

*les dossiers*  
**d'AGROPOLIS**  
INTERNATIONAL

*Expertise of the scientific community*



**Biodiversity**  
Science for humans  
and nature



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## Reconciling forest diversity restoration and sustainable fuelwood resource management in Central Africa—Makala project in the Democratic Republic of the Congo

Contrary to many preconceived notions, Central African forest degradation and deforestation are mainly due to uncontrolled slash-and-burn cultivation, agroindustrial development and unsustainable gathering and use of fuelwood, which accounts for 90% of energy used in rural and urban households and a total of 80% of all tapped timber resources. The Makala project, coordinated by CIRAD with EU funding, is aimed at encouraging farmers to partially preserve forest biodiversity through the selection and protection of useful trees during crop field clearing operations. They may also be encouraged to replant saplings when trees become scarce—this can be in the form of enriched fallows, agroforestry gardens or multipurpose village groves. The forest tree species are mainly multipurpose local species whose numbers are dwindling due to excessive use.

The reforestation of Batéké grasslands, as well as the conservation or reintroduction of trees in degraded areas along forest margins around Kisangani, have had a significant catalytic effect in enhancing biodiversity. This phenomenon boosts the number of animal and plant species in the environment which are traditionally utilized by—and represent a source of wealth for—local communities. In addition to the direct impacts on areas in which the project is operational, the Makala project is one constituent in a set of research projects coordinated by CIRAD aimed at analysing and gaining insight into forest ecosystem patterns in the Congo Basin, especially tree species diversity dynamics. The regional CoForChange project, which is geared towards predicting the effects of global change on forest biodiversity in the Congo Basin, is another example of this.

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## Nam Khan *Eco-vallée* programme

The Nam Khan *Eco-vallée* programme (Laos) strives to ensure joint management of water resources, as well as aquatic and terrestrial environment uses throughout the catchment. There is a high degree of complementarity between the environmental issues and the local socioeconomic situation.

These aims include: poverty reduction and the improvement of inhabitants' living conditions; implementation of sustainable usage (agroecological) practices to fulfil peoples' needs, and; improvement in local stakeholders' governance, skills and expertise.

There are many specific objectives:

- preservation of water resources and associated ecosystems, gaining further insight into environments and habitats within the catchment, development of village-scale management plans and delineation of protected areas
- development: proposal of alternative management strategies on pilot sites, combining innovation and local know-how, improvement of essential rural infrastructures, promotion of local products and development of a quality label; proposal of ecotourism products
- training (local leaders) and public awareness (local communities).

Many inventories and assessments have been carried out over the last 5 years:

- identification of Nam Khan aquatic and fish-farming resources, and of living conditions of fishermen and catchment users
- assessment of the physicochemical characteristics of surface waters
- zoning and typology of ecosystems and sensitive environments in the catchment to understand environment-inhabitant interactions, and inclusion of the results in future management plans
- complete mapping of the catchment



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- studies to analyse the hydrology in Nam Khan and to gain insight into the physiogeographical features in the catchment
- biodiversity assessment based on a series of fauna and flora inventories
- development of a habitat typology and complete mapping of landscape structures via processing of a time-series of remote sensing data
- study to determine riverine vegetation patterns in Nam Khan for pilot initiatives to stabilize the river banks
- ecotourism potential of the valley to develop sustainable income-generating activities.

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▲ *Unloading dugout canoes when running the rapids. Urban population growth and the opening of roads between neighbouring countries (China, Vietnam, Thailand) has increased the demand for natural resources—here mahogany (Toona cinensis), for which uncontrolled logging is increasing.*

*Location: Kenluang rapids on Nam Khan river (Xieng Ngeun district, Luang Phrabang province, Lao People's Democratic Republic.*