

Typha Fuel & Construction West Africa



Senegal and Mauritania, like most countries in sub-Saharan Africa, face two crucial challenges: the need for energy for development, and climate change, to which these countries are particularly vulnerable. In this region, the lack of access to energy directly affects 70% of the population, and 85% in rural areas. In addition, about 730 million people use solid fuels for cooking (firewood and charcoal), harmful fumes and whose exploitation puts strong pressure on the forest resource.

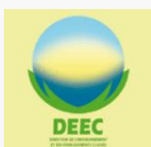
In addition, 75% of Africa's energy consumption and greenhouse gas (GHG) emissions come from building-related activities. The construction sector is particularly dynamic in West Africa, where demand is driven by sustained demographics and strong urban growth. However, the construction techniques, modeled on those of temperate climate countries, appear to be poorly adapted to tropical and Sahelian climates. A transformation of the architectural design, the choice of materials and constructive processes thus appears necessary, in order to reinforce both the comfort and the resilience of buildings to climate change.

However, in Senegal as in Mauritania, a wild plant with particularly interesting properties in terms of energy can contribute to answering these challenges: the typha.

The *Typha Australis* is a fast-growing reed whose proliferation in the Senegal River Basin has greatly accelerated after the construction of dams, including the Diama anti-salt dam in 1986, which created favorable conditions for its development. The scale of the phenomenon and its dynamics are disturbing on several levels: public health, the security of water supplies, the prevention of natural risks, the maintenance of the biodiversity of the Senegal River delta (recognized cross-border biosphere reserve by the UNESCO), and the practice of economic activities.

The efforts made over the last thirty years have not yet made it possible to stem the growth of Typha, despite the potential for recovering this considerable biomass. However, two transformation axes are likely to respond to exploitation strategies on a very large scale: **on the one hand as a combustible raw material for the production of energy, on the other hand as a building material with insulating properties.** These orientations would indeed make it possible to combine the will of the Senegalese and Mauritanian governments to implement the energy transition in the most emitting sectors of GHG, and the imperatives of fight against the proliferation of this invasive plant.

The Typha Fuel Construction West Africa (TyCCAO) project aims to contribute to the energy transition and the fight against climate change, by developing the use of renewable fuels and energy efficiency in the building sector. the massification and dissemination of products based on typha.

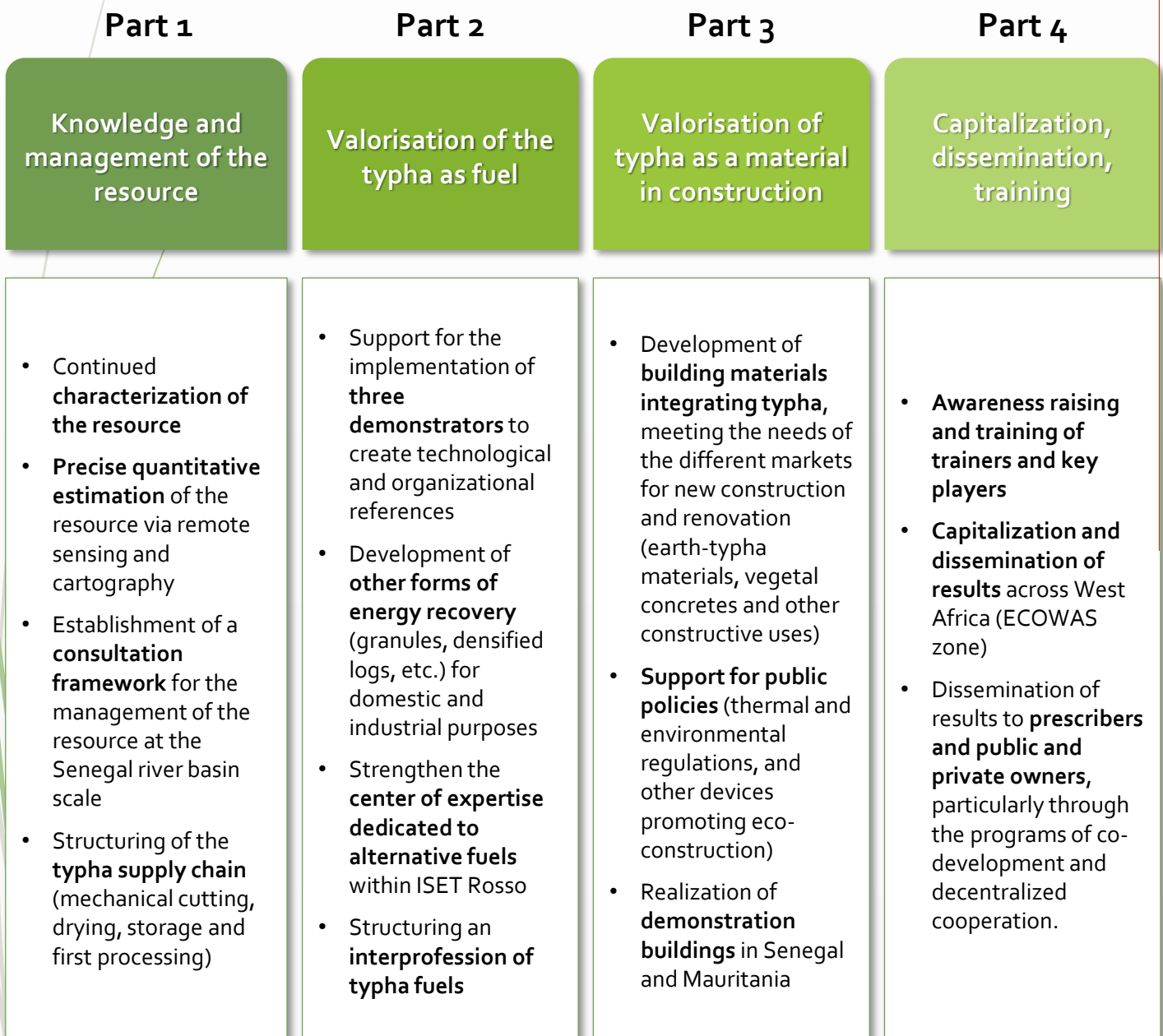


Objectives of the TyCCAO project :

The ambition of the TyCCAO program is divided into 4 objectives:

1. **Refine the knowledge of the biological functioning of the plant**, in order to control the risks of invasion and to ensure optimal processing and production methods;
2. **Promote access to alternative energy** from renewable biomass;
3. **Contribute to the development of buildings with low environmental impact** through their energy efficiency and the use of local and biobased building materials;
4. **Raise awareness, train and boost inter / intra-sectoral and cross-border cooperation** between institutional actors, public decision makers, industrialists, researchers and local entrepreneurs.

A structured project in four parts :



Production of construction materials

The use of plants for the construction of building materials, which is booming in Europe and particularly in France, has many interests: renewable raw material resources for a particularly energy-intensive sector, improved energy efficiency and energy efficiency. comfort of buildings, long-term valorization of biomass and carbon storage, creation of economic activities especially for local populations, preservation of biodiversity, etc.

In Senegal and Mauritania, the TyCCAO project aims in particular at developing:

- Earth-typha building materials;
- Vegetable concretes;
- Rigid panels;
- Insulation boards and bulk;
- Thatch.



The PNEEB / Typha Program 2013 – 2017

Coordinated by the Department of Environment and Classified Establishments (DEEC) of the Ministry of Environment and Sustainable Development (MEDD) of Senegal, supported by the Global Environment Facility (GEF), this program consisted of two components:

- The National Program for the Reduction of Greenhouse Gas Emissions through Energy Efficiency in the Building Sector (PNEEB);
- The Technology Transfer Project: Production of Typha Thermal Insulation Materials in Senegal.

The researches carried out and first pilot demonstrative demonstrations made it possible to characterize the insulating properties of the plant as a building material, and to demonstrate the real interest of its use in energy-efficient buildings.

TyCCAO on its construction component will be an extension of this program and will amplify the results and benefits.

www.pneebtypha.org

Valorisation as an energy resource



Technical developments in Mauritania 2011-2016

In partnership with the Higher Institute for Technological Education of Rosso and the Diawling National Park, GRETE worked from 2011 to 2016 on the development of a production process and a product adapted to the local context. Establishment of the local coal production sector and support for the marketing of the product in its production area and in Nouakchott.

This experience demonstrated the feasibility of the traditional and industrial typha-based coal production chains, while the first typha coal industrial unit was created in 2013.

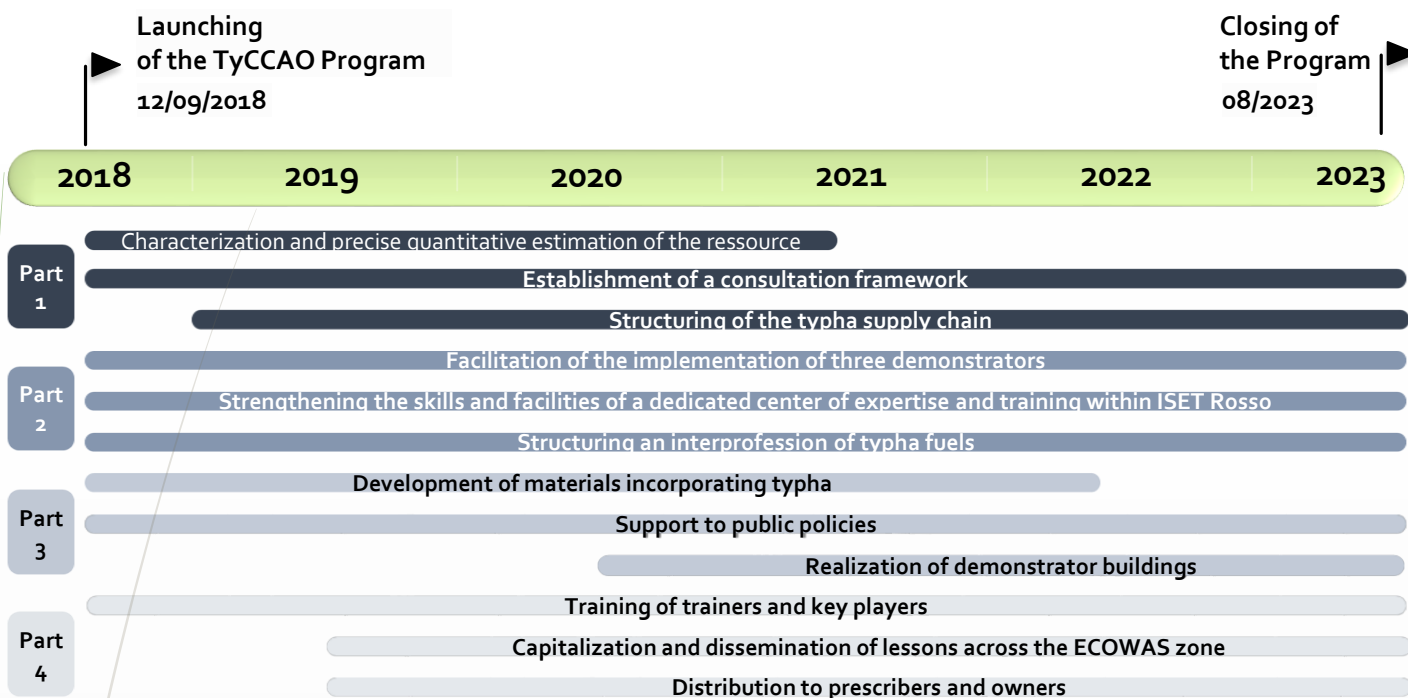
www.gret.org/projet/promotion-de-lutilisation-du-charbon-de-typha-mauritanie

The valorization of Typha in the form of bio-coal is part of a logic of substitution with charcoal and contributes to the fight against deforestation. **The TyCCAO program aims to support at least 10 entrepreneurs in setting up industrial typha coal production units.** Marketing support will facilitate the marketing of this coal in urban markets, while sectoral and regulatory environment work will allow the harmonious development of this sector.

Renewable and standardized fuels based on non-carbonised typha will also be developed and marketed to economic sectors with high thermal needs.



Provisional planning of the TyCCAO project :



TyCCAO project partners



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