BRASIL

Brazil PMR Project

September 2018

pmr | PARTNERSHIP FOR MARKET READINESS

SAIN Secretaria de Assuntos Internacionais

SPE Secretaria de Política Econômica

Brazil PMR Project

- **Brazilian Context**
  - A developing country, with over 200 million people
  - Coming out of a deep economic recession: still high unemployment, low growth and fiscal problems
  - Relatively clean energy matrix, but projections indicate it will get ‘dirtier’ in BAU scenarios
  - In terms of emissions, historically there has been a great share of LULUCF emissions due to deforestation, which has decreased significantly in the last decade, but started to grow again recently

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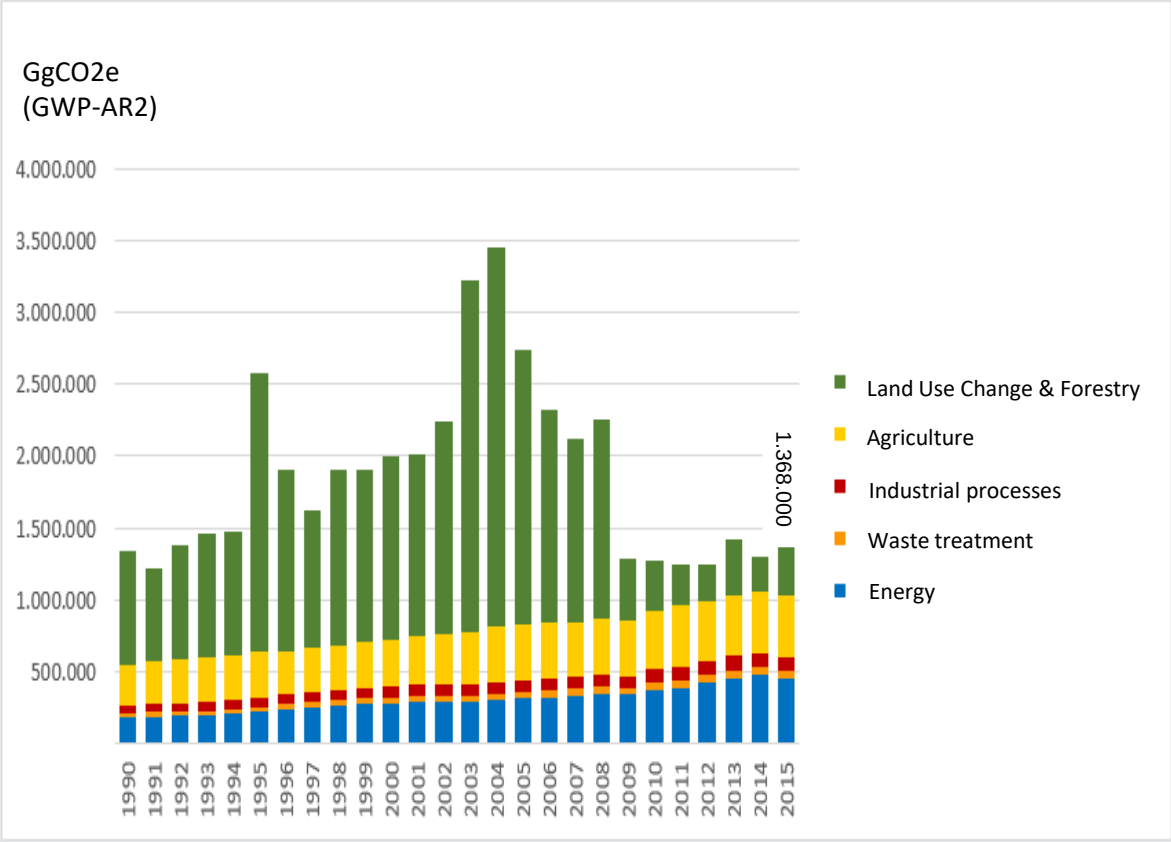
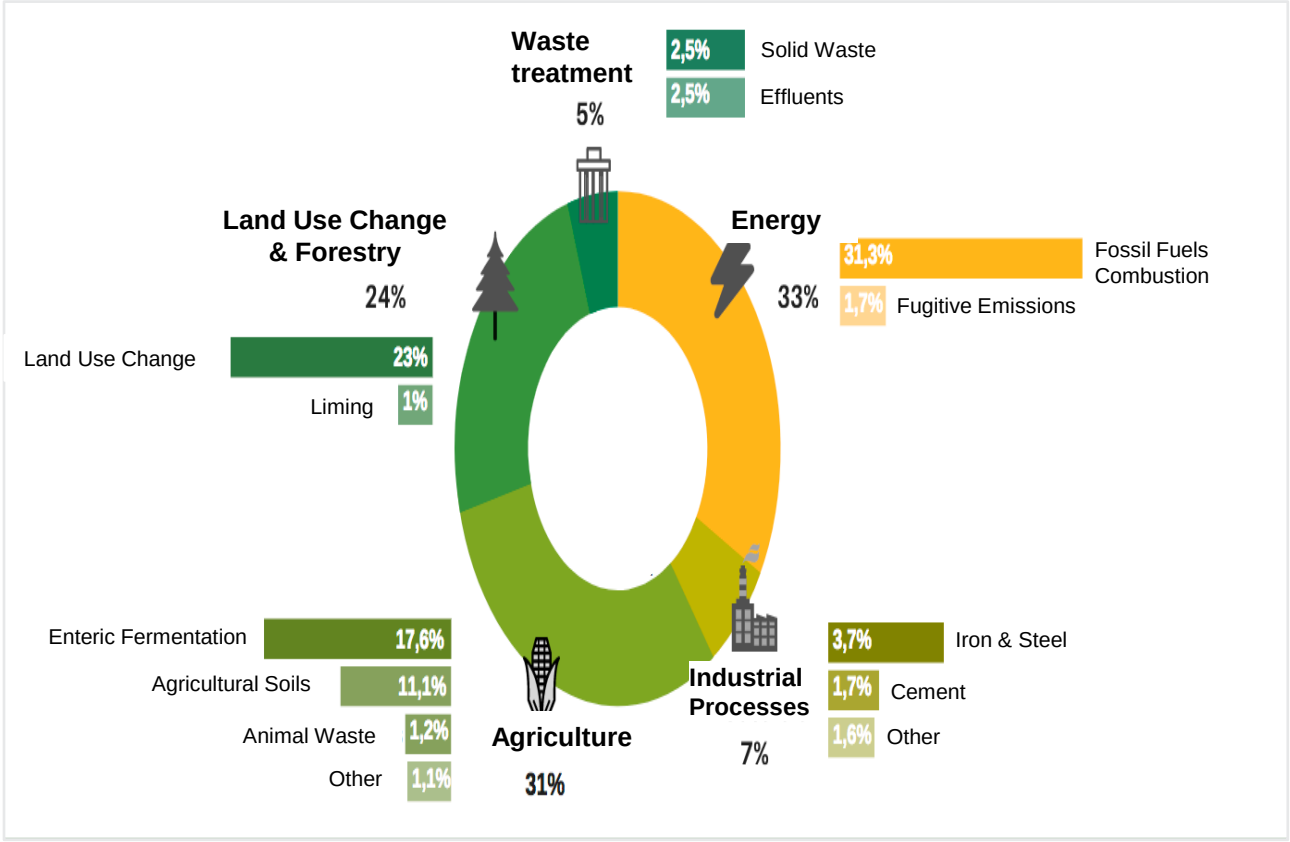
- **Brazilian GHG Emissions by Sector (net)**





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- **Brazilian Context**

  - Brazil presented and, subsequently, ratified it's NDC, which involves reducing GHG emissions by 37% in 2025, compared to 2005 (indicative goal of reducing 43% in 2030)

  - Brazilian climate goal (exogenous to the Project) – reach Brazilian NDC

  - But reaching the target involves costs, public and private

  - Question: how to reach the NDC in the most cost-effective way?

    - Theoretical relevance and worldwide dissemination → carbon pricing instruments

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- **The Brazil PMR: Objectives**

  - Support the decision-making process on the role of carbon pricing instruments in the policies to mitigate greenhouse gas (GHG) emissions → aligns technical and political concerns

  - Research question:

    - (i) Is it desirable to have carbon pricing instruments composing national climate policy in the post-2020 period?

    - ii) If so, what are the main characteristics that the instrument should have in order to optimize the relationship between environmental objectives and socioeconomic development?

  - However, as carbon pricing is not a 'silver bullet' and other policy instruments will influence the efficiency and effectiveness of the CPI → analyze packages of climate instruments, including CPIs

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- **Analytical Framework: rationale**

  - How to answer the questions posed?

    - Need to estimate the impacts of alternative options to reach the climate goal on key socioeconomic indicators
      - → Model to estimate ex-ante impacts of alternative policy combinations

    - But for any given model, its results are more credible, the more realistic are the assumptions behind it. Also, the sole recommendation of packages is itself a challenging task: how to choose which options to simulate? How can we identify the most promising options?
      - → Sectoral studies to look in detail at the main characteristics of Brazilian economic sectors (economic and institutional structures, policy instruments in place, etc.), as well as at the policy interactions with CPIs

    - Still, there might be some important variables to analyze that the modelling component will not be able to deal with and the weighting of the different criteria is not simple. Also the Brazil PMR is not only a technical study, but a political process, so we need political-institutional awareness, stakeholder engagement and participation
      - → Regulatory impact analysis and communication component

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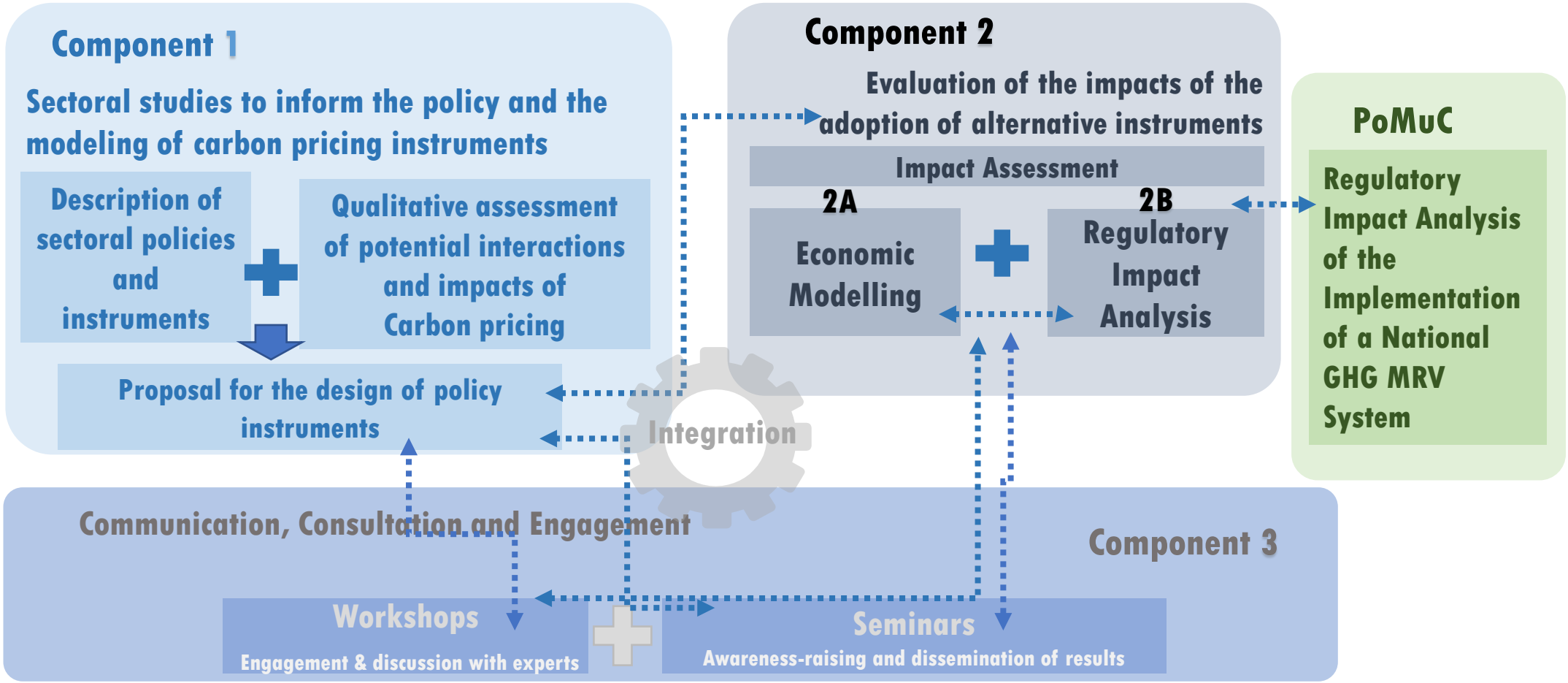
- Analytical Framework: structure



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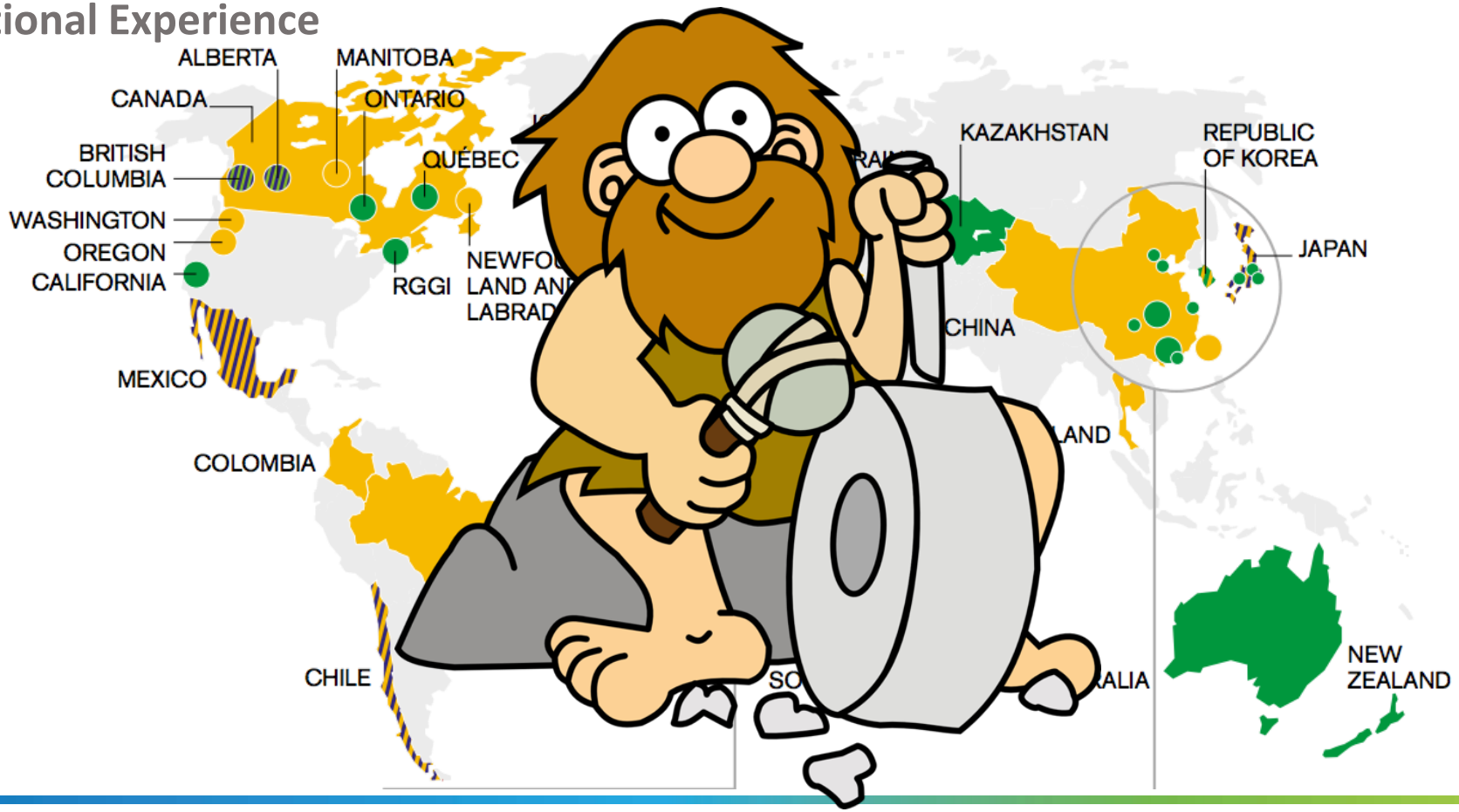
- **Component 1**
  - **1: International Experience**



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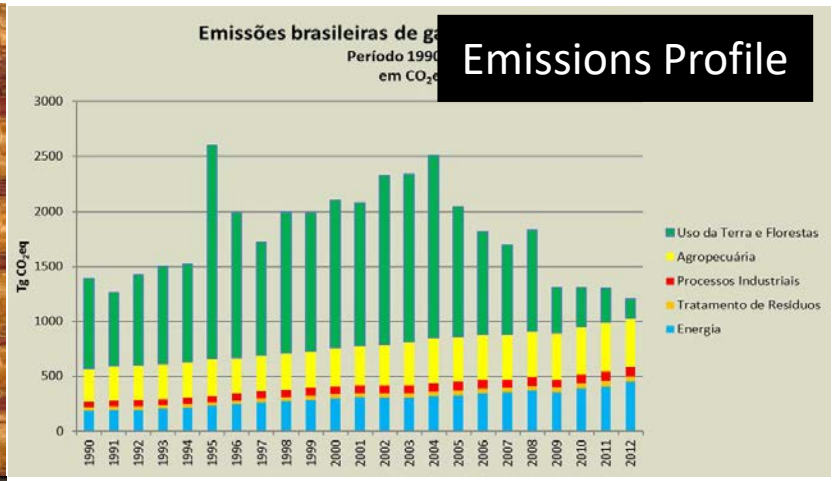
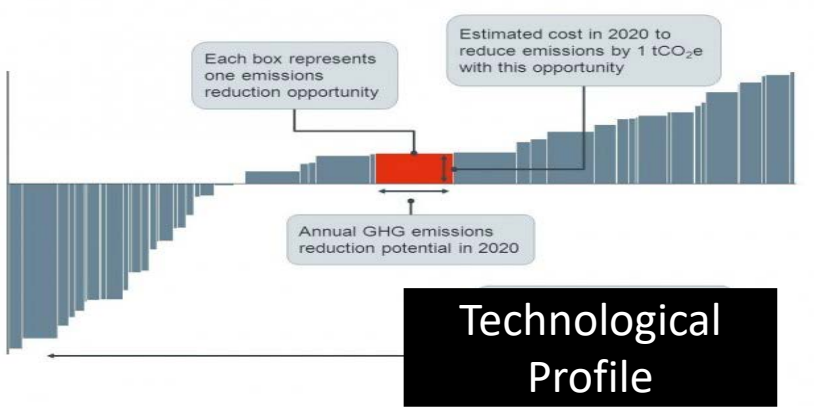
- **Component 1**
  - **2: Sectoral Diagnosis**





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- **Component 1**
  - **3: Mapping of Policy Objectives and Instruments**

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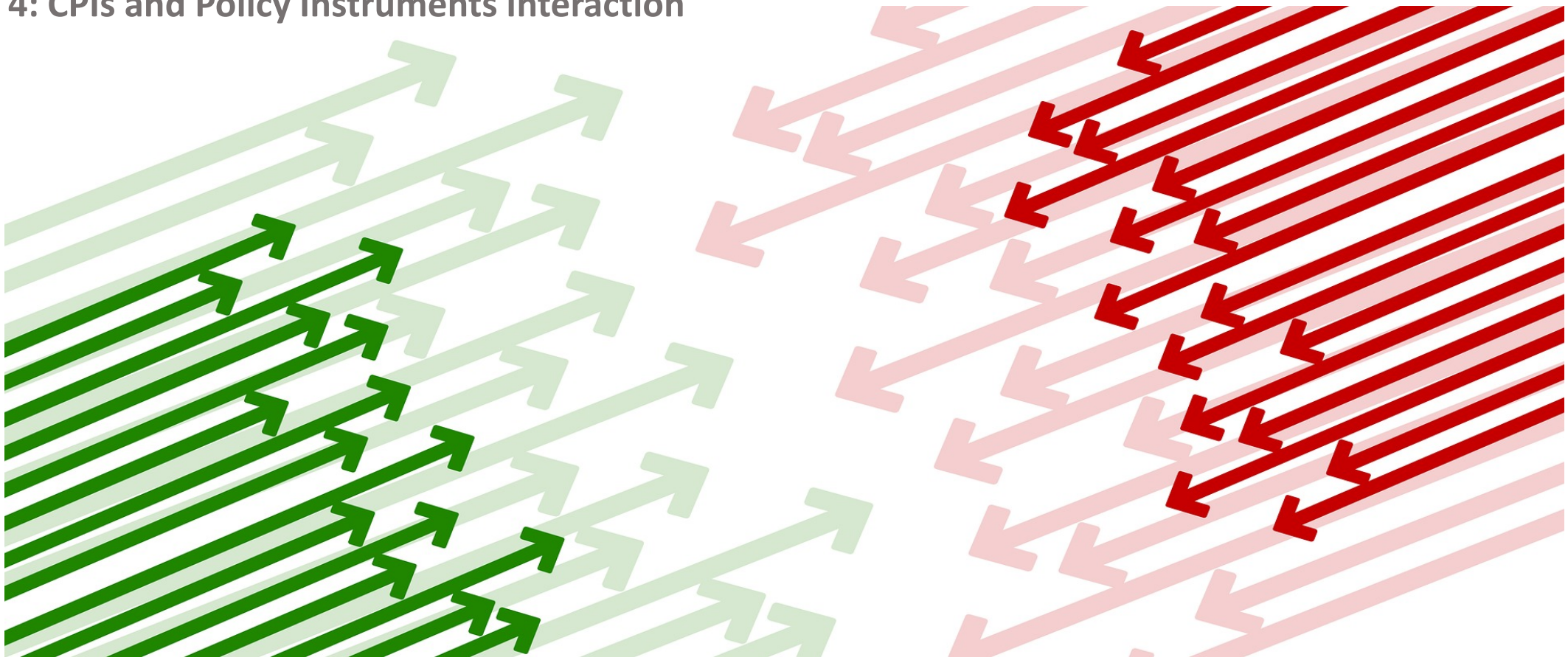
- **Component 1**
  - **4: CPIs and Policy Instruments Interaction**



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- **Component 1**
  - CPIs are not orthogonal, non-correlated with other policy instruments
  - Many times these are not analyzed in detail, so that the results of the analysis may be biased
  - While some instruments might not have much to do with the CPI, many of them might have overlaps
    - Such overlapping instruments may be synergistic, countervailing or redundant
      - R&D stimulus for low carbon activities; Fiscal benefits for fossil fuels; Fuel Standards

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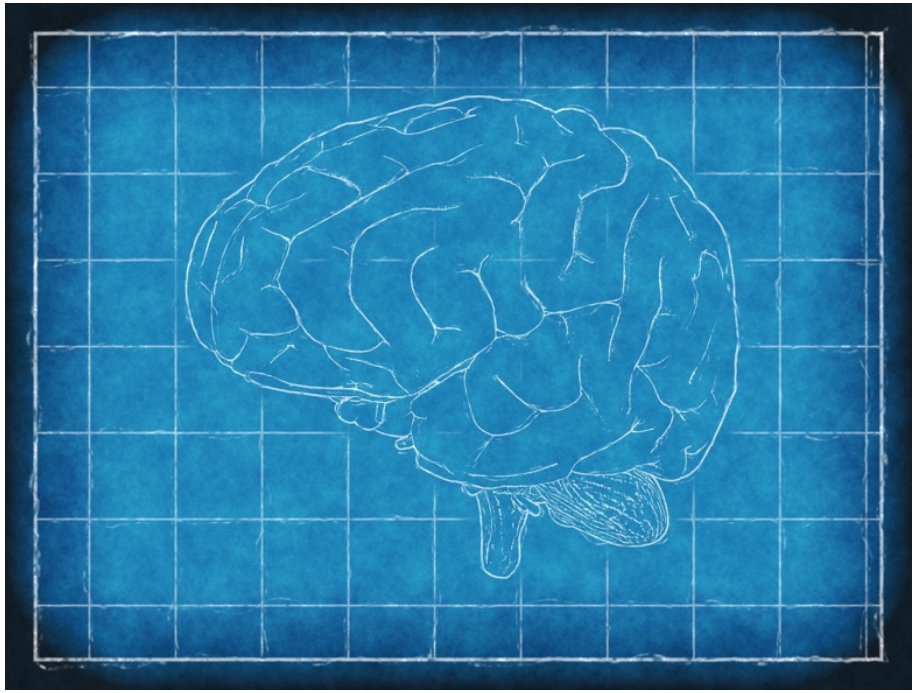
- **Component 1**
  - **5: Design Recommendations for CPIs and Policy Instruments Adjustments – Sectoral Level**
  - **6: Proposition of Economy-Wide Policy Instrument Packages (input to Component 2)**



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- **Component 1: examples of proposals (Ctax)**

	FUELS	ELECTRICITY GENERATION	INDUSTRY	AGRICULTURE
Scope	Fossil Fuels Combustion	-	Process and fugitive emissions	Enteric fermentation from cattle ranching
Implementation	Substitution: volumetric fuels tax (CIDE combustíveis) for a carbon tax (CIDE carbono), including emissions from fuels combustion, industrial processes and enteric fermentation			
Point of Regulation	Fuels' distributors and importers	Shadow carbon price on dispatch and expansion	Industrial plants	Cattle slaughtering facilities
Emissions calc.	Carbon content parameters of fuels, combined with volume of sales		MRV of process and fugitive industrial emissions	Estimation based on the combination of animal age and production, using thresholds (37-40, 41-48, 48-)
Exemptions	LPG and natural gas	Thermoelectric generation	• EITE sectors receive partial exemption based on leakage risk • Industrial plants emitting under 25 ktCo2e/y • Petrochemical naphtha	Animals under 36 months old, establishments not subject to federal inspection
Value	R$30/$tCO_2e$ for the 1st period (3 to 5 years), inflation adjusted			
Offsets	National carbon credits (CRA, MDL), up to 40% of covered emissions in the 1st phase			
MRV	Use the existing system		Annual reporting with 3rd party verification	Enhance existing system
Penalties	According to the Brazilian tax law			
Revenue usage	1º) Fiscal compensations: federal and states' budget 2º) Distributive compensations: compensate beneficiaries of social programs for energy price increases 3º) Environmental compensations: national climate fund, low-carbon agriculture			

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- **Component 1: examples of proposals (hybrid system)**

	FUELS AND ELECTRICITY GENERATION (TAX)	AGRICULTURE (TAX)	INDUSTRY (ETS)
Scope	Emissions of fuels for nun-industrial users	Enteric fermentation from cattle ranching	Combustion, process and fugitive industrial emissions
Implementation/ allocation	Substitution: volumetric fuels tax (CIDE combustíveis) for a carbon tax (CIDE carbono), including emissions from fuels combustion and enteric fermentation		Grandfathering: EITE sectors receive free allocation based on leakage risk on the first phase. Remainder permits allocated through auctions
Point of regulation	Distributors and importers of liquid fossil fuels and natural gas, coal processing plants	Cattle slaughtering facilities	Industrial plants
Emissions calc.	Carbon content parameters of fuels, combined with volume of sales	Estimation based on the combination of animal age, productive system and production, using thresholds (37-40, 41-48, 48-)	MRV of combustion, process and fugitive industrial emissions
Exemptions	• Fuels sales to industrial users covered be the ets • Petrochemical naphtha	Animals under 36 months old, establishments not subject to federal inspection	• Industrial plants emitting under 25 ktCo2e/y
Value	R$30/tCO$_2$e for the 1st period (3 to 5 years), inflation adjusted		• Price ceiling R$30/tCO2e (MSR with 10% of permits) • Price floor R$20/tCO2e
Offsets	National carbon credits (CRA, MDL), up to 40% of covered emissions in the 1st phase		
MRV	Annual reporting with 3rd party verification (R$ 200k fine for false reporting)		
Penalty	According to the Brazilian tax law		R$ 100k fine, inflation adjusted, plus the obligation to buy permits for uncovered emissions
Revenue usage	1º) Fiscal compensations: federal and states' budget 2º) Distributive compensations: compensate beneficiaries of social programs for energy price increases 3º) Environmental compensations: national climate fund, low-carbon agriculture		

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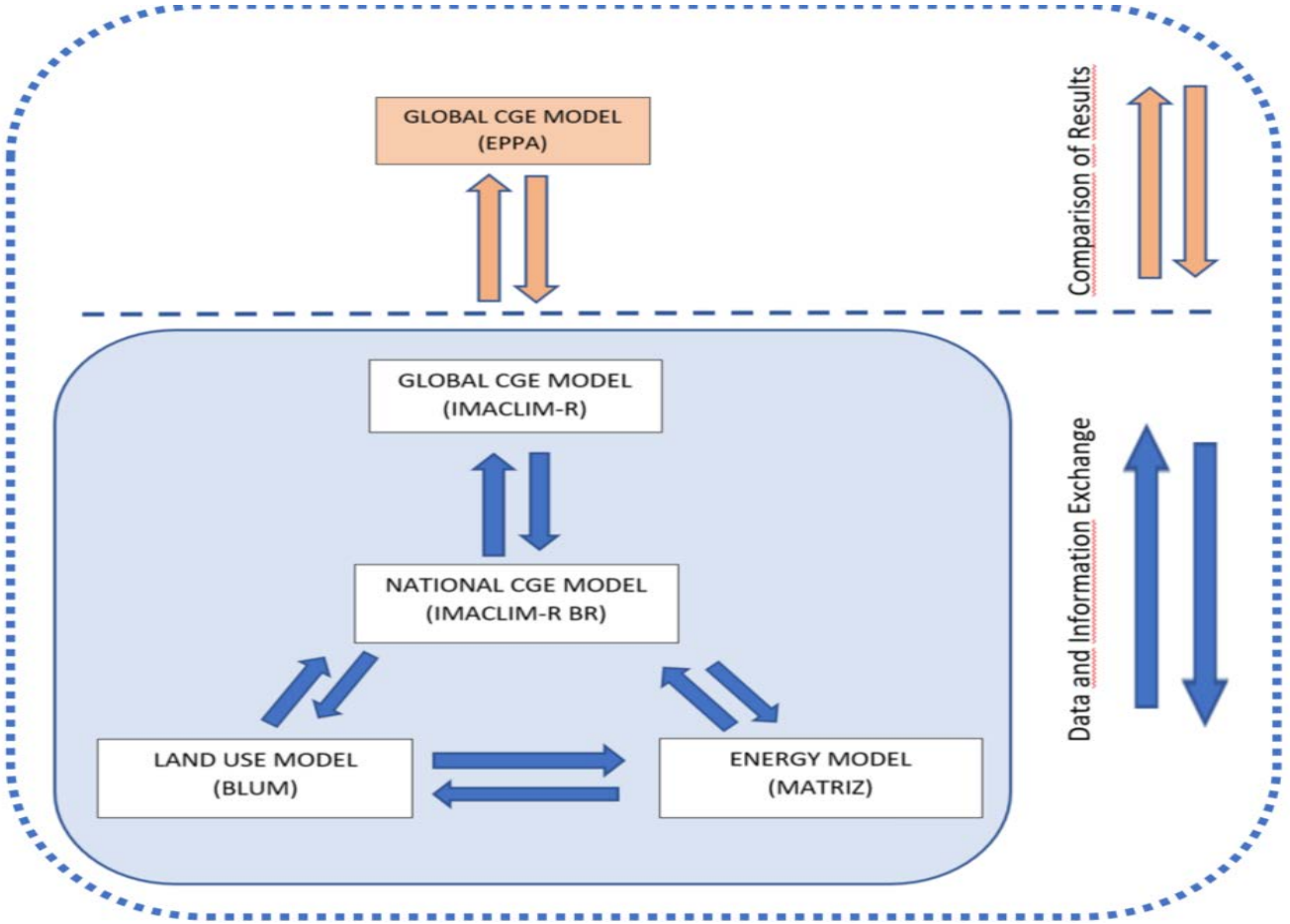
- **Component 2A: Impact Assessment (Modelling)**



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- **Component 2A: Impact Assessment (Modelling)**

Region	Model	Description
Brazil	IMACLIM-BR	Hybrid Computable General Equilibrium (CGE) model, recursive dynamics, up to 40 economic sectors and 10 income classes. Developed to be integrated with BU sectoral models for the analysis of socioeconomic implications of climate and energy policies (medium-long term)
	BLUM	Bottom-up sectoral partial equilibrium land use model. Multi-regional, multi-market, it displays the dynamics of land-use, emphasizing Brazilian agriculture
	MATRIZ	Bottom-up sectoral partial equilibrium model for the energy sector, it is a supply cost-optimizing model (MESSAGE, MARKAL). Multi-regional, adapted to the Brazilian reality, it is used to support energy planning and expansion in Brazil
World	IMACLIM-R	Global version of IMACLIM-BR. Multi-regional and multi-sectoral, it is used to simulate the low-carbon transition of the global economy
	EPPA	Global CGE model, recursive dynamics, multi-regional, multi-sectoral, developed by the MIT. Has been widely used on impact assessments of climate policies

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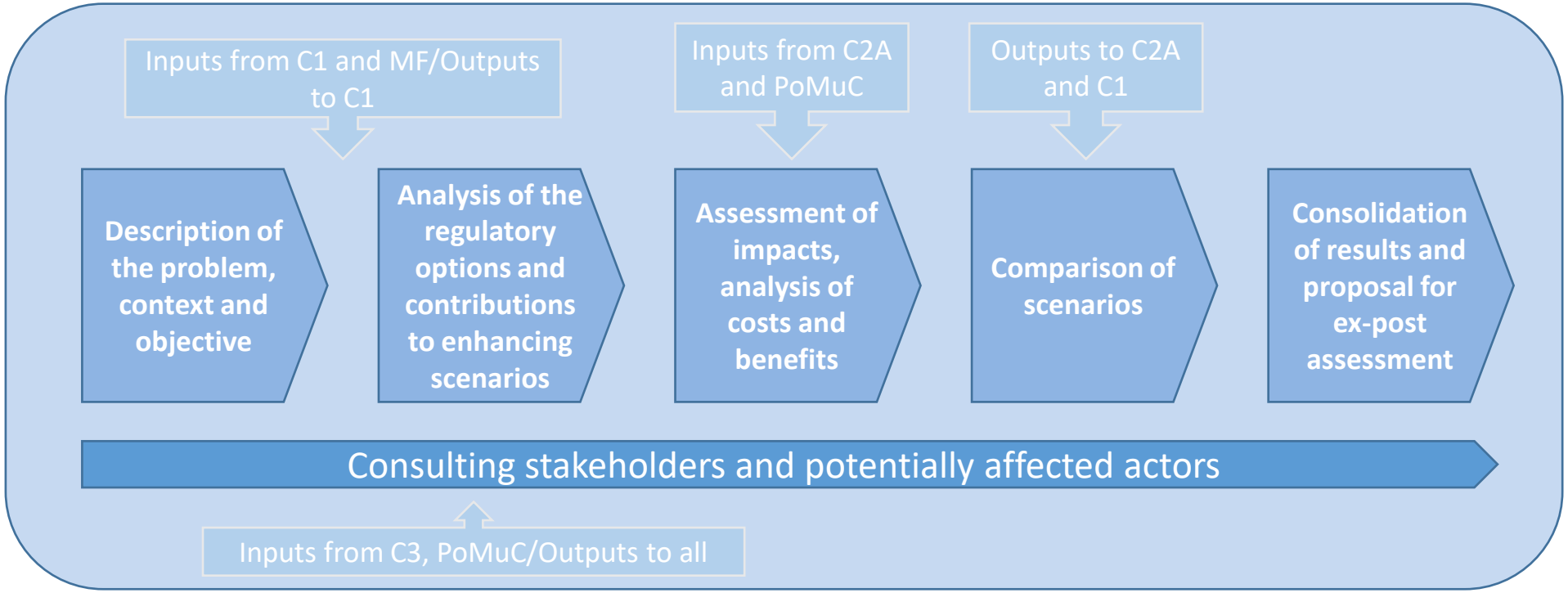
- **Component 2B: Impact Assessment (Regulatory Impact Analysis)**



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- **Component 3: Technical Support, Stakeholder Engagement and Communication**

  - I Seminar: Exploring carbon pricing instruments for Brazil
    - Theoretical framework, international experiences, civil society and private sector imp… roject
  - II Seminar: Reconciling carbon pricing with countries' development agendas.
    - Lessons from international experience, main civil society and private sector worries, …n of initial studies (potential interactions between sectoral policies and CPIs)
  - III Seminar: Forthcoming.

  - Workshop 1: Impact assessment: the adoption of carbon pricing instruments
    - Discussion of methodological aspects related to the ex-ante estimation of socioecon… and to the process of analysis of the regulatory impact of the same class of policies
  - Workshop 2: Sectoral debates
    - Discussion of technical issues related to component 1 studies with experts from the …
  - Workshop 3: Joint Workshop on Carbon Pricing and MRV Impact Analysis.
    - Discussion among all the Project's teams, related to methodological aspects and inte…
  - Workshop 4: Forthcoming.

December 2016

October 2017

July 2019

December 2016

May 2017

May 2018

December 2018

Brazil PMR Project

- **Where are we now?**
  - Component 1: Proposition of economy-wide policy instruments packages ready for public consultation and impact assessment
  - Component 2A: Analyzing the methodological incorporation of the features recommended by C1 in the models used. Next step is to simulate the integrated modelling and produce the first round of results
  - Component 2B: Analyzing the policy scenarios and developing the adequate evaluation methodology
  - Component 3: Organizing the 4th workshop
- **Final results of the project expected by July 2019**

BRASIL

Thank You!

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