Sida Evaluation 00/13

Environmental Projects in Morocco

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Department for Infrastructure
and Economic Cooperation

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Morocco
International boundary
Province or préfecture boundary
National capital
Province or préfecture capital
Railroad
Road or track
Province or préfecture names are the same as their capitals
0 50 100 Kilometers
0 50 100 Miles
Sébou
Oum el Rabia
Tensift
SPAIN
Cádiz
Málaga
Algeciras
Gibraltar (U.K.)
Mediterranean Sea
Tangier
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Azrou
Ben Slimane
Boulemane
Al Jadida
Settat
Khouribga
Oued Zem
Khenifra
Oued Moulouya
Bou Arfa
Safi
el Kelaa des Srarhna
Beni Mellal
Figuig
Ksar es Souk
Azilal
Marrakech
Essaouira
Béchar
ATLANTIC OCEAN
Quarzazate
Oued Dades
Agadir
Oued Sous
Oued Draa
Tata
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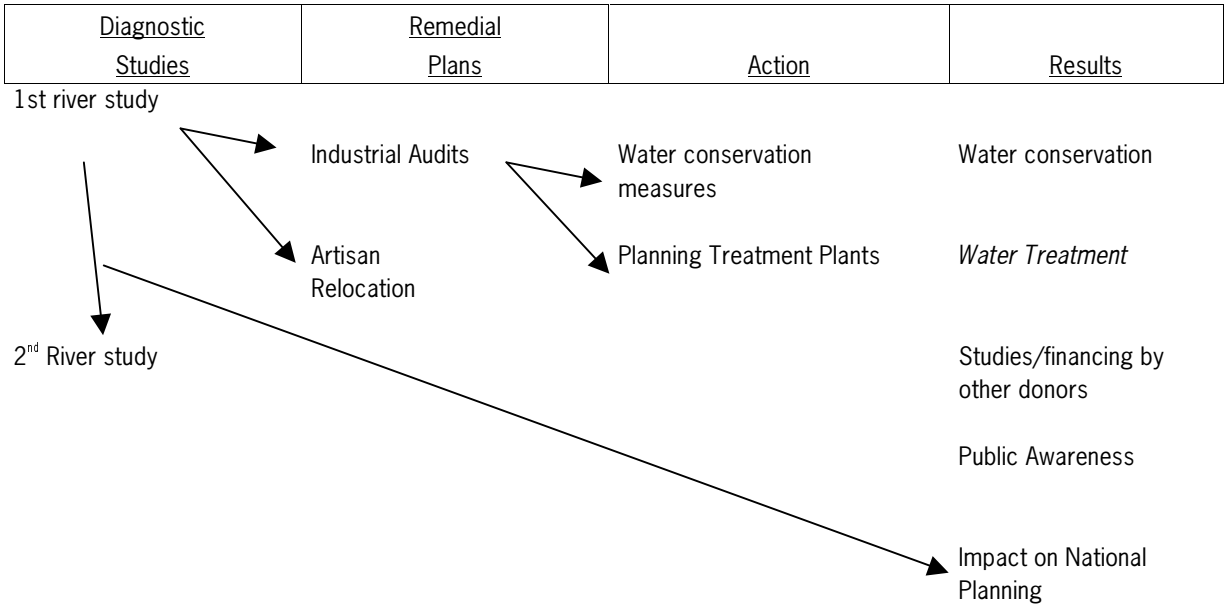
THE EVALUATION TEAM

Swedish Development Advisers AB has been engaged by Sida to review and assess the environmental projects. In May–June 1999 Gunilla Göransson and Jean Pierre Bramslev made a field study visit in Morocco. Bo Andréasson has assisted in the report preparation.

Executive Summary

During 1992 to 1999 Sida has financed six studies in Morocco with the purpose of improving the environmental situation in and around three important river basins. The total cost amounts to near SEK 15 million. The focus of this report to evaluate the studies in order to identify and evaluate results achieved and to assess the relevance, impact and sustainability of the chosen form of support, Contract-financed Technical Cooperation.

The identified effects of the Sida financed studies, all of them carried out by Scandiaconsult International, have been assessed by a classification ranging from the support being diagnostic studies, remedial plans, actions taken and results (se table below). The support and the impact can be summarised in the following way:



The first river study, the River Sébou, was followed by further studies financed by Sida: environmental audits in a couple of sugar industries and a food gel production plant. Those studies have so far resulted in water conservation and the planning for the realisation of internal water treatment installations is currently taking place. The first river study also lead to a second, Sida financed study, of the rivers Oum Er Rbia and Tensift.

The water treatment installations (italics in the table above) are not yet implemented but tender documents are prepared for two sugar industries and financing has been arranged for the food gel industry.

The indirect effects of the Sida support has been twofold

1. The studies presented by Scandiaconsult International have been well integrated into the Moroccan planning process.
2. Public awareness of the environmental problems and awareness in the target group, representatives from industry, seems to have increased as a consequence of reports and seminars.

On the other hand, what is the impact of public awareness? It is argued in this report that such awareness might not be enough for remedial actions to be taken if the costs cannot be financially justified. It might, however, help in the understanding of why authorities use fines and other measures in efforts to improve the environment.

The question is raised if studies are the right thing to do: If the desired result is less polluted rivers, what is the best use of SEK 15 million? Three alternative approaches would be

- a study approach with a long-term perspective,
- a total chain approach with the ambition to ensure that physical improvements are achieved and
- a result driven approach.

There is no one answer to the question of which approach is the best. It is, however, important that it is asked in order to enable a cost efficient support leading to desired results.

An analysis of the goal formulation and its relevance for achieved results shows a development over time towards more specific and measurable goals.

With the exception of the handicraft relocation project, the projects or studies have met their main, primarily output-defined goals. The recommendation based on the analysis of the goal formulation in Sida's internal documents is to strive for the use of *measurable goals*. For the most recent project, the second river study, the LFA[1] matrix was used with apparent benefits to the goal formulation. It is *recommended* that it should be used whenever possible.

Competitive bidding was not used in any of the studies covered by this assessment. Scandiaconsult International carried out all studies for four different Moroccan clients – a ministry of the river studies, a limited liability company, the sugar industry organisation and an urban development organisation. The support model used by Sida, the Contract-Financed Technical Cooperation (KTS), might have a complication in as far as the objectives of the three parties, the client, the consultant and Sida are concerned. There is a built-in risk with KTS that collusion between client and consultant occurs at the expense of the financier. The use of *competitive bidding* is *recommended* as the best control mechanism both to minimise collusion risks and to ensure cost efficiency.

Recommendations regarding future support to the environmental sector of Morocco:

Support to further *national planning* activities and environmental *policy* formulation
Support to public *wastewater treatment* plants as well as industrial pre-treatment installations
Concessionary loans to facilitate investment in *cleaner technologies*.
Rehabilitation of the *Beni Mellal* wastewater treatment *plant.*

[1] Logical Framework Analysis

1. Overview

1.1 Six Environmental Studies

Swedish support to Morocco started in the beginning of the 1990's. By the end of 1998 the total value of the support had reached SEK 29.4 million. Half of this was on account of six environmental projects aimed at reducing the level of pollution of the main rivers in Morocco. Those six, all of which are studies, are the subject of this evaluation.

Sida funded environmental studies in Morocco	Moroccan client organisation	Swedish consultant	Amount (SEK)
Study of Industrial Pollution in the Sébou River	Ministry of Commerce, Industry and Handicraft	Scandiaconsult International	4,244,000
Waste water treatment study for Setexam (food industry)	Setexam	Scandiaconsult International	698,000
Study of Internal Environmental Measures at Sugar Factories	Moroccan sugar industry organisation	Scandiaconsult International	1,735,000
Study of the Restructuring of Handicraft Industry in Fez, Phase I	Ader-Fez	Scandiaconsult International	1,948,000
Study of the Restructuring of Handicraft Industry in Fez, Phase II+III	Ader-Fez	Scandiaconsult International	3,627,000
Environmental Study of Industrial Pollution in Oum-Er-Rbia and Tensift	Ministry of Commerce, Industry and Handicraft	Scandiaconsult International	2,690,000
Total			14,942,000

1.2 One Consultant and Four Clients

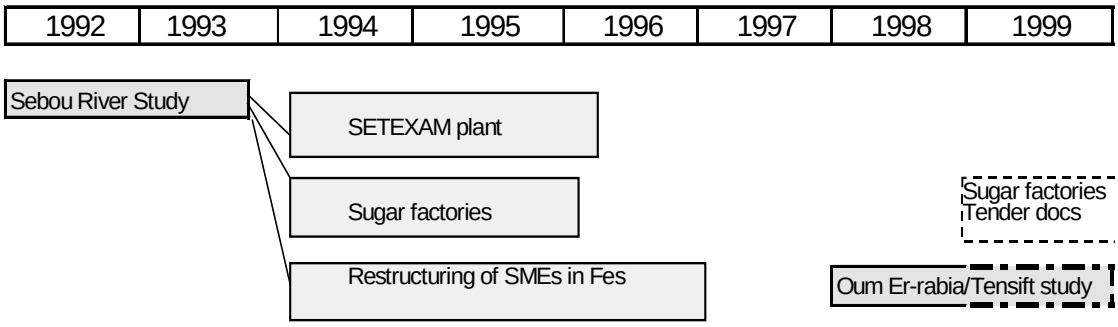
The client organisations have differed for the various studies. The contractual counterpart in the river studies is the Ministry of Commerce, Industry and Handicraft. Counterparts in the environmental audits are one private company (Setexam), the sugar industry organisation and in the case of the Fez Médina relocation study the client is a Government created enterprise Ader-Fez which has an urban development role. All studies have been carried out by the same Swedish consulting firm, Scandiaconsult International, under contract with the Moroccan client organisations whose foreign exchange cost for the Swedish consulting input has been covered by Sida (and previously BITS).

It is worth noting that none of the client organisations are affiliated with the Ministry of Environment. This ministry came into existence in 1995 when the industrial studies were already well under way.

1.3 The Purpose: Reduced Wastewater Pollution

Two of the projects (the first and the last) are river basin studies aimed at defining the extent and kind of pollution as well as main polluting industries. Those are hereinafter referred to as diagnostic studies. The three other studies (of which one was divided in two phases) were aimed at defining actions to reduce industrial waste discharge at the factory or industrial area level. Those, which are referred to as remedial studies, were consequences of the first diagnostic study. They identified measures to reduce discharge of industrial waste into the Sébou River.

The sequence in which the five studies have been carried out is shown in the following graph.



The Sébou River Basin study, which identified the degree of pollution, the main industrial sources as well as the consequences in case remedial action would not be undertaken, led both to the three remedial studies and to a similar diagnostic study for the two river Oum Er Rbia and Tensift. The latter is scheduled to be completed by late 1999.

The tender documents for the sugar factories are under preparation by the end of 1999 with Sida support. This project is not included in the evaluation.

2. Methodology: Evaluation of Sequences in Chains of Events

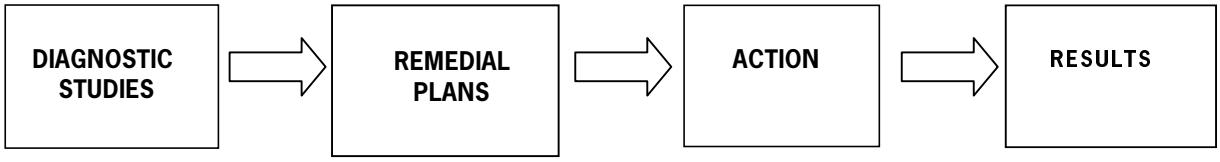
The two main purposes of this evaluation report are

1. to identify and evaluate results achieved and
2. to assess the relevance, impact and sustainability of the chosen form of support, Contract-financed Technical Cooperation.

In addition the evaluation is intended as input in the formulation of a strategy for future cooperation activities within the environmental sector in Morocco and for similar projects in other countries.

The Terms of Reference define the objects of the evaluation as "Evaluation of Environment Projects in Morocco". The 'projects' in respect are studies and as such part of a process, which would eventually lead to projects that could in turn result in the improvement to the water quality in Morocco's main rivers. Two are environmental studies of industrial pollution of river systems, two are environmental audits of five polluting factories and one study investigates relocation as a means of reducing the pollution load of the centre of a Moroccan city.

The logical chain of events towards environmental improvement can be depicted as in the figure below. It would typically start with diagnostic studies. Those may lead to further studies of remedies and alternative technical solutions, which could in turn result in investments that would achieve the end result, environmental improvement, in this case cleaner water.



Studies, problem identification | *Studies, alternative solutions* | *Investments* | *Measurable, physical change*

Neither the diagnostic studies nor the remedial plans would, by themselves, be the end results. They may or may not initiate actions that will have positive environmental effects.

2.1 What is the 'result' of a study?

An assessment of the effect of support in the form of studies would necessitate a definition of the concept of 'result'. The result of a study, in the narrow sense, can be defined as a document containing a certain volume of data, analysis, conclusions, etc. This is typically the contractual definition, which defines the output to be accomplished by the contractor/consultant.

The exogenous results, those pertaining to actual objectives for which the studies have been undertaken can be both direct and indirect, i.e. further links in the above-mentioned chain of events. An evaluation, should, in order to be meaningful seek to answer the question as to whether the studies have produced such exogenous results.

The table below identifies some possible effects of studies, which would lead directly or indirectly to lower levels of pollution.

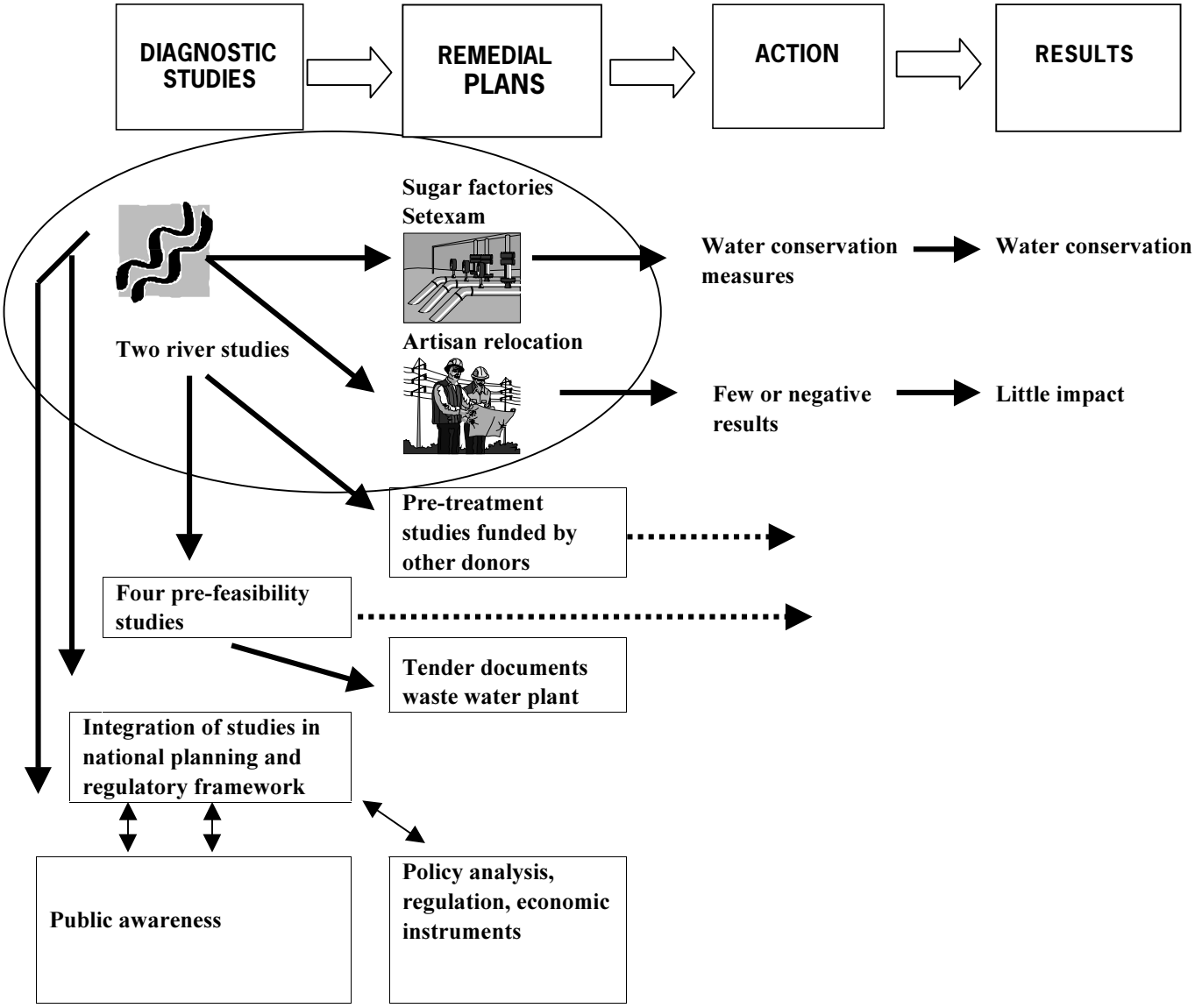
Results of studies

Direct results (industrial level)	Indirect results (national policy level)
Internal: Investments in cleaner technology	Rules and regulation
Internal: Pre-treatment	Economic instruments incl. tariff reforms, changes in subsidies etc.
External: Waste-water treatment plants	Environmental audits
Reduction or closure of polluting production	

The methodology used in the evaluation of the Sida supported studies has been to identify indirect and direct results of the studies and to assess to what extent the studies has been integrated in the Government's plans and if they have been replicated by others without Sida's support.

3. Identified effects of the Sida financed studies

The following graph shows in a summarised manner some of the effects that the studies are deemed to have had.



3.1 Direct Effects on Water Conservation

The *direct* effects of the Sida financed studies comprise internal measures in the audited industries. They are related to water conservation and water recycling. Investments in wastewater treatment have not materialised. Those measures have been identified but are pending due to lack of financing, i.e. they are not commercially viable and the companies are seeking subsidies in order to implement the treatment.

The most comprehensive of the evaluated studies, the relocation of polluting artisans and industries from the old city of Fez has, so far, had little – if any – positive direct impact. Identification of problems and plans for relocation have been completed, but financing for the relocation could not be raised. Some sixty artisans have purchased their lots in the intended new industrial area but have not been able to move due to lack of infrastructure investments and civil works financing. There has even been a negative impact due to the fact that some of the tanneries have moved in to the residential areas near the intended industrial area thereby aggravating the pollution problem.

3.2 Indirect Effects on Providing Solutions

The *indirect* effects of the studies are pre-feasibility studies in a number of polluting factories, impact on national planning and increased public awareness of the magnitude of the pollution problem.

In the diagnostic river studies, and especially in the remedial audits, preliminary studies of solutions to the problems are investigated. Such *pre-feasibility studies* including financial calculations have been carried out for the following industries:

- sugar production (beet and cane)
- gelatine production
- olive oil production
- hide tanning

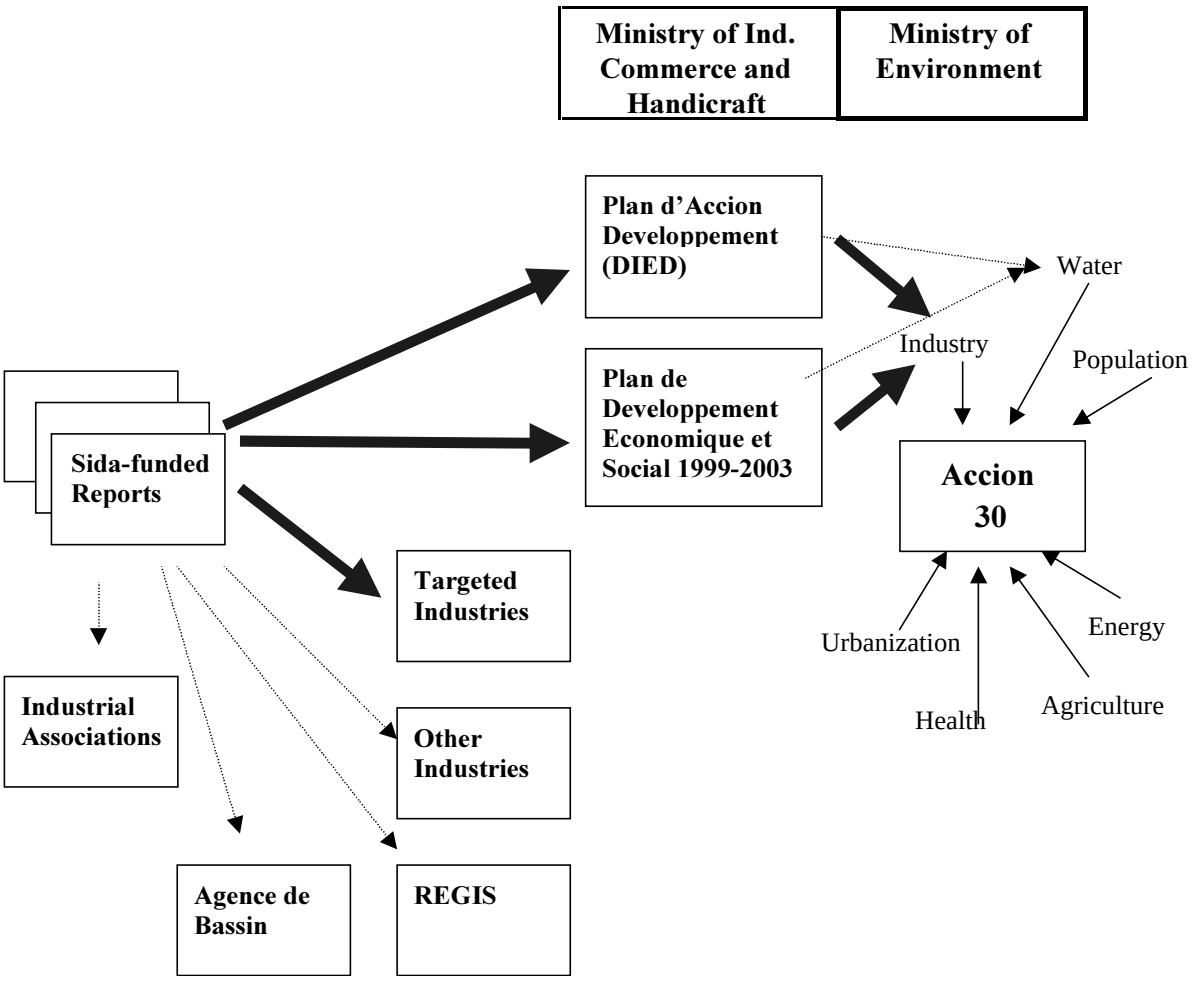
Other environmental audits, in parallel to those financed by Sida, have been financed by other donors e.g. UNIDO, the World Bank and EIB.

3.3 Indirect Effects on National Planning

During the 1990s Morocco has developed a comprehensive and systematic framework in order to promote sustainable planning and development. Sida's support has been relatively small but well focussed and integrated into the process.

The Sébou river study was the first of its kind in Morocco and it has had considerable impact on national planning. This study, and the subsequent ones that were initiated as a consequence of this first diagnostic study, covered many issues with relevance for the authorities in their efforts to cope with increasing pollution levels. The figure below shows the integration and the impact that the studies have had at the *national planning* level.

Integration of Sida Funded studies in the Moroccan Planning Process



In 1996 the Ministry of Commerce, Industry and Handicraft prepared its "Strategy for the Industrial Development in the Medium Term 1996–2000" (Strategie de Developpement Industriel à Moyen Terme 1996–2000). The industrial sector is analysed in terms of economic growth during the period 1996–2000, trade agreements are discussed and growth strategies are developed for each of the following industries: chemicals, agro industries, textile, leather, metal end electrical products. Environmental protection is highlighted, including the use of cleaner technologies and wastewater treatment of the industries, waste in the watersheds of Sébou, Oum Er Rbia and Tensift.

UNIDO has supported the Ministry of Industry to develop its action Plan on Sustainable Industrial Development (Developpement Industriel Ecologiquement Durable au Maroc – DIED). The objective of this plan is to define and to promote sustainable development within the industrial sector:

- Waste and toxic waste regulation
- System of self auditing of companies
- Use of cleaner technologies and eco labelling
- Study of industrial pollution in the industrial zone of Aïn Sebaa
- Study of the environmental impact in the Oum Er Rbia and Tensift watersheds
- Follow up of the study on the impact of industrial pollution in Sébou
- Environmental audits

- Water savings in the sugar factories in Gharb
- Credit for the financing of contamination prevention
- Sector seminars for information and awareness.

The training material developed for the sector seminars are partly based on the environmental studies of Sébou as well as on the environmental audits financed by Sida.

The Swedish support has assisted the Ministry of Industry, Commerce and Handicraft on strategic planning and policy issues related to industrial waste management. The study of Sébou has contributed to increase the environmental awareness and has familiarised decision-makers on environmental matters as it clarifies the impact of different polluters: the industrial, urban and agricultural sectors. The environmental audits, which have been undertaken for selected industries, address both internal and external measures. Some of the internal measures may be implemented at relatively limited investment costs while other many times external, measures like waste-water treatment plants requires large investment and financial arrangements. The management of the companies visited in the course of the evaluation expressed concern of the difficulties in accessing credit for such investments. There are a number of credit lines available in Morocco, but investors claim that they either were not aware of any or that they are not accessible.

There has been a certain lack of inter-institutional co-ordination at the regional level during the work with the studies. For example, the government currently tries to strengthen the so-called "Agence de Bassin" as the watershed management authorities. These have not been actively involved in the studies. Furthermore, there has been a lack of co-ordination with some public institutions, such as the local water and electricity authorities (Regis Autonome Intercommunale de Distribution d'Eau et d'Electricité de Marrakesh – RAADEEM – and Regis Autonome Intercommunale de Distribution d'Eau et d'Electricité de Beni Mellal – RADEET).

The Sida supported studies have been very well integrated in the national planning process but not as well coordinated with local authorities with responsibility for the improvement of the environment.

Any future support to the environmental sector of Morocco should focus on the following issues in order to fit in with national planning efforts:

- Contribute to the operationalization of the National Environmental Action Plan (PANE) and the Plan de Developpement Economique et Social (1999–2000).
- Support to wastewater treatment plants for the public sector as well as pre-treatment installations for the private sector.
- Support to the government in formulating coherent environmental policies; evaluation of experiences from other countries.
- Assess different economy instruments to facilitate the transition to the use of cleaner technologies in industrial processes – concessionary loans could be a possibility

For future support it is recommended to concentrate the cooperation to the Ministry of Environment where the approach could be expected to be more multisectoral when compared to the alternative of cooperation with the Ministry of Industry.

3.4 What is the Impact of Public Awareness?

The diagnostic river studies have been presented at a number of workshops and seminars with participation from the industrial community. The purpose has been to create *public awareness* of the magnitude of the problem and the measures necessary for their solution. However, awareness alone may not lead to improvements of industrial pollution. There are basically three mechanisms that could be used.

1. *Removal of market distortions* so that enterprises would increase their profitability by environmental improvements.
2. The authorities impose *regulations* and controls to enforce compliance of water discharge limits.
3. A *combination* of regulation and market mechanisms where fines and other financial costs are introduced to make it "profitable" for industries to invest in environmental improvements.

One of the problems with the last alternative is that it may negatively effect the competitiveness of the affected companies. It may reduce employment and sometimes even lead to the closure of a firm. In fact, many developing countries allow their industries to compete by ruining their own environment at little or no cost. Tanning is a good example. This extremely polluting industry has been banned in most western countries and transferred to Eastern Europe or Africa from where West European countries are now supplied with raw leather at the expense of the water quality of their rivers.

In order to improve the environment, there is no way to avoid the introduction of some kind of Polluter Pay Principle and accept the fact that the industries cannot build their competitiveness on pollution.

In summary, one of the main objectives of the river studies has been to create awareness in the industrial community. It is doubtful if such awareness creation will encourage factory owners to take action if the costs cannot be financially justified. It may, however, help in the understanding of why the authorities use fines and similar measures to improve the environment.

4. Are Studies the Right Thing to Do?

Financial support to environmental improvements in a developing country can, of course, be designed in many different ways. It can, as in the case of Swedish support to Morocco, be studies with the objective of finding problems and feasibility studies to find remedial solutions. The alternative could be direct support to the construction of wastewater treatment plants. Another relevant alternative could be upgrading of existing but malfunctioning treatment plants combined with staff training. This latter approach would be very relevant for example for the wastewater treatment plan in Beni Mellal (see further details in Appendix 1).

The critical question is:

- **If the desired result is less pollution load in the rivers, what is the best use of SEK 15 million and how can we measure the impact?**

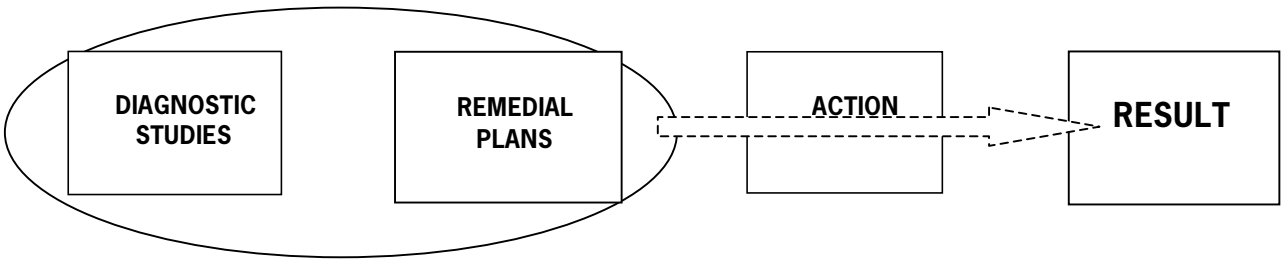
Three main alternatives in order to improve the environment would be:

1. a study approach with a long-term perspective and focus on problem identification and solutions,
2. a total perspective comprising an ambition to see to it that actions are taken and results are achieved and finally
3. a result driven approach.

	Study Approach	Total Chain Perspective	Result Driven Approach
Focus	Studies of problems and remedial solutions	Identification – Plans – Action.- Results	Measurable results

The first approach, here called the *Study approach*, is the one used in Morocco starting with the Sébou river study. This support has produced a number of good quality reports, which provides a strong basis for policy discussions but negligible results as far as cleaner water is concerned. There are no mechanisms to make sure that action is taken and that measurable results are achieved.

Study Approach

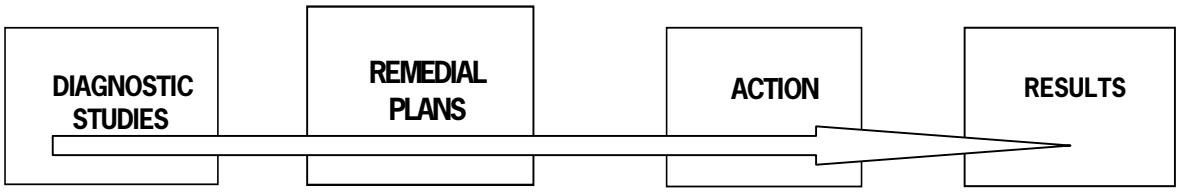


An alternative approach, here called *Total Chain Perspective* would, from the very beginning, attempt to make sure that result, for example, less polluted water, is achieved. It will start with a diagnostic study, but would, at an early stage, focus on areas of high priority and contain financial resources to support appropriate action. Such support could be of different kinds such as

- expertise for technical solutions,
- training,
- subsidised financing,
- introduction of penalties etc.

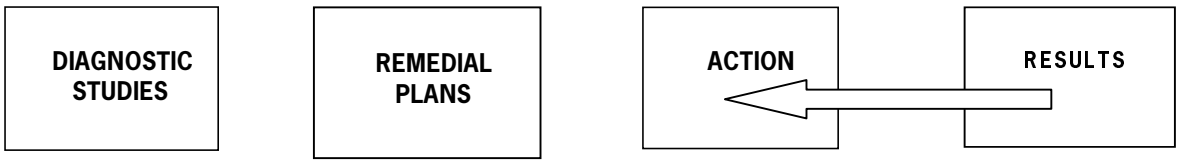
Regardless of the form of the support, the project would have its goals defined in terms of measurable results.

Total Chain Perspective



In the *Result Driven* approach the problem formulation exists. Scarce resources are not allocated to problem formulation but to actions that would solve problems. An example could be to build a wastewater treatment plant where it is evident that the water needs treatment. Another could be to refurbish or improve non-operational treatment plants. There would of course be some studies and measurements to establish the appropriate treatment technique.

Result Oriented Approach

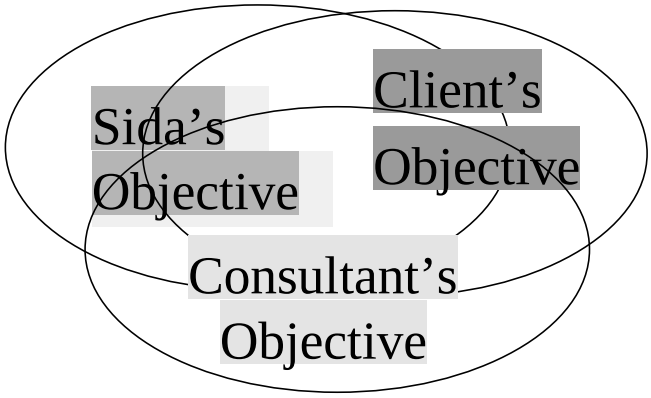


Which approach to use is, of course, to a large extent contingent on the situation at hand. It is, however, useful to start with the desired result (could be clean water or cleaner air) and then chose the most cost efficient support model.

5. Pros and Cons of Contract-Financed Technical Cooperation

Contract-Financed Technical Cooperation (KTS) means that Sida might have to accept the definitions of objectives, output and input made by the contracting parties. Each of these parties would have somewhat different objectives.

The figure below illustrates that only some of the objectives are identical for the parties involved.

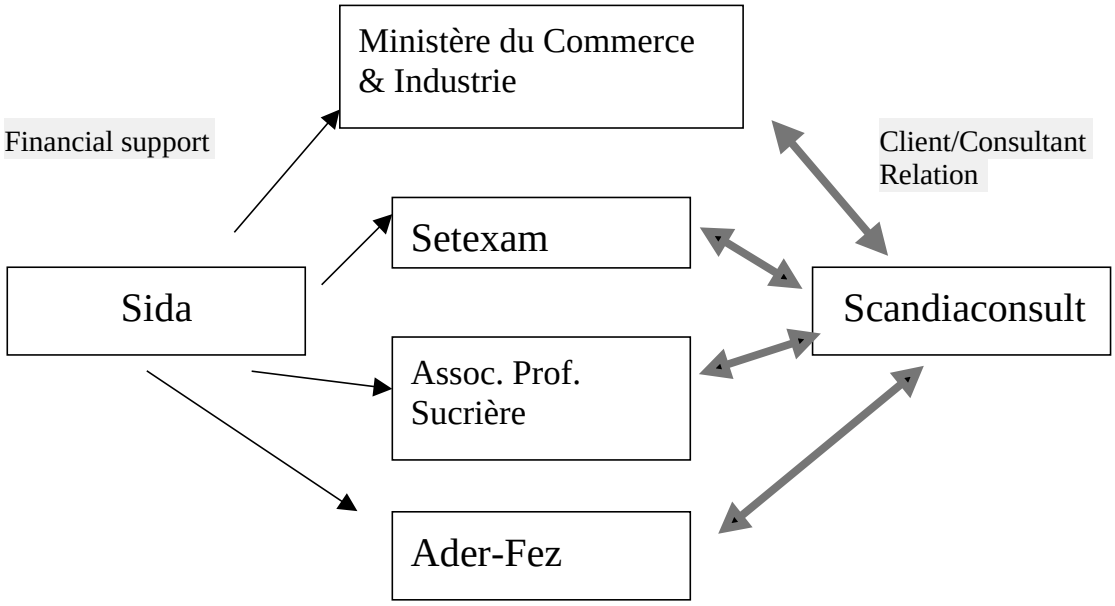


The alternative for Sida would be to define the objective in co-operation with the recipient of the support, the client who would thereafter procure consultants or contractors. This approach would, to a much larger extent, enable Sida to make sure that the project is in line with its own development objectives.

The advantage of KTS is that is requires limited administration by Sida's staff. The negotiations are taking place between the consultant and the client and the responsibilities of the parties are relatively well defined. The relationships between the client and the consultant is self regulatory to a much greater extent then if Sida had defined the project and procured the consultant.

But KTS has a built-in risk. Unless the services are procured under competition collusion between client and consultant could occur. Their joint objective would be to have Sida to pay as much as possible for the parties to share between them. The use of competitive bidding is the best control mechanism that Sida could use for a cost efficient support.

Scandiaconsult has carried out all the studies assessed in this report. Sida has approved of the terms of references for each of the studies and have financed most of the costs. The relationships in the case of the Moroccan environmental studies are shown in the figure.



Competitive bidding has not been used in any of the studies evaluated in this report. The first study, where the client was the Ministry of Industry, was followed by other types of studies where the Ministry was not the client. Invitation of other consultants might have added to the value and/or the cost efficiency of the studies. This is especially valid for the relocation study which had a totally different character compared with the other studies.

With regard to the risk of collusion and excess payment, the evaluation team has not found any indication that any of this has been the case.

6. Goal formulation and achieved results

Decisions to support the Moroccan environmental studies were taken by Sida in the period January 1992 to December 1996. The goal formulations in the decision documents ("Generaldirektörsbeslut") are in most cases of a general nature and reflect an ambition to contribute to environmental improvements. This is especially true for the industry related projects but not so much for the two river studies. This might seem somewhat surprising. It could be expected to be easier to formulate more specific and measurable goals at the industry plant level than at the more superficial level of river studies.

The following table summarises the project goal formulations of the Sida decision documents.

Sida funded environmental studies in Morocco	Goal formulation
Study of Industrial Pollution in the Sébou River Jan 92	a) identify industrial effluents and study their impact on water quality b) propose technical type-solutions c) present alternative forecast in a 25-year perspective d) propose regulation framework, fee system etc e) propose measures for the industry to achieve formulated goals
Study of the Restructuring of Handicraft Industry in Fez, Phase I Oct 93	Reduce pollution from handicraft and small industry and to improve environmental working conditions
Waste water treatment study for Setexam (food industry) April 94	Reduce or eliminate polluted effluents and to reduce the company's sensibility of frequently occurring periods of water shortage. Demonstration effect to stimulate environmental investments in the area.
Study of the Restructuring of Handicraft Industry in Fez, Phase II+III Sept 94	Reduce pollution and to improve environmental working conditions. Identification of sources of pollution and to propose measures (i.e. relocation of the most serious polluters)
Study of Internal Environmental Measures at Sugar Factories Dec 95	a) reduction of water consumption trough recycling (down to 15–20% of current use b) better use of existing energy (study to show what ought to be done) c) reduce dependence of chemical substances
Environmental Study of Industrial Pollution in Oum Er Rbia and Tensift Dec 96	Environmental study to include action plans for relevant polluting industries. Short-term (1999) and long-term (2015) objectives of water treatment results defined for e.g. Suspended Substances 40%/95%, COD 20%/95%, BOD_5 20%/95% etc Project purpose according to LFA matrix: Study the industrial pollution along the rivers and to recommend the solutions required.

The goal formulations can be attributed to three levels with regard to measurability:

1. general goals, difficult to measure
2. multiple goals, difficult to measure
3. specific measurable goals.

The reason for an analysis of ex ante goal formulation is, of course, that it decides the possibilities of ex post evaluations of achieved results. A general goal formulation most often forces an assessment to be based on input related measurements (number of study visits, number of staff that has been trained, etc.). A measurable goal gives the evaluator a chance to evaluate output, which will give a better assessment of achievements.

Defining measurable goals is, however, far from an easy task. A useful tool is the LFA, the Logical Framework Analysis, frequently used by Sida. (It was introduced in the middle of the 1990's). This tool has been appended to the decision documents in most recent Moroccan project and this project is also that with the most specific and measurable goals.

The goal formulations of the six projects could be classified according to measurability as follows:

	Goal formulation		
	General	**Multiple**	**Measurable**
Restructuring of Handicraft Industry in Fez, Phase I	General goal		
Setexam (food industry)		Two specific goals	
Restructuring of Handicraft Industry in Fez, Phase II+III		Two specific goals	
Sugar Factories		Three specific goals	
Sébou River Study		Five specific goals	
Oum Er Rbia and Tensift			A number of measurable goals

The evaluations of the projects, the studies, are presented in appendix 1. A summary of the findings is presented in the next table organised according to the goal formulation analysis in order to illustrate how goal formulation could be related to achieved results for those projects.

The Handicraft Industry in Fez with its various phases has been treated as one project as far as results are concerned.

	Achieved results		
	Goal formulation General	**Goal formulation Multiple**	**Goal formulation Measurable**
Restructuring of Handicraft Industry in Fez, Phase II+III	Little – possibly negative		
Setexam (food industry)		Limited, Water savings	
Sugar Factories		Varies at different factories Water savings	
Sébou River Study		Increased awareness, planning process integration Follow-up audits	
Oum Er Rbia and Tensift River Study			Increased awareness Water saving Waste minimisation Recycling

Although the character of the three first mentioned studies are different from the two last mentioned river studies, there appears to exist a correlation between measurability in the goal formulation and achieved results.

In order to achieve intended results, the role of distinctive and measurable goals cannot be overestimated. This is demonstrated over and over again in monitoring and evaluation of development support projects. The goal formulation in the Moroccan environmental projects, in terms of use of measurable goals, has improved over time from the first decisions in 1992 to the last in 1996.

6.1 Degree of Goal Fulfilment – Sébou River Study

The long-term, development objective of making an impact on the quality of water in Sébou would of course only be possible to monitor over a long period of time. The study has led to further industry sector studies and to a similar study of two other rivers. Industry representatives have expressed disappointment to the fact that plans for the realisation of the proposed measures are lacking.

The short-term, project objectives are twofold 1) to analyse the problems and to indicate possible solutions and 2) to increase awareness of the problems. All planned output in the form of reports was delivered and the quality seems to meet high standards. Data from the study of the impact of the industrial pollution in the Sébou river has been used in the World Bank report "Price of Dirty Water: Pollution Costs in the Sébou Basin".

The transfer or communication of the study result to the target group, the industrial community, appears to have been successful. Managers and technicians that were interviewed were generally well aware of the nature of their pollution problems as well as solution alternatives.

6.2 Degree of Goal Fulfilment – Environmental audits at Setexam (gel) plant

The long-term, development objective is to promote more sustainable water utilisation and the short-term project objectives are to reduce the consumption of fresh water and reduce the contamination of the local groundwater and in addition to this provide a demonstration project for Swedish technology.

A number of activities have been initiated as a result of the environmental audit. The discharge into the infiltration basin is reduced by 40% due to connection to the sewage system and Setexam has implemented water savings measures. Furthermore, the water treatment installation will be build with the help of American financing according to information from the company.

6.3 Degree of Goal Fulfilment – Environmental audits at Gharb sugar plants

The long-term development objective is the same at that of the Setexam audit – to promote sustainable use of scarce natural resources. The project objectives aim at reduction of water consumption, more efficient energy use and reduction of the use of chemicals.

The output of the audits consists of a report for each of the four factories. The studies are strongly focused on the reduction of water consumption and to some extent to energy use. The issue of reduction of use of chemical substances is treated in a rather superficial manner.

The sugar factories are in serious economic problems. One of the reasons for this is the prolonged drought over several years, which has negatively affected the supply of raw material (cane and beets). Currently, the owners of the factories are not able to raise funds needed for investments in wastewater treatment facilities or other remedial plans to improve the impact on the environment.

Late 1999 Sida has decided to support the preparation of tender documents for the necessary water treatment installations.

6.4 Degree of Goal Fulfilment – Restructuring/Relocation of Handicraft in the Old City of Fez

In addition to the long-term objectives, the promotion of sustainable use of natural resources and improvement of the water quality in the Fez and Sébou rivers, the short term objectives are relocation of the most polluting business enterprises from the old city to a new industrial area outside the city area.

The stated objectives of the project have generally not been achieved. The industrial village has not been prepared, the treatment plant for chrome and cyanide has not been constructed and the relocations of polluting industries have not taken place. In fact a number of the tanneries have moved into a residential area near the location of the intended industrial village thus worsening the impact of the pollution.

There are a couple of reasons for the lack of goal fulfilment: 1) the issues to be addressed are very complex, and the objectives seem to be over-ambitious. 2) there was a lack of co-ordination at different levels.

6.5 Degree of Goal Fulfilment – Oum Er Rbia River and Tensift River study

The goal formulation of the two-river study is more precise compared with the other studies reviewed. It has its focus on action plans and measurable goals. The study is planned to be finalised by the end of 1999 and the evaluation is made at an early stage, which limits the possibilities to base an assessment on measurements of the effects.

Environment audits have been carried for fifteen different companies. A number of improvements of the operations have been undertaken.

One of the findings of the evaluation team was the urgent need of rehabilitation of the Beni Mellal wastewater treatment plan an issue outside the scope of the two river study but still crucial to the improvement of the environmental conditions in the area.

The study is not yet finalised, the study will be presented by the end of 1999, but the degree of goal fulfilment appears to be satisfactory both in awareness creation and in physical actions.

6.6 Conclusion

With the exception of the "Relocation of the Handicraft Industry in Fez", the projects, the studies have met their mainly output-defined goals. However, the use of measurable goals is a useful tool in defining, and later on evaluating, environmental projects. In the case of the Moroccan studies that are covered in this report over time more and more specific goal formulations have been used. The recommendation is always to try to use measurable goals when possible, with or without the help of the LFA technique that was used in one of the projects.

7. Conclusions and Recommendations

The main conclusion of the evaluation of the six Sida supported studies called "Environmental projects in Morocco" is that it is very important to define expected results and to distinguish between output and results. This evaluation defines results as impact on the environment, e.g. cleaner water or cleaner air while studies and reports are defined as output.

The output produced by the consultant, Scandiaconsult, is generally of high quality and is highly appreciated by Moroccan recipients at all levels. The reports have been well integrated in the ongoing national and regional planning process. The results in the form of environmental improvements are, so far, meagre.

The impact of the Sida supported studies has mainly been of a policy or planning nature. The first "diagnostic" river study in Morocco, the Sébou study was followed by industry studies focusing on plans to reduce pollution and to a replication of the study in two other rivers. There are, however, no mechanisms to ensure that the plans are implemented in order for the intended result: environmental improvement to take place.

The benefit of the use of the LFA-matrix in the definition of project objectives has been demonstrated in the comparison of the various goal formulations in the Moroccan studies and audits. Measurable goals are relatively easier to define within this framework as compared to not using it and it imposed a structure that prevents the user to avoid or omit the issue of results and measurability.

Recommendation

Support to environmental improvement should not be defined in output-terms only (studies, reports, seminars etc.). The objectives should, as far as possible be defined as results in the form of environmental improvements and, whenever possible, they should be measurable. The use of the LFA-matrix technique is highly recommended.

The Contract-Financed Technical Cooperation (KTS) is efficient in as far as donor administration is concerned. The project definition and the objectives are defined by the client and the consultant and implementation is often self regulatory. However, in the absence of competitive procurement KTS becomes a very risky tool. Procurement based on competitive bidding is the only way that Sida can control project costs.

The same consultant has carried out all the studies that have been evaluated. Competitive bidding has not been used in order for Sida or the clients to get access to alternative proposals or to enable cost comparisons. This is not in full compliance with of the procurement rules that Sida normally follows.

Recommendation

Competitive bidding should always be arranged, also when Contract-Finance Technical Cooperation is used to ensure alternative solutions, avoid collusion and, as far as possible, ensure cost efficient assignment execution.

It is recommended that any future support to the environmental sector of Morocco should focus on the following issues in order to fit in with national planning efforts:

- Contribute to the implementation of the National Environmental Action Plan (PANE) and the Plan de Developpement Economique et Social (1999-2000).
- Support to the government in formulating coherent environmental policies; evaluation of experiences from other countries.
- Support to wastewater treatment plants for the public sector as well as pre-treatment installations for the private sector.
- Assess different economy instruments to facilitate the transition to the use of cleaner technologies in industrial processes – concessionary loans could be considered
- In addition to the more general recommendations, the evaluation team recommends Sida to consider support to the urgent need of the rehabilitation of the Beni Mellal wastewater treatment plant.

For future support it is recommended to concentrate the cooperation to the Ministry of Environment where the approach could be expected to be more multisectoral when compared to the alternative of cooperation with the Ministry of Industry.

Annexes

Appendix 1

Impact Study of Industrial Pollution on the Water Quality of the Sébou River

Etude de l'impact des Rejets Industriels sur la Qualité des Eaux de l'Oued Sébou.

Background

The Sébou River is Morocco's largest and most important river. It is about 500 km in length. The area of the watershed basin is 40,000 square kilometres. Some 4.5 million people live in this area. Morocco is suffering from a chronic water shortage and is highly dependent on its scarce water resources.

The pollution level has reached extreme levels, where its natural assimilative capacity as a waste sink in since long exceeded. The water quality is now unsuitable for tap water production according to international standards. L'Office National de l'Eau Potable (ONEP) has closed a number of water treatment plants along the river due to pollution. The pollution originates from industrial, agricultural and domestic sources. The contaminated water causes health problems, has led to the banning of agricultural exports to EU and the entire fish stock is threatened with extinction.

The Ministry of Industry, Commerce and Handicraft identified and presented a request for the financing of the Environmental Study of Industrial Pollution in Sébou to Sida in 1992. The Ministry needed an assessment of the extent of pollution in the river and who the polluters were.

Project Description

Project Objectives
The long term objectives (development goals):

- Reduce the industrial pollution into the Sébou river and its tributaries.

Short-term objectives (project goals):
- Raise the awareness about the pollution issue and its possible solutions – by increasing knowledge about:
  - current pollution (a diagnostic study)
  - the potential development of the pollution (a prognosis)
  - possible technical solutions
  - regulative/fiscal mechanisms as incentives for implementing technical solutions

Target Groups
The immediate target group is the management of a number of industries along the Sébou, and its tributaries. Some of the industries are situated in towns as Kenitra, Fez and Meknès and others in relatively remote countryside areas (e.g. the Gharb sugar factories).

The ultimate beneficiaries are the population and ecosystems along the Sébou river network.

Components
The project comprises a number of components, each of which is concluded with the submission of a report.

Activities
- Identify the industrial pollution (sources, types, concentrations)
- Elaborate a water quality prognosis till 2015.
- Assess domestic and agricultural pollution and compare them with the industrial pollution.
- Establish and propose methods for controlling and reducing the industrial pollution. Such methods will mainly consist of reduction of the discharged volumes by introducing water saving measures.
- Propose pilot projects and make pre-feasibility studies for them.
- Propose an action plan for the improvement of Sébou's water quality.
- Propose legislative and fiscal mechanisms for implementation of the action plan.

Input
Sida's original input: SEK 3.82 million. Additional grant: SEK 0.42 million, i.e. a total of SEK 4.24 million, of which SEK 3.88 million in fees.

The Moroccan counterpart was the Ministry of Commerce, Industry and Handicraft (MCIA). MCIA's input was the equivalent of SEK 0.8 million. The local input includes fees for local water sampling technicians, laboratory analyses as well as accommodation and transport of Swedish experts.

Project Implementation and Performance

Output and Implementation
All planned output (reports) was delivered. Furthermore two seminars of one day's duration were held for presentation of the results to a nation-wide forum from the industrial community.

No significant deviations between expected and delivered output were encountered. An increase of the project expenses of 11% occurred (SEK 0.42 million), which was accommodated by an additional Sida grant. Sida reported that the extra expenses were mainly because the olive harvest turned out to be extremely poor in 1992. The olive oil industry is a significant polluting industry; therefore Scandiaconsult had to extend their study to the next harvest.

Technical Performance
Scandiaconsult has prepared the following reports:

- A diagnostic report, which identifies the nature and sources of pollution,
- a report containing technical options and solutions,
- a report describing and analysing the legislative and administrative framework, an action plan and a socio-economic cost benefit analysis and
- a summary report

One-day seminars, which were held for prominent persons from the public and private sectors, have further contributed to creating a greater awareness on environmental issues. The seminar was given high visibility with the presence of dignitaries, such as the Minister of Industry, Commerce and Handicraft and the deputy Secretary of State of the Ministry of the Interior.

The reports identify the contribution to the pollution of different sectors:

BOD: The main contributor of BOD is the urban sector (62%), followed by industries (38%). However, there are some geographical differences – the urban pollution is higher in the regions of Fez-Meknès and Kenitra, while the industrial pollution is higher in the Gharb planes.

DCO: the main contributor is the urban sector (62%) followed by the industries (38%).

Phosphorus produces eutrophication to take place in the water: The urban sector has a 59% share and the agricultural sector has 40%.

Nitrogen: This nitrogen pollutant is produced mainly by the agro industrial sector as well as the cellulose industry. However, above all the slaughter houses are the culprit as the blood from the slaughtered animals is poured into the water streams. The urban sector contributes 23%, industry sector 11% and the agriculture sector 66%.

Heavy metals: The industry sector is the sole contributor to this serious contamination. The handicraft industry contributes 26% of the heavy metal contamination and the medium and large industry contributes 74%. It becomes essential to solve the polluting effects at the source as the presence of heavy metals in the waste stream disturbs the biological processes in the municipal waste water treatment plants.

An action plan is developed, where the toxic wastes are considered the most environmentally damaging substances and most urgent to address. However, the report stresses the need that all sectors – urban, industrial and agriculture – contribute to the solution in order to achieve improved water quality in the Sébou river.

Technically, the studies are well conducted. Four industries were selected, representing four different polluting industry sectors (sugar production, tanneries, cellulose and olive oil). For each industry a number of options are presented, advantages and drawbacks are discussed. Finally one option is selected and the rationale for the selection is well explained.

The weakest part of the Sébou Study is the task under the Diagnostics Study ("Volet A") for assessing urban wastewater pollution. The assessment is not based on measurements, but on population statistics and empirical data (from Tunisia) on load per capita for various components. However, taking into the consideration the Terms of Reference of the Project and its focus on industrial pollution, such a limited approach might still be justified.

Almost all parties interviewed by the Evaluation team expressed their satisfaction with the study. The impression was a genuine appreciation of Scandiaconsult's work, which was beyond the politeness and/or loyalty to be expected in such a situation. On the other hand, several of the industry representatives also expressed great disappointment that there had been no plans for the realisation of the proposed measures.

Achievement of Objectives; Effects and Impact

The stated objectives
An assessment of the long-term objective of making an impact on the quality of water in Sébou will only be noticeable and possible to monitor over a longer period of time. However, all the studies undertaken are relevant for achieving the development objective and have initiated processes, which are important and often strategic.

Concerning the short-term objective – to raise the industrial sector's awareness about and willingness to solve the pollution problem – the task has two parts; one is to define and conduct a number of appropriate studies. The other part is the transfer or communication of the study results to the target group, the industrial community. This part is equally important and should not be underestimated.

The short-term objective – creating awareness in the industrial community – requires two things from the project output; 1) a solid and highly competent conducted study, which can be above all dispute, and 2) a successful communication of the study results to the industry. As stated above there is no doubt that the first requirement is met.

The forum for the communication of the results of the diagnostic report was a seminar held in Rabat in November 1992 with industry representatives from all Morocco participating. The seminar was clearly given high priority and prestige with the presence of high dignitaries as the Moroccan Minister of Industry, Commerce and Privatisation and deputy Secretary of State of the Ministry of the Interior. Another seminar was held in October 1993 to present the overall findings after project completion.

The summary report of questions and answers from the first seminar shows an engaged and qualified interest from many participants. The fact that there was a follow-up seminar about one year later than the first one indicates genuine interest.

During their visits at factories, the Evaluation team met managers and technicians that were generally very aware of the nature of the their pollution problems as well as solution alternatives. This is probably not only due to the seminars; many of them had been involved with Scandiaconsult during their study and in some cases Scandiaconsult had been involved in subsequent studies in the enterprise in question.

Even though the industry representatives met by the Evaluation team might be somewhat biased, the conclusion is nevertheless an overall impression of a successfully achieved awareness-raising.

Scandiaconsults's study of the impact of industrial pollution in the Sébou River has furthermore been an important background document in the World Bank's report "Price of Dirty Water: Pollution Costs in the Sébou Basin", which contributes with an economic evaluation of the current and projected pollution situation.

Other major effects or impacts

The most important impact of the project, which could contribute to fulfilment of the long-term objectives, is implementation of proposed measures.

A number of industries or communities have commenced a process towards implementation. None of them have yet reached full implementation, but some have implemented some measures. In order to provide demonstration samples, environmental audits and further studies were approved by Sida for the following activities:

Setexam: Pre-design study for a waste water treatment plant, including water saving measures

Four sugar factories in Gharb: Propose internal measures (including water saving measures)

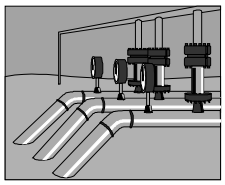
Small scale (micro) industries in Fez: Moving tanneries and other polluting industries out of the Médina to an industrial zone in which to build a water treatment plant.

If implemented, the three projects mentioned above will contribute to an improved water quality in the Sébou river. Another impact of the Sébou study is due to its replicability. Since the Sébou study is widely appreciated, Sida and the Ministry (MCIA) decided to launch a similar study for two other rivers, the Tensift and the Oum Er Rbia. This study does not include as many components as the Sébou study, but the approach is similar. The study comprises 15 enterprises representing 5 industry sectors.

Furthermore, Cellulose du Maroc (CdM) has implemented a number of environmental measures proposed by Scandiaconsult. The implementation of these was financed through soft Finnish loans and with Finnish consultance (Jaako Pöyri). These measures comprised chorine-free bleaching, water recycling and electrofilters on chimneys.

Summary:

Project	Project Period	SCC's counter-part	Budget (original) MSEK	Additional grant MSEK	Number of industries studied/ audited	Implementation of measures	Impact
Environmental Study on Industrial Pollution in Sébou	1992 – 1993	MCIA	3.82	0.42	70 questionnaires 19 audits, 4 proposed measures	Only indirect	Increased awareness Planning process integration Follow-up audits



Environmental Study of the Setexam Factory

Audit Environnemental de l'Usine Setexam

Background

Setexam is a private family owned and very profitable export industry. It produces agar-agar, a substance, which is extracted from sea algae. This contains is a unique substance called gelidium, which is a raw material with gelling properties. Agar agar is appreciated for its ability to produce clear, colourless, odourless and natural gels without the support of other colloids and is used in the production of confectionery, glazing, jellies etc. It is also used as a bacterial cultivation in pharmaceutical production. An environmental audit, as well as a feasibility study for a water treatment and recycling plant could serve as a demonstration project for improving the environmental conditions in the Sébou river.

Setexam's wastewater is discharged into infiltration basins, from where a part evaporates while the rest infiltrates and reaches the groundwater. A very high organic load in the wastewater causes a serious environmental problem. Furthermore, during periods of rain occasional overflows from the infiltration basins into the superficial environment occur. Such spills cause a serious health hazard to the neighbouring population.

Project Description

Long term objective:
Improve the state of the water environment in the Sébou watershed (including the groundwater) and promote a more sustainable water utilisation.

Short term objectives:
Significantly reduce the consumption of fresh water and reduce the contamination of the local groundwater.

Provide a demonstration project for:

- Swedish technology.
- a successful implementation of environmental measures

Target Groups
The enterprise Setexam.

The enterprise was selected for this support because

- the management is willing to carry out the project
- the enterprise has no domestic competitors.

Beneficiaries are
- local population, who occasionally (in the rainy season) suffer from overflow of the infiltration basins.
- Users of the local ground water, including Setexam self.

Components
An environmental audit of the factory.
A feasibility study, including elaboration of tender documents for a water treatment and recycling plant at Setexam.

Activities
Measurements of the factory's pollution.
Technical advise regarding the most appropriate treatment method of wastewater given the actual conditions.
Prepare tender documents aimed at the local market.
Investigate methods of water recycling.

Input
Sida's input: SEK 698,000 of which SEK 519,000 in fees (36 man months).
The Moroccan (Setexam) input: accommodation, 75% of per diem, local transport and local personnel.

Project Implementation and Performance

Output and Implementation
All planned output has been submitted and no deviations were found.

Technical Performance
The professional standard of the study is high. Although the water treatment methods are by no means advanced the analysis and documentation is very thorough. The employees met at Setexam were all very satisfied.

Major Factors affecting Implementation and Performance
The following factors have emerged after Scandiaconsult's study concerning a future project for constructing a wastewater treatment plant at Setexam and should be taken into consideration:

- the water consumption has been reduced significantly
- a large amount of the waste water is discharged into the municipal sewer.

Achievement of Objectives; Effects and Impact

Analysis of various objectives
The main environmental benefit from implementing the proposed measures will be the elimination of the groundwater pollution and relieving the factory's neighbours from the nuisance of occasional overflows from the infiltration basins.

The objective of *reducing the consumption of fresh* (ground) water was highly justified from both a resource point of view (reduce the exploitation of a limited resource), as well as from an economic point of view, due to the price of water extraction. The daily consumption is presently 1200 m^3. The study aims at a future water consumption of 500–900 m^3/day, which will contribute substantially to the enterprise's financial result. Furthermore, reduced water consumption may also diminish the pollution problem by reducing the amount of wastewater infiltrated into the groundwater.

The objective aimed at *constructing a treatment plant* is integrated in the objective stated above, because it will enable recycling of the treated water.

The situation has changed subsequent to the Scandiaconsult's study. At present, 40% of Setexam's wastewater is being discharged into the municipal sewer system via the neighbouring dairy Colait, while the rest is still being led into the basins (700 m^3/day). The original problem thus persists today, but in a somewhat smaller volume.

If the measures proposed by Scandiaconsult are carried out, the consequences will be on one hand the total elimination of infiltration to the groundwater and overflow spilling from the basins, and on the other hand a reduced consumption of clean water.

Achievement of stated objectives
Due to lack of financing none of the stated objectives have been achieved. A partial achievement of one of the objectives was however reached by other means; the discharge into the infiltration basins is reduced by 40% due to Setexam's connection to the sewerage system.

Furthermore Setexam has implemented water saving measures so that the specific consumption (m^3 consumed water per ton manufactured product) has been reduced. However, the production has increased very significantly over the last years, so that the absolute consumption has nevertheless increased.

Other major effects or impacts
The solutions in this project are not only end-of-pipe solutions, but also water preserving as they aim at reduction of fresh groundwater extraction.

According to Setexam's technicians interviewed by the evaluation team, the proposed water treatment technology is known know-how and the operation of such a treatment plant was considered to be within the qualifications already in the enterprise. On the other hand it was also revealed that the technology in question is "not or almost not" yet introduced to the Moroccan society.

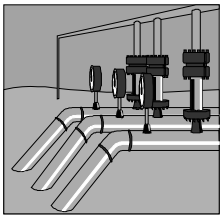
The two statements may seem contradictory, but the general impression of the evaluation team was that Setexam's staff possesses very high competence in chemistry and industrial processing. During the guided tour through the factory the evaluators were shown examples of advanced technological solutions, such as automated process control, recently installed. Therefore it does not seem unlikely that Setexam's technicians possess the competence for operating and maintaining the treatment plant – once it is operational.

The fact that the technology in question is not or almost not yet applied in Morocco means that a successful implementation at Setexam would constitute a important transfer of technology to Morocco.

It should be noted that Setexam is a co-owner of the study results, as a consequence of the contract-financed cooperation. The contract between Scandiaconsult and Setexam explicitly states that the results cannot be published without Setexam's permission. This is an obstacle to the project's replicability. On the other hand, Setexam have declared a willingness to promote Swedish technology, if Swedish finance for implementation should be obtained. Such promotion could, according to Setexam, take place through a seminar for industrials, including a visit at the factory and demonstration of the installed technology.

Summary

Project	Project Period	SCC's counter-part	Budget (original) MSEK	Additional grant MSEK	Number of industries studied/ audited	Implemen-tation of measures	Impact
Gelatine producing Setexam	1994 – 1995	Setexam	0.70	0	1	Limited	Water saving



Implementation study of internal measures at the SUNAG and SUNABEL sugar factories

Etude de réalisation des mesures internes aux sucreries SUNABEL et SUNAG Mechra Bel Ksiri afin de réduire sa consommation d'eau et sa charge polluante.

Background

The sugar industry in the Gharb district consists of four factories. Two of them, SUNAG and SUNAB are producing sugar from beetroots while the other two SURAC and SUNACAS are based on cane sugar. SUNAG and SUNAB have recently been regrouped into one company, SUNABEL and SURAC and SUNACAS now operate under the company name of SURAC. The industries are publicly owned and are currently listed for privatisation.

Serious water shortages pose problems for the operations of the factories. Water used to be supplied for free and has therefore not been economised in the past.

The sugar industry has traditionally been protected from international competition through im0port duties and they have also been subsidised. Domestic prices are some 70 percent higher than world market prices. The Government has given the industries a ten year period to restructure and modernise as the subsidies will be reduced.

Project Description

Project Objectives
The long term (development) objectives:

- To promote sustainable use of natural resources and environmental care

The short term (project) objectives:

- Reduce the water consumption through recycling
- More efficient energy use
- Reduce the dependence on chemicals (lime, aluminium sulphate, soda and chlorine)

Target Groups and Contract Parties
The immediate target group is four sugar factories; two producing from beets (SUNAG and SUNAB) and two producing from cane (SUNACAS and SURAC). The beneficiaries on a short term are the factories themselves (due to reduced costs for water, energy and chemicals) and on a long term the population and ecosystems along the river.

Scandiaconsult's contractual counterpart is the branch organisation Association Profesionnelle Sucrière (APS). It should be noted that APS no longer exists, but has been replaced by tow organisations, one for factories producing sugar from beets and another for factories with production based on cane.

Components
1. Collect information
2. Carry out the studies for the cane sugar factories
3. Carry out the studies for the beet sugar factories

Activities

- Collect all relevant existing information
- Identify internal measures that have already been implemented or are planned
- Measure discharges at various points
- Take water samples and make chemical analyses
- Define further internal measures

Input

Sida's input is 1,74 million SEK, of which 1,49 million SEK in fees.

According to the contract between Scandiaconsult and APS the local input is 837,000 DH. This amount covers: fees for local personnel; expenses for sampling, chemical analyses, telecommunication, seminaries, office accommodation; local transport and hotel accommodation of Swedish experts.

Project Implementation and Performance

Output and Implementation

The output consists of a report for each of the four factories. Each report comprises the following main components:

- A qualitative description of the production process,
- A detailed quantitative water balance for the process,
- Chemical analyses of samples from various steps in the production
- An overview of measures already undertaken or planned by the factory itself, including Scandiaconsult's comments on these
- Short-term objectives and proposed measures for achieving these
- Long-term objectives and proposed measures for achieving these

Technical Performance

The evaluation team does not find ground for criticising the technical standard of the work in the reports themselves. However, when compared with study of the SUTA sugar factory under the Two Rivers Study (Oum Er Rbia and Tensift by Scandiaconsult, these studies appear to be slightly more superficial.

The studies focus strongly on water consumption and to some extent on energy use. This seems to be justified. However, the reduced use of chemical substances (see Objectives above) is treated in a rather superficial manner. This important question is not dealt with in the two chapters concerning proposed measures (long and short term) but in the chapter "Future Situation" (Chap. 8 Situation Projetée; Gestion des Eaux). This section deals with chemicals used in laboratory analyses and not in the production process itself. There may be reasons to justify this fact, such as e.g. that chemicals are not used to any substantial extent in the production, but this is outside the knowledge of the evaluation team.

It should finally be noted that the observation above does not necessarily indicate a non- of the contract, because the evaluation team has not had access to the contract/Terms of Reference, but only the Sida documents. Therefore the observation is limited to state that the project implementation does not fully comply with the objectives stated by Sida.

The conclusion concerning the technical performance is that the study seems more superficial than the other studies by Scandiaconsult, in particular concerning the reduction of the chemical substances, an objective stated by Sida.

Major Factors affecting Implementation and Performance
The sugar factories are in serious economic difficulties. A contributing reason for this is the prolonged drought over several years, which have reduced the supply of raw material (beets and canes) considerably. Presently it seems unlikely that the factories will be able to finance investments.

Achievement of Objectives; Effects and Impact

Analysis of various objectives
The study does not address the question of reducing the pollution load (kg pollutant per day). That may be justified by the recommendation given to build a wastewater treatment plant. If the plant is built, measures to reduce the load of e.g. BOD5, COD, P, N etc. would give little value for money.

This strategy makes the environmental benefit very much dependable on the actual implementation of the wastewater treatment plant. If not built due to lack of financing, the environmental benefit in Sébou will be negligible.

Achievement of stated objectives
As described above, a major condition for achieving substantial environmental benefits is the construction of a wastewater treatment plant within the factories. This fact is a consequence of the approach proposed by Scandiaconsult. This obviously requires a considerable investment, as do also a number of the internal measures proposed by Scandiaconsult. Such investments have, so far, not been made.

In 1999 Sida has decided to support the sugar industry through support to the definition of tender documents for waste water treatment plants. The two counterparts are, on the one hand SURAC (cane sugar) and SUNABEL (beet sugar) and Scandiaconsult on the other. The support is expected to last for one year at a cost of SEK 1.2 million for each of the projects.

Project	Project Period	SCC's counter-part	Budget (original) MSEK	Addi-tional grant MSEK	Number of industries studied/ audited	Implemen-tation of measures	Im-pact
Four Sugar Factories in Gharb	1994 – 1995	APS	1.74	0	4	Varies at different factories	Water saving

Study of the restructuring of Handicraft in the Old City of Fez and protection of its environment

Etude de Restructuration de l'Artisanat de la Médina des Fès et de Protection de son Environnement

Background

Fez, the ancient capital of Morocco, contains a large number of unique cultural monuments and its Médina (the Old City) is therefore on UNESCO's list of World Heritage. The Médina also has a long tradition for handicraft and small scale industries, among them tanneries, coppersmiths and olive oil producers. Many of them are contributing heavily to the water pollution by using open sewers running through the Fez Médina into the Sébou River.

The aim of the Restructuring of Handicraft Industry in Fez is the relocation of the most polluting industries, including tanneries, olive oil producers and metal workers from the Médina to an industrial village, Aïn Nokbi, outside the Médina, as well as relocation of handicraft industries within the Médina itself. The restructuring is administered by ADER-Fez is a private limited liability company created on a government initiative.

It is estimated that some 24% of the contamination in the Sébou river come from the Médina of Fez and about 50% of the toxic waste chrome come from the tanneries in Fez. There is a number of polluting small industries in the Médina beside the tanneries: olive oil presses, and metal workers in particular. It is estimated that the intended transfer of the most polluting industries to Aïn Nokbi would bring about a 97% reduction of the heavy metals and toxic wastes, a 20% reduction of biodegradable waste and 17–20% reduction of solid wastes.

The study was initiated as a consequence of the Sébou river study.

Project Description

Project Objectives
The long term objectives:

- Promotion of sustainable use of natural resources;
- Improvement of the water quality of the Fez river and further downstream in the Sébou river.

The short term objectives:

- Relocation of the most polluting from the Fez Médina to a new industrial area outside the Médina
- Construction of a water treatment plant for chrome and cyanide

Target Groups
- ADER-Fez (Agence pour la Dédensification et la Rehabilitation de la Médina de Fez), Scandiaconsult's contractual counterpart.
- Small-scale industries or artisans with the most polluting activities in the Fez Médina. In the long term, beneficiaries will include the population in the Médina and along the Fez and Sébou rivers.

Components
According to the contract between ADER-Fez and Scandiaconsult, the project consists of the following tree components:

1. A "pilot study" of the relocation of polluting artisans from the Médina to Aïn Nokbi. As a pilot study, this task will only include a limited number of the Médina's enterprises.
2. Study of the de-densification of the Médina. Inventory of polluting activities, ranking of these. Identification of which industries to move out of the Médina, which to relocate within the Médina and which not to relocate. This phase covered all polluting enterprises.
3. Relocation plan for the enterprises that will be moved to Aïn Nokbi.

Activities

Activities within Component 1:

Study the water quality upstream, in and downstream the Médina in order to assess the Médina's pollution load.
Review of previous studies and projects for relocation.
Analysis of the impact of the industries when relocated to Aïn Nokbi.
Elaboration of a relocation plan

Activities within Component 2:

Create a register of polluting enterprises (comprising number of employees, manufactured products, production capacity, building status, etc.)
Estimate the total pollution from artisans and industries.
Make a prognosis of the liquid and solid waste (10 years)
Rank the enterprises according to their degree of pollution.
Identify which units shall remain in the Médina
Identify which units shall be relocated within the Médina.
Establish an action plan for relocation of the enterprises within the Médina.

Activities within Component 3:

Form groups of the enterprises to relocate, in order to maintain the existing commercial and social structure after relocation.
Carry out a preliminary pre-design study for two villages: an industrial and an artisan village.
Carry out a financial investment study, based on the preliminary study.

Input
Sida's input: Phase I SEK 1.98 million, Phase II+III SEK 3.63 million, total amount SEK 5.61 million, of which 4.37 million SEK in fees.

ADER-Fez' input: 75% of per diem expenses, water analyses, seminaries, parts of telecommunications, office rent and local technical experts.

Project Implementation and Performance

Output and Implementation
The output is one report for each of the three phases and two seminars held after reports II and III respectively.

The three reports essentially reflect the planned output. However, the structure of the work process appears to have been altered subsequent to the signing of the contract between Scandiaconsult and ADER-Fez, e.g. with respect to the division of activities between the three main components. Because of this and the fact that the study consists of many sub-components, the comparison of planned and produced output was more difficult than for the other studies. The work has been adjusted "along the road" in a flexible working process approach.

With respect to the delivery of the output it does seem that some activities were omitted – one of them the elaboration a pollution load prognosis.

Technical Performance
The interviewed representatives of ADER-Fez expressed their appreciation of the Swedish consultants and characterised the co-operation as being seam-less and in which ADER-Fez felt as an equally competent partner.

Scandiaconsult's reports are well structured but they are somewhat difficult for the reader to understand in what way a report fits in with the rest of the reports and to which phase each report belongs.

The study results
Criticism against Scandiaconsult's work has been presented in reports made available to the evaluation team. The most important is a report prepared by the PREM project (Pérennitè des Ressources en Eau du Maroc), which is financed by USAID and the Moroccan Ministry of the Environment. A main criticism of PREM concerns the methodology used to assess the pollution load from the tanneries. PREM claims that Scandiaconsult have exaggerated the specific load (kg chrome used per ton leather) and the specific volume (m^3 chrome bath per ton leather). Concerning the load the difference is not significant, but for the volume the Scandiaconsult figure is 3–5 times higher than PREM's sources. It has not been possible to evaluate whether this criticism is justified within the evaluation's short time-frame.

The PREM report furthermore quotes criticism from CDF (Caisse Francaise de Développement) that Scandiaconsult only focuses on end-of-pipe solutions and does not address the question of eliminating or at least reducing the use of chrome (preventive measures. This criticism is considered well justified; the option should at least have been investigated.

Concerning PREM's criticism it should be noted that PREM may not be entirely impartial. PREM is involved in the design of a water treatment plant for chrome at the outlet of Dokkarat, the industrial area just upstream the Fez Médina. Thus PREM's water treatment plant can be seen as a competitor to or at least complementary to the ADER/Scandiaconsult plant planned at Aïn Nokbi. There has been a good deal of polemics between the two parties (PREM and ADER) each of them claiming that the other's project is to some degree unjustified.

Major Factors affecting Implementation
The main mechanism for financing the relocation activity has stalled. ADER-Fez's ordinary and most important source of income is real estate allotment. The allotment project that was suppose to yield the finances destined for the development of Ain Nokbi has not been implemented.

Achievement of Objectives; Effects and Impact

The preparation of the industrial village Aïn Nokbi including the construction of the wastewater treatment plant for chrome and cyanide has not taken place. Neither have the Plans for transferring of the most polluting industries out of the Médina as well as the Plan to Relocate the small industries within the Médina been implemented. On the contrary, there has been a negative impact as many of the tanneries have moved into the residential areas at Aïn Nokbi and thereby aggravating the environmental pollution.

A number of factors contribute to this result:

- Poor project formulation: very complex issues are addressed. This has resulted in over ambitious objectives and activities, which have not been possible to deliver;
- Little institutional coordination: for example the database containing basic information, such as information on buildings, including name of owner, address, surface, commercial and productive activities, production capacity, number of employees and the value of the property should have been integrated with the municipality;
- A lack of integration with the on-going planning process of the Master Water Plan by RADEEF and the Development Plan undertaken by the municipality;
- Little donor coordination which has resulted in disagreement on the level of pollution in the Médina and subsequent technical solutions, such as attention to preventive and cleaner technology as opposed to waste water treatment plants; This has resulted in a controversy between RADEEF, the municipality and donors on the technical recommendations due to focus on end-of-pipe solutions; donors such as CDF and USAID on the due focus on preventive solutions vis a vis the end-of-pipe solutions.
- A suitable regulatory framework with permissible waste rates and licensing combined with an efficient enforcement of the regulations and the identification of suitable economic instruments would be more efficient in reaching the objective;
- Focus on detailed planning and mapping of existing tanneries instead of focusing on a suitable combination of regulatory framework and economic instruments to facilitate the restructuring process and transfer of enterprises;
- The project has not succeeded in finding its role in the restructuring process of the small industries, which is taking place, thereby facilitating this process;
- The complexity of this project does probably make it un-suitable for KTS support.

Achievement of stated objectives
None of the stated objectives have been achieved, due the halted relocation process – the first step to achieve any environmental improvement whatsoever. A number of artisans (around 60) have in fact purchased their lot at Aïn Nokbi, but cannot move since 1) the infrastructure in Aïn Nokbi is not finished, and 2) financing for civil works is lacking.

It is difficult to assess the prospects of the implementation of the relocation plans. Taking into consideration the indisputable need for action it is surprising that the project has remained stalled for so long. In any case, as time passes and the "facts on the ground" change (e.g. due to changing commercial conditions), it becomes still more probable that a similar study must be re-done, and

thereby a considerable part – if not all – of Scandiaconsult's work and Sida's investment will be wasted. Representatives from USAID were of the opinion that this is already the case.

It is tempting to argue that the project objectives were too ambitious by including both the socio-economic restructuring component and the more technical-environmental component – mainly the design of the wastewater treatment – in the same project. As an alternative, the second component could have been launched only when the first component was successfully implemented, i.e. when it is certain that the enterprises are going to move.

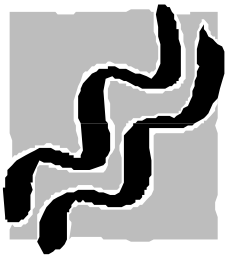
However, not all environmental activities could have been postponed to a second phase, since the identification of the industries/handicrafts to move out are mainly based on environmental criteria. Therefore the initial activities had to comprise an environmental audit of the Médina's activities.

Other major effects or impacts
According to conversation with USAID, a number of polluting artisans has in fact left the Médina – due to (some unspecified) pressure. Such pressure may have been a by-product of the awareness-raising, which is one of the implicit project objectives. As a consequence, these artisans have moved their enterprises to areas of Aïn Nokbi, i.e. their pollution is being dispersed rather than gathered in an industrial estate as was a project objective.

When dealing with heavy metals, dispersion is a very unfavourable option due to the metal's accumulative properties. Above all, a systematic wastewater treatment is difficult to achieve for tanneries that are dispersed in a large area. Thus, the reality has apparently been working against the objectives in the four years that have past since project finalisation. This shows the urgency of providing a solution to the stalled implementation.

Summary

Project	Project Period	SCC's counter-part	Budget (original) MSEK	Additional grant MSEK	Number of industries studied/audited	Implementation of measures	Impact
Restructuring of Handicraft industry in Fez	1994 – 1996	ADER-Fez	5.61	0	Hundreds of small industries	Few	Little – possibly negative



Study of the reduction of the impact from industrial discharges on the water quality of two rivers

Etude de la Reduction de l'Impact des Rejets Industriels sur la Qualité des Eaux d'Oum Er Rbia et du Tensift.

Background

The main industrial centres in the two watersheds are Marrakech (Tensift watershed) and Beni Mellal (Oum Er Rbia watershed). The industries in these two towns comprise mainly five sectors: tanneries, sugar factories, olive oil factories, dairies and canning.

The city of Marrakech at present has no wastewater treatment at all. Together with the city's domestic wastewater all industrial discharges go directly into the river with no pre-treatment. During a large part of the year the natural discharge of the river is negligible, so the river flow consists entirely of wastewater. The last hundreds of meters before Marrakech's sewer's outlet into Tensift River, the sewer becomes an open canal. From this, peasants have made a diversion into the surrounding fields and use the wastewater for irrigation (!).

The city of Marrakech has elaborated a plan (Plan Directeur de l'Assainissement) to build a first stage of a municipal wastewater treatment plant. Due to difficulties of financing, only one stage is planned so far. This stage will consist of a simple biological pre-treatment. To ensure the function of the biological process it is a pre-requisite that industrial toxins are removed from the wastewater before its arrives to the treatment plant. Thus, a reduction of the industrial pollution will not only give an immediate benefit for the river, but is *necessary* for the planned treatment of domestic wastewater.

Beni Mellal has a municipal wastewater treatment plant. However, not all industries in the Beni Mellal area are connected to the sewerage system.

Project Description

Project Objectives
The long-term objective is that the water of the rivers becomes of drinkable quality. The industry's contribution to this is assumed to be:

- reduced water consumption and water recycling
- pre-treatment of the waste water
- recycling of heavy metals
- reduce all organic effluents with 95% by 2020 through industrial pre-treatment and municipal treatment

An assessment of the long term objective of making an impact on the quality of water in the Oum Er Rbia and Tensift will only be noticeable and possible to monitor over a longer time. However, all the studies undertaken are relevant for achieving the development objective and have initiated processes, which are important and often strategic.

The short-term objectives are

- identify, characterise and assess the importance of the polluting discharges from the industries
- Assess the impact of the industrial discharges on the two rivers.
- Propose type solutions (per sector) to minimise the found impacts
- Prepare a regional action plan for each of the two rivers.

Target Groups and Contract Parties
The contractual counterpart of Scandiaconsult is the Ministry of Commerce, Industry and Handicraft (MCIA).

The immediate target group is all the polluting industries in the two watersheds. Fifteen selected industries are the direct study objects. In the long-term the beneficiaries will be the populations and ecosystems along the rivers.

Components
The main components are

- Environmental audits of fifteen industries representing five different sectors.
- Development of type solutions
- Preparation of action plans
- Seminaries for presenting the study findings and for discussing the draft action plan before preparing the final action plan.
- A training workshop

Activities
- Visit selected industries
- Elaborate a diagnostic of the present situation
- Make recommendations for reducing discharges – in the short term
- Make recommendations for reducing or eliminating discharges and solid waste – in the long term.
- Make an economic analysis
- Make preliminary reports
- Elaborate a regional action plan for each river (middle to long term measures)
- Make final reports
- Training workshop (in Morocco) for industrials and key personnel from MCIA. Duration of workshop: 5 days.
- Two regional seminars for presentation of the study results.

Input

Sida's input is 2.87 million SEK (including an additional grant of 175,000 SEK) of which 2.59 million in professional fees.

The input of Scandiaconsult's counterpart (MCIA): Office accommodation, telecommunication, printing, local transport, hotel accommodation and per diem for Swedish consultants while in Morocco. The Ministry also provides a person actively participating in the project. The local input is estimated to 440,000 DH (approx. 350,000 SEK).

Project Implementation and Performance

Output and Implementation
The project was not yet finalised at the time of the evaluation visit in Morocco. At that time the preliminary versions of the 15 audit reports had been submitted. The Ministry of Commerce, Industry and Handicraft (MCIA) is still collecting comments from the fifteen enterprises that were audited. When the comments are received from all enterprises, the final audit reports will be presented.

The next step of the project is the elaboration of action plans for each watershed. When the draft action plans are ready, these will be presented and discussed during seminars.

Technical Performance
Although this is a replication of the initial Environmental Study of Industrial Pollution in Sébou, this study does not address the integral problems of urban, agriculture and industrial contamination of the water basins. Focus is here on the industrial pollution problems

Following audits were reviewed by the mission team:

- Audit Environnemental de l'Huilerie des Ouled Ayad, August 1998
- Audit Environnemental de la Conserverie Framaco, August 1998
- Audit Environnemental de la Laiterie Halib Tadla, August 1998
- Audit Environnemental de la Tannerie Hallal Maroc, April 1999
- Audit Environnemental de la Sucrerie et Raffinerie de Tadla (SUTA), April 1999

The objectives of the audits is:

- To sensitise industries on the importance of reducing the environmental contamination
- To reduce the waste water pollution at the source, with recycling and internal measures as preventive actions
- To reduce the waste water pollution, with external treatment of waste water
- To reduce the generation of solid waste, through the reduction of production, recycling and internal or internal measures of solid waste
- To minimise air contamination
- To achieve these objectives through few economic investments. Actually, some measures may be profitable, thanks to a reduction of water and energy use

The audits are comprehensive (with some exceptions) and increasingly systematic as more audits have been made as it is noticeable that the quality of the audits has improved over time. Each one contains a description of the current production process, an analysis of the environmental impact of all wastes, describes all the measures suggested by the management, as well as by Scandiaconsult. Finally a plan is prepared for the short, medium and long term. The most recent reports also include details on the financial implications in terms of investments and benefits to be generated from the investment.

Management of the different companies has already started to undertake improvements in operations, which have resulted in productivity improvements with positive environmental effects. Below the recommendation made by Scandiaconsult are described.

Estimated waste reduction due to Scandiaconsults' recommendations

Name of project	Athmo-sOdor	Water savings m3/year	Chrome T/year	Solid waste	Reduction DCO	Reduc-tionDCO5	Pre treat-ment plant
l'Huilerie des Ouled Ayad	Yes	25%	7,5	Consid-erable	50–60%	80%	Yes
la Conserverie Framaco	Yes	8,743		N.D.	80%	25%	Yes
la Laiterie Halib Tadla*		3,965		N.D.	N.D.	yes	Yes
la Tannerie Hallal Maroc		80%			yes		Yes
la Sucrerie et Raffinerie de Tadla (SUTA)							Yes

N.D. not defined
Note. There are additional measures recommended by Scandiaconsult, which are not presented in this table.

The information, which the management of the dairy has provided, is too general to provide a basis of detailed cost calculations of the investments.

The audits address both internal and external measures to be undertaken in the short, medium and long term. An analysis is made for the different kinds of investments and it is clear that several of the internal measures may be undertaken with no or very small investment costs – they are so called 'win win' investments. However, wherever it is necessary to make investments in changes of processes and pretreatment plants of waste, there is no financial incentive in terms of improving the profitability. In this case, only a regulatory framework, which functions according to the Polluter Pays Principle (PPP) will make the entrepreneurs make such investments. In fact, all the industries investigated will need investments in pre treatment plants in order to achieve necessary decontamination of the wastes. It is recommended that the Consultant further systemises the presentation of the reports and present the environmental impact for the different types of industries. The tannery has closed its operations, due to low profitability. In this way, the pollution of the toxic wastes, chrome and cyanide have vanished.

Subsequently, an action plan will be elaborated for each watershed. As the draft action plans are ready, they will be presented and discussed during seminars in Beni Mellal and Marrakech.

Major Factors affecting Implementation
Some enterprises had unexpectedly closed down before Scandiaconsult had audited them. The process of selecting other industries to substitute the closed one and an extra travel caused a small extra cost of the project. The cost was also increased due a extension of the scope of work which appeared not to have been stated explicitly in the contract; Scandiaconsult initially intended to prepare only one action plan (for both rivers) and audit six enterprises, which the client (MCIA) did not accept. With a small additional grant it was agreed that Scandiaconsult would prepare two action plans, one for each watershed, and audit 15 industries.

Some enterprises have stopped their activities since the study period, primarily tanneries, due to a general crisis in the tannery sector.

Wastewater treatment plant
One of the reasons for the plans to treat the industrial wastewater is to safeguard a good function of municipal wastewater treatment plants (planned at Marrakech, existing at Beni Mellal). At Beni Mellal not all industries are presently connected to the municipal sewer, but among those who are, are the tanneries. These discharge wastewater with a considerable load of chrome, which is known to be harmful to the biological processes at a treatment plant.

The evaluation team visited the Beni Mellal wastewater treatment plant and one of the questions they were anxious to get answered, was the effect of the chrome on the treatment process and the content of chrome in the residual sludge and in the "clean" discharge into the river. Currently there is no knowledge on the chemical composition of neither the inflow nor the outflow, because the plant does not have a laboratory in operation. The evaluation team could, however, verify by the colour of the effluent, that the cleaning process is not optimal. In fact, even though the plant is only about ten years old, the function is unsatisfactory in several respects, according to the representative of RADEET (Régie Autonome Intercommnunale de la Distribution d'Electricité et d'Eau du Tadla), the Tadla region's water and electricity supply body. For example: there have been a number of cases in which the rotors of the aerators had disconnected and fallen to the bottom of the reaction basin. In such cases, the basin must be emptied in order to collect the lost parts and make repairs, with a serious and lengthy disturbance of the process as a consequence. There were also examples of permanent malfunction. The treatment plant has virtually no trained professionals employed, able to operate the plant.

Thus it appears that the municipality of Beni Mellal seriously needs assistance aimed at the wastewater plant, both concerning improving the "hardware" as well as the training.

Achievement of Objectives; Effects and Impact

Project assumptions
The evaluation team visited two of the enterprises that were audited in the study. The two enterprises represented two of the five sectors that were included; a tannery (Marrakech) and a sugar factory (Beni Mellal). However it turned out that the tannery had closed due to the sector's general problems: a reduced demand (due to the East-Asia crisis according to the manager) and a reduced supply of skins causing high prices. According to the manager of Tannerie Halal Maroc all other tanneries of a similar size were in the same situation. The factory had been closed about a year.

Thus the pollution problem caused by these tanneries appear reduced – but for how long? However it is clear that the tannery-related part of the Scandiaconsult study will not give any value for money for a considerable time, because even those tanneries that manage to survive will have great difficulty to finance environmental measures.

One of the reasons for the proposed measures is to safeguard the function of the municipal wastewater treatment plant. As mentioned above, the existing plant at Beni Mellal is functioning quite unsatisfactory. The residual sludge is being disposed at the city dump for environmental reasons due to the expected content of e.g. chrome even though the actual concentration has never been measured because the plant lacks a laboratory!

Support to this treatment plant could be considered for Sida funding.

Analysis of various objectives
The long-term objective that the river water shall become drinkable seems more than optimistic, considering that the river is literally a sewer during a large part of the year. However the project objectives are both realistic and justified.

Achievement of stated objectives
A lot has been achieved at sugar factories.

No effect at the tanneries.

Sustainability and Replicability
The fact that the sugar factory SUTA has been able to implement the major part of the internal measures proposed by Scandiaconsult through their own expertise and financial resource, indicates that the solutions are sustainable.

Project	Project Period	SCC's counter-part	Budget (original) MSEK	Additional grant MSEK	Number of industries studied/ audited	Implemen-tation of measures	Impact
Environmental Study on Industrial Pollution in Oum Er Rbia and Tensift, incl. environmental audits	1998 – ongoing	MCIA	2.87	0.18	15	Some	Increased awareness Water saving Waste minimi-sation Recycling

Appendix 2

Terms of Reference for the evaluation of environmental projects in Morocco

1 Background

The aim of the Contract Financed Technical Cooperation is to promote human resource development in low and middle income countries and to provide know-how in areas which are of strategic importance for the development of partner countries. It shall promote a greater exhange of skills and experiences between Sweden and partner countries and encourage a broad spectrum of Swedish participation in the cooperation.

Sida has since the beginning of the 90's supported a number of projects in Morocco reaching a total volume of 29,4 mkr up to December 1998. Many of the undertaken projects have been in the field of environment. The total volume for environmental projects amount to 17,4 MSEK divided between 8 projects. Two of these projects are still on-going.

The projects have aimed at the reduction of the pollution from industries in the neighbourhood of the rivers and, in some projects, the improvement of the working environment within those industries. The main activities have consisted of the identification of polluting industries and the magnitude of this pollution into the rivers and the elaboration of action plans for the treatment of waste, mostly liquid, but in some cases also solid waste. The projects have dealt with industries such as handicraft (tanners, coppersmithers), sugar and olive oil factories and phosphate industries. The industries are based in the vicinity of the rivers of Fès, Sébou, Oum Er Rabia and Tensift close to cities such as Marrakech, Ben Mellal, Fès, Khénifra (more info needed from SCC or Ministry).

The Swedish partners have been Scandiaconsult and Sweco. However, the main implementing partner has been Scandiaconsult which to a certain extent has used experts from Riksantikvarieämbetet, Svenska Sockerbruk and Naturvårdsverket. On the Moroccan side the local partners have been the Ministry of Commerce and Industry (2 projects), Ader-Fès (3), Association Professionelle Sucrière (1), Setexam (1) and La Communauté Urbaine (on-going, not part of the study).

As mentioned above most of the projects have been finalized. The on-going study of pollution into two rivers will be finalized within short.

A complete list of the projects can be found in Appendix 1. Copies of the internal Sida decisions can be found in Appendix 2 (being sent by mail).

2 Purpose and Scope of the Evaluation

So far no evaluation has been undertaken of projects supported in Morocco. The information from the evaluation will be used as an input in the formulation of a strategy for the Swedish relations with the Mediterranean Countries which is presently being elaborated by the Ministry of Foreign Affairs.

The purpose of the evaluation is as follows:

- to identify and evaluate the results that have been achieved through the projects
- to identify and analyse results produced through the support, with special focus on the sustainability of using Contract-Financed Technical Cooeration (KTS). The evaluation should identify development impact on national, regonal and organisational levels in Morocco as well as tracing the impact of Swedish-Moroccan relations and connections.
- to provide Sida with an input and recommendations for future cooperation activities within the environmental sector in Morocco and for similar projects in other countries.

3 The Assignment (issues to be covered in the evaluation)

An analysis should be made of the projects' relevance, efficiency, results and effects, long term impact and sustainability. The consultant shall produce a report with findings and recommendations (Annex x). The major content required is given below.

3.1 Relevance

- Assess if the projects have been relevant to the existing problem in the environmental field in Morocco
- Assess if the projects have been relevant to needs and strategies in Morocco in the environmental sector
- Assess if the planned outputs have been achieved
- Assess if the project specific objectives have been fulfilled
- Assess if the projects have contributed to the fulfillment of the overall objectives as specified in the project documents
- Assess how the projects supported by Sweden relate to other projects financed by other donors in the field of environment (include a brief description of the activities of other donors).

3.2 Efficiency

- Assess the cost-efficiency of the projects
- Evaluate the quality of services, including value of money, performed by the Swedish counterparts
- Evaluate the efficiency of the various stakeholder's co-operation, positive as well as negative experiences when relevant
- Identify and define reasons for any delays, overruns and problems in the implementation process of the projects and comment on additional costs, if any, and unintentional effects
- Assess whether the principle of cost-sharing has been correctly fulfilled.

3.3 Impact and sustainability (results and effects)

- Assess the short-term as well as the long-term effects of the activities carried out.
- Assess the effects of the cooperation on an institutional, regional and national level.
- Assess the impact of the transferred knowledge to the concerned partners with regard to capacity building and institutional strengthening. Are the effects sustainable without further assistance?
- Assess the impact on the country's environmental policy, strategy and work.
- Analyse to what extent the Moroccan partners have been able to continue the process of transferring the knowledge within their own organisations and to other industries. To what extent have the projects served as demonstration projects for further activities?
- Has the cooperation resulted in or facilitated any commercial relations or any other spin-off effects between Morocco and Sweden within the environmental sector?
- How have the issues regarding gender been considered within the projects? Have the projects resulted in any specific effects regarding the gender issues?

3.4 Lessons learned

- What are the operational and strategical lessons learned from the projects? How can sustainability be improved?
- In brief assess the need for future assistance within the environmental sector.

4 Methodology, Evaluation Team and Time Schedule

The evaluation should take place during spring 1999. The evaluation will be based upon documentation, interviews, fact-finding mission to Morocco, report writing and presentation of the report. It will be based on available documentation at Sida and interviews with relevant personnel, visits in Morocco with interviews with relevant personnel at end users and beneficiaries as well as interviews with relevant personnel related to the projects.

The evaluation should be carried out by one or two persons with knowledge from and experience of projects in the field of environment. Since most of the available reports are in French and French is the working language, it is important that the consultant (s) have a working knowledge of French.

The partners to be visited in Morocco are the Ministry of Commerce and Industry, ADER-FES, Setexam, and two groupings of sugar factories (former Association Professionelle Sucrière). The Ministry has accepted to act as the coordinator of all visits. The Consultant should arrange the visit with the assistance of the Ministry.

The visit will include the city of Rabat, Fès, Marrakech and other cities of relevance where industries related to the different studies are located (to be specified). It might also be appropriate to make a visit to the Swedish Embassy, at least to present preliminary views and conclusions.

The background material consists of project memos, contracts and reports which can be collected at Sida or at the implementing partners. Further information should be gathered through the interviews both in Sweden and Morocco.

5 Reporting

The evaluation report shall be written in English and should not exceed 40 pages, excluding annexes. Format and outline of the report shall follow the guidelines in **Sida Evaluation Report – a Standardized Format** (see Annex 1). Five (5) copies of the draft report shall be submitted to Sida no later than 15 June 1999. Within 2 weeks after receiving Sida's comments on the draft report, a final version in 5 copies and on diskette shall be submitted to Sida. Subject to decision by Sida, the report will be published and distributed as a publication within the Sida Evaluations series. The evaluation report shall be written in Word 6.0 for Windows (or in a compatible format) and should be presented in a way that enables publication without further editing.

The evaluation assignment includes the production of a Newsletter summary following the guidelines in **Sida Evaluations Newsletter – Guidelines for Evaluation Managers and Consultants** (Annex 2) and also the completion of **Sida Evaluations Data Work Sheet** (Annex 3). The separate summary and a completed Data Work Sheet shall be submitted to Sida along with the (final) draft report.

The draft report shall be presented to Sida at a meeting of maximum two hours duration.

Appendix 3 – List of persons met

Agence pour la Dedensification et de la Réhabilitation de la Médina de Fès (ADER FES);

Fouad Serrhini, Directeur de Programmation et de Planification;
Abdeslam Taleb, Docteur d'Etat Charge de Mission Environnement;

MINISTERE DE L'INDUSTRIE, DU COMMERCE ET DE L'ARTISANAT

Jamal Eddine El Jamali, Directeur de la Production Industrielle;
Jamal Morchadi, Chef de Service des Industries Parachimiques;
Abderrahim Chakour, Chef de Division des Industries Chimiques et Parachimiques;
Mohamed Zguigo, Chef du Service du Commerce Intérieur;
Abdelouahed Rahmoun, Ingénieur d'Etat Délégué de M.C.I., Kenitra;
Abdelhamid Jabri, Délégué du Commerce et de l'Industrie a Fès;
Abdelhak Qachchachi, Inspecteur a la DPCI Fez;
Mohamed Abdelaoui, Ingénieur d'Etat, Chef de Bureau Provincial de la Meteologie Légal et Industrielle, Béni Mellal;
Larbi Bouchachia, Délégué Provincial du Commerce et de l'Industrie de Béni Mellal;
Idrissi Kaitouni Seed, Responsable de l'environnement, Délégation du Commerce et Industrie, Fez;
Mohssine Semmar, Chef de la Division de la Promotion et de l'Environnement;

MINISTERE D'ENVIRONNEMENT

El Kebir Mdarhri Alaoui, Biologiste Environnementaliste Division de l'Observation et des Etudes;

PROGRAMME DES NATIONS UNIES POUR LE DEVELOPPEMENT (PNUD)

Khadija Belfakir, Représentant Résident Assistant;

Régie Autonome Intercommunale de Distribution d'Eau et d'Electricité du Tadla (RADET)

Rhouzlane Mohamed, Directeur;

REGIE AUTONOME DE DISTRIBUTION D'EAU ET D'ELECTRICITE DE MARRAKESH

Commans, Chef de Projet, SGI-CID-SG
Kantchev, Chef de Projet adjoint
Farah Ahmed
Abatourab Oussama
El Kiassi Abbes, SGI-CID-SG

CELLULOSE DU MAROC

Mohammed Mezzour, Vice Président Directeur Général;

UNION EUROPEENNE

Guerrato, ambassadeur
M. Juan Jorge de la Caballeria, Conseiller;

SWEDISH EMBASSY

Cecilia Malmsten, Swedish Ambassadeur;

Société SUNABEL

Moulay Rachid Alaoui Hafidi, Directeur Général du Groupe des Sucreries de Betterave Gharb et Loukkos;

Sucrerie SUTA

Lazouzi Abdelaziz, Directeur Usine de Béni Mellal
Mounier Hassan, Directeur de Coordination des Etudes et de Développement

BANQUE MONDIALE

Linda Likar, Economiste Principal;
Robert Clement-Jones, Economiste Principal;

GSBGL – SUNABEL

Mme Raja Tahiri, Ingénieur d'Etat, Chef de Division Laboratoires et Recherche;

SETEXAM

Dr. Abdelwahab Riad, Directeur de Laboratoire, Laboratory Manager;
Hassan Zainou, Directeur de Production, Production Manager;
Bouchaib Rebbouh, Directeur d'Usine, Plant Manager;

Agence Américaine pour le Développement International (USAID)
Alan R. Hurdus, Chef de la Division de l'Environnement et des Ressources Naturelles

SCANDIACONSULT INTERNATIONAL

Mohamed Effendi, Area Manager Africa;

Project Pérennité des Ressources en Eau du Maroc (PREM)

Redouane Choukr-Allah, Coordinateur Technique
Mario Kerby, Directeur du Projet

Appendix 4 – Literature list

Banque Mondiale: Une croissance plus forte, des opportunités d'emploi. Des choix à faire pour le Maroc, Washington, 1996;

Ministère du commerce, de l'Industrie et de l'Artisanat, Royaume du Maroc, Organisation des Nations Unies pour le Développement Industriel: Développement Industriel Ecologiquement durable au Maroc, Note Technique, avril 1996;

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Scandiaconsult International, Royaume du Maroc: Réhabilitation et Environnement, Etude de restructuration de l'artisanat de la Médina de Fès et de protection de son environnement, août 1994;

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World Bank: Project Appraisal Document on Proposed Loans to the Kingdom of Morocco and the Municipality of Fès-Médina for a Fès-Médina rehabilitation Project, October 7, 1998;

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Department for Africa

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Department for Infrastructure and Economic Cooperation

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00/3 PROMESHA. Evaluacion del Programa de Capacitacion para el Mejoramiento Socio Habitacional. Ronaldo Ramirez, Patrick Wakely
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00/4 Land Management Programme in Tanzania. Kjell J Havnevik, Magdalena Rwegangira, Anders Tivell
Department for Natural Resources and the Environment

00/5 The National Environment Management Council in Tanzania. Grant Milne
Department for Africa

00/6 The African Books Collective. Cecilia Magnusson Ljungman, Tejeshwar Singh
Department for Democracy and Social Development

00/7 Twinning Cooperation between Riga Water Company and Stockholm Water Company. Martti Lariola, Sven Öhlund, Bengt Håkansson, Indulis Emsis
Department for Eastern and Central Europe

00/8 Cambodia Area Rehabilitation and Regeneration Project. Hugh Evans, Lars Birgegaard, Peter Cox, Lim Siv Hong
Department for Natural Resources and the Environment

00/9 Lao National Drug Policy Programme. Margaretha Helling-Both, Göran Andersson
Department for Democracy and Social Development

00/10 Sida Support to the Asian Institute of Technology. Jan Rudengren, Inga-Lill Andréhn, Guy Bradley, Richard Friend, Dan Vadnjal
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