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**INDEPENDENT EVALUATION OFFICE  
OCCASIONAL PAPER**

**A Framework for a Systematic Assessment of  
Interventions on Access to Water and Sanitation:  
UNDP's Every Drop Matters Programme**



These occasional papers from UNDP's Independent Evaluation Office (IEO) are a series of ad hoc publications presenting in edited form, papers on evaluation topics. Occasional papers cover one or more of the main themes of the Office's work, such as assessment of development results, thematic evaluations, global or regional programme evaluations, decentralized evaluations, impact evaluations, evaluations commissioned by programme units, evaluation methods and guidance, and national evaluation capacities development. They are intended primarily for international organizations, government, civil society and the academic community.

This publication is the product of collaborative work between IEO, UNDP RBEC, UNDP Water Governance programme, and The Coca-Cola Company Eurasia and Africa Group project members. Special thanks goes to the UNDP resident representatives, deputy resident representatives, country directors, and EDM project management teams from the UNDP country offices in UNDP's RBEC region, to which the case described in this paper, refer. Thanks are also due to the Bureau for Development Policy, and the Water and Ocean Governance programme. Their advice helped to shape the framework for selecting and developing common project indicators and reviewing drafts of the reports upon which this paper is partially based.

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# I. ABSTRACT

The Every Drop Matters (EDM) programme is a partnership between UNDP and the private sector. It aims to increase access to safe drinking water and proper sanitation, and promote responsible water management through outreach and awareness-raising activities. It does this through seed funding and piloting innovative ways of solving water problems, which are identified by local communities. Since 2007, EDM has promoted sustainable, cost effective and replicable ways of managing water and access to clean water sources and awareness raising activities on the responsible use of water sources in UNDP's RBEC region (East Europe and the CIS). In 2013, EDM asked UNDP's Independent Office of Evaluation to help assess its own impacts to date and help develop a system to document and monitor impacts of EDM interventions over time. The IEO proposed an incremental approach to first clarify the issues and obtain quick, qualitative data about EDM impacts. These would feed into the design of a more comprehensive system able to generate quantitative data for EDM stakeholders. To assess change rapidly, a quick impact assessment was conducted to generate early findings and lessons and to test a monitoring system of EDM achievements with a view to generating data for a more comprehensive and rigorous studies of EDM interventions. While this paper does not delve into the specific results of the assessment – the subject of a parallel paper – it refers to it to suggest a set of recommendations of a programmatic nature for EDM-type projects. Recommendations include that the monitoring system needs to use as simple a set of indicators as possible, with independent and external mechanisms to validate the data; EDM-type projects should not be implemented as stand-alone interventions, but should be systematically embedded into broader programmes with more staying power; and that the dynamism, the knowhow and visibility of private sector partners should complement the neutrality and credibility that UNDP brings to local partnerships, but also diversify the funding sources on water governance, and address more closely the broader sectoral constraints that have a strong bearing on its impact.

## II. INTRODUCTION

Clean water is fundamental to sustainable development. It is the common thread that runs through the global challenges at the top of development agendas: energy, food, health, security, climate change and poverty eradication. But just as water is central to sustainable development, it is also one of development's greatest challenges. Conflict over increasingly scarce water resources undermines peace and stability in many areas, so good water management indirectly helps to ensure stability.

Given the importance of water to poverty alleviation, human and ecosystem health, the management of water resources is of central importance. The depletion and pollution of water resources has resulted from the natural limitations of water supply, a lack of financing and appropriate technologies, and from profound failures in water governance. Improving water governance should be a key priority. Any response needs to emphasize an integrated approach to water resource management and effective governance.

In 2006, the United Nations Development Programme (UNDP) and The Coca-Cola Company (TCCC) joined forces in an effort to improve access to clean water. The partnership, called Every Drop Matters (EDM), aimed to increase access to safe drinking water and proper sanitation and to promote responsible water resource management through outreach and awareness-raising activities. The partnership represents an approach to seed fund and pilot innovative ways of solving water problems identified by local communities. Together with government and non-governmental organizations in East Europe and CIS region, EDM aimed to promote sustainable, cost effective, replicable ways of managing water with 17 projects in nine countries between 2007 and 2011. It sought to improve access to clean water sources, responsible use of water sources, and raise awareness.

The programme is an example of how private sector partnerships can help to improve the lives of people and communities, and preserve the environment. The partnership also attempts to demonstrate the benefits of the EDM approach and provide lessons for future projects. It sought to document and objectively assess the impacts of its projects on people, communities, the environment and water resources. Some impacts that had already materialized were assessed in 2013 in the RBEC countries (henceforth the 'EDM Regional IA') where enough time (at least five to six years) had passed since the projects began. A baseline was established to allow an assessment to be made of changes and impacts that may be attributable to EDM projects.

This document presents a framework designed by UNDP's Independent Evaluation Office and RBEC, which was used to establish a system to monitor and assess the impacts of EDM's project interventions. The IEO proposed an incremental approach, initially with small investments to clarify the issues and obtain quick, qualitative data on the programme's impacts (henceforth, the 'Impact Assessment', or 'part A' of this paper). This was designed to feed into the design of a more comprehensive system to generate quantitative data serving the needs of EDM stakeholders ('Monitoring System', or 'part B'). That, in turn, could feed into a broader system for impact research supported by time-series and cross-sectional data from many projects over different countries. In other words, the plan was:

1. In the *short term (three to six months)*, to run IAs of a representative sample of project interventions that took place until the time of the assessment, using existing and new data collected, from projects that started in 2007 (from the EDM Regional phase).
2. In the *medium term (within one year)*, to develop the key elements (primarily, the indicators) of a monitoring system (MS) for EDM projects. EDM would be able to use these to establish an enabling environment to systematically gather data on EDM interventions over time, based on the agreed indicators. That was designed to allow EDM to progressively learn and better report and communicate its own results.



This paper starts by offering an introduction to the concepts of impact and monitoring (section II) and the framework of the EDM partnership (section III). That is followed by Part A, a description of the main elements of the rapid IA and the specific results of the IA in the sample of RBEC countries, with the main outcomes and lessons learned. Part B continues by describing the main elements of an MS. This includes a description of how the IA informed the set of indicators and main elements of the MS specifically proposed for the EDM. It is followed by conclusions and recommendations aimed mainly at proposing an operational list of directly usable indicators, for the implementation of the MS within the EDM programme (and applicable for other, similar, types of initiatives).

### III. THE IMPACT ASSESSMENT AND THE MONITORING SYSTEM

Impacts are the positive and negative long-term effects on identifiable groups driven by development interventions, directly or indirectly, intended or unintended. The effects can be, for example, economic, socio-cultural, institutional, environmental, or technological. However, what development interventions often determine are outcomes, the intended or achieved short- or medium-term effects of an intervention's outputs, usually requiring collective effort of partners. Outcomes are changes in development conditions that occur between completion of outputs and achievement of impact.

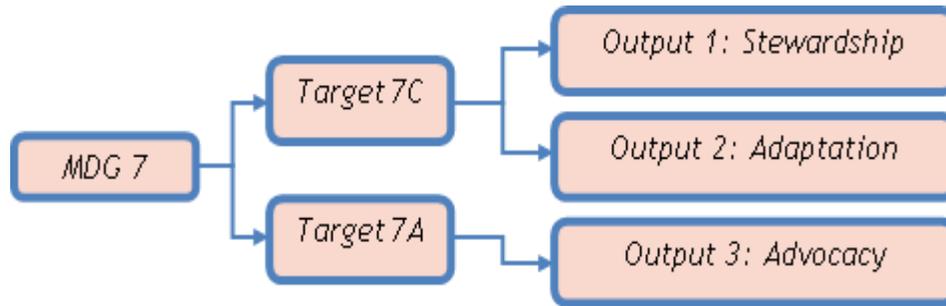
To assess such changes or effects, a quick IA was conducted in 2013 to generate early findings and lessons to be learned by EDM. This IA also allowed the testing of an MS of EDM achievements that could be used to generate future data to feed into more comprehensive, systematic, and rigorous impact evaluation studies of EDM interventions.

The EDM programme therefore needed to establish an MS – a systematic data collection system to monitor the long-term consequences of interventions and progress towards project outputs/outcomes, and assess the extent to which objectives are achieved. Monitoring and evaluation are complementary, together focusing on tracking inputs and outputs, while evaluations assess efficiency, outcomes and impact of interventions, during and after implementation, by comparing the impacts against declared project/programme plans, with a focus on longer term impacts.

The framework for the system that is presented here was developed in 2013 at the request of EDM. It takes account of the views of the EDM programme management, key partners, donors, stakeholders, and main project players, from meetings of EDM stakeholders and implementers. The idea is that the EDM programme would use the MS to systematically collect information on impacts of EDM project interventions, on the lives of beneficiaries and communities in EDM programme countries, and on the environment and water resources based on targets detailed in the EDM logframe (Annex 1) and in EDM projects. These targets, classified within the three main EDM objective areas 'Stewardship', 'Adaptation' and 'Advocacy', relate to aggregated MDG 7 indicators.

Figure 1 shows how EDM activities contribute to outcomes and impacts. Plotting and understanding the intended activities behind the actions and activities that can lead EDM to its intended impacts can help to focus EDM interventions and guide the development of IA questions, baseline and data monitoring surveys. In the example, the end product foresees the three main objectives of EDM feeding into the MDG 7 target A: *"Integrate the principles of sustainable development into country policies/programmes and reverse loss of environmental resources"* and/or MDG target C: *"Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation"* attempting to meet MDG indicators 7.8 *"Proportion of people using an improved drinking water source"* and 7.9: *"Proportion of people using improved sanitation facilities"*.

**Figure 1: How EDM objectives feed into MDG targets**



The standard United Nations Evaluation Group (UNEG) criteria of relevance, efficiency (operating at optimal cost), effectiveness (extent of achieving objectives), and sustainability guided the assessment. As impact is of interest of EDM, the criterion of impact is added to the guiding principles of the overall assessment. The design of the assessment also ensured that involved stakeholders:

- Share a common understanding of what is meant by impact and expectations vis-à-vis impact evaluation and risks in attempting to identify impacts;
- Are aware of, and make explicit, their understandings on how change happens and, similarly, what kinds of changes they think should be explored, measured or appraised;
- Consider how the desired impacts of the programme/project are defined;
- Define the context of the assessment. Which factors influencing the context are taken into account? How are they weighed? What frameworks are used to understand the wider context?
- Consider the following questions. What level of impact will be examined? Impact on whom? Will measurement be at the level of the individual, the household, communities, organizations, and beyond? What is the scope?
- Consider what examples are used from which to generalize impact. A sample has to be made by taking into account representation in terms of population coverage, types of activities; and
- Make comparisons with the situation before EDM interventions to establish the counterfactual; hence the need for baselines to be able to run before/after comparisons in time and space, to compare with groups not touched by the interventions (the with/without comparisons).

As interventions result from the collaboration of different partners, the evaluation looked at the extent to which observed development effects could be attributed to specific intervention(s) or to the performance of one or more partners, taking account of other interventions and confounding factors, or external shocks. This allowed conclusions to be drawn on the cause–effect relationships between the projects and the evolving situation of people, communities and resources. Assessment is about measuring or valuing change that can be attributed to interventions, so it is not enough to say that programme objectives or goals were met. Comprehensive IA requires distinctions to be made in the degree that changes can be attributed to that (or those) programme(s) or partner(s).

## IV. EVERY DROP MATTERS: A PARTNERSHIP FOR SAFE WATER

EDM is a multi-region partnership initiative including countries in Europe, CIS, Middle East and the Asia-Pacific region. The partnership aims to help achieve the MDGs by improving access to safe drinking water and proper sanitation and to promote responsible water resource management through outreach and awareness-raising activities. The partnership was first designed as a regional initiative in Europe and CIS in 2007, with activities in Armenia, Croatia, Kazakhstan, Romania, Russia, Turkey, Ukraine and the Black Sea coastal areas. It has supported innovative community projects in three ways:

1. Community water stewardship;
2. Improved water governance; and
3. Raising awareness to promote environmental resource preservation and sustainable use of water for domestic purposes.

Between 2007 and 2011, EDM implemented 17 projects in nine countries and reports that it has provided over 513,000 people with access to clean water sources, reaching over 477,000 people by raising their awareness of the responsible use of water. This paper discusses EDM project sites in East Europe and the CIS region. Learning from EDM's large variety of project interventions through the IA and the MS can bring meaningful lessons. The present study looked first at project sites, eight of which are described below. All projects that are part of the sample described later in this paper completed their activities between 2007 and 2011.

- **Ukraine** is very rich in natural springs. However, a large proportion of springs are abandoned or poorly maintained. The fountains built around the springs are either destroyed or polluted and at risk of disappearing. In 2009, EDM helped to build or rehabilitate 14 natural springs, which are now becoming centres of their communities' social life. More than 200 communities applied to be involved in these projects.
- In **Croatia**, the purpose of the Gacka River's Adopt and Revive a River project was to develop a model to preserve water resources through alternative income generation for communities. Construction of a walking path, marking a new biking trail, opening a Rent-a-Bike point and workshops on environmental protection are among the activities to support sustainable tourism on Gacka River.
- Access to safe and reliable drinking water sources in **Turkey** is a major issue for poor rural communities in many areas. People use ground or reservoir water for drinking and domestic use. The Roof-Top Rain-Water Harvesting Pilot Project was designed to bring a new water resource to a village located near Beypazari. It offered an alternative source of water for domestic use to 30 households. In another project, the main supply pipeline of the Saray Municipality, located close to the capital city Ankara, was fractured. It leaked frequently, causing an average loss of 50,000 tons of water per annum. And because of infiltration, the quality of the water has been compromised. An EDM project renewed the main water supply artery, providing access to safe drinking water for 15,000 inhabitants. Women and children in the district were the focus of a comprehensive awareness campaign educating the public on responsible use of water resources in urban life.
- The Aghstev River, which flows through northeastern **Armenia**, is heavily polluted. As part of the project to adopt and revive the river as an environmental beauty, a waste water treatment plant was designed. Educational activities, public relations events and communication materials were developed to raise awareness and encourage sustainable tourism activities. USAID, the Municipality of Dilijan, the Armenian Water Committee and the Armenian Water and Sewage Company have also joined hands with EDM as project partners.

- The focus of EDM in **Romania** was sustainable water management, and specifically the development of strategies to improve community access to water supply systems. Feasibility studies and mobilization of funds in three remote villages of Suceava County served as a pilot, which helped the local authorities in Vatra Dornei to earn €2.5 million in EU grants to further improve the water supply and waste management systems in their city.
- EDM worked with WWF to develop an educational tool to be introduced to primary schools' curricula in counties around the **Black Sea**. The project aims to increase environmental awareness in school children, specifically relating to the Black Sea ecosystem. It aimed to reach two million school children aged between nine and 12 in the six Black Sea countries and to increase the capacity of their teachers through a Teacher's Guide. The project is active in Turkey, Ukraine, Russia, Bulgaria and Romania, in dialogue with the Black Sea Commission as well as the ministries in those countries.
- In **Kazakhstan**, EDM's Rural Water Supply project worked to rehabilitate rural water supply systems. In addition to engineering works, including the reconstruction of the water intake structure and water tanks and construction of a 2.2 km water pipeline, local administration workers and targeted groups such as students and local communities were trained. In Kok-Ozek village, water was provided to 1,500 households, the community school and the public health centre.

## A. EDM projects' impact assessment

The EDM regional IA was developed as a first step in the process of developing the EDM assessment. The IA used a combination of methods, both quantitative and qualitative. The tools include:

- logical framework;
- beneficiary assessment; and
- a simplified most significant change technique.

Data were collected on outcomes and impacts over time, comparing the situation at the start of the projects with the 2013 situation. To assess impacts, the IA compared changes in beneficiaries with those of non-beneficiaries (with/without counterfactuals). The data collected during the EDM regional IA were intended to inform the design of the MS. The tools it used included a semi-structured questionnaire designed around a subset of the same EDM quantitative indicators (Box 1), to produce lessons learned in designing the baseline questionnaire.

*Logical framework.* A first step in the IA is the logframe (Annex 1), with targets that relate to measurable outputs and outcomes, levels of analysis, methods for data collection and assessment, and the timing of data collection. The logframe explains what the project wants to accomplish, the strategy it will use, and how success can be measured. It helps clarify objectives and identify expected causal links in the results chain: inputs–outputs–outcomes–impact. It identifies performance indicators at each stage, and risks that could impede attainment of the objectives. But because log frames were not available for EDM projects, a stakeholders' reflection on the individual project targets, facilitated by the IEO team, allowed specific project logframes to be generated for the EDM.

*Beneficiary Assessment (BA)* This is used to gather information to assess the value of projects in terms of their principal users' perceptions. BA is used to understand the perceptions of beneficiaries and local stakeholders about a project. This makes their voices heard by those managing the project, and obtains systematic qualitative information to complement quantitative evaluations. Although BA results do not usually lead to statistical analysis, they are more than anecdotal information. The systematic nature of BAs also enhances the reliability of findings by combining techniques to gather information. Such techniques allow responses to be triangulated (crosschecked), and for a reasonable assessment of the extent to which opinions expressed by individual respondents represent widely held community views.

As well as generating descriptive information, BAs can produce recommendations that translate into lessons learned by project managers, suggested by those consulted, for changes to current or planned projects. During implementation, BAs can provide feedback for monitoring purposes. At the end of a project, a BA can complement survey-based evaluations with beneficiary opinions. Project managers are a primary audience of BA findings. Their involvement is sought in the BA process from the design to the review and presentation of results.

The quality and effectiveness of BAs depend heavily on training and preparedness of evaluators and their appropriate supervision and monitoring. In general, the EDM IA used a range of qualitative rapid appraisal techniques for BA, including interviews with key informants; focus group discussions with community groups; direct observation; and mini-surveys on selected EDM indicators using questionnaires with a few – mostly closed-ended – questions that can generate quantitative data.

*Most significant change:* an MSC approach involves collection of significant change stories from the field and systematic selection of the most significant stories by selected stakeholders. The MSC was designed to use a participatory approach to collect qualitative data on changes brought about in the livelihoods of project beneficiaries, in farmers' participation (including women), and in awareness. This involves participatory monitoring of EDM projects that affect the livelihoods of people. The technique is rooted in learning and reflection and is used alongside programme logic to create comprehensive monitoring, evaluation and learning frameworks that focus on learning rather than accountability. It also helps projects to improve their own ability to capture and analyse the impact of their work. The MSC aims to identify and understand outcomes/impacts by systematic analysis by 'learning groups'. The focus is on key changes that groups undergo as a result of project interventions. As well as providing a platform to identify and analyse success, it can capture problems, gaps and constraints, along with unintended consequences and change.

The method collects stories, supported by examples including quantifiable information when appropriate, within activity domains that reflect the range of activities and outcomes under the project, including changes in quality of life, people's participation in activities and institutional/organizational changes. Examples include training demonstrations and knowledge gained, water management technology adoption, awareness-raising, women's involvement in projects, and access to sanitation.

The technique is also in line with the need expressed by EDM stakeholders to "capture stories of change" in project areas. Implementing a simplified MSC approach involves only some of its steps and quantifies some of the indicators, where possible, for instance the number of beneficiaries with access to water for livelihoods is changed as a perceived result of EDM. These steps are:

**Box 1: General typologies of EDM projects indicators**

1. Number and percentage of people with access to improved drinking water source, hand washing and sanitation facility.
2. Number and percentage of students (girls and boys) and schools with access to, for example, improved drinking water source, practising hand washing, sanitation facilities in their school.
3. Cost of water, including price and cost changes.
4. Net increase against baseline in cubic metres of storage available for household use.
5. Net increase against baseline in cubic metres of storage available for agriculture and productive uses, in the target community.
6. Operation and maintenance/long-term sustainability of the project.
7. Net increase vs. baseline in cubic metres (per day, year, etc.) of treated waste water.
8. Change in water efficiency measures (WP, WUE, reducing losses, etc.).
9. Has the project intervention been replicated? How many additional people have benefited via the replication?
10. Number of people and students trained/informed on good water conservation practices.
11. Number of teachers trained to use project developed learning materials.
12. Number of project related articles and all formats of media outreach.

- collecting significant stories of change at the community level;
- reviewing and selecting the most significant stories; and
- verifying stories and feeding the results back to stakeholders.

The selected stories must reflect the outcomes aimed for in the project. The process of selection encourages joint analysis and understanding in participants and managers, builds capacity, and provides evidence of changes and potential impacts. It encourages dialogue and interactive exchange across project layers, thus enhancing institutional linkages and networks. In addition to qualitative findings, quantifiable evidence can be collected, such as the degree of significance of each change, measurements of the participation in EDM activities, and MS indicators of livelihood changes. As the MSC is based on purposive sampling, it can lead to biased results,<sup>1</sup> but measures were taken to reduce that risk. The approach can also allow data collection to be triangulated,<sup>2</sup> which is essential for the EDM projects' MS given that monitoring data collection may have to rely on project staff or community leaders, and therefore need external verification.

### **Sample selection for the impact assessment in the RBEC region**

The EDM regional assessment (IA) was conducted in 2013 by means of pilot IAs in the RBEC region where the EDM regional programme started in 2007. The sample covered 10 completed EDM projects (Table 1) in seven countries, which – despite a lack of baselines – were considered to be more evaluable because of the longer time that had passed since implementation. The sampling criteria were:

- relevance of the project to the EDM objectives;
- type of objectives covered by the project;
- likelihood of having achieved impacts and therefore to present lessons to be learned;
- likelihood of being able to replicate and up-scale the project;
- extent of innovation in the interventions; and
- financial size of the project and likelihood of value for money.

In addition, the projects had to have been implemented for a sufficient time. The estimated value of returns in relation to the money invested should also have been large enough. The type and number of objectives covered by the projects were considered, in order to have a representative cross-section of EDM objectives. Sampling was done with EDM managers, and involved representativeness of the EDM projects in RBEC.

The sampling was deliberately, and to some extent, partially aimed towards a higher likelihood of encountering impact or positive impact stories. This was because of the exploratory nature of this phase, which tested hypotheses and indicators to inform the future design of MS indicators.

Five projects were eventually selected, all implemented in three RBEC countries. The IA was tested and conducted in the selected locations. The independence of the IA process, designed, managed and run by IEO, was further ensured by data collection supported by independent consultants recruited nationally to conduct or help conduct (with IEO) staff the evaluation field work. These consultants were identified and contracted directly by IEO.

**Table 1: Projects sampled for the assessment**

Sampling criteria	Ukraine	Armenia	Croatia	Kazakhstan		Romania	Russia	Black*** Sea Box	Turkey	
				K. Ozek	Almaty				Bey pazari	Saray
Likelihood of impact*	L	H	M	L	H	H	M	H	H	H
Lessons learned*	M	H	H	H	L	H	H	H	H	L
From/to	2009 2012	2009 Ongoing	2007 2010	2007 2009	2010 2013	2007 2008	2010 2013	2010 2013	2007 2009	2007 2008
Value for money*	H	H	H	L	M	H	H	H	M	M
Coverage of EDM objectives**	1, 3	1, 3	3	3	1	3	3	3	1	1
Replicability*	H	M	H	L	M	H	H	H	H	M
Up-scaling potential*	H	H	H	L	M	H	H	H	M	L
Innovative approach*	H	L	H	M	L	H	H	H	H	L

**Legend:**

\* L – low (e.g. low likelihood of finding impact, or e.g. expected value for money invested)

\* M – medium (e.g. medium likelihood of the project being replicated)

\* H – high (e.g. high likelihood for the project experience to be used, or e.g. highly innovative approach used).

\*\* 1, 2, 3 are the EDM objectives of Water Stewardship (1), and Awareness on water issues (3). Within the sampled projects there was no project having specific climate change (2) objectives; however the rapid IA described below allowed indirectly testing also a set of potential Climate Change indicators (see Table 4).

\*\*\* With project activities spanning over different countries including Ukraine, Russia, and Turkey.

 Selected projects.

## Key IA results

This section systematically presents the background and baseline data of each sampled project and its main impacts as found by the rapid IA teams, with some general conclusions.

### Turkey – the Saray Main Pipe Rehabilitation project

**Baseline** The main water pipeline connecting the Saray district of Ankara to the Ankara Water system was built in 1984 by the *muhtar* (elected village head) with villagers' funds, using cement-laced asbestos pipes. Water billing only started in 1995 when the Ankara Water and Sewage Authority (ASKI) was given responsibility for maintaining and upgrading the community-built Saray water system. The latter solved the village's serious water shortage, but the pipes aged poorly. They were leaking and breaking frequently, with water pressure changes in the pipeline and vegetation roots entering the pipe. Up to 50,000m<sup>3</sup> were lost because of these leaks in 2006 alone. After each break, repairs would be made by ASKI, but these would often take time to start and complete. Sometimes, the community of 25,000 people remained for up to 10 days without water. They were able to use old water wells in the meantime, but the water table is falling, because of the area's growing industrialization.<sup>3</sup> Most of the old wells have dried up. Saray's water supply system retains its original configuration, in which a main line feeds into a storage tank that goes into a feeder line that goes into a water distribution network.

**Project description** In 2007, shortly after the EDM initiative began, Sahin Keykan, manager of TCCC's Icecek factory, together with the Saray Municipality, contacted the EDM project to propose a rehabilitation of the main water pipe connecting Saray to the Ankara water supply system. The EDM project team prepared a work plan, together with ASKI, with a budget of \$420,000.

**The project's objective** was to transmit drinking water from the Ankara water supply system to Saray through a reliable, foodgrade ductile steel (length 3.5 km; diameter 0.30 m) main pipe, in line with ASKI standards. The project also organized awareness-raising sessions in schools on World Water Day, during a year marked by a prolonged drought in Anatolia, including Ankara.<sup>4</sup>

**Impacts** The project responded to the needs of the population and used high technical standards. The only issue is that the repair affected only one part of a broader system plagued with problems:

- The reservoir is still very small (400m<sup>3</sup>) and is fitted with old equipment.
- Further downstream, feeder lines were smaller than the standard diameter, which caused excessive friction losses and reduced pressure heads throughout the network.
- The network lines were all made of fragile, carcinogenic asbestos-laced cement.

After the EDM project, ASKI replaced the Saray feeder pipes using its own funds, increasing their diameter to allow for greater discharge, and rehabilitated some of the old network pipes. The project benefits are durable and sustainable over the long term, given that ASKI is responsible for its maintenance, has already installed several network upgrades and is planning further upgrades.

The main impact documented by the rapid assessment is the year-round availability of safe drinking water in Saray's communal water supply system, serving some 25,000 people. Other possible impacts include a reduction in exposure to asbestos – a carcinogenic substance when absorbed by the human body through inhalation. It should be stressed, though, that these benefits only materialized after ASKI performed additional, complementary works on feeder and network lines. Therefore the following impacts are *not attributable to EDM alone, but to EDM and ASKI*.

- Reliable supply of water: Even the highest floors in the highest buildings now have water, which they had not previously had. All Saray inhabitants have access to the system. There are no more service interruptions. There is a high degree of satisfaction with both the quantity and pressure of water. The consumption is typically around 15m<sup>3</sup> per household per month.
- Use of water: Tap water is used by *some* households for drinking (often with add-on filters fitted on the

tap), while others still prefer to buy bottle water. The quality of water in the Ankara water adduction system remains unreliable.<sup>5</sup> Therefore, the water availed by the project is mainly used for washing, and the project led to an increase in washing machines and dishwashers in Saray. This has reduced the amount of work that has to be done by women in household chores. The absence of outages also saves women time and effort, because they previously had to fetch water from wells during shortages.

- Reduced water losses: 50,000m<sup>3</sup> were reportedly lost in 2006 due to leaks. It is reasonable to assume that the current system loses significantly less. However, water is still being lost, but in *different places than before*. Because it is a *system*, repairing one part is useful, but not necessarily sufficient. For instance, the reservoir was severely overflowing at the time of our visit, due to an automatic valve malfunction.
- Growth in revenue collection: Since water losses have been reduced, the percentage of non-revenue water lost also probably decreased. But the growth in water revenue, informally confirmed by ASKI, is mainly due to population growth, itself driven by industrial growth.
- Reduced exposure to asbestos: Exposure to air-borne asbestos is a known risk factor of lung cancer. It is possible that the old pipes could release air-borne asbestos when they were being repaired, and thus a positive impact of the project on health is possible, though far from certain. Only an epidemiologic survey could verify this impact hypothesis.

### Conclusions, lessons learned and recommendations

The project was found to be positive, because it had a large, visible impact on water availability for many people. The project's high visibility and the fact that it featured in many newspapers was considered a significant benefit by project sponsors.

That said, a systemic overhaul of the old water network would have been technically and sanitarily preferable to the adopted 'weaker-link repair' approach. EDM's rehabilitation of the main line was not in itself sufficient for the correct functioning of the whole system. The partnership established with ASKI was vital in ensuring the success and sustainability of the initiative.

Weak monitoring and evaluation made it difficult to assess some impacts. For instance, the full extent of water loss could not be ascertained. If the project had been able to install a simple flow meter at the start of the main pipe, it would have been possible to measure the flow entering the Saray system and to compare that with the total volume of water consumed, as measured by the metering system of individual water connections, thus estimating roughly the amount of water loss in the system.

Given its large potential impact, this approach could be replicated in other localities in Turkey, focusing on replacing old asbestos-ridden systems with modern, reliable and healthy alternatives.

### Turkey: Rainwater harvesting in Kuyumcu Tekke

**Baseline** The village of Kuyumcu Tekke, located near the historic town of Beypazarı of Ankara Province in Central Anatolia, suffered from inadequate access to water during summer months. The village had two water resources before the EDM project. One was a reservoir 8 km from the village that fed into the village water distribution network. In recent years (e.g., 2006) this source was sufficient for just one hour's water per day during hot and dry summer days. It is understood that most or all villagers store water from the village network every morning until it is exhausted – after about an hour of use. Houses at low elevations have always had greater access to this water source than those located at higher elevations. Occasionally, the municipality uses water trucks to fill the reservoir, a practice which – according to some villagers – seems to have spread disease. The other was the village fountain, which is fed by another pipe transmitting water from a spring. This fountain also delivers a limited amount of water, particularly during summer, but the water is of very good quality for drinking.

The Beypazarı municipality has tried to drill wells and bring water from Beypazarı town via a pipeline, but both are costly due to the high elevation of the village. As a result of lack of water during summer, some families have left the village in recent years. A study undertaken by the International Centre for Agricultural research in the Dry Areas (ICARDA) highlights the importance of water not only for households, but also for livestock, the

primary source of livelihoods in the area.

**Project description** In what would become one of the first EDM projects, UNDP and TCCC partnered with ICARDA and the Beypazarı municipality in 2007 to conduct a pilot rooftop water harvesting project in Beypazarı. The project was located in Beypazarı, because the town receives only around 400 mm of rainfall per year. In discussions with the municipality, Kuyumcu Tekke was identified as most vulnerable to drought, and selected for the pilot rainwater harvesting project.<sup>6</sup>

The project was contracted to ICARDA, and was implemented over two years. The first year was spent researching, introducing the intervention, and testing the approach – including building a pilot cement tank in the house of the *Mukhtar*, which proved to be too expensive and led to the purchase of plastic tanks from a dealer in Izmir for the other houses. The second year was devoted to full-scale implementation.

**The project's objective** was to enable the people of Kuyumcu Tekke to have enough water for their drinking and household needs, especially during hot summer months. The budget provided all the material necessary to complete the project, including the roofs themselves. These had to be included in the project deliverables, because it was found that most roofs were not watertight. This increased the cost of each individual system and consequently only some 18 houses could be fitted within the budget, while eight households could not get the system at all. Rainwater harvesting is an old practice. The current use of hydrophores and filtration screens helps provide clean, safe, pressurized water to consumers. The systems were inspected on site in Kuyumcu Tekke village and found to be of standard technology and satisfactorily installed. Interviewed beneficiaries (women and men) in the village also considered the system to be of satisfactory quality, reliable and easy to maintain. Nobody complained about the way the system functioned.

**Impacts** The main impacts documented by the evaluation are socioeconomic and related to increased water availability during summer months. Other impacts include:

- Increase in capital: 18 households, made up of 67 persons, received a rainwater harvesting system worth an average of TL9,823, including a now fully watertight roof.
- Quantity of water made available: The tanks are only used during summer when there is a water shortage. Assuming the tanks are filled before summer and receive no additional rain during summer, these 18 systems have delivered an average of 12m<sup>3</sup> of rainwater to each household every year. This modest amount is considered sufficient to supplement existing water sources for the four summer months. Interviewed villagers said that approximately half of the water they consume during those four months comes through the water harvesting systems. The project has thus negated the effects of the annual drought period.
- Quality and use of rainwater: Rainwater is not generally used for drinking, as it is too 'sweet' (lacking in minerals). ICARDA tested the harvested rainwater and the results confirm that the rain water is drinkable, but lacks minerals. Instead, the harvested rainwater is used mainly for washing, and the project led to an increase in washing machines and dishwashers in the village.<sup>7</sup> This has reduced the amount of work required by women in household chores.
- Reduced use of other sources of water: Some interviewed women mentioned a reduced need to fetch and carry water from the common fountain. They also referred to reduced reliance on tap water, which may be unhealthy in summer, especially when replenished by municipal water tanks.<sup>8</sup> The village must pay the municipality for such replenishment, which may also result in savings.
- Jealousy and conflict: The main unintended impact is that the project did not help everybody in the village, and therefore created tension and jealousy within the community. Several interlocutors qualified the situation as "awkward" or "disturbing", going against a shared sense of equity within the group. This inequity was slightly reduced by two factors. First, only five or six households are without the system, while some other households not served by the project have already migrated out of the village. And second, the households that were left out are those located at lowest elevation in the village (the works followed a top-to-bottom sequence), which have the best access to tap water.

- The project benefits are durable and sustainable over the medium term. However, it should be stressed that the system is too expensive for beneficiaries to replace it. One elderly household in the village reported that they will not replace the tank and gutters, because they are expensive.
- According to Beypazarı municipality, some other villages are asking for the same system, but none is purchasing the system on their own. Similarly, some three to four years after the end of the project, the *Mukhtar* and those villagers that did not get the system are still asking UNDP to complement the project, rather than installing the system by their own means.
- This circumstantial evidence is confirmed by an analysis of the project costs. The calculation shows that the project was very expensive compared to national water tariffs. These tariffs vary across cities, in Beypazarı being 3.1 TL/m<sup>3</sup> (tap water). Even if one assumes a 20-year amortization period rather than 10 years, the cost remains excessive at 34 TL/m<sup>3</sup>. It made little sense to have 5m<sup>3</sup> tanks, because they brought no significant savings compared to larger tanks and significantly raised water costs.
- This being said, there are other UNDP projects in Turkey that promote rainwater harvesting. One is in Gölbaşı (Ankara) and the other in Manisa.

### Conclusions, lessons learned and recommendations

- The project successfully reduced the effects of the annual drought period in the village, and benefited some 67 people.
- While a number of *technical* lessons were drawn during implementation and have been listed in the ICARDA report, the most important lesson from the project is that equity ranked high in villagers' criteria for a new project. In retrospect, installing cheaper and simpler systems (for instance, a single size tank of 10m<sup>3</sup> for all) would have allowed all households to be covered. The fact that installation of the new systems started from the houses located at higher altitudes implies that ICARDA knew from the start and based on their cost calculations that some of the houses would not be covered. That inequality led to significant problems for the *Mukhtar*, who was accused by some of having favoured his relatives. Interestingly, the village has now elected a new *Mukhtar*.
- Consequently, in future similar projects, UNDP should carefully examine the budget and the whole project, with a view to spreading project benefits more widely.

### Ukraine: Spring rehabilitation

**Baseline** The drinking water supply system in Ukraine was designed and constructed during Soviet times, around 50 years ago, and they do not seem to have been expanded or maintained much since. Only 64 percent of the total population were covered by centralized water supply services provision in 2011. Some 37 percent of all water supply networks are in a worn-out condition. 102 municipalities do not have regular, 24-hour water supply, but only according to an hourly schedule. This is particularly the case for Southern Ukraine and Crimea, which experience water supply problems most summers. The irregularity of the water supply is also explained by outdated central water supply systems, which are often broken (even in Kyiv), leaving people without water.

Water quality is a very significant issue. The pipes' age means that drinking water gets polluted by iron, its hardness increasing and taste deteriorating the further one is located in the delivery system. Suspended matter can be found in the drinking water, which people boil and/or purify with filters before consuming. To assure sanitary standards of drinking water, enterprises use chlorides. During periods of heavy rain, the water supply and discharge systems often cannot cope with the additional load caused by the storm waters. This further affects the quality of drinking water available to the public. The quality of drinking water is monitored in the *outlets* of local enterprises that deliver water, and not in the *taps*, allowing the problem to remain ignored and unattended.

As a result of former industrial activities, almost 4.6 million Ukrainians in 261 settlements located in all regions of the country receive the worst quality water. In such conditions, the only option for safe drinking water is to buy

bottled water,<sup>9</sup> or to rely on one of Ukraine's many natural springs, some of which have been used and developed since antiquity. Given the failure of central delivery systems, community-managed natural springs have remained important water sources in Ukraine. In Kyiv, for example, there are 172 organized artesian springs. The springs' water quality is usually not controlled by the state. Given that pollution of underground water tables is a recurring problem, the challenge of ensuring properly monitored water quality in community-managed springs is not only a technical, but an important political issue.

**Project description** Jointly implemented between 2009 and 2012 by UNDP and TCCC Ukraine, with local authorities and the support of TM BonAqua, the Ukraine spring rehabilitation project aimed to restore and protect natural water springs (including surrounding recreational areas); to encourage communities' self-mobilization through the active engagement of local authorities and community organizations on water resource management issues; and to raise awareness and promote rational water resources use by school children and youth.

The project's total cost was relatively small (\$475,000) and was cofinanced by UNDP and TCCC (\$98,700, or 45 percent), municipalities and village councils (\$80,311, or 45 percent), and local communities and businesses (\$52,417, or 10 percent). The provision that municipalities and communities should contribute financially to the rehabilitation of their own springs was meant to ensure a strong dialogue between UNDP, TCCC, municipalities and villages, and to lead to better local ownership of the project and, consequently, to more sustainable results. Synergy with broader initiatives led to lower management costs, better visibility, and greater involvement of the communities in a broader development effort. Overall, 26 natural springs were rehabilitated in 13 *oblasts* across Ukraine, including nine municipalities and 12 villages. Results reported in awareness-raising included:

- Street boards on rational water usage were placed in the municipalities where community projects on natural springs' rehabilitation were implemented;
- A training module for high school teachers on Rational Usage of Water Resources was developed in partnership with the NGO, Teachers for Democracy and Partnership; parts of the training module were later included as extracurricular school content in five municipalities;
- 352 pupils, 504 high-school teachers undertook the educational programme on rational usage of water resources, leading to a 20 percent estimated lower water consumption in schools; and
- An 11-minute educational documentary on sound water management was broadcast on Ukraine's First National Channel on 30 April 2012 at 1030 a.m. and disseminated on DVDs.

### Impacts

- Reliable supply of water: A reduction in the amount of water taken from the central water supply reduced the financial cost for families.<sup>10</sup> Many families interviewed near the sources in Novograd-Volynsky come to the source almost daily collecting 20 litres per day for use in cooking and drinking. The springs to be rehabilitated were selected based on their high frequency of use. Four out of 26 sources were restored. Two more sources (also visited by the assessment team) were restored by the community themselves, using their own means, before the EDM project. In none of the visited communities are the rehabilitated water sources strictly 'vital' for the livelihoods of those using them, as they already have access to centralized (and old) water systems, and/or other sources, such as wells.
- Additional recreational and social areas: Spring restoration was also used as a means to improve the natural landscape. The approach involved cleaning and protecting the spring basin and adding a pipe, tap or well for easier water collection, but also improving the access to the springs by, for example, constructing stairs or an access road, and some benches or tables near for the source to be used as a meeting point for people. In both areas visited, the restored springs were a recreational centre for the community and for the children.
- Historical dimension: Many rehabilitated springs have long been used, with some having structures dating back to antiquity (Roman springs). This adds a cultural dimension.

- Greater empowerment of local communities: The community-based methodology led to a high level of community mobilization and engagement. It also seemed to contribute to the introduction of a national privatization policy. In Soviet times, the state owned all buildings and was responsible for managing common areas in apartment buildings and around houses. The current policy is to transfer housing units and the responsibility for common areas to the owners of flats and houses by establishing non-profit Unions of Owners of Multi-storey Buildings (OSBB). This requires collaboration and organization from the community, a catalyst effect brought by the project's earlier informal 'community unions' for spring rehabilitation, which served as a springboard for further organization until the establishment of OSBBs.
- Awareness-raising: The project implemented public campaigns to draw public attention to water challenges and good practices (which, in Novograd–Volynsky, also covered also energy). A textbook with practical lessons and experiments with water for children, entitled *Water in Nature and Life of the People*, was developed by the project and was said to be much used in schools. Their practical advice was reportedly replicated, with possible (but not quantifiable) effects on household water consumption.
- Unclear improvement in water quality: Although water quality measurements are occasionally made by the municipalities, the springs visited by the team were actively used, which indicates that the local population considered that water to be better quality than the central supply water. The project did not test the water quality as a factor in the selection of the springs to be rehabilitated. Its approach failed to grasp the quality dimension, and did not necessarily ensure the delivery of *potable* water to the communities. In Novograd–Volynsky, the *post-factum* quality control and certification process for the rehabilitated springs involved a series of water quality tests conducted by municipal sanitary services. The results, published in local media, showed that water from two of the four springs sampled by the team were not recommended for drinking, including one spring where *E coli* was found and another that had a high presence of nitrates, linked to agricultural practices.<sup>11</sup> However, this water is still perceived to be *safer* or of *better* quality and taste than the water from old water pipes. Some reportedly chose to filter or boil their spring water at home. None of the sources in Novograd–Volynsky has a notice saying that the water is safe to drink.
- Visibility effect: In some cases, the EDM project used spring rehabilitation for more educational, public relations purposes, than for real water supply, as suggested by the spring in Letochki village, Kyiv *Oblast*, which was restored due to its vicinity to the Coca-Cola factory as an event linked to the Euro 2012 football tournament. This rehabilitated spring is cited as an EDM achievement, but it probably has minimal or no impact, because it is uncertain how many people use it.

## Conclusions, lessons learned and recommendations

- The assessment of the effectiveness of the EDM spring rehabilitation project in Ukraine yielded mixed results. The interventions achieved a good socioeconomic impact, which was also due to combining technical interventions with educational and informational campaigns that were conducted within the project's overall framework. However, the technical and livelihood impacts could have been clearer if the project had included a goal of ensuring safe drinking water quality in the restored springs, which, at least in some observed springs, does not seem to meet potability standards.
- The process of awarding projects can be improved and create more impact on those communities that actually need safe water if it included as a criterion the vital role that the rehabilitated spring can represent for livelihoods, i.e. where springs are the main or the only source of drinking water. However, it is clear that this would require additional costs in terms of both human resources (working with new settlements outside UNDP projects) and technical (costs of water sampling and analysis). In general, the relatively small size of the EDM project in Ukraine can lead to potentially large positive impacts. These are, however, difficult to quantify and would benefit from more attention by EDM.
- There is a need to support the replication of proven successful EDM experiences. Projects such as the spring rehabilitation are worth replicating. Possible innovations in such projects may include public

awareness events, e.g., water-related excursions at drinking water supply and sewage water treatment systems, informational centres (e.g., at the Water Museum, Kyiv); other educational activities;<sup>12</sup> and activities to facilitate the transmission of awareness from children to adults (e.g., low cost stickers to bring home a message) and vice versa.

### **Croatia: Gacka River Tourism Development project**

**Baseline situation** Gacka is one of Croatia's purest rivers and the main source of drinking water for the country's large, densely populated coastal areas at the foot of the Velebit mountain range. The river flows through Lika-Senj County, one of the country's least developed and least populated counties, which experienced much physical and human destruction during the war in the 1990s. Otočac is the valley's main urban centre. It uses the river for drinking water, along with other towns along the coast. Traditionally, timber extraction, and textile and chemical industries provided employment to Otočac, but these were largely destroyed during the war or have declined. Agriculture is one of the remaining significant economic activities. In the last decade, youth have tended to leave the valley in search of work in the big cities.

In this context, the river and its water are seen as strategic. Tourism is an obvious development opportunity. In Croatia, tourism has developed mainly along the Adriatic Sea shore, but is yet to extend to the hinterland. A highway was built to connect Zagreb with Split, the Dalmatian coast's largest city. The highway is a major north-south transportation corridor and provides improved access to the Lika-Senj County and the Gacka area. The highway has led to the development of rural tourism. In this context, the sustainable development of river-based tourism constitutes a key priority development objective, and was chosen to be the focus of the EDM project.

**Project description** The Gacka River was chosen as the most suitable location for the EDM project in Croatia based on the extent of need in the water sector; the potential for visibility and multiplier effects; and the presence of capable local stakeholders. The overall project goal was "to contribute to the development of the Gacka area as a sustainable tourism destination, which bases its offer on preserved natural resources, especially water." The project was implemented by UNDP Croatia between 2007 and 2010<sup>13</sup> in partnership with the City of Otočac, local sections of the Croatian Chamber of Economy and of the Tourism Board, the Barkan-Otočac bicycle club and the Otočac high school.

The project focused on relatively small interventions to improve tourist infrastructure and equipment<sup>14</sup> and particular attention was given to awareness-raising and visibility activities.<sup>15</sup> The originally planned budget of \$125,000 was raised to \$310,000 by end of project in December 2010 (\$240,000 – or 78 percent – from TCCC, and \$70,000 – or 22 percent – from UNDP and other partners).

**Impacts** Three years after the EDM project closure, some economic, social, technical and institutional impacts of the EDM project in the Gacka Valley can be observed. An increase in the number of tourists is a project result, and an incentive for further business development. From 2007 (start of EDM project) to 2012, the number of tourist arrivals in Otočac increased fourfold and the number of overnight stays increased by 62 percent. During the same period, the same indicators for the Lika-Senj County increased by 12.3 percent and 23.1 percent respectively (*Otočac Tourist Board, 2013*).<sup>16</sup>

According to the Croatian Ministry of Tourism, in 2012 Lika-Senj County saw an increase of 6.5 percent in tourist nights and a 9 percent rise in tourist visits, which can in part be attributed to the EDM project. In the first half of 2013, the number of overnight tourist stays in the Gacka Valley reached 20,000. Owing to expansion in tourist demand, tourist capacities have also been improved. The EDM project's contribution is considered significant by local partners and interviewees, who referred to the influence of promotional activities conducted by the EDM project, including through television and international media. They included an EDM documentary shown at the World Water Forum in Istanbul. These activities have spread the word, and have helped position the Gacka Valley as a recognizable tourism destination nationally and internationally. For example, the promotion of the Gacka Valley as a fly-fishing and river based tourist destination has attracted a large number of fishermen from Croatia and Europe. These tourist arrivals in the valley have more than doubled annually over the last few years (from around 1,000 to approximately 2,200 in 2014).

In addition to media exposure, the project's main value is its networking and partnership aspects. There is no local culture of partnerships and collaboration, so UNDP helped connect people and unite energies. But the support was too short and too little. The region faces strategic problems that cannot be dealt with in such a short time. Most interviewees concluded that the EDM project was a good starting point in opening new development perspectives that should be developed further.

The project also strengthened the entrepreneurial spirit in the Gacka Valley and pointed to new business opportunities. The results achieved by the two private sector partners supported through the project are, of course, modest. The 14 fishing rods donated to the fishing association have each been rented about 15 times per year. No new centre opened to rent fishing equipment. The Barkan Cycling Club and Rent-a-Bike point in the centre of Otočac, equipped with 15 bikes, is open and fully operational. The project developed their capacity to connect with partners and promote themselves at local and international levels. For instance, the EDM project enabled the construction of the first two cycling trails (about 75 km), in the Gacka Valley and the cycling club later obtained funding from the Ministry of Tourism to expand the network to seven trails, giving a total length of 240 km.

The new multi-media hall in the *Croatian Centre for Indigenous Species of Fish and Crawfish in Karstic Waters* opened on World Water Day. Funds were raised from local partners to complement the EDM budget and make the centre's second floor into a visitor centre. The centre has brought attention to the rich biodiversity and abundant water resources of the Gacka Valley among tourists and visitors, whose numbers are rising every year. The Otočac high school has continued with the type of environmental initiatives started during the EDM project. Waste collection activities in karstic ponds and along the Gacka River have been repeated on a yearly basis, even after the project's closure. But the inter-school cooperation that was established during the project between the Otočac high school and schools in neighbouring municipalities has not continued after the project closure.

A number of project planned activities could not be implemented, or were unsuccessful:

- The Water Museum: too expensive, replaced by the multimedia hall installed in the existing Centre for Indigenous Species of Fish and Crawfish;
- Equipping of the Otočac wastewater treatment plant: not pursued for cost reasons. Project documentation for waste water problems was completed and accepted by the City of Otočac. In this way, the EDM project helped to establish preconditions for construction works planned by the City of Otočac in 2014. Implementation of this project will ensure better quality of drinking water not only for population of Otočac, but also for the local population and tourists in the coastal areas that use drinking water from Gacka.
- The Gacka Valley 'brand': The brand was developed by McKinzay and was supposed to become the property of the Chamber of Commerce. However, the Chamber proved not to be interested, because it collided with their own quality mark – *Croatian origin*. LIFE/EDM gave the logo's ownership to the Municipality of Otočac instead. The logo has made its way into the city's publications, but has not started operating as a mark of catering service quality, as originally intended. The area is perhaps too small to justify its own quality logo.
- The walking path along the Gacka River: a fitness park was set up instead.

## **Conclusions, lessons learned and recommendations**

Two dimensions were key to the project's success:

1. The development of strong partnerships with local actors, which ensured some sustainability of project interventions, but, more importantly, created a dynamism, a culture of partnership that was previously generally lacking in this isolated and deeply rural region of Croatia. These actors now have a better capacity to network and relate with national and international actors of interest, notably with central ministries and donors.
2. Visibility raised through media and promotion campaigns, e.g., promotion of Gacka as a fly-fishing

destination, was seen as a factor in increasing the number of tourists coming to Otočac. UNDP/EDM was probably not the only actor engaged in such campaigns, but interviewees believed that the EDM project had contributed significantly.

On the first point, the change in project management was crucial in ensuring better local ownership of the project results and stronger local partnerships. Institutional sustainability was secured by greater involvement of local institutions (e.g., the City of Otočac, the County Tourism Board) in project implementation. The original idea of managing the EDM project from Zagreb did not work quite as well from that perspective. Embedding the EDM project within a broader and longer UNDP programme also helped to ensure a degree of continuity of support. The EDM project was very short and financially small. Embedding it within the LIFE programme allowed the latter to continue supporting the EDM activities even after the end of the project.

On the second point, it should be stressed that the technical support offered to specific actors (e.g., the Gacka brand, the bicycles and cycling path) was not seen by local interviewees as contributing to the rise in tourism. Rather, it was the EDM project's high media exposure and culture of visibility (e.g., arranging for media coverage of all EDM project activities, and in doing so, bringing the national media to Otočac) that was credited for the impact on tourism. This relentless attention to visibility was clearly a strength brought by TCCC.

### **Black Sea Basin: The Black Sea Box, in Turkey and Ukraine**

**Baseline** A low level of awareness and appreciation of the Black Sea was reported in Turkey. There is much pedagogic and other material about the Mediterranean Sea, which attracts attention from tourists, unlike the Black Sea. The Black Sea is also smaller and enclosed, which helps to explain why it suffers from the same problems of pollution or overfishing as the Mediterranean. The situation was different in Ukraine. According to interviews with teachers in Crimea and Odessa, there were already classes in the curriculum devoted to the Black Sea and its protection before the Black Sea Box (BSB), but they had less interesting teaching materials. There is a dearth of pedagogic resources in both countries. In Turkey, more innovative material exists, but most are translated from other languages.

**Project description** The project started in Turkey in 2008. EDM approached the Istanbul chapter of the World Wide Fund for Nature (WWF) to seek help in developing something similar to the Danube Box<sup>17</sup> for the Black Sea. WWF accepted the project and UNDP enlisted the Black Sea Commission<sup>18</sup> to create a panel of scientific advisors. EDM also composed a team of 'education technologists' (pedagogues), who developed the BSB with the help of the scientific panel. In 2010-2011, this was translated into Russian and other languages and disseminated in the five countries bordering the Black Sea. In Turkey, EDM established partnerships with the Black Sea Commission and the Turkish Teachers Academy Foundation from the project's outset. Scientists from the Black Sea Commission wrote the first draft of information on the BSB. WWF and the Turkish Teachers Academy Foundation then simplified the text for children and commented on the materials, which proved particularly useful for the Ministry of Education's approval of the BSB. The process of approving new pedagogic material by the Ministry can take a long time in Turkey, but they found an ally in the Minister (who was from the Black Sea), thanks to which the process took only three months.

In Ukraine, the project was implemented directly by the UNDP Crimea sub-office. The organizations responsible for the dissemination of the BSB were the Crimean Republican Centre for Ecological Education of School Youth, and the Young Naturalist Centre in Odessa. The aim was to help primary school children discover the Black Sea, raise their awareness of some of its benefits and environmental issues, and help teachers with new teaching material. The kit is aimed at children aged between nine and 12 and at their teachers. The BSB consists of a binder, a CD-ROM (with same content), playing cards, a poster showing notable species, and a map, all in a carton. The binder was conceived as a teacher's guide rather than targeted at children. The materials focus on the main species of mollusc, fish and mammals, the benefits of the Black Sea (environmental, economic, cultural); threats to the Sea; and actions that can be taken by people and governments to protect it.

In Turkey, the BSB was delivered through a series of training of trainers (TOT) events. This was proposed by the BSB authors as a way of introducing the BSB through a formal event with teachers, rather than just to drop the box on them. The TOT was not included in the budget, but was approved by EDM and implemented along the

Anatolian Black Sea coast. Each school in the region was requested by the Ministry of Education to send one teacher for the TOT. Teachers received one box each after the training, meaning that one box was given to each school in the region. The box was later handed out to about 850 teachers (one box per school) through the Ministry of Education's own regular teachers' conferences in the cities of Ordu, Giresun, Samsun, Sinop, and Rize – all Black Sea shore towns. A number of media events were also organized.

In Ukraine, the project included translation of the BSB into Russian and Ukrainian; adaptation to the Ukrainian reality and certification by the Laboratory of the Environmental, Institute, and the National Academy of Pedagogical Sciences of Ukraine; printing of 900 copies in 2012 and 2,500 copies in 2013 in Ukrainian, plus dissemination of 750 copies of the box in Russian (for bilingual areas); and training for teachers-trainers on how to use the box were held in 2012 in Simferopol, and in 2013 in Odessa. One more was planned for November 2013. As in Turkey, there were no funds budgeted for TOT, and therefore the training was conducted as an initiative of the educational departments and centres of extracurricular activities. The number of trained teachers was lower than in Turkey, with 20 teachers trained (four per region). Overall, 4,150 boxes were printed. Some 1,650 were disseminated in 2012, covering 900 schools in the five Ukrainian Black Sea regions of Odessa (350 copies), Kherson (350 copies), Mykolaev (350 copies), Crimea (450 copies), and Sevastopol (100 copies). Each school received one box in Ukrainian and, in some cases, also one box in Russian. One-quarter of the schools in those regions were reached.

A number of public events were also organized in Ukraine, with the following audience estimates:<sup>19</sup>

1. Black Sea Day, 31 October 2011 (Eupatoriya, Crimea) (two TV channels and three newspapers). As it was regional Crimean TV, it is estimated that between 5,000-10,000 people watched the reportage (population of Crimea is about 2 million, and those channels reached the whole peninsula), newspapers – one local and two regional – with total coverage of about 15,000 people.<sup>20</sup>
2. Training for trainers for 20 teachers/methodologists (four from each targeted region) in May 2012 (Simferopol, Crimea) (one TV channel and one newspaper). The media coverage reached around 5,000 people through television, and another 5,000 people through print media.
3. Black Sea Day 31 October 2012 (Odessa): with 50 participants from five regions and coverage by the Odessa media (two TV channels and four newspapers), a safe assessment of the audience is approximately 25,000 people.
4. Opening of the Black Sea corner at the Museum of Water in Kyiv (in 2012) given the national coverage including three national TV companies, public radio, and at least two newspapers, the total audience can be estimated at between 100,000 and 200,000 people.
5. Presentation of the box at the Lviv Publishers Forum (open class with 60 children, two trainers, four teachers, and about 100 observers/visitors to the forum). A total audience of 200-300 visitors (mostly publishers) learned about the BSB initiative.
6. The conference-workshop on Black Sea Day on 31 October and 1 November 2013 was attended by 30 participants from five regions. One local print media was present, and the information was also published online. The estimated media audience was 5,000 people.

The BSB has its website, with modules available for download ([www.blackseabox.org/education-set.html](http://www.blackseabox.org/education-set.html)). The box is also disseminated online to 1,000 libraries using the Ukrainian library association ([www.bibliomist.org](http://www.bibliomist.org)). EDM is also creating an iPad/iPhone application.

**Impacts** Use of the BSB by teachers: WWF Turkey developed the box with much attention given to its scientific content, and tested it in two schools before finalizing it. During the Turkish teachers' training, teachers were reluctant at first, expressing doubts that they could use the box given the heaviness of the curriculum. But at the end of the training, they had become more positive. However, they recommended more human stories and socioeconomic aspects to make it more relevant for people. As it stands, the BSB is dominated by biology and physical geographic topics, with little attention to human activities linked to the sea, such as fishing.

Since the use of the BSB is obviously voluntary, impacts seem to be highly dependent on teachers' attitudes towards it. If teachers are interested, they will use it; if not, it stays in the library. However, from the data collected by the evaluation it appears that enthusiastic teachers dominate:

- In Ukraine, 56 percent of 24 schools interviewed by phone were using the BSB and 46 percent were not. High use was found in Crimea (Sevastopol and Eupatoria), but it was used less in Kherson, probably reflecting the absence of related teachers' training in Kherson. This points to the importance of delivering the BSBs along with appropriate training.
- In Turkey, a survey was conducted by WWF at the end of each training session. Results for Rize and Trabzon were made available to the assessment team. It appears that the overwhelming majority of trained teachers (95 percent) were positively inclined to the box.

Given the lack of educational materials and that only one box was distributed per school, the BSB (in Ukrainian: Black Sea Treasury Box), become something of a *treasure chest* for teachers in both countries, as they became inspired by new, interactive approaches to teaching about the Black Sea.

Conveying educational messages to children: In Turkey, the emerging pattern is that the binder contains a vast amount of lessons and educational activities presented as games, and that teachers are typically using only a small part of this material, as they see fit. The BSB is used by teachers from various disciplines (e.g., geography, biology, chemistry, mathematics). A mathematics teacher could use an activity to measure the area of the Black Sea as part of a lesson on geometry, for instance. There is, therefore, no certainty that the key ecological awareness messages of the box are systematically conveyed. There are no available data on the number of pupils using the box. The feedback from teachers indicates that the playing cards and posters are much appreciated and used by pupils, but there was less appreciation of the binder, which was conceived as a teacher's guide.

There is more information on the use of the BSB in Ukraine than in Turkey. Perhaps because the Black Sea is their only sea, there were already classes devoted to it in the curriculum, which may explain why the BSB is used in Ukraine as a way to make lessons more interactive and interesting for pupils. Data suggest that 900 schools received the BSB in 2011, of which about 504 (56 percent) use them. In total, it is estimated by EDM/UNDP that 50,000 pupils have been involved with the BSB so far. The number of teachers involved is estimated to exceed 4,000. An estimated 200,000 people were reached by exhibitions and media coverage in Ukraine

In terms of sustainability, the BSB was unfortunately conceived as a one-off business, in which there was no opportunity to progressively update and adapt the box based on feedback received.

### **Conclusions, lessons learned and recommendations**

The BSB was a very effective project, and proved itself as an effective awareness-raising tool at low cost. It was received enthusiastically in both countries, and its messages have reached hundreds of thousands of children.

However, it would appear that despite WWF efforts to summarize the scientific material received from the Black Sea Commission, some of the people interviewed suggested that further refinement of the material is needed to make it more immediately practical for both teachers and children.

If this initiative is replicated or updated, it would be important to invest more in the training of trainers. Providing information on how to use the BSB and advocating for its use through formal training, however short, determines to a large extent whether or not the BSB will be used. The box also seems 'too nice'. While relatively inexpensive (\$15), the risk is that it remains on the teachers' shelves. A less glossy box, available in greater quantities, would have reached more schools and more children. The teacher's guide could be produced in black and white, for instance.

Other suggestions for improvement include further simplifying and distilling the BSB content, in a second version; paying greater attention to *human* geography and activities related to the sea, such as fishing; a demand for less childish games aimed at teenagers (broadening the target users); the use of movies/audio-visuals; national BSB websites (only Turkish and English versions are available at present); giving the BSB a Facebook

account; and using more country-specific examples.

There is no systematic monitoring of the BSB's use. In Ukraine, the Crimean Republican Centre for Ecological Education of School Youth and Environmental Centre is an implementer as well as a monitor. It records data on the number of schools and teachers and number of children reached by the BSB, but they are not systematic and appear not to have received guidance. UNDP may need to ask others to monitor the box's dissemination and its actual use. Similarly, in Turkey, either the Ministry of Education or more likely the Turkish Teachers Academy Foundation could be tasked with surveying the BSB's use in greater detail than was possible during the present assessment.

### **Summary of outcomes from the IA and lessons learned**

The purposes of the diverse projects that were reviewed varied widely, ranging from the provision of water in Turkey and Ukraine to tourism development in Croatia. Their main impacts, outcomes and the lessons learned from the assessment are schematically outlined in Table 2, offering an overview of the variety and variability of the different types of outcome. There were also significant commonalities across projects.

- The impacts are generally positive, visible and much appreciated locally. The assessment concluded that the EDM projects tend to bring value to, and have often improved the quality of life of, ordinary people. As such, they are perfectly appropriate for UNDP interventions.
- In all projects concerned with provision of drinking water, water potability and quality received much less attention than water availability. This is surprising, because the issue features explicitly in one of the global objective of the EDM (increased access to safe drinking water).
- By design, these projects were all financially small and of short duration. One should therefore be careful not to overstate their impacts or to outscale recommendations.
- The most significant results and greatest potential for sustainability were achieved when the EDM project was embedded within a broader intervention with more staying power, e.g., Croatia and Ukraine, where the EDM projects were implemented by other UNDP programmes; and in Saray where the Ankara Water and Sewage Authority ensured a degree of continuity in support. In contrast, there was a lack of follow-up in the rooftop water harvesting project and a missed opportunity to further disseminate and upscale the results obtained by the BSB.
- The replication potential is linked to the quality of the partnerships developed locally. The stakeholders most likely to replicate project approaches are those were involved locally in project implementation, e.g., in Croatia, the new networking culture demonstrated in the project exposed the Otočac municipality to new horizons and partners.
- TCCC is a private sector development partner that can bring dynamism and has the knowhow and interest in providing interventions with national and international visibility. This can be of benefit, but also carries a risk. Because TCCC is involved in the provision of bottled water or has partnered with companies who are in this market (e.g., BonAqua in Ukraine) in some EDM countries, a suspicion may arise among the public or in the media that EDM is part of a corporate strategy to penetrate these markets. For example, in Croatia, there was apparently an early temptation to use the project visibility activities to advertise the Coca Cola trademark rather than the project and its local partners. This raised the suspicion that TCCC was in the Gacka project only for its own interests.
- All projects had an awareness-raising component, often advising on how to save water in day-to-day domestic use. This was appreciated, e.g., in Ankara, which had experienced a prolonged drought when the Saray project was being implemented; and in Croatia where the Otočac high school engaged in environmental education. This line of work is relevant where there is significant scope for improvement and savings in domestic water use. However, in some of these contexts, the main water-related issue is not about domestic use, but about water governance, on which ordinary citizens have little or no

influence. The dismal state of water supply systems in Ukraine, for example, which were designed and constructed during Soviet times, leads to severe water quality issues and probably also systemic loss of water. In such contexts, a classic awareness-raising component targeting communities might be less effective than advocacy campaigns targeting government officials and municipalities. When this is contrasted with EDM's own reports (self-reporting), the rapid IA results are often markedly inferior to the self-reported results. This is a widespread phenomenon, which explains why independent evaluations are perceived as more credible than self-reporting.

- Nearly all projects led to unintended impacts, with the exception of the BSB. Unintended impacts documented in this report included:
  - The rainwater harvesting project in Kuyumcu Tekke, Turkey, was unable to provide a rainwater harvesting system to all households in the village, resulting in tensions and jealousy within the community. Given the water's lack of minerals and the existence of alternative water sources, rainwater is not used for drinking, but only for washing. As in Saray, the project led to an increase in the use of dishwashers and washing machines in the village.
  - In Ukraine, the possibility that the rehabilitated springs may provide non-potable water was not considered at first, and, although data are scarce, it would appear that this risk may have materialized in at least some of the springs.
  - In the Gacka River Tourism Development project, Croatia, the rise in tourist arrivals was intended, but interviewed stakeholders attributed this not to the project's technical activities, but to the extent of its media coverage – which at some point became detrimental. This, however, was quickly addressed.
  - In Saray, Turkey, the constant availability of water now allows inhabitants to purchase appliances such as dishwashers and washing machines that can reduce women's household chores, and the replacement of old asbestos pipes by steel pipes may result in a reduced risk of cancer, although the latter result remains unproven.

**Table 2: Summary of main impacts, outcomes, and lessons learned by the evaluated projects**

IA criteria	<i>Ukraine – Springs Rehabilitation</i>	<i>Turkey – Beypazari Rain Water Harvesting</i>	<i>Turkey – Saray Main Pipe Rehabilitation</i>	<i>Turkey, Ukraine – Black Sea Box</i>	<i>Croatia – Gacka river tourism development</i>
<b>Impact (overall)</b>	++ Recreational, Water availability, Water cost saving	+ Alleviated lack of water in summer; some savings	+++ Beneficiaries use more washing machine + Awareness	? Difficult to assess, but large number of children etc.	++ number of tourists x 4; and modest job creation
<b>Beneficiaries</b>	~ 1,000 users/day, (in a municipality) or up to 190,000 people in Ukraine	67 people (some village household did not benefit)	Up to 30,000 people living in the served area	Besides children, also their families, teachers, etc.	Municipality of Otočac, Otočac high school, service providers
<b>Unexpected outcomes &amp; impacts</b>	- Potability issues relative to central pipeline system and pollution of water tables	- Jealousy within the community for non-beneficiaries	+ Removed asbestos could result in less cancer??	None identified	+ Networking of local actors ± Media coverage
<b>Value for money</b>	+	--	+++	++	++
<b>Replicability/ Sustainability</b>	++ Natural replicated In other cities	- Due to high cost discouraging new users' adoption	+++ Expanded by Ankara Water & Sewage Authority	Worth more investments	++ Integration in LIFE programme helps follow up
<b>Innovation</b>	++ Community involved in project + Awareness	++ Potential good technology, not pro-poor; + Awareness		+ Fills a lack of pedagogic material in Turkey	± Branding (did not work well)
<b>Lessons learned</b>	Sub-optimal water quality better than central pipe from Soviet time; – add water safety	Equity is valued more than technical perfection	Expand: this pilot provided value for money, helped lots of people, and may reduce cancer risks	Box is focused on biology; more info on shared water governance, and socio-economics?	Visibility efforts can be very useful but can also backfire if too focused on Coca Cola

**Legend:** + positive impact or effect    - negative impact of effect

## B. The MS for EDM projects

The MS was designed to support EDM in tracking progress. The information wanted by project implementers, partners and stakeholders deals with the outputs, their dissemination, and their use. Monitoring outputs, dissemination and use enables an assessment of what was achieved as a result of implementing projects in terms of reaching implementing partners/stakeholders and beneficiaries. Results monitoring was instead planned to be carried out on the basis of a set of identified and agreed indicators and related targets.

At the end of projects, or sometime after that, impacts can be assessed by comparing change in relevant indicators with baseline data before the project. In other words, the MS is part of project management as it checks whether planned inputs are used, activities are completed, and outputs delivered. The MS allows results to be tracked over time, corrections to be made during implementation, degrees of success to be assessed, and ownership and accountability to be promoted. The MS is also used to steer programmes, to confirm or otherwise that they are on track and that progress is being made.

When an MS integrates assessments of impacts on people's lives, it is not only concerned with attaching values to livelihood outcomes, but also with understanding whether local livelihoods are moving in the right direction as a consequence of the interventions. So it can be more relevant to focus on determining the direction of change rather than just attaching values to change and to differentiating impacts between groups. An MS developed in participatory ways tries to consider the perspectives of stakeholders (including beneficiaries, project implementers and donors), providing feedback on the effectiveness of ongoing projects. The MS also allows more regular, evidence-based and systematic reporting and builds capacity for continued learning beyond the life of projects, by producing data usable for planning, policymaking and resource allocation.

### **Users and uses of the EDM MS and communication aspects**

The intended users of information from the MS are national partners involved in EDM projects, EDM management, IEO, EDM stakeholders, TCCC and the public. The uses of the results foster development of new areas where EDM has activities and – by spill over – other areas relevant to EDM. Beneficiaries include water users and the EDM project area communities.

Communication is an integral part of the EDM programme and should also be part of the MS system. This is not limited to publication of EDM MS and impact data, but should include community awareness-raising for both positive and less positive results, by supporting reflection on lessons learned during EDM workshops and meetings of community feedback groups to share the results for local learning.

### **Principles and standards guiding the EDM MS**

The EDM MS is based on principles that help to ensure its relevance and sustainability. It is demand-driven, i.e. its managers have requested it, its users have determined its content, and it considers the views of the project implementers. These, in turn, should derive from the views of beneficiaries. The system was developed in consultation with EDM stakeholders. Reliable data must be gathered in a timely manner so that they can benefit users, such as planners, EDM management. Data collection, analysis and reporting must be clear and understandable. Quantitative data is required by the EDM programme and its donors for accountability reasons. All contributors should be entitled to feed back on the results deriving from the assessment, also as an incentive to support the process of gathering the data. The MS is not an end in itself, but a means through which to achieve greater effectiveness, ownership and sustainability.

## Design of the MS

The MS was designed to be implemented by staff hired by EDM projects and partners. These include UNDP country office focal points, NGOs/CBOs (who in most cases implement EDM projects) and TCCC officers. Training them as enumerators for MS activities (first in the projects sampled for the regional IA, and then in all others) would allow them to play an active role as enumerators for the MS by gathering data on project outputs and results. The MS proposed to implement, where and as far as possible, a self-assessment mechanism.<sup>21</sup>

Developing the MS also aimed to strengthen institutional and human capacity to collect impact data, and ensure that it would be progressively owned by EDM project leaders and communities and can be sustained. EDM staff, partners' focal persons and beneficiaries would need training to establish the MS and to maintain it.

EDM projects are normally implemented by UNDP country offices and/or NGOs with the support of TCCC staff. All those parties would therefore contribute to data collection. Mechanisms to ensure the independence of the data collection process include MS data collected by EDM implementing parties, with systematic triangulation and validation by a third party (from those cited above), which is not the same as that which runs the EDM project and is not directly involved in the project. Least cost *and* independence arrangements were designed on a project-by-project basis. For example, if the country office staff (i.e., the Environment Programme Managers) operate the project, the MS data would be collected by TCCC staff and validated by NGO staff (if present) or a consultant, or the other way round. The option that community leaders or capable community members help in collecting the data should also be explored. When a fully independent party is not available, external consultants can be trained and periodically hired for the MS by the programme.

The first step in developing the MS is to focus on a few common indicators that cover the various EDM objectives, based on logframes and the views of EDM managers, beneficiaries and stakeholders (including from the donor, i.e., on the water table replenishment<sup>22</sup> indicator). Indicators should be aligned with official information sources (e.g., disaggregated national statistical data, on MDG 7, project financial data) as a partial substitute for baselines, and targets need to be established against indicators. Impact indicators are linked to long-term objectives, separate from the performance indicators, but linked to activities. Indicators should be developed according to the S.M.A.R.T. principle:

**Specific** to the objective;

**Measurable** either quantitatively or qualitatively;

**Available** at an acceptable cost;

**Relevant** to the information needs of decision-makers; and

**Time-bound** so users know when to expect the objective or target to be achieved.

The next step is to set a regular monitoring schedule (e.g., annually, every six months) depending on the nature of the indicator and cost and effort needed to obtain the data. The schedule is reflected in a plan managed by each project and country, based on implementation arrangements, and helps to safeguard independence. The first MS data collection generates baseline data, which can then allow changes against agreed common indicators to be assessed.

It took about one year to develop the MS for the EDM and deliver a system that for use across EDM projects (Table 3).

**Table 3: Timeline and work plan for the EDM MS**

Step	Activities and Deliverables (IA and MS)	Q1	Q2	Q3	Q4
1	EDM workshop + follow up: develop projects metadata	■			
2	EDM workshop + follow up: develop long list of EDM indicators	■			
3	EDM workshop + follow up: sample EDM projects for the IA	■			
4	Validate projects metadata table		■		
5	Short list of agreed major <u>EDM MS indicators</u>		■		
6	Revise IEO work plan (share with the key stakeholders)		■		
7	Finalize discussion on the IEO work plan		■		
8	Develop <u>protocols for IA, baseline, and MS data collection</u>			■	
9	Run <u>IA</u> study focusing on EDM sample or projects in RBEC			■	
10	Complete design of EDM MS (becomes the <u>baseline</u> data)				■
11	Training on MS development; <u>MS + baseline</u> for EDM projects				■
12	Initiate <u>IE analysis</u> of EDM MS data, and publishing the IA				■

The first activity was a stakeholders workshop (Steps 1–3) to analyse and streamline the key elements (e.g., projects metadata, indicators) of the whole monitoring and evaluation, while the EDM projects sampling was a product for the IA. This was followed by refining and validating metadata and indicators common to several projects (Steps 4–5) and sharing the proposal with EDM partners and donors (Step 6).

The IEO work plan was finalized (Step 7) and the rapid IA study was designed (Step 8), including a questionnaire. The IA was then conducted (Step 9) in a sample of EDM regional projects and countries (see Table 1). As the IA study of RBEC regional completed and the related MS system validated and transferred to an online platform, field monitoring in RBEC regional projects were ready to start on a pilot basis (Step 10). At this point, training for EDM global projects on monitoring evaluation is offered and the MS can then be implemented in EDM projects (Step 11). Finally, when MS data is collected systematically across indicators, IE analysis and other data analysis may begin (Step 12).

### Lessons learned from the EDM MS

One objective of the assessment was to test a list of technical or socioeconomic indicators that could be used to document and quantify EDM impact, if included in a future MS. The evaluators often found it difficult to use the list of indicators that had been based on EDM staff suggestions. A revisited list of indicator usability (versus the list of the indicators typologies proposed by the EDM, Box 1) is now presented in Table 4. The assessment pleads to simplify the list of indicators, for the following reasons:

- **Projects are not standard:** EDM helped communities in the region tackle their clean water and sanitation priorities, with a range of community-based initiatives reaching from wastewater treatment to rainwater catchment. The large variability in EDM projects is a strength, because it allows a response to specific and varied local priorities and contexts, but also means that a list of standard indicators may fit rather poorly with some.
- **Cost of data collection:** Some indicators are easier to collect than others. The limited capacity of some implementing partners and small size and duration of most EDM projects makes it unlikely that partners will be willing and able to reliably measure a long list of complex indicators,<sup>23</sup> and in any case would make their measurement costly.
- **Loss of crucial information:** A numerical indicator is not always the right tool to capture what is essentially qualitative information. For example, the “number of government policies directly



influenced by project activities” is not as important as the *content* of those policies and whether or not the policies are being enforced.

On top of the predefined indicators that the assessment recommends keeping (Table 4), EDM should consider adding the following indicators to its MS system:

- *Quality of water* as judged by beneficiaries and through systematic water analysis.
- *Cost/value of the additional water* provided by the project – this variable is important to assess cost-efficiency and the potential for replication.

**Table 4: Usability of common EDM projects indicators**

	<b>Predefined indicators tested in the rapid impact assessment</b>	<b>Usability – recommendation</b>
<b>Water Stewardship Indicators</b>	1. Number of people with access to an improved drinking water source	Keep
	2. Number of students with access to improved drinking water at school	Keep
	3. m <sup>3</sup> of storage available for irrigation water, in the target community	Replace with: additional water saved and used for irrigation, drinking, etc.
	4. Number of people trained to maintain project technologies in the target community	Keep
	5. Number of community water management committees set up in the target community	Replace with sustainability measures
	6. Number of students able to demonstrate correct hygiene behaviour in target schools	Not easily measurable – drop
	7. m <sup>3</sup> of treated waste water	Keep
	8. Number of people with access to improved sanitation facilities in the target community	Keep
	9. Number of children with access to improve sanitation at school	Keep
<b>Climate Change and Adaptation Indicators</b>	10. Number of target community members [trained] in efficient water use	Keep
	11. Number of people trained to maintain water capture/treatment system	Same as #4 – aggregate
	12. m3 of replenished water (less water losses, treated waste water, saved irrigation water etc.)	Not easily measurable – contract out or drop
	13. Water productivity in agriculture (kg/m3)	Not easily measurable – drop
	14. Number of government (local or national) policies directly influence by project activities	Number means little here – replace by textual description of policy influence
	15. Number of people trained about climate change and efficient water use operating in the project target area	Similar to #16 – aggregate
<b>Advocacy and Awareness Indicators</b>	16. Number of people with knowledge of good water conservation practices	Similar to #15 – aggregate
	17. Number of locations where the projects activities have been replicated	Not easily measurable – yet useful to keep
	18. Number of NGOs/government agencies involved in responsible use of water activities in project location	A number means little here – replace by a textual description of stakeholders
	19. Number of people receiving training using project-developed educational materials	Keep
	20. Number of children receiving education using project-developed materials	Similar to #19 – aggregate
	21. Number of teachers trained to use project-developed learning materials	Keep
	22. Number of children participating in awareness raising activities	Similar to #10 – aggregate
	23. Number of people receiving guidelines on water conservation	Similar to #10 – aggregate
	24. Number of people with skills to teach WASH education	Not easily measurable – drop
	25. Number of project related articles in local and national media.	Replace with a list of articles

## V. CONCLUSIONS AND PROGRAMMATIC RECOMMENDATIONS

In addition to the recommendations for EDM projects indicators listed above, the EDM IA team also arrived at recommendations of a broader programmatic nature, including:

- 1.** The EDM MS needs to use as simple a list of indicators as possible, and should not rely *only* on indicators. The MS cannot be reduced to the collection of statistics and indicators. An important part of it requires understanding the qualitative dimensions of development, and people's perceptions about project usefulness or the lack thereof. TCCC's surveying capacity could usefully be brought to bear in this respect. It would also be useful to keep the MS as objective as possible, which calls for an independent and external mechanism to validate the data.
- 2.** EDM projects, which are typically small and short, should not be implemented as stand-alone, separate and isolated interventions, because this reduces their impact and visibility. UNDP should continue to cultivate partnerships with key national stakeholders in implementing EDM projects, and systematically embed EDM projects within broader UNDP programmes that have more staying power, as this was found to lead to better sustainability.
- 3.** While UNDP can bring neutrality and sustainability to local partnerships, TCCC can bring dynamism, and has the knowhow and interest in providing interventions with national and international visibility. However, the temptation to use EDM projects to advertise the Coca Cola trademark should be resisted, or the suspicion of hidden motive may damage the partnerships.
- 4.** EDM should strengthen its emphasis on water safety and potability, to avoid the perception that TCCC may not be interested in providing safe drinking water. The best way to dispel any notion that TCCC is supporting these projects for its own gain is that EDM openly focuses on *safe drinking water*.
- 5.** UNDP should complement EDM with other funding sources to address key water governance issues. Water governance is central to the UNDP mandate in the water sector. In addition, implementing small-scale water delivery projects without addressing broader sectoral constraints could, in some contexts, prove quite useless. In some of the reviewed projects, significant water governance issues were not addressed by the EDM project, but had a strong bearing on its impact (e.g., in Ukraine: how to improve water quality and reduce the impact of pollution on water?).
- 6.** EDM – and in general similar modalities of interventions – may wish to fund follow-up projects when particular interventions are found to be effective. The lack of follow-up was often found to be detrimental to EDM impact. In the sampled projects, a second edition of the Black Sea Box and a project aiming to locate and replace old asbestos-laced concrete pipes in Turkey would be welcome.

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# ANNEX 1: RESULTS RESOURCES FRAMEWORK

EDM Regional: (2007–2010)

Intended outcome: <b>Energy and Environment for Sustainable Development</b>		
Outcome indicator, including baseline and target: <b>Access of poor populations’ adequate and safe water supply and basic sanitation increased, and local management of water resources improved</b>		
Applicable MYFF Service Line: <b>3.2 – Effective Water Governance</b>		
Project title and ID: <b>Every Drop Matters: Regional Public–Private Sector Partnership Initiative on Water</b>		
Intended Outputs	Output Targets	Indicative Activities
<b>1. Increased access to safe drinking water</b>	Significant reductions in the numbers of households in select regions of pilot countries that do not have access to improved water sources	Introduction, expansion of small grants programmes for communities, local water associations Assistance with developing proposals for GEF, other donors and commercial funders for water projects, including flood control and forms of water-related disaster preparedness
<b>2. Good practices in industrial water management</b>	Successful transfer of environmentally sustainable water use technologies to pilot companies in selected industries	Identification of good practices in reductions in industrial water use (via TEST, other methodologies), development of procedures, guidelines for their implementation
<b>3. Advocacy and communication</b>	Significant improvement in media, government, public awareness about regional water issues, as measured by media references, statements by public officials	Support for national, regional water-related publications (e.g., possible launch of UNDP human development report on <i>Water and Development</i> , possible devotion of <i>Development and Transition</i> newsletter to regional water issues), and for codification and dissemination of successful projects and other activities via web-based knowledge tools and knowledge fairs

## ENDNOTES

<sup>1</sup> Bias towards success: subjectivity in selection; in favour of popular views; in favour of stories that are preferred by the project funding and implementing organization; and bias towards the views of those who are good at telling stories.

<sup>2</sup> Triangulation of data collection from different sources ensures that data is valid. Data are collected in interviews with participants, document review, and focus groups surveys of participants. This helps in avoiding or reducing the natural biases involved in data collection.

<sup>3</sup> For example, according to TCCC factory manager, his factory consumes about 60,000m<sup>3</sup> of water per year, pumped from a dozen wells and supplies around the factory grounds.

<sup>4</sup> This part of the project was not evaluated.

<sup>5</sup> Saray is located at the periphery of the Ankara water supply system. Generally, water quality tends to degrade as one moves away from the centre of a system towards its periphery, especially if water is stored at various points in the system.

<sup>6</sup> It was not entirely clear to the assessment team why the project was geared to rooftop rainwater harvesting, though it could be due to the fact that EDM staff were exposed to this technology through ICARDA, which had been promoting this technology for years. EDM suggests that reasons were the absence of other water sources and that the technology cost less than bringing water from neighbouring communities.

<sup>7</sup> Appliances that require both a certain quantity of water and pressure head.

<sup>8</sup> A number of village residents have fallen sick after the municipality last replenished the reservoir. Symptoms include swollen lymph nodes, and doctors say this is associated with rodents.

<sup>9</sup> Average cost is 33 UAH (c.€3) per 20 litres.

<sup>10</sup> This cost varies. In general, the smaller the settlement, the higher the local cost of drinking water. For instance, the price of 1m<sup>3</sup> of water in Kyiv is 3.18 UAH (€0.3) whereas in Novograd-Volynsky it is three times higher, reaching 9.15 UAH (€0.9).

<sup>11</sup> Novograd-Volynsky interrasyon division of laboratory researches of State Sanitary Epidemiological Service # 3358-3364, dated 2 September 2013.

<sup>12</sup> An example of water games software is Play Danube: [www.playdanube.at/](http://www.playdanube.at/)

<sup>13</sup> The project duration was originally planned to be 12 months.

<sup>14</sup> 1) Constructed and fully equipped the multimedia centre for visitors in the Croatian Centre for Indigenous Species of Fish and Crawfish in Karstic Waters. This activity replaced the idea of the Water Museum; 2) Renewed and reconstructed fitness park on the northern armband of the Gacka River; 3) Created and installed new tourism signals (marking and mapping bike trails and routes, tourist info-panels, Rent-a-Bike points); 4) Donated 15 bicycles to the Bicycling Association and two certified biking guides; and 5) Donated 14 fishing rods to the Fishing Association.

<sup>15</sup> 1) Documentary on the Gacka River, which was presented at the celebration of the World Water Day and in the 5<sup>th</sup> World Water Forum held in Istanbul in March 2009; 2) A Good Water Management Guide and A Survey on Tourist Potentials of Gacka Valley; and 3) Project leaflets and booklets, as well as a guide/manual about investing opportunities in Gacka.

<sup>16</sup> The number of tourist arrivals in the Republic of Croatia has increased by less than 4 percent in the same period.

<sup>17</sup> An educational tool kit developed by TCCC and the International Commission for Protection of the Danube River.

<sup>18</sup> The Black Sea Commission is headquartered in Istanbul. The Danube Commission has been involved in the same way in the development of the Danube Box.

<sup>19</sup> Information provided by Kurtmolla Abdulganiyev, UNDP Crimea

<sup>20</sup> A link to one report: [www.youtube.com/watch?v=ZOxyJHEoRVs](http://www.youtube.com/watch?v=ZOxyJHEoRVs). A print example: [www-ki.rada.crimea.ua/index.php/-i/2688-2011-11-03-09-08-49](http://www-ki.rada.crimea.ua/index.php/-i/2688-2011-11-03-09-08-49) (*Krymskiye izvestiya is the regional public newspaper*).

<sup>21</sup> To prepare project staff to run the MS, training is required, comprising baselines development, interview techniques and ethics, independence, data validation, survey design and planning, attribution, counterfactual analysis, triangulation and verification of data, and data recording and reporting online through a web-based platform to host it in the MS. The platform was designed and implemented from the latter part of 2013 and start collecting data from IA sample countries (as a pilot test of the online system) so that, after proper training, it can host the data collected from every EDM project.

<sup>22</sup> Measuring water table replenishment takes time and costs. It involves measuring the level in a sample of wells all year round. If data is not already collected, it does likely cost a significant amount of resources.

<sup>23</sup> This involves measurement of 'replenished water', an indicator that TCCC is keen to collect to help report against its commitment to become 'water neutral' by 2020. Diversity in project types and complexity of water cycles in most contexts makes this indicator very difficult to measure accurately and in a way that can be actually aggregated across projects.



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