Identifying Challenges

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MY 5 CHALLENGES
“Evidence-based policy-making: EE & Buildings

EX-ANTE ANALISYS

1	2	3	4	5
PUBLIC POLICY MAKING: Socio-economic Development, Climate, S&T, Energy and Energy Efficiency	"Policy appraisal" ENERGY EFFICIENCY Indicators of performance: policy instruments	Data Analysis and Modeling	MONITORING AND EVALUATION	POLICY ADJUSTMENTS

EX-POST ANALISYS

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Conrado A Melo

Aline T Causo

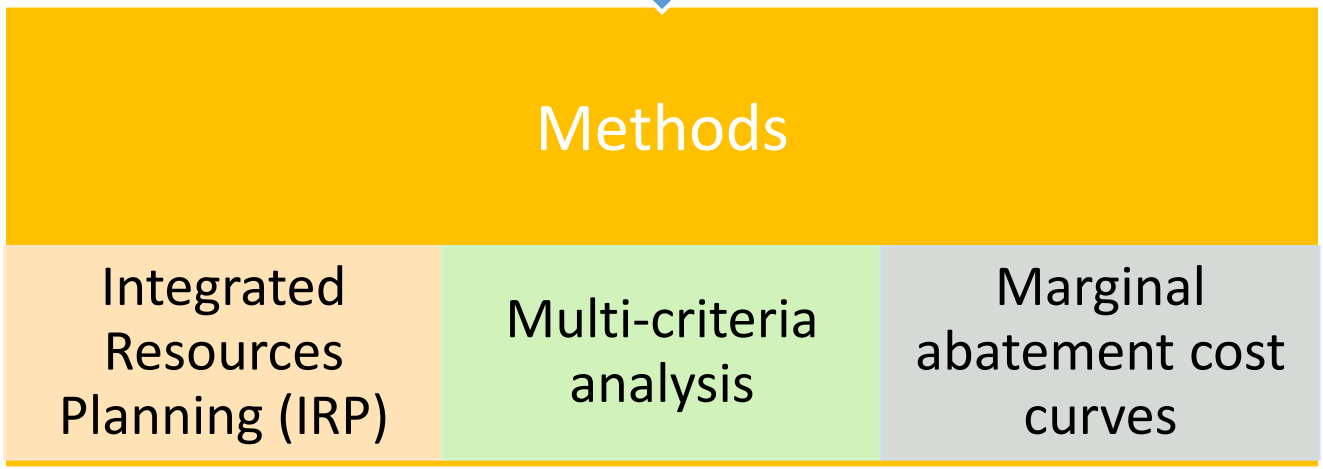
Evaluating public policy mechanisms for climate change mitigation in Brazilian buildings sector

Low-carbon mitigation strategies for Brazil

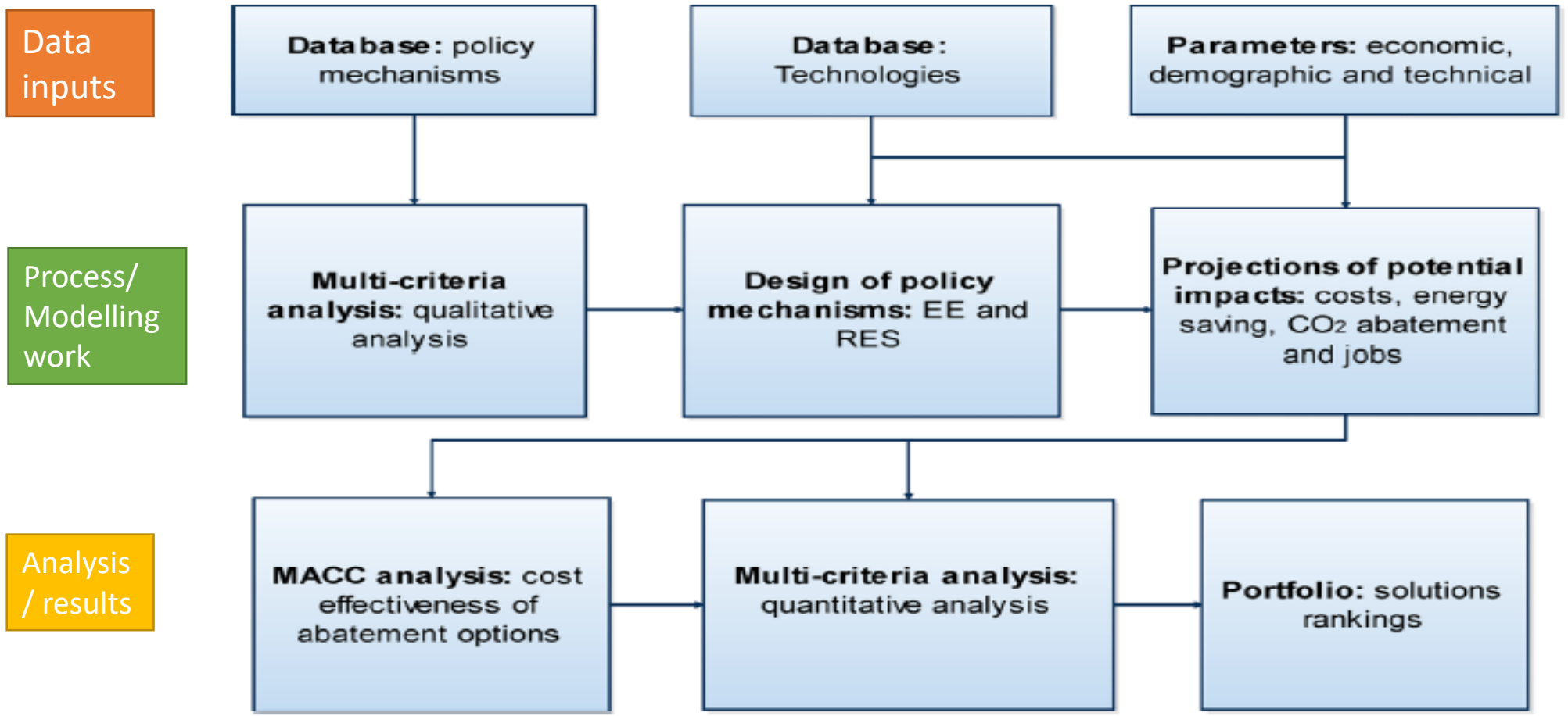
- GHGs emissions from the Energy sector in Brazil: relatively small by international standards, but increasing steadily.
- Challenge: maintain high participation of RE and invest in more efficient energy-infrastructure – specially on the DEMAND SIDE
  - Transportation
  - Industry
  - Buildings

Our "Evidence-based Policy" approach

Objective: create a portfolio of technologies+policy instruments to reduce emissions up to 2030 in the buildings sector. Investigate the **best** dissemination strategies.



Project workflow



Select policy mechanisms

- Regulatory and control mechanisms
  - Technical standards for appliances, regulated procurement schemes, building codes, compulsory investments, tariffs
- Economic/market-based instruments
  - Financing mechanisms, rebates, ESCOs, cooperatives
- Fiscal instruments and incentives
  - Carbon taxes, taxes and subsidies
- Support, information and voluntary action
- Funding mechanisms

•14 different policy mechanisms for EE interventions

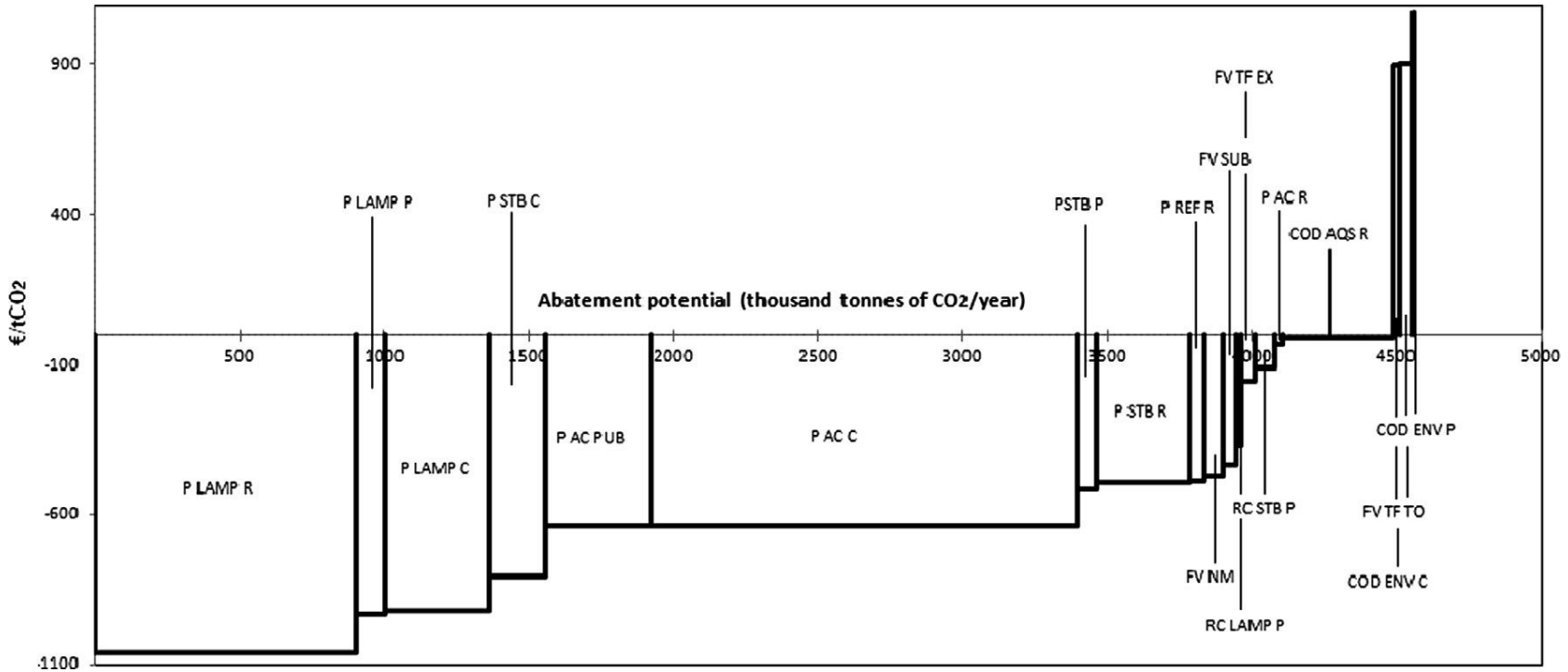
•6 different policy mechanisms for RE onsite generation

Residential buildings—R (cumulative total from 2014 to 2030)			Commercial buildings—C (cumulative total from 2014 to 2030)			Public buildings—Pb (cumulative total from 2014 to 2030)		
Mechanism	Energy saving potential (TWh)	Abatement potential[d] (Million tonnes of CO_2e)	Mechanism	Energy saving potential (TWh)	Abatement potential (Million tonnes of CO_2e)	Mechanism	Energy saving potential (TWh)	Abatement potential (Million tonnes of CO_2e)
P[a] REF R	9.67	0.90	P AC C	269.76	25.10	P AC Pb	67.44	6.27
P AC R	5.49	0.51	P LAMP C	65.90	6.13	P LAMP Pb	17.35	1.61
P LAMP R	165.62	15.41	P STB C	35.15	3.27	P STB Pb	11.12	1.03
P STB R	59.33	5.52	COD ENV C	3.54	0.33	RC STB Pb	12.88	1.20
COD[b] AQS R	69.38	6.45				RC LAMP Pb	1.81	0.17
FV NM	11.72	0.95				COD ENV Pb	0.15	0.01
FV (other)[c]	9.15	0.74						
Total	330.36	30.48	Total	374.35	34.83	Total	110.76	10.30

[a] P means Minimum energy performance standards.
[b] COD means energy efficiency codes.
[c] Other FV refers to the application of only one of the options beyond net metering (subsidies or feed-in tariff).
[d] To estimate the weight of buildings electricity consumption in CO_2e emissions from power generation we apply an emission factor of $0.080tCO_2e$ per megawatt hour that is an average of official assumptions in the PNE 2030 (EPE, 2007) and an loss factor for the Brazilian Interconnected System of 15% (EPE, 2011).

Results: Energy savings / CO2 savings

Results: Marginal Carbon Abatement Costs



Ranking of options

Ranking	MACC	MCA
1°	P LAMP R	P LAMP R
2°	P LAMP P	FV NM
3°	P LAMP C	P STB C
4°	P STB C	P AC C
5°	P AC PUB	P LAMP C
6°	P AC C	P STB R
7°	PSTB P	P AC PUB
8°	P STB R	P LAMP P
9°	P REF R	COD AQS R
10°	FV NM	PSTB P
11°	FV SUB	P REF R
12°	RC LAMP P	FV SUB
13°	FV TF EX	P AC R
14°	RC STB P	FV TF EX
15°	P AC R	RC STB P
16°	COD AQS R	COD ENV C
17°	COD ENV C	FV TF TO
18°	FV TF TO	RC LAMP P
19°	COD ENV P	COD ENV P

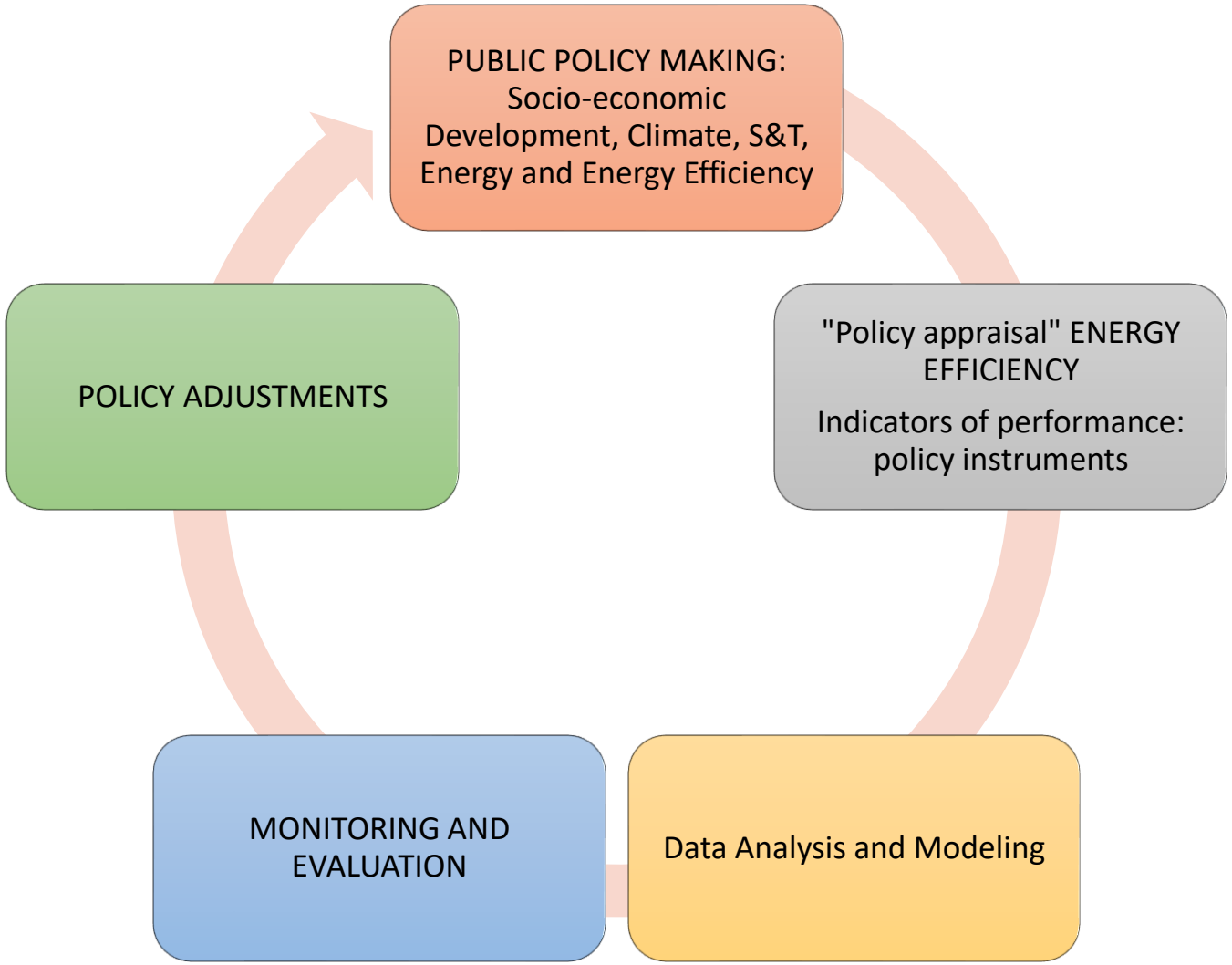
Benchmarking

Regulations

Data Analytics

User influence on performance

Monitoring and Evaluation



Publications

- Melo, C. A.; Jannuzzi, G. M.; Tripodi, A. (2013). *Evaluating public policy mechanisms for climate change mitigation in Brazilian buildings sector - Energy Policy* v. 61, p. 1200-1211,.
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- Jannuzzi, G. M.; Melo, C. A.; Sébastien, J. (2012*). Detailed comparison of Brazilian and French obligation schemes to promote energy efficiency. International Energy Program Evaluation Conference (IEPEC). June, Rome, Italy.*
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Thank you

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