

Navigating the region's turbulent waters for electric power & the role for innovation and technology

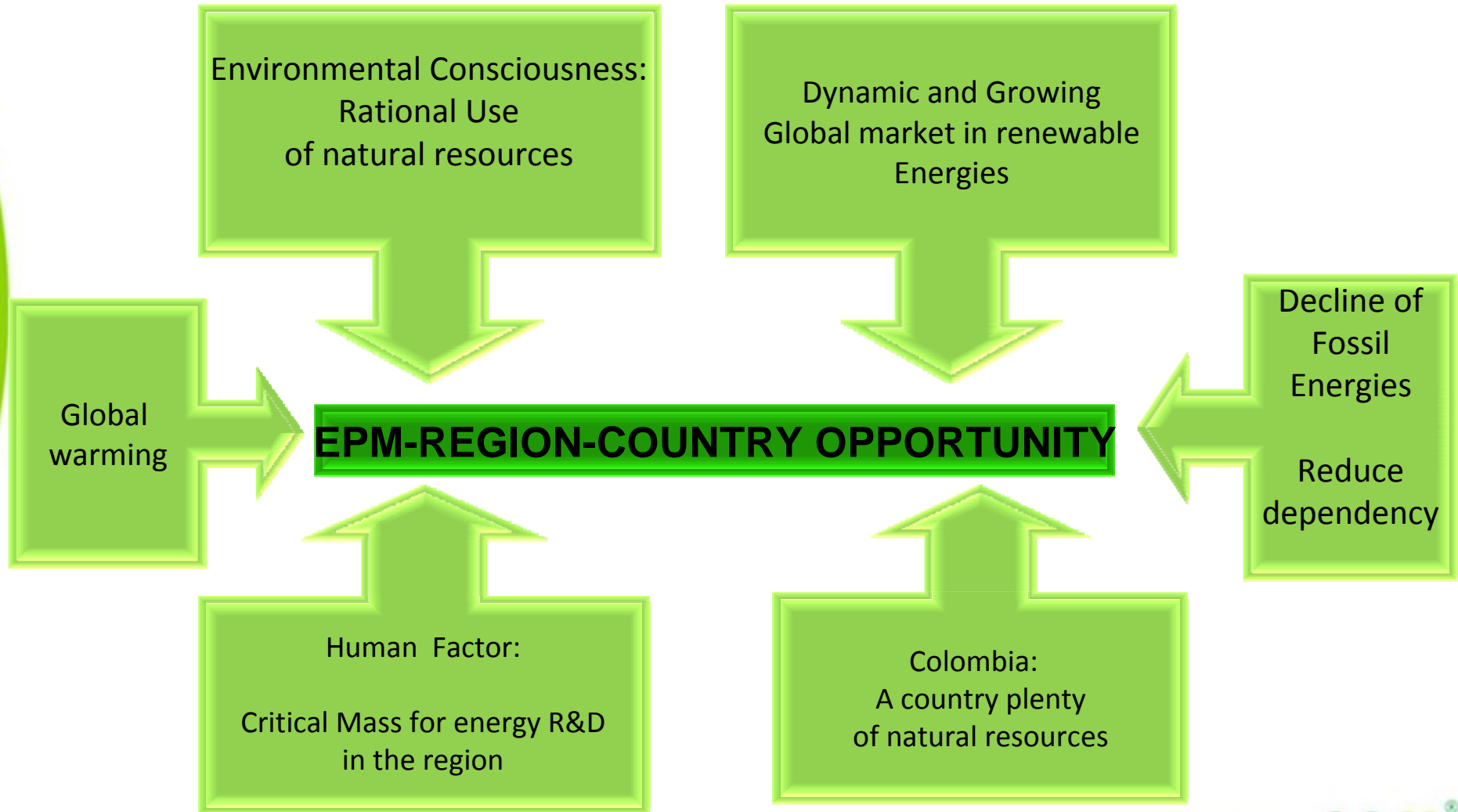
¿A world in crisis or a world of opportunities?

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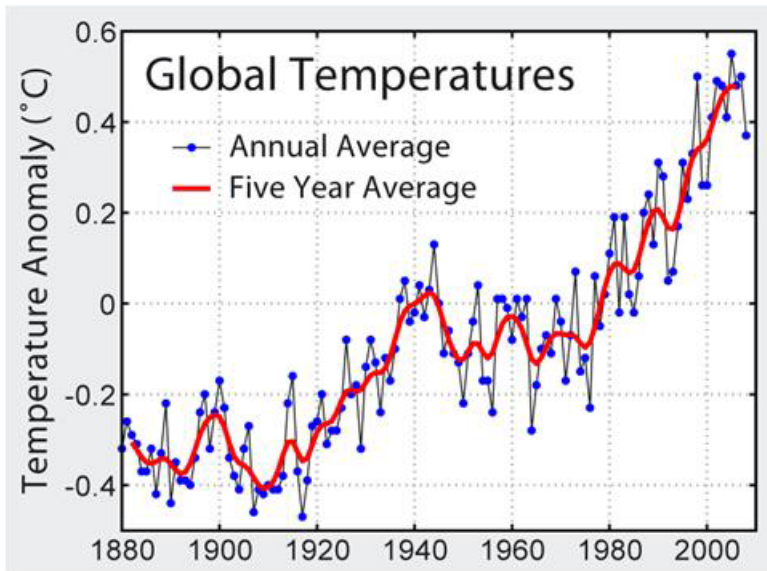


La Jolla – May 12/2009

# ¿A world in crisis or a world of opportunities?



# Global Warming



Source: NASA: Goddard Institute for Space Studies

Upsala Glacier. Patagonia,



Source: GREENPEACE. Martina Krueger.  
Carbon Insights 2008. Copenhagen

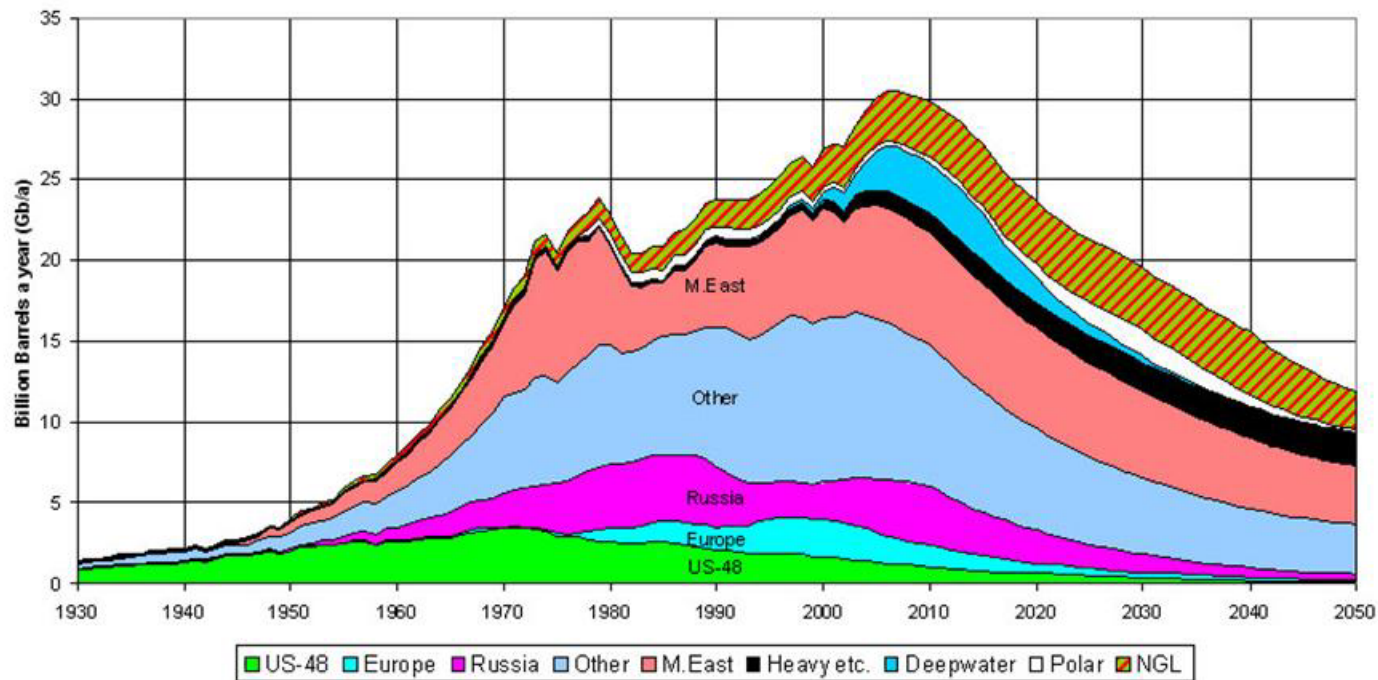
## Need for finding solutions

- Reducing emissions in energy production
- Capturing and sequestering CO<sub>2</sub>
- Reducing energy intensity

[http://www.youtube.com/watch?v=XZ\\_JJ62JJVQ](http://www.youtube.com/watch?v=XZ_JJ62JJVQ)

# Decline of fossil fuels Reducing dependency

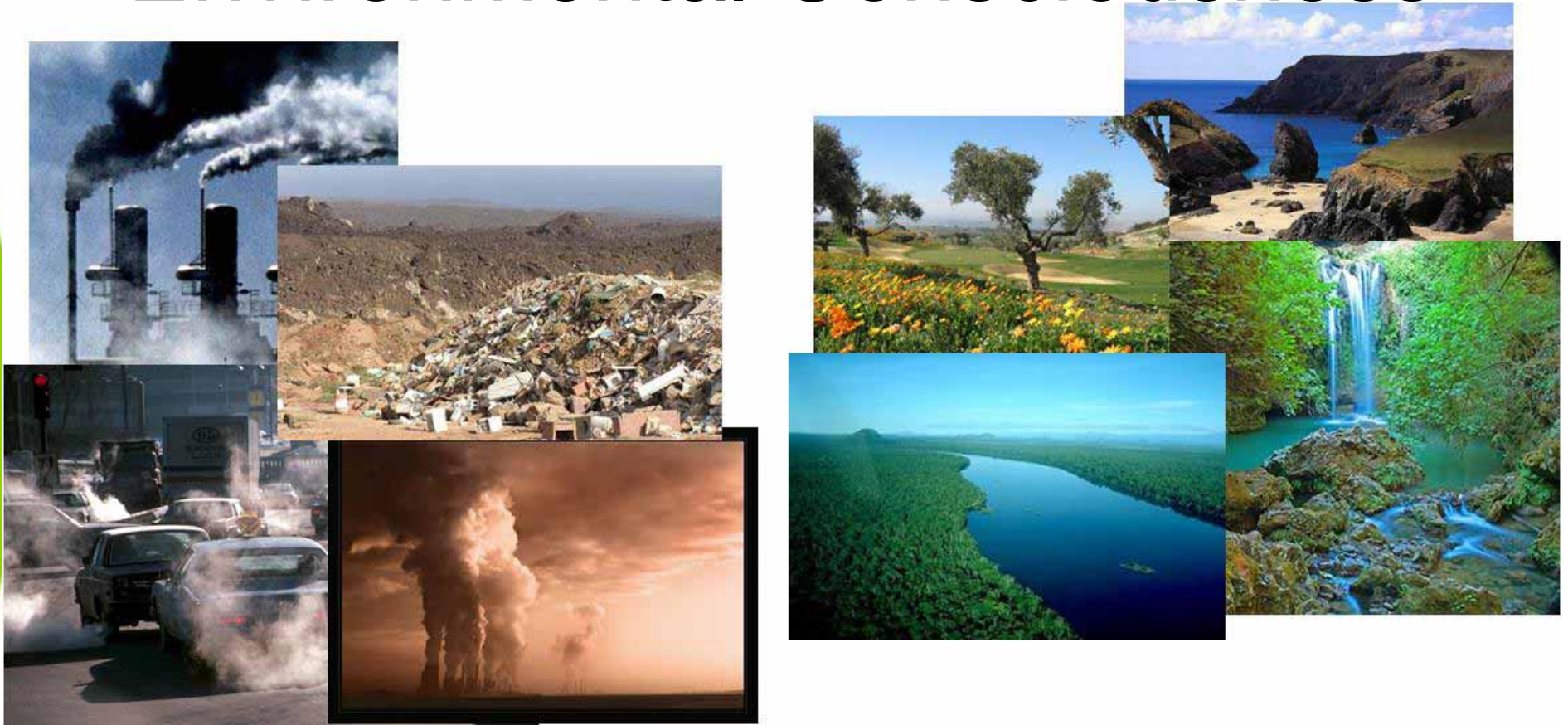
## OIL AND GAS LIQUIDS



Source: [www.peakoilportal.com](http://www.peakoilportal.com)

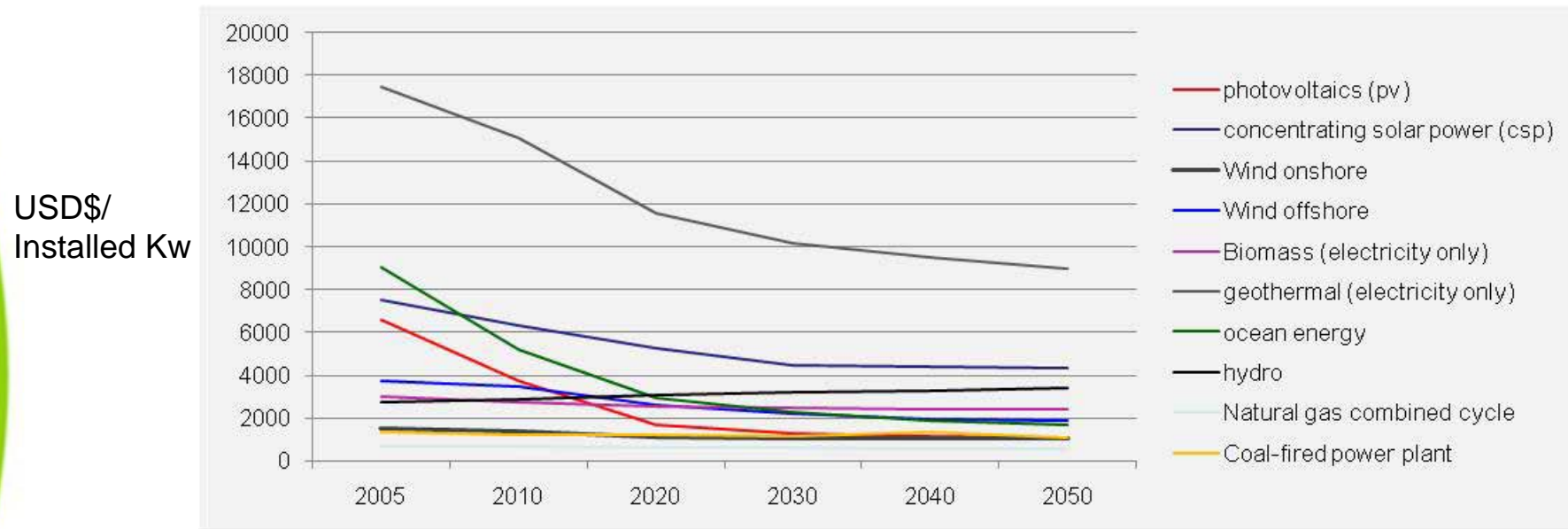
The necessity of diversifying energy sources that will allow replacing hydrocarbons and reducing the dependency on traditional fuel producers.

# Environmental Consciousness



The need to ensure a better habitat to all species' future generations.

# Dynamic and growing global market of renewable energies



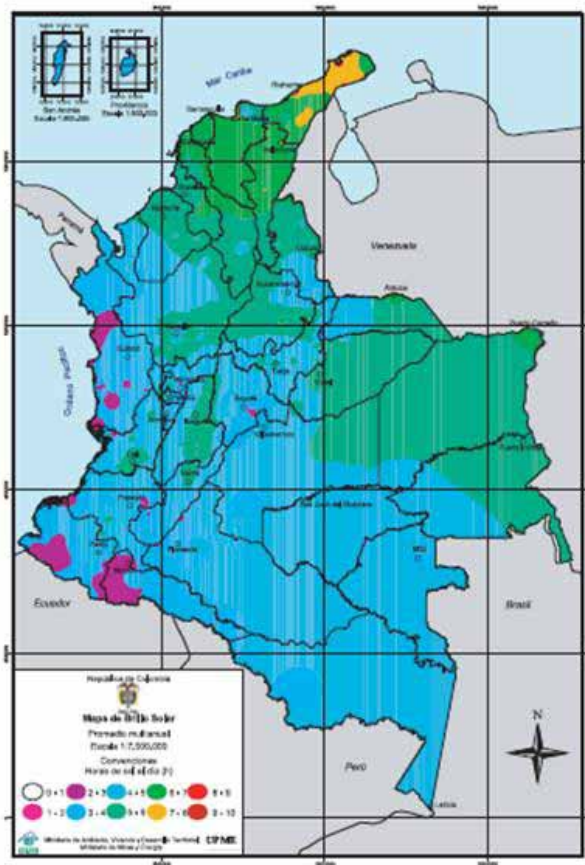
Source: Energy International Agency – EIA 2008



Excellent opportunities in growing markets.

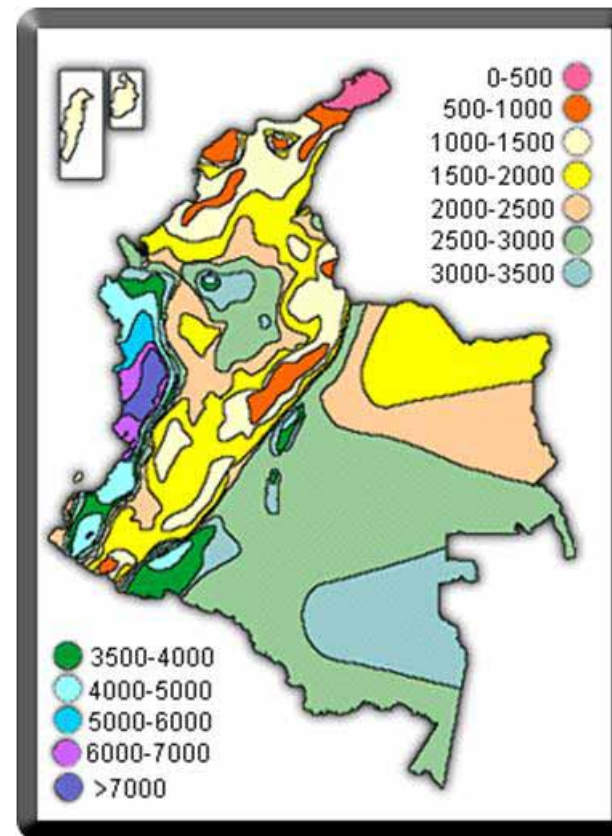
# Colombia: A country plenty of natural resources

Solar radiation map



Source: Unidad de Planeación Minero Energética - UPME. Colombia

Rain map  $mm^3$

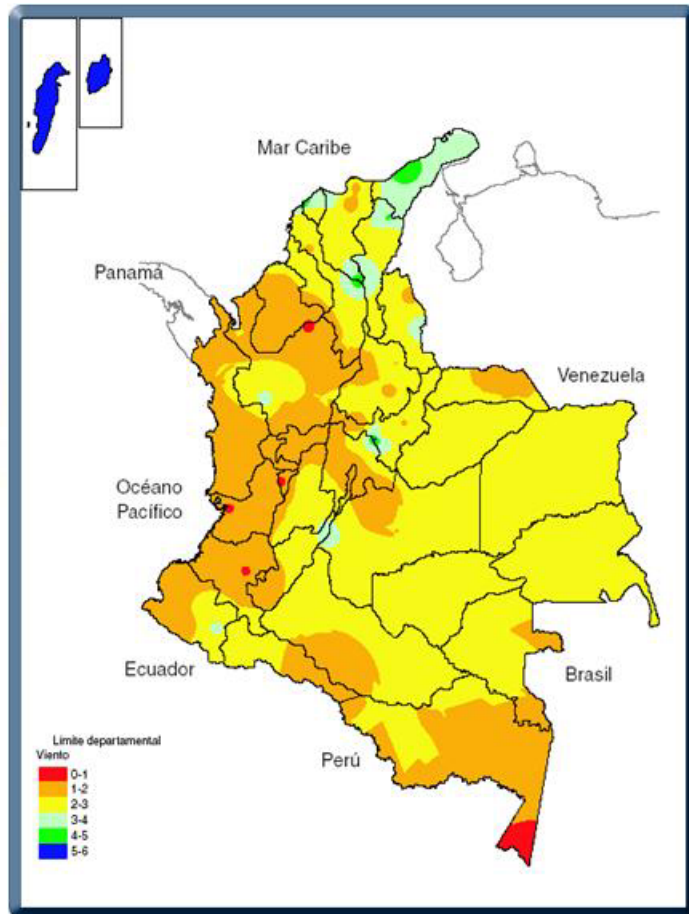


Source: Instituto de Hidrología, Meteorología y Estudios Ambientales de Colombia - IDEAM

Great amount of resources and land extensions available for exploitation without impacting food security nor rainforest.

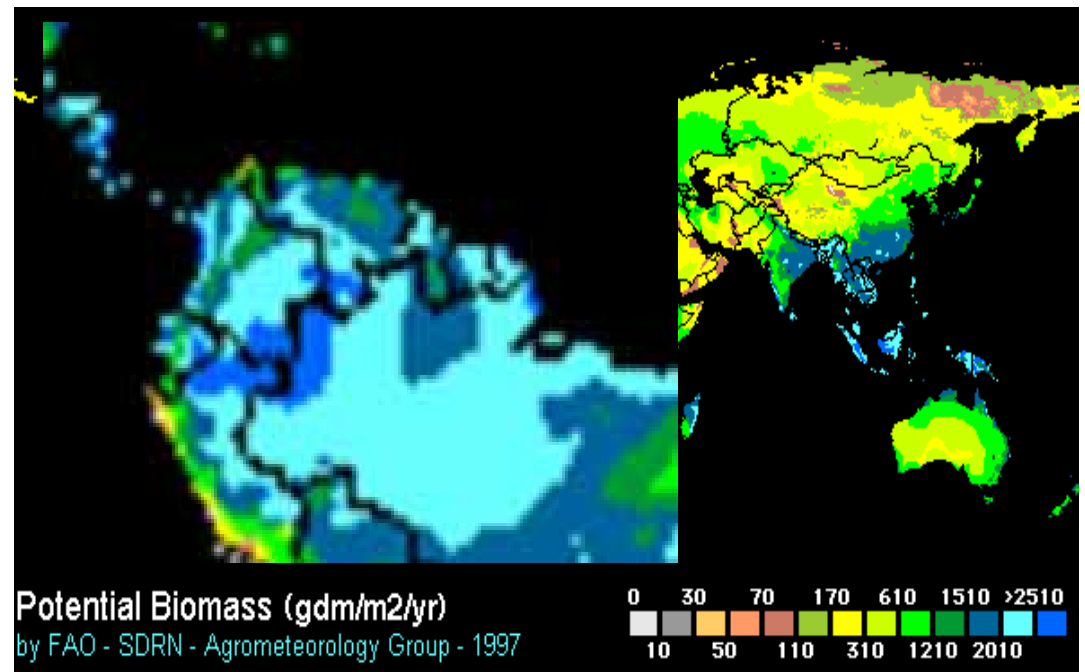
# Colombia: A country plenty of natural resources

Wind map (m/s)



Source: Asociación de Estados del Caribe – AEC

Biomass Potential



Units: Grams dry material /square meter /year

Source: FAO-SDRN –  
Agrometeorology Group - 1997

## Human Factor: Critical Mass for energy R&D in the region

- Medellín: Energy cluster, especially in academic, scientific and technological fields.
- Universities: UdeA, Unal, UPB, ITM, among others
- 40+ research groups in energy-related topics.
- R&D critical mass in intensity and production.

# EPM-Region-Country opportunity

- Framework:
  - Corporate social responsibility.
  - Environmental sustainability.
  - Business sustainability.
  - Business growth and diversification.

# Initiatives in innovation and technology

## CIEN

**Center for energy research and innovation**

Strategic alliance with 4 universities in the region

Mostrar aquí los escudos de las universidades

6 million dollars in the first 3 years

## VENTURE CAPITAL

**0.6% earnings for funding**

R+D+i

Spin offs

Entrepreneurship

New Business Lines

10 million dollars per year

## THE BLOCK

**Medellin City Hall initiative, supported by EPM group of companies**

To provide the community with **facilities and services** to promote innovation and entrepreneurship in some specific technological sectors, such as Energy, TICS, and Biotechnology.



*estamos ahí.*

# Thank you!

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