



The Next One Billion

Isaac García Moreno – Head of Projects / Member of the Board

November 2018

PUBLIC

Table of Content

- I. Alten Energías Renovables Overview
- II. Alten International Footprint
- III. Main Figures:
 - I. Data.
 - II. Why?
- IV. Models from Investor Point of View
- V. Examples: M-Kopa and Powerhive
- VI. Conclusions

Alten Energías Renovables Overview

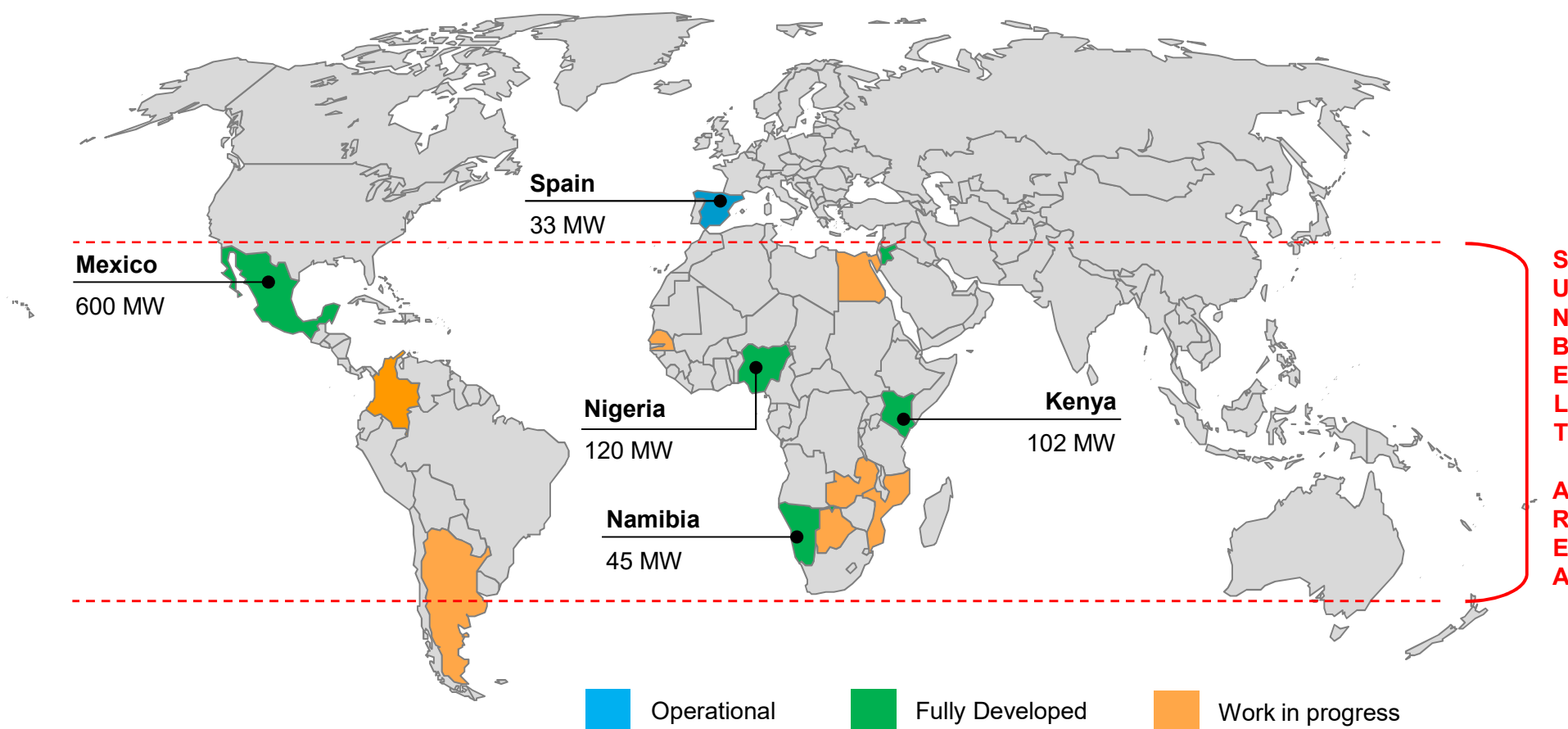
OVERVIEW

- Founded in 2006 by Carlos and Luis Castellanos, Alten Energías Renovables (“Alten”) is a solar PV energy Independent Power Producer (IPP) with a highly experienced and focused management team dedicated to develop, invest and operate high-performance, low risk PV projects
- Alten developed 6 PV plants in Spain with a total investment above US\$330m, being 83% project finance debt and the remaining 17% equity provided by Alten shareholders
- In January 2013, Alten incorporated Mr. Juan Laso as Deputy President and initiated an ambitious international project focused in two geographical areas: America (mainly México) and Sub-Saharan Africa
- PV projects under development exceed 1,000 MW. The business plan contemplates the development of 500 MW in 5 years (Plan 5/500), with a total investment of ~ \$1.1bn
- Alten provides full value chain service: development, construction management, debt financing negotiation, equity financing and operation and management
- Alten also participates in local renewables associations in the countries where is present what provides the Company with strong relationships with public institutions and an excellent positioning in the market
 - In Mexico, Alten is member of CESPEDS⁽¹⁾ (Comisión de Estudios del Sector Privado para el Desarrollo Sustentable) and ASOLMEX (Mexican Association of Photovoltaic Solar Energy)

(1) Sustainable development vehicle of the “Consejo Coordinador Empresarial” (CCE) (www.cce.org.mx/cespedes/)

Alten International footprint

- Alten developed and built solar assets in Spain and fully developed projects with in Mexico, Kenya, Nigeria and Namibia pending financial close
- Alten is expanding its activities in Africa and Latam



Main figures: Data

ELECTRICITY ACCESS

Source: IEA, World Energy Outlook -2018

Electricity Access, Summary by Region

	Rate of access						Population without access (million)
	National				Urban	Rural	
	2000	2005	2010	2017	2017	2017	
WORLD	73%	76%	80%	87%	95%	76%	992
Developing Countries	64%	69%	74%	83%	93%	73%	992
Africa	35%	39%	43%	52%	74%	36%	603
North Africa	90%	96%	99%	100%	100%	99%	<1
Sub-Saharan Africa	23%	28%	32%	43%	67%	28%	602
Developing Asia	67%	74%	79%	91%	98%	85%	351
China	99%	99%	99%	100%	100%	100%	-
India	43%	58%	66%	87%	98%	82%	168
Indonesia	53%	56%	67%	95%	100%	89%	14
Other Southeast Asia	68%	76%	84%	88%	97%	82%	44
Other Developing Asia	38%	45%	58%	76%	88%	68%	125
Central and South America	86%	90%	94%	96%	98%	86%	20
Middle East	91%	80%	91%	92%	98%	78%	18

- From 2000, the electricity access in the world has improved, but still today there is almost 1 billion people living without access to electricity.
- Africa, India and other countries in Asia are those ones with higher levels of no access to electricity.
- Rural communities are the most affected ones and such situation it is no expected to change, at least without new business initiatives.

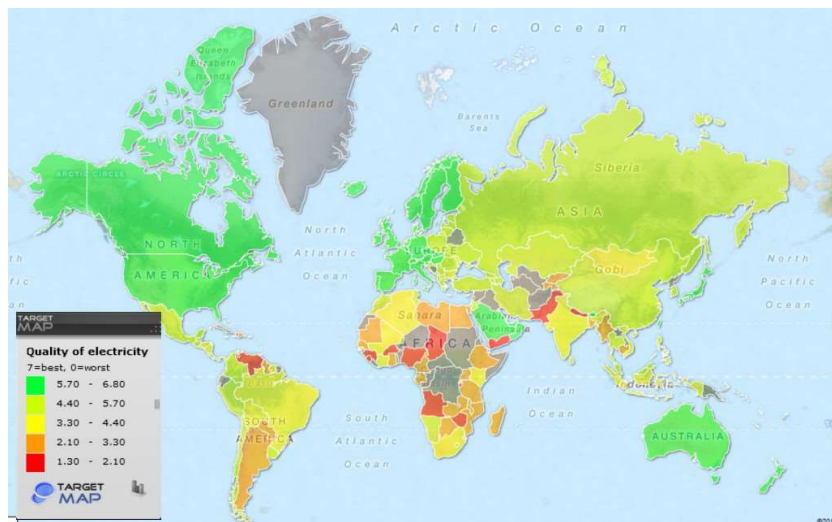
INSTITUTIONS

- Development Finance Corporations have resources to provide grants and financing to electrification programs.
- World Bank leads ESMAP, a global program focused on providing technical assistance and knowledge, with three different activities: energy access, energy efficiency and clean energy.



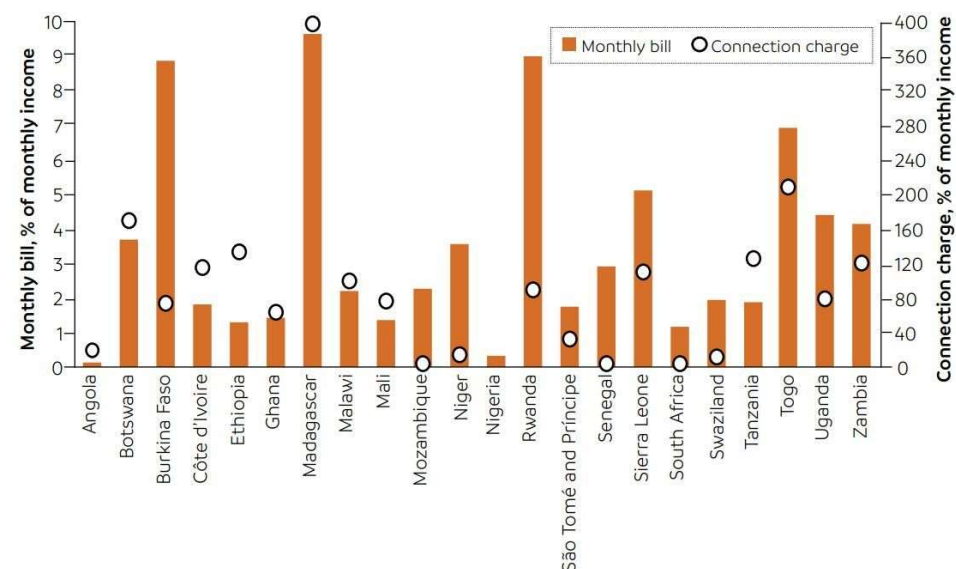
Main figures: Why?

GRID STABILITY



- Electricity quality is related to the strength of the grid and capabilities to manage it.
- Old systems without maintenance.
- Expansion of the grid must be a priority in parallel to deploying micro and minigrid solutions.

CONNECTION CHARGES



- In Africa, one the biggest problems is not only the lack of strong electrical networks, the connection charges and prices of electricity do not allow future consumers to get connected.
- Expensive generation based on oil and gas, and national utilities without cheap financing resources.
- In several countries, the connection charge to the grid is equivalent to 100-200% of the monthly income of a national.

Models from Investor point of view

Microgrid managed on a decentralized basis

- This model is based on a high level of grants and donors available for the project

Disadvantages

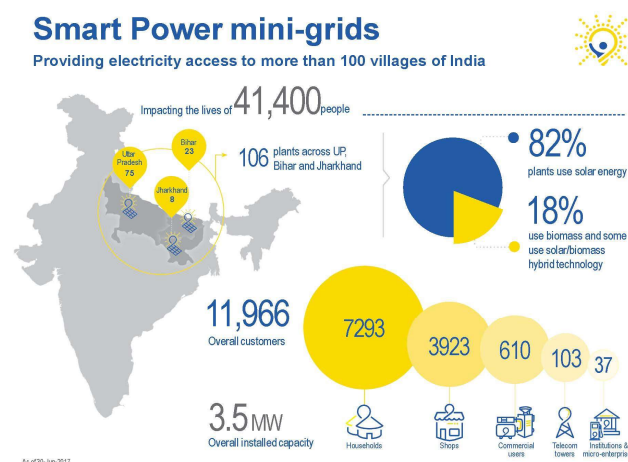
- High financial risk. This risk is placed on a community lack of resources.
- Local disputes and high risk of abandonment.
- Costly assistance for corrective maintenance.
- Mini and microgrids are less efficient than larger grids.

Benefits

- High level of local employment, as the operation of the plants should be lead by locals.
- Flexible tariffs based on the community needs.
- Autonomous management without external control.

Investment on distribution grids

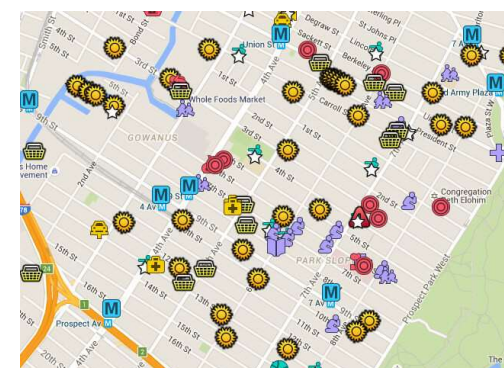
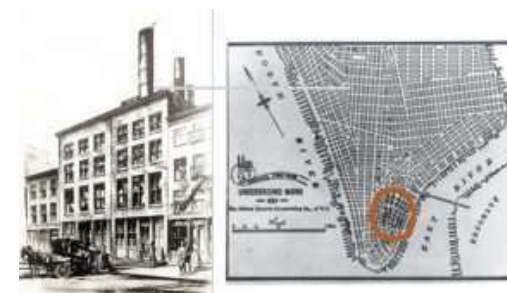
- These Areas are mainly rural and with lack of infrastructure.
- Utilities without enough financial resources. This kind of projects should be promoted on a PPP basis based on a stable political and policy framework.
- Long periods of implementation not only due to financial restrictions. Social and environmental issues.



Models from Investor point of view / 1

Microgrid managed on a centralized basis

- Similar approach to the telecommunications industry.
- Thousands of towers in Europe or USA have been financed under this scheme.
- Developer/IPP looks for a pipeline of locations with lack of electricity access and high connection charges or no available grid.
- PPA Macro signed with regional or national institutions: electricity produced by IPP and billed to Utility. Utility will charge to end consumers.
- Maintenance can be done by IPP or Utility technical team.
- Developer/IPP can not finance on a project finance basis and must look for concessional funding from international development agencies.
- This scheme can be applicable to urban areas...this scheme is **NOT NEW**.



Framework

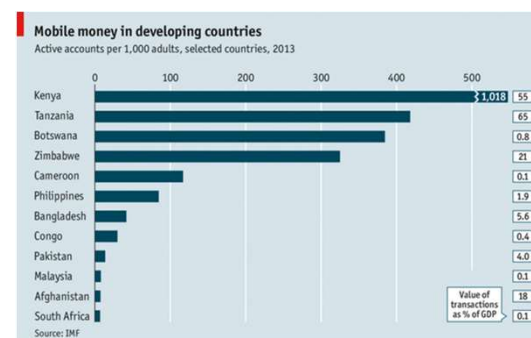
- Regulators should delegate regulatory tasks to other government and non-government entities.
- Regulators should change part of the national scheme to allow small power plants and IPPs to access electricity generator status without the same requirements applicable to bigger installations.
- A regulator for rural electricity access can be a way forward for this market.
- Quality standards of supply must be flexible, as we can not expect this kind of grids to fulfill with the conditions established on national grid codes.

Examples

M-Kopa Solar

Financial services provider for Solar Kits

- M-Kopa Solar allows access to solar power to low income population.
- Based on the mobile money technology developed in East Africa.
- Customer needs to provide details and is connected to Safaricom Grid
- Initial cash deposit by the customer
- Daily payments until the loan is repaid.



Powerhive

Technology provider for IPPs and developers

- US based company, its focused on providing solution for rural areas
- Powerhive provides the infrastructure needed for supplying electricity on mini and microgrids.
- Automate start meters
- Based cloud system to manage the stability of the grid



Conclusions

Key Points

- One of the most important markets for IPPs and Developers for the next ten years.
- International funding available, but financing structures are different to traditional project finance scheme.
- Utilities and regional/local governments are key to deploy these solutions.
- Regulators should be flexible and can play a key role
- Storage systems will accelerate development.
- Mini and microgrid should be deployed in parallel with grid expansion to ensure quality and reliability of the system.
- Africa and Asia will lead the development.



Thanks for your time!

Contact Details:

isaac.garcia@alten-energy.com