

# PV Off-Grid Market Trends and Business Opportunities in Latin America

Henrik Uehlecke

„renewables – Made in Germany“ initiative of the Federal Ministry for Economic Affairs and Energy

Munich, June 7 2014

[www.renewables-made-in-germany.com](http://www.renewables-made-in-germany.com)

**I. The „renewables – Made in Germany“ initiative**

**II. Off-Grid Market Trends in Latin America**

**III. Measures of the initiative for Latin America**



# I. The „renewables – Made in Germany“ initiative

---

## The “renewables – Made in Germany” initiative

Launched by the German Parliament in 2002 and operated by the Federal Ministry for Economic Affairs and Energy

### Main objectives:

- to contribute to climate protection
- to stimulate the acceptance of renewable energy in other countries
- to provide comprehensive support to SMEs as they tap foreign markets





Federal Ministry  
for Economic Affairs  
and Energy



<b>Networking &amp; business opportunities in your country</b>	<b>Networking &amp; business opportunities in Germany</b>	<b>Information material &amp; business opportunities online</b>
<ul style="list-style-type: none"><li>• Business information &amp; contact events</li><li>• Trade fair participations</li><li>• dena-Renewable-Energy-Solutions-Programme</li></ul>	<ul style="list-style-type: none"><li>• Fact-finding missions to Germany</li></ul>	<ul style="list-style-type: none"><li>• Brochures &amp; Information material</li><li>• Technology exhibition</li><li>• Catalogue &amp; CD-ROM</li><li>• Internet portal</li><li>• Newsletter</li><li>• Virtual market place: <a href="http://www.renewablesb2b.com">www.renewablesb2b.com</a></li></ul>

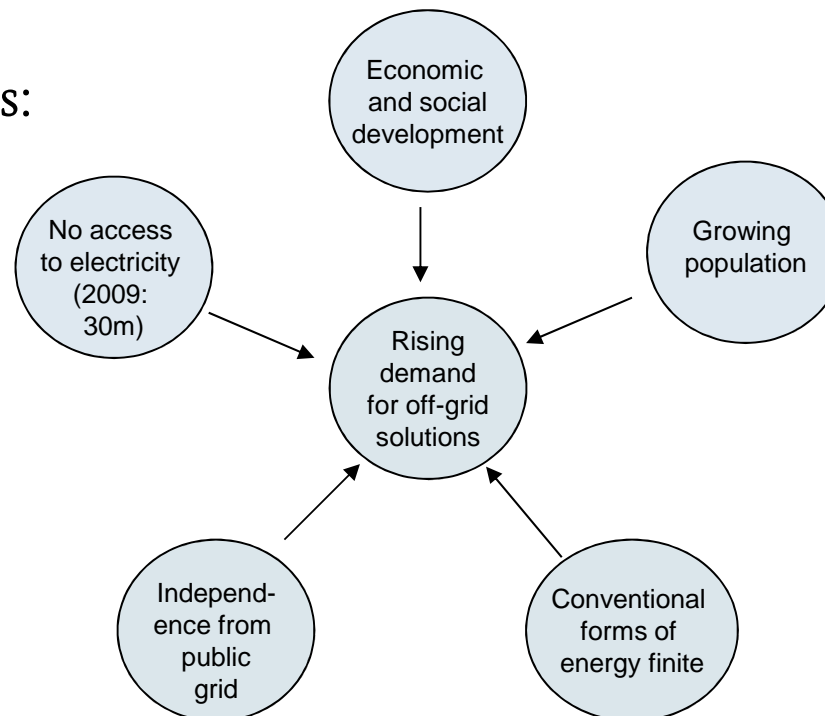
[www.renewables-made-in-germany.com](http://www.renewables-made-in-germany.com)



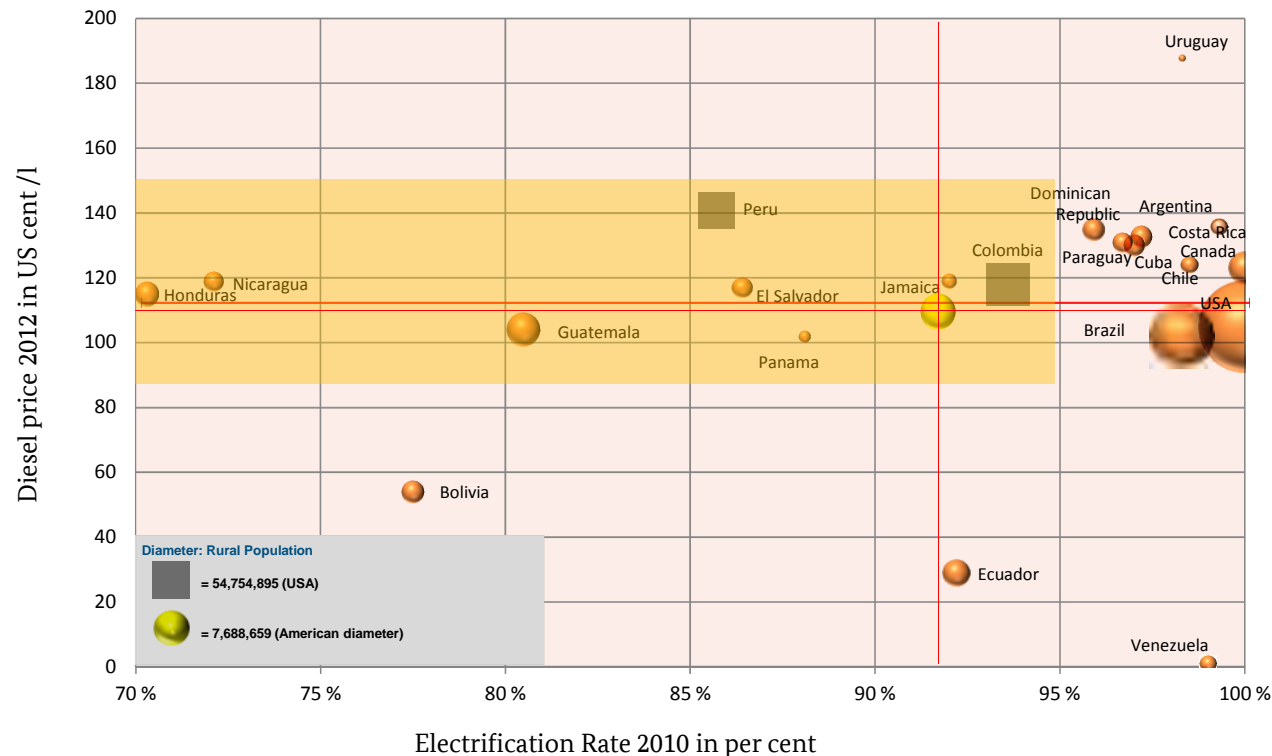
## II. Off-Grid Market Trends in Latin America

## Why off-grid solutions in Latin America?

Main causes:



## Off-grid markets of Latin America in terms of diesel price, electrification rate, primary energy consumption



- In total, eight countries offer a particularly high potential for off-grid: El Salvador, Guatemala, Honduras, Jamaica, Colombia, Nicaragua, Panama & Peru.
- The diesel price in Peru is the second highest in the region, at 141 US cents a litre. At the same time, the electrification rate is 85.7%.
- Uruguay has an electrification rate of over 98%. However, the country has the region's highest diesel price and might be an interesting off-grid market for niche applications.



### Mexico

Electrification coverage in Mexico currently at 97 percent. Energy reform in December 2013 (Estrategia Nacional de Energía 2010-2024 (ENE)). Goal: by 2024 35% of electricity from non-fossil sources.

### Bolivia

By 2025, all Bolivian households are to have access to electricity (Programa Electricidad para Vivir con Dignidad and Programa de Electrificación Rural).

### Colombia

IPSE (Instituto de Planificación y Promoción de Soluciones Energeticas para las Zonas No Interconectadas) is running pilot projects to electrify village schools via PV. 52% ZNI regions. Cover most of electricity supply via PV and small-scale hydro.

### Argentina

Programmes like PERMER (Proyecto de energías renovables en mercados rurales) promote the development of PV in rural areas. Further funding at provincial level includes subsidies and tax breaks.





Federal Ministry  
for Economic Affairs  
and Energy



### Guatemala

“Iluminación Domiciliar” projects in several regions in the country. Electrification rate below 40% in the north.

### Ecuador

95% of Ecuador’s population has access to electricity, but less than 50% of inhabitants of Amazonas region.

### Peru

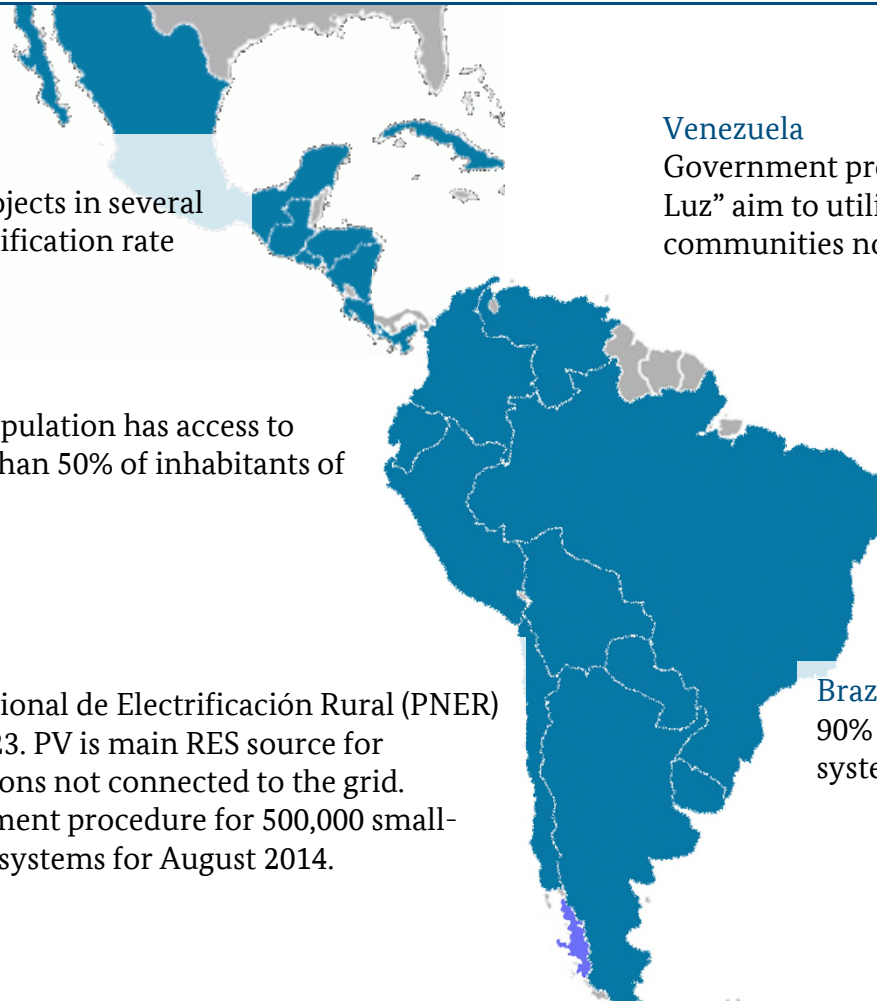
Plan Nacional de Electrificación Rural (PNER) 2014-2023. PV is main RES source for installations not connected to the grid. Procurement procedure for 500,000 small-scale PV systems for August 2014.

### Venezuela

Government programmes like “Sembrando Luz” aim to utilise renewable energy for communities not connected to the grid.

### Brazil

90% of installed PV capacity is isolated systems.



---

## Technologies and applications for off-grid solutions in Latin America

### Technologies:

- Photovoltaics, e.g. solar home systems, PicoPV systems
- Solar thermal systems
- Small-scale wind
- Small-scale hydro
- Biogas

### Applications:

- Private households (e.g. computers, washing machines, hot water, cooking)
  - Agriculture (e.g. water pumps, drying produce)
  - Trade and services (e.g. machinery, process heat)
  - Public institutions (e.g. lighting, medical equipment)
  - Infrastructure (e.g. street lighting, telephone networks)
-

---

## German companies offer:

- a broad variety of excellent services and products
  - long lasting durability, especially in the field of rural electrification.
  - Innovative and reliable German engineering
  - great experience in the development, production and implementation of all kinds of off-grid applications.
-



### III. Measures of the initiative for Latin America



### Mexico

IE & BM "Photovoltaics"  
TF "The Green Expo"  
RES "Hybrid PV-small-scale wind"

Guatemala / Central America  
BM "Distributed energy supply –  
bioenergy, PV and wind"

Bolivia  
FM "PV"

### Peru

IE & BM "Bio-, solar and wind energy,  
small and mid-sized facilities and  
hybrid facilities for island networks or  
meeting corporate in-house needs"

### Chile

IE & BM "Distributed electricity and heat supply,  
small-scale facilities for in-house supply"

## Activities in the field of off-grid solar energy in Latin America in 2014

### Cuba

BM "Energy efficiency and renewable energies  
in the food-processing industry"

### Colombia

IE & BM "Off-grid"

### Brazil

IE & BM "PV with focus on inverters and  
meter technology, advice, capacity  
development for project management,  
installation und QM"

TF "Intersolar South America"

---

## Networking & business opportunities in your country

- **Cuba:** Energy efficiency and renewable energies in the food-processing industry, 9-13.06.2014
  - **Brazil:** PV with focus on inverters and meter technology, advice, capacity development for project management, installation und QM”, 8.-12.9.2014
  - **Mexico:** Renewable energy in buildings, 29.9.-3.10.2014
  - **Colombia:** Off-grid: energy supply in remote regions of Colombia, 6-9.10.2014
  - **Peru:** Bio-, solar and wind energy, small and mid-sized facilities and hybrid facilities for island networks or meeting corporate in-house needs, 27-31.10.2014
  - **Chile:** Distributed electricity and heat supply, small-scale facilities for in-house supply, 17-21.11.2014
-

---

## Fact-finding missions to Germany

- **Colombia:** Power generation from RES, 1-4.7.2014

## Trade fair participations

- **Brazil:** Intersolar South America, 26.-28.8.2014
  - **Mexico:** The Green Expo, 24.-26.9.2014
-



---

To find out more about „renewables - Made in Germany“,  
please visit our website:

[www.renewables-made-in-germany.com](http://www.renewables-made-in-germany.com)

