



# **Jatropha Curcas as a potential source for producing biofuel in the dry lands of IUCN PACO countries**

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# INTRODUCTION :

In the last few years, most countries, especially non fuel producing countries have suffered from increased fossil fuel prices with negative consequences on their development.

This situation is most remarkable in African countries where liquid fuel is essential for the operation of energy dependent services of Small and Medium sized Enterprises (SMEs)

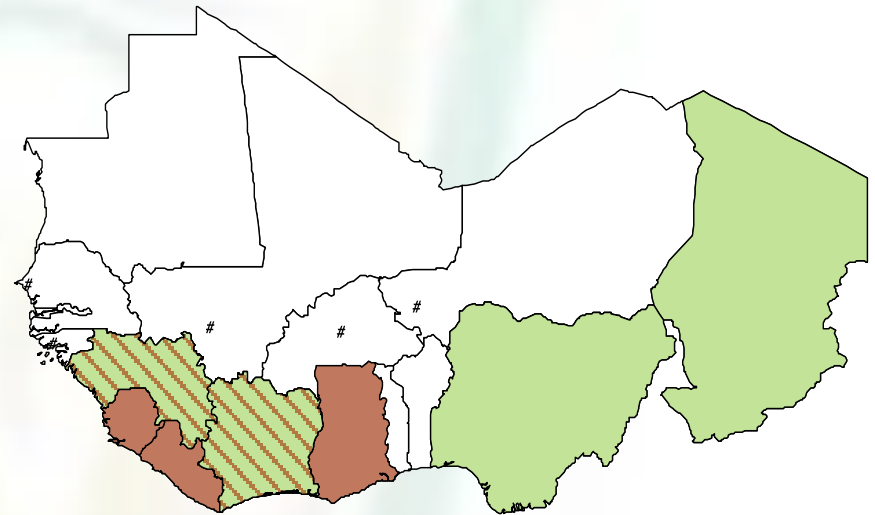
Faced with this situation, the production and use of bio-fuels constitutes an alternative, capable of meeting energy needs while creating an economic activity for rural populations.



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## GENERAL CONTEXT OF SAHELIAN COUNTRIES :

- Poor distribution of rainfall;
- Economies that are essentially dependent on agriculture for the majority of the population (farmers and graziers);
- High demographic growth;
- Low food security (importation of food products);



- Population pressure → over-exploitation of plants, over-grazing, excessive collection of fuel-wood → degradation of natural resources with resultant conflicts between farmers and graziers;
- Low level of energy yielding resources → predominance in the use of traditional energy (wood, charcoal, some fibre remains);
- Importation of fuel derivatives for other usage, especially for transportation;
- Low level of electrification : (BF: 15% urban zone electrified, and 1% in the rural zone).





# SITUATION OF BIOFUELS IN SAHELIAN COUNTRIES

## OBJECTIVES ASSIGNED TO BIOFUELS:

- Reinforce **protection** of the environment
- Contribute directly to **reduce the level of poverty of the population;**
- Improve productive revenue in a sustainable manner while ensuring socio-economic development;
- Reduce the energy bill of populations as well as the pressure on vegetative cover;
- Improve rural electrification, transport and agricultural intensification.



## CURRENT SITUATION:

**In the whole sahelian countries , biofuels are still emergent sectors**

**Mali is the precursor country in the region with the production and the use of some thousand liters of oil of jatropha**

**Other countries such as Burkina, Senegal and Niger started very recently projects in this sense(direction)**

## MAIN PROSPECTED SOURCES FOR BIOFUEL

- sugar cane residues: it is a long experience (ethanol), risk competition with food production and need modify engine**
- Cotton oil: important potential and availability in use for biofuel ; but cotton oil is use for food (alimentation)**
- Neem oil: exportation in Europe for Pharmaceutical use**
- Jatropha curcas*: Several current plantations

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States are still in search of the best choice for the production of the biofuel.

This choice will be made through the answer to the following questions:

- Do the integration to the system of production allows to avoid the competition with the food production?
- Is the choice profitable on the economic way and is it controllable by the producers? (where can we sell the product? Market?)
- Is the choice sustainable in environmental, social and economic term?
- What will be the necessary steps to develop this choice? (Basic investment)

Do the choice of *Jatropha curcas* gives the best answer to these questionings?

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# Jatropha curcas in the sahel

## JATROPHA AS A POTENTIAL SOURCE FOR THE PRODUCTION OF BIOFUEL :

Among the numerous sources that exist for the production of bio-fuels, and based on actual experiences in Burkina Faso, Mali and Senegal, it can be said that Sahelian countries have chosen *Jatropha curcas* as the most potential source for the production of bio-fuel as it is most adapted to their environmental context and responds best to assigned objectives.



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## ADVANTAGES OF JATROPHA

- 1. A species that is highly tolerant and adapted to the difficult conditions of the Sahelian environment:**
  - Poor soils;
  - Annual rainfall : 300 to 1000mm;
  - Dry period : 3 to 6 months;
  - High temperatures.
- 3. Ease of multiplication:**
  - in plantation;
  - direct planting by seed;
  - regeneration by buds and cuttings.
- 3. Production (fruiting / seeding) from the first year of planting.**



### 4. On the socio-economic and environmental level:

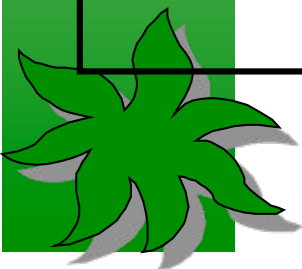
- Jatropha is a species that has been in use at the local level for a long time;
- It has been integrated in the agroforestry production system;
- It has multiple usage:
  - ⇒ Living fences;
  - ⇒ Control against erosion;
  - ⇒ Improvement of soil fertility;
  - ⇒ Improvement of fallows;
  - ⇒ Generation of revenue through the manufacture of i.e. soap, bio-fuels, organic fertiliser, cosmetics, medicines--
- Jatropha curcas is not invasive especially as its fruits are harvested and used.



## RISKS OF JATROPHA

- **The use of fertile land especially for monocultural Jatropha plantations could lead to competition with food crops;**
- **The economic yield of comparative choices for land and the biofuel market have not yet been mastered;**
- **The different impacts of the production and use of biofuels on the environment (emission of green house gases) are still poorly known;**
- **The sustainability of the choices in terms of the environmental, social and economic contexts, still requires further studies.**

As a summary, it can be said that there is insufficiency in knowledge and regulatory instruments and texts on biofuels.





# SOME EXPERIENCES IN THE PROMOTION OF JATROPHA

## AGRITECH IN BURKINA FASO.

- Production of biofuel based on *Jatropha curcas* in an agro-forestry system by recuperating poor unused degraded lands;
- This initiative employs more than 42 permanent workers of which more than ten are women including several seasonal workers;
- The initiative specifically targets local consumption (local market);
- The work is undertaken in concert with local populations and local authorities.



Association Jatrophas et production de mil





# SOME EXPERIENCES IN THE PROMOTION OF JATROPHAS

## PROJECT TII PALGA OF THE LARLE NABA.

- The project seeks to generate revenue for populations through the production of the grains of *Jatropha curcas*;
- The project works with populations who use *Jatropha curcas* on their farms in agro-forestry systems;
- The initiative concerns the whole country;
- The target is the external market for *Jatropha* seeds;
- The stakeholders of the project are essentially the producers of *Jatropha* seeds.



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## WHAT LESSONS CAN BE LEARNED?:

Through the various experiences which we have just seen, we can say that the production system with jatrophas has to take into account the following elements to succeed:

- **The production system and lands use must be well integrated in order to avoid the competition with the food production and breeding**
- **The economic profitability must be well mastered (existence of markets)**
- **The knowledge must be improved on the environmental, social and economic sustainability of the system.( need of indicators)**
- **Finally countries have to have texts (regulations, standards, strategy) on the production and the use of the oil of jatrophas**





## What to expect from the UICN and from his(her) partners for the promotion of biofuels?

- **Generate and disseminate knowledge on optimal conditions to promote and undertake bio-fuel initiatives in the PACO countries**
- **Support and monitor the development of national and regional strategies encouraging suitable promotion of bio-fuel initiatives in the PACO countries**
- **Guide the development and the implementation of tools to evaluate the impacts of bio-fuels on the environment and societies as well as on options to mitigate adverse impacts**
- **Build, if need be, the capacity of main stakeholders in bio-fuel development in the sahel**
- **Advise on equity issues to take into account, including the gender approach at all levels of the production chain for bio-fuel initiatives in the ecosystems of the dry lands of PACO countries**





# CONCLUSION

In front of the rise of fuel prices, the sahelian countries started the production of biofuel especially on base of *jatrophas curcas*.

However to make a successful and a good appropriation of biofuels it is necessary:

- to implement a program of research for accompaniment and training in the benefit of the whole actors
- To have a precise institutional and statutory frame
- To involve the whole actors (private, state, local community...)
- To look to their best integration to the local and national production system (eco-responsible production which takes into account the problems of sharing of space, socioeconomic and environmental impacts.)

