



"Value chain, Legal framework and Geopolitics of the natural gas business in Colombia"

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VIGILADA MINEDUCACIÓN

“Assessment of gas prospectivity in Colombia onshore basins with hydrocarbon commercial production”

- **Objectives:**

- the evaluation and quantification of the prospectivity of gas in seven basins of the country allowing the generation of exploratory scenarios that serve as a tool in the planning of the gas business.
- Carry out a review of the legal framework and value chain to establish the limitations and make recommendations to improve the development of the sector
- Like a plus was conducted the analysis of the geopolitics scenario of the natural gas business in Colombia

- **Work team:**

- Patricia Mantilla- Legal Framework
- Boris Villa Gallo – Chain Value
- Alberto Cisneros Lavaller - Geopolitics

- Nelson Lizarazo – ANH Supervisor
- Carlos Julio Rodriguez – UPTC Supervisor
- Clara Elena Escobar – Project Director

- Natural Gas Legal Framework – P. Mantilla
- Value Chain – B. Villa
- Global & Regional Geopolitics Colombia Gas Implications – A. Cisneros
- Wrap up

“Colombia Natural Gas Legal Framework”

Patricia Mantilla

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LEGAL FRAMEWORK OF NATURAL GAS IN COLOMBIA

- Government Policy
- National Energy Plan
- CONPES (Economic and Social Policy National Council)
- Andean Community

NATURAL GAS MARKET ENTITIES

- The Governmental Entities involved in natural gas are:
 - [Ministry of Mines and Energy](#)
 - [Energy and Gas Regulation Commission \(CREG\)](#)
 - [National Hydrocarbons Agency \(ANH\)](#)
 - [Mining and Energy Planning Unit \(UPME\)](#)

MINISTRY OF MINES AND ENERGY

- The Ministry of Mines and Energy oversees:
 - a) Issue technical regulations on the production, transport, distribution and commercialization of electricity and fuel gas, their uses and applications.
 - b) Adopt plans to expand fuel gas coverage and supply.

ENERGY AND GAS REGULATION COMMISSION (CREG)

- The Energy and Gas Regulation Commission is an Special Administrative Unit affiliated with the Ministry of Mines and Energy:
 - a) Economic regulation for the activities of the hydrocarbon-derived liquid fuels chain,
 - b) Builds the framework for fuel gas sector activities to ensure the availability of an efficient energy supply,
 - c) Establishes Fees for gas fuels.

NATIONAL HYDROCARBONS AGENCY (ANH)

- The National Hydrocarbons Agency is affiliated with the Ministry of Mines and Energy. It oversees:
 - a) Identifies and Evaluates Colombia's hydrocarbon potential,
 - b) Executes and manages agreements for the exploration and exploitation of hydrocarbons owned by Colombia, as well as monitoring all obligations under such contracts,
 - c) Allocation of areas for exploration and/or exploitation subject to the types of contracts previously analyzed.

MINING AND ENERGY PLANNING UNIT (UPME)

- The Mining and Energy Planning Unit (MEPU) is a Special Administrative Unit which emphasizes on technical aspects of the Gas Business. It is monitored by the Ministry of Mines and Energy. Its main functions towards the Gas Industry are:
 - a) Develops and updates Gas Supply and Mining Management Plans,
 - b) Analyze the economic, social and environmental desirability of developing renewable and non-conventional energy sources and their energy uses,
 - c) Evaluate the economic and social profitability of exports and imports of mineral and energy resources.

NATURAL GAS EXPLORATION

- Hydrocarbon Exploration and Exploitation Agreements
- Types of Contracts
 - Technical Evaluation Contract (TEA)
 - Exploration and Production Contract (E&P)
- Economic, Financial, Technical, Operational and Environmental Capacity
- Exploration Period varies between 2 and 9 years

NATURAL GAS PRODUCTION

- Supply Contract
 - Supply a specific quantity of gas to different buyers.
 - Supply gas without being bound to a specific volume.
- Contract that guarantees firmness:
 - Contract in which an agent guarantees a maximum quantity of natural gas, without interruptions, for a given period and which requires a guarantee that the Supplier has natural gas reserves.
- Contract that does not guarantee firmness
 - Contract in which an agent does not assume a commitment to continue supplying a specified quantity of natural gas, consequently, the contract may be interrupted by either party.

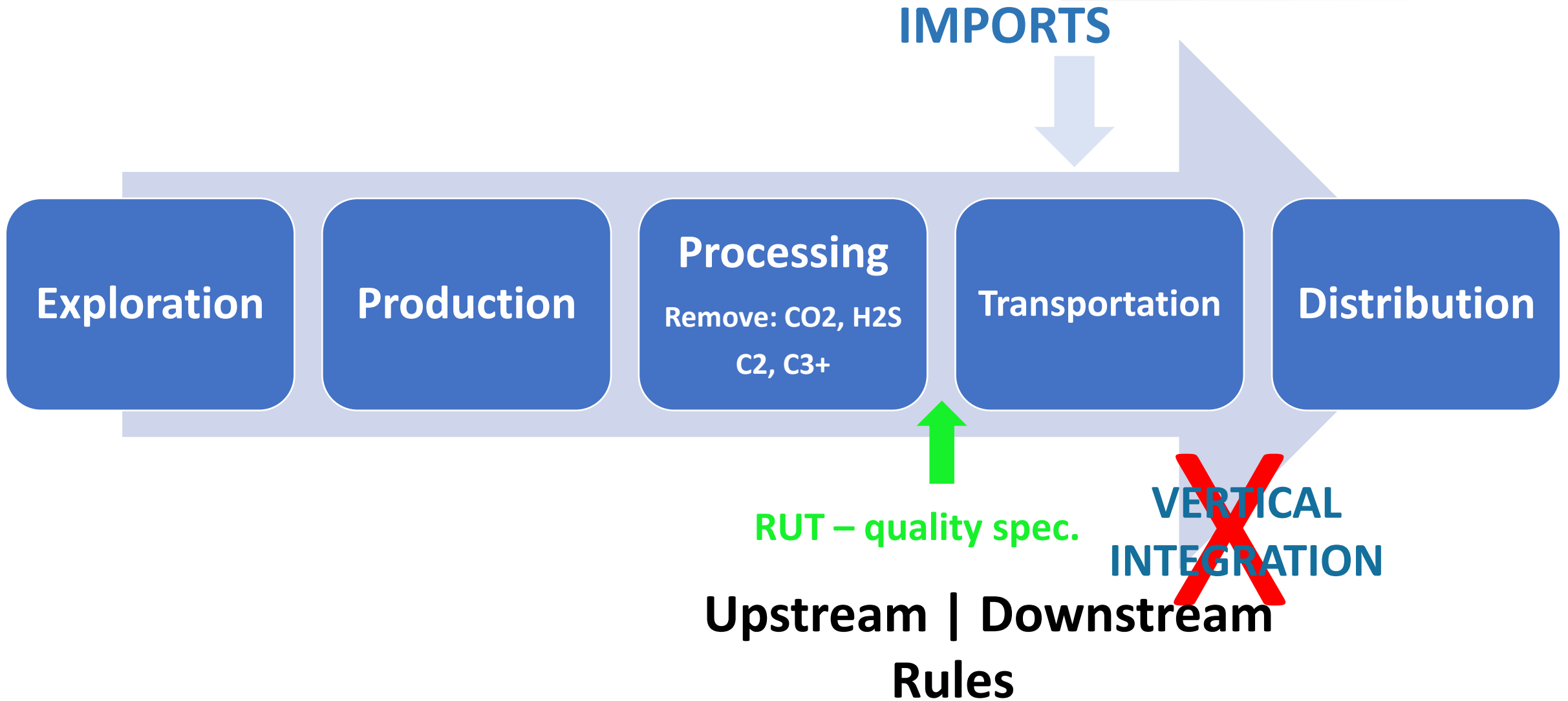
“Colombia Gas Value Chain”

Ing. Boris Villa Gallo

borisvilla@hotmail.com

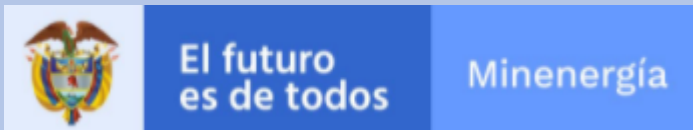
3204982167

- General overview, basins & infrastructure
- Main agents & market rules
- Market and prices
- Future supply & demand
- Conclusions



PRODUCTION ONLY

PRODUCER



EXPORT PERMISSION IF
R/P > 6 YEARS



SALES TO NATIONAL MARKET

MARKETER- PRODUCER



REGULATION

- Monopolies
- Oligopolies

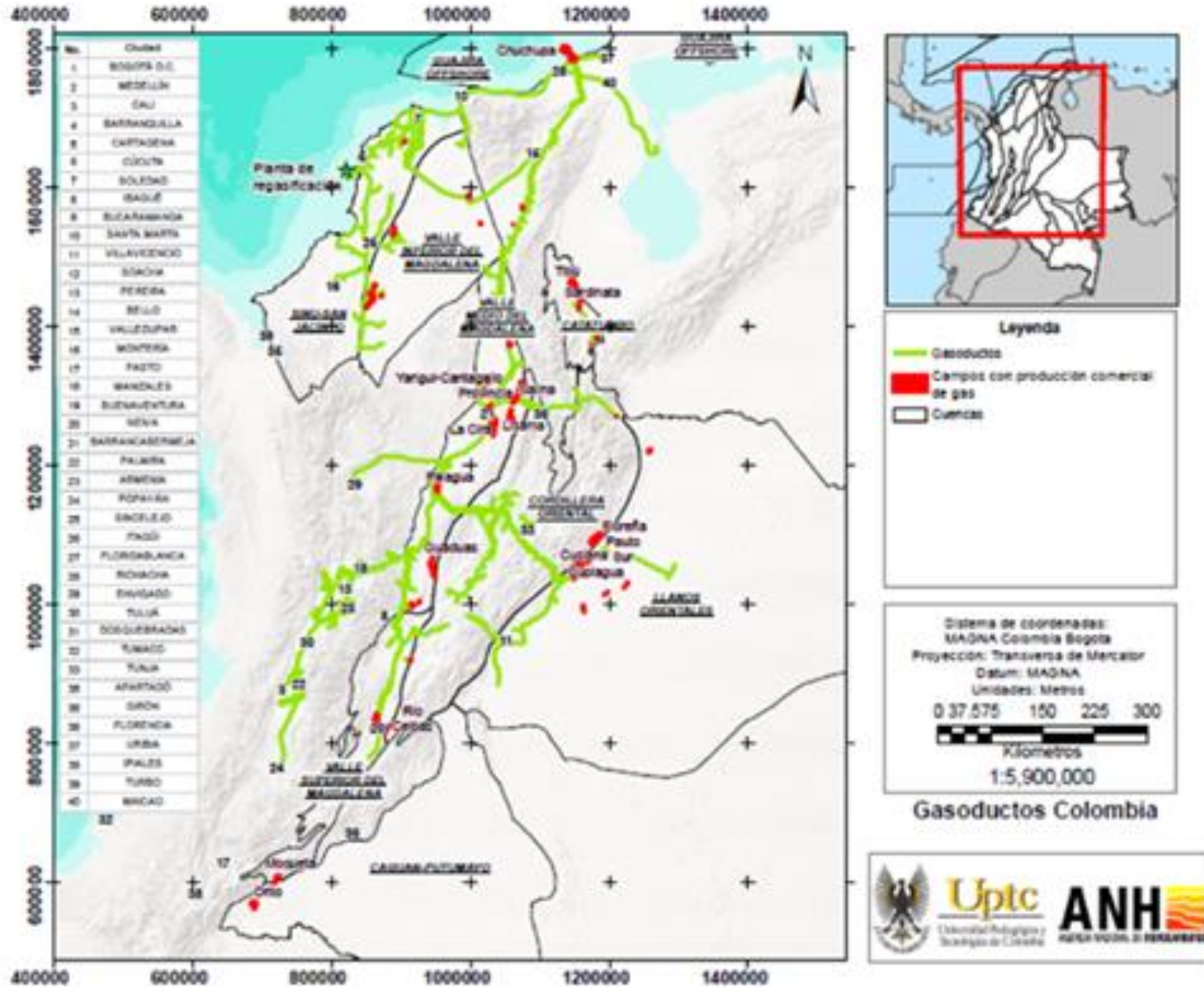


CONTROL

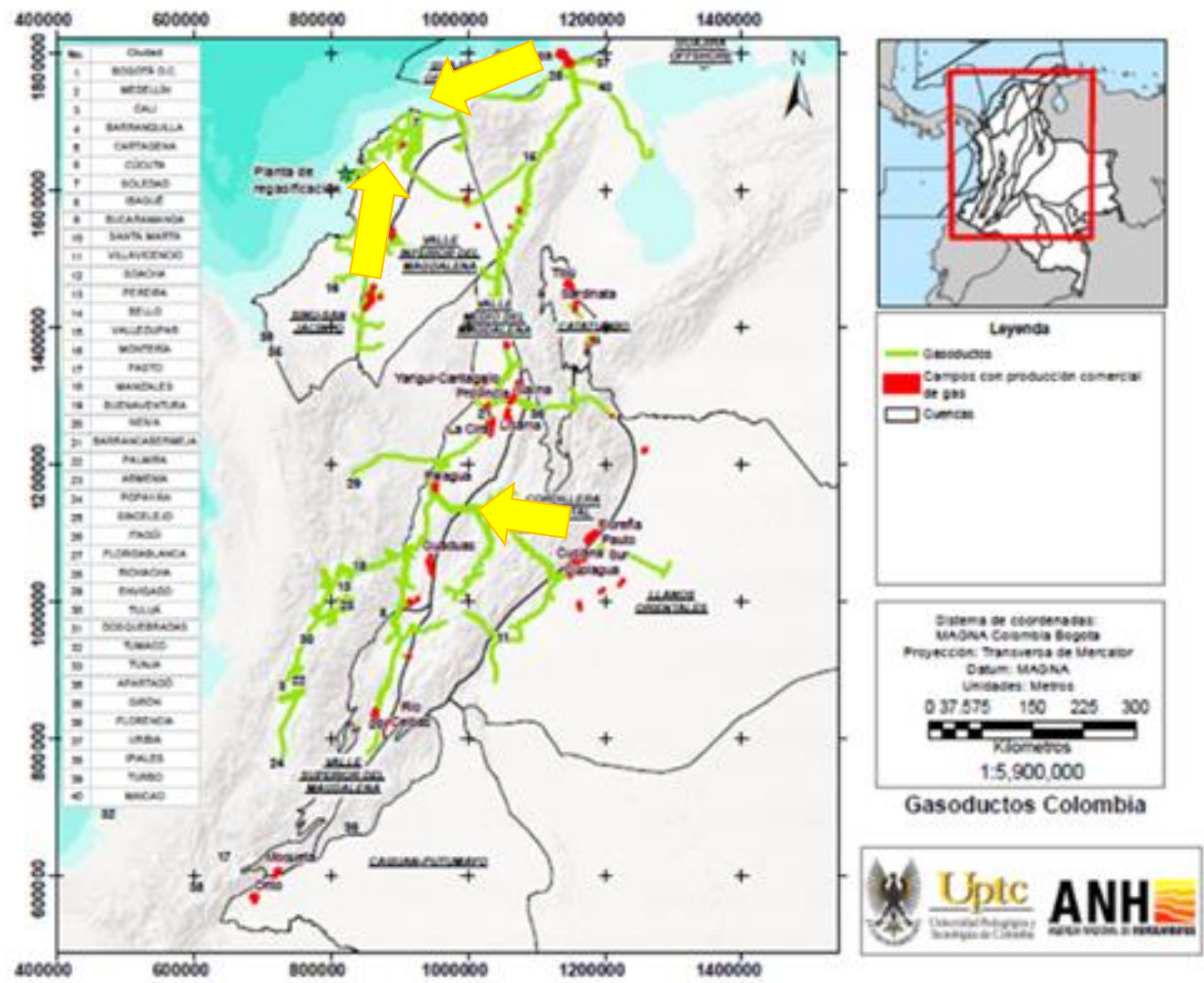
SNT National Transportation System

1062 Mcfd*

* aug/21

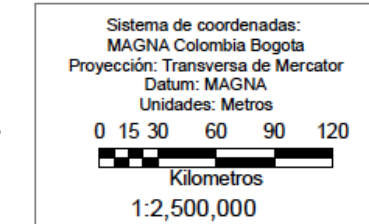
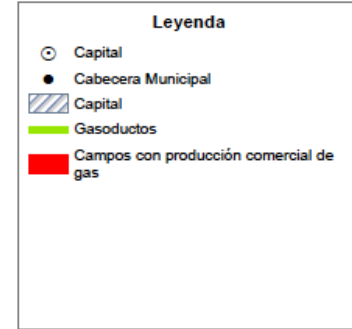
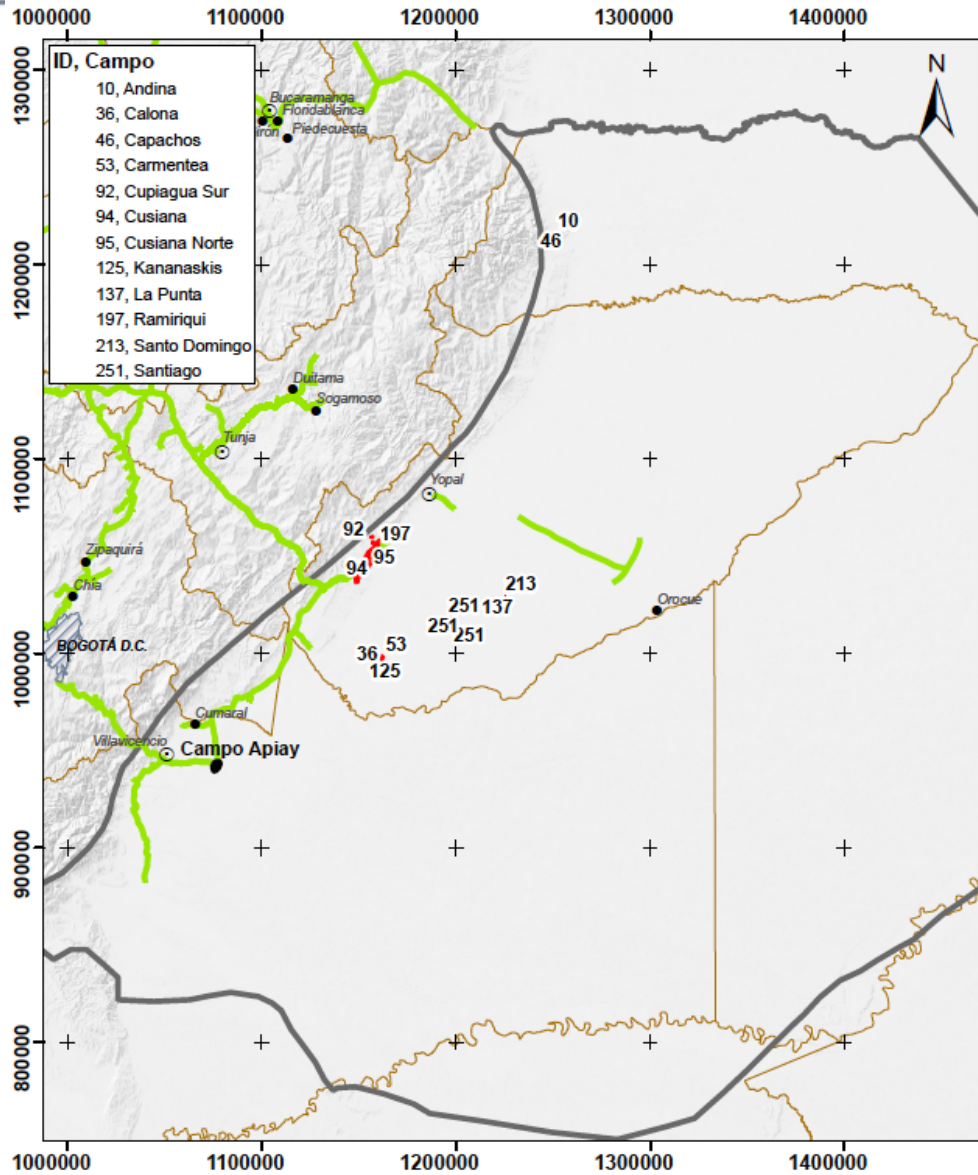


SNT TRANSPORTATION DEVELOPMENT



LLANOS

Cusiana
Cusiana Norte
Cupiagua Sur



Campos con Producción Comercial de Gas
Cuenca
Llanos Orientales



El futuro
es de todos

Minenergía

438 Mcfd*
41%

VIM

El Difícil

Bonga

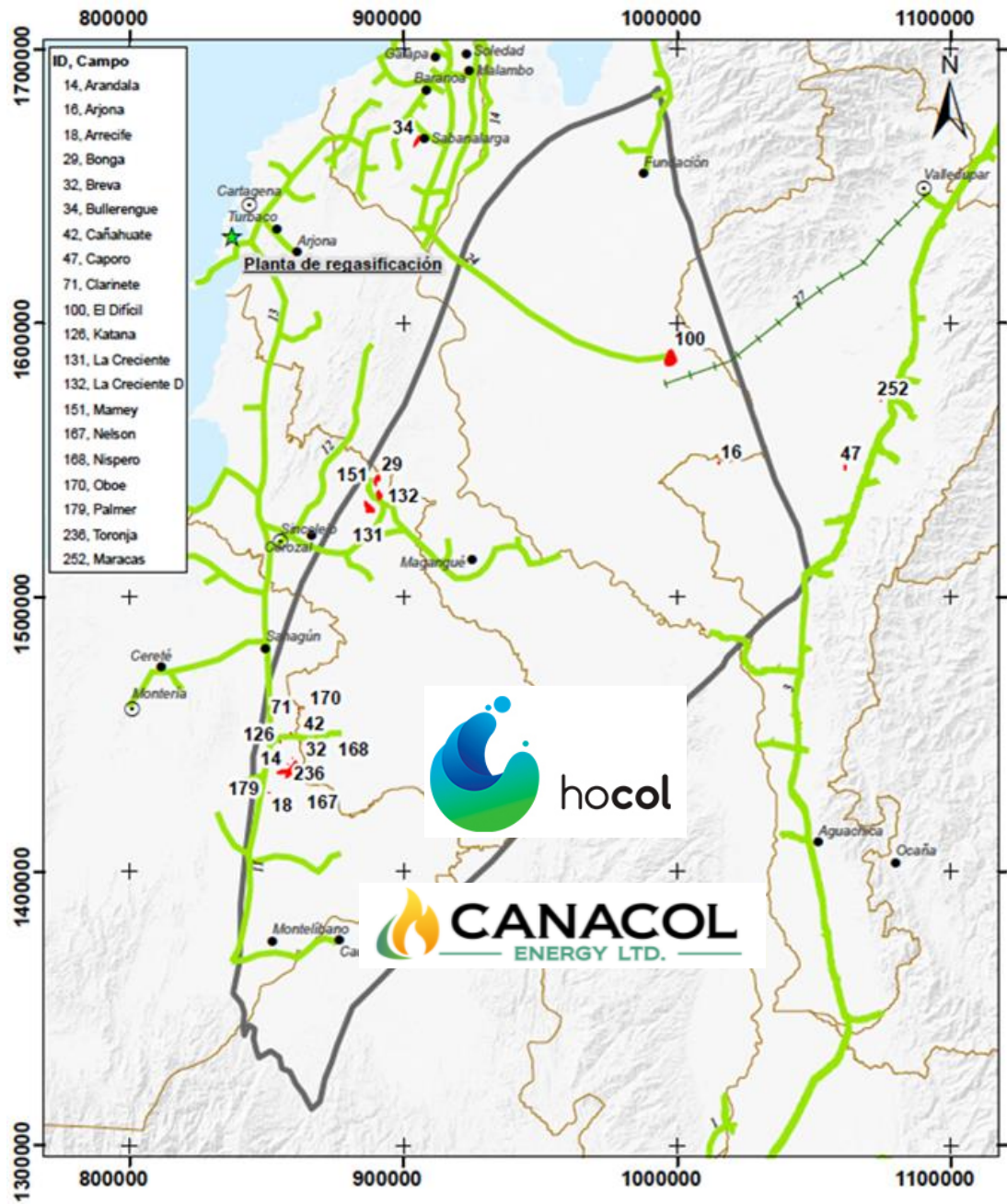
Mamey

Nelson

Clarinete

Pandereta

Arrecife



AGENCIA NACIONAL DE HIDROCARBUROS



Leyenda

- Capital
- Cabecera Municipal
- Gasoducto
- Gasoductos de distribución
- Campos con producción comercial de gas

Sistema de coordenadas:
MAGNA Colombia Bogota
Proyección: Transversa de Mercator
Datum: MAGNA
Unidades: Metros

0 10 20 40 60 80
Kilometros
1:1,800,000

Cuenca
Valle Inferior del Magdalena



237 Mcfd*

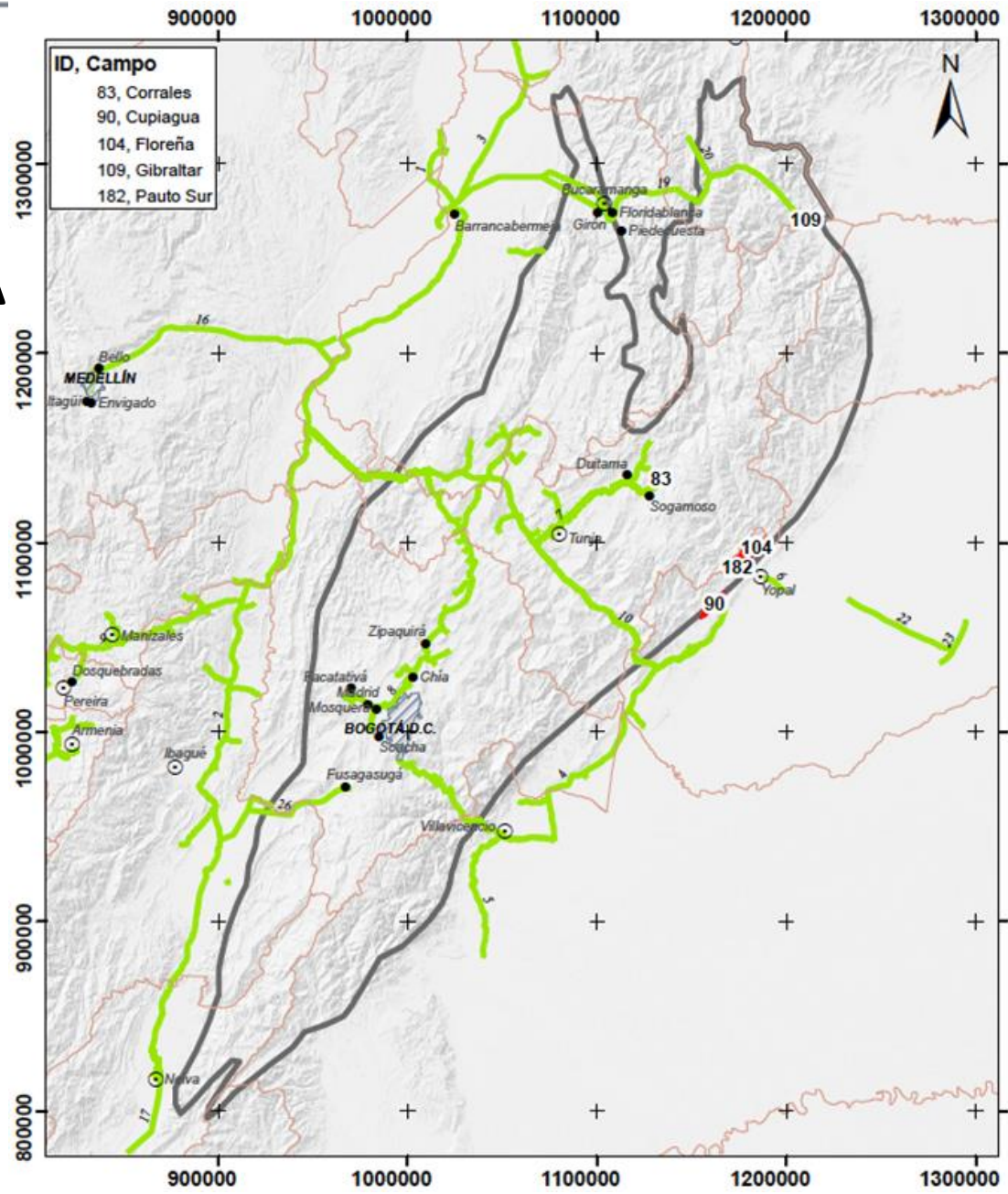
22 %

CORDILLERA

Floreña

Pauto

Gibraltar



Leyenda

- Capital
- Cabecera Municipal
- ▨ Capital
- Gasoductos
- Campos con producción comercial de gas

Sistema de coordenadas:
MAGNA Colombia Bogota
Proyección: Transversa de Mercator
Datum: MAGNA
Unidades: Metros

0 15 30 60 90 120
Kilometros
1:2,600,000

Campos con Producción Comercial de Gas
Cuenca
Cordillera Oriental

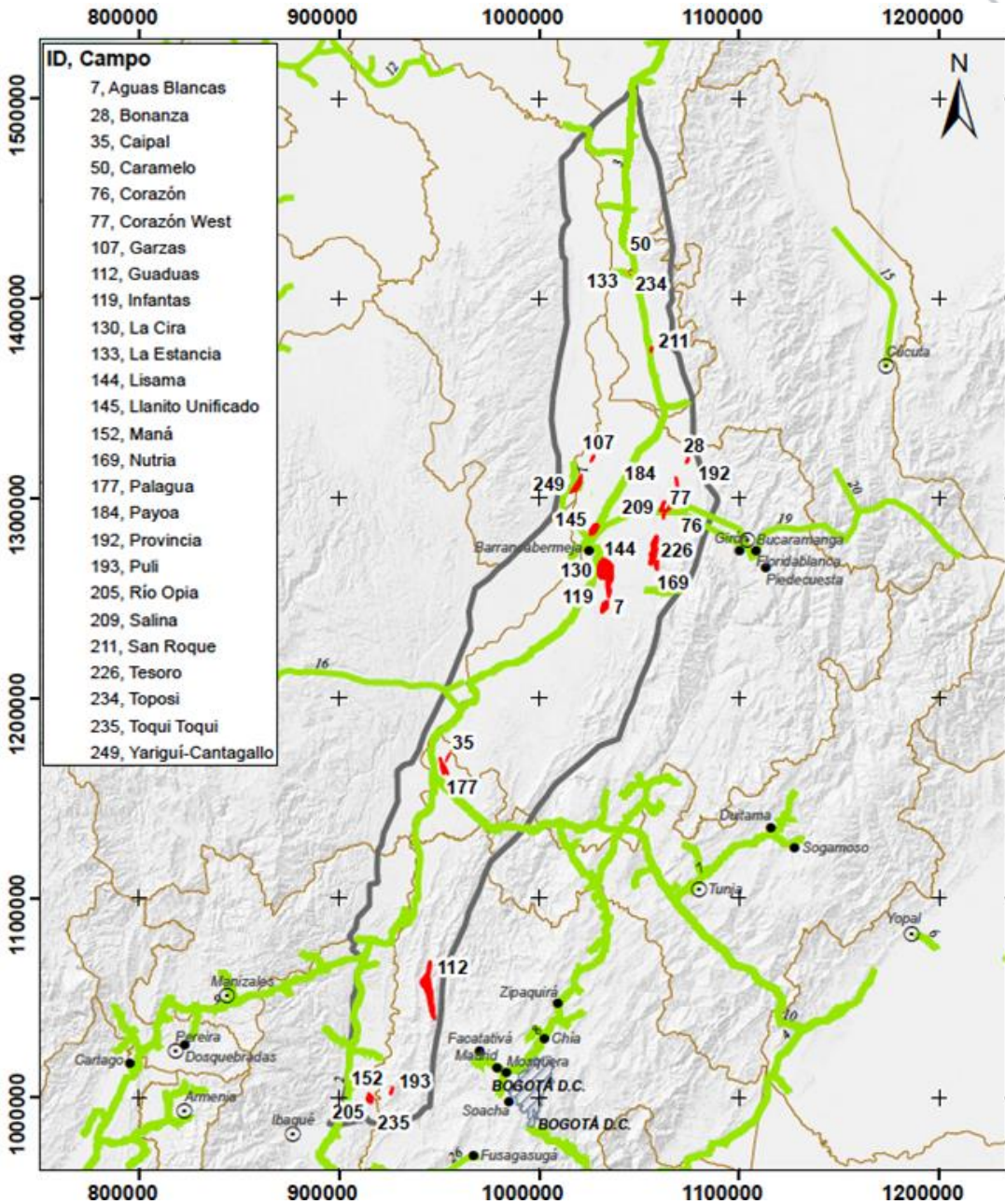


201 Mcfd*

19 %

VMM

Provincia
Payoa
La Cira



AGENCIA NACIONAL DE HIDROCARBUROS



Leyenda

- Capital
- Cabecera Municipal
- ▨ Capital
- Gasoductos
- Campos con producción comercial de gas

Sistema de coordenadas:
MAGNA Colombia Bogota
Proyección: Transversa de Mercator
Datum: MAGNA
Unidades: Metros

0 15 30 60 90 120
Kilometros
1:2,500,000

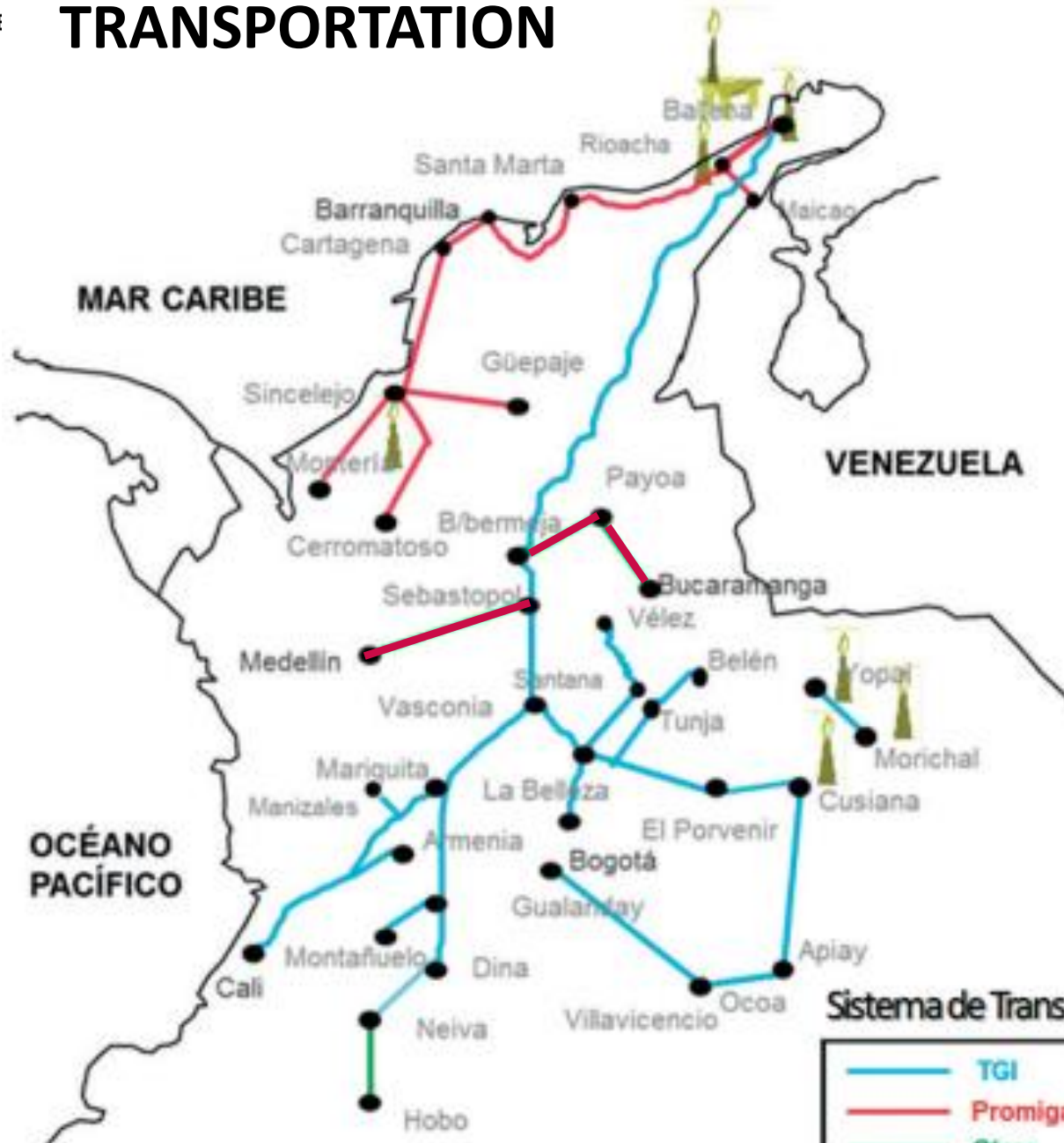
Campos con Producción Comercial de Gas
Cuenca
Valle Medio del Magdalena



40 Mcfd*

4 %

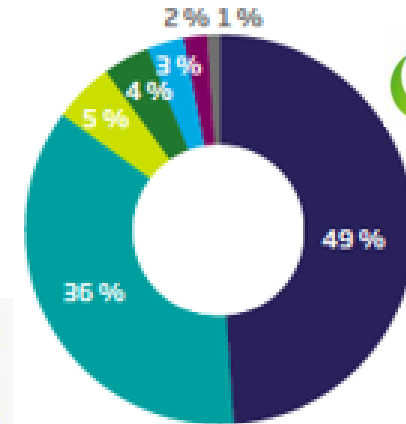
TRANSPORTATION



Participación-2020

Empresa

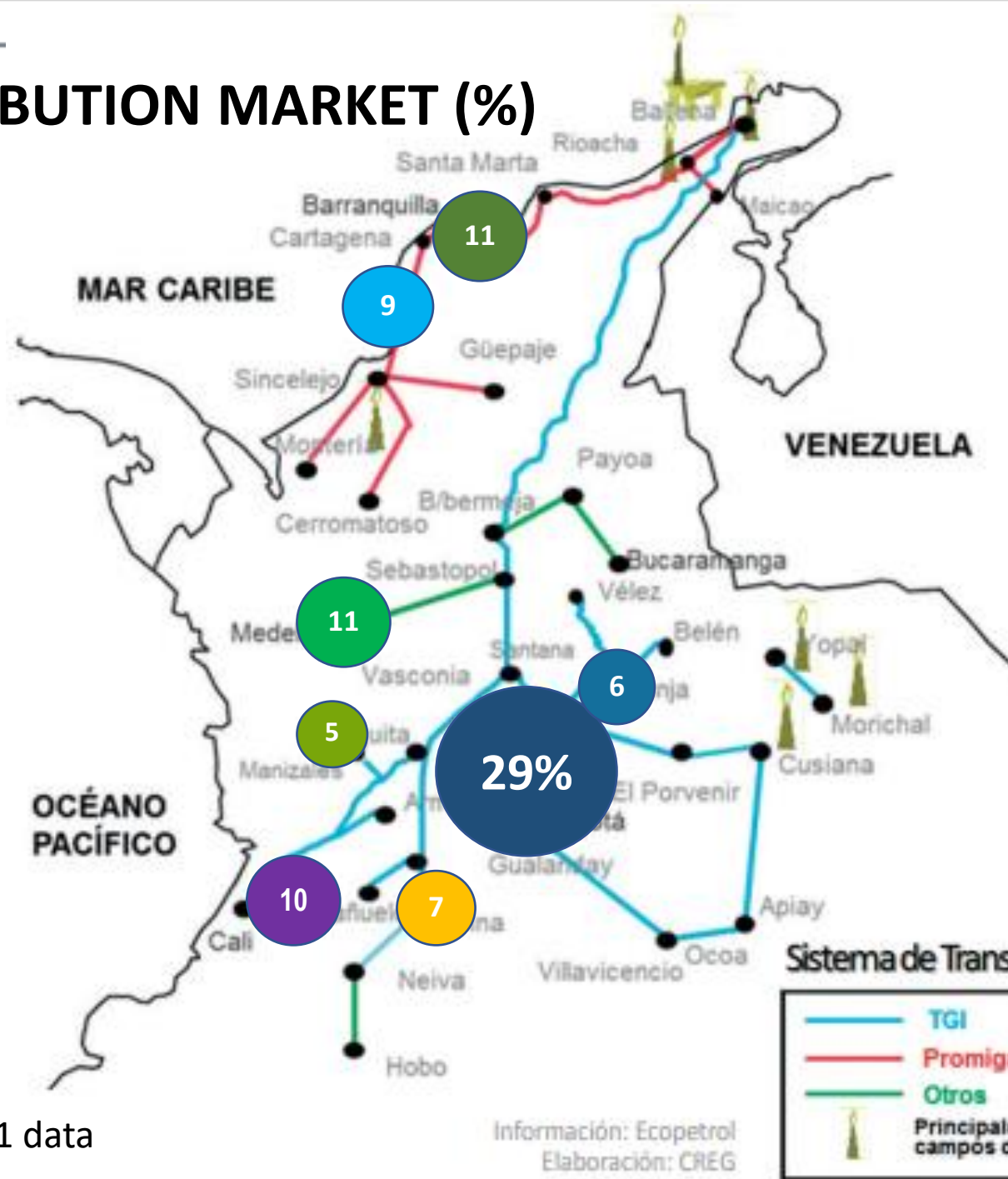
- TGI
- Promigas
- Transmetano
- Transoccidente
- Promioriente
- Progasur
- Coinogas



Sistema de Transporte

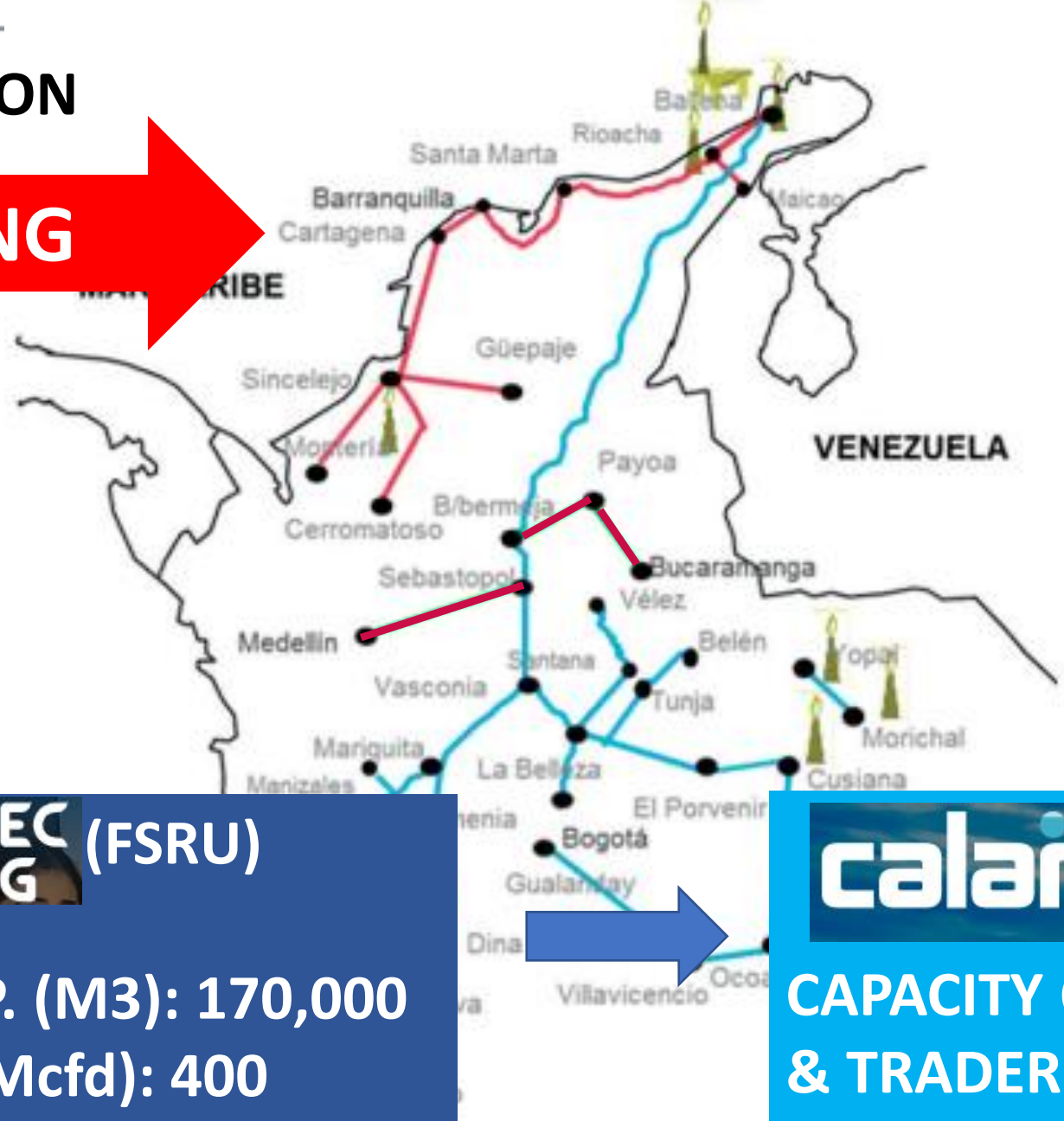
- TGI
- Promigas
- Otros

DISTRIBUTION MARKET (%)




Source: Promigas, 2021 data

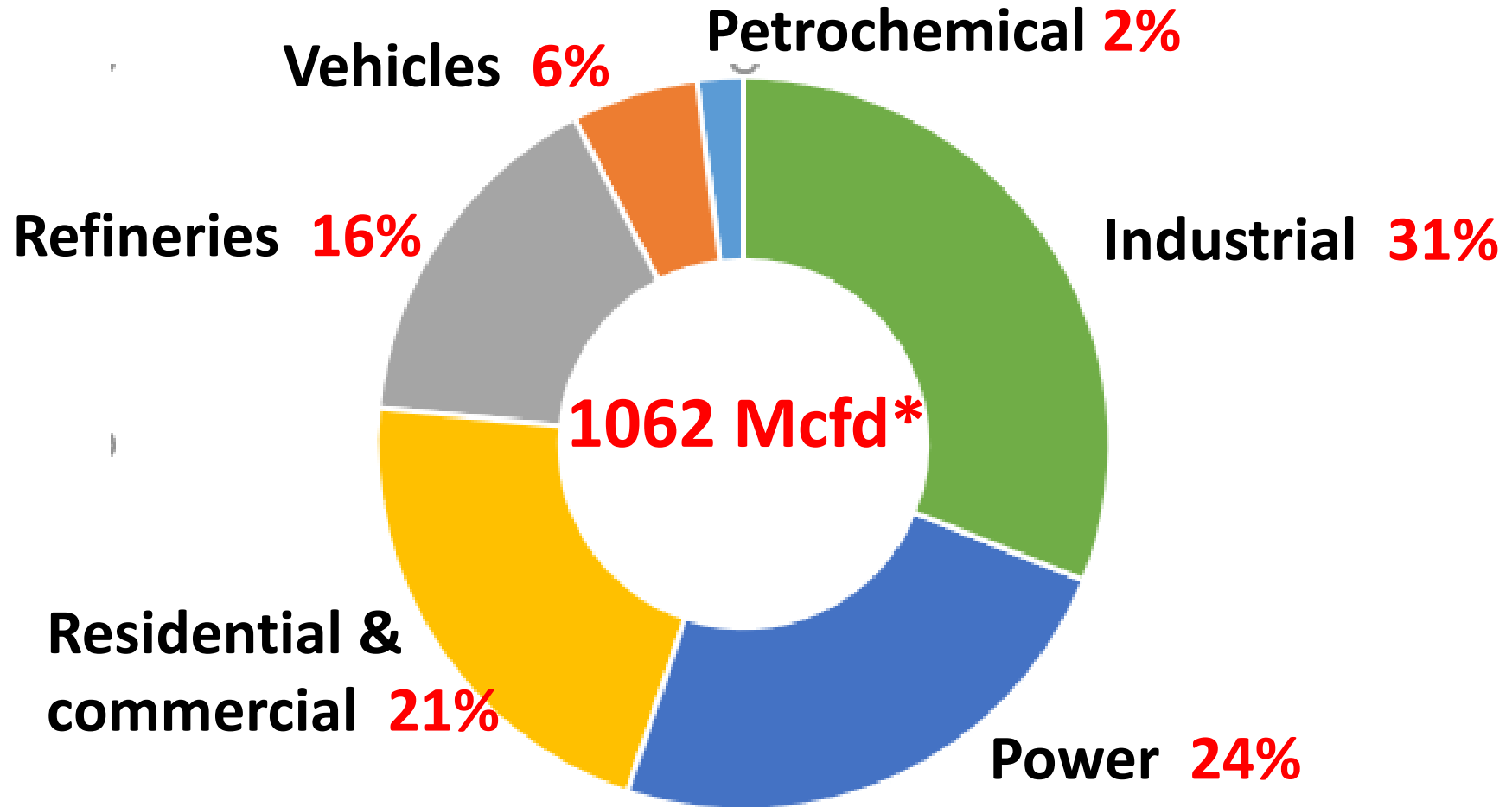
REGASIFICATION



 (FSRU)
STORAGE CAP. (M3): 170,000
REGAS CAP. (Mcf/d): 400


CAPACITY OWNER
& TRADER

DEMAND PER CONSUPTION TYPES



Marketer Producer rules

PRICES ARE FREELY AGREED
BETWEEN SUPPLY & DEMAND

Production >
30 Mcfd

Production <
30 Mcfd

Non STN
interconnected

Extended
proof fields

**TRADING RULES: SCHEDULE,
ONCE/YR, MECHANISM,
CONTRACTS, ETC**

**FREE TRADE: ANY TIME OR
CONTRACT**

PRIMARY MARKET

SECONDARY MARKET

SUPPLY

TRANSPORT


SUPPLY

TRANSPORT


Sellers



- marketer - producer
- Importer



- transporter



- trader
- big consumer



- trader
- big consumer


Buyers




- trader
- big consumer



- trader
- big consumer



- marketer producer
- importer
- trader



- trader

Contract types

- Firme al 95%
- Firmeza condicionada
- Opción de compra
- Opción de compra exp
- Contingencia
- C1/C2
- Con interrupciones

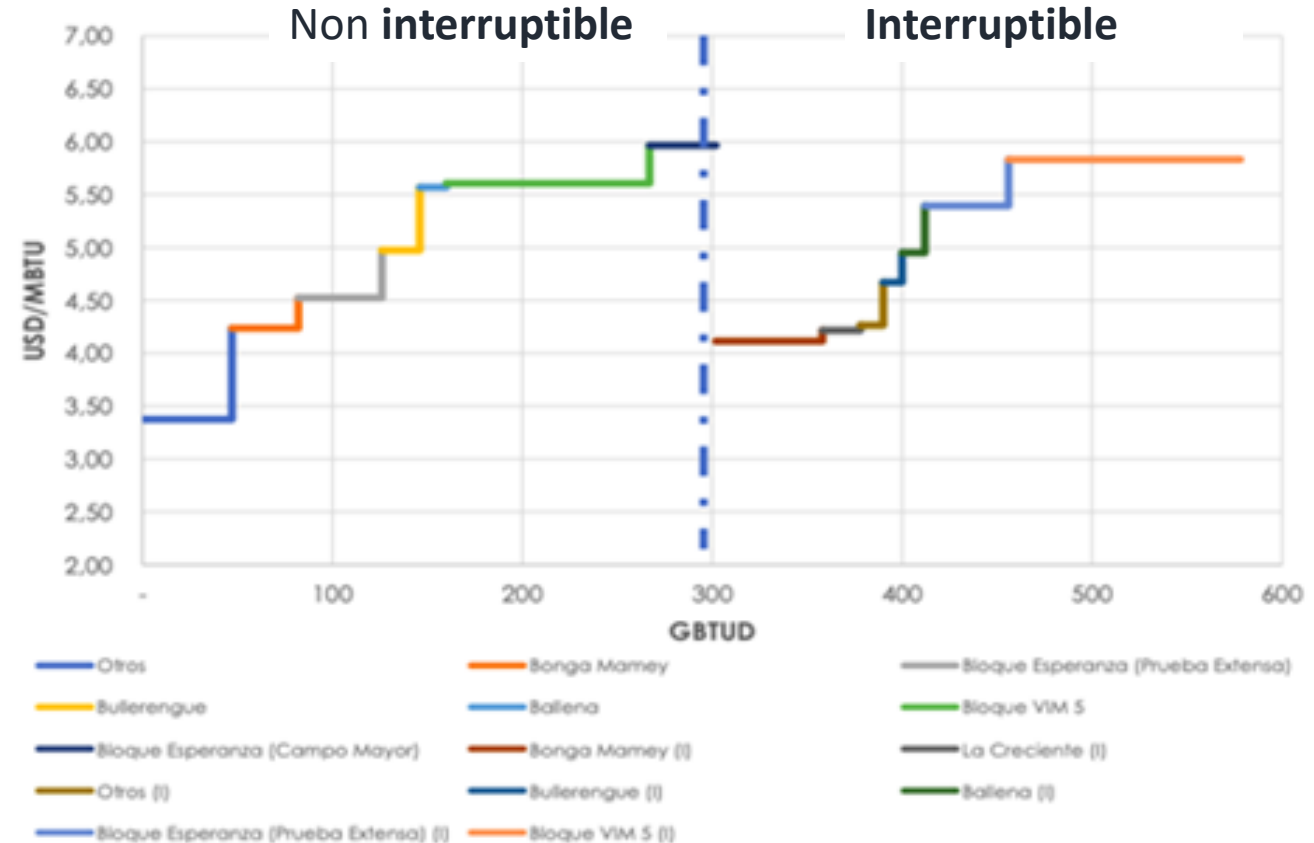
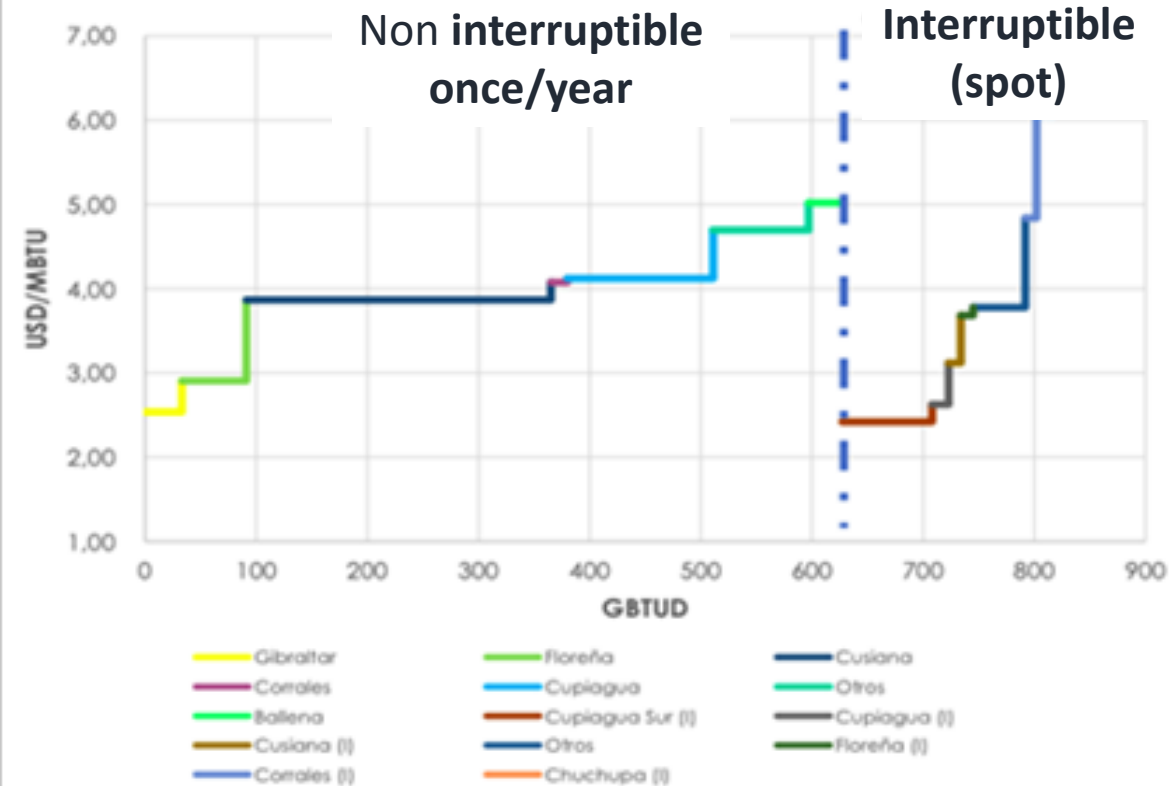
- Firmes
- Firme Trimestral
- Firmeza condicionada
- Opción de compra
- Contingencia
- Con interrupciones

- Firme
- Firmeza condicionada
- Opción de compra
- Opción de compra exp.
- Contingencia
- Con interrupciones

- Firme
- Firme Trimestral
- Firmeza condicionada
- Opción de compra
- Contingencia
- Con interrupciones

Field prices Interior market 2019-20

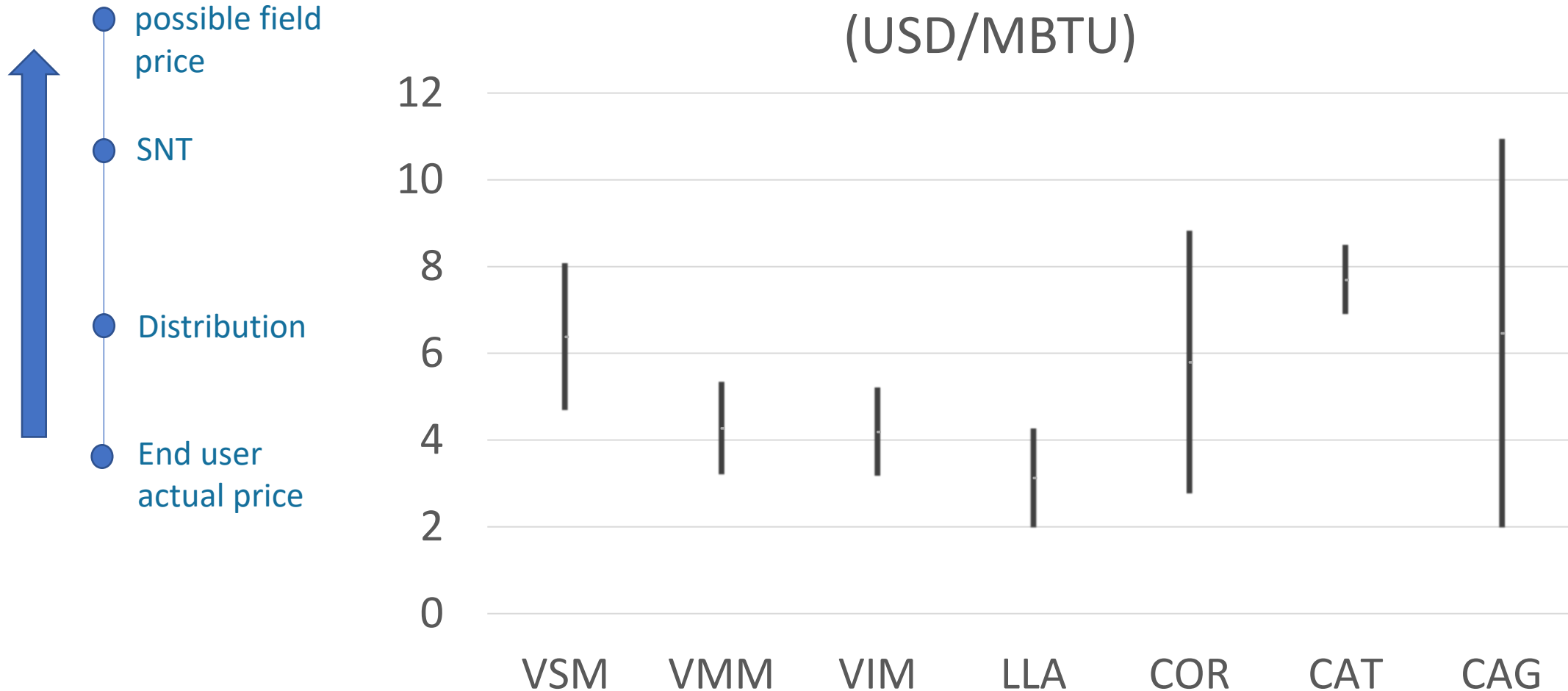
Field prices Atlantic Coast market 2019-20



Fuente: SEGAS

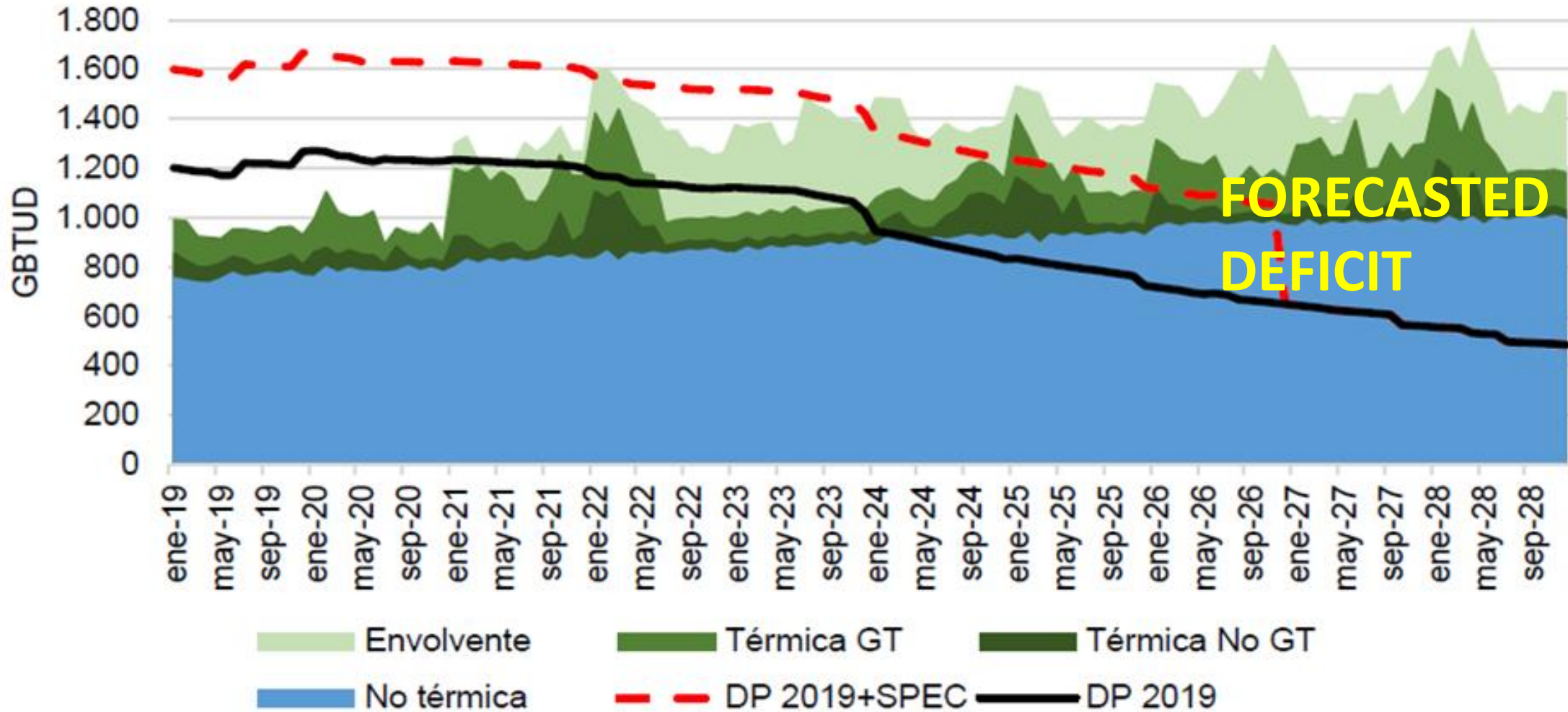
Colombian fields 1 Mcf ≈ 1 a 1.15 GBTU

Well head estimated netback prices* (USD/MBTU)



* Based on average non-interruptible contracts in sep/21 & distance up to 84 km away the SNT

SUPPLY - DEMAND BALANCE



Source: UPME

- Colombia has a relative mature gas market with infrastructure & regulation already developed
- Market opportunity for the next years because of incremental needs with declining supply
- Regulation for new producers is flexible to enter in the market
- Regulation is evolving to adjust for new gas sources

Thank you!

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“Global & Regional Geopolitics Colombia Gas Implications”

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Global Business Consultants CEO/President

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GLOBAL & REGIONAL GEOPOLITICS COLOMBIA GAS IMPLICATIONS

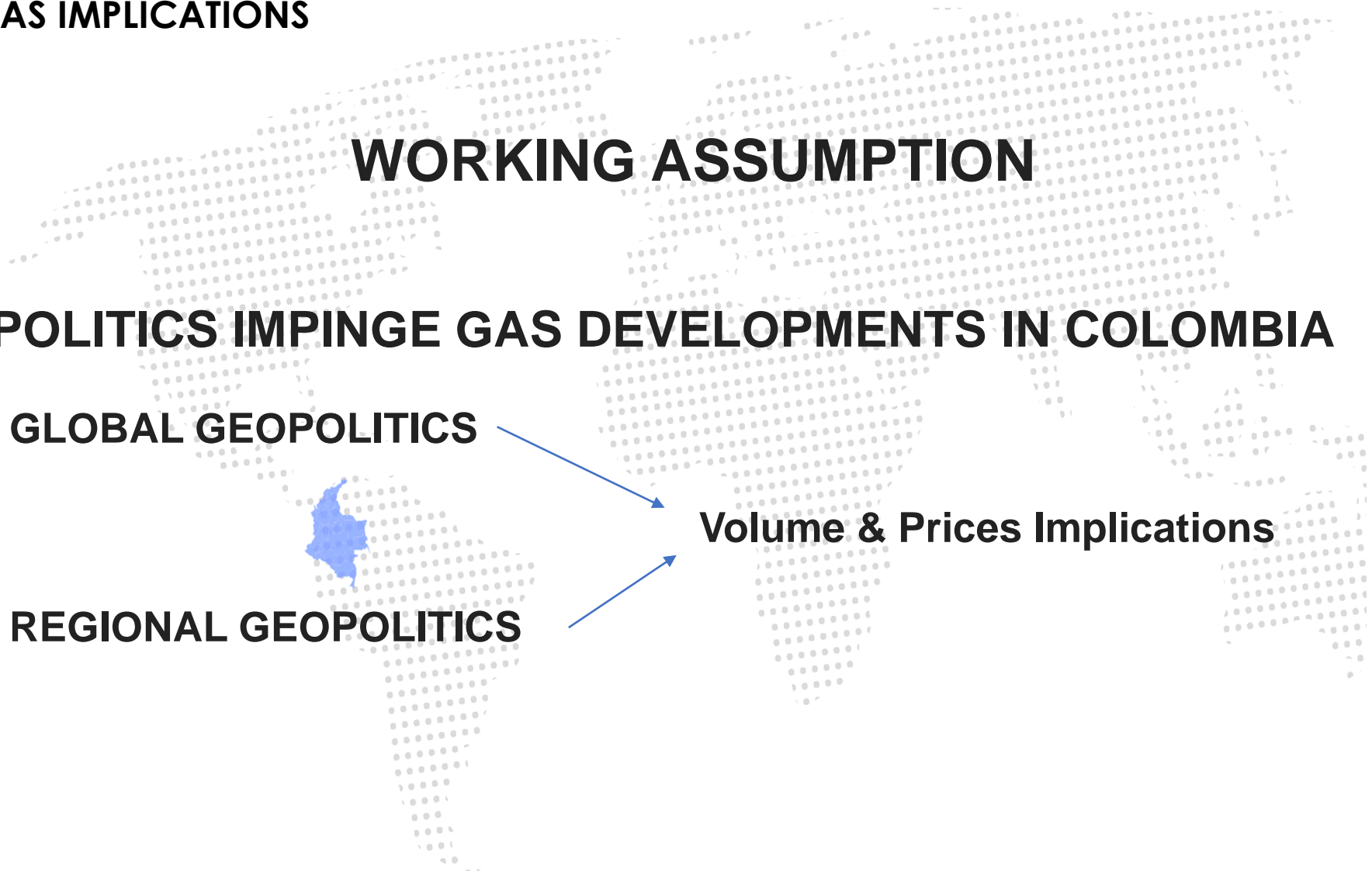
WORKING ASSUMPTION

GEOPOLITICS IMPINGE GAS DEVELOPMENTS IN COLOMBIA

- GLOBAL GEOPOLITICS

- REGIONAL GEOPOLITICS

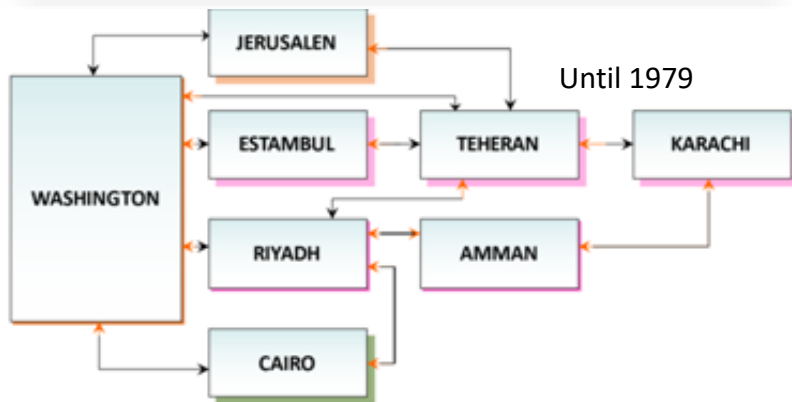
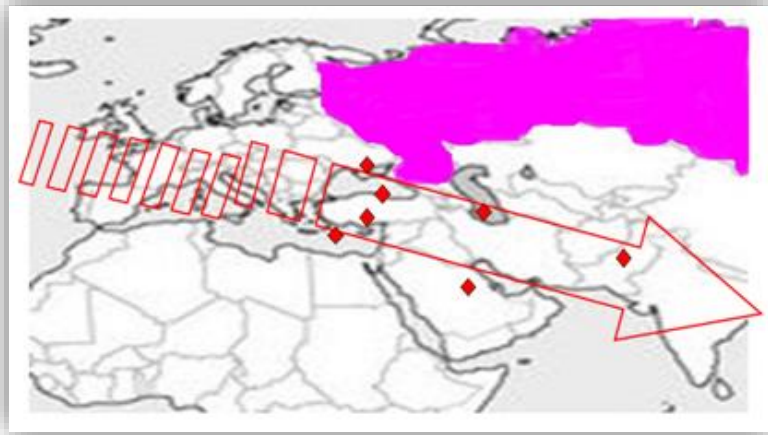
Volume & Prices Implications



GLOBAL GEOPOLITICS

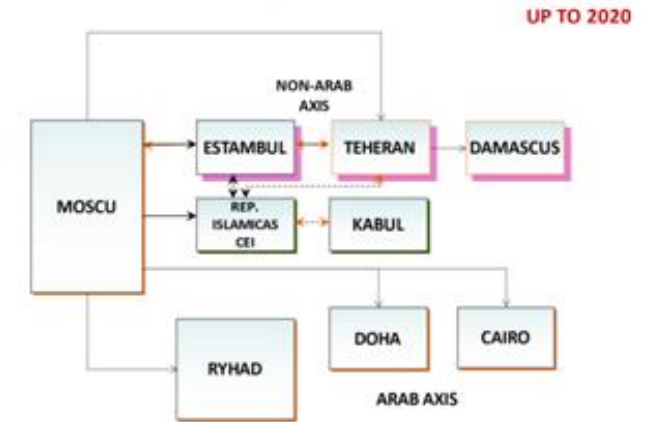
POLITICS of CONTAINMENT

After WWII USA establishes Strategic Axis controlling Great M.EAST & Central Asia



RUSSIAN Strategic Positioning – Disrupting Containment

Moscu New Axis



Advantages of the Northern Sea Route

Rotterdam to Yokohama	-3,840NM	9.0 days
to Shanghai	-2,361NM	5.5 days



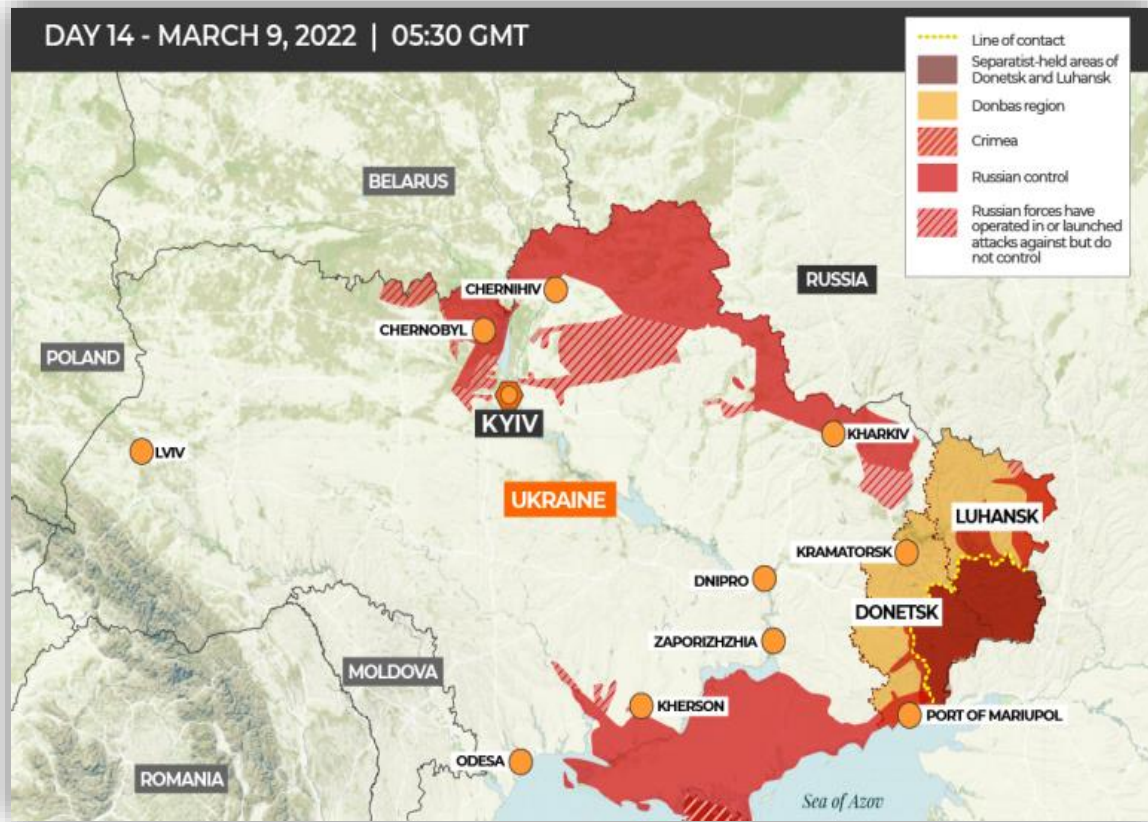
Maritime Arctic Route

Source: "Economic Possibilities of Shipping through Northern Sea Route", Lee and Song, 2014

Economist.com

RUSSIA UKRAINE WAR

Russian Invasion
From Failed "Blitzkrieg" to Protracted Conflict ?



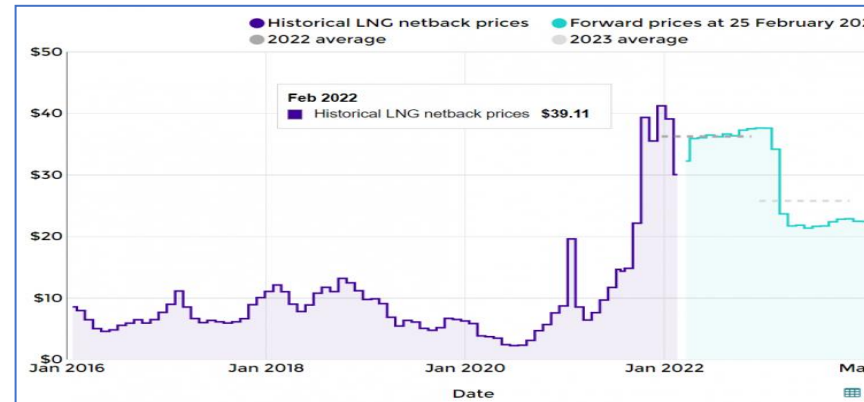
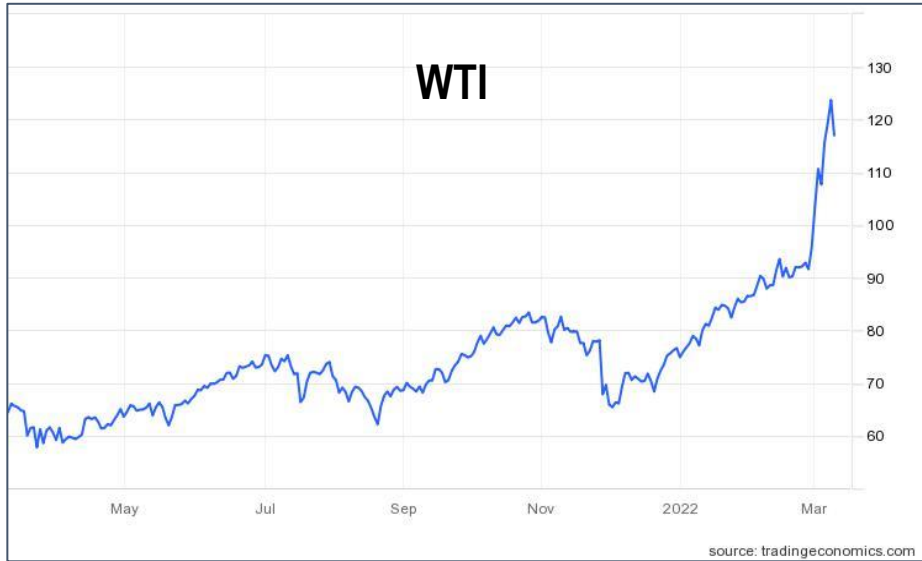
Source: <https://www.aljazeera.com/news/2022/3/9>



Political Geography Redesigned
USSR Comeback ?



HYDROCARBON PRICES: War Shock

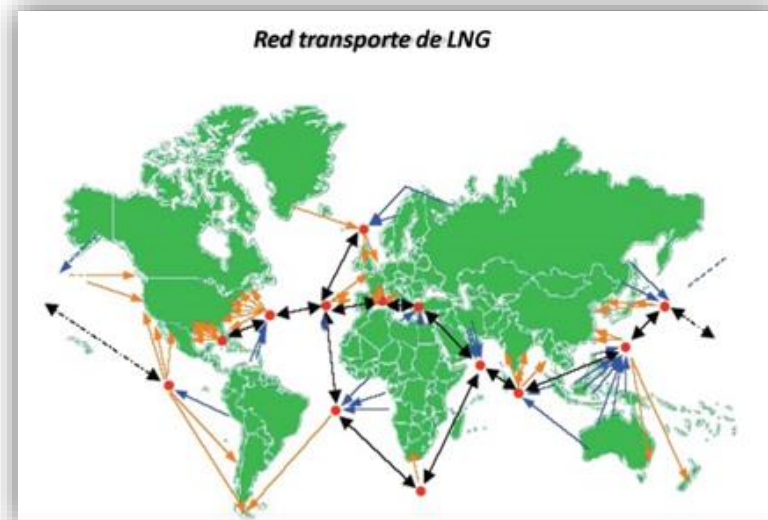
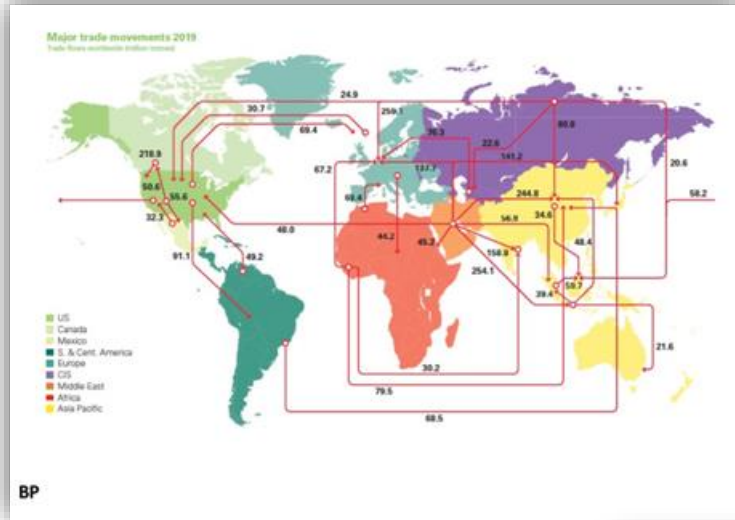


ASIA

OIL 130 \$/BI – LNG EUR: 53\$/MBTU ASIA: 40\$/MBTU

OIL vs. GAS GEOPOLITICS

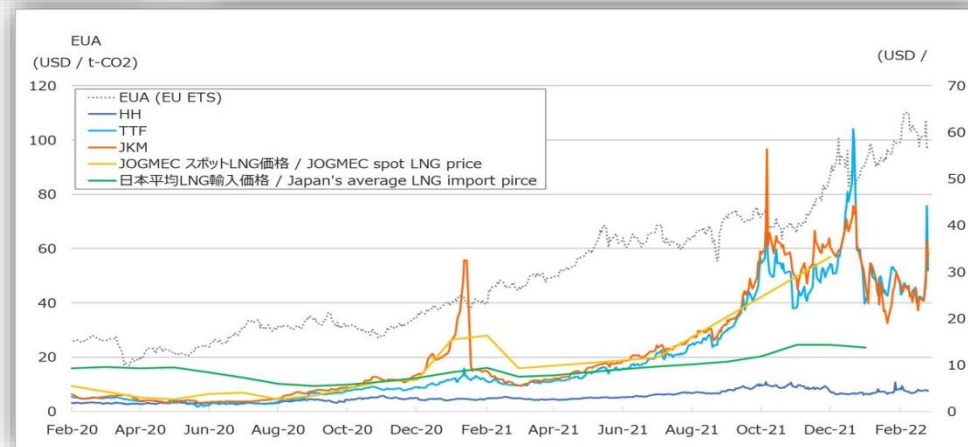
“Free Flux” Geopolitics



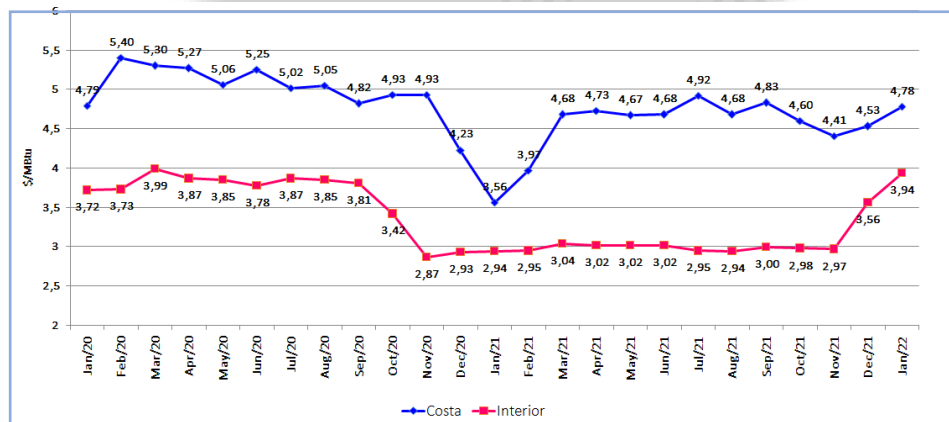
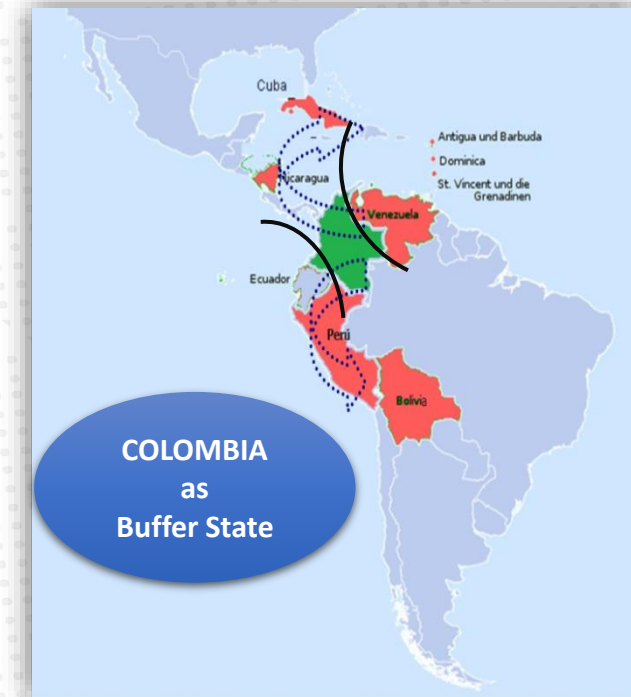
Geopolitics of “Entrapment”



Gas Prices Geopolitics Impact



COLOMBIA GEOPOLITICS



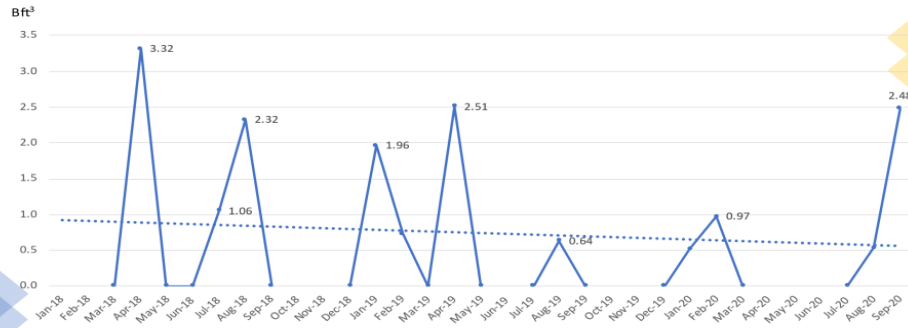
Source: Gestor del Mercado Colombia

NOTICEABLE DIFFERENCE BETWEEN DOMESTIC PRICES vs. IMPORTED LNG

The Former barely affected by global geopolitics;
The Latter influenced by geopolitical events in any world region

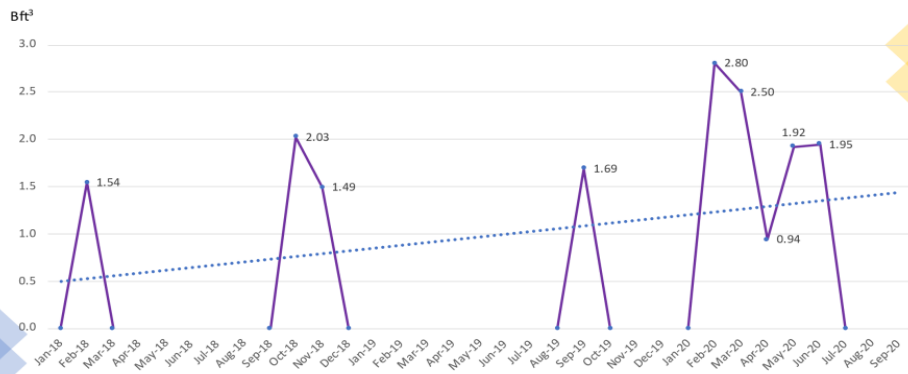
COLOMBIA GEOPOLITICS: RUS War LNG Repercussions

Colombia: USA LNG Imports



Fuente: SPEEC

Colombia: T&T LNG Imports



Fuente: SPEEC

USA

Incremental exports to COL in jeopardy due to boost EUR destinations

Export Prices to COL could Increase Proportionately ?

LNG Volume

LNG Prices

T&T

Exports to COL in jeopardy due to possible EUR destinations or USA

Export Prices to COL ?

REPERCUSSIONS - Final Remarks VOLUME REPERCUSSIONS

GLOBAL GEOPOLITICS

- Major Competition: The Near Abroad defied by the Farther Abroad (Europe – USA?)
- Eventually Lesser volumes available for COL LNG Imports

REGIONAL GEOPOLITICS

POLITICS OF CONTAINMENT

- Could Impinge the reversal of Ricaurte Gas line between VEN-COL
- Bilateral Agreement return Gas to COL by 2012
- Impact Rio Hacha Producers

BUFFER STATE

- Jeopardize eventual Peruvian Exports to Buenaventura
- Would Castillo last ?
- What COL New Government ?

REPERCUSSIONS - Final Remarks

PRICING REPERCUSSIONS

- Higher Prices for imported LNG at Baru
- New Exporter Perú (Buenaventura) with high prices stricken by ASIA LNG Markers,
May become a showcase for higher prices to COL Caribbean Coast

IMPLICATIONS - Final Remarks

- **ONSHORE** Gas new incremental supply opportunities. More exploration at risk; higher imported LNG prices unfold new economies for developing more costly domestic gas
- **OFFSHORE** Gas for long term Open Destinations Near and farther Abroad

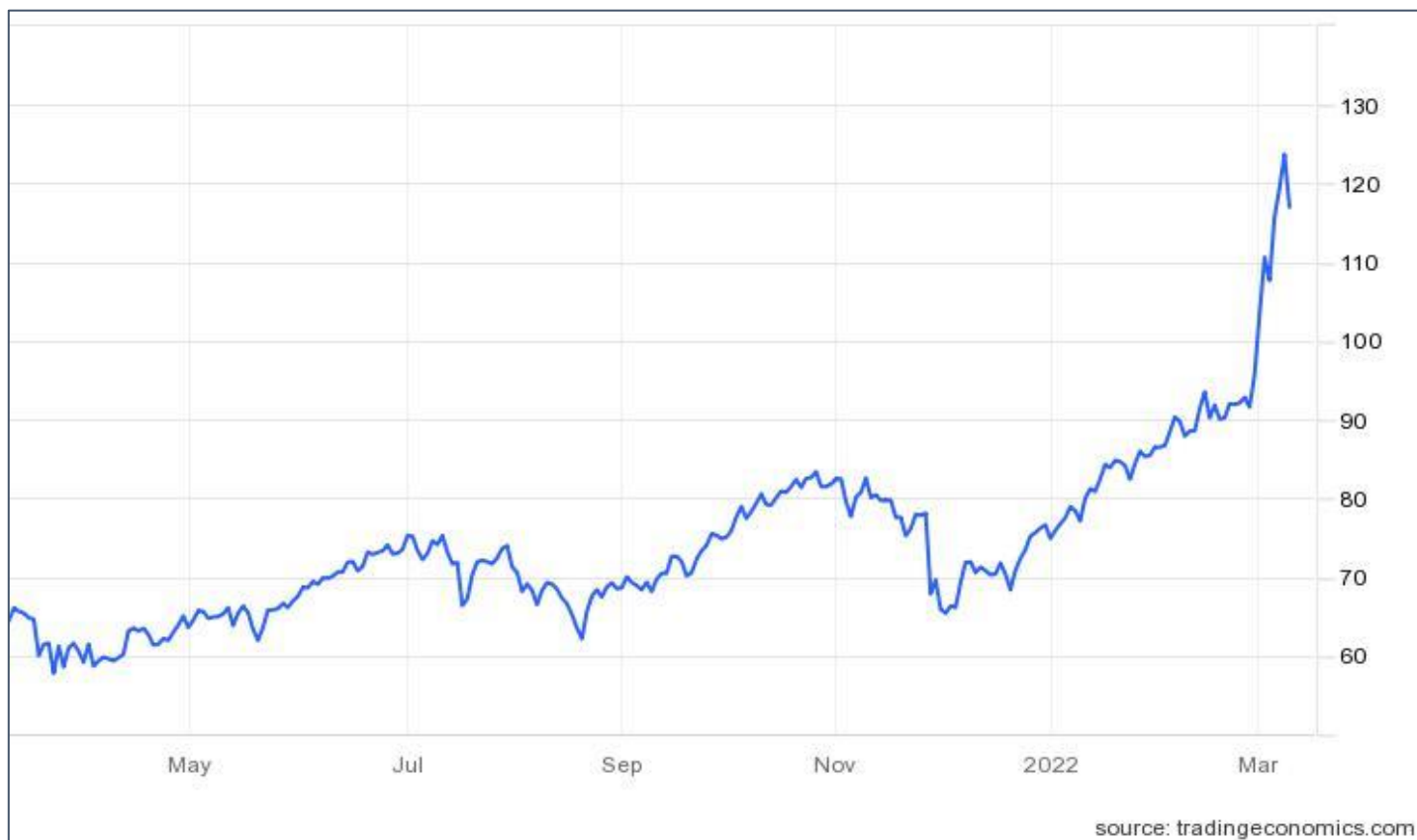
FRIN

**Further Research is Needed to Analyze any Particular Implication
For a Given Operator/Producer**

BACKUP

OIL PRICES: War Shock

WTI



RUS War in UKR: Repercussions

OIL Prices with Risk Premium (130)
Omicron Impact in CHN slow down trend (100)

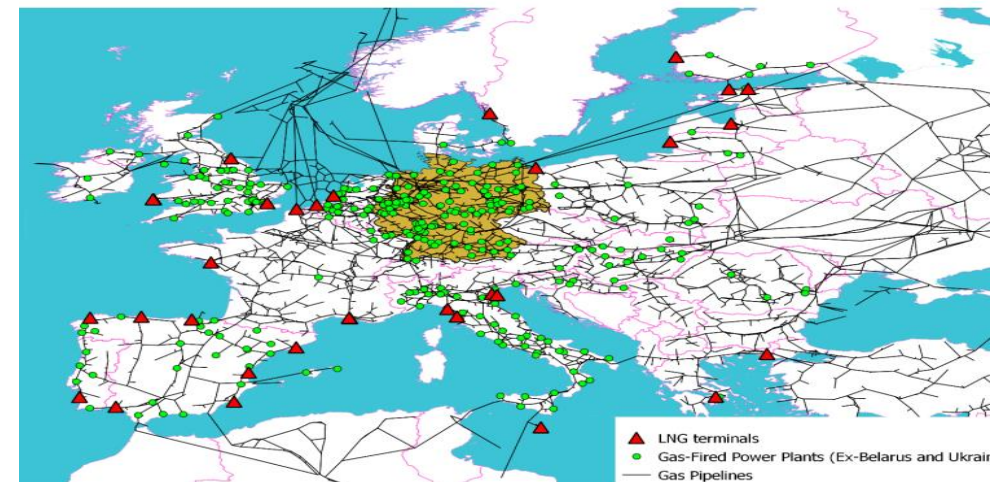


EUROPE: LNG PRICES

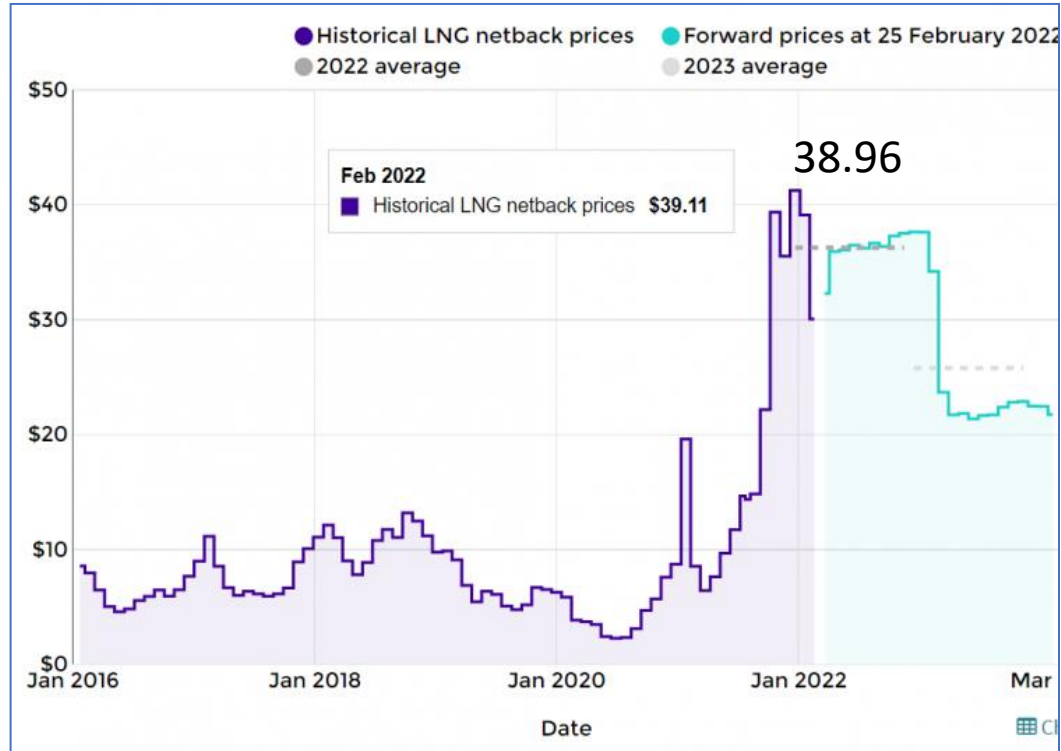


Germany particularly exposed to RUS gas supplies disruptions due to:

- Lack of LNG import facilities;
- High dependence on gas-fired power;
- Shutdowns of several coal & nuclear generation capacity over past decade



ASIA LNG PRICES

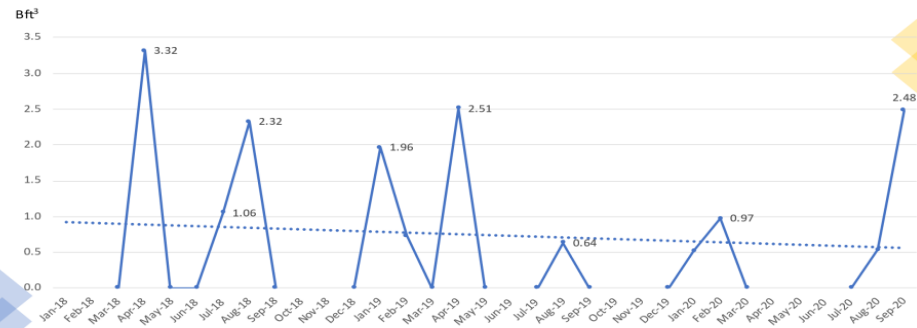


Asian *Spot LNG prices* rose buoyed by concerns over RUS supply to EUR as buyers shun Russian gas and LNG in response to her invasion of Ukraine

Average LNG price for *April delivery into north-east Asia* estimated at \$40.5/MBtu (up \$3, or 8%)

COLOMBIAN GEOPOLITICS : RUSSIAN War LNG Repercussions

Colombia: USA LNG Imports

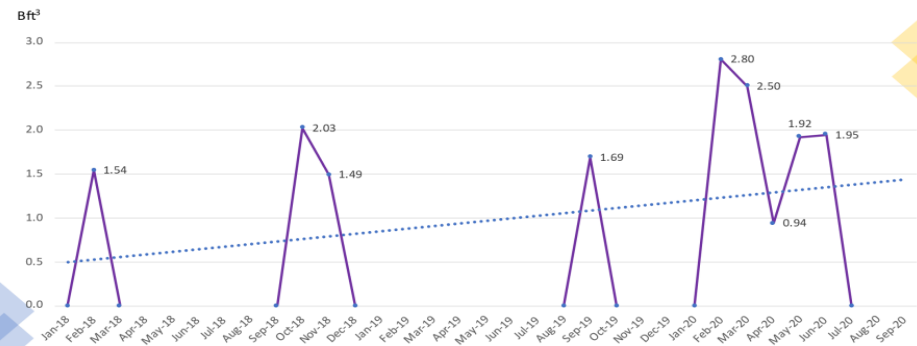


Fuente: SPEC

RUS War in UKR: Repercussions

USA incremental exports to COL in jeopardy due to boost EUR destinations

Colombia: T&T LNG Imports



Fuente: SPEC

RUS War in UKR: Repercussions

T&T exports to COL in jeopardy due to possible EUR destinations or USA (coping with EUR increasing Demand)

COLOMBIAN GEOPOLITICS : LNG Pricing Repercussions

RUS War in UKR: Repercussions

USA LNG Prices

**Export Prices to COL could Increase
Proportionately ?**

RUS War in UKR: Repercussions

T&T LNG Prices

Export Prices to COL ?

ESCENARIOS MEDIANO PLAZO Demanda



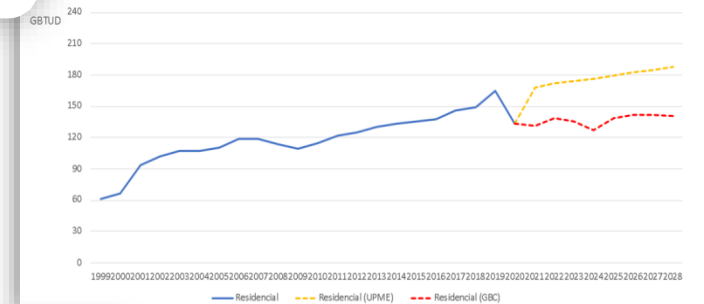
Rangos Escenarios Sec. Industrial



Rangos Escenarios demanda de gas (TOTAL)



Proyecciones Sec. Residencial

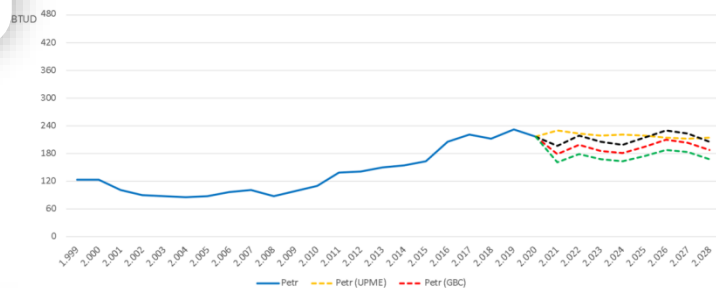


Rangos Escenarios Sec. Term

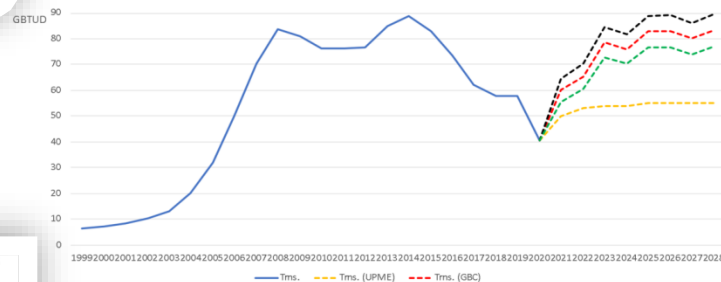




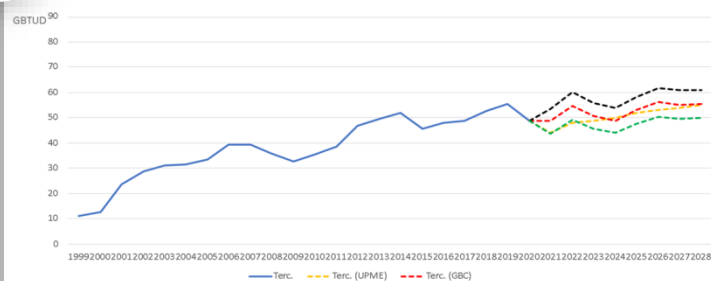
Rangos Escenarios Sec. Petr



Rangos Escenarios Sec. Transporte



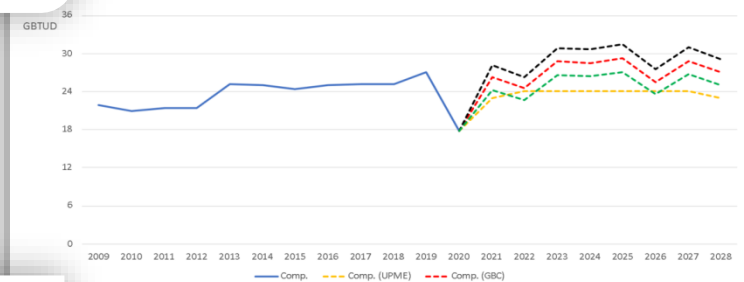
Rangos Escenarios Sec. Terciario



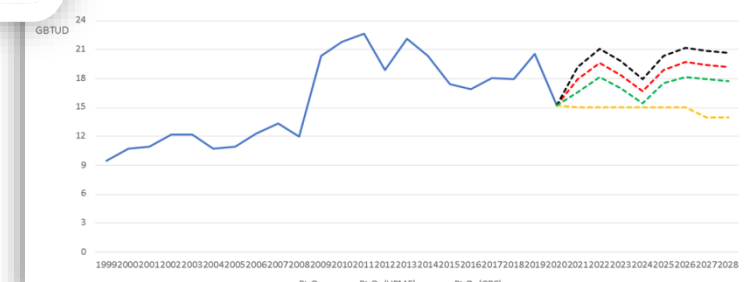
ESCENARIOS MEDIANO PLAZO



Rangos Escenarios Sec. Compresores

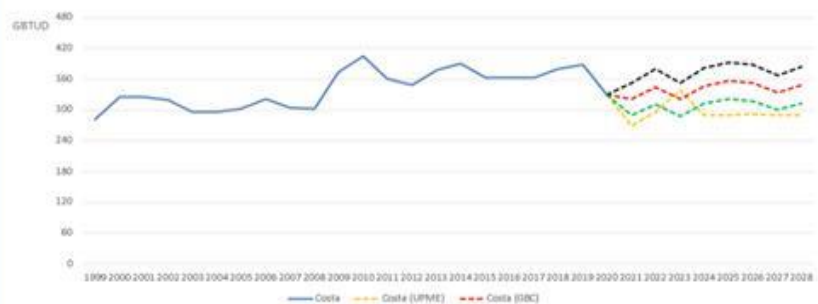


Rangos Escenarios Sec. Petroquímico

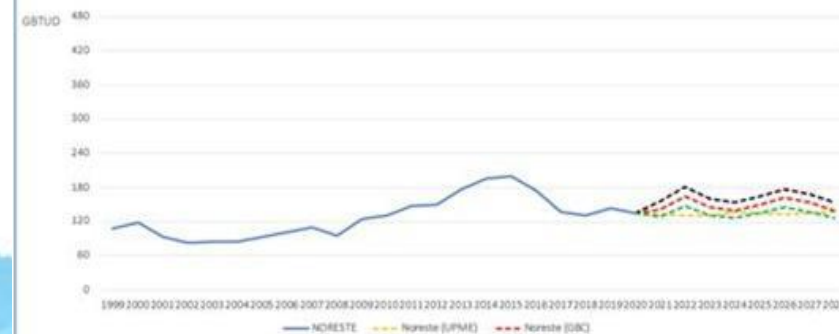


PROYECCIONES POR REGIÓN

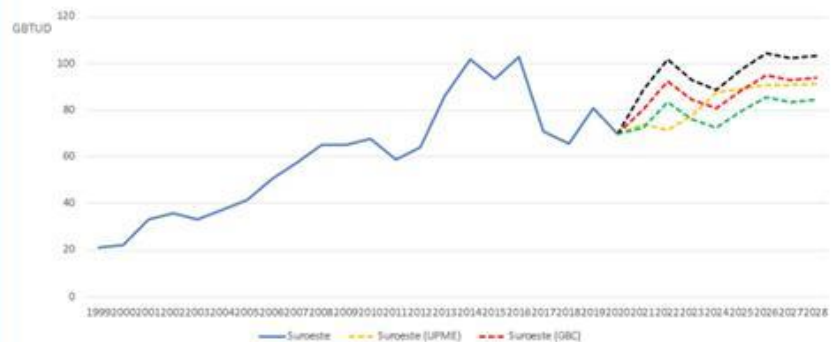
Rango Escenarios Reg. Costa



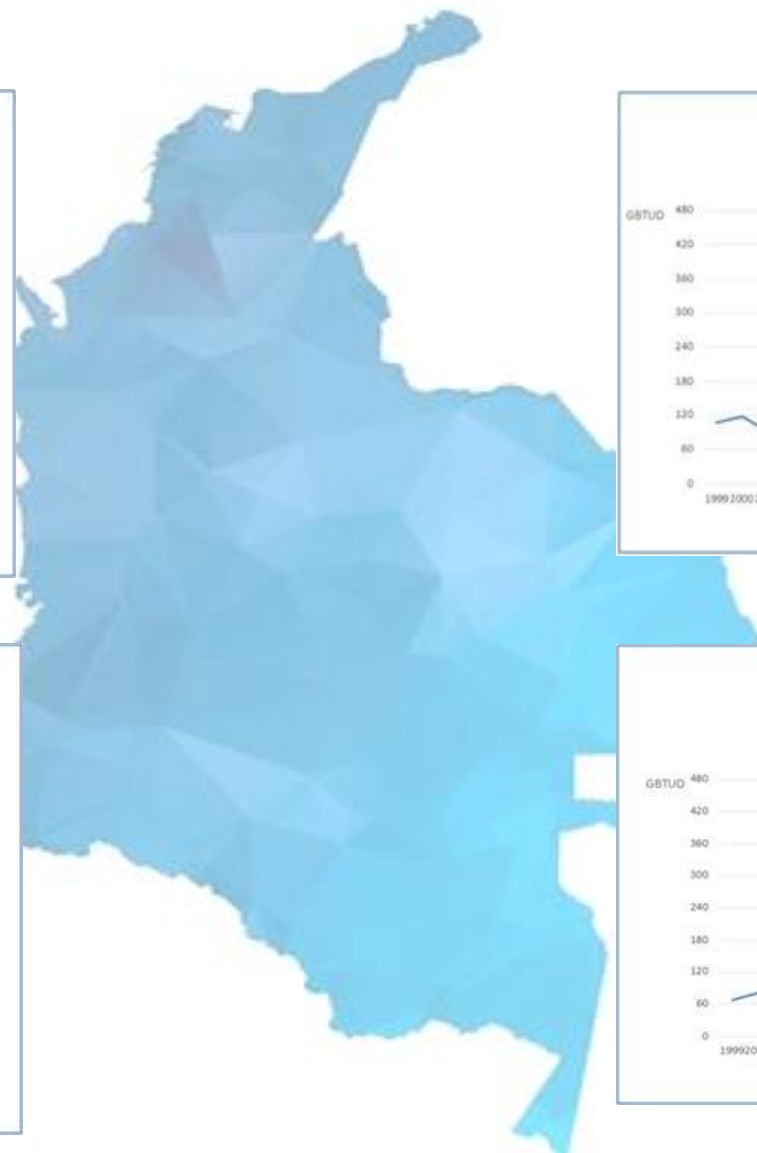
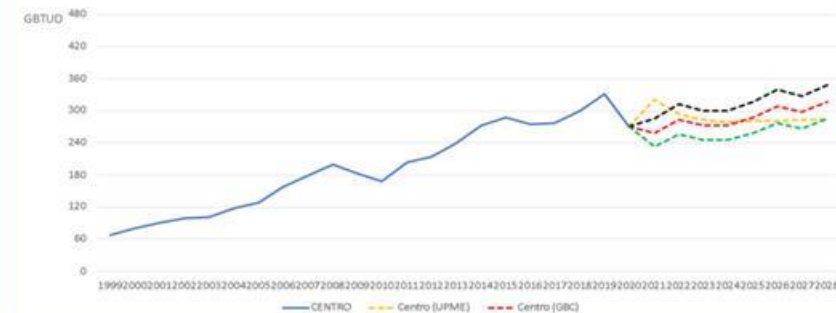
Rango Escenarios Reg. Noreste



Rango Escenarios Reg. Suroeste

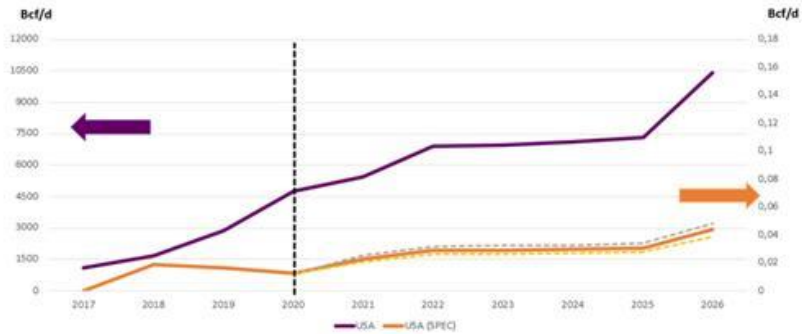


Rango Escenarios Reg. Centro



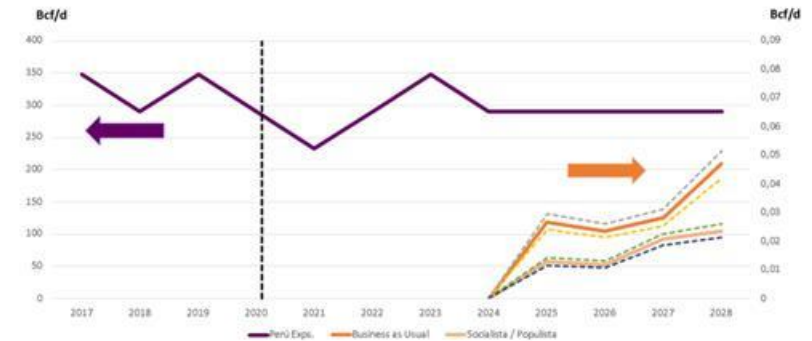
SUMINISTRO COMPETIDORES LOCALES: Domestico vs. Importado

USA: Total exp. vs. Col. Exp. (estimación GBC , Rangos)



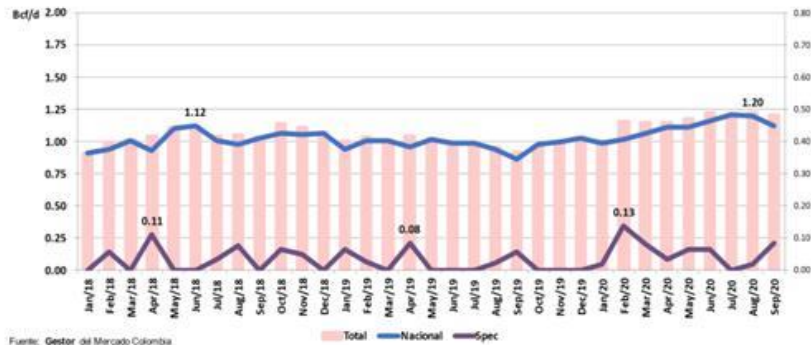
Fuente: CIB - Spec

Perú: Total exp. Vs. Col. Exp(estimación GBC, rangos)



Fuente: CIB - Cálculos propios GBC

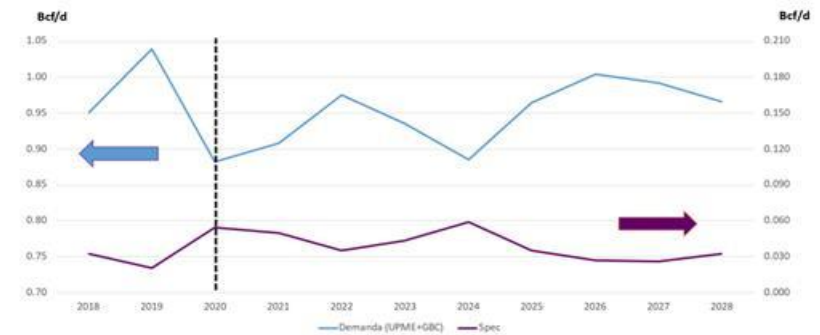
Producción Nacional Vs. Importación SPEC



Fuente: Gestor del Mercado Colombia

— Total — Nacional — Spec

Proyección Demanda e Importación SPEC



Fuente: UPME - Spec - Cálculos propios GBC

GEOPOLÍTICA GLOBAL



China ; Gran actor a nivel mundial

- Liderar la nueva revolución industrial
- Hacer uso de Inteligencia Artificial; y
- del Internet Cuántico.



Wikipedia, File:New_Silk_Road_-_ru.svg. 2020

Estados Tapón (“Buffer States”)



Zona Neutral entre Kuwait y Arabia Saudita

Wikipedia, File:Former Saudi-Kuwaiti Neutral Z.



Zona Barrera entre Kuwait e Irak.

Central Intelligence. 2007



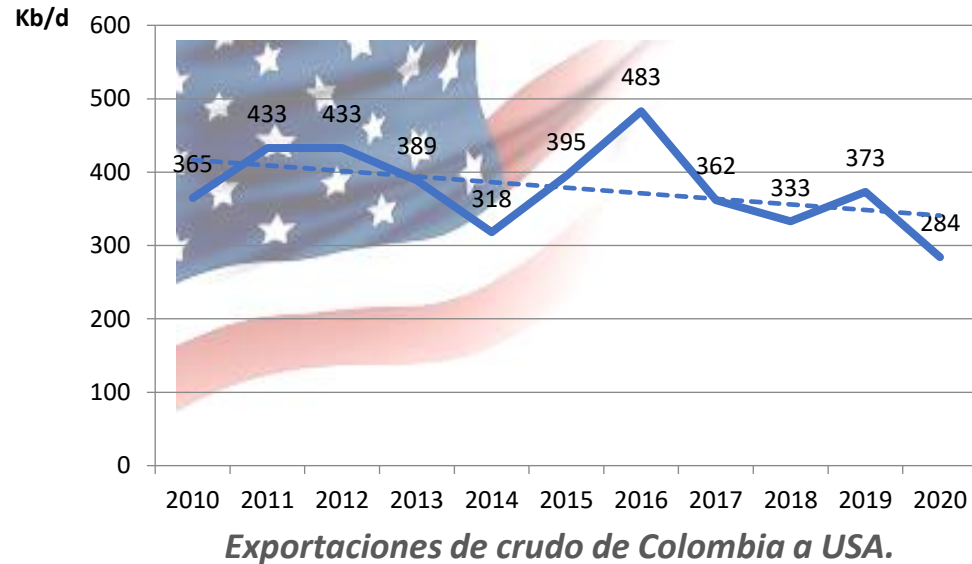
Estado Tapón ARG - BRA - URU

REFLECTIVE REMARKS

- ✓ El comportamiento de la **Demanda de Gas** en Colombia hacia el mediano plazo (2028) se mantendría en alrededor de 1,000 GBTUD. Y en el Escenario Superior pudiera incrementarse hasta alrededor de 1,100 GBTUD.
- ✓ El sector de mayor crecimiento volumétrico hacia el 2028 será el Sector Transporte.
- ✓ La región de mayor crecimiento en volumen será la Región Centro.
- ✓ El **Suministro de Gas** esperado cubrirá esa demanda y seguirá siendo primordialmente suplido por Gas producido Domésticamente.
- ✓ Volumétricamente en niveles absolutos el **LNG de USA** es mayor que los volúmenes importados de Trinidad y Tobago.
- ✓ Se incorpora dentro de este horizonte temporal un **Nuevo Exportador. Perú** pasará a exportar gradual y progresivamente a la eventual planta Regasificadora planeada en Buenaventura.
- ✓ Pudieran en el futuro adelantarse conversaciones entre Guyana y Trinidad/Tobago para explorar opciones de acuerdos de suministro de gas natural.

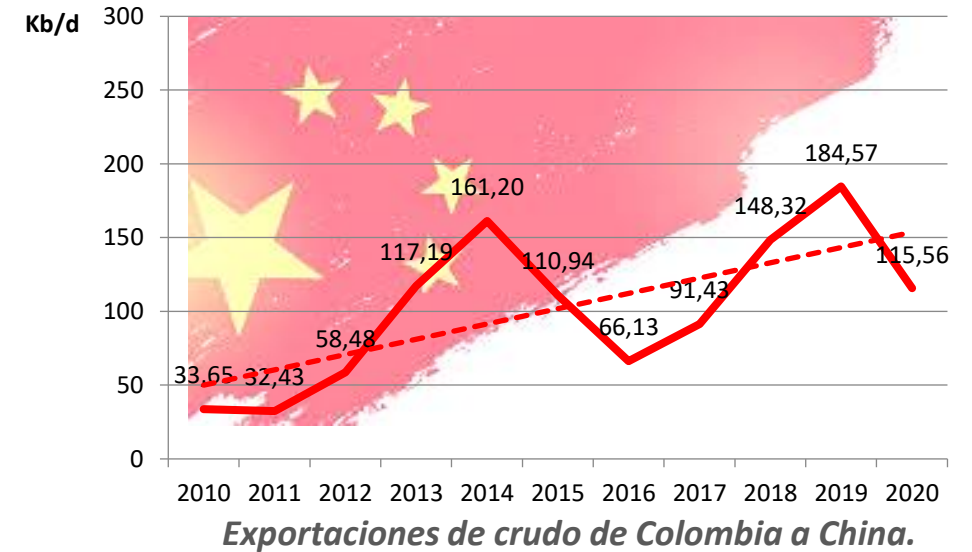
COLOMBIAN GEOPOLITICS

Exportaciones a los Dos Polos Geopolíticos... USA, CHINA



✓ Declinación de las Exportaciones

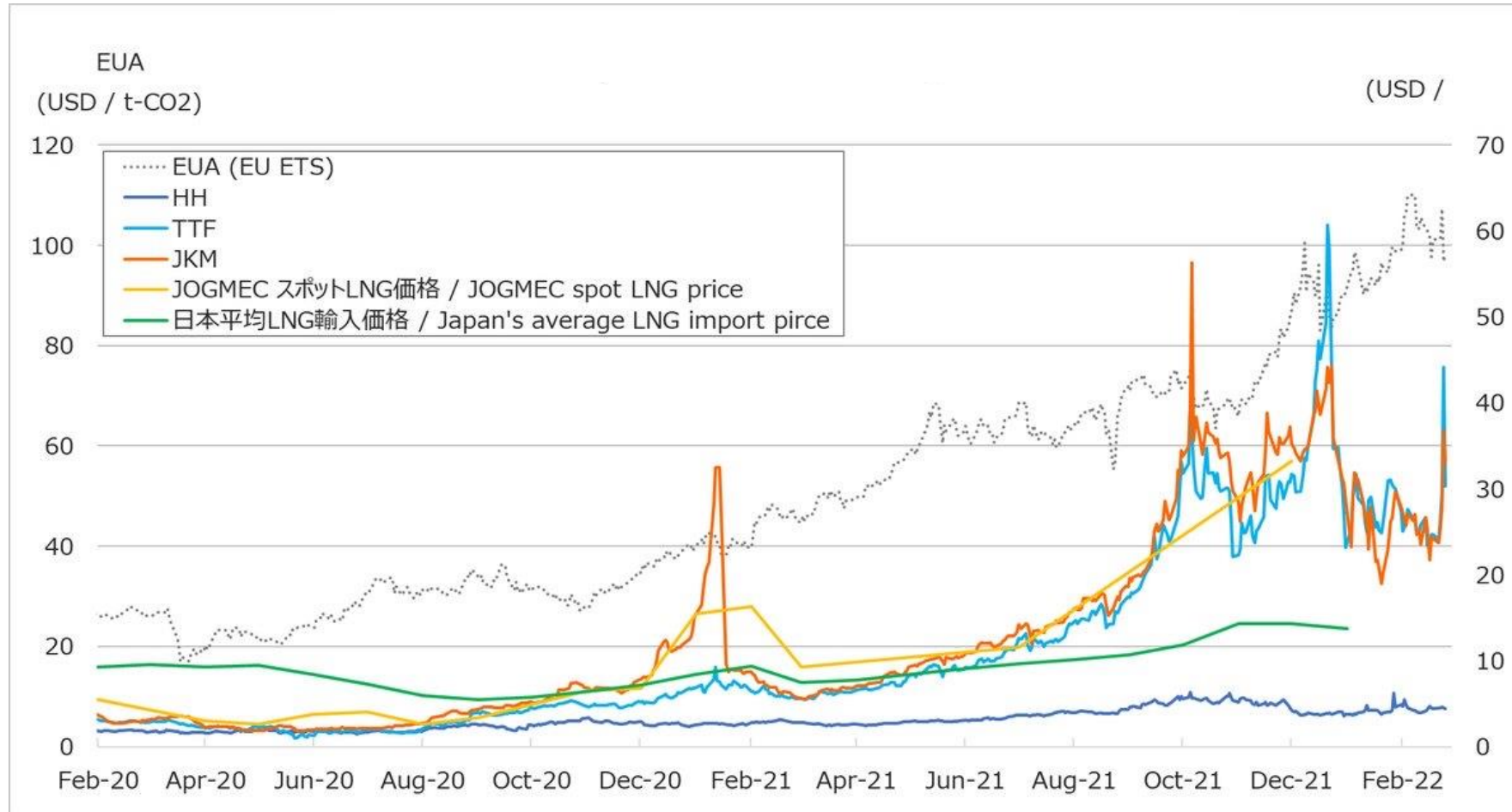
- Autosuficiencia de USA
- Desarrollo de petróleos de esquisto
- Colombia como Aliado Preferencial



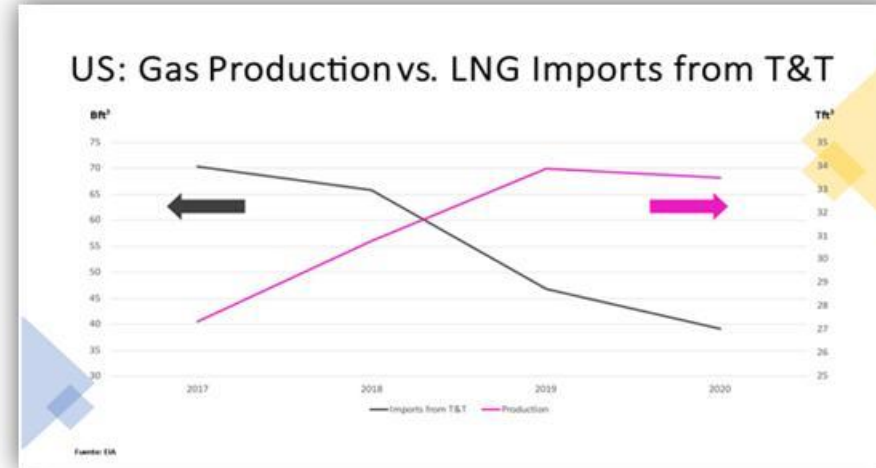
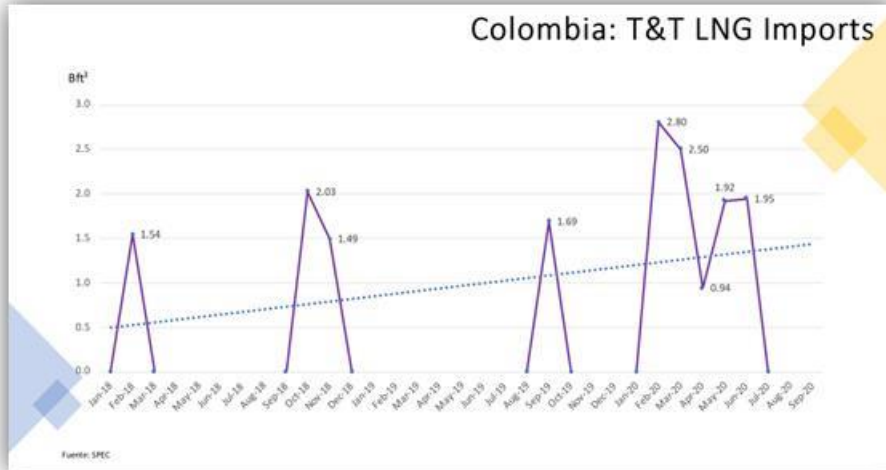
✓ Incremento de las Exportaciones

- China como polo geopolítico
- Desarrollo

LNG and SPOT Gs prices: War Impact



COLOMBIAN GEOPOLITICS



T&T ha incrementado su destino regional hacia Colombia.

