



Organización Latinoamericana de Energía
Latin American Energy Organization
Organisation Latino-américaine d'Énergie
Organização Latino-Americana de Energia

GEOHERMAL ENERGY IN ANDEAN COUNTRIES

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NOVEMBER 2013



OLADE se crea el 2 de noviembre de 1973 con la suscripción del Convenio de Lima, instrumento constitutivo de la Organización, ratificado por 27 países de América Latina y el Caribe y un País Participante, Argelia.



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MISIÓN: Contribuir a la integración, al desarrollo sostenible y la seguridad energética de la región, asesorando e impulsando la cooperación y la coordinación entre sus Países Miembros.

VISIÓN: OLADE es la Organización política y de apoyo técnico, mediante la cual sus Estados Miembros realizan esfuerzos comunes, para la integración energética regional y subregional.



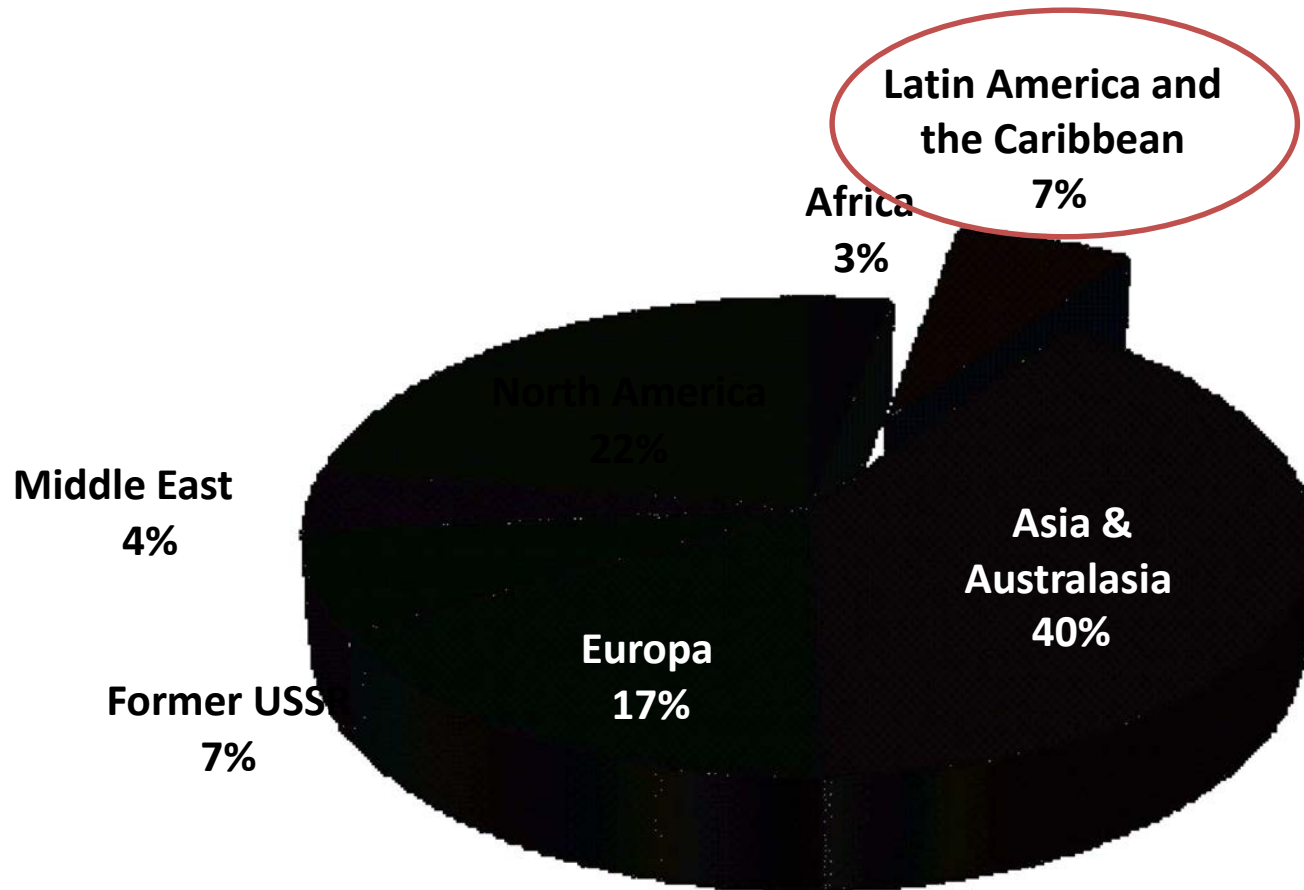
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1. General Panorama of the Energy Sector in LA&C

Distribution of World Electricity Production

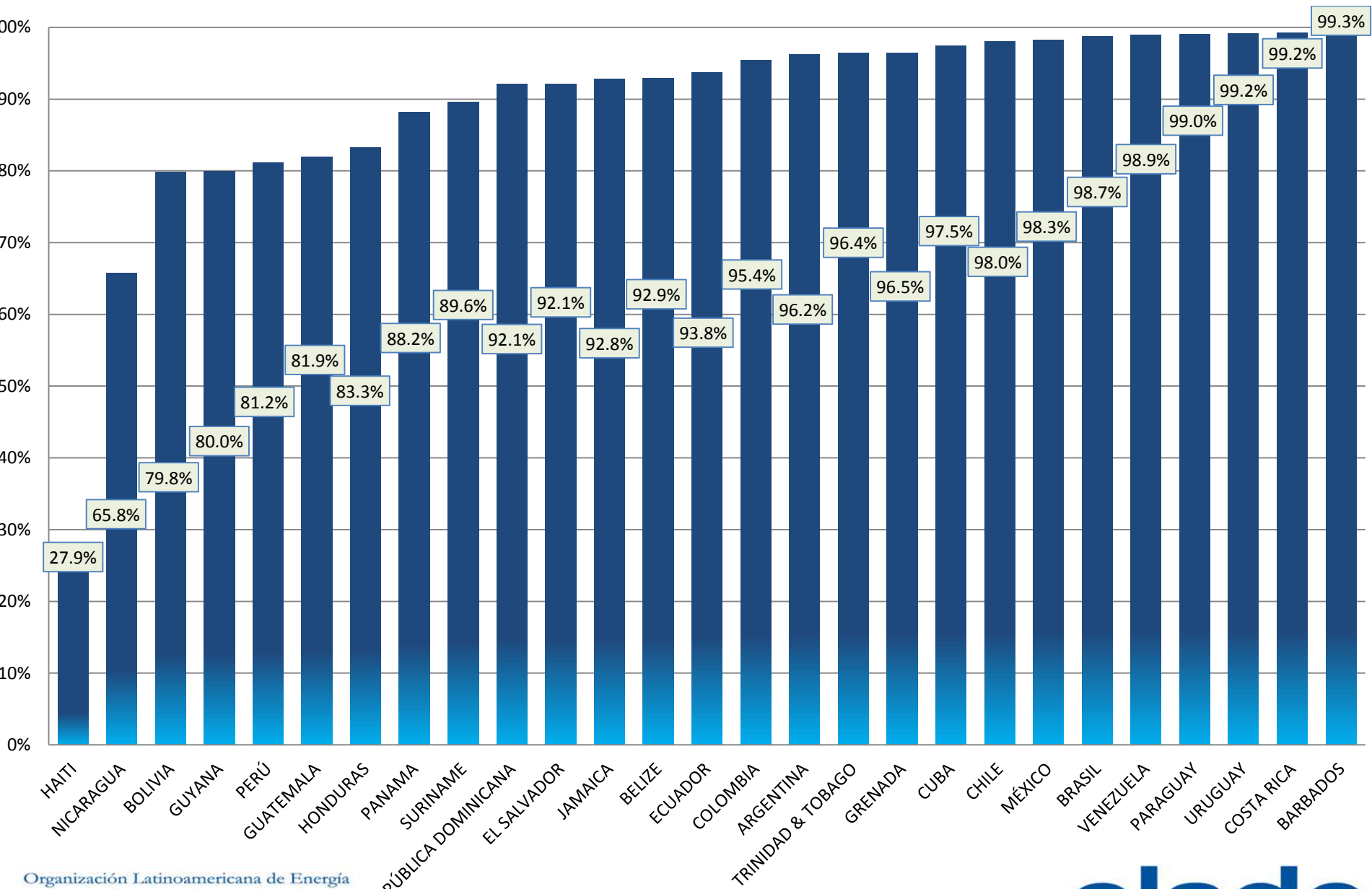
World total: 22.040 TWh



Source: SIEE-OLADE, 2013, data from 2011

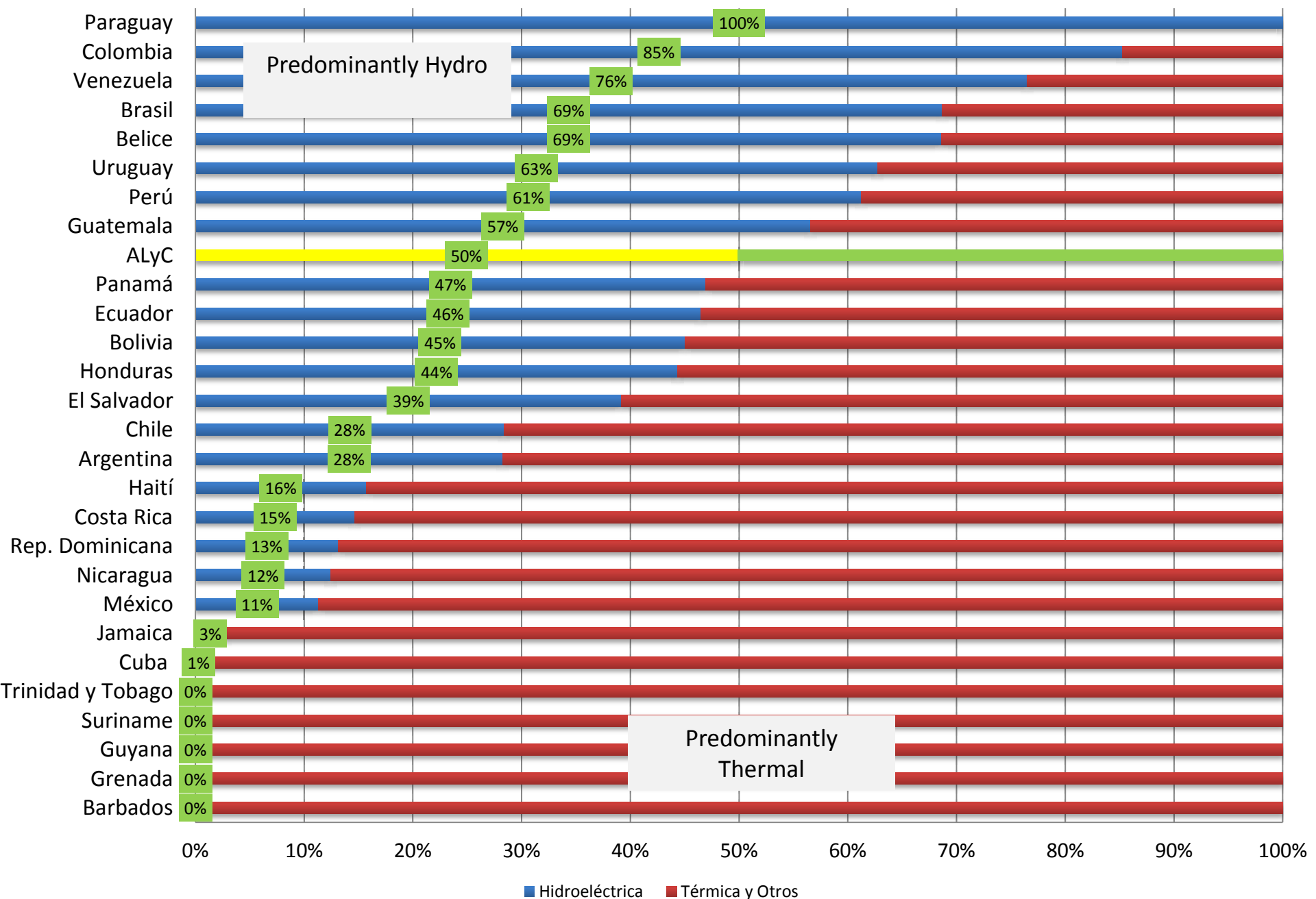
Percentage of Electrical Coverage in LA&C

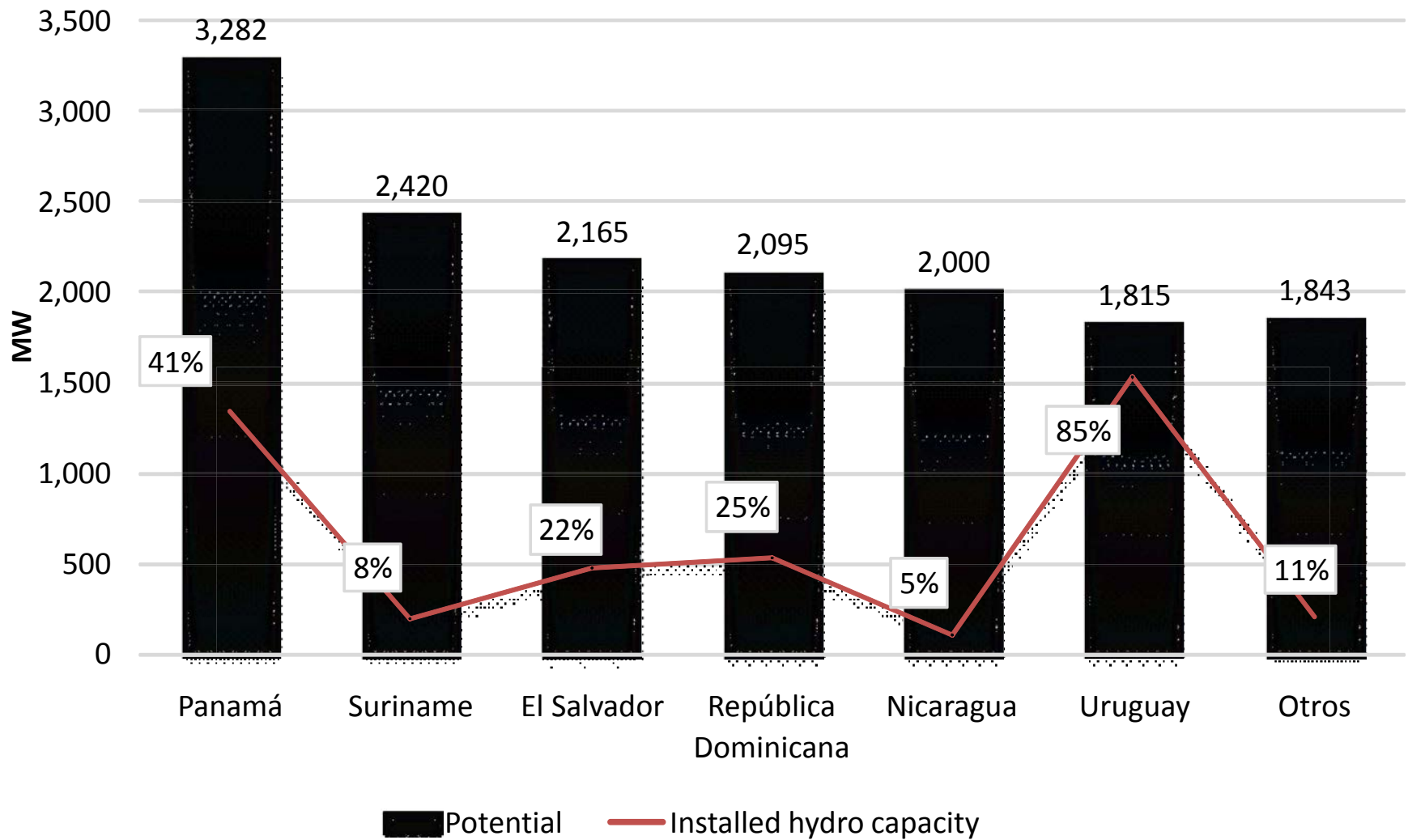
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Structure of Electrical Generation in LA&C

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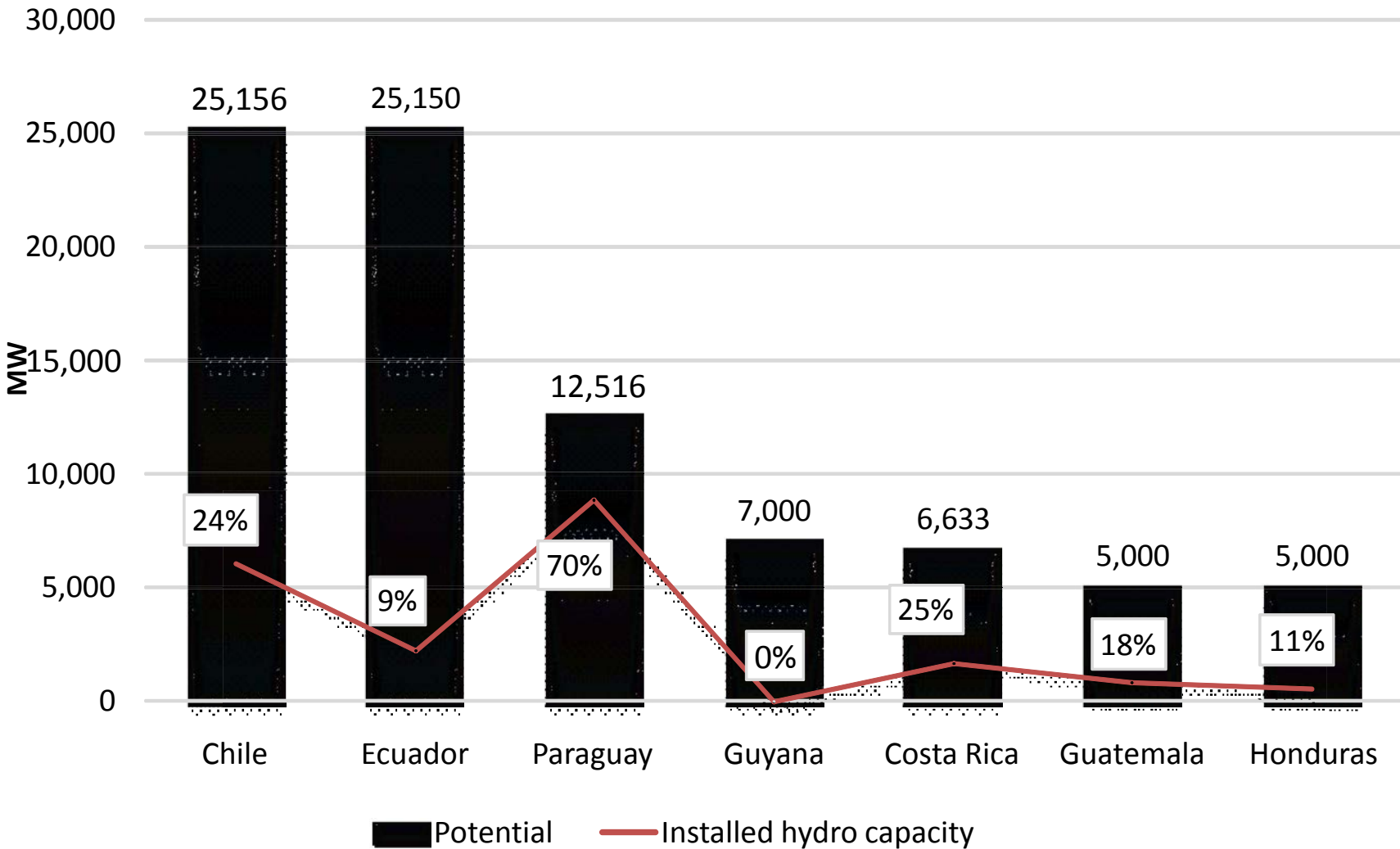




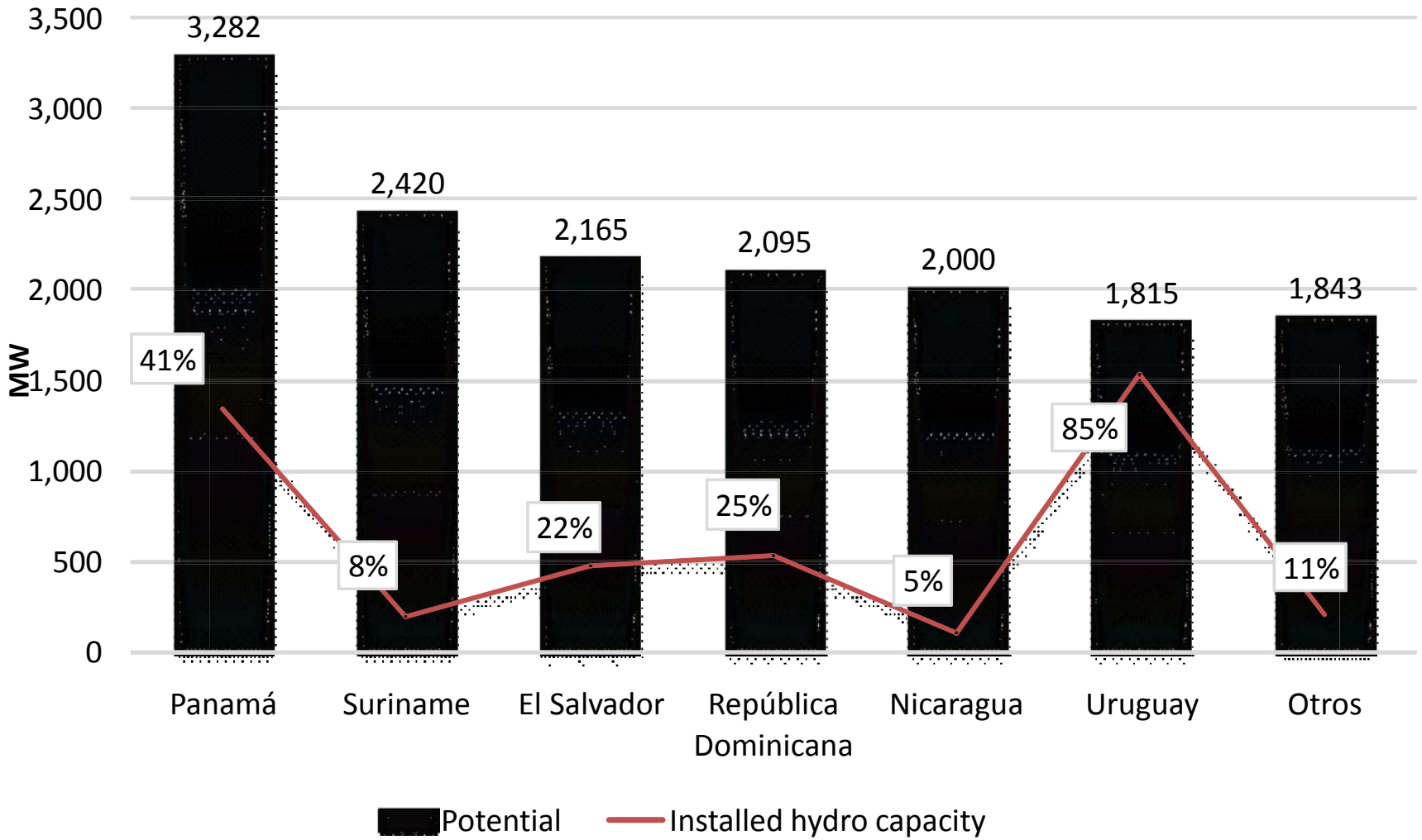
Source: SIEE-OLADE, 2013, data from 2011

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Source: SIEE-OLADE, 2013, data from 2011



Source: SIEE-OLADE, 2013, data from 2011

Renewables in LA&C

Wind Generation

Country	Potential (MW)	Installed capacity (MW)	% used
Argentina	2,000,000	130	0.01%
Brasil	142,000	1,509	1.1%
Chile	40,000	205	0.5%
Colombia	18,000	20	0.1%
Costa Rica	800	129	16.1%
Cuba	N.D.	11	
Ecuador	884	20*	2.3%
Honduras	1,200	102	8.5%
México	71,000	873	1.2%
Perú	22,000	142	0.6%
Rep. Dominicana	N.D.	33	
Uruguay	3,000	52	1.7%
Venezuela	45,000	30	0.07%
Total LA&C	2,343,884	3,256	0.14%

* Data accurate to 2012

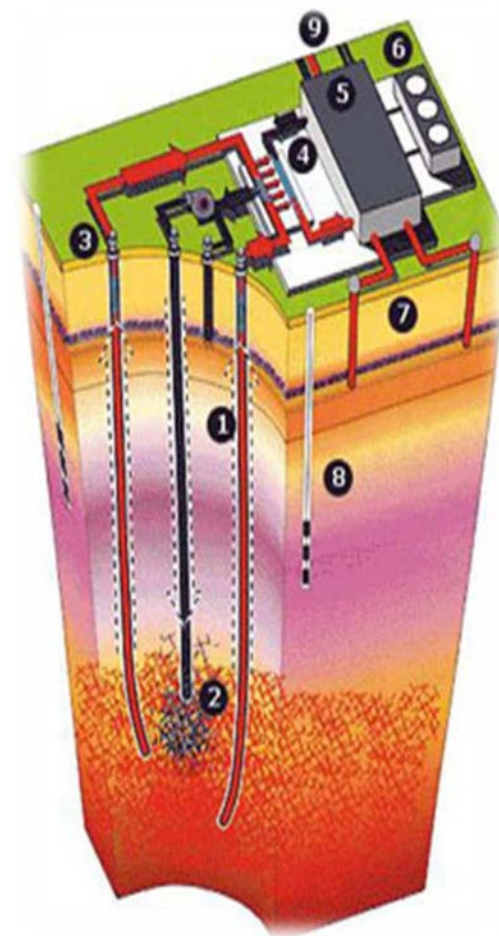


2. Geothermal Development Potential in Countries in the Region

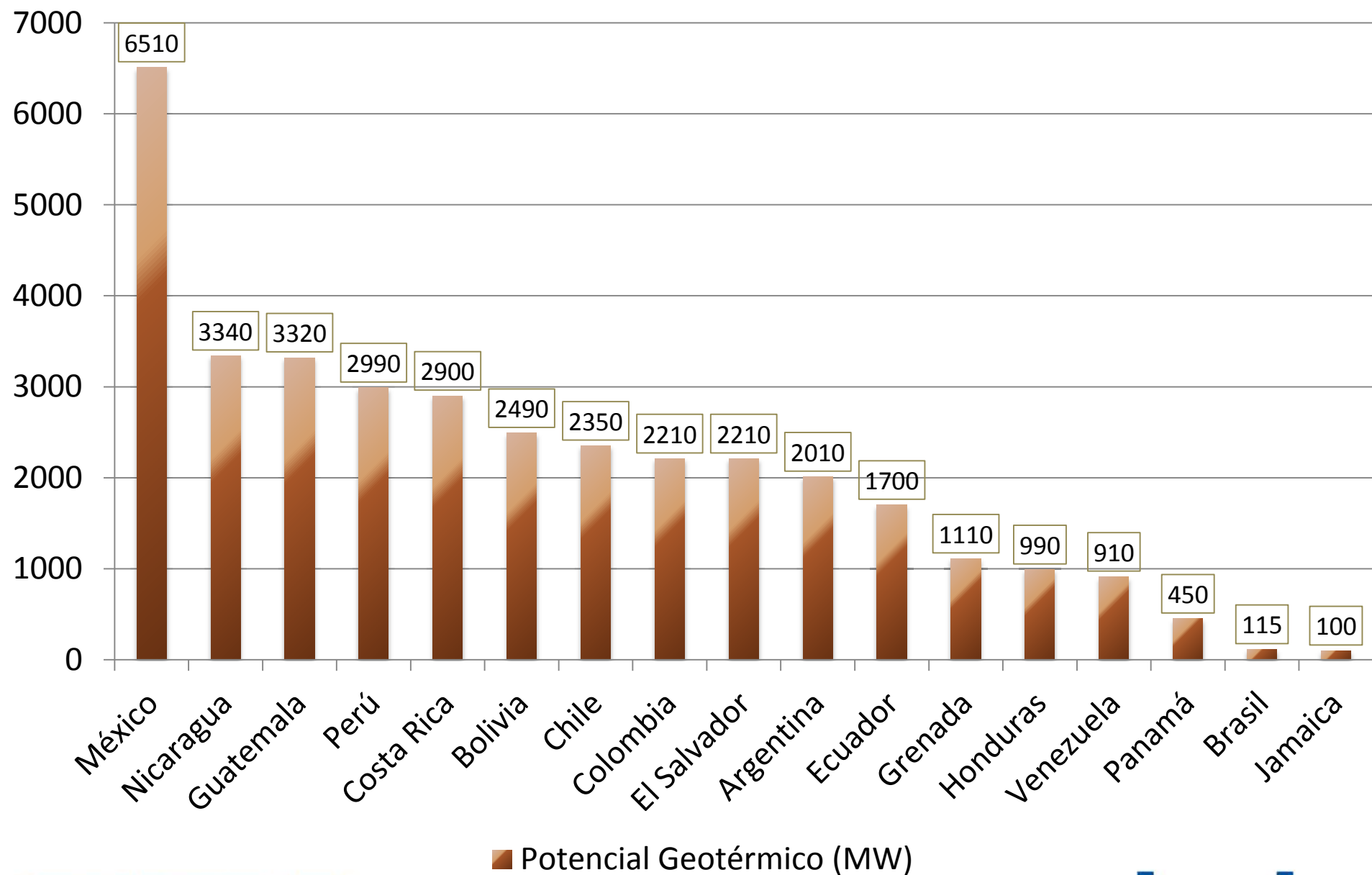
Renewables in LA&C

Geothermal Generation

	Potential (MW)	Installed capacity (MW)	% used
Argentina	2,010	0	0%
Bolivia	2,490	0	0%
Brasil	115	0	0%
Chile	2,350	0	0%
Colombia	2,210	0	0%
Costa Rica	2,900	166	5.7%
Ecuador	1,700	0	0%
El Salvador	2,210	204	9.2%
Grenada	1,110		0%
Guatemala	3,320	49	1.5%
Honduras	990		0%
Jamaica	100		0%
México	6,510	965	14.8%
Nicaragua	3,340	88	2.6%
Panamá	450	0	0%
Perú	2,990	0	0%
Venezuela	910	0	0%
Total LA&C	35,705	1,472	4.1%

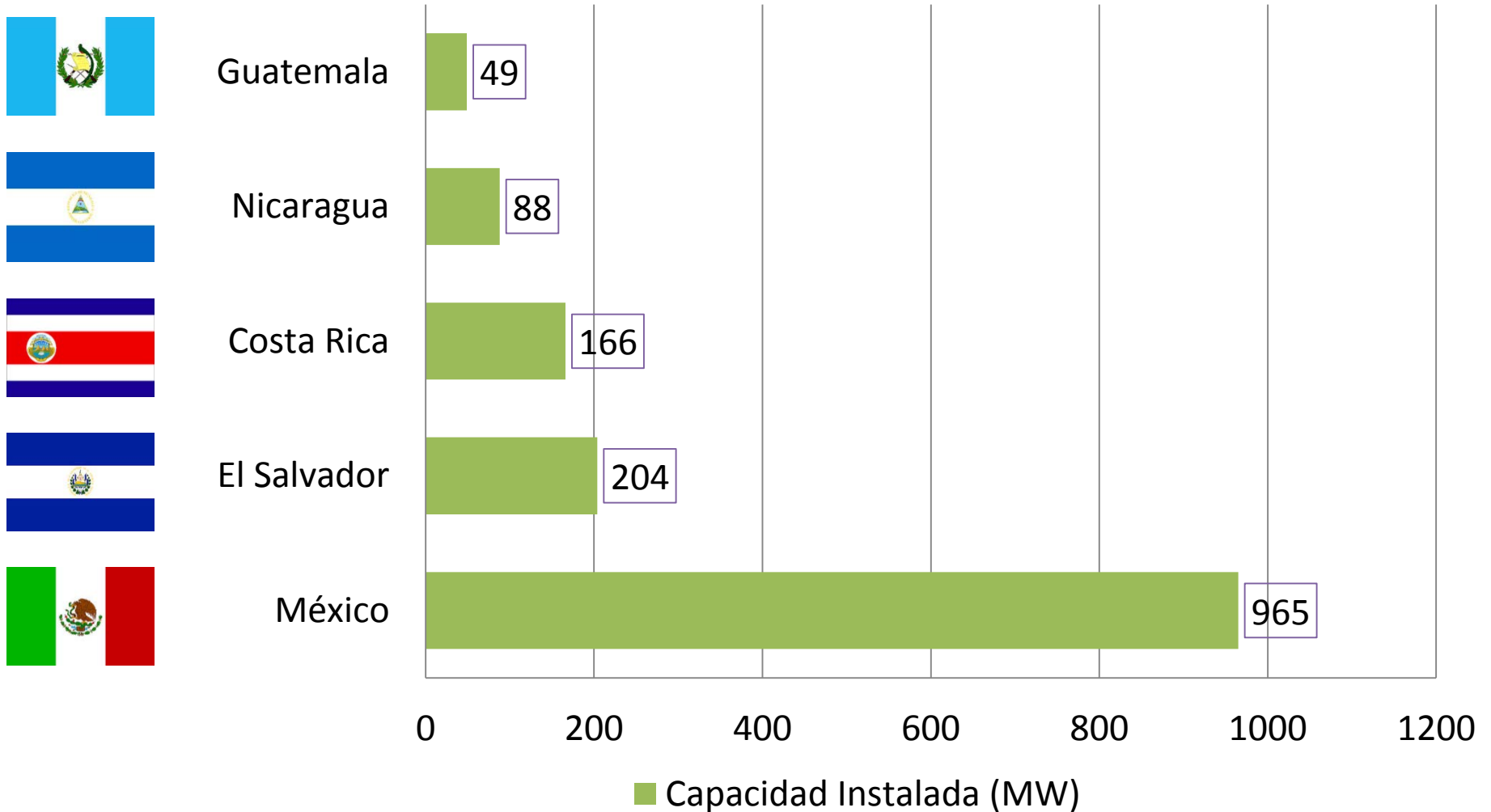


Source GEA, 2011

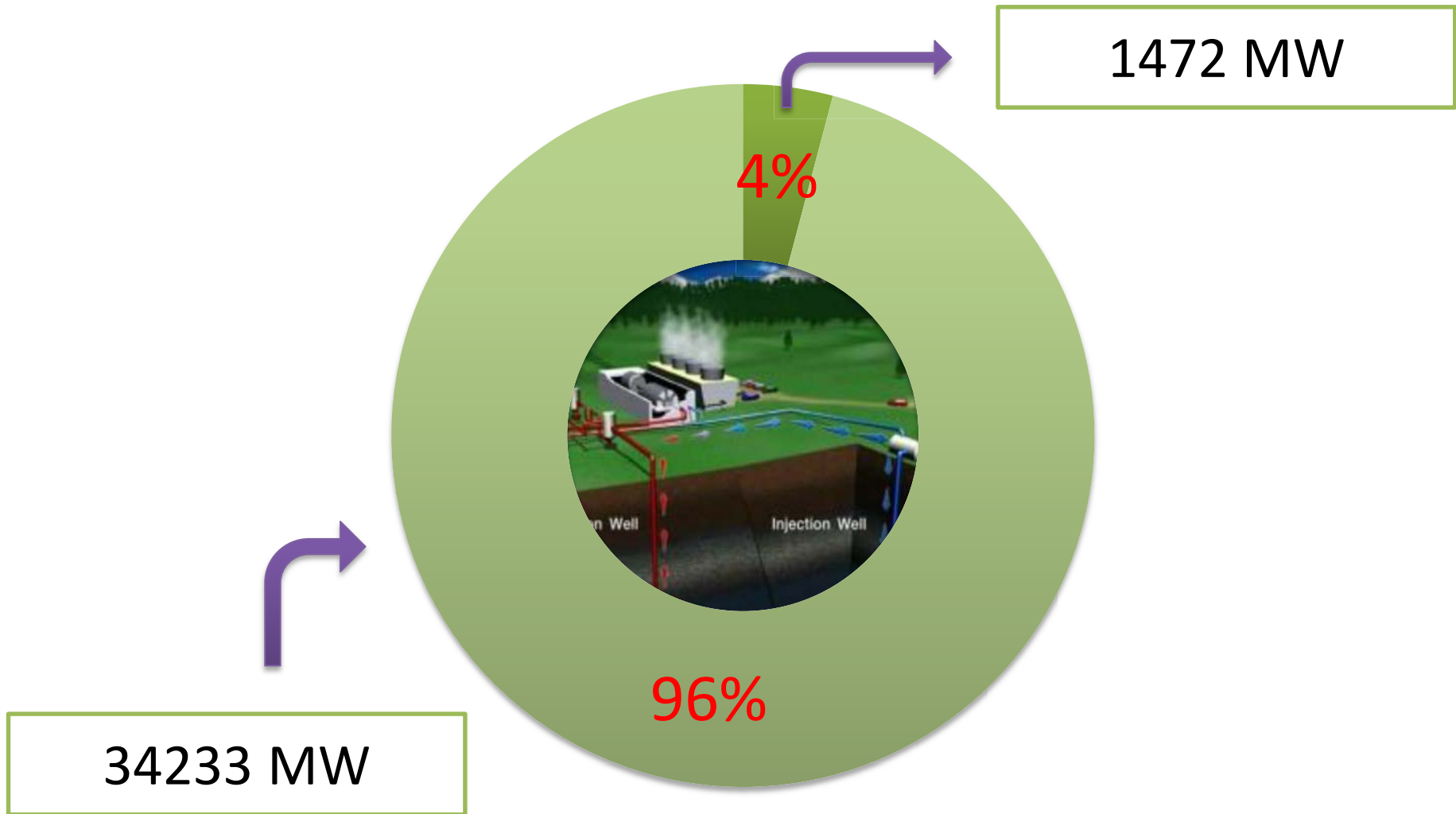


■ Potencial Geotérmico (MW)

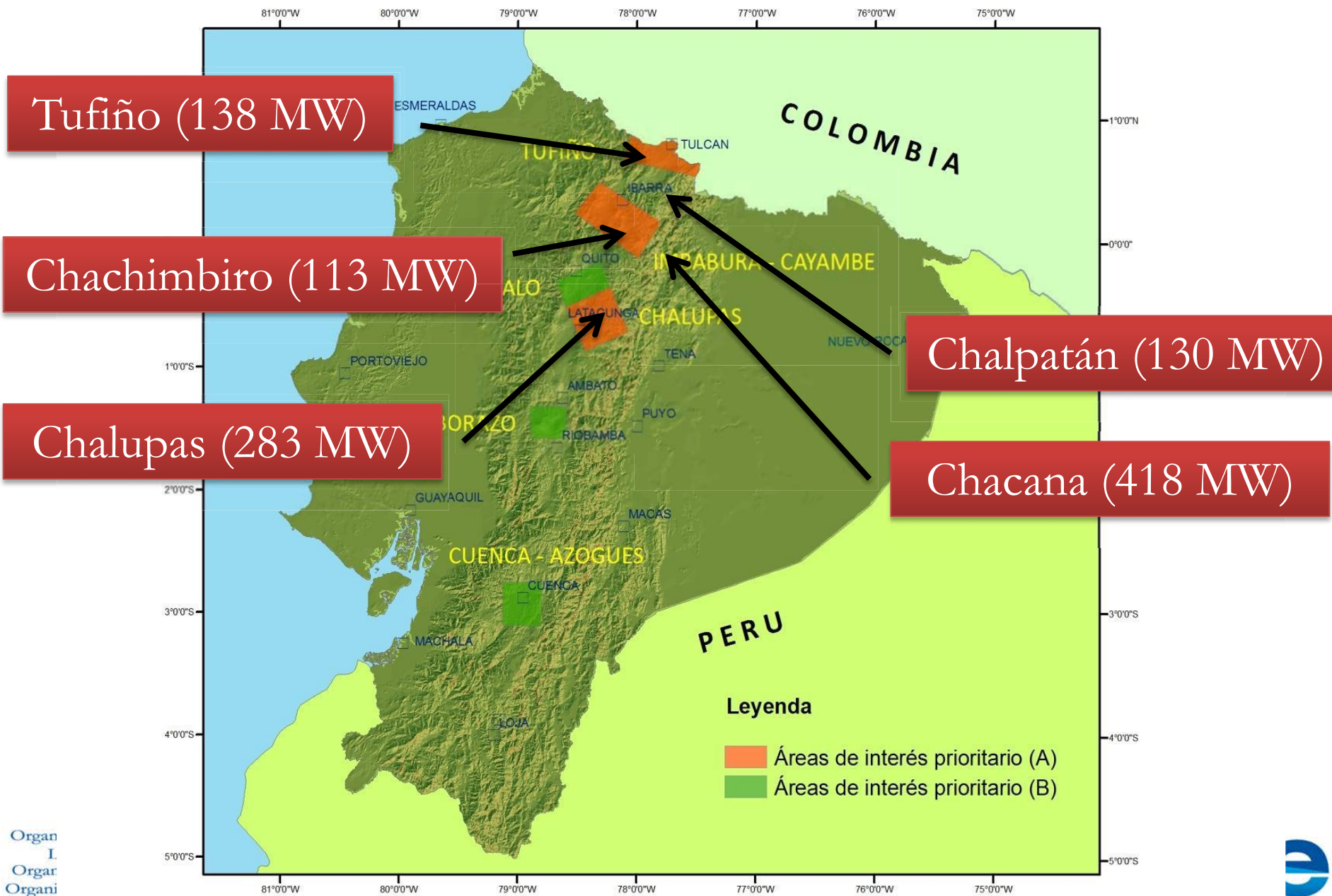
Countries with Installed Geothermal Capacity (MW)



Percentage of Geothermal Potential Harnessessed



3. Geothermal Development Potential in the Andean Region



In 1982 OLADE, in consultation with Geotérmica Italiana/INTECOL and the former Instituto Colombiano de Electricidad (ICEL), completed the National Geothermal Reconnaissance Study, which identified the areas of geothermal interest.

Los Nevados

Status: Pre-feasibility Studies

Paipa - Iza

Azufral

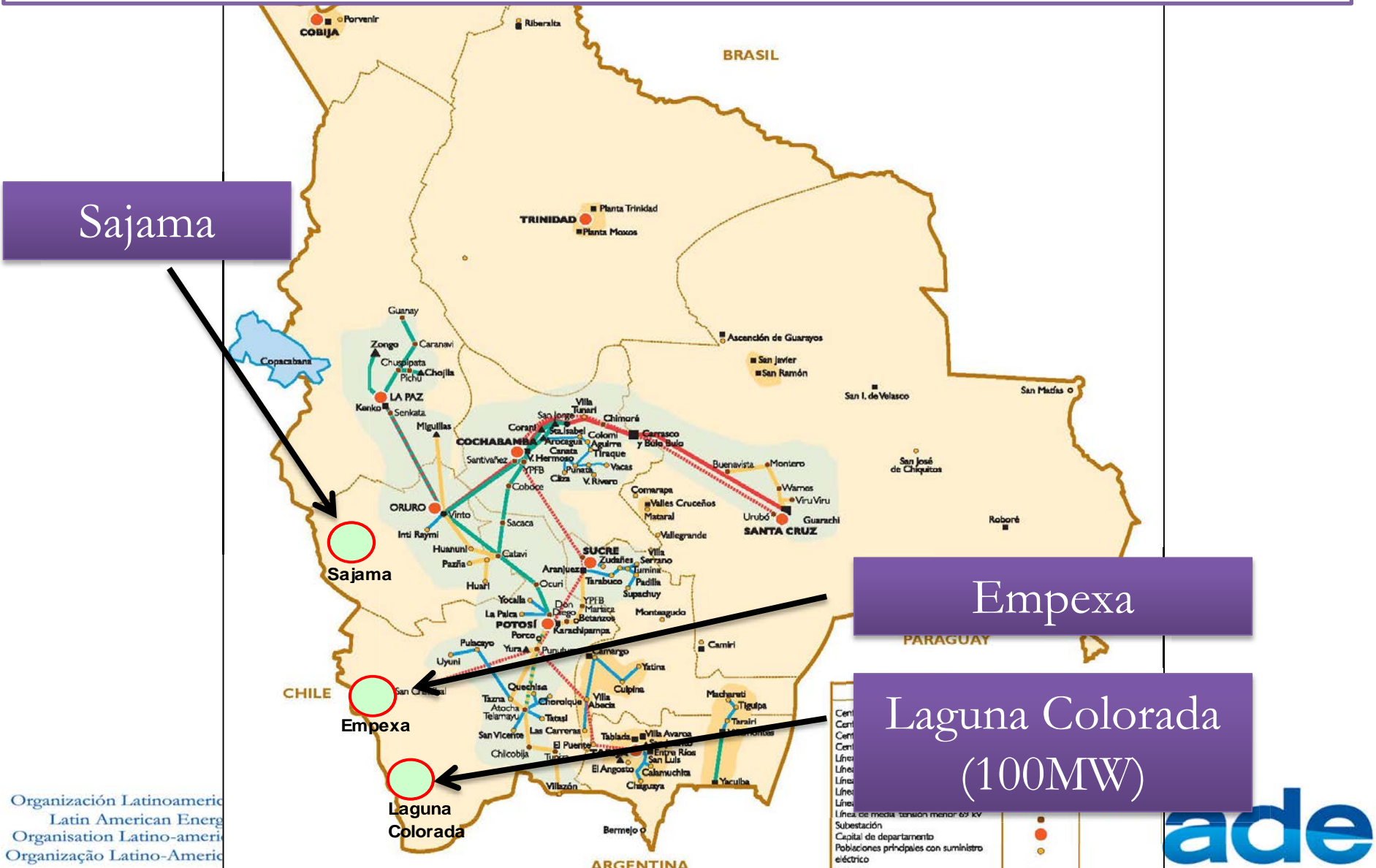
- Chiles
- Cerro Negro
- Cumbal



Geothermal Potential in BOLIVIA

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Between 1975 and 1976, the United Nations Development Programme (UNDP) completed a National Inventory of Geothermal Resources.



The greatest interest and the majority of the studies conducted in Peru are concentrated in the southern part of the country, where it is estimated that the best development prospects are located (INGEMMET, 2010):

Group A (High Potential)

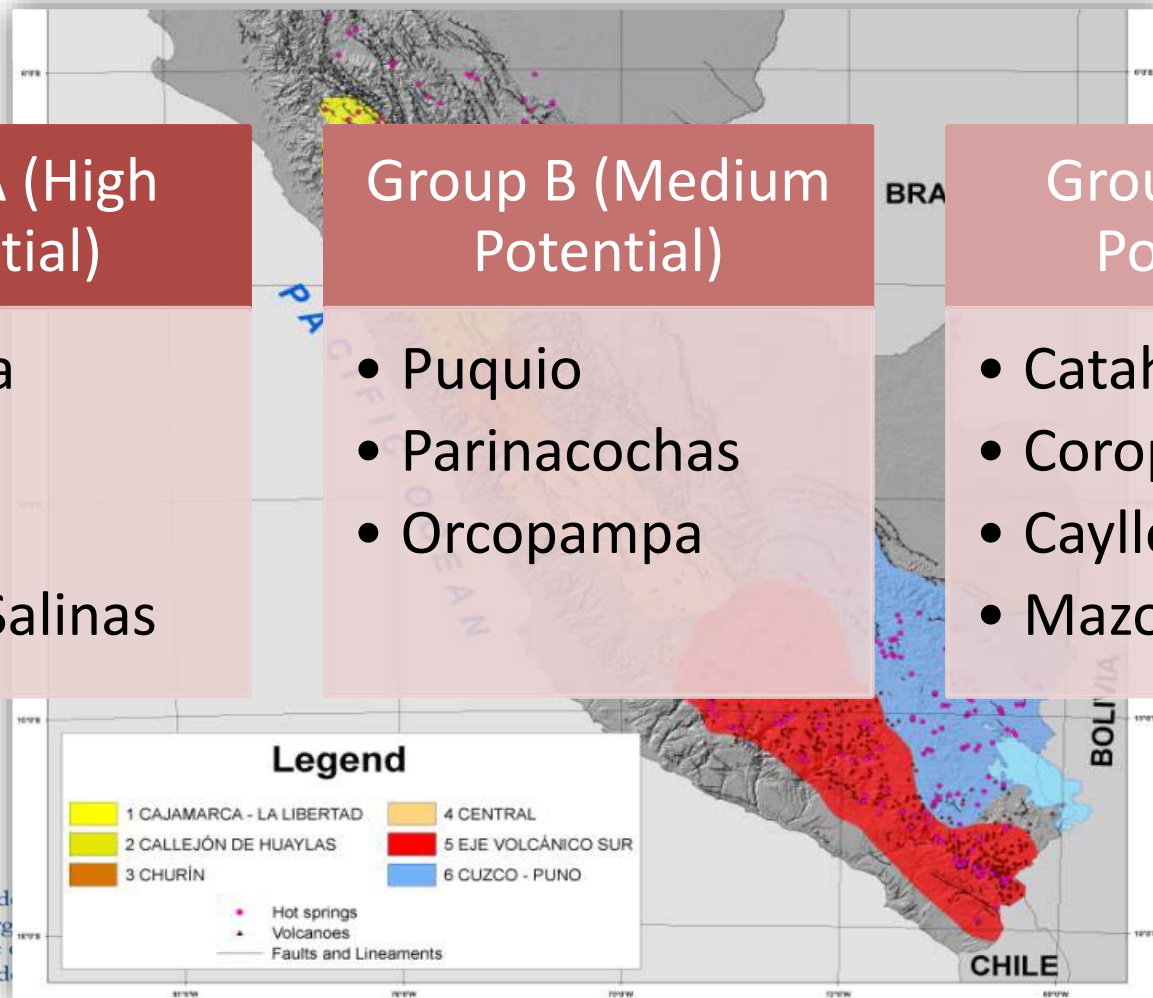
- Tutupaca
- Calacoa
- Maure
- Laguna Salinas

Group B (Medium Potential)

- Puquio
- Parinacochas
- Orcopampa

Group C (Low Potential)

- Catahuasi
- Coropuna
- Caylloma
- Mazo Cruz



Geothermal Potential in CHILE

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Experts from the University of Chile have estimated a potential of 16,000 MW.

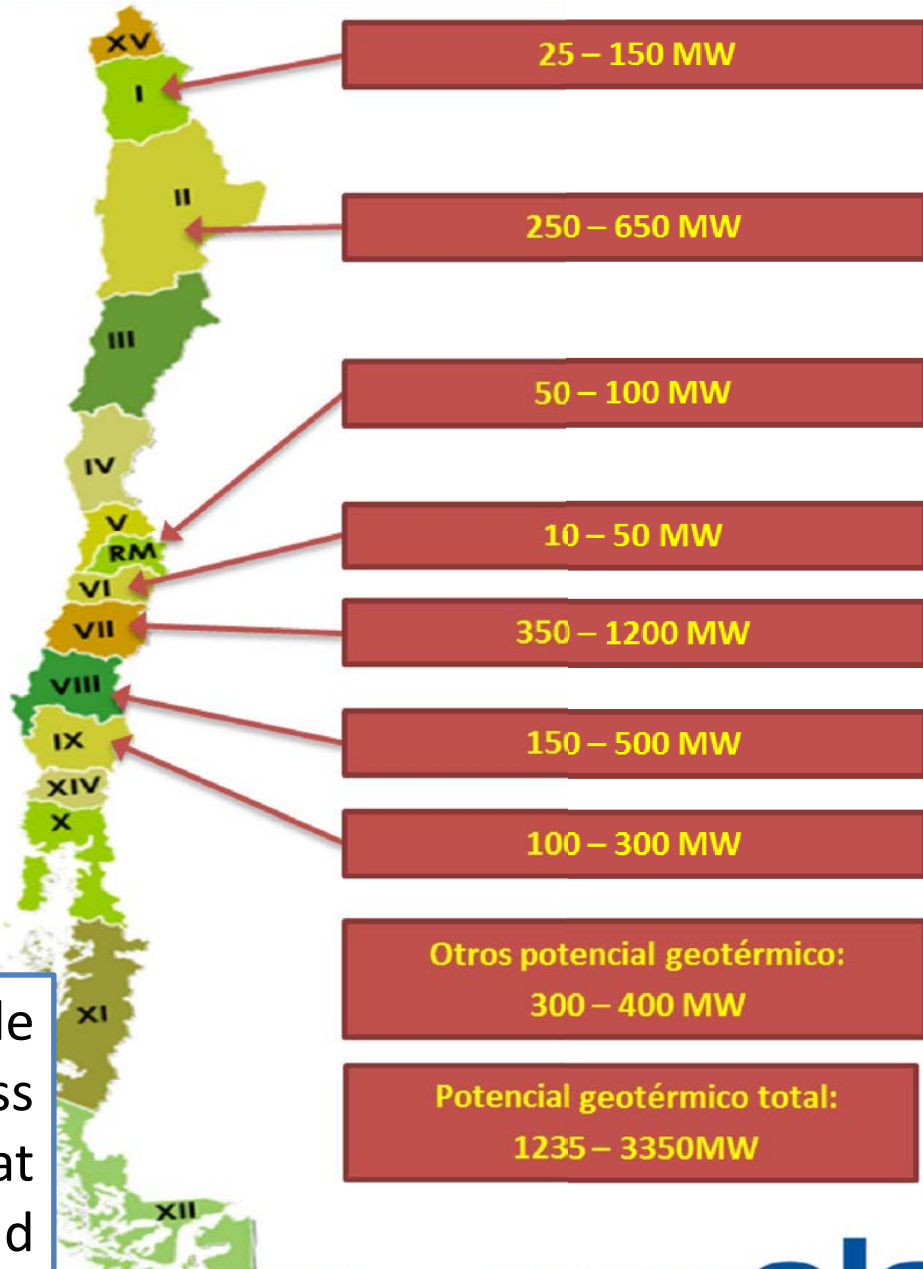
SIC

- Capacidad Instalada: 12.488 MW
- Generación: 46,1 TWh
- Población: 92%

Aysén

- Capacidad Instalada: : 49 MW

The Empresa Nacional de Petróleo (ENAP) is less optimistic and estimates that the geothermal potential could reach 3,350 MW.



4. Barriers to Development of Geothermal Energy

Financial

- Limited access to financing.
- Risk coverage for investment in geothermal development does not exist.

Political

- More security must be provided for development companies in terms of social issues to reduce the perception of risk that communities will block development of the project.
- Dissemination of the benefits of geothermal energy to society and local government authorities is needed.

Technical

- Insufficient number of experts on specific geothermal subjects at three levels – scientific, engineering and technical – as well as of experts on environmental assessment for geothermal projects.
- Lack of specialised service companies.
- Lack of educational offering related to geothermal energy.

Regulatory

- No standard criteria for environmental assessment of geothermal projects exist.
- No technical assessment criteria (methodology, parameters and standards) applicable to exploration permits exist.
- The current legal framework does not contemplate low-enthalpy geothermal energy.



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Perú
Uruguay
Venezuela

América Central y México

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Costa Rica
El Salvador
Guatemala
Honduras
Nicaragua
Panamá
México

Caribe

Barbados
Cuba
Grenada
Guyana
Haití
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