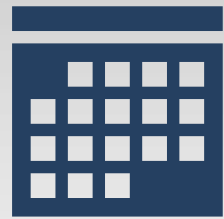# Cost Models

ANATEL

Historical
Context

General aspects
of the cost
models adopted

Results
achieved

Timeline

2003

Presidential
Decree Nº
4.733/2003

Mandated
the adoption
of a long run
cost model

2005

Resolution n°
396/2005-RSAC

Established the
fundamentals
principles and
guidelines for
the regulatory
cost model

2011

Cost Model
project

RSAC revision
and Bottom-
Up model
development

2012

Resolution n°
600/2012-PGMC

Primary tool
for promoting
competition

2018

Resolution n°
694/2018-PGMC
revision

Relevant
markets
update and
new
asymmetric
measures
adoption

2020/21

Cost Model
project

Development
of a new
Bottom-Up
model

2023

Current Scenario

Reference
values are
transitioning
from Top-
Down to
Bottom-Up

Timeline

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2018

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Primary tool for promoting competition

Resolution n° 694/2018-PGMC revision

Relevant markets update and measures adoption

2020/21
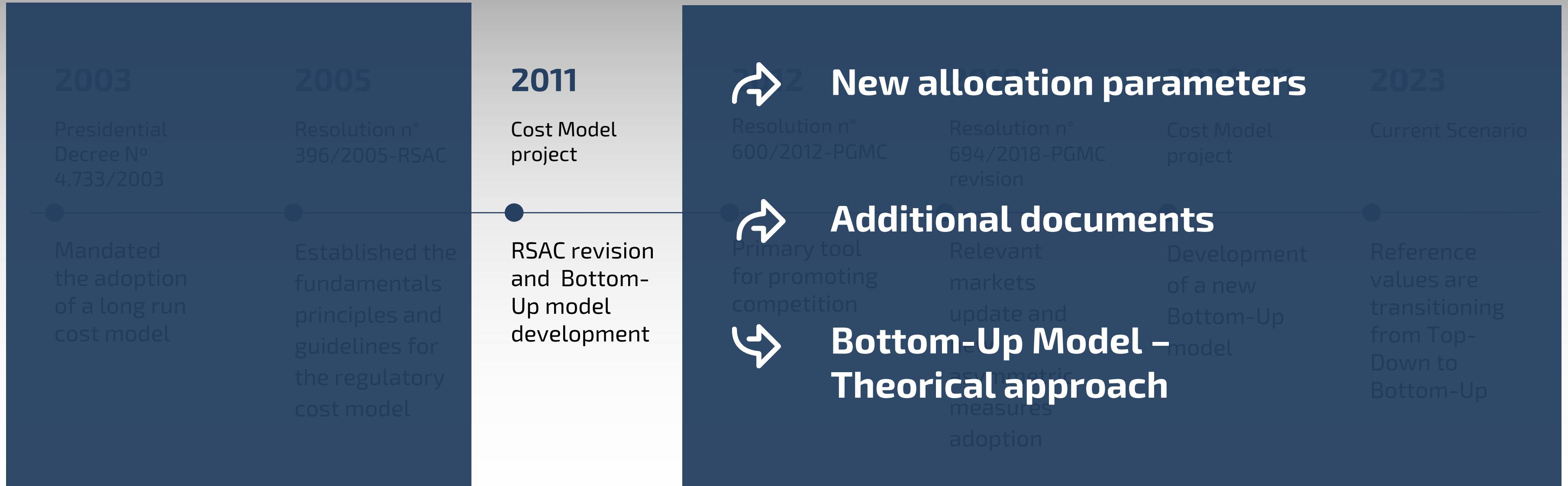
Cost Model project

Development of a new Bottom-Up model

2023

Current Scenario

Reference values are transitioning from Top-Down to Bottom-Up

Top-Down Model

FAC-HCA and LRIC

Separation and Allocation of Accounts Regulation (RSAC)

Timeline

ANATEL

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2011

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2012

Resolution n° 600/2012-PGMC

Primary tool for promoting competition

↪ **New allocation parameters**

↪ **Additional documents**

⤷ **Bottom-Up Model – Theorical approach**

Resolution n° 694/2018-PGMC revision

Relevant markets update and ~~competition~~ measures adoption

Cost Model project

Development of a new Bottom-Up model

2023

Current Scenario

Reference values are transitioning from Top-Down to Bottom-Up

Timeline

2003

Presidential Decree Nº 4.733/2003

Mandated the adoption of a long run cost model

Main tool to promote competition

Resolution n° 396/2005-RSAC

Established the fundamentals principles and guidelines to the cost model

Identify relevant markets

Model project

RSAC revision and Bottom-Up model development

Identify the groups with significant market powers

2012

Resolution n° 600/2012-PGMC

Primary tool for promoting competition

Establishes the asymmetric measures to be adopted in each of the relevant markets

2018

Resolution 694/2018-PGMC revision

Relevant markets update and new asymmetric measures adoption

2020/21

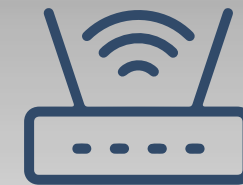Model project

Development of a new Bottom-Up model

2023

Current Scenario

Reference values are transitioning from Top-Down to Bottom-Up

Relevant Markets – Product Dimension – Asymmetric Measure

National Roaming

Data Roaming

Wholesale Reference Offers

Passive Infrastructure

Ducts, Conduits, Poles and Towers

Wholesale Reference Offers

Fixed Access Network Infrastructure

Local Loops Unbundling

Wholesale Reference Offers

Local/Long Distance Transportation

Leased Lines

Peering

IP Transit

Wholesale Reference Offers

IXP Implementation of each registration area

Timeline

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the regulatory
cost model

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600/2012-RSAC

Primary tool
for promoting
competition

New transport product ←

Price control based on top-down results ←

2018

Resolution n°
694/2018-PGMC
revision

Relevant
markets
update and
new
asymmetric
measures
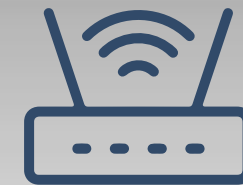adoption

2020/21

Cost Model
project

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model

2023

Current Scenario

Reference
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Down to
Bottom-Up

Relevant Markets – Product Dimension – Asymmetric Measure

National Roaming

- Data Roaming
- Wholesale Reference Offers
- Cost Oriented Reference Values

Passive Infrastructure

- Ducts
- Wholesale Reference Offers
- Cost Oriented Reference Values

Fixed Access Network Infrastructure

- Local Loops Unbundling
- Wholesale Reference Offers
- Cost Oriented Reference Values
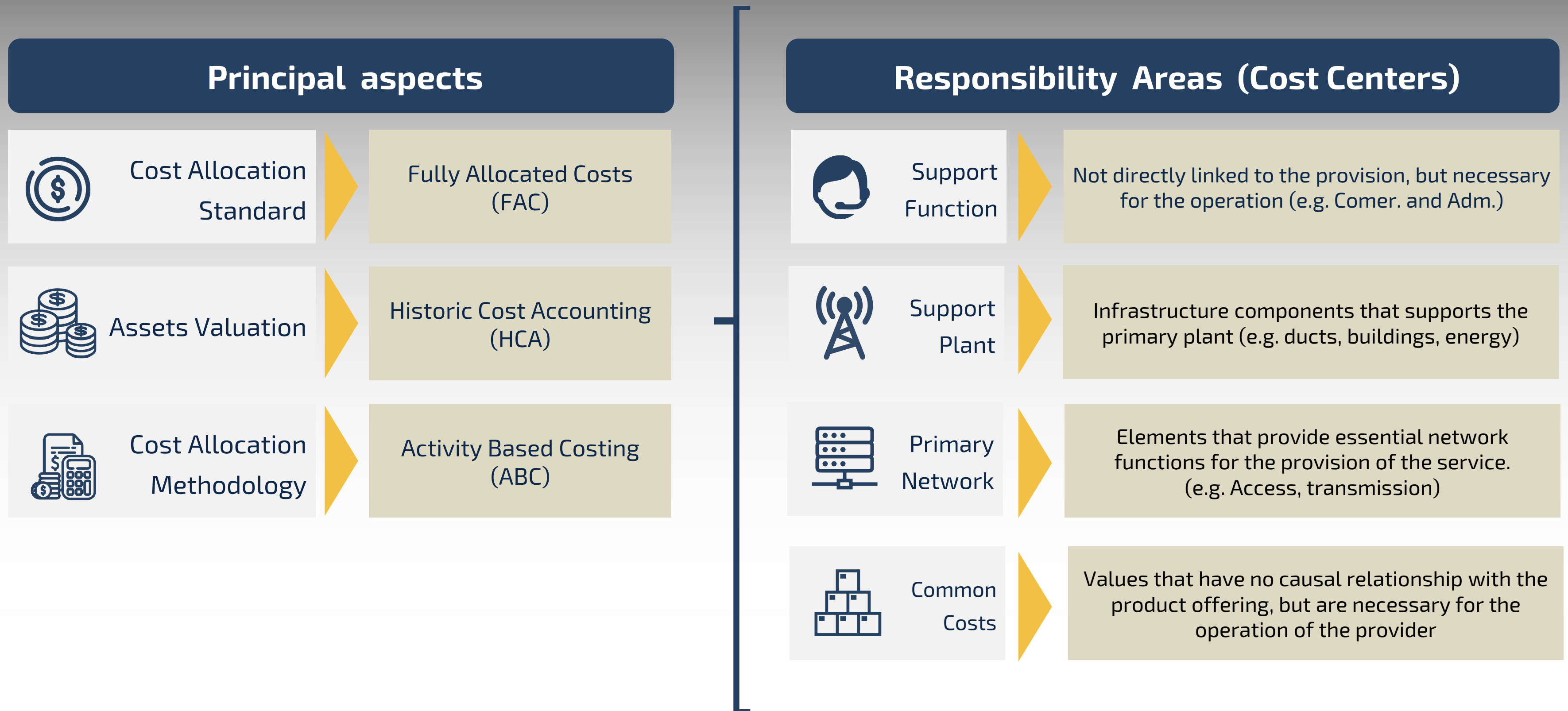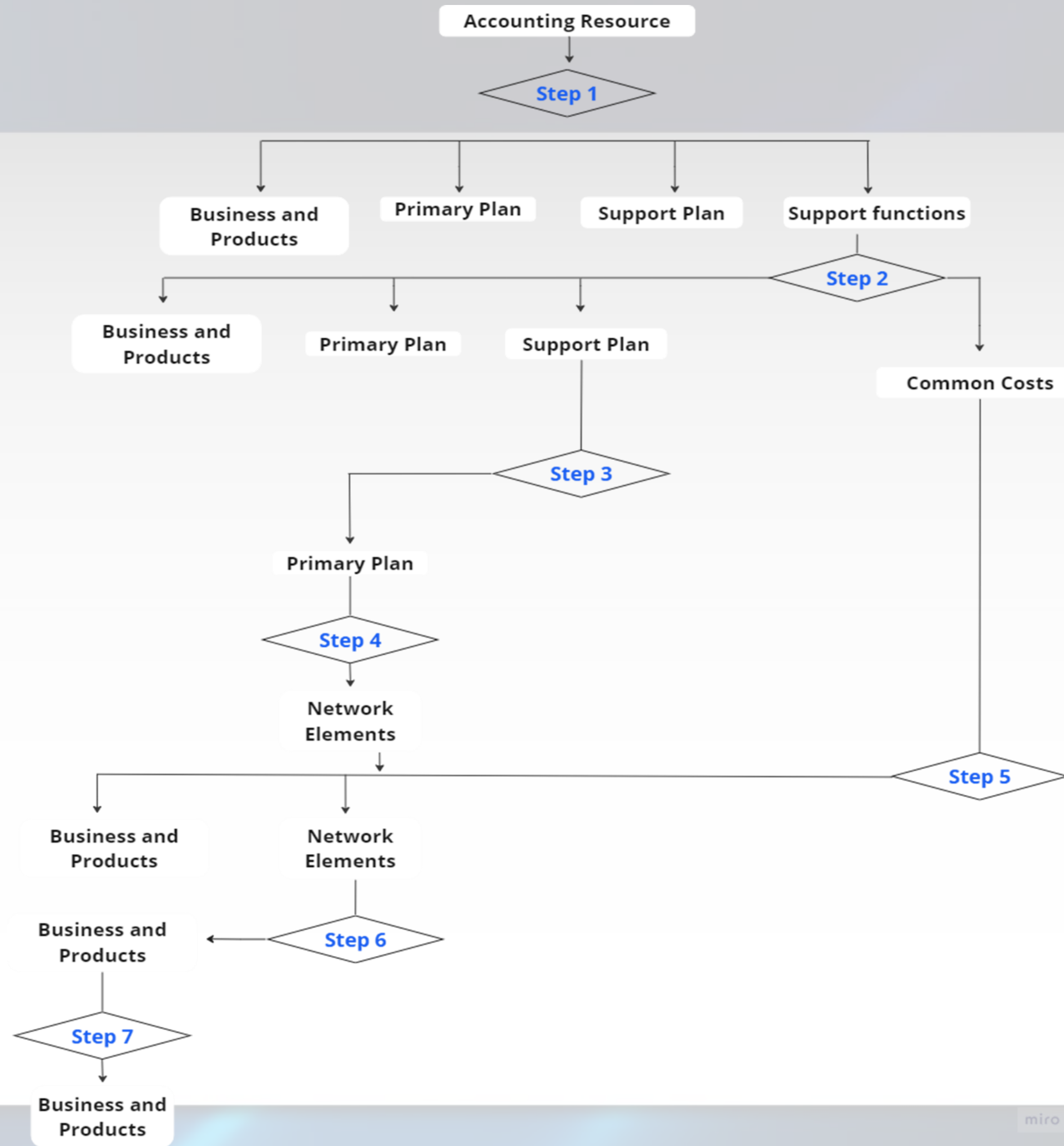
Local/Long Distance Transportation

Leased Lines	Peering	High-Capacity Data Transport

- Wholesale Reference Offers
- Cost Oriented Reference Values

Top-Down Model – Principal Aspects

Principal aspects

Cost Allocation Standard	▶	Fully Allocated Costs (FAC)
Assets Valuation	▶	Historic Cost Accounting (HCA)
Cost Allocation Methodology	▶	Activity Based Costing (ABC)

Responsibility Areas (Cost Centers)

Support Function	▶	Not directly linked to the provision, but necessary for the operation (e.g. Comer. and Adm.)
Support Plant	▶	Infrastructure components that supports the primary plant (e.g. ducts, buildings, energy)
Primary Network	▶	Elements that provide essential network functions for the provision of the service. (e.g. Access, transmission)
Common Costs	▶	Values that have no causal relationship with the product offering, but are necessary for the operation of the provider

Top-Down Model

Allocation Matrix

Cost Composition - Wholesale Roaming - Data

- O&M: 61%
- Depreciation: 20%
- Administrative: 8%
- Taxes: 5%
- Financial: 3%
- Commercial: 2%

Relevant Markets – Product Dimension – Asymmetric Measure
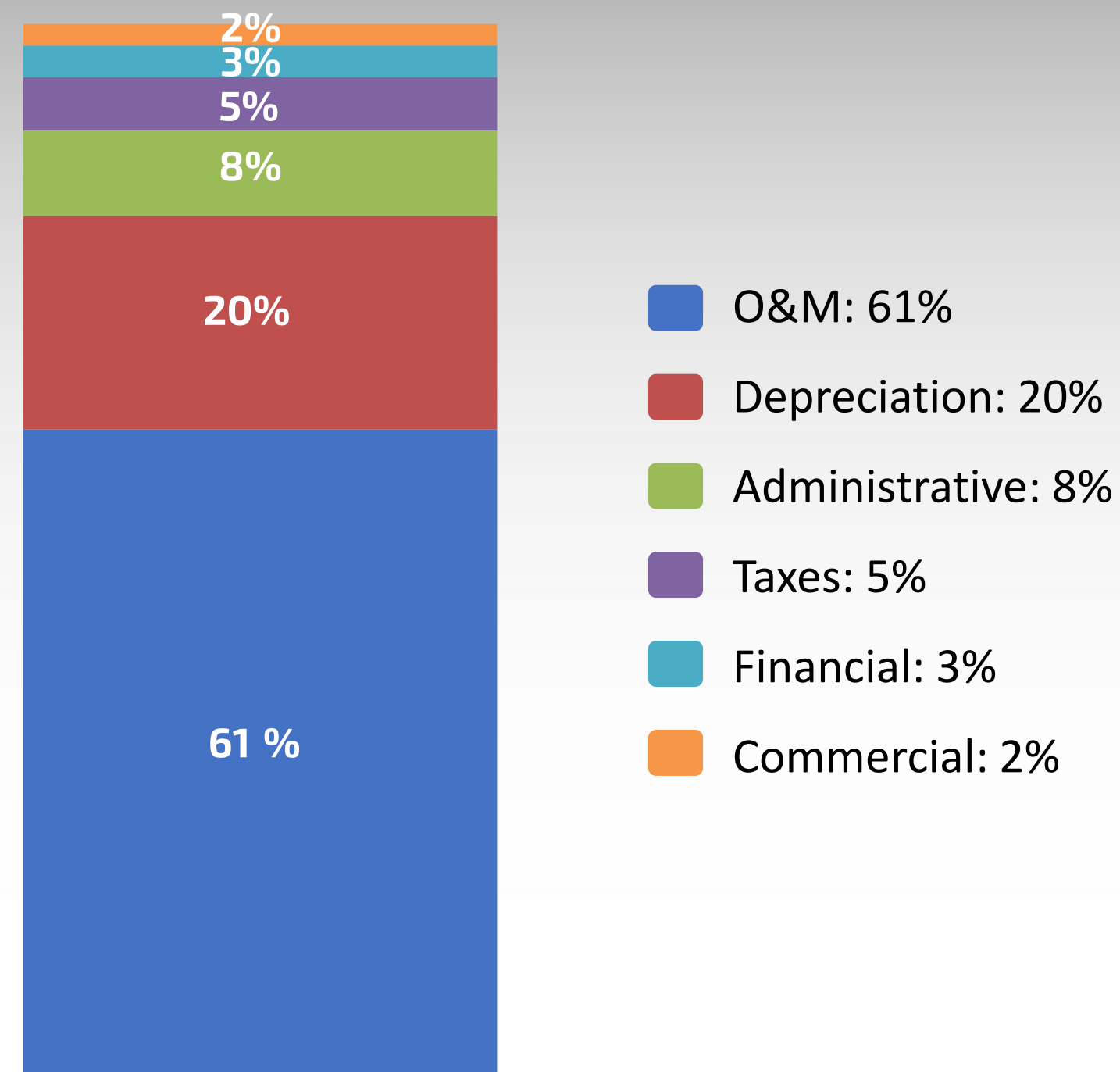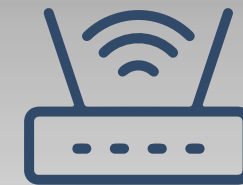

National Roaming

Retail product costs minus avoidable selling costs

Passive Infrastructure

Accumulated costs divided by the length of the ducts that the provider had

Fixed Access Network Infrastructure

Relation based on the speed and distance of leased lines

Local/Long Distance Transportation

Full Unbundling: Results of an operator's cost model

Bitstream: calculated considering a relationship with full unbundling and the prices of existing bitstream reference offers.

Reference Values – Prior and After to Cost Orientation

Telecom services	Prior	After	Decrease
Full unbundling (BRL/ access)	38.58	15.40	60%
Bitstream (BRL/ access)	42.52	17.23	59%
Wholesale voice roaming (BRL/ min)	0.67	0.07	90%
Wholesale data roaming (BRL/ min)	2.30	0.02	99%
Wholesale SMS roaming (BRL/ SMS)	0.07	0.04	37%
Duct rental (BRL/ m)	32.49	0.18	99%
High-speed leased lines (BRL/ Mbit/ s)	N/ A	3.84	N/ A

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2020/21

Cost Model project

Development of a new Bottom-Up model

2023

Current Scenario

Reference values are transitioning from Top-Down to Bottom-Up

Bottom-Up Aspects

Common aspects for both models (fixed and mobile networks)

Cost Allocation Methodology	LRIC+

Assets Valuation	Current Cost Accounting (CCA) for all assets except civil infrastructure and copper cabling (HCA)

Depreciation Methodology	Economic depreciation

Modeledd provider	Efficient hypothetical provider with characteristics of PMS identified by Anatel

Modeled time period	2020 - 2036

Geographic Granularity	Geotype level to ensure a good compromise between complexity and accuracy

Specific aspects for fixed networks

Access Technology	Copper, fiber and wireless

Services considered	> Access > Voice > Broadband > Leased Lines > Others

Specific aspects for mobile networks

Access Technology	2G, 3G, 4G e 5G

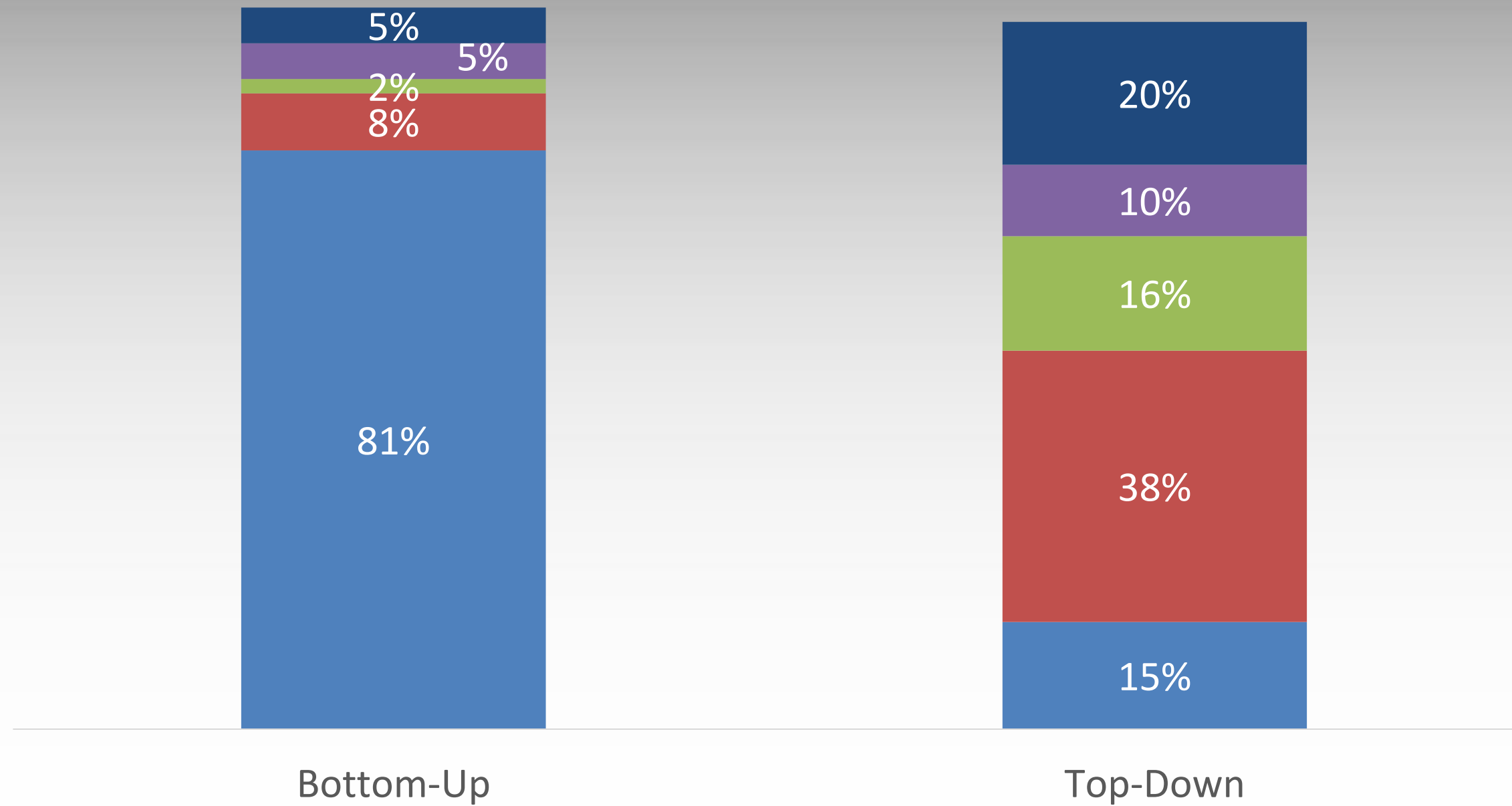| Services considered	> Voice > SMS > Data > Nacional Roaming Internet > Roaming > Others

Timeline

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development

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600/2012-PGMC

National Roaming ←

Primary tool
competition

High-Capacity Data Transport ←

2018

694/2018-PGMC
revision

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new
asymmetric
measures
adoption

2020/21

project

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a new
Bottom-Up
model

2023

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Cost composition comparison - Roaming Data

Cost Models

Results achieved

Broadband Expansion

Households (%) with Internet access at home
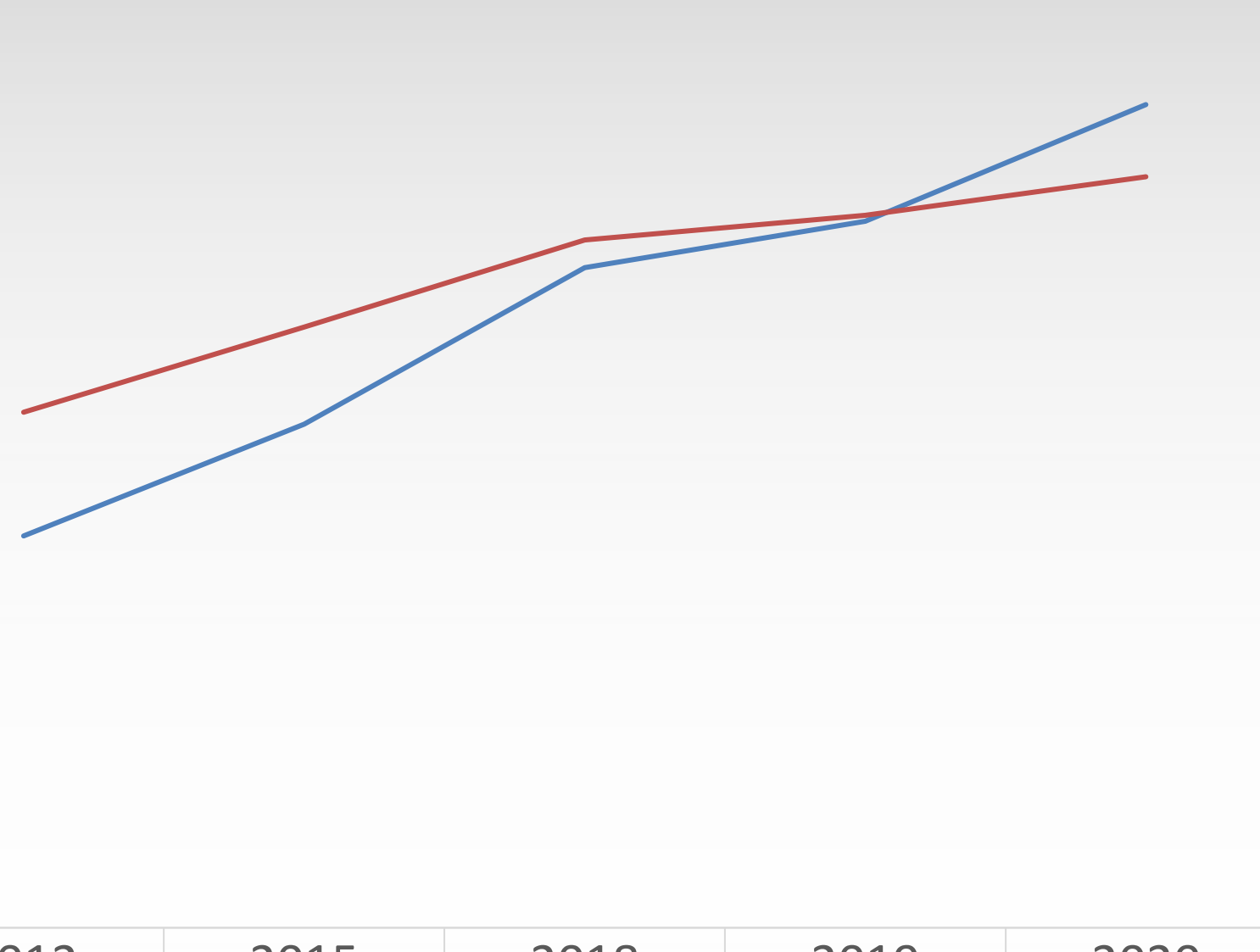
	2012	2015	2018	2019	2020
Brazil	40%	51%	67%	71%	83%
America	52%	61%	70%	72%	76%

Market Share Increase of Small Providers

ANATEL

Total broadband access

2015

14%

86%

2018

24%

76%

2023

52%

48%
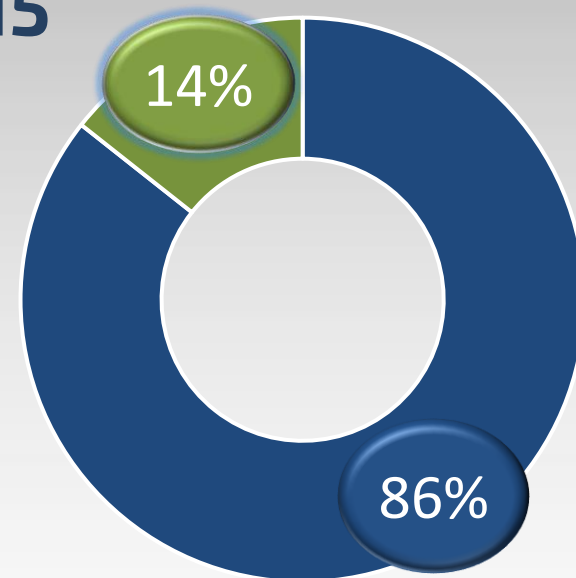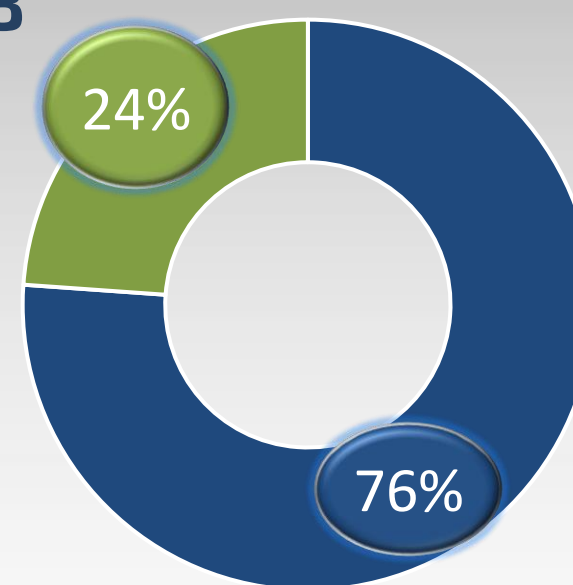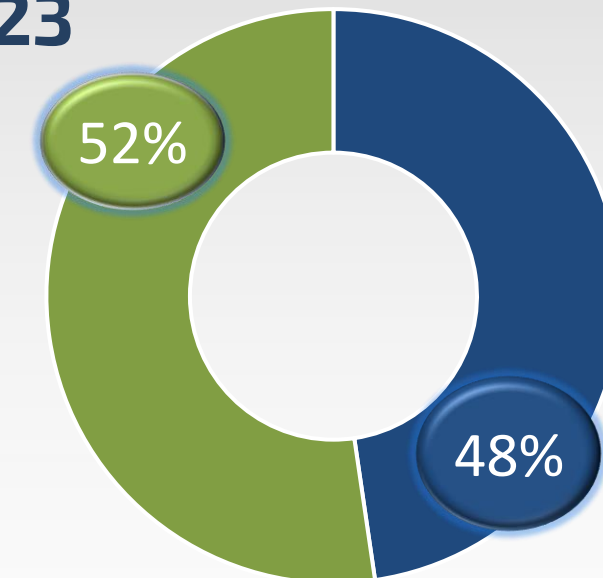
● Small Providers   ● Large Providers

In 8 years, there was an **increase of 8.5x in total broadband access by small providers** versus 1.2x by larger providers
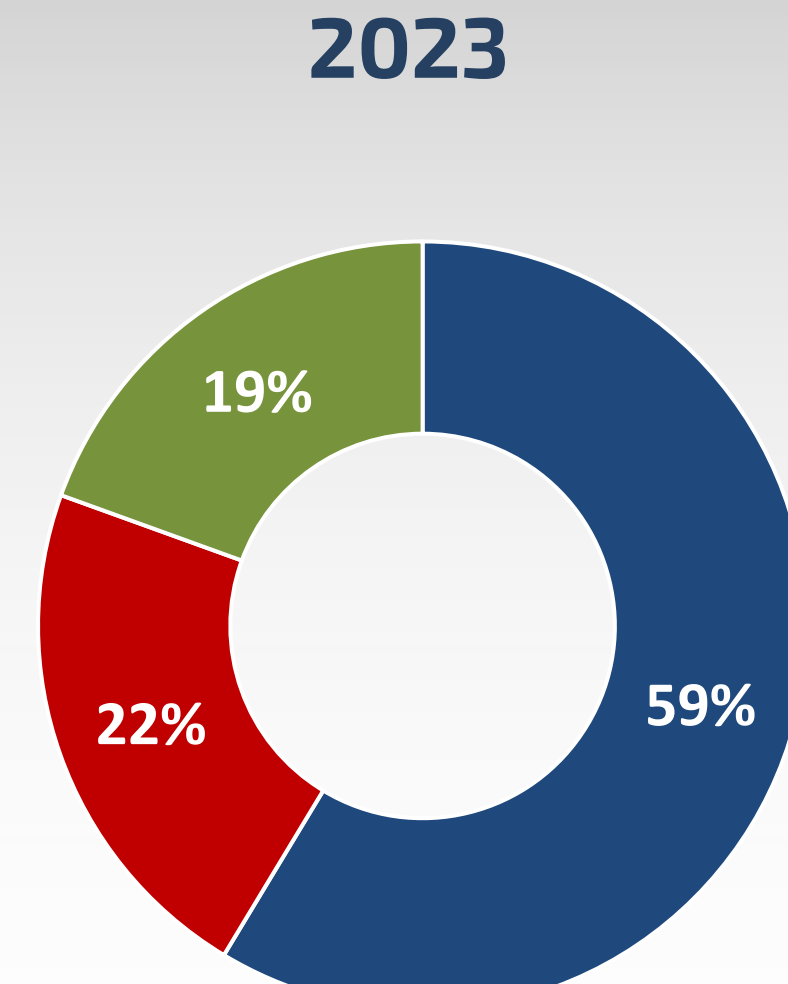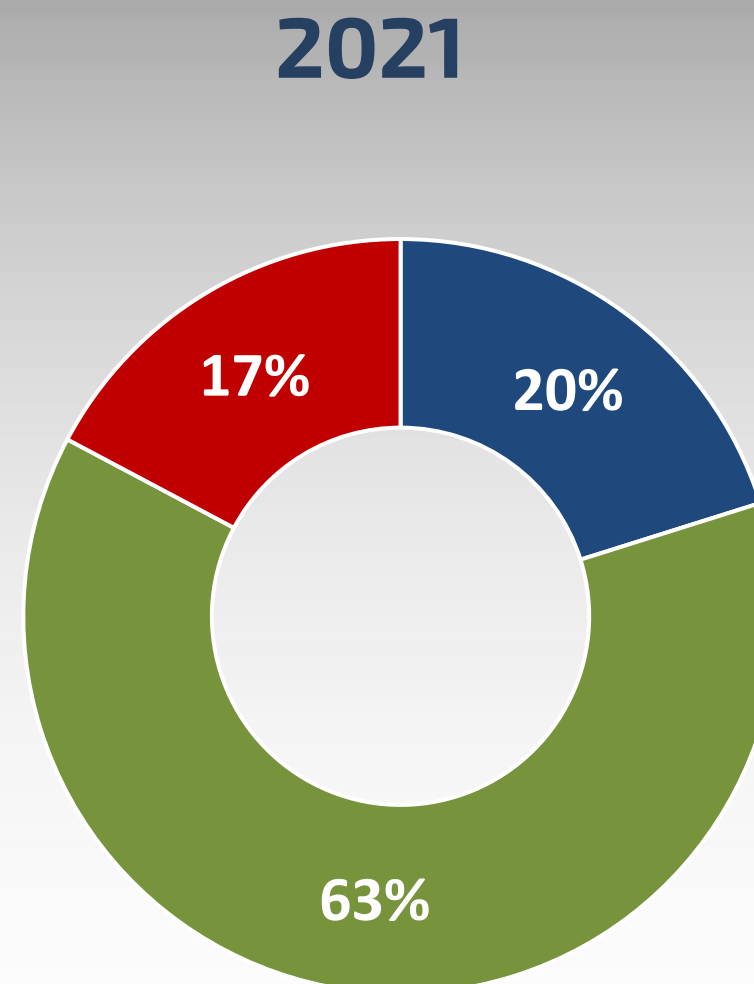
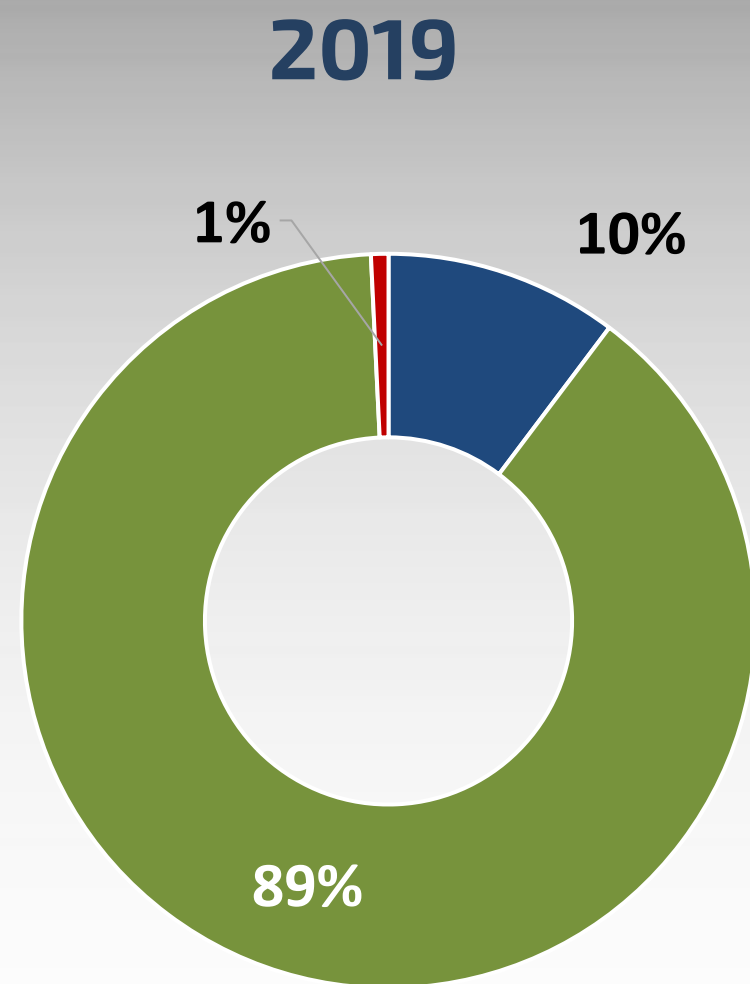# Fiber Network Coverage Expansion (2016 x 2022)

ANATEL

2016	2022

500 mi

// Cost Models
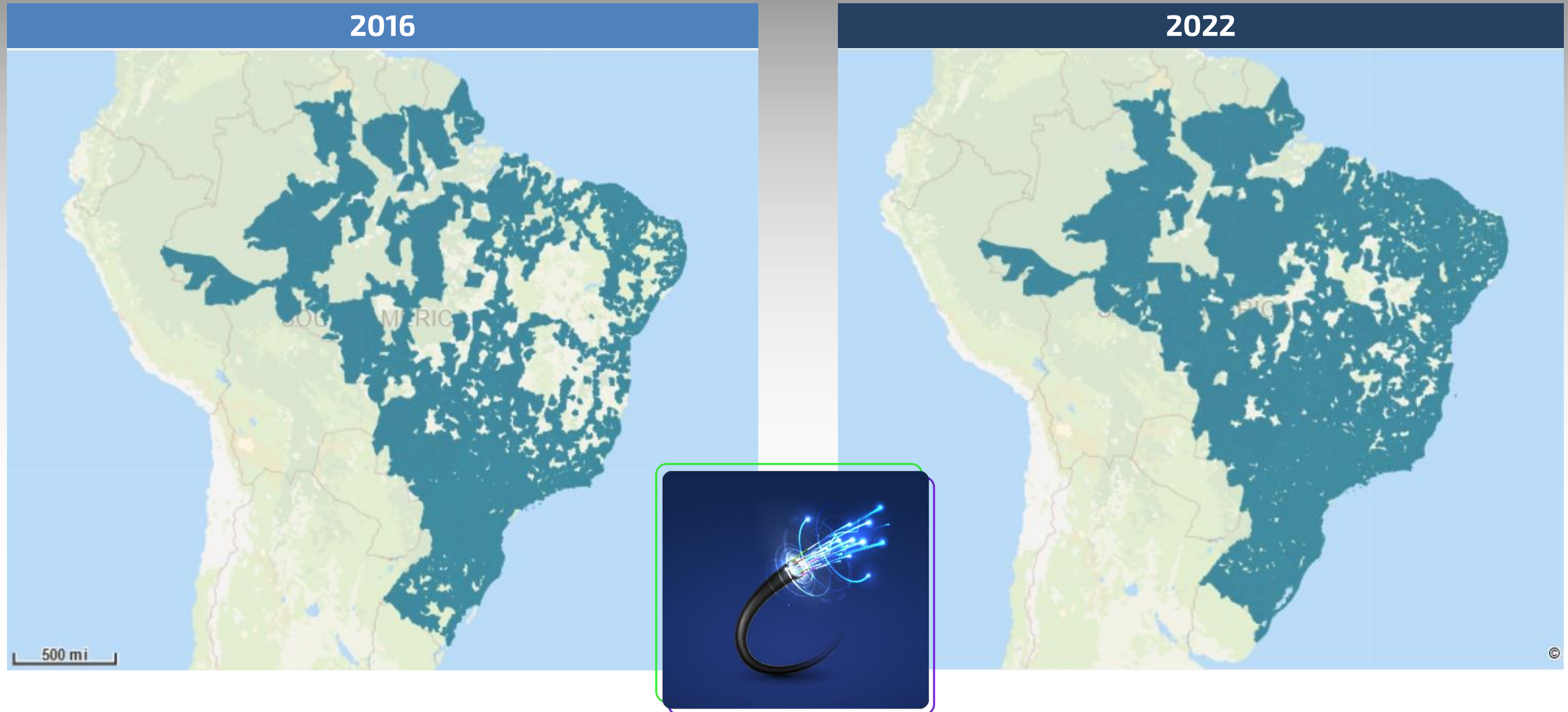
Evolution (%) of Mobile Access by Provider Size
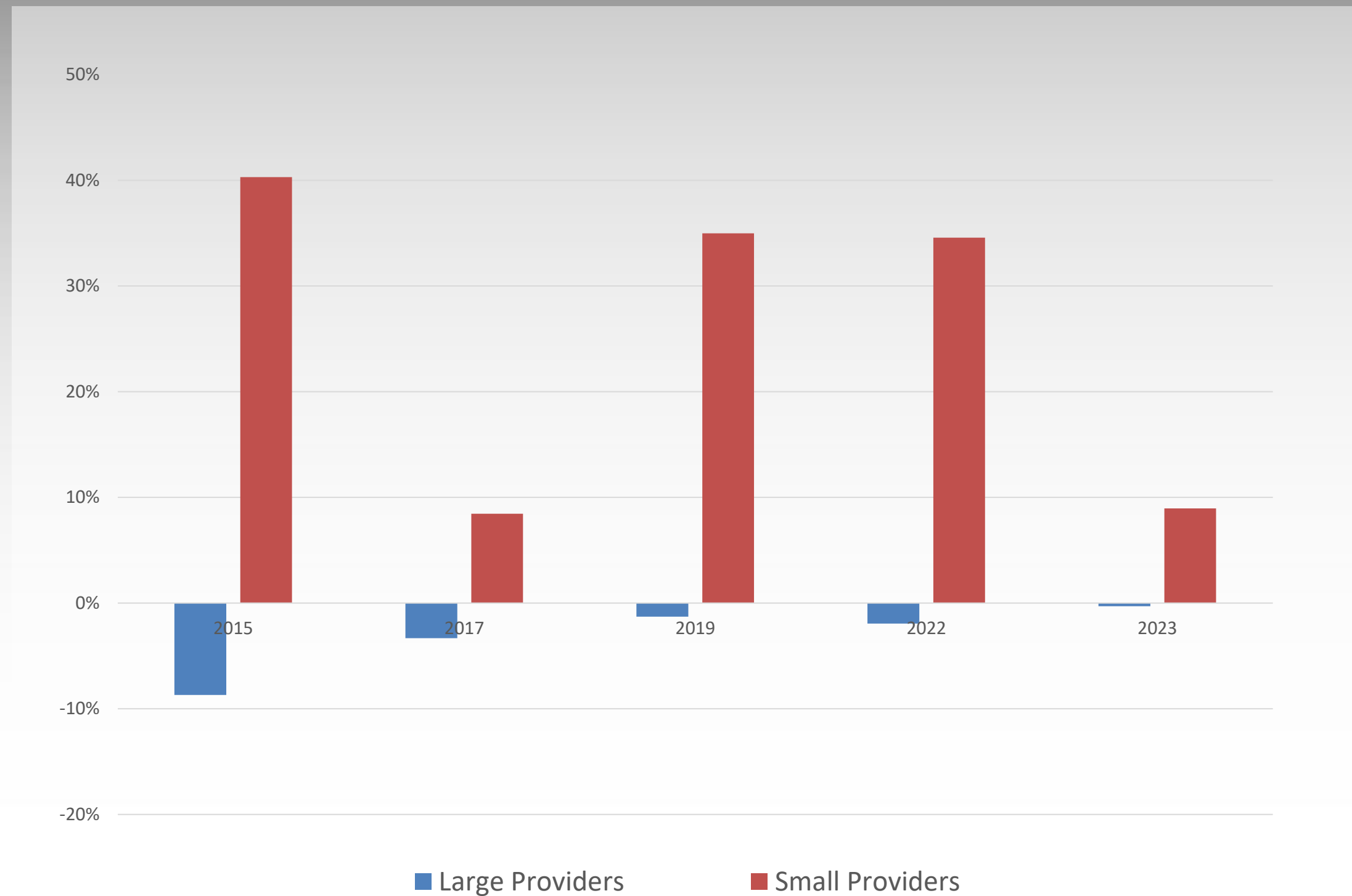
Type of Services - Small Providers

2019

- 1%
- 10%
- 89%

2021

- 17%
- 20%
- 63%

2023

- 19%
- 22%
- 59%

■ M2M ■ Standard ■ Point of Service

Abraão Balbino e Silva
Anatel Executive Superintendent

sue@anatel.gov.br

www.anatel.gov.br