



MinMinas
Ministerio de Minas y Energía

**PROSPERIDAD
PARA TODOS**

Climate Change | Mitigation





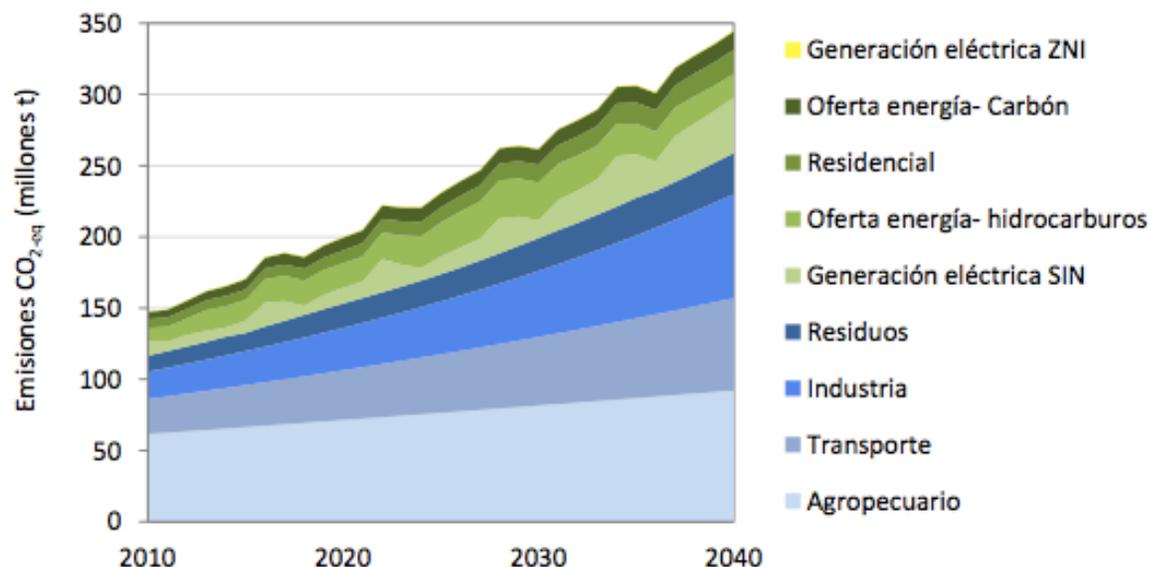
Overview

Currently Colombia accounts 0.37% of the total world emissions (2004), however with a population of over 60 million people in 2040 and a sustained economic development, Colombia will increase dramatically it's emissions from 150mm tons of CO_{2eq} in 2010 to 350mm tons in 2040.

- More than 30% of the expected increase will be related with the energy sector.

Foreseeing this scenario, Colombia is currently working on the Colombian Low Emissions Development Strategy (CLEDS) aiming to:

- Divert growth from BAU (Business as Usual) emissions.
- Create green growth alternatives.



Source: Uniandes 2014



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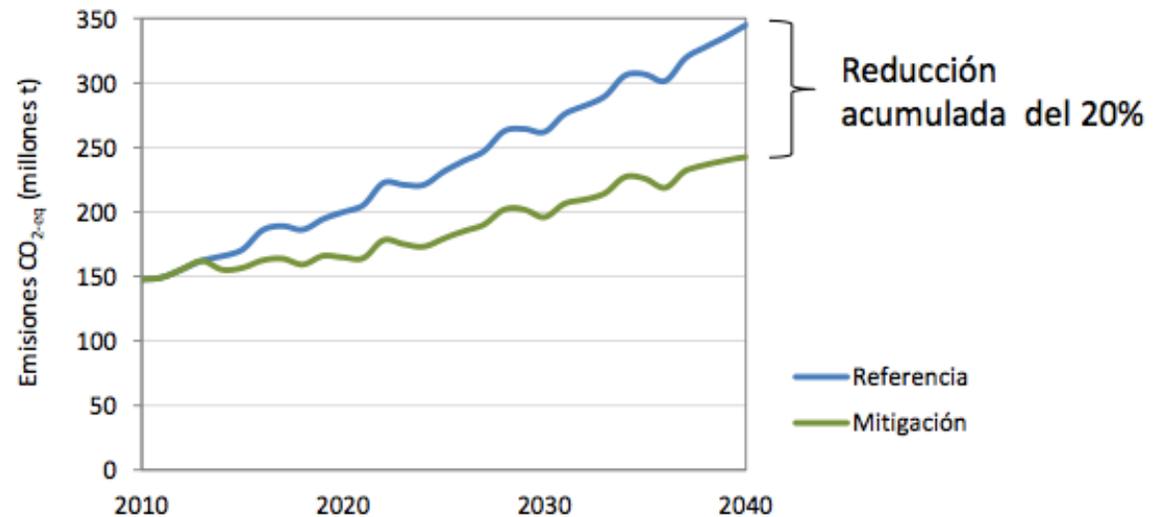
Mitigation Scenario

For over two years the Colombian Government worked on the identification of cost-effective measures able to:

- Contribute with the long term country development.
- Produce real CO₂ emissions reductions.
- Create consensus among government and stakeholders.

The result was a portfolio of actions able to reduce our emissions on around 20%.

- In 2013 those actions were discussed with the stakeholders and the result of the deliberation process was the Sectorial Mitigation Action Plans (SMAP's)



Source: Uniandes 2014

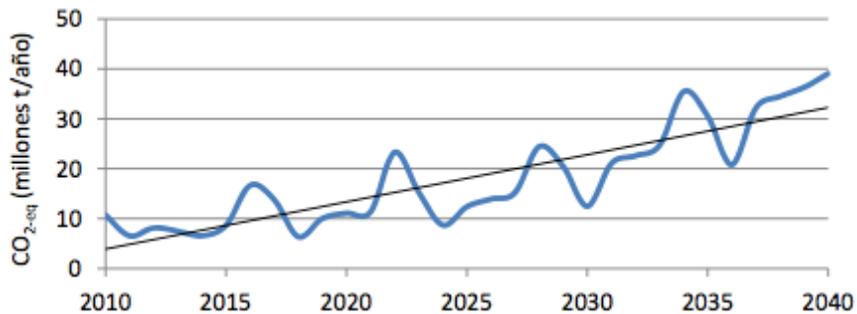


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Overview Energy

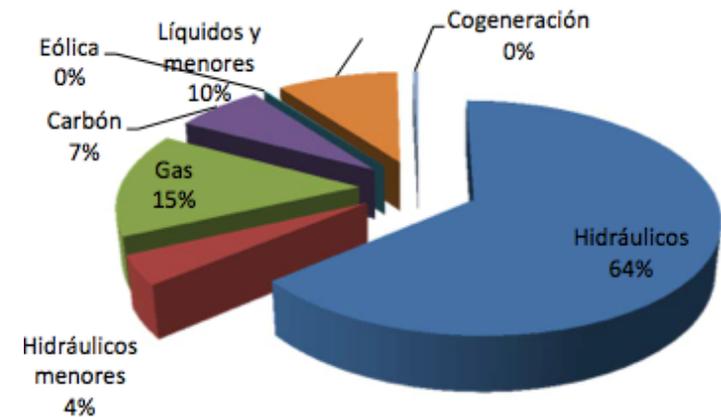
Despite the fact that the Colombian energy matrix is clean, the future energy demands will increase the electricity emissions *4.



The expected demand, is requiring the extensive use of new energy sources that in the long term would reduce emissions by 300mm tons CO₂eq.

- Geothermal, wind, co-generation and self-generation, are the most cost-effective measures to be developed.

Installed Capacity 2012:
14361 MW



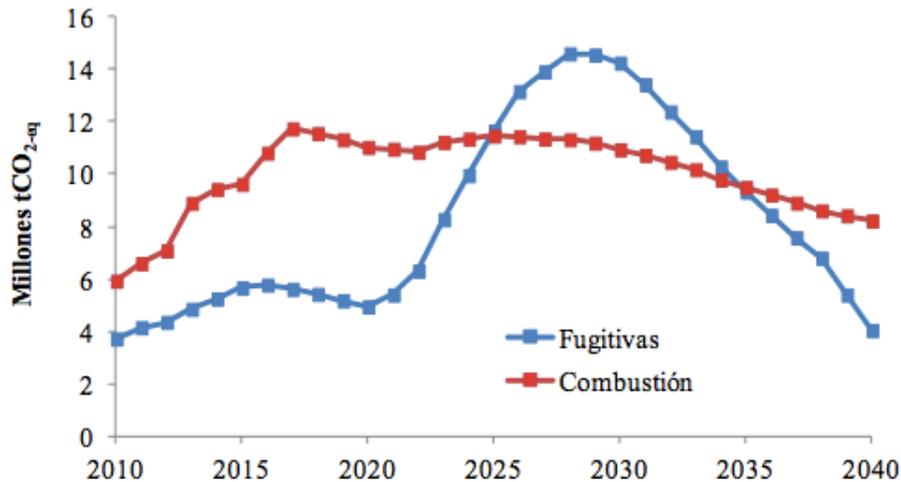
Source: XM, 2013



Overview Oil & Gas

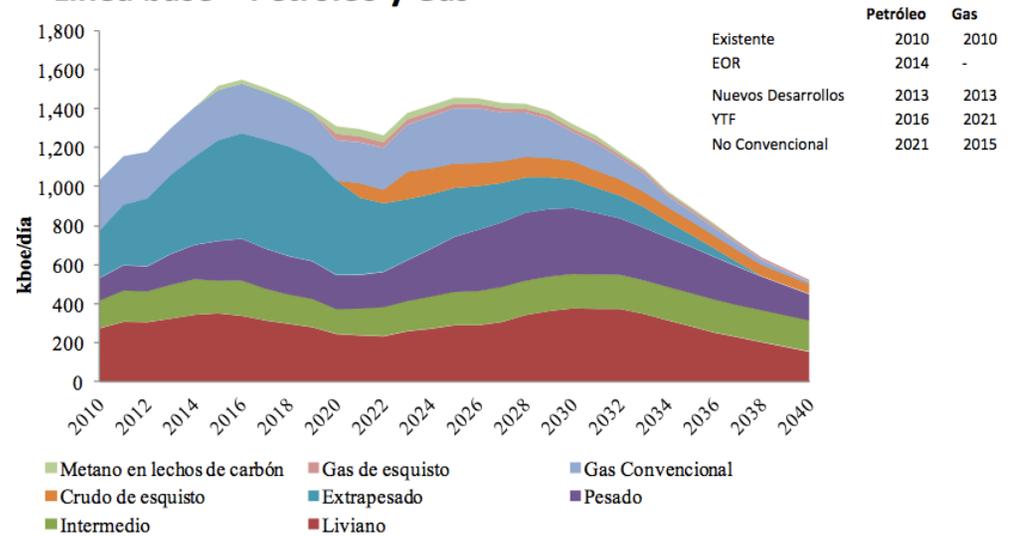
According to the UPME (Mines and Energy Planning Unit) most of the long term emissions will be related with non-conventional and YTF. However the sector emissions can be categorized as:

- Combustion
- Fugitive emissions



Source: Uniandes, 2014

Línea base – Petróleo y Gas



Source: UPME, 2012

In consequence the current efforts points to reduce this emissions sources through:

- 1) Energy management
- 2) CCS (Carbon Capture and Storage)

The expected reduction is 114mm tons between 2015-2040.



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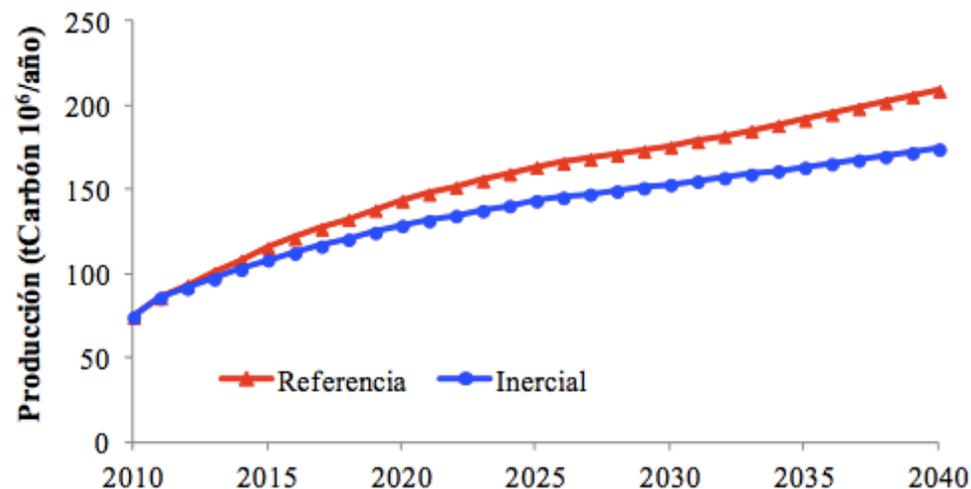
Overview Coal

Currently Colombia produce 85 mm tons of coal, by 2040 will produce between 150-200mm tons. Most of the emissions are related to fugitive emissions (Colombia is a net exporter of coal), counting over 300mm tons CO₂eq (2010-2040).

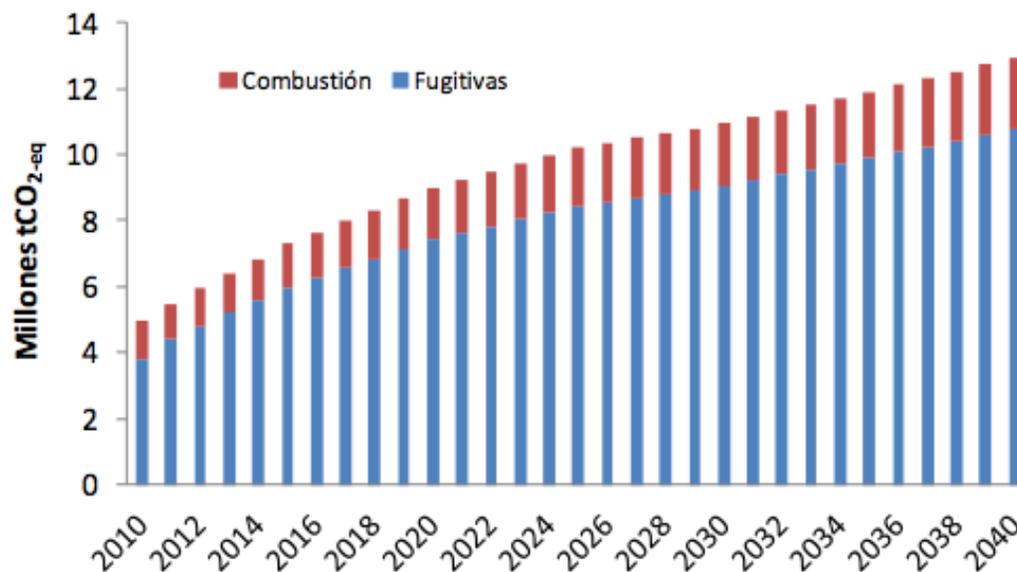
In consequence the current efforts point to reduce this emissions sources through:

- 1) CMM (Coal Mine Methane) use.
- 2) Energy efficiency.

The expected reduction is 30mm tons between 2015-2040.



Source: US Energy Information Administration, 2012



Source: Uniandes, 2014



SMAPe | Sectorial Mitigation Action Plan - electricity

Policies	Guidelines	Objectives
ENERGY EFFICIENCY (DEMAND)	Promote energy efficiency policies.	Reduce GHG emissions through energy savings by energy efficiency actions and programs.
NATIONAL ENERGY SYSTEM OPERATION EFFICIENCY	<ol style="list-style-type: none">1) Promote the demand participation (self generation, co-generation) in the national interconnected system.2) Gradually integrate smart grids in the national interconnected system.	<ol style="list-style-type: none">1) Reduce electricity losses by displacing energy consumption in peak times (with incentives, not increasing tariffs to discourage consumption)2) Stabilize the demand curve, displacing fossil fuel generation.
NON CONVENTIONAL RENEWABLE SOURCES IN THE NATIONAL ENERGY SYSTEM	Promote non-conventional and renewable energy sources in the national energy system with reliability, environmental, social and economic sustainability criteria.	Reduce GHG emissions using renewable and non-conventional energy sources in the national energy system.



SMAPh | Sectorial Mitigation Action Plan - hydrocarbons

Policies	Guidelines	Objectives
Energy efficiency	Promote energy management in the oil & gas industry	CO ₂ reductions through energy efficiency, process management and energy generation with cleaner technologies.
CCS (Carbon Capture & Storage)	Promotion of CCS for EOR (enhanced oil recovery)	Reduce emissions by the use of CO ₂ produced by the industry in EOR activities.
Gas supply management	Promote the use of natural gas and LPG in Colombia.	Replace the utilization of fossil fuels with higher emissions factors with natural gas and LPG.



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SMAPm | Sectorial Mitigation Action Plan - mining

Policies

CMM (Coal Mine Methane) market development

Energy efficiency on mining operations

Guidelines

- 1) Policy regulation
- 2) Pilot project and research development

Promote energy efficiency projects on current mining operations.

Objetives

Reduce GHG emissions on coal operations through CMM use for self-generation or flaring.

Decrease fugitive emissions and reduce combustion



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Current Developments





SMAPe

- Implementation strategy
- Nationally Appropriate Mitigation Actions | NAMAs

PRIORITIES 2014

1. Energy efficiency agency creation.
2. Technical regulation expedition
3. Promotion and support of residential and commercial energy efficiency projects
4. Promotion of renewable non-conventional energy sources in off-grid areas.
5. Promotion of active participation of demand in the national energy system

PROGRESS

1. Agreement signed between MME and ANDI: evaluation of the best association model and definition of energy efficiency parallel actions.
2. Defining the roadmap for the development of smart grids in Colombia, Law 1715 (Demand Response, self generation), RETIQ, RETIE
3. Energy efficiency projects (Public lighting, thermal districts). Law 1715 (ZNI)
4. MoU MME-DOE (USA)



SMAPh

- Implementation strategy
- Nationally Appropriate Mitigation Actions | NAMAs

PRIORITIES 2014

1. Support ECOPETROL in their GHG emissions reductions efforts Develop a common information management platform on hydrocarbons emissions.
2. Encourage private sector engagement on GHG reductions.

PROGRESS

1. Over the last two years ECOPETROL achieved over 500.000 tons CO_{2eq} reduction.
2. Under the auspices of CCAC Pacific Rubiales Energy is in the emissions assessment phase. However for 2014, we expect a net reduction of over 200000 tons CO_{2eq}
3. PROURE Oil & Gas
4. NAMA ECOPETROL



SMAPm

- Implementation strategy
- Nationally Appropriate Mitigation Actions | NAMAs

PRIORITIES 2014

1. Pilot project on CMM
2. Pilot project on energy efficiency

PROGRESS

1. Regulation development (Act. 90325 of 2014), self-generation procurements in underground mining, best practices guidelines for methane drainage.
2. National Mining Agency is developing a new framework for the industry encouraging environmental best practices.
3. Pilot projects MILPA, GECELCA.



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Thank you

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UNDP | Colombian Low Emissions Development Strategy

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