

Ex post evaluation – Morocco

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Sector: Agricultural Water Resources (CRS Code 31140)

Programme/Project: Small and medium-sized irrigation perimeters in Dadès-Valley - a) Investment (BMZ No. 1995 66 084)*, b) Accompanying measure (BMZ No. 1995 70 532), c) Basic and advanced training (BMZ No. AF 1993 117), d) Basic and advanced training (BMZ No. AF 2003 233)

Implementing agency: Office Régional de Mise en Valeur Agricole d'Ouarzazate

Ex post evaluation report: 2015

		Project A (Planned /Actual)	Project B (Planned /Actual)	Project C (Planned/ Actual)	Project D (Planned/ Actual)
Investment costs (total)	EUR million	14.5/12.51	0.26/0.14	1.3/1.2	2.3/2.2
Counterpart contribution	EUR million	4.3/3.66	---	---	---
Funding	EUR million	10.2/8.85	0.26/0.14	1.3/1.2	2.3/2.2
of which BMZ budget funds	EUR million	10.2/8.85	0.26/0.14	1.3/1.2	2.3/2.2

*) Random sample 2014



Summary: Improvement of hydraulic infrastructure (concrete lining of roughly 160 km of main channels and installation of distribution infrastructure) for roughly 6500 ha of small and medium-sized irrigation areas in the Dadès-Valley. Programme participation was conditional on the establishment of user associations in the relevant irrigation areas and taking on a share of the costs. After an initial payment, subsequent instalments were mostly provided by means of physical labour or similar compensation advisory services as well as basic and advanced training were to support the user associations in operating and maintaining the rehabilitated perimeters, and helped to improve their crop cultivation skills.

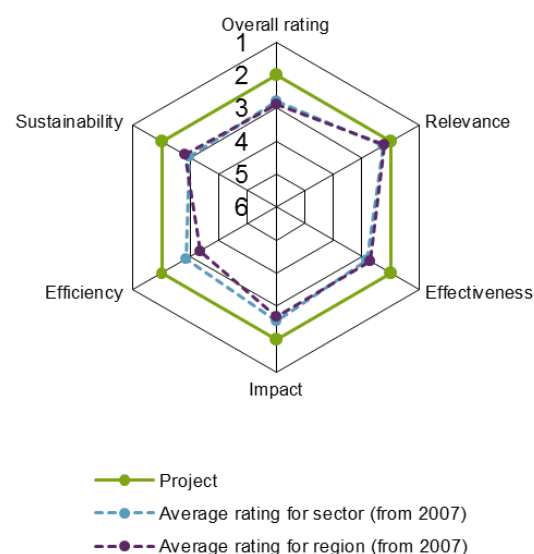
Objectives: The intended impact of the project was to increase the target groups' farming incomes. The respective indicator was an increase in real agricultural incomes (20 % no later than 8 years after the project launch). The programme objectives (outcome) was to increase agricultural production measured in terms of a rise in productivity (unit yield on rehabilitated areas) and effect a moderate change in crop structures towards higher-value crops. The indicator was an increase in the unit yield for selected crops in rehabilitated areas (3 years after project launch: common wheat +3 0%, alfalfa +14 %, potatoes +18 %, 8 years after project launch: apples +33 %).

Target group: The roughly 17,600 landowners of small irrigation plots, the majority of whom lived below the poverty line as of the project appraisal.

Overall rating: 2

Rationale: The anticipated increases in yield and income were achieved, and in some cases the expectations were significantly exceeded - at comparably low specific overall costs. In terms of the participatory approach the project was a trendsetter for all subsequent interventions in the Moroccan irrigation sector in.

Highlights: Very close, trusting relationships between the regional representatives of the executing agency "Office Régional de Mise en Valeur Agricole d'Ouarzazate" (ORMVAO) and the user associations.



Rating according to DAC criteria

Overall rating: 2

The intended positive productivity and income trends were largely achieved - and in some cases exceeded - at specific costs way below initial expectations. The project also had structural effects in terms of enhancing beneficiaries' participation in planning and maintenance, not only for this, but also for all future interventions related to Morocco's irrigation agriculture. Additionally, the programme produced non-economic benefits in terms of preserving the cultural landscape in the project area, thereby supporting social cohesion and slowing urban migration.

Relevance

The project was focused on increasing the agricultural and cultivation production of micro and small farming families using areas of between 0.2 and 1 ha (average of roughly 0.3 ha). This was to help improve living conditions, reduce poverty and boost the efficient use of water as a scarce resource.

With hindsight, the project concept and intervention logic are still coherent and relevant as of today. They take account of the specific conditions in the programme region and are in line with the development priorities of the German federal government and the government of Morocco:

Water scarcity is the main bottleneck to the development of Morocco's agricultural production. Alternative farming methods are not an option in the region for the foreseeable future - given the limited quantity of irrigable areas, social structures that cannot be changed in the short term and insufficient alternative employment options.

The programme directly supported the implementation of the Moroccan programme to improve small and medium-sized irrigation perimeters, which was launched in 1994 ("Programme de mise en valeur agricole intégré des zones de petite et moyenne hydraulique"/PNI).

The project's focus is also in line with the Moroccan government's current sectoral priorities, as reflected in the 2009 "Plan Maroc Vert" (PMV). Concerning the water sector, the PMV concentrated primarily on improving traditional small irrigation systems. This also holds true for the "Programme National de l'Economie d'Eau d'Irrigation (PNEEI)", which promotes the introduction of water-conservation techniques.

The project also broke the ground for introducing a participatory approach in accordance with the 1990 law on forming user associations (Associations des Usagers des Eaux Agricoles, AUEA).

The project was closely aligned with a complementary IFAD-funded programme that focused on improving other infrastructure (riverside protection, drinking water, road construction), livestock farming and strengthening the executing agency's advisory function in the programme region. As part of the IFAD programme, a unit was created at the executing agency targeting the promotion of women.

Relevance rating: 2

Effectiveness

The programme objectives were to increase agricultural production - to be measured by a rise in productivity (unit yield on rehabilitated areas) and a moderate change in cultivation patterns towards higher-value crops (target added at ex-post evaluation).

The targeted yield increases were achieved or significantly exceeded before the programme's completion - both in terms of higher unit yields for almost every crop and greater utilisation intensity in many perimeters. As expected, though, yields continued to fluctuate considerably from year to year, mainly due to strong variations in rainfall. Reduced water losses in the system lead to an increase in water usage efficiency and the availability of water resources, especially for downstream areas. Accordingly, yield fluctuations are much lower in those areas - particularly when compared to perimeters that have not been rehabilitated.

The effects of higher individual crop yields vary from perimeter to perimeter - depending on land use patterns. The marked change in cropping structures in many zones towards higher-value crops with higher profit margins (particularly roses and fruit, esp. apples, olives and dates) was another significant impact of the project.

One crucial factor for achieving higher yields in such a short period was the participatory approach, which - for the first time in Morocco - was adopted for planning the measures (e.g. selecting channels, distribution infrastructure). In the unanimous opinion of all those involved (executing agency and users), this meant the specific needs of all users were considered much more deliberately and considerately than before. Moreover, the executing agency found that infrastructure measures can ultimately be implemented more easily with the help of a participatory approach.

Unit yields, esp. for the market crops referred to above, could be raised even further in some cases with the targeted use of fertiliser. For other crops, the yield potential increases are not sufficiently profitable due to the relatively high cost of fertiliser.

Effectiveness rating: 2

Efficiency

The production efficiency actually achieved exceeded initial expectations despite the project's 6-year implementation delay, specific investment costs were on average 20,000 DH/ha (EUR 1,947), still below the expected costs at the project appraisal (25,000 DH/ha, EUR 2,197). Therefore they were significantly below the upper limit of 40,000 DH/ha, up to which an internal rate of return totaling 6% was considered sufficient.

Among other things, those lower specific costs resulted from the stronger promotion of larger perimeters with longer channels, which means a larger total area served per unit of length of the channels. Accordingly, it was also possible to increase the total rehabilitated area by approximately 5 % compared to initial estimations (i.e. from 6,100 ha to 6,400), despite greatly reduced total project costs (-14 %). Owing to plot sizes which are still very small in comparison to other areas, specific costs are still considerably higher than those of other comparable rehabilitation programmes in Morocco (e.g. PMH North, PMH III). They comply with the guidelines of the Ministry of Agriculture, which consider the average cost of approximately 25,000 DH/ha as "viability limit". In our view, this figure appears justified, keeping in mind the parallel objective of promoting particularly remote areas with relatively small perimeters.

The significant reduction in time - and partly also financial efforts - required to maintain the systems is considered a very relevant impact by all users - compared to the burdensome maintenance of traditional earth channels and spring intakes.

Based on rough calculations, allocation efficiency can be assessed as good, despite delayed completion. The economic rate of return should be at least in the range of 20 p.a.. A more precise quantification is no longer possible due to a lack of data since the project's completion.

It should be noted that the users' own contributions of 10 per - as originally planned - have not been demanded in full. On average only slightly more than 3 % of the cost contribution was paid. But even this contribution was ultimately not used for the actual project, and was instead deposited in the user association's bank account that was specifically opened for this reason. The funds are to be used for follow-up investments, which has not materialised so far owing to problems of authorisation. Personal contributions in the form of work performed were rendered to a certain extent as some form of compensation for the lack of payments. With comparable follow-up projects either personal contributions or deferred water tariff payments were agreed because of the limited financial means of the users.

Efficiency rating: 2

Impact

The intended impact was to increase the target group's farming incomes (particularly micro farmers and smallholders) by +20 % in real terms, at the latest in the 8th year of operation (following the delayed programme completion: 2016/2017). In comparison to the rest of Morocco, family incomes in the

programme region are still significantly below those in other regions; the poverty incidence of 12 % – around 20 % in rural areas – lies above the national average of 9 %.

The intended improvement of living and income standards was confirmed throughout by the representatives of the project-executing agency and the Ministry of Agriculture. Data gathered by the project-executing agency as well as separate own surveys make it appear very plausible that the intended increase was realised in the first 6 years after the end of the programme. Accordingly, the ultimate objective can be considered fulfilled. As per general estimates, the average proportion of farming income is meanwhile significantly above 30 % of a family's total income. This is a significant increase compared to the estimates at the programme appraisal (approximately 17 %). Over the same period the poor rural population decreased from initially 60 % to now 20 % (see above), which also points to significant income growth from farming.

Besides income from livestock farming and regional non-agricultural employment (crafts, public service, trade, etc.), which has not risen to any particular extent, transfers from migrants still contribute significantly to family incomes, as expected. Only a small proportion (< 10 %) of land owners, mostly female-headed households, do not have additional income; they mainly live from subsistence farming. The increase in farming income per se is nowhere near enough for many micro farmers and smallholders to obtain a yearly income above the national poverty line which currently stands at DH 3,569 per person (EUR 316).

The establishment of a user association (AUEA) is generally considered to facilitate much more efficient communication between users and the executing agency ORMVAO. On the one hand, the representation of users' interests vis-à-vis ORMVAO not only improved in the programme's planning phase, but also in the long run; on the other hand, ORMVAO finds that structure more efficient in terms of communicating with users and gathering important information from them. The relationship between local ORMVAO representatives and the AUEAs is considered trusting. The participatory approach of the project already had a structural effect in the planning phase: the positive project experiences have resulted in user participation becoming well established in the planning of all comparable projects in Morocco.

The effects on concerning living and income conditions, meet initial expectations. Further substantial income increases could result from the successfully continued shift towards high-value market crops, particularly roses and fruit products.

As part of the PMV, marketing initiatives are already promoted through mergers of cooperatives, so-called Groupements d'intérêt économique (GIE). As national pioneers, some cooperatives or GIEs can really benefit from this in the programme region. The completion of rehabilitation works in their irrigation systems coincided with the PMV's launch in 2009, which enabled those GIE to obtain subsidies right at the beginning of the promotion scheme.

In a regional context, one of the positive effects is the contribution made to protecting micro farmer and smallholder structures. Apart from protecting the cultural landscape in the Dadès Valley, as is always emphasised in dialogue, ownership of farming land (even if very small) is very relevant, especially for regional identity and for cohesion in large families. Therefore, migration is often only planned seasonally or temporarily, and permanent emigration is declining.

Conflicts over water use (and costly and cumbersome investigation into those by the authorities) have decreased significantly since the programme's completion, which is frequently cited as a major impact of improved water availability. This obviously facilitates the implementation of additional projects in the common interest.

Impact rating: 2

Sustainability

No major sustainability problems are foreseeable concerning adequate and orderly operation of the irrigation systems: this assessment is based, on the one hand, on the users' high interest in efficient use as well as on the increased acceptance – thanks to the participatory approach – of taking responsibility for the systems; on the other hand, the perimeters' relatively simple and robust design and the many years of

experience with running, maintaining and servicing such facilities make sustainability prospects appear favourable.

However, external support is necessary, particularly in cases of larger damage caused by unusual flooding (approximately every 10 years). Considering ORMVAO's significant commitment, their small budget results in the risk lengthy repair delays, which may negatively impact on effective irrigation and therefore crop yields.

According to current estimates, water availability in the region does not represent a substantial sustainability risk for the next 40 years, as drainage from the Atlas Mountains is considered to be sufficient.

One key condition for long-term success was and is advisory support to the user associations and the cooperatives - esp. on cultivation and particularly the marketing of high-value crops. Marketing efforts by GIEs with substantial resources (e.g. free provision of improved fruit-tree varieties, construction of cold storage) are indeed supported in the scope of PMV, but there is still a substantial need for technical assistance regarding the further processing and marketing of the product in and outside of the country. Otherwise there is a significant risk that - despite the favourable situation as pioneering cooperatives (or pioneering GIEs) and excellent product quality, increasing competition and relatively long transport routes will mean that no new markets are found that ensure sufficient sales at good prices.

Sustainability rating: 2

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).