



## TURKEY

# Anatolia Watershed Rehabilitation Project

### Project Summary and Scope

The purpose of this project is to implement sustainable natural resource management practices in order to raise incomes in communities impacted by resource degradation in 28 micro-catchments in the Anatolia and Black Sea regions of Turkey. Each micro-catchment covers between 5,000 and 15,000 hectares, with a total area under development of approximately 202,000 hectares. The project, which was launched in 2004, focuses on poverty reduction by making the rural economy more resilient to crises that affect the most vulnerable. The project's strategic objectives are directly linked to Turkey's National Environmental Action Plan, which calls for improved and more environmentally friendly agricultural practices to reduce soil erosion and the pollution of groundwater and surface water. Turkey contributes approximately 20 percent of the nitrogen and 12 percent of the phosphorus produced in the non-Danube Black Sea basin. Only 6.6 percent of land in Turkey is free of some level of erosion.

### Best Practices

Best practices implemented to date for small family farms and livestock operations include:

- **Household manure platforms and centralised composting** — The construction of small manure platforms and the development of institutional and management systems for collection/delivery to central composting facilities.
- **The introduction of new technologies for the storage and collection of manure** — In areas with limited physical access to sites where manure is stored, standard-design containers (normally used for garbage collection) have been introduced. These are collected by purpose-built vehicles, which haul the manure to central storage and composting facilities.
- **Manure compost injection.** A locally manufactured system has been designed to handle poultry waste and is coupled with global positioning system modeling to pilot the effectiveness of injecting the compost and its impact on yield and nutrient reduction.

#### INVESTMENT

Work Bank IBRD loan	USD 20 million
Global Environment Facility grant	USD 7 million
Turkish co-financing	USD 8.65 million
Local communities co-financing	USD 9.46 million
<b>Total</b>	<b>USD 45.11 million</b>

#### PROJECT DURATION

2004–2012

#### NUTRIENT CHALLENGES

- Poor agricultural practices, including inappropriate and excessive application of fertilisers and pesticides
- Soil erosion
- Poor drainage
- Inappropriate handling of animal manure waste

#### EARLY NUTRIENT BMP "WINS"

- Manure management and centralised manure storage



- **Digesters** — Two small-scale pilot biogas digesters have been completed in Corum (the village of Arifegazili) to convert animal waste to energy. Nutrients will still have to be transported off site.

### Other Key Successes

- The project provides a platform for collaboration between multiple ministries and interest groups to address issues related to rural poverty.
- The introduction of manure management systems has had a profound impact on health, sanitation and hygiene in the local communities.
- Economic development/income-generating opportunities for livestock farmers from the selling of composted manure (partly due to significant increases in commercial fertiliser prices).

### Key BMP Indicators

- Adoption of environmentally friendly practices by 30 percent of farmers in the project areas.
- Adoption of improved manure handling and storage facilities by 55 to 60 percent of farmers in the pilot areas.
- Development and adoption of packages of investments and practices for nutrient discharge reduction by 65 percent of farmers in the pilot areas.
- Facilitation of the alignment of national regulations with the EU Nitrates Directive.

### Further Information

Project information documents are available at <http://web.worldbank.org>

Project contacts:

**Peter A. Dewees**, IBRD team leader

E-mail: [Pdeweese@worldbank.org](mailto:Pdeweese@worldbank.org)

**Miriam Van Dyck**

Tel.: (202) 458-2931

E-mail: [mvandyck@worldbank.org](mailto:mvandyck@worldbank.org)



### About the Living Water Exchange

The Living Water Exchange, a GEF/UNDP project promoting nutrient reduction best practices in Central and Eastern Europe, will share information and accelerate the replication of the most appropriate nutrient reduction practices developed from GEF and other investments in the region.

For more information, please visit <http://nutrient-bestpractices.iwlearn.org/> or email Chuck Chaitovitz [chuck@gef.org](mailto:chuck@gef.org)

