



LABEX URBAN FUTURES NETWORK
'CITY AND ENERGY' WORK GROUP

HYBRID ELECTRIC ENERGY SYSTEMS LOW DENSITY URBAN ENVIRONMENTS

In the global North and South, access to electric energy and the trustworthiness of networks are core issues of urban territorial development. In many spaces, a variety of energy systems have coexisted for some time, and continue to do so, leading to complex socio-technical interactions which affect political, economic and legal contexts. What impact will this process have on use aspects? By gathering scholars, energy sector professionals, governmental and non-governmental agency representatives this series of study days will offer complementary perspectives on the co-evolution of cities and energy systems and help better identify structuring issues for scientific research.

Organized by Sylvie Jaglin (University Paris-Est, LATTs research unit), Margot Pellegrino (University Paris-Est, LAB'URBA research unit), Marika Rupeka (research assistant) on behalf of the 'City and Energy' work group, Labex Urban Futures research network.

FRIDAY 6 APRIL 2018

The Role of Mini-Grids in Structuring Territorial Responses to Energy Transition Challenges

How does the diffusion of mini-grids affect territorial development and, inversely, how do local singularities structure energy systems? This inquiry is at the foundation of topics addressed during the City and Energy workgroup's first study day, offering three different perspectives: the local governance of electric energy, the sociotechnical and legal frameworks that serve as interfaces, the new business models and organizational approaches that emerge.

Spoken languages: French and English. All power point presentations will be in English.

Venue : Cité Descartes Campus, 14-20 boulevard Newton, Champs-sur-Marne, 77455 Marne-la-Vallée, France.
'Bienvenue' building, room B017 and room B020.

Registration form: <https://www.inscription-facile.com/form/32VBH2GGnNkOrv8JS5Ny>

PROGRAMME

9:00 *Welcome address*

SYLVY JAGLIN, professor at University Paris-Est, member at LATTS research unit,
MARGOT PELLEGRINO, professor at University Paris-Est, member of Lab'Urba research unit,
on behalf of the 'City and Energy' work group and the Labex Urban Futures research network.

SESSION 1: THE LOCAL GOVERNANCE OF ELECTRIC ENERGY

9:15 *Mini-grids as an Application of Elinor Ostrom's Theses on Polycentric Governance as a Way to Cope with the Tragedy of the Commons*

JEAN-CLAUDE BERTHÉLEMY, professor at Paris 1 Panthéon-Sorbonne University's Economic Studies department, researcher at the Foundation for international development studies (FERDI).

This presentation will focus on the governance issues that need to be addressed in order to make progress towards the goal of sustainable development n° 7 on access to energy. The starting point is an observation that there are major governance problems in the electricity grids of countries lagging behind in access to electricity. These governance problems, which incur high costs for network users, are part of Elinor Ostrom's interpretation of the tragedy of the commons. Minigrid projects, the technical and economic feasibility of which has been strengthened in recent years by advances in renewable sources electricity generation, are a realistic response to these challenges. Polycentric governance, as envisaged by Elinor Ostrom, would resolve the tragedy of the commons. Some lessons learnt from recent rural electrification projects help identify the key factors for the success of such projects.

9:45 *Inverting Electric System Hierarchy. Micro Grids in New York*

FANNY LOPEZ, professor architecture history at Architecture School ENSAVT Marne-la-Vallée, researcher at Laboratory for studies on Infrastructure, Architecture and Territory (LIAT).

The damage caused in New York by the hurricane 'Sandy' in 2012 has changed the way in which players in the field of energy perceive the role of mini-grids and micro-smart grids. This presentation will offer a historiographic analysis of the most iconic decentralized energy infrastructure projects that have been carried out during the past few years, specifically outlines the role that digital interfaces.

10:15 *Lock-in and Lock-out: System Interfaces, Local Networks, and the Politics of Low Carbon Transition*

RONAN BOLTON, professor at the University of Edinburgh, researcher at the Science, Technology and Innovation Studies department.

In this talk I will present work which examines new linkages and couplings between local electricity and heat distribution networks, drawing examples from a number of UK cities and Hamburg in Germany. The main argument I want to make is that the politics of energy transition is not confined to individual energy systems or sectors. The reshaping of interfaces between different local energy networks and other infrastructures is emerging as a key site of technological ambiguity, contestation, and opportunity for radical innovation. Through case study research I illustrate how new processes of lock-in and lock-out are emerging at these interfaces. In the UK context I have observed how municipal authorities who have developed new combined heat and power and district heating projects are being locked-out of the electricity market due to high transaction costs involved in selling into the national wholesale market. As a result, a number of municipal authorities have invested in 'private wire' networks which bypass the existing market and regulatory structures. In the Hamburg case I discuss how the coupling of electricity and heat infrastructure is perpetuating lock-in to coal-based electricity production. In this case ownership and control of the electricity and heating infrastructure is highly contentious and how these systems can be recombined and reconfigured is a key topic in the political debate. The governance and ownership local networked infrastructure and how the interfaces between systems are controlled and managed will be discussed in the wider context of low carbon transitions and their political dynamics.

10:45 *Panel session 1.*

SESSION 2: NETWORK INTERFACES, SOCIO-TECHNICAL AND LEGAL ASPECTS

11:30 *From Legal Transitions to Minigrid Projects in France*

JEAN SONNET, director of decentralized energy generation projects for the French power company Omexom, a branch of the Vinci Energy group.

Omexom provides services to power companies and to operators who ensure energy transformation and its delivery to the consumer. The company's expertise in the field of large-scale electric networks has enabled to anticipate the impact of renewable energy production systems, to develop storage solutions, to make infrastructure smarter, and to respond to changes in consumption patterns. The first part of this presentation will analyse the evolution of legal frameworks: European directives, the 'Energy transition and green growth' law that the French government published in 2015 (LTECV), and other rulings and decrees regarding closed distribution networks and autonomous systems. Secondly, the speaker will present an electric energy mini-grid project in Marmagne – a small town of 2000 inhabitants in central France. The project's aim is to improve the energy performance of the existing building stock, and to provide new services to the local population. By combining legal, technological, social, economic and organizational innovations, this project has become a demonstration of the sustainable city concept.

Lunch break

SESSION 3: BUSINESS MODELS AND MINIGRID MANAGEMENT SYSTEMS

14:00 *Presentation of an ongoing project: 'Social, Sustainable and Rural Energy in Mali'*

MAXENCE BOCQUEL, consultant, Energy and Services division, Yélé Consulting company.

According to the World Bank, the energy access rate in rural Mali is under 12%. The difficulty to get access to energy is one of the main impediments for economic development in these territories. The 'Social, Sustainable and Rural Energy in Mali' project was developed by Yélé Consulting and its Malian subsidiary CIFED in cooperation with the High Council of Local Authorities (HCC) – a public body in charge of coordinating local and regional development policies. The project offers a set of energy services to economic operators and local businesses by using a 100% renewable energy microgrid solution. Beyond providing access to energy, the aim is to help local players pursue economically-viable and socially-valuable activities.

14:30 *New Business Models Transforming the Energy Sector in the Global North and South*

JENS OLIVER WEINMANN, professor and programme director at the European School of Management and Technology, Berlin.

In most countries, the energy transformation encompasses three phases: non-hydro renewable energies in a niche position, as a major player, and as a dominant player. However, start-ups in developing countries may have completely different business models than start-ups in industrialized countries, because the former often use decentralized energy generation to complement the existing grid infrastructure in areas where grid connections are not established, whereas decentralized energy in industrialized countries is a substitute and replacement of already existing supply (and the respective institutional) structures. In addition, each phase of the energy transformation allows for different models to emerge. This session provides a taxonomy of business models along the three phases of the transformation, with examples for each phase and economic context.

15:00 *Panel session 3.*

15:30 *Closing remarks.*