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LATTS LABORATOIRE TECHNIQUES TERRITOIRES ET SOCIÉTÉS

Co-production and hybridization of electricity configurations in Sub-Saharan cities : a socio-technical approach

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Research projet Hybridelec (coord. Verdeil & Jaglin, 2018-2022)

Co-production: a discarded concept (in my research)

- Co-production: not a concept I used in my research on urban services
  Alternative conceptualizations: « shared management » (1995); « composite supply systems » (2010); « delivery configurations » (2012); « delivery configurations in heterogenous urban environment » (2014), « hybrid delivery configurations and the Pragmatic Turn » (2016)

- Co-production : an analytical and normative thinking in service delivery primarily informed by the particular social conditions of cities in the North:
  - Public Choice theory and its critique of bureaucratic government
  - co-production as a means to empower communities against the state (Ostrom 1996) or to institutionalize the role of 'intermediaries'(Bovaird 2007) in long-term arrangements (Verschuere et al. 2012)

- With reference to the South, co-production has been conceived either as an institutionalized partnership supporting more efficient service delivery in weak state environments (Joshi and Moore 2004) or as a means to strengthen community capacities and enhance citizenship (Mitlin 2008; Mitlin and Bartlett 2018).

Electric landscapes and processes of infrastructuring

- Heterogeneous materialities
- Deciphering processes of infrastructuring (Blok *et al*. 2016)
- Infrastructuring work provided:
  - by utilities projects based on the grid
  - and by ordinary citizens, both middle class and poor households, and by commercial businesses, developing decentralized solutions

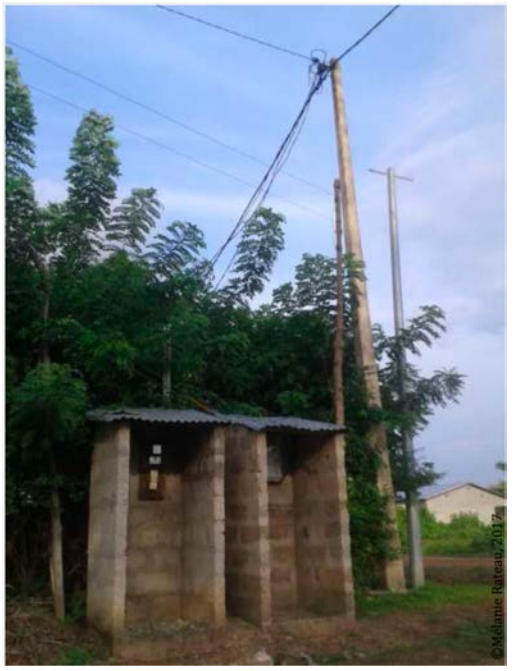

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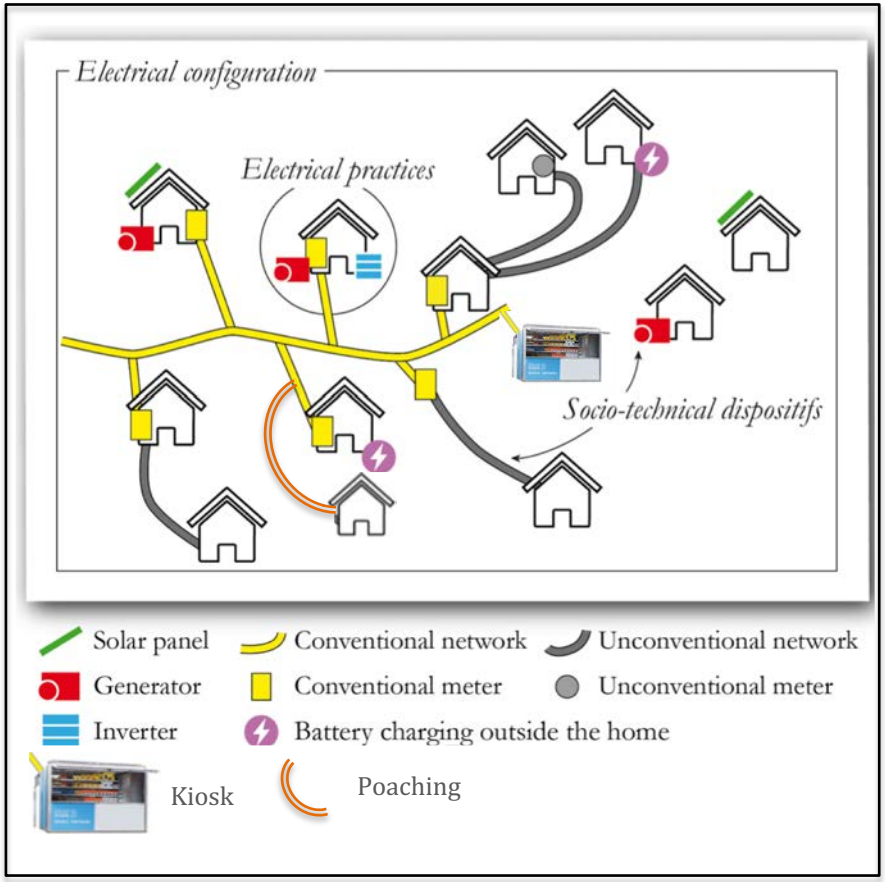
PHOTO 39 : MURS AUX COMPTEURS, DÉPART DES TOILES D'ARAIGNÉE

PHOTO 23 : EXTENSION DU RÉSEAU PAR TOILES D'ARAIGNÉE DANS LE PÉRIURBAIN

PHOTO 62 : GROUPES ÉLECTROGÈNES QUI PARSÈMENT LES ROUTES DU QUARTIER DE HAIE VIVE

Configuration as assemblage of heterogenous socio-technical *dispositifs*

Adapted from Rateau & Jaglin 2019



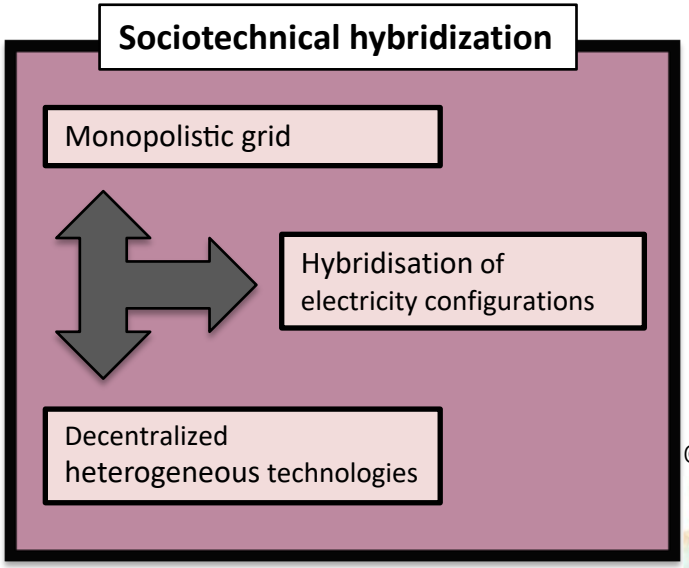
☛ Concept of configuration used in STS (Geels 2002) , socio-anthropology (Olivier de Sardan 2011) and in geography (Baud *et al*. 2014)

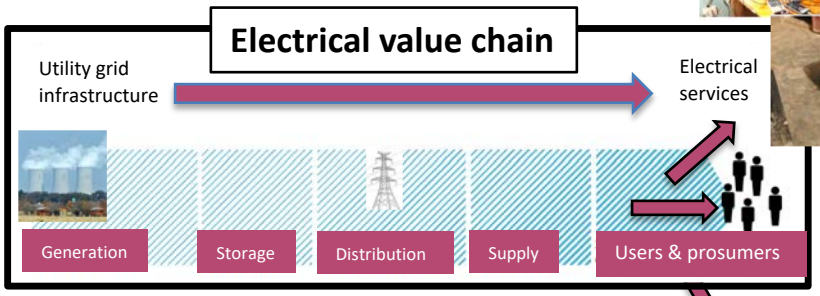
☛ At the household and neighbourhood levels, socio- technical *dispositifs* are selected and combined through practices At city scale, this results in an urban electricity **configuration:**

- thinking about the whole and its parts without reducing the grouping to its heterogeneous components
- emphasizing the idea that a set of heterogeneous elements is itself perpetually remodelled by the interactions of its constituent parts.

☛ Between the stability of a regime and the fluidity of an assemblage, it provides a framework for analyzing the relationships that bring together socio-technical *dispositifs* in dynamic arrangements, while taking into account contextual elements of stability

Electricity configurations in transformation





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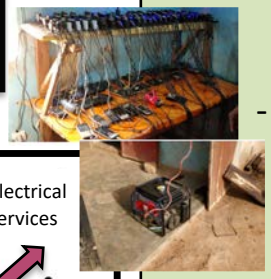

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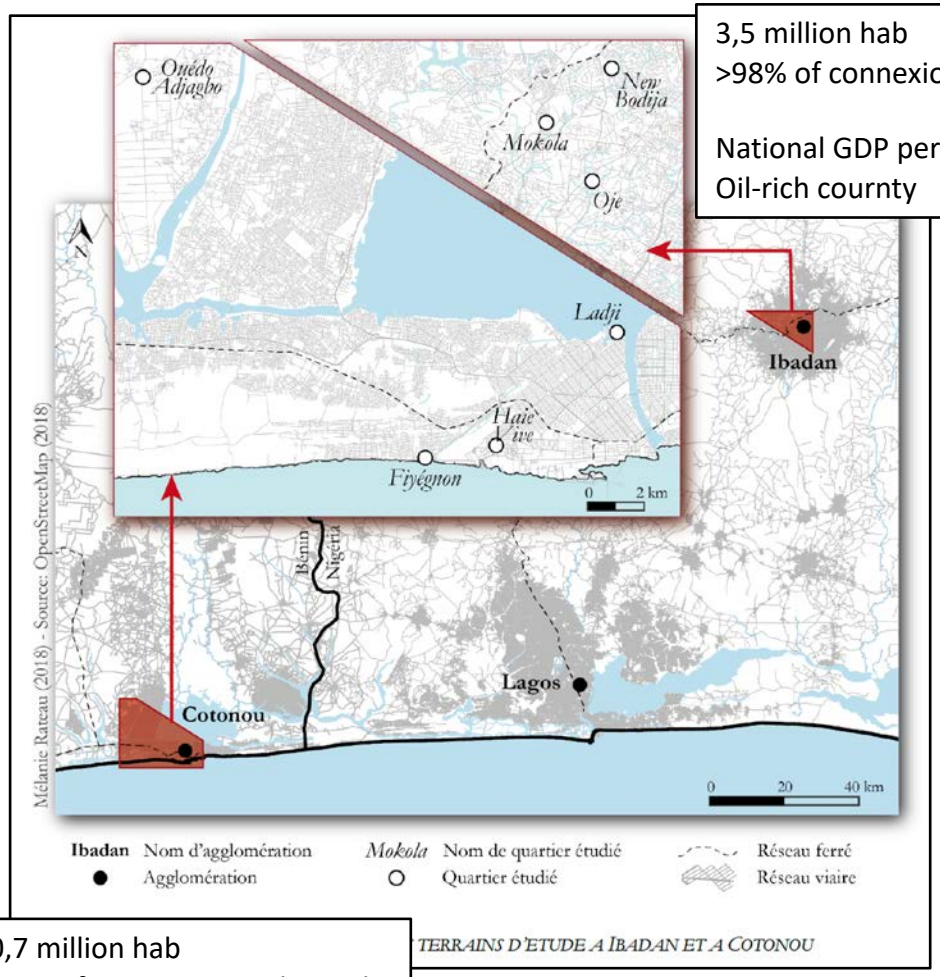
- **Sociotechnical hybridization**: processes of combining heterogeneous technical worlds, namely the monopolistic grid and decentralized various technologies, resulting in new sociotechnical arrangements that borrow from both (Hybridelec project)
- **changes in the electrical value chain** due to 3 factors:
  - market diversification, from the sale of electricity to the sale of electrical services (e.g. security of supply, efficiency, appliances charging, refrigerated storage, etc.)
  - slippage of the economic value further down the chain along with a multiplication of actors and of skills: operators, retailers, installers/repairers of solar equipment, prosumers, etc.
  - blurring of producer-consumer boundaries with the increase in distributed power generation

=> call for a shift in focus, **from the grid infrastructure to electrical services**, and for a more accurate account of the role of human and non-human intermediaries actually matching supply and demand

Cotonou (Benin) and Ibadan (Nigeria): A socio-technical inquiry (Labussière and Nadaï 2018)



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3,5 million hab
>98% of connexion to the grid

National GDP per capita: 1962$
Oil-rich cournty

0,7 million hab
70 % of connexion to the grid

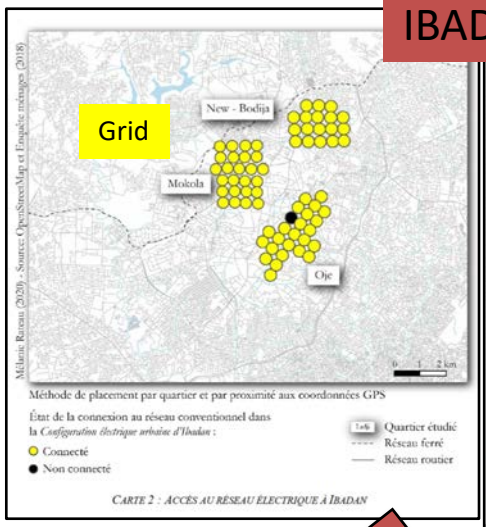
National GDP per capita: 806 $
Energy poor country

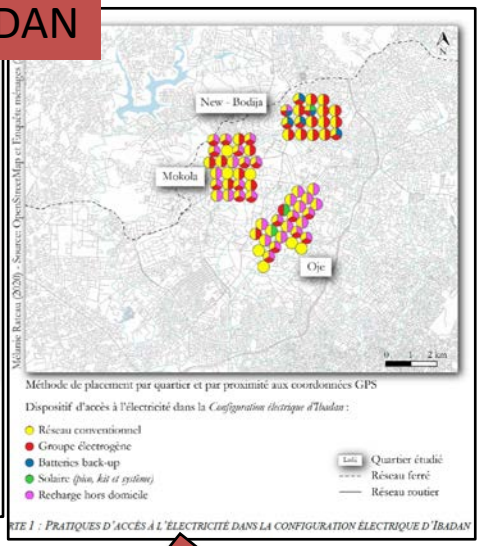
2017-2018:
- interviews with representatives of governance institutions, utilities, business actors, NGOs
- households survey in neighborhoods with varied social and infrastructural characteristics

Research approach:
- empirically analyze the aggregation of socio-technical solutions (for generation, distribution, storage and use), in different neighborhoods and for different social groups;
- confront the concept of co-production in a critical perspective based on these situated experiences and discuss discrepancies related to 'underlying informants' (Watson 2014, p. 62)
- consider what this concept brings and helps to understand.

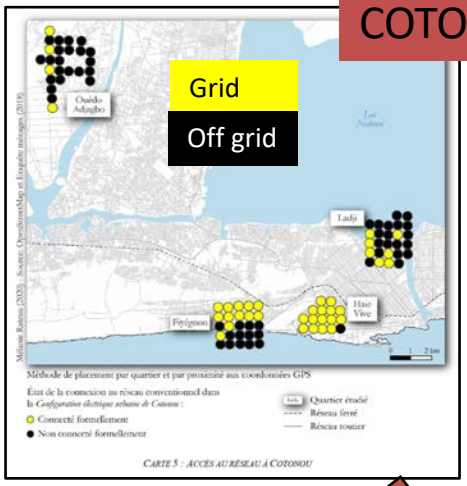
Situated co-production arrangements

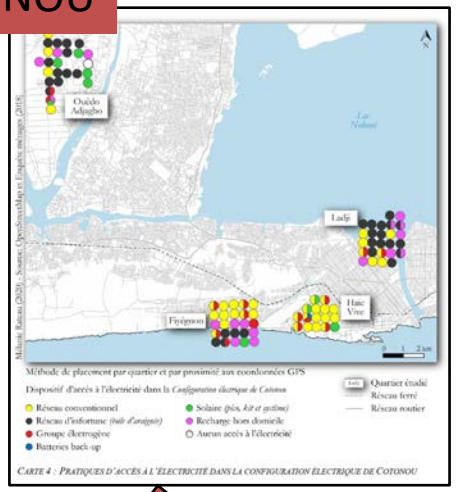
IBADAN

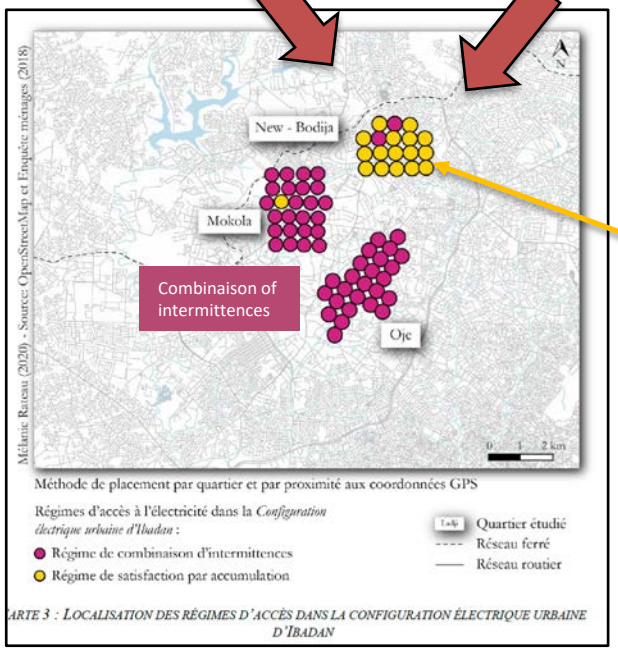




COTONOU

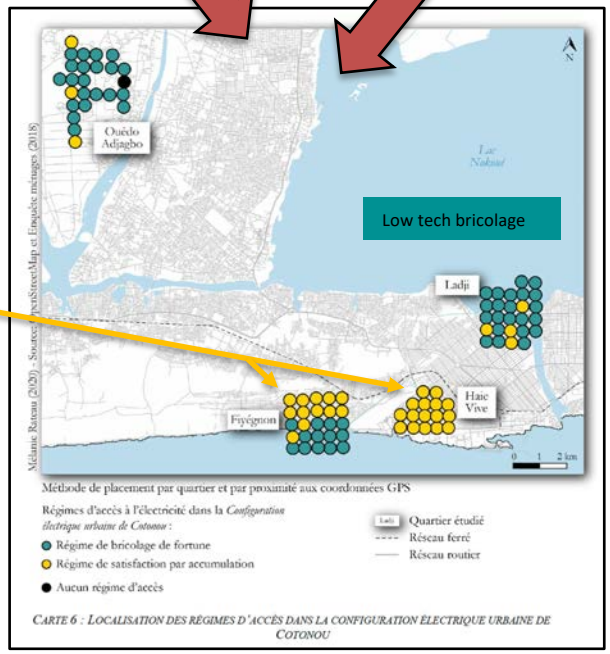






3 regimes of access to electricity

Satisfaction by accumulation



Source : M. Rateau, PhD 2021

Electricity services co-production: deciphering ‘underlying informants’

According to the literature:

1. **Provider and consumer collaborate to deliver the service**
   For electricity, supply and access are mediated by technologies undergoing rapid changes and the notion of co-production should be broadened to include both grid and off-grid electrical services as well as decentralized solutions for self-generation and storage

2. **Co-production involves two types of actors : individuals or groups of citizens and public officials**
   But technologies and skills needed to transform electricity into energy services depend heavily, sometimes exclusively, on market actors and mechanisms. Therefore the notion of co-production should be open to actors from the three spheres: State and utilities; urban society; market

3. **Co-production is based on a regular long-term relationship between state and non-state actors**
   In situations where legal norms of the state are challenged or violated, and where monopoly suppliers are failing, the understanding of co-production processes should take into account informality and institutional bricolage (Cleaver 2002)

4. **Co-production supports more efficient service delivery and/or enhances citizenship**
   In the neighborhoods surveyed, co-production is neither claimed by dwellers nor sought by utilities, it does not appear to be part of a ‘social movement’ seeking ‘to change the way in which institutions govern. Rather, it reflects a default register of action, based on a pragmatic use of local resources

Mélanie Rateau & Sylvy Jaglin (2020): Co-production of access and hybridisation of configurations: a socio-technical approach to urban electricity in Cotonou and Ibadan, *International Journal of Urban Sustainable Development*, DOI: 10.1080/19463138.2020.1780241

Conclusion: Rational for reconceptualising co-production

...from electricity services in Sub-Saharan urban areas

- Arrangements for accessing electricity do not fit the classical interpretation of co-production but it is interesting to consider what this discussion highlights

- First, ordinary mechanisms of service delivery in African cities lead to a dilemma: either one considers co-production processes to be intrinsically context-specific, at the risk of emptying the concept of its substance, or one refrains from analyzing them in terms of co-production

- Then, in Cotonou and Ibadan, grouping the various practices of supply and access under the umbrella of co-production :
  - helps to emphasize the structurally multi-actor and multi-technology dimension of urban electricity configurations
  - helps to conceptualize the role of the state other than in terms of absence or failure
  - has proved fruitful in exploring the interdependencies between neighborhood-level arrangements and urban electricity configurations by showing how, in response to growing and diverse demands, co-production processes support the socio-technical hybridization at the urban scale

- But it must be emphasized that these processes of co-production, if that's what they are called, supply electrical services without providing mechanisms to redress city scale inequalities. Mainly based on individual and market dynamics, they open up space for demand-driven arrangements within electricity configurations that lack proper institutions and tools for their governance and regulation.
  This raises the crucial question of the consequences of these "ordinary" co-production processes on inequality of access to electricity in African cities

THANK YOU

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