, natural boundaries such as rivers were used in the project to reduce the costs of fencing. Overall, the production efficiency of natural rejuvenation is significantly higher than that of afforestation, provided that the site and vegetation conditions (parent trees) encourage natural rejuvenation. This was the case in Chiauri, for example.

Nevertheless, concentrating resources on natural regeneration would not have been expedient in this project, as the afforestation of certain tree species was envisaged in order to achieve the climate adaptation target.

In order to assess **allocation efficiency**, the project costs are compared with the cumulative carbon reduction achieved after 20 years. According to a model developed during the project, the carbon storage of the project is estimated at 41,369 tonnes of CO_2e for pure afforestation areas of 975 ha. The areas visited in Chiauri and Lori make up the largest part of the estimate, namely 89%. A validation of the calculation for these areas resulted in slightly lower values due to the poor growth rate at these sites. The project costs per tonne of carbon absorbed are thus high by international and inter-sectoral standards.[8]

The decision not to pursue CDM certification proved to be sensible. Due to high fixed costs, certification costs exceeded the low expected revenues due to low carbon prices and small project areas. Taking into account the local growth rates and carbon absorption, about 4,000 hectares of floodplain forests (Georgia) would have needed to be afforested to break even between certification costs and revenues after 10 years or approx. 19,000 hectares of mountain forest (Armenia) in a conservative scenario according to a project study. The cost of the plan-

7 Since the expense data were not broken down into standard and enrichment planting figures, it was assumed that the planting density was half as high for enrichment planting (7% of the area included in this calculation). Internal calculations based on WWF Germany's expense tables.

8 See http://www.ipcc.ch/ipccreports/tar/wg3/index.php?idp=171

ning phase for a CDM or VCS project alone was estimated at USD 160,000-250,000 in the study.

Overall, cost efficiency is unsatisfactory, especially due to the high reforestation costs per hectare.

Efficiency rating: 4

Sustainability

Already mentioned as a risk in the project proposal, the project term of originally two years was too short for a forest project. The cost-neutral extension of the project and the "bridge funds" of EUR 200,000 provided by WWF as well as the continued commitment of the *Armenia Tree Project* to manage the stocks was an essential contribution to the relative success of survival rates. Project investments in hardwood must continue to be safeguarded by maintenance measures. Otherwise, the survival rate of planted tree species threatens to decrease further, and softwoods could expand their dominance in the natural regeneration process. In both Georgia and Armenia, the weak national forestry authorities took little responsibility for the maintenance of stocks on their land. In Azerbaijan, it was reported that the state forestry service assumed responsibility for forest management and involves the local communities. The Georgian state forestry authority, on the other hand, had already expressed concerns about sustainable management at the beginning of the project due to budgetary constraints.

As regards the sustainability of the project's impact, it should be emphasised that WWF's work and cooperation with the *Armenia Tree Project* have institutionalised the project experience and this experience continues to be applied in WWF projects and by ATP in Armenia. ATP is mainly financed by donations from the Armenian diaspora and plants up to 200,000 trees per year, i.e. about 70 ha. In the forestry authorities, on the other hand, high staff turnover is endangering the institutionalisation of knowledge from project training. In order to replicate the Forest Landscape Restoration approach by other stakeholders, a formalised process of involving local stakeholders would be reasonable.

Whether or not the Forest Landscape Restoration approach will be applied in the future in the forestry sector of the three countries and whether the forests in the project areas and possibly other forests are sustainably managed by municipalities will also depend on the organisation in the forestry sector from a political and economic point of view. In Georgia, the forestry sector is highly centralised, and a transfer of "forest areas of local importance" to the municipalities, as envisaged by a government decision, has not yet taken place. This contradicts to some extent the project's intended role of the local population and communities in sustainable forest management. Municipal forests and private forests are provided for by law in Armenia, but currently 99% of the areas are de facto state-owned forests. The project, with its afforestation on the municipality's own land and other ATP activities, contributes to the development of municipal forests.

The aforementioned structural weaknesses of the forestry sector in the Caucasus limit the project's sustainability. Sustainability is rated satisfactory since WWF with its bridge loan and ATP with its continuous commitment in Armenia were able to partly compensate for the short project term.

Sustainability rating: 3

Coherence, complementarity and coordination

Despite small-scale intervention areas, the project stands out in view of the low national budgets for afforestation initiatives in Georgia and Armenia and the limited involvement of other in-

ternational organisations such as the United Nations Development Programme in the past ten years in national afforestation statistics, especially in Armenia. Apart from this, in the Caucasus, BMZ has increasingly focused on supporting protected areas in view of the region's scarce resources and its relevance for international biodiversity and the respective national strategies. The European Union, the World Bank and the *International Union for Conservation of Nature* (IUCN) are also active in forest protection and biodiversity conservation in the Caucasus.

There are individual projects being undertaken by other donors that promote alternative energy sources or more efficient use of firewood and thus complement how the problems are addressed.

Coordination between donors and implementing organisations takes place informally on the ground as well as in conferences and workshops.

Coherence, complementarity and coordination rating: 2

Project management

On the positive side, individual project measures such as CMD registration and the establishment of a protected area were reviewed for meaningfulness during the course of the project and adapted accordingly. WWF, KfW and BMUB all acted constructively to this end.

A high degree of local visibility for the project was achieved through visits by journalists and press material.

In order to draw as robust a conclusion as possible from the demonstration projects, the intervention areas could have been structured more consistently, e.g. by strictly separated areas for natural regeneration and reforestation as well as fence-without-fence comparisons and separated according to planting methods on areas with otherwise equivalent baseline conditions. A corresponding separate cost analysis for different methods of treatment would have been helpful to derive "lessons learned".

In the case of one intervention area, the evaluation delegation found a deviation between the documented boundary of the area according to the geo-information system and the actually planted area. Higher accuracy of GIS data is a prerequisite for effective monitoring.

The short project term had already been highlighted as the main risk in the project concept. Given the time constraints and the need to involve the local population in site selection — often a lengthy process — the results achieved were only possible due to strict time management. Especially in the preparatory phase, project management could have defined the objectives more clearly and examined the feasibility of the individual measures. Project management was satisfactory overall.

Project management rating: 3

List of abbreviations	
ATP	Armenia Tree Project (Armenian non-governmental organisation)
BMUB	Bundesministerium für Umwelt, Naturschutz, Bau und Reaktorsicherheit (Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety)
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (Federal Ministry for Economic Cooperation and Development)
CDM	Clean Development Mechanism
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalents
EPE	Ex post evaluation
EUR	Euro
FC	Financial Cooperation
ha	hectare
IKI	Internationale Klimaschutzinitiative (International Climate Initiative)
IUCN	International Union for Conservation of Nature
NGO	Non-governmental organisation
t	tonne
VCS	Verified Carbon Standard
WWF	World Wide Fund for Nature (non-governmental organisation)

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, overarching developmental impact, coherence, complementarity and coordination rating and project management**. 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 impact of the project (positive to date) is very likely to continue undiminished or even increase.

Sustainability level 2 (good sustainability): The developmental impact 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 impact 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 impact 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 seven 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).