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Costa Rica

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Clean and Efficient Energy

Decarbonization of the electrical system: the case of Costa Rica

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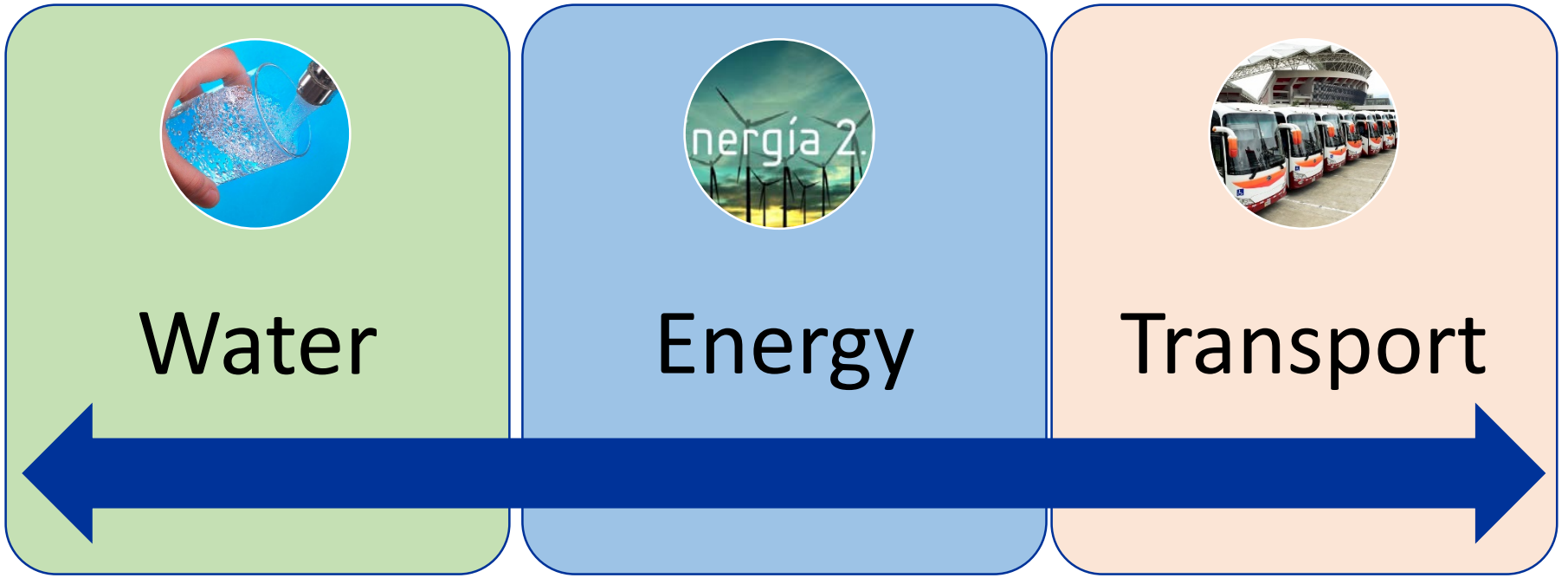
Intendant of Energy of Costa Rica
24 de mayo de 2018

ARESEP: Multisectoral Regulation Model



- Law N° 7593, Law of the Regulatory Authority of the Public Services (1996).

Electricity: Generation, Transmission, Distribution and Commercialization.

Hydrocarbons: distribution and final consumers.

Costa Rica: socio-economic indicators 2017

Capital	• San José
Population	• 4 909 000
Surface	• 51 100 km2
GDP	• 3,9 %
GDP per capita	• $17 000
• Fiscal deficit	• 6,2%
Inflation	• 2,57%
• Proverty	• 20,0%
Unemployment	• 9,3%

The National Electrical System (SEN) of Costa Rica

1 Costa Rica already has a renewable electrical system

COSTA RICA
GOBIERNO DEL BICENTENARIO
2018 - 2022

AUTORIDADES COMUNICADOS DE PRENSA TRANSPAREN

Sistema eléctrico de Costa Rica se consolida como modelo de generación renovable

27 diciembre, 2017

27 diciembre, 2017 Ambiente, Comunicados, ICE, Medio ambiente application/vnd.openxmlformats-officedocument.spreadsheetml.sheet, Electricidad, Energía, Gobierno, Renovable

NACIONALES

Costa Rica logra récord al usar energía de fuentes renovables 300 días seguidos

noviembre 18, 2017 Redacción Costa Rica

In 1997: record of 300 days of generation 100% renewable.

2 Structure of the National Electrical System (SEN)

Generation 1/

ICE: 70%

- Main generator: 70%
- Exclusivity in geothermal generation.
- Exclusivity in thermal generation.
- Generation Expansion Plan (PEG).
- Operator of the National Energy Control Center

Transmission

ICE: 100%

- Monopoly.

Distribution and y commercialization 2/

ICE: 42%

CNFL

JASEC

ESPH

Coopealfaro

Coopeguanacaste

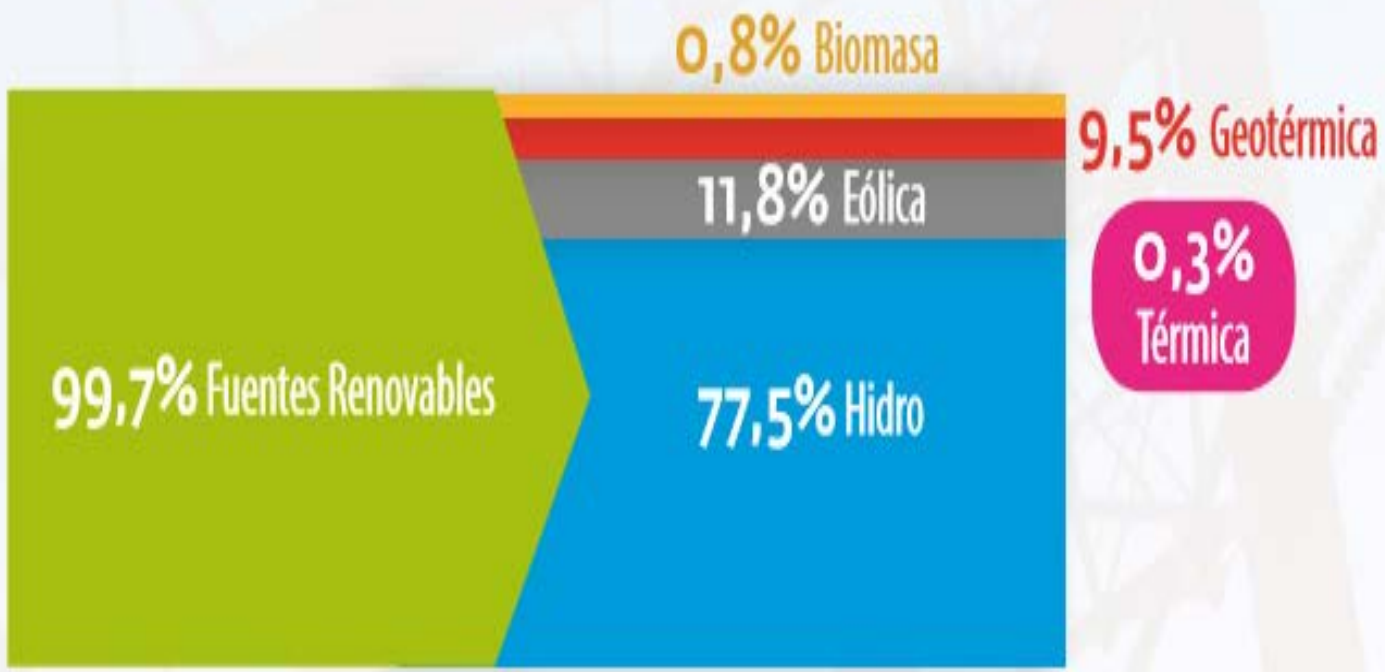
Coopelesca.

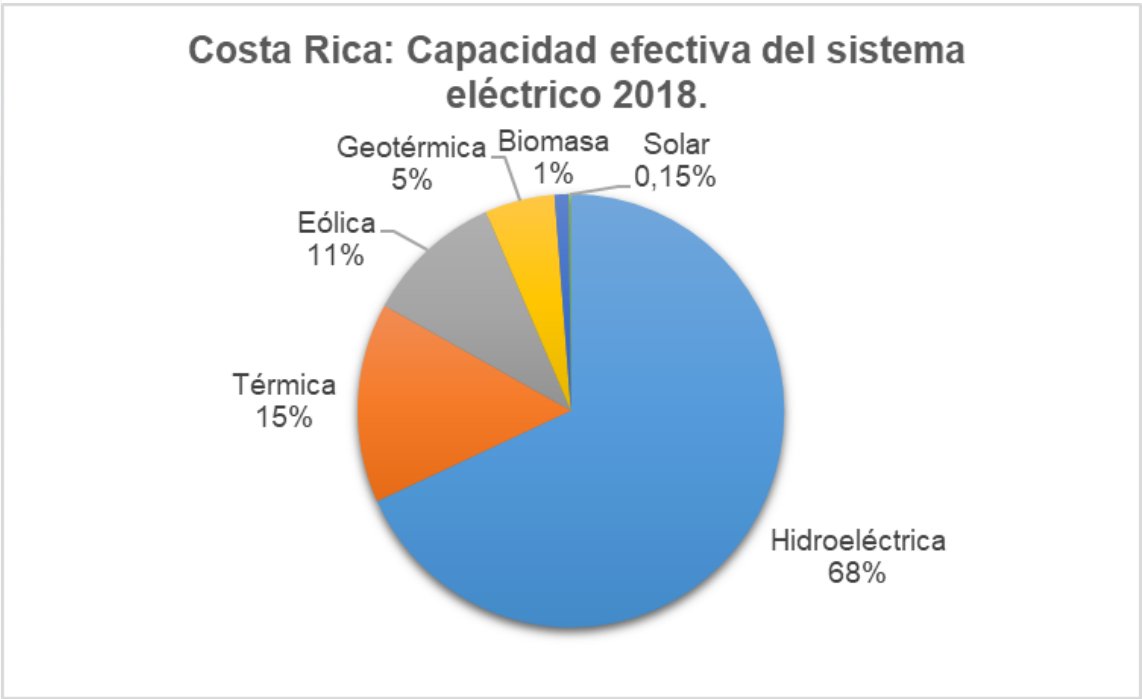
Coopesantos

1/ Private generation is allowed on a small scale and with renewable sources.

2/ Municipal and cooperative companies can generate their own energy.

3 99,7% renewable generation in 2017





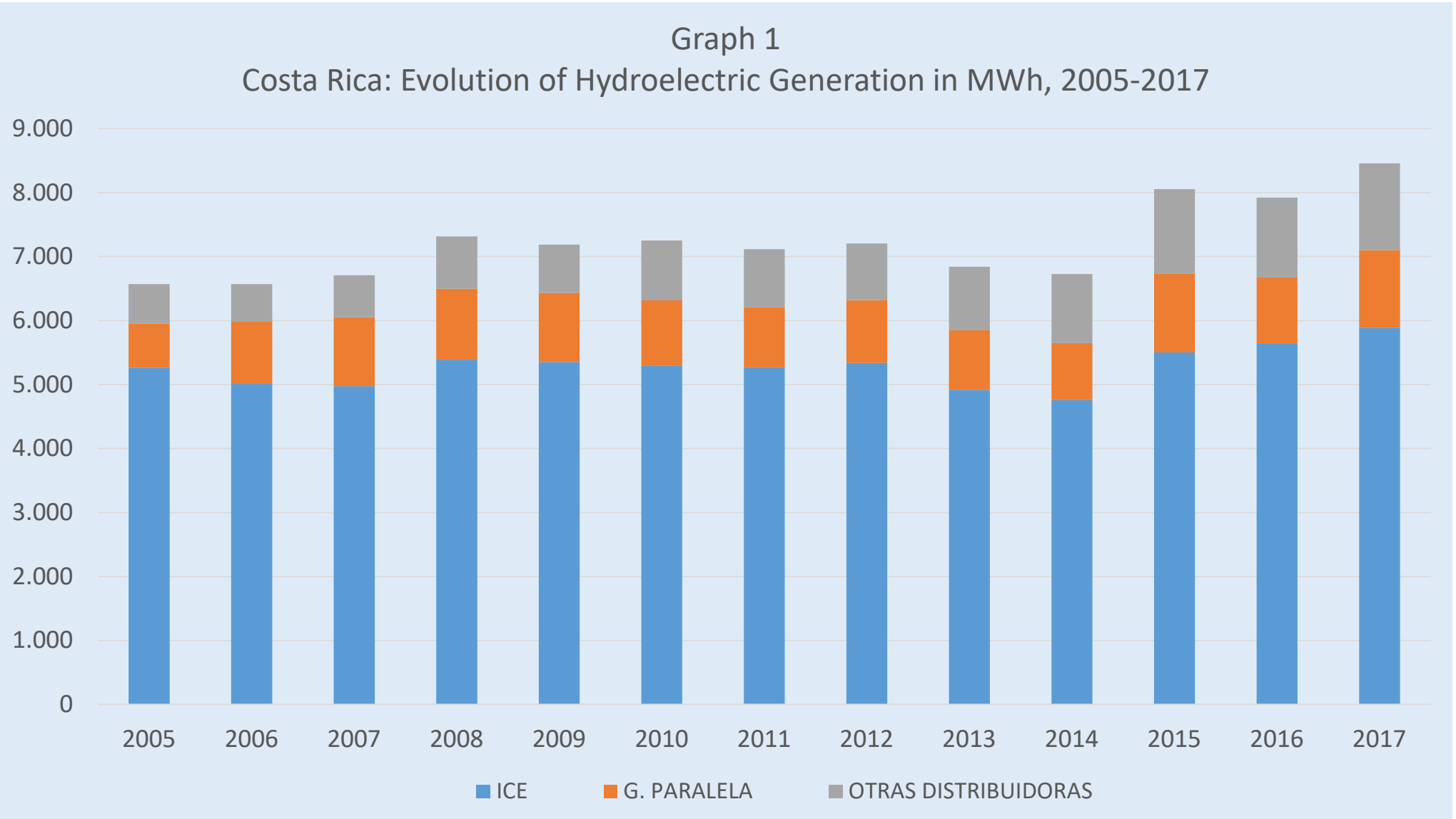
4 Electrical coverage: 99,4%.

Costa Rica: índice de cobertura eléctrica según empresa distribuidora. (Estimado a julio 2017).

Empresa distribuidora:	Área (Km²)	Índice cobertura
ICE	38 715	98,09%
CNFL	885	100,00%
ESPH	104	100,00%
JASEC	1103	100,00%
COOPEGUANACASTE	3 915	99,63%
COOPELESCA	4 851	99,63%
COOPESANTOS	1275	99,70%
COOPEALFARO	252	100,00%
COSTA RICA	51 100	99,39%

Fuente: Base de Datos Proceso Expansión del Sistema.
ICE - Planificación y Desarrollo Eléctrico. Atlas CR 2014, ITCR.

5 Costa Rica: Hydroelectric Generation

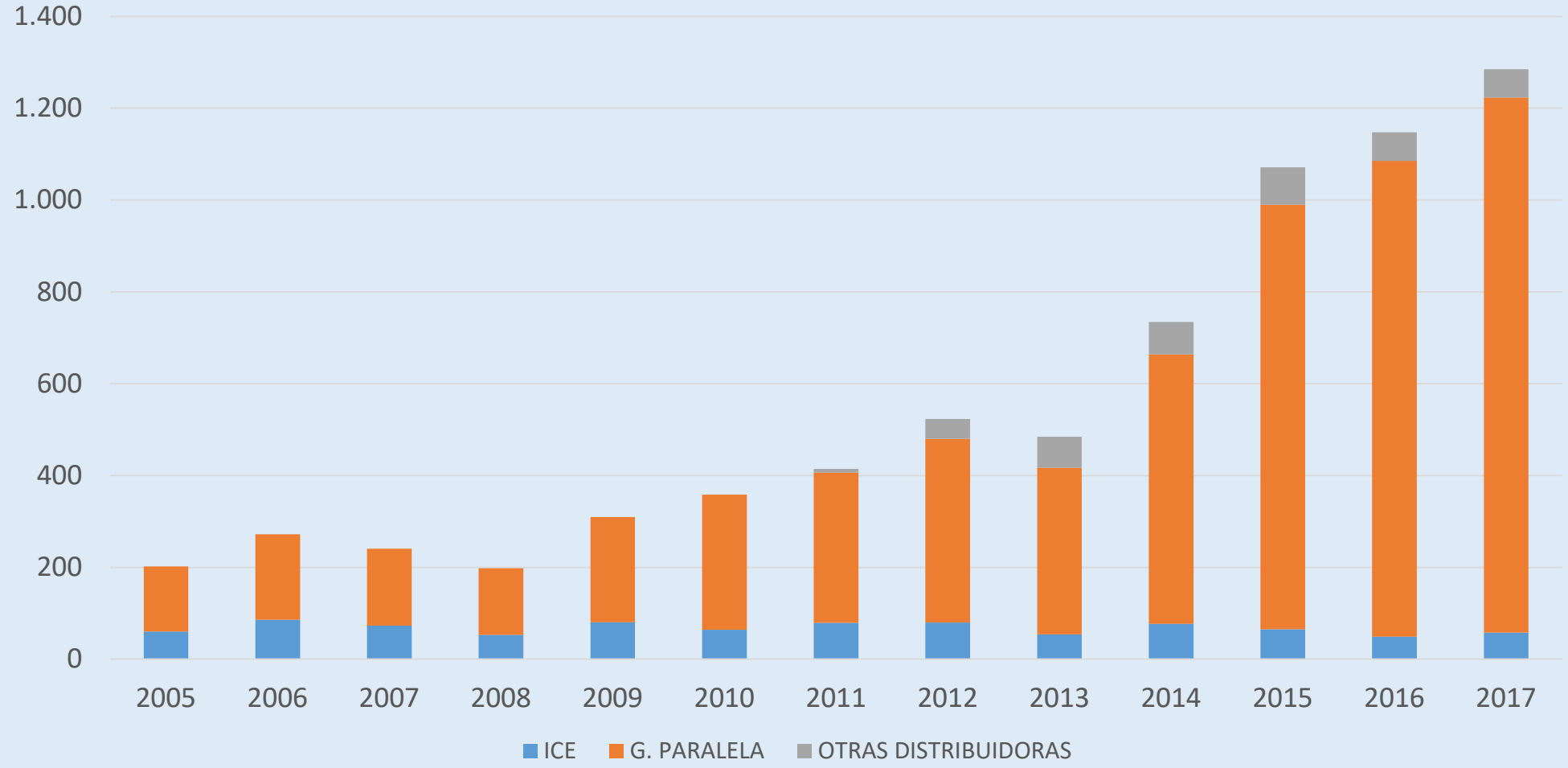


77.5%
Of the total generation in 2017

6 Costa Rica: Wind Generation

Graph 2

Costa Rica: Evolution of Wind Generation in MWh, 2005-2017

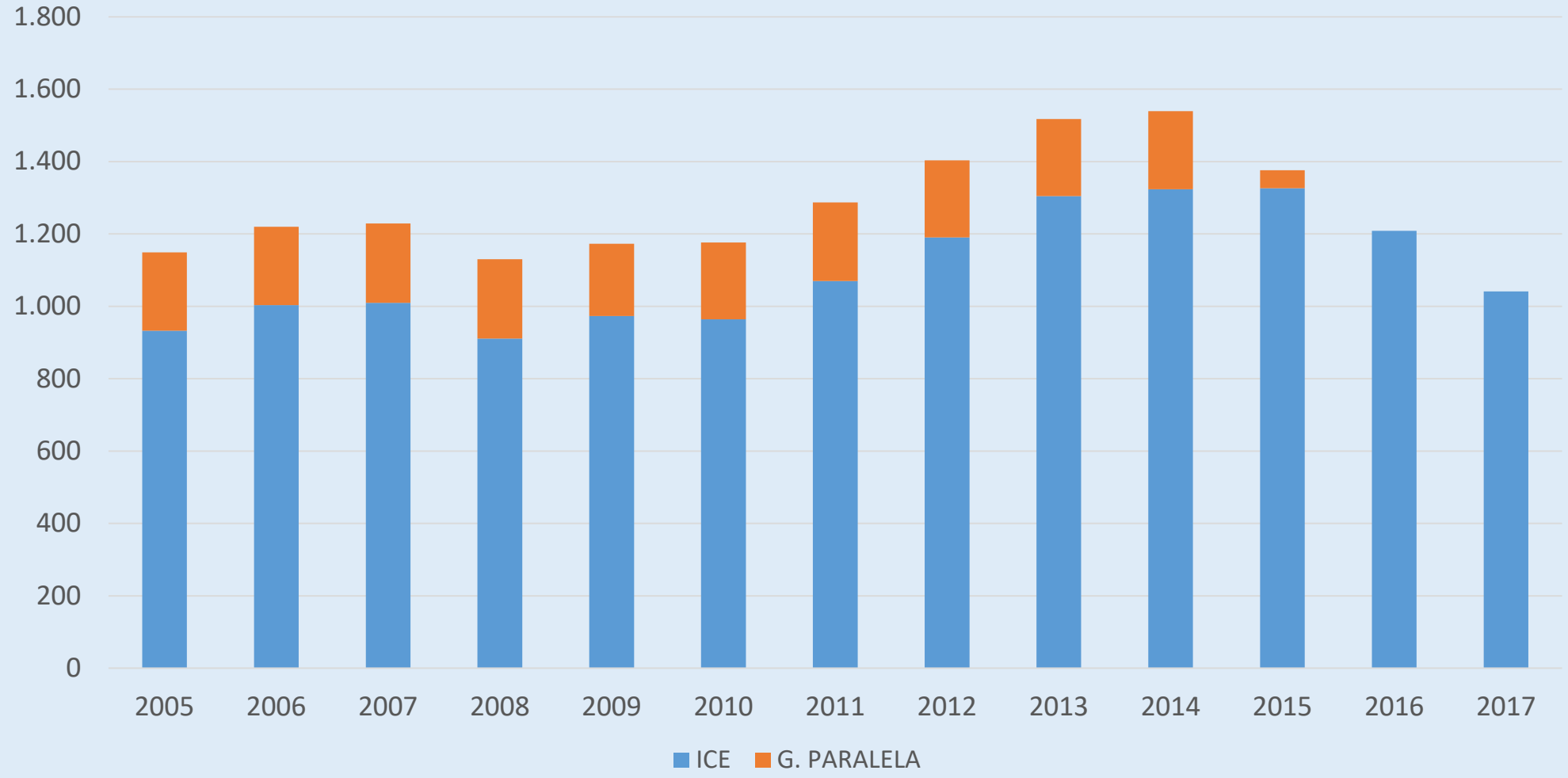


11.8 %

Of the total generation in 2017

7 Costa Rica: Geothermal Generation

Graph 3
Costa Rica: Evolution of Geothermal Generation in MWh, 2005-2017

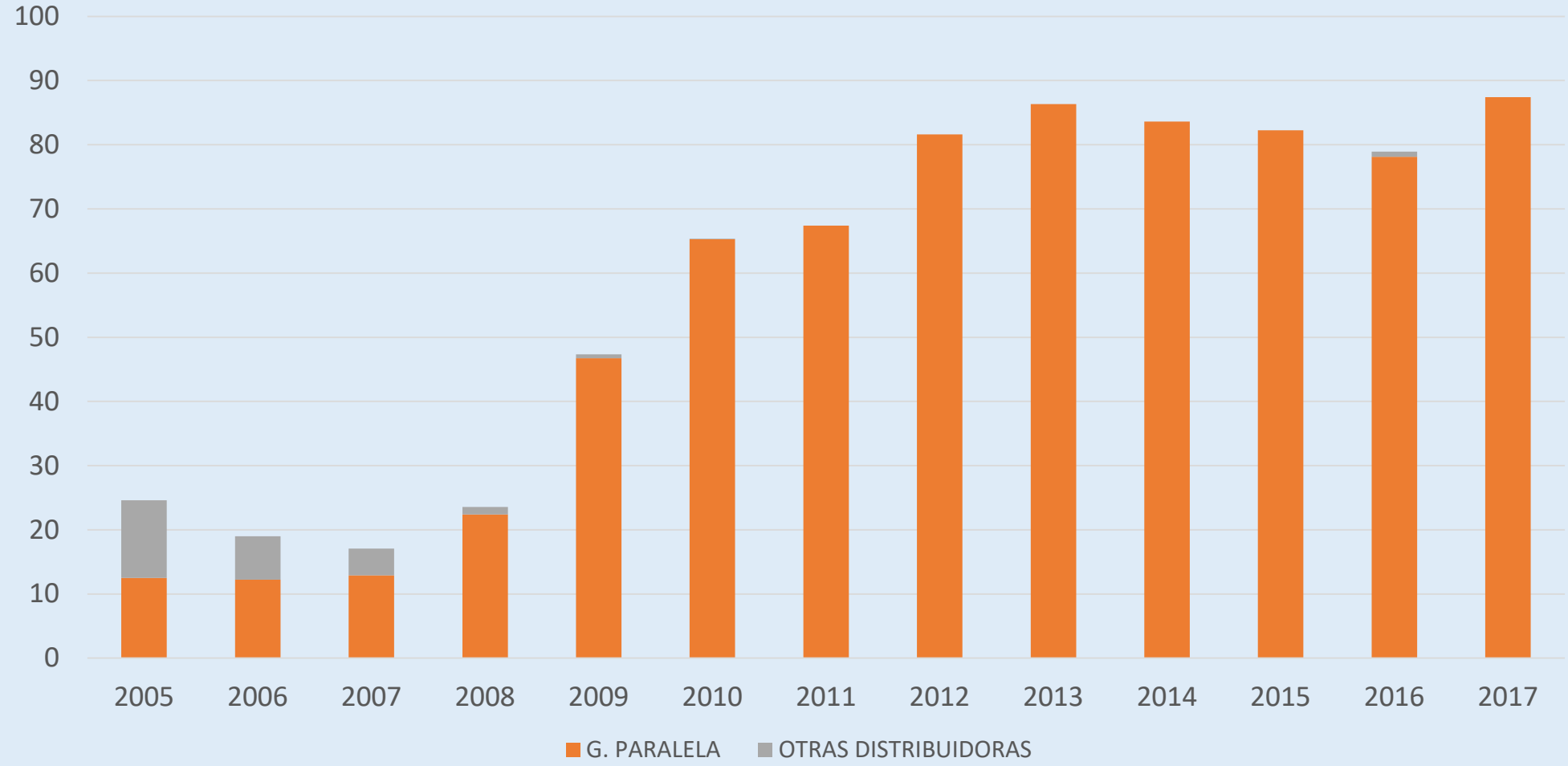


9.5%
Of the total generation in 2017.

8 Costa Rica: Biomass Generation

Graph 4

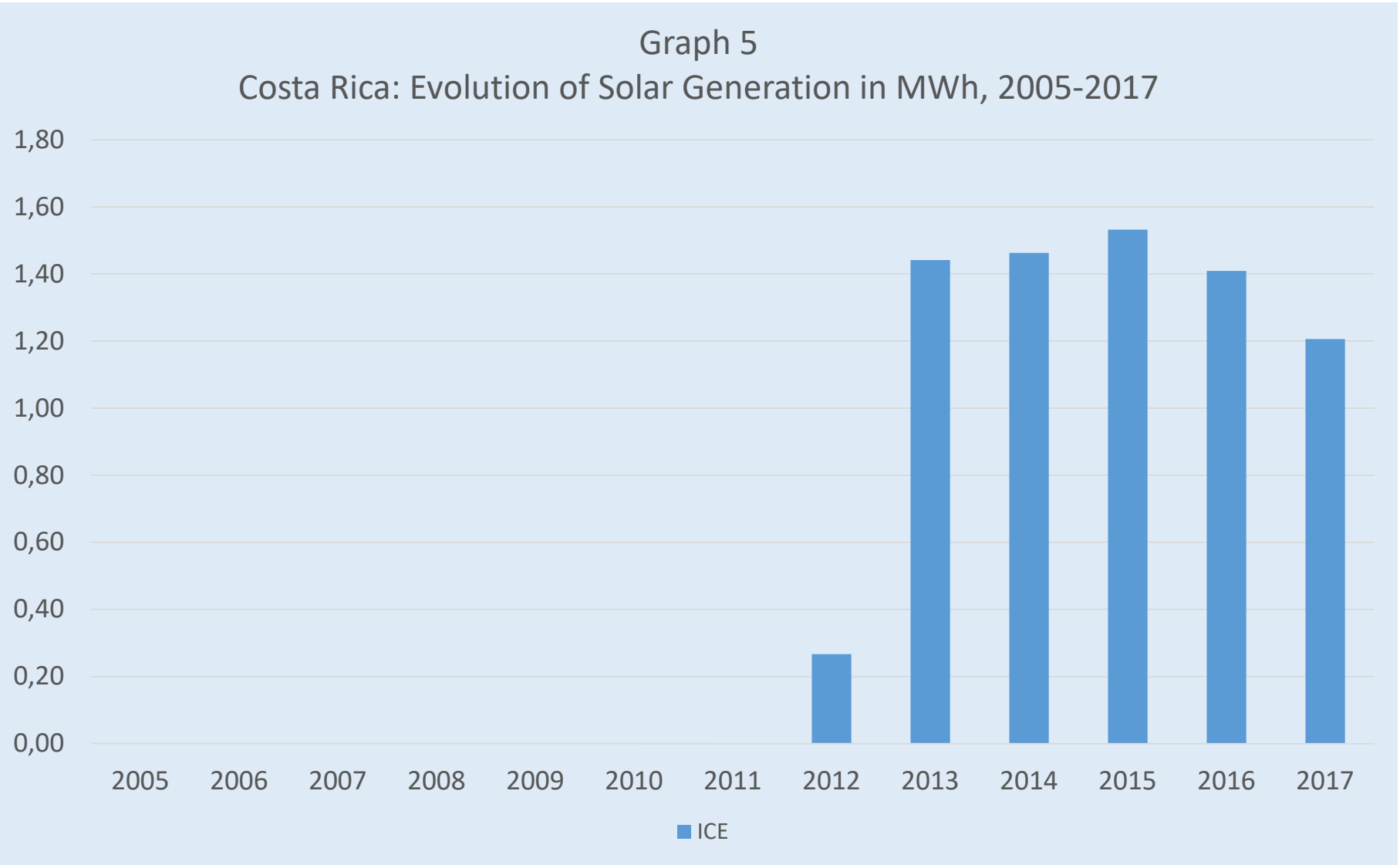
Costa Rica: Evolution of Biomass Generation in MWh, 2005-2017



0.8%

Of the total generation in 2017

9 Costa Rica: Solar Generation.

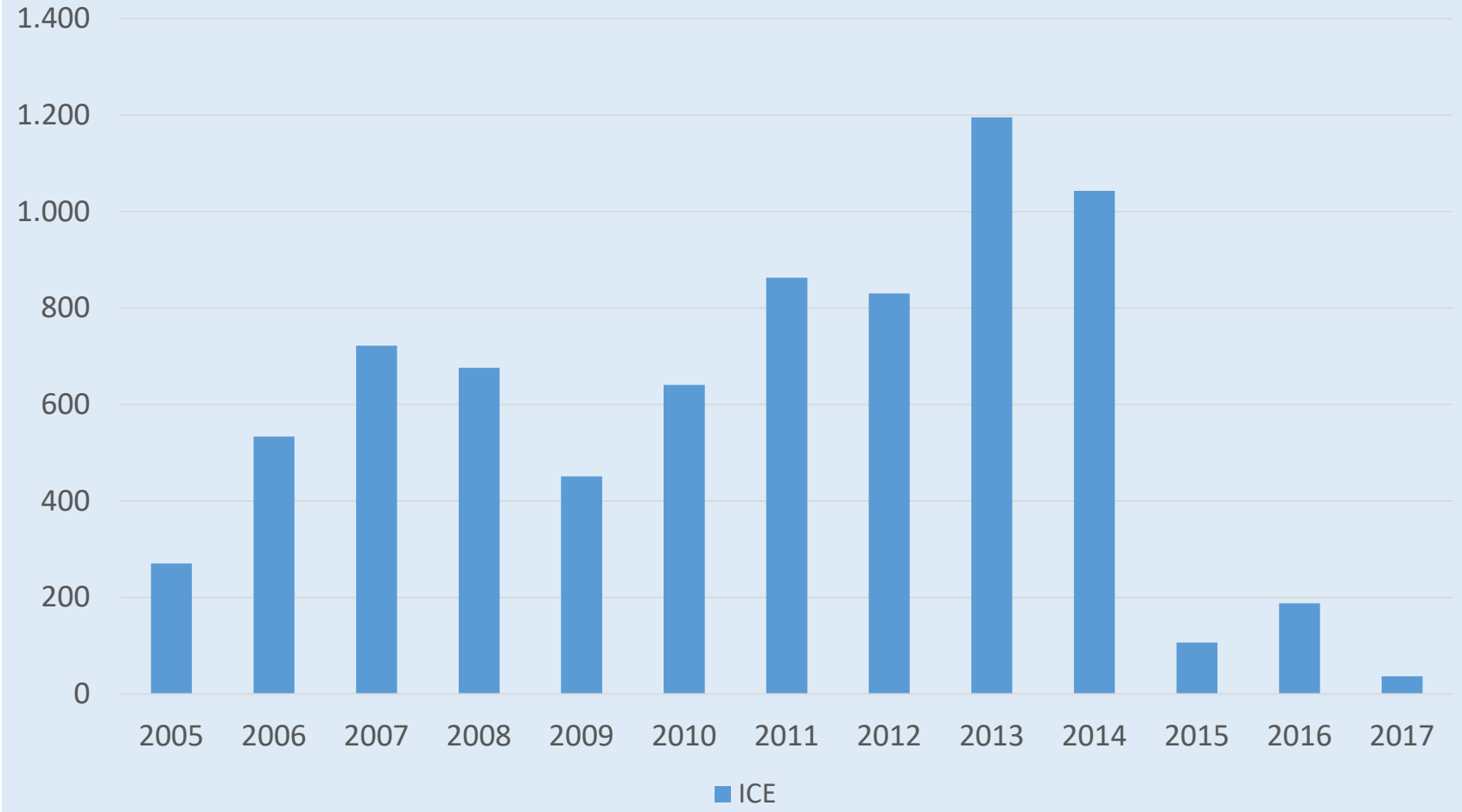


0.3%
Of the total generation

In january 2018: Distributed generation for self-consumption: 727 projects, 15 MW.

10 Costa Rica: Thermal Generation

Graph 6
Costa Rica: Evolution of Thermal Generation in MWh, 2005-2017



0.3%
Of the total generation 2017.

Regional Electricity Market (MER).

Operation of new wind power plants.

Favorable climate.

Main challenges and actions

Main Challenges

- Efficiency
- Sustainability
- Competitive rates
- Flexible regulation

Main Actions

National Energy Conservation Commission.

- Working Groups.
- Disruptive technologies: Storage, Smart grids, Distributed generation, Electric vehicle.
- MINAE-ARESEP-Regulated companies.
- National Energy Plan 2015-2030.

Development of regulatory instruments.

- Ancillary services.
- Bagasse and biomass methodologies.

Main Actions

Review of tariff structures.

- Residential.
- Transmission.
- Social.

Regulatory accounting.

Supervisión of strategic investments in the generation system.

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Thanks