

## Research Initiatives on “Universal Access to Energy” Research Agenda

Date 06/02/2019

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*Households in developing countries still lack access to modern energy services that are affordable, clean, reliable, and safe, and pay high prices for poor-quality substitutes. Insufficient infrastructure and production capacity, poor reliability, low access for the poor and rural areas are a few of the issues to be addressed. This situation entrenches poverty, damages health, constrains delivery of local services, increases vulnerability to climate change, limits expansion of opportunities, erodes environmental sustainability at the local, national, and global levels, and creates negative impacts on education and health.*

*The aim of this new research initiative, launched at the end of 2017, is to gather the complementary research expertise of its members to produce a set of rigorous, analytically and quantitatively grounded knowledge which will help designing appropriate policy framework for meeting the energy need of consumers and producers and to sustain the economic development and environmental transition.*

### 1. THREE RESEARCH AXES

#### ➤ Understanding barriers to access

Beyond financial constraints, lack of access to energy at the household and firm level also involves behavioral aspects, and the institutional and policy contexts in which energy is produced and delivered. Researchers that are involve in this axe, seek to qualify and quantify these different barriers to access electricity in the context of developing countries, with a special emphasis on Sub-Sahara Africa.

#### ➤ Understanding the road to impact

Energy can play an important and critical transformative role in the development process: creating more and better jobs, improving health and education, and lead to deep structural transformations in the economies. In this axe we will investigate the conditions for energy access to reach its full potential in terms of economic development, through these different channels. We also incorporate into our analysis pressures that access to energy exert to local natural resources and carbon emissions.

## ➤ Designing the appropriate business model and regulatory framework

Appropriate policies and system of regulation are critical to achieve environmental objectives, and the goal of delivering safe, reliable and affordable energy to end-users. Development of innovative business models requires taking into account the new global landscape and local context. At the global level, the advent of new technologies for the production, the delivery and the payment of energy open new windows of opportunities. At the local level, business models need to be flexible enough to adapt to the differentiated and segmented usage of end-users. Overall, this suggests that no stand-alone solution exists and that currently centralized system should work in combination with and integrate other decentralized solutions. In this axe we will investigate the conditions for successful deployment of these new technologies, and institutional solutions.

## 2. THE TEAM

Given our broad thematic which embraces the issue of energy access from different perspective our research team comprises social scientists (economics and management), from various backgrounds and fields of expertise. They are all currently involved in different dimensions of energy-development nexus. They are all well connected with academia, policy makers and local actors in SSA.

### *Core researchers*

- **Ahmed Tritah:** (Project coordinator, Associate Professor, Le Mans University)  
Fields: Development economics, labor, demography and migration, human capital and health, impact evaluation of public policies
- **Anna Creti** (Professor University Paris Dauphine)  
Fields: Regulation and competition of network industries, Market design, Economics and energy policy, Organization of utilities, Environmental regulation, Carbon markets
- **Jean Pierre Ponsard** (Senior Research Fellow CNRS-Ecole Polytechnique)  
Fields: Economics of environment, industrial organization, game theory, corporate social responsibility, Energy business models
- **Philippe Delacote** (Research Fellow, Inra)  
Fields: Environmental and natural resource economics, Development Economics, Non-profit sector economics

### *Researcher Affiliates*

- **Geoffrey Barrows** (CNRS Research Fellow, CREST, Ecole Polytechnique)  
Fields : Environmental economics, international development, International trade

- **Maria Eugenia Sanin** (Assistant Professor University Evry, on leave, InterAmerican Development Bank)  
Fields: Energy Security, Electricity markets and regulations
- **Nicolas Mottis** (Professor, Ecole polytechnique)  
Fields: Management of innovation, Entrepreneurship, Corporate Responsibility

#### ***Post-doctoral researchers***

- **Akil Amiraly** (CEP, Ecole Polytechnique)  
Fields: Processes of technological diffusions, Local appropriation and translation of new technologies, Urban infrastructure systems

#### ***Doctoral students***

- **Mamadou Barry** (CEC)  
Fields: Energy and development, Payments systems
- **Gwen-Jiro Clochard** (Ecole Polytechnique, CREST)  
Fields: Political economy, Development and infrastructure
- **Maryème Kettani** (University Evry, financed by I-Tésé, CEA)  
Fields: Solar energy in Morocco
- **Nicolas Plain** (Université de Grenoble, CIFRE Schneider Electric)  
Fields : Renewable microgrids for rural electrification, Block chain

### **3. PAST, CURRENT AND EXPECTED ACTIVITIES**

#### **1. Working Papers in Progress**

- "Accessing electricity with PV panels: an experience in Benin." Mamadou Barry Anna Creti.
- "Can CSR initiatives be successfully implemented as business opportunities? The case of BOP. Thomas André, Nicolas Mottis and Jean-Pierre Ponsard
- "Power to empower: the impact of electricity on women and children in Africa", Emile Tenezakis, Ahmed Tritah
- "The Economic Benefits versus Environmental Costs of India's Coal-Fired Power Plants". Geoffrey Barrows, Teevrat Garg, and Akshaya Jha

#### **2. Internships**

- Base of the Pyramid and Corporate Social Responsibility : Why they interact and How. Thomas André, Dec 2015 Ecole Polytechnique, CIFRE Schneider Electric, now at Schneider Electric, Sustainable Development and Global Strategy.
- Access to Energy in Benin, Leonide Sinsin, Dec 2017. Universités Paris Dauphine et Abomey Calavi, Cotonou Bénin, now at Aress, start-up for PV access to electricity
- Morocco as a potential hub for photovoltaic technology adoption and diffusion in Northern Africa Maryème Kettani - under the supervision of María Eugenia Sanin (ongoing).
- Microgrids for electrification of rural Sub-Saharan Africa Nicolas Plain – under the supervision of Benoît Hingray and Sandrine Mathy (University of Grenoble)
- Biomass and Energy in Mali, Niger And Burkina, Capstone Project, Collective Project, Master Students Economics and Engineering, Université Paris Dauphine and AFD, ongoing 2018.
- Cookstoves in sub-Saharan Africa, Capstone Project, Collective Project, Master Students Economics and Engineering, Université Paris Dauphine and Total Awengo, March 2016.
- Solar hydropumping and agricultural productivity in Burkina Faso, Capstone Project, Collective Project, Master Students Economics and Engineering, Université Paris Dauphine and Electriciens Sans Frontières, March 2017.
- Small hydropower in India, I. Brahimia, M. Grappin, V. Liagre, C. de Raouhault, Master Rest, Ecole Polytechnique, March 2016.
- Doing business with renewables at the bottom of the pyramid. The case of solar energy in Africa, N Tommasini, A. Michele, Master Rest, Ecole Polytechnique, March 2016.
- "Reference baseline report: Impact Evaluation of KivuWatt Gas Methane Power Plant", 2016. Datastorm-FMO-Enea, Ahmed Tritah
- Access to Energy and Pay as you Go services, Mamadou Barry (CERDI).
- Energy, human capital and labor supply in Africa, Emile Tenezakis (Ecole Polytechnique).
- Access to energy and blockchain selection (Ecole Polytechnique, internship at Schneider Electric).

#### **3. Events (seminars, workshops, summer schools)**

- Social determinant of energy access in Africa, Paris IUF, December 15th 2016.
- Policy Session on Access to Energy in Developing Countries (WCERE, 2018), jointly organized with AFD, June 2018
- Climate, Energy, Development, International Conference, October 4th 2018 University Paris Dauphine.
- We intend to develop Summer school - training sessions with Wascal research affiliates