WEBINAR: 24 OCTOBER, 2018. 9 AM AEST

Austrade
Saïd Metwalli, Trade Commissioner
Alejandra Calderon, Energy Lead
UPME
Carlos Garcia, Demand deputy director
Carolina Sanchez, General director advisor

National Financial Development Institution – FDN
Enrique Cadena, Finance & Investment Manager

Andesco
Kathrine Simancas, Energy & Gas Director
Colombia Inteligente
Juan David Molina, Management leader

OPPORTUNITIES IN COLOMBIA POWER SECTOR
Colombia
Emerald in the rough
How can Austrade help you

Practical tips and advice

• Market briefings – including cultural perspectives
• Referrals to service providers
• Established networks in the local business community

Opening doors with our badge of government

• High-level visits (government, private sector, unis)
• Opportunities may come our way
• Work closely with DFAT and state governments

Export Market Development Grant Scheme (EMDG)
Perceptions…
New reality…
The Economist
“Colombia: country of the year”
The dove of peace

Lonely Planet names Colombia 2nd best country to visit in 2017

2016 NOBEL PEACE PRIZE
Juan Manuel Santos

The New York Times
COLOMBIA # 2 in 2018: With the war finally over, the entire country is opening up
Colombia overview

- 4th largest economy and 6th largest FDI destination in Latin America
- OECD accepted member since May 2018
- Founding member Pacific Alliance (Mexico, Chile, Peru) with Australia as an associate member (FTA in negotiation)
- New pro-business government since Aug 2018
- Over 50 Australian companies in country

<table>
<thead>
<tr>
<th>Country</th>
<th>GDP US billions 2017</th>
<th>S&amp;P/Fitch/Moody’s</th>
<th>Ease of Doing Business Ranking 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>1,798</td>
<td>BB- / BB- / Ba2</td>
<td>125</td>
</tr>
<tr>
<td>Mexico</td>
<td>1,046</td>
<td>BBB+ / BBB+ / A3</td>
<td>49</td>
</tr>
<tr>
<td>Argentina</td>
<td>545</td>
<td>B+ / B / B3</td>
<td>117</td>
</tr>
<tr>
<td><strong>Colombia</strong></td>
<td><strong>282</strong></td>
<td><strong>BBB- / BBB / Baa3</strong></td>
<td><strong>59</strong></td>
</tr>
<tr>
<td>Chile</td>
<td>247</td>
<td>A+ / A / Aa3</td>
<td>55</td>
</tr>
<tr>
<td>Peru</td>
<td>195</td>
<td>BBB+ / BBB+ / A3</td>
<td>58</td>
</tr>
<tr>
<td>Ecuador</td>
<td>98</td>
<td>B- / B / B3</td>
<td>118</td>
</tr>
</tbody>
</table>

Sources: WB, WEF, S&P
Doing business in Colombia

Recommended practices

• Be positive, persistent and patient
• Relationship first, business second
• Spanish speaking
• Invest in a local presence as the client expects after sales service and technical assistance
• Get the right partners; tax, legal, accounting
• Due diligence is key
• Talk to Austrade

Challenges

• Preference for buying local
• Strong local competition
• Supply chains need of improvement
• Government actively pushing to fill the gap in Infrastructure
• Complex tax regimes requiring expert advise
Energy
Institutional structure for the electricity sector

**Sectorial Policies**
- Presidente de la República
- MINMINAS
- MINHACIENDA
- DNP

**Economic Regulation**
- Comisión de Regulación de Energía y Gas (CREG)

**Planning**
- UPME
  - Unidad de Planeación Minero Energética

**Counsellor**
- CNO
  - Consejo Nacional de Operación
- CAC
  - Comité Asesor de Comercialización

**Supervision & Control**
- Supertiene de Servicios Públicos
- Industria y Comercio

**Administration & Market Operator**
- XM
Key players & Multilatinas

- Generation, transmission, distribution and commercialization of electricity
- Natural gas
- Operations in Colombia, Peru, Guatemala and Brazil
- Capex 2017-2020: AUD$2.2B

- Generation, transmission, distribution and commercialization of electricity
- Natural gas, water and sewage and telecommunications
- Operations in Colombia, Chile, El Salvador, Guatemala, Mexico and Panama
- Capex 2018-2021: AUD$5.1B

- Generation, transmission, distribution and commercialization of electricity
- Hydroelectric, wind, solar and thermal plants
- Operations in Colombia, Panama and Costa Rica
- Capex 2018: AUD$317M
Key players & Multilatina

- 42,064 km of transmission network in Colombia, Peru, Brazil and Bolivia
- Road concessions and information & telecommunications technology
- Operations in Colombia, Brazil, Peru, Chile, Bolivia, Ecuador, Argentina and C.A.
- Capex 2018-2022: AUD$5.4B

- Generation and commercialization of electricity
- Hydroelectric and thermal. Development in wind and solar
- Acquired by Brookfield Asset Management in 2016
- Capex 2018-2020: USD$2.1B
Market events

- Webinar with Colombian Multilatinas & sector associations
- National & International Andesco Congress
  - June 26-28, 2019
  - Cartagena, Colombia
- FISE 2019 Fair
  - December 4-6, 2019
  - Medellin, Colombia
Contact us

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Gracias
Colombia’s Energy Sector

Carlos García
Octubre 23 de 2018
Colombia’s electricity sector

Management and Policy
Ministry of Mines and Energy

Planning
Mining and Energy Planning Unit

Regulation
Energy and Gas Regulatory Commission

Surveillance
Superintender of Public Services

System Operation and Market Administration
XM – Markets Experts

Technical Consulting
1. Planning Advisory Committee of Transmission – CAPT
3. Advisory Committee for Coordination and Follow Country Energy Situation – CACSE
Mission

Planning Colombia’s mining and energy development, manage the information of the sector and support the formulation of the sector public policy, in coordination with the actors involved.

- Formulate scenarios for the energy demand.
- Be the *Think Tank* of the National Government.
- Promote the energy efficiency in the country.

- Support the Ministry of Mines and Energy (MME) and investment decision makers, by formulating evaluations, diagnoses of supply - demand of resources and development of indicative plans.

Special Administrative and **technical Unit of the National Order**, under the Ministry of Mines and Energy.

PROJECT’s (i)

• Generation and Transmission Expansion Plan 2017 -2031

• Expansion Auction – January 2019

• Mining Sector Context

• Liquid fuel Plan - 2018

• Gas supply plan - Regasification Plant and Expansion
PROJECT´s (ii)

• The Rational use of energy program consolidates the priorities of the Colombian State for an efficient use of the national energy basket. – PAI PROURE 2017 -2022

• National Strategic Electric Mobility –NSEM-

• Smart Grids - Grid Edge Transformation

• Advances in Technical Regulations – National Electric Code NTC 2050 updating

• National Energy Observatory
Expansion Auction – January 2019 - renewables mainly

REGISTERED PROJECTS IN PHASE 2-with environmental permits

<table>
<thead>
<tr>
<th>Resource</th>
<th>Projects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon</td>
<td>2163</td>
</tr>
<tr>
<td>Sun</td>
<td>1725</td>
</tr>
<tr>
<td>Wind</td>
<td>1505</td>
</tr>
<tr>
<td>Water</td>
<td>949</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>868</td>
</tr>
<tr>
<td>Biomass</td>
<td>25</td>
</tr>
</tbody>
</table>

Decree MME 0570 of 2018

1. Strengthen the resilience of the generation matrix
2. Promote competition and increase efficiency in price formation.
3. Mitigate the effects of climate variability and change by taking advantage of the complementarity between renewable resources
4. Strengthen regional energy security
5. Reduce emissions of greenhouse gases from the electricity generation sector

MME Resolution 40795 de 2018

- Target Demand: 3,443 GWh-year
- Minimum rating score: 50 points
- Period of validity of the product to be auctioned: 10 years
- Start date of obligations: December 1, 2022.

MME Resolution 40791 of 2018

Criteria to qualify projects that have passed the prequalification stage.

a. Resilience
b. Complementarity of resources
c. Regional energy security
d. Reduction of emissions

Characteristics of the Auction

- Volunteer
- Two points: Sellers and Buyers
- Projects greater than 10 MW
- Only projects with a score greater than or equal to 50 points compete
- Closed envelope
- Offer quantity and price
- Pay as Bid
GRACIAS
www.upme.gov.co
@upmeoficial Upme (Oficial)
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Enrique Cadena
Financial Trends for Energy Renewables

Corporate Finance
Project Finance
Bonds and Others

40%

Fuente: Global trends in renewable energy investment 2017
Financial Instruments

- Grants
  - Equity / Venture Capital
  - Mezzanine Subordinated Debt
- Equity
  - Senior Debt (Project)
- Debt
  - Asset – Bucket Securities
- Asset - Bucket
- Insurance and guarantee
  - Pari-passu / subordinated warranty
  - Liquidity Warranty
  - Insurance (wind /sun)
  - Insurance (contingent)
- Small Scale
  - Agregation Vehicles
  - Portafolio Warranty

Source: Financing renewable Energy. Options for Developing Financing Instruments Using Public Funds
FDN role

Non Conventional Energy Renewable

- Wind
- Solar
- Biomass / Biogas
# Projects type

**Programa de Energías Renovables PER**

<table>
<thead>
<tr>
<th>PROYECTOS</th>
<th>Description</th>
</tr>
</thead>
</table>
| ![Wind Turbine], ![Solar Panel] | • Projects over 20 MW  
                      | • Technologies – Wind, Solar, Biomass             |
| SMALL PROJECTS AND ENERGY EFFICIENCY | ![Energy Efficiency Icon]  
| ![Energy Efficiency Icon] | • Projects below 20 MW and Energy Efficiency      |
Financial Instruments

- Grants
  - Equity / Venture Capital
  - Mezzanine Subordinated Debt
- Debt
  - Senior Debt (Project)
- Asset - Bucket
  - Asset – Bucket Securities
- Insurance and guarantee
  - Pari-passu / subordinated warranty
  - Liquidity Warranty
  - Insurance (wind /sun)
  - Seguro (contingent)
- Small Scale
  - Agregation Vehicles
  - Portfolio Warranty

Source: Financing renewable Energy. Options for Developing Financing Instruments Using Public Funds
## Projects type

Programa de Energías Renovables PER

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<tr>
<td>• Projects bellow 20 MW and Energy Efficiency</td>
<td></td>
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</table>
Agregation Model for ER y EE

Small Scale (20 MW) y Energy Efficiency

Credit Enhancement

FDN → Commercial Banks/Capital Markets → SPV

Debt

Debt

Portfolio 1
- Sub-project 1
- Sub-project n

Portfolio N
- Sub-project 1
- Sub-project n

Equity from Sponsors
Gracias
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AustradeLATAM | Austrade LATAM
ANDESCO is the biggest utilities association in Colombia. It was created in 1995 after the Law 142 of 1994, which let the private investment on this sector. Actually this companies can be private, public or a mix.

We represent the interests of the members in a sustainability frame and best practices. We promote policies, regulation and rules for better services for the citizens.

Our members are more than 110 companies of:

- Internet
- Telecommunications
- Television
- Electricity
- Natural gas
- Water
- Sewage and waste
Stakeholders – How we do it

- BRANCHES:
  - Executive
  - Legislative
  - Judicial
  - Supervisory

- Members
  - Companies from other economic sector

- Associations
- Academy
- Providers
- NGO
- Media

- BRANCHES:
  - Executive
  - Legislative
  - Judicial
  - Supervisory

Government
National and Local

Companies

Utilities, IT and TV

Community
Customers

International affairs

Embassies
- Cooperation Entities
- Bilateral Chambers
Our members of the electricity supply chain

**Generation**

Hydropower, thermoelectric plants and non-conventional renewable energies

- AES Chivor
- ISAGEN
- enel
- CENS
- Grupo-epm
- enel
elecro Caquetá
- ELECTRICARIBE
- EMPRESA
- RISARALDA
- Gensal
- Gececa
- Celsia
- Urra S.A. E.S.P.
- Termotasaajero
- Termoem Cali
- Grupo-epm
- EMSA
- CEO
- ESSA
- Dispac
- ElectroHuila
- ENERTOLIMA
- CETSA
- EPSA
- Rutoque S.A. E.S.P.
- EBSA
- EEBP

**Transmission**

- isa
- INTERCOLOMBIA
- TRANSELCA
- Grupo Energia Bogota
- Distasa
- EME Cali
- CEDENAR
- Grupo-epm
- EMCSA
- Grupo-epm
- Grupo-epm

**System operator**

- ENAM
- sopesa
- ENAM
- ENAM

**Out of the grid**

- XM
- nitro energy

**Distribution**

- Just retail salers
Energy transitions to a more sustainable energy (new technologies and low carbon resources):
- New business models
- Decentralised energy
- Energy efficiency
Our annual Congress could be a great place to get more information of Colombia businesses. The 21st Congress will be held in 2019 with more than 2000 attendants.

**Keynote speakers**

**Government discussions**

**Utilities Speed Meetings**

**International speakers**

**B2B meetings**

**Sectorial rooms**

**Save the date:**
26th to 28th June of 2019

Las Americas Convention Center, Cartagena
Andesco
Asociación Nacional de Empresas de Servicios Públicos y Comunicaciones
PBX: (57-1) 616 76 11 – Fax: (57-1) 218 41 54

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OPPORTUNITIES IN COLOMBIA POWER SECTOR
Portfolio project
Current status
Collaborative network to enable and accelerate the grid edge transformation

We are a smart grid forum, made up of companies and entities, for the integral and efficient integration of smart systems into the infrastructure of the Colombian Electricity Sector with the purpose of reducing risks and maximizing benefits for stakeholders.
Studies 2017

Working lines

5*
State of the art

3
Strategic guidelines

3*
Project formulation

1
Policy actions

Grid Edge Transformation

Smart User

Analysis Trends

Demand Response
Smart Meter
DER
Energy Storage
Cybersecurity CSIRT-SEC

Demand Response
DER
Energy Storage

Demand Response
Smart Meter

Grid Edge Transformation
The focus was set on four pillars:
1. New business models
2. Technology deployment
3. Electric mobility
4. Sustainable microgrids
Smart grid activities (2018)

Radioelectric spectrum requirements

Multi-services storage options

DR to GHG mitigation strategy

Smart meter challenges

IoT Applications
To develop ...

1. **New business models:** Enable the emergence of innovative business models and partnerships among industry players, supported by regulatory changes
   - Big Data/Analytics
   - Industrial IoT
   - Blockchain

2. **Technology deployment:** Ensure the massive rollout of smart metering to drive active participation of customers

3. **Electric mobility:** Accelerate the integration of electric vehicle

4. **Micro-grids:** Develop micro-grids solutions in areas not connected to the grid
   - User empowerment
   - Technology for monitoring and control
Task-Force contacts

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