

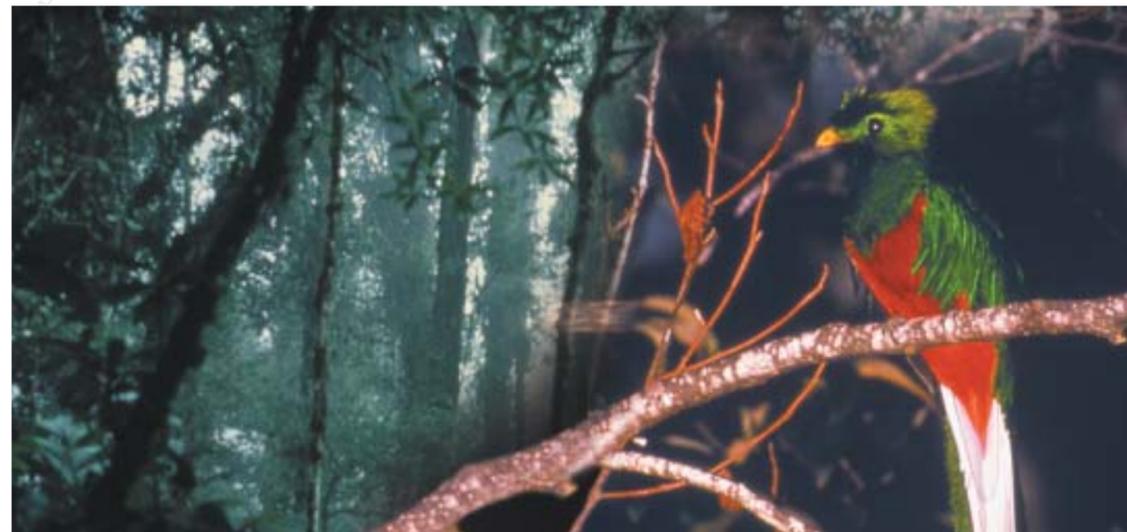
## Biodiversity and Socio-economic Values

The Motagua-Polochic System, located along Guatemala's Atlantic Coast, is one of the most biodiverse regions within the Mesoamerican Biological Corridor. Among the protected areas located here is the Sierra de las Minas Biosphere Reserve (SMBR), considered as Guatemala's most precious jewel within the National Protected Areas System.

Based in the eastern reaches of the country, the SMBR extends approximately 130 km in length and 10-30 km in width over a 240,000 hectares surface area. As the oldest mountain range in the region, with altitudes ranging from almost sea level to over 3,000 meters, it is one of the most spectacular and species rich mountain chains in all of Central America.

The Reserve harbors over two thirds of all mammals and reptiles registered in Guatemala and Belize, a large variety of ecosystems grouped into 6 life zones (dry, conifer and cloud forests) and critical habitat for endangered species including the resplendent Quetzal, Tapir, Howler Monkey, Jaguar and Harpy Eagle. It is also considered one of the world's most important "gene banks" for coniferous species.

Sixty-three permanent rivers originate in the dense cloud forest of the SMBR core zone and flow to low-lying river valleys, such as the Motagua, which represents one of the most arid regions throughout the isthmus and is characterized for its increasingly endangered and unique thorn-scrub forest habitat type.



Water resources here are essential as they supply over 500 resource-poor communities (approximately 400,000 people), 2 hydroelectric projects and 12 more planned, numerous irrigation systems for cattle ranching, agro-industrial export operations (cantaloupe, mango, etc.) and coffee processing, and 8 bottling companies (Pepsi Cola, Coca Cola, the Beer and Rum Industries).

In addition, these rivers also flow downwards towards the Polochic river valley, on the northern side of the Sierra de las Minas, which by contrast is settled predominantly by Q'eqchi', Poqomchi' and Achi' Mayan indigenous groups. Water resources here are essential to support mostly subsistence-based agriculture and some coffee, cardamom and fruit production for export.

Finally, the SMBR montane tributaries represent a vital lifeline to the adjacent Bocas del Polochic Wildlife Refuge, which stands as an important Ramsar wetlands site, a migratory bird sanctuary and popular tourist site. In their last reaches, these continental waters also drain into the Gulf of Honduras and affect the biological integrity of the Mesoamerican Reef, a world class coastal marine site and a WWF Global 200 ecoregion.

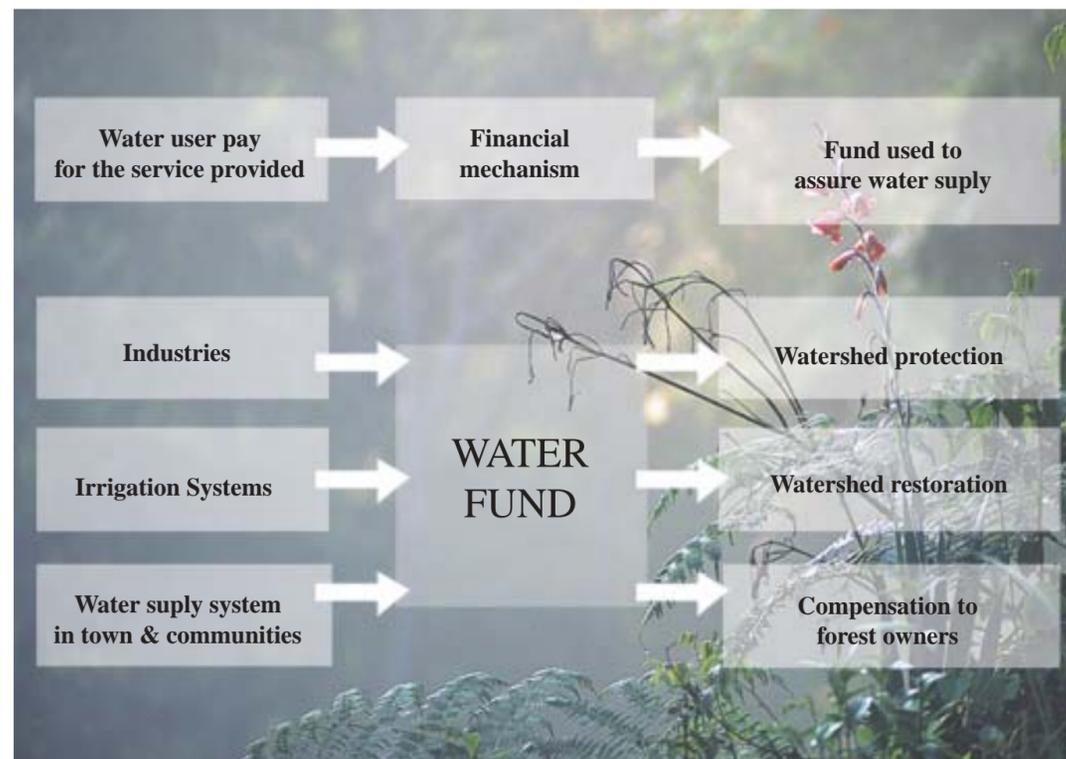


## The Value Behind Developing a Water Fund Model

The Water Fund Model is a joint initiative led by Defenders of Nature with support from WWF Central America and other national and international partner organizations. The project won the RE-Source Award for Sustainable Watershed Management 2002 presented by Swiss Re, one of the world's leading reinsurers. The award is conferred on an annual basis and aims to support promising watershed management projects, from the planning and evaluation stages through to implementation.

The Water Fund Model represents an innovative financial mechanism that proposes to link downstream water use with upstream forest conservation to ensure abundant and clean water supplies for sustainable development in the future. It is intended to help mitigate threats to this protected area stemming principally from deforestation, forest fires and agricultural expansion.

The relation "downstream users-upstream conservation" will contribute with landscape restoration and sustainable resource management of micro watersheds of the SMBR.



## Project Concept

This Payment for Environmental Service program will help ensure the protected areas financial self-sustainability by increasing participation among local resource users, particularly by engaging the private sector and municipalities in the conservation of their own natural resource base.

At a broader level, beyond the protected area itself, the Water Fund is also intended to address water pollution problems affecting the Motagua and Polochic rivers and ultimately the Mesoamerican Reef, which stem from neighbouring urban centers and agro-export activities. This conceptual model will be useful for replicability by other municipalities in Guatemala and as a tool for future policy development at a national level.

Finally, by recognizing water as a valuable resource, the project will ensure long-term industrial and agricultural production in Guatemala's North Eastern region. In turn, this will help generate social and economic benefits to local populations' through employment generation and sustainable development.

The project has been designed to address the following questions:

- Who uses the water and how much do they use?
- How much water is available?
- Strategically, who should be involved first in the Payment Scheme?
- What is the cost of water?
- How will funds for upstream management be obtained?
- How will funds be distributed to appropriate activities?
- What activities should be funded?
- How will we measure our impacts on water, forest and coastal marine resources?





# The Challenge

Despite the importance of this forested mountain range for water production, this situation may not be sustainable in the long-term as local water users have in recent years noted a fall in water quality and quantity, particularly during the dry season.

Deforestation, cattle ranching, forest fires and agricultural expansion are just some of the upstream threats that are leading to forest and freshwater habitat loss, fragmentation and down-stream sedimentation. Forest conversion imperils the hydrological cycle in the region and the supply of abundant quality water for industry, agriculture, domestic purposes and hydroelectric energy production.

Furthermore, there are no financial mechanisms in place to charge and channel user fees upstream to the managers of the SMBR or to compensate forest owners for the important environmental services they provide.

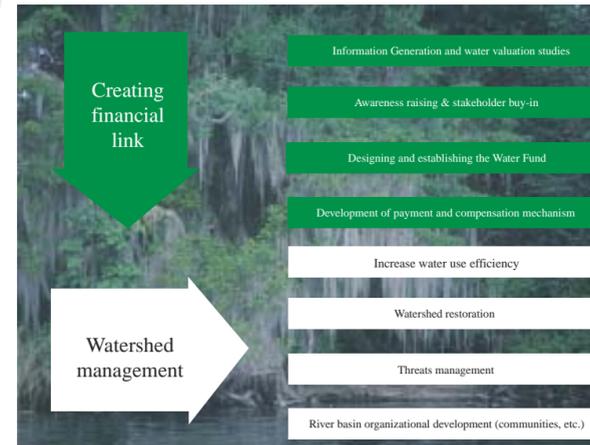
Bottling companies make no payment for water pumped from aquifers. Surface water users, agro-industry, industries and farmers do not pay any fees and only residential dwellers pay fixed fees which are not based on consumption levels and cover only the maintenance of the distribution system. In no case, do collected fees go to protect and manage the SMBR's tropical montane cloud forest so critical for water supply.



# The Strategy

Owing to the strong economic inequalities in the Motagua-Polochic region, Defenders of Nature have decided to focus on channelling payments from water users from industry first.

This Environmental Payment Scheme will initially engage major industrial water users in the Motagua Valley (hydro-electric plants and bottling companies) who have demonstrated a greater willingness and ability to pay into such a project, thus fostering greater corporate responsibility towards sustainable freshwater resource management. Once this is established, agricultural and lastly residential users will be brought into this payment scheme.



The design of this financial mechanism and water valuation study represent the heart of a much broader initiative that takes into account several other project components including integrated river basin management, efficient irrigation systems, scientific research development, clean production, strengthening local water management and governance capacities, and undertaking environmental education and awardness-raising among target groups.

This water-based financial mechanism is anticipated to have broader implications at the policy level in Guatemala and to serve as a replicable model in Latin America and the World for landscape scale conservation linking forest, freshwater and coastal marine biomes.



For further information contact:

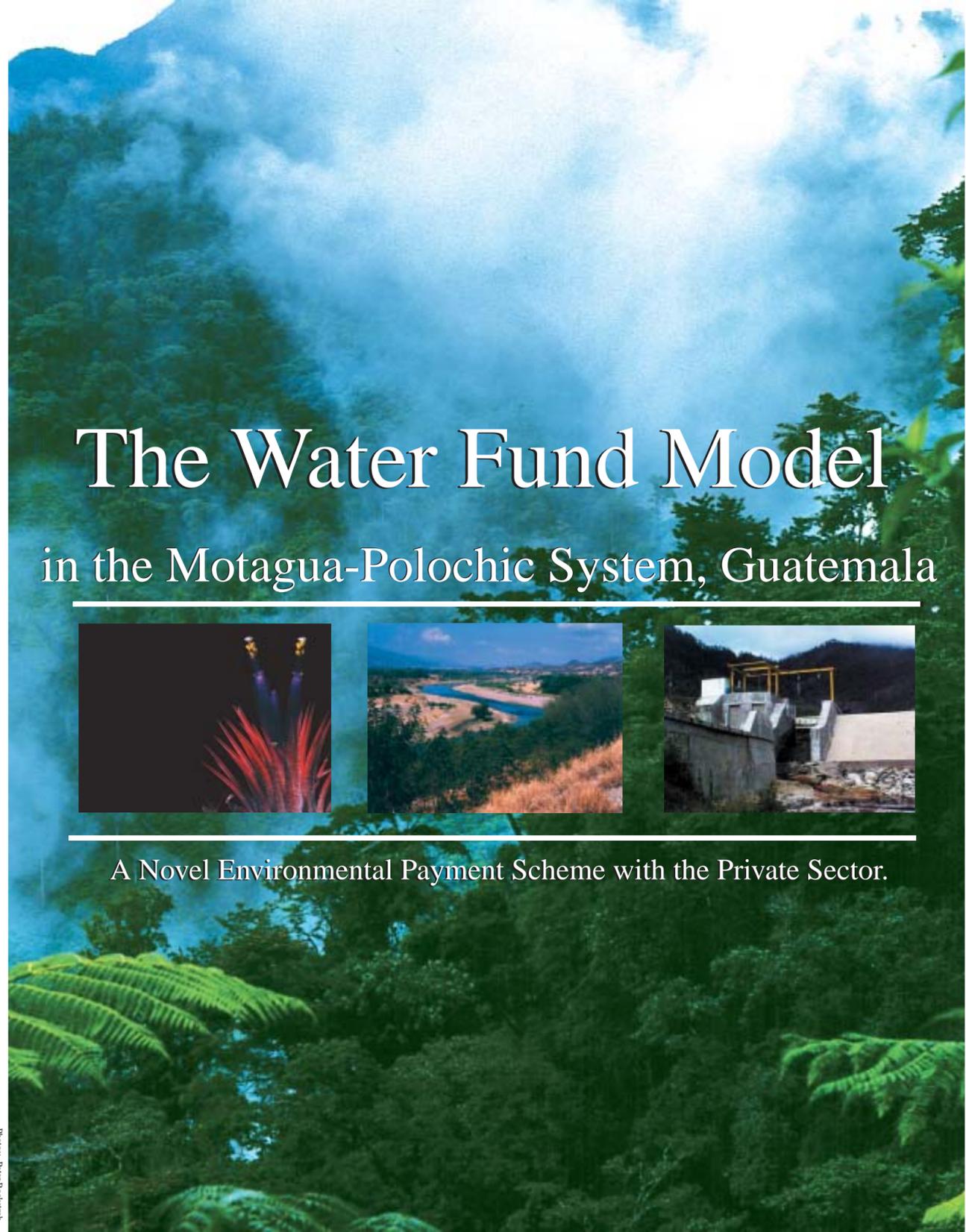
Defensores de la Naturaleza  
Oscar Nuñez, Water Fund Director  
E-mail: [onunez@defensores.org.gt](mailto:onunez@defensores.org.gt)

WWF- Central America Regional Office  
Melissa Edwards, Freshwater Program Officer  
E-mail: [medwards@wwfca.org](mailto:medwards@wwfca.org)

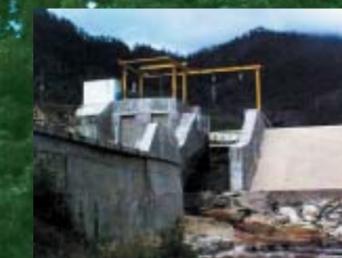
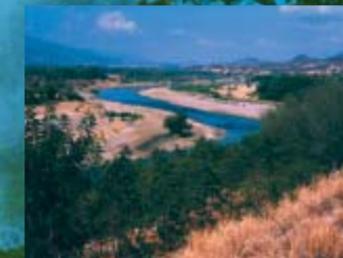


A sharing solutions initiative by Swiss Re- Towards a sustainable future

Photos: Peter Rockstroh  
3 WWF Central America  
Produced by the Communications Department  
WWF Central America  
[edwards@wwfca.org](mailto:edwards@wwfca.org)



# The Water Fund Model in the Motagua-Polochic System, Guatemala



A Novel Environmental Payment Scheme with the Private Sector.