Off-grid RET rural electrification in Latin America - Focus on Peru, Bolivia and Colombia

7 October 2013, REN21 Webinar

Marcus Wiemann
Secretary General
Agenda

• Introduction to the Alliance for Rural Electrification

• State and potential of off-grid RETs for rural electrification in Latin Am.
  • Peru
  • Bolivia
  • Colombia

• Stimulating private involvement - Challenges and suggested solutions
Introduction

• International business association promoting off-grid RETs solutions for rural electrification in developing and emerging countries

• Main purpose:
  • Knowledge-sharing platform
  • Enable business development
  • Facilitate public-private dialogue

<table>
<thead>
<tr>
<th>3-year strategy – Annual Action Plans</th>
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<tbody>
<tr>
<td>2013 Africa</td>
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<td>2° Sem.</td>
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<td>Storage</td>
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Source: Fortis Wind
Service lines

Public Affairs support
Awareness creation for nascent rural markets through advocacy, communications & marketing services: campaigns, newsletters, brochures, position papers, tool-kits, market studies.

Business & Intelligence Support
Business creation and development: representation at conferences, organisation of events (e.g. business delegations, workshops, webinars), project management, finance and procurement services.

Administration & Services
First-hand sector information, sharing competencies and best practices, membership management, project and meeting activities, individual requests.
Membership structure

- More than 70 members
- All kinds of actors:
  - Companies
  - Universities
  - NGOs
  - Public entities
- Present on all continents
- Covering all the RET value-chain
Vast network of partners

- International Organisations
- Sector platforms
- Media
- Local beneficiaries
Why the focus on rural electrification?

- **Electricity fundamental** for socio-economic development (IEA, 2011)
  - 1.3 billion people un-electrified, most of them in rural Africa and Asia
  - 1 additional billion is under-electrified

- **Positive 2030 outlook** for off-grid clean rural electrification
  - 60% of new 952 TWh generation capacity to achieve universal access to electricity will be off-grid (UNF, EAPN, 2012)
  - Off-grid RET business models ready to be upscaled and replicated

- **Positive RET financing climate to continue** in developing countries
  - 2012: $112 bn out of $244 bn RET investment took place in the South with a focus on developing countries (sources: UNEP/FS/REN21).

- **Promising political momentum** as shown by post-2015 SDG agenda and numerous country electrification programmes.
Why off-grid RETs?

- **Grid extension** often unfeasible due to:
  - Low demographic density
  - Difficult access

- **Isolated diesel sys** less attractive
  - High costs of transport
  - Fluctuating int. fuel prices

- **Off-grid RETs**: cost-eff., flexible & reliable
  - **Individual systems**:  
    - Isolated households
    - Basic services
  - **Mini-grids**:  
    - Isolated villages
    - Advanced services

Additional capacity to achieve universal access to elec by 2030: 952 TWh

- 42% Mini-réseaux
- 20% Sys. domestiques
- 20% Réseau rural
- 18% Réseau urbain

Source: June 2012, UN Foundation
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**Electrification rates in LAC**

### Indicator

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Figure</th>
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<tbody>
<tr>
<td>Pop. un-electrified in LAC</td>
<td>6% of total pop</td>
</tr>
<tr>
<td>Pop. un-electrified in rural LAC</td>
<td>28% of total rural pop</td>
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**Source:** Global Tracking Framework, 2013

**Country** | **Trends in elec° rates**

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2000</th>
<th>2010</th>
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<tbody>
<tr>
<td>Haiti</td>
<td>31</td>
<td>31</td>
<td>34</td>
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<tr>
<td>Comoros</td>
<td>42</td>
<td>45</td>
<td>48</td>
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<td>St Vt &amp; Gren</td>
<td>67</td>
<td>70</td>
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<td>Nicaragua</td>
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<td>Guyana</td>
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<tr>
<td>Bolivia</td>
<td>74</td>
<td>77</td>
<td>80</td>
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<td>Honduras</td>
<td>75</td>
<td>77</td>
<td>81</td>
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<tr>
<td>Guatemala</td>
<td>76</td>
<td>79</td>
<td>82</td>
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<tr>
<td>Peru</td>
<td>69</td>
<td>72</td>
<td>85</td>
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**Source:** REN21, GSR, 2013

**Source:** Global Tracking Framework, 2013
**Total and Rural electrification rates in 40 LAC countries (2010)**

<table>
<thead>
<tr>
<th>Country</th>
<th>Elec° rates</th>
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<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Rural</td>
</tr>
<tr>
<td>1 Haiti</td>
<td>34</td>
<td>12</td>
</tr>
<tr>
<td>2 Comoros</td>
<td>48</td>
<td>37</td>
</tr>
<tr>
<td>3 St Vt &amp; Gren</td>
<td>73</td>
<td>29</td>
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<tr>
<td>4 Nicaragua</td>
<td>74</td>
<td>43</td>
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<td>5 Guyana</td>
<td>78</td>
<td>72</td>
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<tr>
<td>6 Bolivia</td>
<td>80</td>
<td>55</td>
</tr>
<tr>
<td>7 Honduras</td>
<td>81</td>
<td>64</td>
</tr>
<tr>
<td>8 Guatemala</td>
<td>82</td>
<td>68</td>
</tr>
<tr>
<td>9 Peru</td>
<td>85</td>
<td>60</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>85</strong></td>
<td><strong>74</strong></td>
</tr>
<tr>
<td>27 Colombia</td>
<td>97</td>
<td>91</td>
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Data extracted from 2013 Global Tracking Framework
Peru

• **State of rural electrification**
  • Rural electrification rate ~60% (9th lowest rate in LAC)
  • About 1,462,783 un-electrified households
  • 13,345 of off-grid and 3,373 on-grid SHS (Case study of AMP)
  • High wind potential in mountains and coast.
  • There is also hydro and biomass potential

• **Policy Framework**
  • Target 96% by 2020
  • National Rural Electrification plan 2011-2020
  • Two funds: FOSE - cross-subsidy & FONCODES - rural dev. inc. RETs
  • Main executive body: National Rural Electrification Office (DGER)
  • *Also specific legislation incentivising RETs development*
Bolivia

- **State of rural electrification**
  - Rural electrification rate ~55% (6th lowest rate in LAC)
  - About 515,815 un-electrified rural households
  - PV and hydro potential

- **Policy Framework**
  - Target: 70% by 2015 – 87% by 2020 – 100% by 2025
  - Law for Universal Access to Electricity 2006
  - Rural electrification Decree 2005
  - Fund: FOCO – linked to the law on universal access to elec.
  - Main body: Vicemistry of Electricity and Alternative Energy
Colombia

• **State of rural electrification**
  - Rural electrification rate 91% (27th lowest rate in LAC)
  - About 127,343 un-electrified rural households
  - Non-Interconnected Zones: 23% of total territory - 2.3 m. people
  - Installed Small hydro: 519 MW
  - Installed SHS : 78,000 SHS
  - High wind potential

• **Policy Framework**
  - Target: 20% by 2015 & 30% by 2020 of off-grid elec. gen° from RETs
  - Main body: Institute for the Investigation and Application of Energy Solutions (IPSE)
  - Funds: FANZI – off-grid zones and FAER – rural areas
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• Stimulating private involvement - challenges and suggested solutions
### Barriers and suggested solutions

<table>
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<tr>
<th>Challenges</th>
<th>Solutions</th>
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<tbody>
<tr>
<td>Lack of institutional and political will</td>
<td>Stability, long-term master plan and commitment towards RE and access to energy</td>
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<td>Inadequate legal and regulatory framework</td>
<td>Simplification, standardisation (licensing, PPAs, authorisation, access to market etc.)</td>
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<tr>
<td>Public support schemes</td>
<td>One-off for capital investment and/or on-going. Cross-subsidy/ REFiTs / Phase out fuel subsidies.</td>
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<tr>
<td>Access to finance</td>
<td>Credit schemes, guarantees for the banking sectors</td>
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<tr>
<td>Lack of information and need for capacity-building on technical, business, financing.</td>
<td>From simple end-user education to building entrepreneurial skills and technical trainings.</td>
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<td>Need for an integrated approach</td>
<td>Creation of synergies water, food, telecom sectors</td>
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ARE LAC business-oriented activities

- 1st semester 2014: Campaign on Small Hydro (with a focus on LAC)
  - Established an internal Taskforce
  - Creation of a technology position paper
  - Attendance of a UNIDO SHP workshop in Brasil (pre-warming)

- Market briefs for several countries (Peru, Bolivia, Colombia)
  - Established a partnership with Berkeley Rural Energy Group
  - First drafts have already been prepared

- Event organisation
  - Exploring possible target countries for business delegations
  - Evaluating the organisation of a large scale event

- Local actors:
  - Establishing an MoU with Plataforma Latinoamericana de Energia Sostenible y Equidad - PLESE
  - Supporting the Mancomunidad Trinacional Fronteriza Río Lempa in its intervention on rural electrification.
Thanks you very much for your attention

 Interested in receiving our Newsletter?
 Send us an e-mail:
 are@ruralelec.org

 ALLIANCE FOR RURAL ELECTRIFICATION (Brussels)
 0032 2 400 10 53 - are@ruralelec.org - www.ruralelec.org

Source: Phaesun