

## PROTECTING ALL ECOSYSTEMS



Operating in or near a variety of habitats, including lagoons, oceans, tropical and boreal forests, mangroves, tundra, deserts, coastal waters and the Arctic, we are firmly committed to protecting local ecosystems.

In 2005, we developed a Biodiversity Policy setting out the objectives that guide our initiatives:

- Minimize the **impact** of our activities on biodiversity.
- Integrate **biodiversity** issues in our environmental management system.
- Pay special attention to regions whose biodiversity is particularly rich or vulnerable.
- Take part in scientific **research** and help to improve our **knowledge** of biodiversity.

To ensure the proper application of this policy, a **practical guide to biodiversity** was published in 2007.

Furthermore, Total made the commitment in 2013 not to have any extraction of oil or gas nor any exploration activity within the perimeter of the natural World Heritage sites as per the UNESCO list of June 4th, 2013.

### Minimizing our Impact

Biodiversity is an integral part of the baseline surveys and environmental impact assessments conducted prior to each project.

Our aims is to:

- gain **knowledge and understanding of the ecosystems** in the areas in which we operate
- assess** their vulnerability
- identify the related environmental and/or social and economic issues** and develop the most appropriate technical approach.

Our studies also **define the protective measures** to be taken, such as creating wildlife corridors, reducing land use and preventing the introduction of invasive species.

They enable us to **identify, on a case-by-case basis, the indicators necessary to gauge the effectiveness** of our initiatives.

*Total has been working to preserve biodiversity for many years. Initially dedicated exclusively to protecting biodiversity, the Total Foundation has supported more than 200 research projects since its creation in 1992.*

### TOTAL AND THE LOCAL COMMUNITY REPLANT MANGROVE FORESTS IN INDONESIA

Total Exploration & Production (EP) Indonésie is helping to **protect the rich and complex ecosystem** of the Mahakam Delta. Since 2000, Total has implemented a sweeping program to replant the mangrove forests in this oil and gas producing and shipping region. More than 10.6 million seeds have been planted over an area of more than 2,600 hectares. The program has been ratcheted up in 2013 and now its goal is to replant **a million mangrove trees annually**. Total involves the

local community in the initiative, with Indonesians participating actively in seeding and transplanting seedlings. The program has also been expanded in the last several years to include support and coaching for local people in how to manage their

has also been expanded in the last several years to include support and coaching for local people in how to manage their shrimp farming operations sustainably.

**In Yemen**, for example, **a coral reef containing nearly 80 different species was discovered** during the environmental baseline survey undertaken prior to the launch of our Yemen LNG liquefaction plant project. This led project teams to:

**Redesign part of the plant** and modify plans for shoreline work in the port of Balhaf to reduce the impact of construction on ocean currents and coral and fish communities.

**Adapt the shore retaining wall** and install silt curtains to protect the coral colonies from sediment during construction work.

Ensure that **cooling water from the plant is discharged farther out to sea** to protect nearby coral.

**Move 1,500 coral colonies** that were located in exposed areas. This was the biggest coral transplantation project ever undertaken anywhere in the world.

Scientists will continue to monitor the coral throughout the plant's operating life. As part of this project, Yemen LNG forged a **scientific partnership** with the International Union for Conservation of Nature (IUCN) to set up an **observatory** of marine biodiversity.

## Broadening Our Knowledge

We take part in scientific research and the advancement of knowledge through our research centers, the Total Foundation and the many research programs conducted with other organizations, including the French oceanographic research institute IFREMER, the World Conservation Monitoring Centre and the International Union for Conservation of Nature (IUCN).

We have also supported the French Foundation for Research on Biodiversity (FRB) since its creation. Launched by the Ministers of Ecology and Research in March 2008, the FRB aims to facilitate the development, support, leadership and promotion of research on biodiversity. In 2010, we chose to support a study on the value of biodiversity initiated by the FRB and in 2011 we are partnering its flagship program on biodiversity modeling and scenarios.

Find out more about the Foundation for Research on Biodiversity (<http://www.fondationbiodiversite.fr/>)

In addition to these initiatives, we have created biodiversity observatories at several sites representative of the diversity of our businesses, both in France, at the Feyzin refinery and the reclaimed chemicals site in Prémont, for example, and abroad, at the liquefaction plant in Yemen. Through these observatories, we hope to:

**Foster dialogue** among stakeholders, including experts, NGOs and local authorities and communities.

**Gather reliable data over a long period** to target our action plans more effectively.

**Make a significant contribution** to scientific knowledge.

## EXPANDING OUR KNOWLEDGE BASE TO MORE EFFECTIVELY PROTECT BIODIVERSITY

In June 2010, a large-scale **environmental monitoring campaign** was conducted around N'Kossa, one of our offshore oil fields in the Congo. The campaign was undertaken in partnership with respected researchers and laboratories, including French oceanographic institute IFREMER, the University of Angers, Institut de Recherches Internationales et Stratégiques (IRIS) and the Total Petrochemicals research center.

The aim was to assess the accuracy of various innovative tools for evaluating the state of the deep ocean, including microorganism analyses, biomarkers and ecotoxicological tests. The results are currently being processed. The most effective methods will be deployed on a large scale in the near future, giving us better control over the environmental impact of our oil and gas operations.

## A Geographic Information System to Preserve Biodiversity On and Around Our Sites

We are currently finalizing a geographic information system (GIS) that will show the locations of our facilities with respect to protected areas, such as those defined by the International Union for Conservation of Nature (IUCN), UNESCO (Man and the Biosphere program and the World Heritage Convention) and the Ramsar Convention\*.

We have access to regularly updated information through an agreement signed with the World Conservation Monitoring Centre, the biodiversity information and assessment arm of the United Nations Environment Program (UNEP).

The data provided by the system will enable managers:

to make any necessary changes to the **biodiversity protection measures** at their sites;

**develop biodiversity protection plans** tailored to their context, in partnership with local stakeholders.

\* The Convention on Wetlands of International Importance, called the Ramsar Convention after the Iranian city where the treaty was adopted in 1971, is an intergovernmental treaty that provides the framework for the conservation and wise use of wetlands and their resources.

## **IN THE DEMOCRATIC REPUBLIC OF THE CONGO OPERATING NEAR AN OUTSTANDING WILDERNESS AREA**

The exploration operations will be conducted in Ituri province, in the northern section of the license, outside the park and surrounding areas. This plains region is located 300 kilometers from the mountains with their particularly diverse wildlife and plant life in the Virunga National Park. The southern, montane forest is the natural habitat of the mountain gorilla, symbol of the park (see sidebar).

We are committed to safeguarding ecosystems wherever we operate and have long been engaged in protecting biodiversity, both directly in our operations and through our corporate foundation.

To learn more on conducting exploration operations near a fragile wilderness area (</en/society-environment/environment/local-environmental-footprint/biodiversity/Conducting-Exploration-Operations-near-a-Fragile-Wilderness-Area-in-the-Democratic-Republic-of-the-Congo-1>)