

**Cape Verde: Reforestation on Fogo and Santiago**

**Ex-post evaluation**

<b>OECD sector</b>	31220 / Forest development	
<b>BMZ project ID</b>	1) 1990 65 954 (Investment) 2) 1990 70 319 (Complementary Measure)	
<b>Project-executing agency</b>	"Direcção Geral da Agricultura, Silvicultura e Pecuária" (DGASP) in the "Ministério do Ambiente, Agricultura e Pescas" (MAAP)	
<b>Consultant</b>	GfA – Gesellschaft für Agrarprojekte	
<b>Year of ex-post evaluation</b>	<b>2005</b>	
	<b>Project appraisal (planned)</b>	<b>Ex-post evaluation (actual)</b>
<b>Start of implementation</b>	1) 2nd quarter 1991 2) 2nd quarter 1991	1) 4th quarter 1991 2) 1st quarter 1994
<b>Period of implementation</b>	1)+2) 72 months	1)+2) 72 months
<b>Investment costs</b>	1) EUR 2.74 million 2) EUR 0.15 million	1) EUR 2.70 million 2) EUR 0.15 million
<b>Counterpart contribution</b>	1) EUR 0.34 million 2) EUR - million	1) EUR 0.30 million 2) EUR - million
<b>Financing, of which Financial Cooperation (FC) funds</b>	1) EUR 2.40 million 2) EUR 0.15 million	1) EUR 2.40 million 2) EUR 0.15 million
<b>Other institutions/donors involved</b>	none	none
<b>Performance rating</b>	4 (inadequate degree of developmental effectiveness)	
<b>• Significance / relevance</b>	4	
<b>• Effectiveness</b>	4	
<b>• Efficiency</b>	3	

**Brief Description, Overall Objective and Project Objectives with Indicators**

The project comprised the rehabilitation of 1364 hectares of degraded areas on Fogo and Santiago through afforestation and erosion control measures and the improvement of 960 hectares of areas afforested earlier on Fogo. The mechanical and biological measures were to contribute to protecting the soil and water and to safeguarding and expanding the agricultural and forest resources as well as to stabilising and increasing the agricultural and forestry production potential (project objective). As set forth in the project appraisal report, the project objectives were to be considered reached when the indicators for the rehabilitation of 750 hectares of eroded farmland and 960 hectares of areas afforested earlier under technical cooperation on Fogo and 585 hectares of afforested areas on Santiago had reached the following benchmarks two years after the end of the project:

- 70% of the physical control erosion structures erected in the project areas on Fogo and Santiago (supporting walls, terraces and small dams) exist and are being properly maintained.

- The planned density of around 50 trees per hectare is reached on 70% of the areas designated for agroforestry, and of around 200 trees per hectare on 70% of the rehabilitated old afforested areas.
- In the sub-project Santiago at least 70% of the seedlings have taken root on the afforested areas.
- No overgrazing or premature logging is taking place on at least 70% of the areas of the sub-project Fogo; damage caused by humans or goats can be ascertained on less than 10% of the areas of the sub-project Santiago.

Another indicator for the complementary measure was added in the course of project implementation, namely the improvement of the qualifications of the executing agency through the introduction of a monitoring and evaluation system.

The overall objective of the project is to contribute to an ecologically stable intensification of the soil utilisation systems. This is to contribute to improving the income and living conditions of the target population. Given the complex relationships of cause and effect the overall objective was to be considered achieved when the project objective was achieved.

### **Project Design / Major Deviations from the original Project Planning and their main Causes**

The project appraisal identified the imbalance between the limited yield potential of the farmland and forest areas and the ecologically inappropriate use of the resources as the core problem (degradation of vegetation and soil erosion through uncontrolled timber extraction, overgrazing and unadapted dry farming). The measures were implemented on two islands of the Cape Verde archipelago.

The island of Santiago is the largest of the 10 inhabited islands of Cape Verde with an area of 991 square kilometres (25% of the total land area of Cape Verde), it has a good 235,000 inhabitants. The island of Fogo has a land area of 476 square kilometres (11%) and approximately 37,400 inhabitants.

#### Measures on Santiago:

- Stabilisation of a self-contained part of the water catchment area of Ribeira Selada in the district of Santa Catarina through targeted erosion control and afforestation measures (target: 585 ha) incl. creation of a nursery.

#### Measures on Fogo:

- Rehabilitation of an area of 960 ha previously afforested under technical cooperation in the region of Monte Boca Larga (in the southwest) and
- erosion control and water conservation measures (supporting walls, terraces and carving of erosion clefts) in the communities of Curral Grande and São Lourenço (in the west) and afforestation of privately used farmland (750 ha).

The measures financed included construction and planting measures as well as complementary works (creation of small tree nurseries, simple access roads and patrols following completion of the erosion control measures). FC funds were also used to finance equipment for the executing agency (office equipment, tools, vehicles) and a complementary measure to set up a computer-based monitoring and evaluation system. The proceeds from the management of the project were to be deposited into a fund to finance forestry service activities. This forestry fund, however, is largely depleted and the budgets for investment and maintenance are currently falling.

The deep slopes in the project area of Santiago were stabilised with semi-circular plant containers reinforced by stones and terraces fortified by stone walls with a width of 1.5 to 2 metres. Erosion clefts produced by uncontrolled rainwater run-off were stabilised and rehabilitated through the construction of small dams. The main species planted in the reinforced terraces and planting bays was the mesquite tree (*Prosopis juliflora*), one that is very successful in arid climate (approximately 400 seedlings per hectare).

Traditionally, the forestry authority used to carry out the labour-intensive measures as food for work with pre-defined locations and measures; however, since the early 1990s it has sought to decentralise the implementation in close cooperation with the urban population and the target groups on the basis of new forestry laws (including the right of co-determination in the selection of forest areas and tree species). This has been increasingly introduced in the framework of the project, but primarily on the private lands on Fogo island.

The implemented measures largely matched the planning at the time of project appraisal, although the areas afforested differed from the target on Santiago (target 585 ha, actual: 400 ha) and Fogo (target : 1,710 ha, actual: 1,924 ha).

The complementary measure comprised a limited consultant assignment of approximately nine expert months to support the forestry authority in procurement and project administration (five expert months), conducting annual audits (three expert months) and setting up a computerised monitoring and evaluation system (one expert month). The M+E system was conceived at the start of project implementation and focused on monitoring activities and results. An impact monitoring was theoretically conceived but no relevant indicators were actually ever established. Support by the consultant was not planned.

In retrospect the project conception was in line with the social and environmental policy priorities of the island republic. As the degradation and erosion processes on Cape Verde continue unabated the approach is fundamentally still relevant. However, in hindsight it would have been more appropriate to focus on better locations that were privately owned. As a result the measures had a rather limited general impact.

### **Key Results of the Impact Analysis and Performance Rating**

As no agreements on the use of the afforested areas on Santiago (public land) have yet been negotiated with the user groups and no acknowledged rights of utilisation exist either, the target group is showing only very limited willingness to assume a share of the responsibility for the sustainable management and maintenance of the erosion control structures. The areas are still being used for uncontrolled grazing (extensive livestock farming) and timber cutting for firewood. Therefore the sustainability of the measures is not assured even if there are no visible signs of excessive utilisation yet.

Managing the rehabilitated areas on Fogo (private property) is the task of the landowners or tenants; the regional authority of São Filipe is in charge of inspecting and supervising land use. It turned out that the landowners' continuing low sense of responsibility for necessary maintenance on the measures financed out of the project is largely due to the fact that they (primary project target group) were not involved at the beginning of the project. Under the project conception, the landowners and tenants affected by the measures were not given a say in the selection of the project areas, the erosion control measures or the tree or shrub species to be selected for afforestation. From today's point of view the preparation of the target group for the project is considered inadequate. This led to misunderstandings at the start of the project and even to a refusal on the part of the landowners to make land available for the planned measures. The affected people were obviously not convinced of the benefits they could expect from the planned measures (increased production, erosion control, etc).

The regional direction of São Filipe (Fogo) has succeeded in the meantime in cooperating more closely with the farmers' associations and private landowners established in the project area to secure the sustainability of the project measures. The farmers' associations have taken over most of the implementation of the maintenance work and the supervision of the silvo-pastoral utilisation of the rehabilitated forest areas. The long-term benefits of the project measures are also being increasingly acknowledged. A negative result is that no specific management plans with clear guidelines for the use of the resources of the areas intended for agro-silvo-pastoral use have yet been set up on Fogo.

On the basis of the target indicators we rate the achievement of objectives as follows for Santiago:

- *Uncontrolled water runoff*: The structures put in place in 1994, 1995 and 1998 (small dams in erosion clefts) to protect against uncontrolled surface water runoff are 60% in poor condition while 85% of the structures built in 1996 are in good condition.

- *Plant containers:* Of the approx. 200,000 plant containers in place, only 6% are in good condition (all those built in 1996 are in good condition). The remaining containers built in 1994/96 and 1998 are 60% in poor condition or no longer existent.
- *Number of trees:* The survival rate of the approx. 260,000 seedlings planted in the years 1994-1999 is not known. The fact that currently 75% of all plantings are in place is mostly due to the intensive follow-up plantings carried out in the years 2002 and 2003 outside the project. Except for the first project year, in which different tree species were planted in an experiment (*Jatropha curcas*, *Prosopis juliflora*, *Parkinsonia aculeata*, *Acacia vitorea*), plantings in the ensuing years focused on the one species best adapted to the arid climate, the mesquite tree (*Prosopis juliflora*).
- As confirmed by the results, indicators reveal that the individual target for the seedlings could be achieved in the sub-project area of Santiago. On the basis of the information received about the intensive follow-up plantings conducted in 2002 and 2003, however, it must be assumed that the project measures would not have been sufficient to achieve this result. The second important element of the project objective, securing the erosion control measures in the long term, however, was not reached. Thus some of the criteria for achieving lasting success in afforestation were fulfilled but the benefits nevertheless remained limited: In this extremely steep and differentiated terrain and with the climatic extremes, natural erosion takes place even without anthropogenic influence or grazing by farm animals, and this erosion cannot cause extensive damage because of the immediate proximity to the ocean and because the locations are of only marginal importance to crop cultivation and animal husbandry. In retrospect, the selection of this area was not a sound choice.

The following data are the result of a study commissioned for Fogo (the condition of the erosion control and water retention structures was not surveyed):

- The measures carried out from 1994 to 1999 to control erosion in the sub-project area of Fogo primarily included terraces reinforced by stone walls (approximately 135,000 metres), non-reinforced terraces (approximately 76,000 metres) and supporting walls (220,000 metres). Surveys based on random samples showed that 70 to 80 percent of the non-reinforced terraces were generally in poor condition. Field inspections of the reinforced terraces and supporting walls showed that 70 to 80 percent were in good condition. This is more likely due to the relatively long useful life of these constructions than to periodic maintenance on the part of the landowners or tenants, however.
- The target indicators for the rehabilitated former TC areas and agroforestry areas were specified separately at project appraisal. The surveys by the DGASP of the areas afforested under the project, however, provide quantitative information only on the current planting density for the areas afforested each year. So the average planting density can only be calculated for the overall area on Fogo: 23 trees/ha (survival rate of 39%). This is well below the planting density intended for the sub-areas under the project (former TC afforestation: 200 trees per hectare, rehabilitated agroforestry areas: 50 trees per hectare). It is to be assumed that the tree density remained far below the target indicators and that the expected biomass increase could therefore not be achieved.
- On-site estimates revealed that the target indicator that is to give information on the current use of resources on the afforested areas (grazing and timber cutting) does not appear to have been met. There are clear signs of overgrazing and intensive timber extraction. Trampling damage caused by grazing livestock is also the probable cause of destroyed non-reinforced terraces on slopes.

Up to the year 1999 the executing agency carried out a monitoring of all measures for which it used the monitoring and evaluation system developed under the complementary measure. It was applied primarily to afforestation and served to identify necessary follow-up plantings and not so much to determine erosion control measures and impacts. Monitoring of the erosion control structures would have been reasonable only after KfW's final inspection in any case (1999), as these structures can be assumed to have a relatively long useful life and usually require no maintenance in the first years. After 1999 a review was performed only in the framework of the final inspection. In this sense the indicator for a functioning monitoring and

evaluation system for improving the qualifications of the executing agency has not been fulfilled. As a result, maintenance measures, for instance, cannot be planned.

The inadequate information setup described for the sub-project area of Fogo, which cannot be improved retroactively anymore as the data collected were incomplete, allows only an estimate of the degree to which the project objective has been achieved. According to this estimate, the majority of the indicators have not been fulfilled. The indicators of project objective achievement are estimated to be generally positive for the sub-project area of Santiago while the fact that the area selected on Santiago Island made only a marginal contribution to the achievement of the project objective must be rated negative. We therefore deem the project objective generally not to have been achieved. For reasons of plausibility the overall objective therefore also must be regarded as not having been achieved.

No project-specific data on the potential use of fodder and firewood for each surface unit treated is available. This makes it impossible to perform an accurate analysis of the impact on the project level and for the economy as a whole, nor a comparison with the estimates made at the time of project appraisal for lack of reasonable cost and earnings data.

The new forestry law made it possible to involve target groups into the project more strongly and shifted responsibility to the local branches of the General Direction for Agriculture, Silviculture and Fishing (DGASP). Accordingly, after the project conception was changed, in the second half of the project (from 1997 onwards) the annual planning of project measures on Fogo Island was carried out with the full participation of the target groups, leading to considerable improvements and relieving the tension in the relationship with the landowners and the population in the sub-project area of Fogo.

During the six-year project period a total of 157,000 and 106,000 working days were performed for the project on Fogo Island and Santiago Island, respectively. Because the work was seasonal, around 440 jobs were created during this time. In many areas the project benefited women in a particular way (commission work in project implementation and positive impacts from the project in the form of increased vegetable farming, improved availability of (drinking) water, firewood and fodder), and particularly households managed by women (up to 40% in the target areas). The project conception was designed to create employment for poor groups of the population; however, because few people live in absolute poverty on the Cape Verde Islands no specific impacts on poverty were expected already at the time of appraisal.

The living conditions in rural areas tended to improve as a result of the project. There is no way of telling whether the project contributed to reducing the continuing rural exodus. Available data still point to an annual population growth of as much as 1% for both project regions. The erosion control and afforestation measures made a positive contribution to the ecological sustainability and ecological stabilisation of the target areas.

Overall, the project appraisal was based on an overly optimistic estimate of overall project risks. In particular, the implementing capabilities of the executing agency were overestimated and the complementary measure was not comprehensive enough. On the basis of the positive experience gathered with the farmers' association and intensive education work performed by the DGASP since the completion of the project we assume that the measures will in part be sustainable at least on Fogo Island.

On the basis of the key criteria of effectivity, efficiency and relevance/significance the developmental effectiveness of the project is rated as follows:

- The selected areas on Santiago made only a minor contribution and those on Fogo made a limited contribution to the achievement of the project objectives. We rate the effectiveness of the project as not sufficient (rating 4) as essential parts of the project objective indicators were not achieved, especially on Fogo. The subsequent close involvement of the target group (farmers' associations) has a positive impact on the sustainability of the measures, but the quality of the land treated is generally unsatisfactory.
- We consider the costs of the main project components to be appropriate overall. The current rate of utilisation is still low. Frequent personnel replacements in the project-executing agency had a negative impact on the implementing efficiency of the project. Overall, we judge the project's efficiency to be still satisfactory (rating 3).

- Given the ongoing pressure on the natural resources and continuing erosion in other areas of the island republic the core problem continues unabated. The contribution of the project measures to the achievement of the overall objective and, thus, the relevance of the project are minor. As the owners or tenants of private land have a greater sense of ownership, the impacts of the project on the target group in the sub-project region of Fogo (private land) are much more visible than in the sub-project region of Santiago (public land). With regard to the minor outcome the project has a rather limited significant impact. The project did have a positive influence in regard to the follow-up projects under German Financial Cooperation, also in the sense of the lessons that were learned. We rate the relevance/ significance of the project as slightly insufficient (sub-rating: 4).

### Lessons Learnt

- In a resource protection project, informative, practicable indicators need to be developed from the outset that apply to all essential measures and permit a quantitative and qualitative assessment of measures against scientific, social and ecological-biological criteria.
- The development of a suitable and sustainable monitoring and evaluation system within a weak executing agency requires considerable consultant support. The introduction of a systematic impact monitoring must be discussed again particularly at the start of the phase of operation, the staff must be trained in surveying methods and the evaluation of the data must be submitted to the management in regular intervals. The practical introduction of a monitoring and evaluation system must be supervised during the implementation by KfW as well.
- In erosion control projects with a definable and easily measurable target group size it is indispensable to involve the target group members in the conception, implementation and maintenance of the measure in order to ensure lasting success. In principle, preference should be given to locations with higher erosion control and yield impacts (deeper soils, lower gradients, high protective impact, higher precipitation). This applies to measures implemented on private land in particular. To the extent that the target group draws a specific individual benefit from the measures, for instance in agricultural production, a contribution to the costs should be considered.

### Legend

Developmentally successful: Ratings 1 to 3	
Rating 1	Very high or high degree of developmental effectiveness
Rating 2	Satisfactory degree of developmental effectiveness:
Rating 3	Overall sufficient degree of developmental effectiveness
Developmental failures: Ratings 4 to 6	
Rating 4	Overall slightly insufficient degree of developmental effectiveness
Rating 5	Clearly insufficient degree of developmental effectiveness
Rating 6	The project is a total failure

### Criteria for the Evaluation of Project Success

The evaluation of the "developmental effectiveness" of a project and its classification during the ex-post evaluation into one of the various levels of success described in more detail above concentrate on the following fundamental questions:

- Are the **project objectives** reached to a sufficient degree (aspect of project **effectiveness**)?

- Does the project generate sufficient **significant developmental effects** (project **relevance** and **significance** measured by the achievement of the overall development-policy objective defined beforehand and its effects in political, institutional, socio-economic and socio-cultural as well as ecological terms)?
- Are the **funds/expenses** that were and are being **employed/incurred** to reach the objectives **appropriate** and how can the project's microeconomic and macroeconomic impact be measured (aspect of **efficiency** of the project concept)?
- To the extent that undesired **(side) effects** occur, are these tolerable?

We do not treat **sustainability**, a key aspect to consider for project evaluation, as a separate category of evaluation but instead as a cross-cutting element of all four fundamental questions on project success. A project is sustainable if the project-executing agency and/or the target group are able to continue to use the project facilities that have been built for a period of time that is, overall, adequate in economic terms, or to carry on with the project activities on their own and generate positive results after the financial, organizational and/or technical support has come to an end.