

## Energy valuation of agricultural industries' waste through the appropriation and deployment of gasogens in Cambodia and the transfer of technology to West Africa

**Company name:** Energy Development Innovation Group (IED)



**Project Title:** Energy Valuation of Agricultural Industries Waste Through Local Gas Disposal and Deployment

**Intervention country:** Benin. Cambodia. Côte d'Ivoire

**Duration:** 2013 - 2024

**Total cost:** Minimum 10 million euros for all countries of intervention

**Mobilized workforce:** dozens of employees

**Topics:** Bio-electricity / Energy production / Agro-waste recycling



### Activities accomplished:

- Needs Studies, Social-Economic Analysis, Financial Engineering and Legal Editing
- Engineering studies, consulting and contracting suppliers, structuring a pipeline projects (15 potential sites), identification and contracting with agribusinesses
- Construction work on power plants, testing and commissioning, process and maintenance
- Local recruitment, training and management of operations teams
- Management and operation of electricity generation and resale units

### Project description:

The initial project in Cambodia was to build two small gas-fired power plants using rice husk, waste from nearby farms, and wood from sustainable agroforestry, as well as to strengthen associated electricity distribution networks.

IED Group finances and operates the gasification system through its subsidiary in Cambodia, mobilizing equity funds, loans and subsidies (FFEM and UNIDO). IED sells all of its electricity generation to local concession companies at a better rate for their customers and with a better quality supply in order to contribute to rural electrification.

In addition, IED recycles biomass burning waste into locally sold coal briquettes for food-efficient cooking mode by people.

The objective of the programme is to develop a viable and replicable solution for recovery of agricultural and agro-industrial waste, for powers from 200kW to 2MW, with a strong impact on local economies, employment and environment. Through a transfer to West Africa of manufacturing and operating know-how operational since 2018 in Cambodia, replicability of this first Cambodian experience will be established. An important training/action component will enable construction of first units in Benin and Côte d'Ivoire from 2021, gas-generating power plants using agricultural waste from the exploitation of cashew.

The innovation also focuses on legal-institutional settings in a context where, if self-production and independent production are allowed, national regulatory frameworks are calling for incentives more conducive to renewable energy. In addition, funding remains a real challenge for projects with complex and small projects: mobilization of impact funds and guarantee instruments are to emerge on this project.

IED Group has been organising transfer of these technologies to West Africa since 2020 in partnership with Nitidae and CIRAD. From local cashew agro-industrial farms, not using the agricultural

waste produced for the creation of their cashew nuts, we choose to adopt this technology by building gas-generating power plants on their plots, as close as possible to biomass resource. These "turnkey" infrastructures will enable them to be self-sufficient in electricity and optimize their productive activities, while recycling their polluting agricultural waste, previously-unused.

**French partners:**



FONDS FRANÇAIS POUR  
L'ENVIRONNEMENT MONDIAL



**Foreign partners:**



ORGANISATION DES NATIONS UNIES  
POUR LE DÉVELOPPEMENT INDUSTRIEL



CAMBODIA CONSULTING  
DEVELOPMENT ENGINEERING



**Quote:** "CCDE, an IED subsidiary in Cambodia, is reckoned by the Cambodian authorities, in particular because its power plants using agricultural waste from rice farms correspond to the needs of the populations in terms of reasoned use of natural resources, and expectations from institutions for decentralized production of sustainable electricity" - Ky Chanthan, Director IED/CCDE Cambodia

**Post-project results:**

The plants operated in Cambodia at Sraem (800 kW) and Charchuk (210 kW) sites have already demonstrated expected results for this type of project, which is being replicated in Africa:

- Improving supply of green electricity to rural populations
- Cost-effective solutions for recycling untapped agricultural waste and technology transfers
- Creating sustainable local jobs and income-generating activities that require electricity

**Spin-offs for France:**

- Valuing French expertise abroad (Energy / Agronomy / Recycling)
- Definite and sought-after leverage: replication of initial project underway in Afrique, possibilities for use of various biomass resources of agricultural waste (rice, cashew nuts, etc.)
- Sustainable French funding and use of official development assistance for economically, environmentally sustainable and socially responsible projects

**Benefits for Benin, Cambodia, Côte d'Ivoire:**

- Ecological rural electricity and dependence on fossil fuels for electricity generation
- Economic interest of local agricultural enterprises in the exploitation of their waste to promote energy self-sufficiency and diversify their incomes
- Hundreds of sustainable local jobs created, including more than 50 already created in Cambodia
- Promoting income-generating activities by improving electricity distribution in rural areas and marketing biomass combustion waste

**Environmental impact:**

- Reducing CO2 emissions for electricity generation
- Recycling and productive use of agricultural waste polluting soil and untapped
- Creating and operating sustainable agro-forestry to help capture CO2

