KFW

Ex post evaluation – Turkey

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Sector: Drinking water, water management, waste water/waste (CRS 43030) Programme/Project: Waste management Samsun investment (No. 1998 67 102*) Accompanying measure 1 (No. 2001 70 332), Accompanying measure 2 (No. 2005 70 234)

Implementing agency: Samsun City Council

Ex post evaluation report: 2015

		Investment (planned)	Investment (actual)	Accomp.measure (planned) **	Accomp.measure (actual)
Investment costs (total)	EUR	17.29	11.63	1.16	0.87
Counterpart contribution	EUR	8.09	2.47	0.00	0.00
Funding	EUR	9.20	9.16	1.16	0.87
of which BMZ budget fund	ls EUR	9.20	9.16	1.16	0.87

*) Random sample 2015; **) both accompanying measures together, for breakdown see p.2.



Summary: Introduction of a modern, integrated waste management system for the City of Samsun by establishing an organised landfill for municipal waste, rehabilitating the old landfill, procuring vehicles and equipment for waste collection and implementing waste collection pilot projects. The first accompanying measure comprised support for operational monitoring, optimising the collection system and other improvements to waste management. A second accompanying measure facilitated advisory services for hospitals on the separate collection of hazardous medical wastes and the training of operating staff at the new landfill.

Objectives: The overall objective ("impact") was to help reduce the environmental and health risks originating from the uncontrolled dumping of waste; the project objective ("outcome") was to establish a functioning and efficient disposal system for waste from the city of Samsun and surrounding municipalities.

Target group: The entire population of the project region and the catchment area.

Overall rating: 3

Rationale: The project is still rated as satisfactory overall. The reasons for this are the effective operation of the new landfill and the efficient, separate disposal of hospital wastes. The successful transfer of knowledge in key areas via the accompanying measures also contributed to this overall rating. However, the envisaged reorganisation of the departments responsible for waste management did not take place, and the uncontrolled dumping of bulky waste and mixed construction waste is continuing to a certain degree on the secured former landfill,

Highlights: Waste separation only happens in selected areas with private companies, and the informal sector has been successfully integrated.



Rating according to DAC criteria

Overall rating: 3

Breakdown of total costs

A = Investment measure	BMZ No. 1998 67 102,
B = Accompanying measure I	BMZ No. 2001 70 332 and
C = Accompanying measure II	BMZ No. 2005 70 234

	Project A (Planned)	Project A (Actual)	Project B (Planned)	Project B (Actual)	Project C (Planned)	Project C (Actual)
Investment costs (total) EUR million	17.29	11.63	0.66	0.60	0.50	0.27
Counterpart contribution EUR million	8.09	2.47	0.00	0.00	0.00	0.00
Financing EUR million	9.20	9.16	0.66	0.60	0.50	0.27

Relevance

The project addressed one of the biggest environmental problems in Turkey: the unorganised disposal of waste that presents a health and environmental hazard. The core issues regarding the old Samsun landfill site were correctly identified during project appraisal: From today's perspective, the need for constructing a new, properly organised landfill site and the rehabilitation of the old one can still be confirmed. Eliminating the cause of repeated uncontrolled fires and the dispersal of waste after floodings is still considered urgent today and important for local development. Modern waste management still requires the introduction of collection systems for different recyclables; furthermore the separate collection and disposal of particularly dangerous waste materials and hospital waste is still a requirement. There was and persists a need for accompanying measures to prepare both managers and operating staff for new situations and circumstances and to provide support. The intervention logic's main elements - measures, outcome and impact - still appear plausible.

Qualifications in the evaluation are expressed concerning the leachate treatment plant at the landfill site, which was introduced late to the project and not properly dimensioned; furthermore the treatment of bulky waste and mixed construction waste was not sufficiently addressed in the project concept. With regard to the leachate treatment plant, explicit advice was already provided during the planning phase by a certified expert, who highlighted insufficient treatment capacities if the concentrate were returned to the landfill. Although this process was ultimately selected, treatment capacity was not increased for unknown reasons. There is no qualified disposal service for bulky waste and mixed construction waste according to the existing regulations in Samsun.

No other waste management projects were supported by international institutions in the project region. The project was in line with the focuses of Turkish-German development cooperation and was considered a priority in accordance with the Federal Government's guidelines on development policy.

Relevance rating: 2

Effectiveness

The attainment of the outcomes as defined during project appraisal (PA) was assessed according to the following indicators:



Indicator	Status PA	Ex post evaluation
(1) The new landfill is operated properly according to the operat- ing manual. The operating log is fully maintained in accordance with international standards.	Not met	For the most part operated and man- aged properly. Bottlenecks and deviations in the ar- ea of leachate treatment. ¹)
(2) Waste is no longer deposited at the old landfill site, which is se- cured and closed.	Uncontrolled disposal at the unsecured old landfill	The old landfill is secured, but deposits of household waste continue to a clearly visible extent ²⁾
(3) Effective separate collection of recyclables and their delivery for recycling - using informal waste collectors - is carried out in parts of the project area.	40% recycling rate	Not continued as planned, because the system was too expensive for the district municipalities. The district municipalities have start- ed other forms of recyclables collec- tion at major sources and selected households. Informal waste collectors have also been included in these con- tracts.
(4) Waste collection costs are at least 20% (target value EUR 30/mg) below the costs in 2003.	49 EUR/t	Cannot be ascertained, as Samsun Metropolitan Municipality is not re- sponsible for this and no data availa- ble from other sources either.
(5) Hazardous from households waste is collected separately and effectively in parts of the project area.	Not met	Only to be continued to a limited ex- tent for kitchen oils and batteries.
(6) Proper separation of infectious waste in at least 3 hospitals.	Not met	Operational in all major health facili- ties.
(7) The organisational unit re- sponsible for waste-management operation uses appropriate man- agement, planning, budgeting and monitoring tools (e.g. route plans, staffing plans, maintenance plans, liquidity plans, development and evaluation of appropriate perfor- mance indicators)	Fragmented respon- sibilities	Responsibilities are still fragmented. Due to new national legislation, Sam- sun Metropolitan Municipality com- prises the entire former province with a total of 17 communities since 2014. Operational tasks are no longer pooled with those of the district mu- nicipalities.

¹) The population served and the quantity of deposited waste were significantly higher than anticipated during the planning phase (about 610,000 instead of 460,000 inhabitants; roughly 200,000 t per year of waste instead of around 140,000) primarily due to additional incorporations. The specific waste quantity at around 320 kg per inhabitant per year is roughly 7% higher than expected at 301 kg/(*y). The total volume of waste, and recyclable waste collected separately, has increased to almost 380 kg per inhabitant per year, i.e. about 6% higher again than at the completion of the project in 2012.

²) The depositing of mixed construction waste and domestic waste is not as critical as the previous operation as a landfill for household waste. However, totalling several hundreds of cubic metres it is not just visually striking, and also leads to the formation of contaminated leachate, which eventually reaches the river and groundwater. Fires stemming from this are possible too. During the final inspection the Samsun Metropolitan Municipality pointed out it would like to continue to use the site as a landfill for construction waste and excavated soil. The site was then transferred within the Samsun Metropolitan Municipality to the construction

department. Inspections of proper operation were thus no longer carried out by the responsible authority for waste.



The improvements achieved in the area of hospital waste are remarkable.

The training courses conducted have brought about fruitful and long-lasting improvements in nearly all areas. Activities undertaken in recent years to improve waste management – such as experiments in waste pre-treatment, the integration of a fermentation plant for parts of fine fractions resulting from the pretreatment, and the implementation of other collection schemes for recyclable materials – are based heavily on information and suggestions from the courses.

The dumping of sewage sludge with a dry matter content of less than 40% negatively affects landfill operations. The producer was advised to consistently mix in adequate amounts of lime to ensure the target value is met.

Hospital waste management is now functional throughout the entire new Samsun Metropolitan Municipality - after the pilot project was extended to collect this waste fraction at three hospitals. The impetus for this was the sterilisation system and the pilot project for the collection of this waste fraction.

Bulky waste and electronic waste were not part of the project. The Samsun Metropolitan Municipality must develop solutions for this together with the district municipalities.

The project executing agency's commitment and growing expertise is demonstrated, e.g., by a pilot project recently begun for mechanical pre-treatment, as well as by its own experiments on biological pretreatment and the thermal recovery of fractions thus generated. Initiatives with view to the pre-treatment of waste are commendable in principle – regarding both improved resource utilisation via recycling and the landfill's longer life span. However, shortcomings, primarily in terms of fire protection and occupational safety, require swift action. This was discussed in the presence of representatives from the companies concerned (contract parties and subcontractors).

In connection with the experiments on waste pre-treatment, concerns were expressed on the planned disposal of dewatered fermentation residue from the organic fraction of mixed household waste in agriculture. These concerns relate to the accumulation of heavy metals in soils, as, e.g., experienced in Germany after similar projects, which is why this treatment is now prohibited in Germany.

Taking into account the greater weighting of indicator (1), the overall sub-rating is 3.

Effectiveness rating: 3

Efficiency

Considering the previously unorganised dumping of waste that threatened both the environment and health, the funds for a new landfill were used where the environmental situation could be improved most effectively. The same applies to the hospital-waste sterilisation plant. For the first time in the region It made the separate disposal of such waste possible.

However, far fewer resources were used for securing the old landfill than originally planned. The main reason for this is that the plans for the comprehensive capture of leachate, including a subsequent purification plant, were abandoned. This is understandable in view of the uncertainties regarding the effort and cost associated with the subsequent installation of appropriate equipment at the base of the site and in the river-bed area; furthermore, regular pumping costs would be required for treating the leachate that may be extracted.

At about EUR 2.50/m³, actual specific investment costs in the new landfill with a capacity of roughly 2.3 million m³ are comparable to similar larger volume schemes in Turkey for. At roughly 6 EUR / ton, actual operating costs (excluding debt service and depreciation) are in the range of smaller landfills in Turkey. Therefore, project costs are rather low on the whole.

The investments made display a good balance between improvements and resources used. The project as a whole was carried out with a delay of around four years compared to the original plan.

Efficiency rating: 2



Impact

The intended impact of reducing environmental and health hazards caused by the previously uncontrolled disposal of waste was largely achieved through the rehabilitation of the old landfill. Smouldering waste fires and associated harmful emissions, in particular, have ceased. Securing the old landfill also eliminated other negative effects – such as waste regularly being swept away during floodings or waste constantly being dispersed down the valley through wind. However, as the location has not been closed off entirely, it still operates as a landfill for construction debris and excavated earth. This is financially much more convenient for the Samsun Metropolitan Municipality than setting up a completely new and separate landfill for such waste. From an environmental perspective, there would be no arguments against it being used only for such purposes. However, it became obvious that substantial amounts of mixed construction waste and household waste were also being disposed of there. Accordingly, negative environmental impacts remain, albeit to a much lesser extent than in the past. As a point of orientation, the roughly 15,000 tonnes of waste regularly disposed of each month at the new site can be compared with the several hundred tonnes of such waste at the old landfill.

The new landfill does not significantly affect the surroundings. No people live in the immediate vicinity. Certain burdens due to waste transport can be observed, despite the use of large consolidated shipments. Unpleasant odour emissions are caused primarily by the open leachate pond, and are noticed especially during weak winds in the inhabited areas further down the valley.

Impact rating: 3

Sustainability

From today's perspective, the economic situation regarding waste management in the Samsun Metropolitan Municipality does still not meet requirements. The extent of financial contributions for waste management depends on the significance the sector receives from the personal perspective of the responsible decision makers (Mayor, Secretary General). A corresponding set of regulations that safeguards this importance is not yet established in the system. Depreciation and reinvestment are particularly affected by this. However, senior politicians in charge have so far at least ensured adequate funding allocations for replacement or maintenance measures.

During the evaluation mission, the vital importance of maintenance, servicing and spare parts management for the compactor were emphasised to ensure the long-term effective use of the landfill's capacity. The lack of steady, secure funding for these maintenance measures presents a risk for the continued effectiveness of the project.

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).