

BUSINESS FOR CLIMATE PLATFORM

EMISSIONS TRADING SYSTEM SIMULATION - EPC ETS

Biannual Analytic Report: March-August 2014

Summary Version

An Initiative of:



Centro de Estudos em
Sustentabilidade da EAESP



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1. Introduction

The Emissions Trading System Simulation of the Business for Climate Platform (EPC ETS) is an initiative of the Center for Sustainability Studies of the Business Management School at the Getulio Vargas Foundation (FGV-EASP), in Sao Paulo, Brazil. Founded in 2003, [FGV-EAESP Center for Sustainability Studies](#) (GVces) has been developing business and public management strategies, policies and tools for sustainability at the local, national and international levels. [Business for Climate Platform \(EPC\)](#) is an integral part of GVces Global Sustainability Program, whose goal is to jointly produce knowledge with the business sector and support their internal mobilization and their engagement with the public sector and civil society, to act in areas such as climate change, biodiversity, ecosystem services and water resources.

EPC ETS consists of a cap and trade simulation based on the currently most significant international carbon market experiences. As part of EPC agenda, that initiative is being deployed in partnership with Rio de Janeiro Green Stock Exchange (BVRio - Bolsa Verde do Rio de Janeiro), which manages BVTrade, the electronic platform for negotiation that hosts EPC ETS.

The purpose of that Simulation is to engage Brazilian companies in the discussion on a comprehensive and robust cap and trade market approach in order to foster GHG emission reduction and co-create, along with these companies, clear propositions for the government of how a potential market in Brazil could be designed. The following goals were established by the initiative:

- Co-create the foundation (necessary rules, assumptions, tools and concepts) for a pilot ETS
- Simulate a Brazilian ETS based on previously established foundations
- Assess effectiveness of the pilot approach, based on the results of the Simulation
- Develop propositions to be delivered to the government for an eventual Brazilian ETS
- Engage this national initiative with others worldwide, fostering knowledge sharing and lessons learned, besides potential synergies

Therefore, throughout 2013 the rules and parameters for the simulation were determined. Along with this process, GVces team conducted sector discussions on carbon intensity indicators that could be applied to an eventual relative cap and also to manage performance of companies operation in the ETS scenario.

In 2014, in February there was an initial meeting to align ETS rules and parameters and a training on how to use BVTrade, as well as a meeting in August to discuss the first EPC ETS results. By the end of the year, there will be a meeting to discuss the strategies adopted by the companies, partial results and adjustments needed for the next simulation cycle. Every two weeks, a newsletter is published targeted at participant companies. ETS performance and operational assessments are included in the published biannual and final reports.

This is a summary report based on EPC ETS Biannual Analytic Report (from March to August 2014). To see the full report, in Brazilian Portuguese, please [click here](#).

Participant Companies

There are 20 companies involved on the first EPC ETS cycle in 2014: AES Brasil, Anglo American, Banco Citibank, Banco do Brasil, Itau Unibanco, Braskem, CCR, Construtora Camargo Correa, Duratex S.A, Eletrobras Furnas, Ecofrotas, Grupo Boticario, Klabin, Raizen Energia S.A, Oi S.A, Sanepar, Suzano Papel e Celulose, Tam, Telefonica Vivo, and Vale.

Summary of EPC ETS Operating Rules and Parameters in the 2014 Cycle

Operating rules and parameters for EPC ETS in 2014 were co-created with the companies members in 2013. To see more details, please refer to the [document containing full Simulation foundations](#).

- **EPC ETS Structure:** Steering Committee (SC), formed by eight members of national and international institutions, Management Committee (MC), formed by GVces team members, and players), which are the regulated companies by EPC ETS (RC) and market special operators (MSO).
- **Markets:** Only spot market, which consists of primary market (auctions offered by MG) and secondary market (bonds market), in which all players operate buying or selling at their disposal.
- **Bonds:** Emissions allowances (fictitious, exclusively issued by MC) and offsets (two categories, verified and not verified; they can either be fictitious or real), both representing 1tCO₂e each.
- **Financial resources:** EPC ETS official fictitious currency is EPCent: Ec\$, issued by MC, with 1:1 parity with the Brazilian Real.
- **Emission conciliation:** Should be performed by RC at the end of the operation period – November 28th, 2014. Final reconciliation will be performed on August 2015, when participant emissions from 2014 will be publicly available. Currently, the limit to use offsets in emission conciliation is 10%.
- **Performance of EPC ETS regulated companies:** Assessment based on two indicators – 2014 real emission conciliation, and the cost of such conciliation.
- **Fines:** For each noncompliance CO₂e ton, the company will have to face fines corresponding to 500% the average price of allowances at the day the market closed, and the total amount of noncompliance tCO₂e will be considered as a debt in direct allocation of allowances on the following cycle.
- **Requirement for participation:** Disclose Scope 1 (direct emissions) and Scope 2 (electricity indirect emissions), in the years 2012, 2013 and 2014, accounted for according to the Brazilian GHG Protocol Program Specifications¹ (EPB).
- **Base Year:** For EPC ETS 2014 cycle, the base year started as 2012, being adjusted to 2013 in August.
- **Cap:** 90% of Scopes 1 and 2 emissions of all EPC ETS participant companies, meaning this is an absolute global cap that incorporates a global target to reduce 10% of emissions in the time period.
- **Market opening price:** Calculated based on the simple average price of short-term emission allowance futures contracts in the markets in Europe and California.
- **Initial allocations:** Initial allocation of allowances is free and direct, credited to the account, and varies between 40% and 60% of 90% of the company emissions in the base year (as determined by the relative rank of the company compared to the sectorial benchmark, based on a carbon intensity indicator). Financial initial allocation corresponds to 150% of the resources needed to buy emission allowances, considering 90% of the company emissions in the base year.
- **Cap adjustment:** In the beginning of August 2014, when 2013 emissions were disclosed, 2012 was replaced by 2013 as the base year. Although the cap remained 90% of the base year emissions, the global total amount of emissions related to cap changed due to differences between 2012 and 2013 emissions.

¹ Especificações do Programa Brasileiro GHG Protocol: Contabilização, Quantificação e Publicação de Inventários Corporativos de Emissões de Gases de Efeito Estufa (Brazilian GHG Protocol Program Specifications: Accounting, Quantification and Disclosure of Corporate Greenhouse Gas Emission Inventories) – 2nd Edition. Available at: http://ghgprotocolbrasil.com.br/arquivos/152/especificacoes_pb_ghgprotocol.pdf

2. EPC ETS Development Analysis

2.1. Activities and Results of EPC ETS from March to August 2014

For the first months of simulation, from March to July, the year of 2012 was used as the base year, which resulted in an absolute global cap of 21,963,089 tCO₂e. In August, as the 2013 inventories were disclosed, there was an adjustment in cap, using 2013 as the base year. As there was an increase in 2013 global emissions of EPC ETS regulated companies, the cap was adjusted in about 8%, accounting for 23,853,912 tCO₂e². In this time period from March to August, about 82% of the adjusted cap were distributed as emission allowances and are available for negotiation in the secondary market: 46% through initial direct free allocation, and 36% through auctions (primary market).

Primary market – auctioning - 80% of the companies participated in at least one of the four auctions of emission allowances held by MC until August 31st (there was no auction for offsets). However, only two companies participated in all four auctions. Companies participation, per auction, was as follows: 1st auction (March), 60%; 2nd auction (April), 25%; 3rd auction (June), 25%; and 4th auction (August), 35%. The first auction was held at EPC ETS opening, on March 14th, and about 55% of the 9,336,659 allowance offered were purchased by 12 companies. All purchase offers were met, and there was a 33% premium compared to the opening price; the second one, on April 14th, had 64% out of the 2,500,000 allowances offered bought by five companies, and there was no premium; the third one, on June 11th, had 72% out of the 500,000 allowances offered bought by five participant companies and there was no premium; and the fourth auction, on August 20th, after cap adjustment was announced, was one of the most successful auctions, with about 90% out of the 1,700,000 emission allowances offered bought by seven companies, and the premium was about 8%.

Secondary market – The secondary market also started to operate on March 14th, along with the first auction in the primary market. In general, the secondary market showed low liquidity from March to August. Until August 31st, there were only 23 deals closed: 11 transactions for emission allowance, seven type 01 offset transactions, and five type 02 offset transactions. Only 45% of the companies participated in these transactions (nine companies). The low liquidity of the secondary market had adverse effects on the carbon pricing, since price variation was very sensitive to unusual transactions. Type 01 (validated and verified) and 02 (validated, but not verified yet) offsets were regulated by MC and included in negotiations in April. In this month, there were nine bonds' negotiations: 3 for emission allowances, 3 for type 01 offsets, and 3 for type 02 offsets. As for the highest price (Ec\$ 35.00) of emission allowance negotiated in the first half, type 01 and type 02 offsets had 43% and 55% lower prices, respectively.

In August, after cap adjustment, the secondary market resumed its busy activities. Market absolute liquidity³ was higher in March, April and August, when six, nine and eleven transactions were reported, respectively. In July, there was only one negotiation, and in May and June absolute liquidity was zero.

Newsletters and normative ruling – Information on the market operation is received every two weeks by the companies through newsletters published by MC. The newsletters are also used to inform participants on coming auctions and the international market scenario.

MC issued a Normative Ruling (IN) in April aiming at regulating offset negotiation; such ruling was replaced with IN02 as of October, with updated information.

² This figure refers to 2013 cap, including Scope 2 emissions adjusted by 2012 SIN factor; the total volume of emissions in Scope 1 and Scope 2 of EPC ETS participants in 2013 was 13.4% higher than in 2012, totalling 24,901,726,61 tCO₂e.

³ Absolute liquidity: number of emission allowance and offset transactions in the secondary market.

2.2. Analysis of EPC ETS Activities from March to August 2014

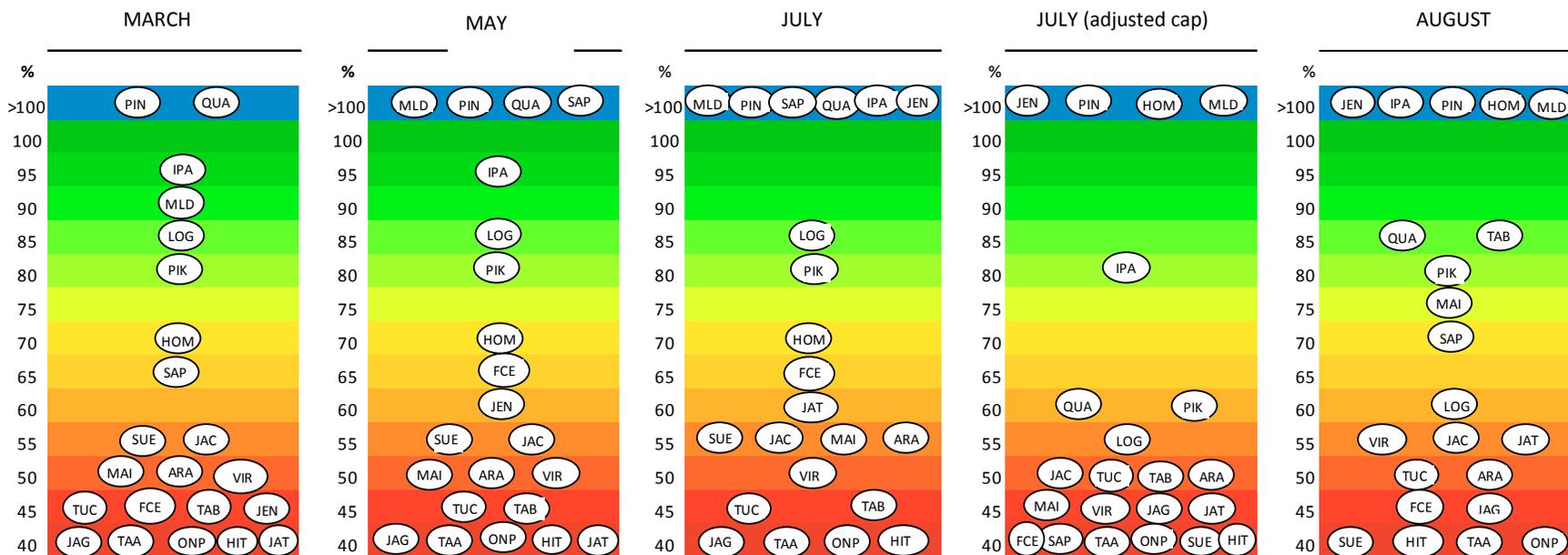
Analyses reported in this session are based on 2013 emissions and, therefore, are not conclusive.

Profiles of company operation and market strategies: companies can be sorted in two different profiles considering operations performed until August:

- *Buyer:* Apparently, fifteen companies purchased part of their expected emission in 2014, hoping to complement their *position* (stock of bonds) at the end of the operation period.
- *Seller:* Seven companies managed to purchase an amount of bonds higher than their 2013 emissions and, if they are not expecting much higher emissions in 2014, they should offer bonds in the secondary market (Graphic 1).

Two companies left EPC ETS, for internal reasons, but are still being considered in the analyses, as established in EPC ETS rules and parameters for 2014.

Graphic 1. Relative positions of companies participating at EPC ETS, from March 14th to August 31st, 2014. Percentages refer to the volume of the company emissions that was already covered by EPC ETS bonds (emission allowances and/or offsets), for 2012 (March, May and July) and 2013 (July adjusted cap and August) emissions. Acronyms and their corresponding aliases: ARA = Arara Azul (Blue Macaw); FCE = FCE; Hiteco = HIT; HOM = HOM; IPA = Ipe Amarelo (Yellow ipe); JAC = Jacaranda (Brazilian rosewood); JAT = Jacutinga bird; JEN = Jenipapo fruit; LOG = Lobo Guara (Maned wolf); MAI = Mailu; MLD = Mico Leao Dourado (Golden lion tamarin); ONP = Onca Pintada (Jaguar); PIN = Pinheiro (Pine tree); PIK = Pink; QUA = Quaresmeira (Purple glory tree); SAP = Sapphire; SUE = Sustainable Energy; TAA = Tamandua (Anteater); TAB = Tatu Bola (Three-banded armadillo); TUC = Tucano; VIR = Vitoria Regia (Lilypad).



In Graphic 1, taking as reference emissions in the base year (2012 up to July, and 2013 from July to August), companies whose positions are in blue color (>100%) can be considered sellers, which means they have a surplus of bonds and can sell them in order to have profit, without compromising the conciliation of their emissions at the end of the 2014 negotiation period. All the other companies can be considered buyers, since they did not reach the total amount of allowances to cover their emissions in the base year.

As there was a free direct allocation in the beginning of the simulation, the companies already had bonds in their portfolio before the completion of the first allowance allocation by the primary market, enabling arbitration operations (please refer to Bodie et al 2010, p. 325). Three companies (14% of RC⁴) were involved in four successful arbitration operations with emission allowances. An alternative to have financial profit is to speculate on future trend of prices adopted at EPC ETS. Until August 31st, it was possible to identify only one sales offer for offsets and, if they found a counterpart and completed the transaction, it would be a successful price speculation.

Offsets had lower prices than emission allowances, then the companies had the chance to reduce the costs of building their position. Thus, type 01 offset has lower price than allowance, and type 02 offset (validated, but not verified yet) is even cheaper than type 01 offset, due to the risk of not being verified. By August 31st, only four companies had invested in offsets (18% of RC⁵). However, there is a limit of 10% for the amount of offsets the company must conciliate with MC by the conclusion of EPC ETS operations in 2014.

Role of special operators – offset provider and investment bank: MSO⁶ has played a critical role in fostering EPC ETS liquidity. The investment bank took part in 55% of emission allowance transactions, about 30% of type 01 offset transactions, and 80% of type 02 offset transactions. The offset provider accounted for 100% of offset input in the secondary market. EPC ETS rules and parameters allow RC to offer real offsets, but no company had this initiative until August 31st.

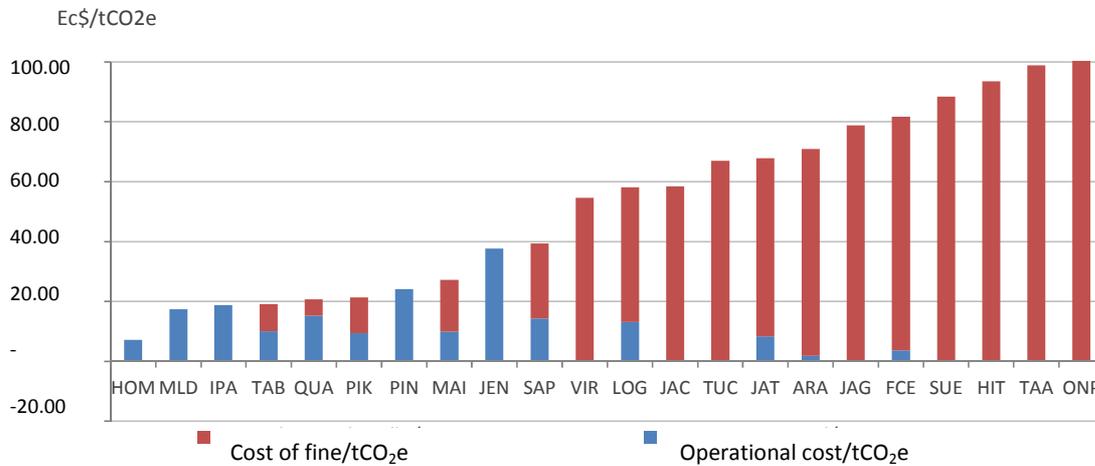
Financial performance of the companies: The companies financial performance somehow reflects their operational strategies. Four out of the five companies that played the seller role built their position at a low cost, and can still sell their surplus of bonds, reducing their costs even further. *Jenipapo* (JEN), the fifth of the selling companies, has a slightly higher cost, but can also reduce it by selling bonds in the secondary market (Graphic 2).

⁴ OMR = Market operators regulated by EPC ETS

⁵ RC = EPC ETS Regulated companies

⁶ MSO = EPC ETS market special operators (investment bank and offset provider)

Graphic 2. Estimate of final cost per tCO₂e for each company in EPC ETS 2014 cycle, considering as reference 2013 emissions. The operational cost corresponds to the net value of purchases and sales performed by the company. Fines refer to 2013 emissions that are still not covered by EPC ETS bonds, and were valued as 500% of the closing price (until August 31st) for each tCO₂e the company would still need to purchase in order to conciliate 2013 emissions.



Those companies that have not defined their positioning yet are shown on the right side of the graphic, with a high cost per tCO₂e. If the prices used at EPC ETS are kept at their current point or increase, those companies will hardly be able to succeed so well in this indicator as the five selling companies HOM, MLD, IPA, PIN and JEN.

Cap adjustment: dynamic absolute cap: The choice to use a global absolute cap was based on two main reasons: (a) it allows imposing a global and real emission reduction target; and (b) it is much easier to estimate than a relative cap. However, cap adjustment in August reduces the assurance of progressive emission reduction. Therefore, the adjustment ultimately makes the cap dynamic. In order to keep it absolute, it will be necessary to not adjust cap and work with a fixed base year, with progressive reduction targets, for instance.

Indirect emissions from electricity purchase (Scope 2) and the emission factor of Interconnected National System (FE SIN - in Portuguese acronym): The decision to fix FE SIN when adjusting cap is a controversial one. On one hand, because fossil-fueled thermoelectric power plants are increasing their participation in the Brazilian energy matrix, FE SIN has been significantly increasing and reaching new records month after month, resulting in a raise in Scope 2 emissions for companies, whereas they have no control over it. On the other hand, emissions related to energy generated (and consumed) in the country are real and, in a regulated market, they will somehow need to be accounted for. Apparently, the simplest solution would be if the Brazilian electrical system rules allowed consumers to actually choose their energy provider and account for GHG emissions according to the generating source.

Limit of offset use to conciliate emissions: As 2013 emissions (based on which the adjusted cap was calculated) were higher than in 2012 (initial cap base), until the end of August there was no reason for MC to change the limit of offset use. It is unlikely that any unusual event in the next three months will change this assessment, thus risk associated with type 01 offset is virtually zero, and type 02 has its risk reduced (basically, to the risk of verification). In other words, using offsets to build position for emission conciliation gets even more attractive to the companies.

Trends for EPC ETS prices and associated risks: The price for emission allowance at EPC ETS closed at Ec\$ 28.00 on August 31st. At this price point, and taking as reference RC emissions in 2013, 14% of the companies will not have enough resources to buy the necessary allowances to conciliate their emissions by the end of the 2014 cycle. Moreover, EPC ETS prices have been going up since the negotiation opening and, if they keep increasing, companies will be more likely to fail to conciliate their emissions. At a Ec\$40.00 price point, for instance, 50% of the companies will not have financial resources to conciliate their emissions, considering 2013 emissions.

3. EPC ETS Carbon Intensity Indicators

Under the EPC ETS context, carbon intensity indicators (CIIs) were used to establish sector benchmarks, which govern initial financial allocation and emission allowance. In 2014 cycle, intra-CIIs were utilized for this allocation, due to a lack of consensus in the search for an inter-sectorial CII.

Taking EPC ETS goals into account, it is necessary to adopt intra-sectorial indicators, because they sort each company according to their activity, bringing to light critical aspects on each company GHG emissions. The use of this kind of indicator aims at the following goals: (i) support determining free initial allocation of emission allowance according to the company performance measured against a benchmark; (ii) support efficiency analyses of a company emissions compared to their base year and to other companies in the same sector.

The 22 companies that initially adhered to EPC ETS were sorted into 10 sectors, and four of these sectors were divided according to the activity performed by the companies. Classification was based on CNAE (IBGE), but adapted to EPC ETS needs. Companies that are members of the Brazilian GHG Protocol Program were also accounted for in the calculation of sectorial indicators and benchmarks⁷, so the analysis was more consistent.

CII numerator was jointly determined with EPC ETS participant companies, and they decided that both Scope 1 (direct emissions⁸) and Scope 2 (electricity indirect emissions⁹) would be considered in the calculation. Scope 3 emissions (other indirect emissions¹⁰) were not considered, since they are sources that cannot be controlled by the companies, that is, the companies have no direct influence over them. The denominator was chosen based on feasible alternatives, i.e.; easily collectable data, available in public sources. In the process of collecting data for the denominator, it is relevant to observe that the limits (both organizational and operational limits) applied are the same used for the numerator.

The choice for inter-sectorial or intra-sectorial CIIs depends on the purpose of the desired analysis. Although inter-sectorial indicator based on financial variables can be applied to any company, caution should be taken when making use of it. Although this type of indicator removes complex issues such as sector classification and definition of the activities performed by each group of companies, it also removes from the analysis relevant and specific issues pertaining to each company activity.

On the other hand, the use of intra-sector CIIs (i) requires adopting and eventually developing an indicator for each sector and/or subsector, which increases the market complexity, and (ii) eventually lacks sufficient data to calculate indicators. Challenges to build those indicators at EPC ETS are related to: (i) sectorial classification, since many companies perform more than one economic activity; (ii) metric to be adopted in the denominator representing activities of all companies belonging to that sector or subsector.

In order to enable coherent comparisons and meet some specifics of sectors and companies, in some cases more than one indicator was adopted per sector. Therefore, EPC ETS sector may show: (i) a single indicator, using only one indicator for the sector; (ii) a composed indicator consisting of two or more secondary indicators, having a common denominator and different numerators; (iii) multiple indicators, two or more indicators, which are individually analyzed and complement one another. As jointly established with the companies, all CIIs used in EPC ETS 2014 cycle are intra-sectorial indicators.

⁷ To determine indicators and define sector benchmark, some companies who are members of the Brazilian GHG Protocol Program were considered. Those companies were chosen because they had already elaborated and published their GHG inventories through the Public Emissions Registry – data needed in order to calculate indicators.

⁸ Scope 1: GHG emissions that belong to or are controlled by the organization (GVces and WRI, 2011).

⁹ Scope 2: GHG emissions resulting from purchase of electric and thermal power, consumed by the company (GVces and WRI, 2011).

¹⁰ Scope 3: Accounts for emissions that result from the company activities, but occur in sources that do not belong to or are not controlled by the company (GVces and WRI, 2011).

Table 1 shows EPC ETS participant companies sorted per sector and subsector (whenever applicable) and their corresponding intra-sectorial indicators. Also identified in the table are EPC ETS non-participant companies in 2014 that were used as reference for establishing the sectorial benchmark.

Table 1. Indicators applied to each EPC ETS sector and subsector.

Company	EPC ETS Participation	Type of Indicator	Indicator
1.0 FOREST PRODUCTION, PULP AND PAPER SECTOR			
Suzano Papel e Celulose	Participant	Composed	$CII_{\text{forest production, pulp and paper}} = \left\{ \left[\frac{\text{Paper production emissions}}{\text{Raw paper production}} \times \alpha \right] + \left[\frac{\text{Sectorial emissions for pulp production}}{\text{Sectorial pulp production}} \right] \times \beta \right\}$ <p>Where: CII_{fpc} is the indicator of carbon intensity for forest products, pulp and paper α is the percentage of emissions allocated to produce paper; and β is the percentage of emissions allocated to produce pulp in the sector</p>
Klabin	Participant		
2.0 SERVICES SECTOR			
CCR	Participant	Single	$CII_{\text{services}} = \frac{\text{emissions (E1 + E2)}}{\text{number of employees}}$
Ecofrotas	Participant		
Ticket	Considered for benchmark calculation purposes only		
3.0 FINANCIAL SECTOR			
Itau Unibanco	Participant	Single	$CII_{\text{financial sector}} = \frac{\text{emissions (E1 + E2)}}{\text{consolidated revenue - BRL\$}}$
Citibank	Participant		
Banco do Brasil	Participant		
Banco Santander	Considered for benchmark calculation purposes only		
Organização Bradesco			
4.0 POWER SECTOR			
4.1 GENERATION AND DISTRIBUTION			
AES Brasil	Participant	Composed	$CII_{\text{generation and distribution}} = \left[\left(\frac{\text{emissions (E1)}}{\text{energy generated - MWh}} \right) + \left(\frac{\text{emissions (E2)}}{\text{energy distributed - MWh}} \right) \right]$
EDP	Participant		
CPFL	Considered for benchmark calculation purposes only		

Company	EPC ETS Participation	Type of Indicator	Indicator
4.2 GENERATION AND TRANSMISSION			
Eletrobras Furnas	Participant	Multiple	$CII_{1_generation} = \frac{\text{emissions (E1)}}{\text{energy generated - MWh}}$ $CII_{2_transmission} = \frac{\text{emissions (E1 + E2)}}{\text{kilometers of transmission line - km}}$
5.0 INFORMATION AND COMMUNICATION SECTOR			
5.1 TELECOM			
Oi S.A	Participant	Single	$CII_{telecom} = \frac{\text{emissions (E1 + E2)}}{\text{number of accesses}}$
Telefonica Vivo	Participant		
TIM	<i>Considered for benchmark calculation purposes only</i>		
5.2 INFORMATION			
Grupo Abril	Participant	Single	$CII_{information} = \frac{\text{emissions (E1 + E2)}}{\text{raw revenue - BRL}}$
6.0 TRANSPORT AND LOGISTICS SECTOR			
TAM S.A	Participant	Single	$CII_{transport\ and\ logistics} = \frac{\text{emissions (E1 + E2)}}{\text{ASK}}$ <p>*ASK – Available Seat Kilometer</p>
7.0 TRANSFORMATION INDUSTRIES SECTOR			
7.1 CHEMICAL			
Braskem	Participant	Single	$CII_{petrochemical} = \frac{\text{emissions (E1 + E2)}}{\text{tons of finished chemical products}}$
7.2 COSMETICS			
Grupo Boticario	Participant	Single	$CII_{cosmetics} = \frac{\text{emissions (E1 + E2)}}{\text{tons of finished cosmetics products}}$
Natura	<i>Considered for benchmark calculation purposes only</i>		

Company	EPC ETS Participation	Type of Indicator	Indicator
7.3 SUGARCANE AND BIOFUELS			
Raizen Energia S.A	Participant	Single	$CII_{\text{sugarcane and biofuels}} = \frac{\text{emissions (E1 + E2)}}{\text{tons of grounded sugarcane bagasse}}$
8.0 CIVIL CONSTRUCTION			
8.1 CONSTRUCTION PROJECTS			
Construtora Camargo Correa	Participant	Single	$CII_{\text{civil construction}} = \frac{\text{emissions (E1 + E2)}}{\text{man - worked hours}}$
Construtora Andrade Gutierrez	Considered for benchmark calculation purposes only		
8.2 BUILDING MATERIALS			
Duratex S.A	Participant	Multiple	$CII_{\text{Deca division}} = \frac{\text{emissions (E1 + E2)}}{\text{pieces produced - units}}$ $CII_{\text{Wood division}} = \frac{\text{emissions (E1 + E2)}}{\text{volume of panels - m}^3}$
9.0 EXTRACTIVE INDUSTRY			
Anglo American	Participant	Single	$CII_{\text{extractive industry}} = \frac{\text{emissions (E1 + E2)}}{\text{processed mass}}$
Vale	Participant		
10. WATER, SEWAGE AND WASTE MANAGEMENT ACTIVITIES			
Sanepar	Participant	Multiple	$CII_1 = \frac{\text{emissions (E1 + E2)}}{\text{volume treated (supply of water and sewage)}}$ $CII_2 = \frac{\text{emissions (E1 + E2)}}{\text{mass of urban waste treated}}$

4. Alternate Indicators for Free Initial Allocation per Benchmark and for In-House GHG Emission Management

To continue the process of jointly building EPC ETS Simulation and, especially, to keep the discussion on carbon intensity indicators (CIIs), three possible paths were considered for the next simulation cycles: i) **improve intra-sectorial CIIs** used in 2014; ii) **using inter-sector CIIs**, but assessing benchmarks per sector; or iii) **adopting CII per product** to determine the benchmark and allocate initial allowances.

Path (i) **improving currently used CIIs** aims at overcoming the following challenges encountered in 2014 cycle: lack of data to calculate CII denominator; equivalence of organizational limits; harmonization and scope of different activities performed by the same company; more specific sector definition (allocation of companies in sectors and subsectors); significance of emissions in the company activities.

Propositions were elaborated for sector reorganization and companies' allocation and their corresponding intra-sector indicators with the purpose of supporting discussions with member companies on CII to be used in the next EPC ETS cycles; such propositions can be found in Table 4 of the [full Biannual Analytic Report](#). In general, the use of intra-sector indicators, by trying to achieve more coherence, tends to an increasingly in-depth segregation into subsectors in order to get more specific CIIs, down to levels of activity, facilities and even product families.

The second path, (ii) **adopting inter-sector indicators**, with benchmark analysis per sector, has the following benefits: low complexity for calculating the indicator, since a common, simplified indicator is established for all companies, and higher availability of data needed to calculate the indicator. The great challenge is to choose the CII denominator, and it is usual to adopt financial (such as the gross annual income) or social (such as the number of employees) metrics. Due to the low specificity of the inter-sector indicator and the potential incoherence when comparing companies, choose this unique indicator becomes a complex task.

As for (iii) **using indicators per product**, initial allocation would be determined according to a benchmark per product, based on the European Union ETS (EU ETS¹¹) and California's ETS¹². For applying this alternative to EPC ETS, MC would define each product benchmark using national or international data available according to predetermined criteria.

The use of benchmark based on facility's emission per product ensures a more accurate free allocation, but makes data collection and organization more complex to calculate the indicator and, consequently, the benchmark. Especially when considering the Brazilian scenario, where there is lack of data available regarding emissions and production per facility, and the large amount of products involved. Another challenge to use this model under EPC ETS context is the inclusion of services, since they are not physical units (facilities). Both ETSs previously mentioned consider only large emitters in the industry, not taking into account service providers, as EPC ETS does.

As for Scope 2, a highly relevant item for the service sector, the suggestion is to remove this numerator from all EPC ETS CIIs, since FE SIN variation interferes with indicators in the company, although the indicators are not managed by them. Determining FE SIN from one year to another (as in the 2014 cycle) may cause distortions in the company analysis when compared to their real emissions.

From this analysis of international ETS, there is a trend to account for and report emissions per facility (plant) and also per product. In a scenario of institutionalizing ETS in Brazil, an alternative method to encourage data measuring, collection and report could be, for instance, to determine a period of time for adjustment and, after that, companies that have not measured, collected and reported the data needed for calculating the benchmark would receive only a percentage of the initial allocation assigned to others.

Under the perspective of carbon efficiency in business management, the calculation of emission indicator per product can be considered the most attractive alternative, considering that measurement per facility (plant) enables a more effective emission management and shows each product's carbon intensity.

¹¹ For more information on free allocation based on EU ETS benchmark, please visit: http://ec.europa.eu/clima/policies/ets/cap/allocation/index_en.htm

¹² For more information on free allocation based on California's ETS benchmark, please visit: <http://www.arb.ca.gov/cc/capandtrade/allowanceallocation/allowanceallocation.htm>

5. Conclusion

Inter-sector carbon intensity indicators used to support initial free allocation of emission allowances demonstrated little efficiency in benchmark comparison, whereas more details are needed. There is still a lot to be done regarding data generation and availability, especially on the company side, to build more accurate and efficient carbon intensity indicators.

Given the current Brazilian scenario and the stage climate regulations and environmental management are at, we came to the conclusion alternative 1 is the most recommended to EPC ETS at this moment (2014 and 2015 cycle), having as a guideline to improve inter-sector indicators every year, enhance the companies carbon management and foster benchmark calculation and initial allocation that are fair and reliable to the business reality.

At the same time, companies should start improving data sorted per facility, aiming at building a database for future calculation of CII per product, as described in alternative 3, which is the ideal option from the indicator effectiveness perspective.

As for companies operating at EPC ETS in 2014, in general, a conservative profile was adopted in the first semester. Apparently, a few companies purchased a surplus of bonds that could be sold later, and only about 30% of the participants were willing to anticipate the building of their positions for future conciliation. If prices keep rising, increasingly more companies will lack financial resources and will have to use offsets in order to conciliate their positions and avoid fines as determined in EPC ETS.

Although they originally have two operation goals at EPC ETS (emission conciliation first, and then financial efficiency, measured by the cost of position conciliated per tCO₂e), apparently less than 20% of the companies tended to act in a way to reduce their operational costs and compete in that second goal. In this sense, extra EPC efforts are needed to raise awareness of their members about the relevance of costs associated to a carbon market and their role in emission pricing. More engagement from the company's financial department can help to increase EPC ETS liquidity through speculation operations (whose goal is financial profit). Part of the difficulty the companies had in the engagement with EPC ETS is due to team members turnover. As the new company representative did not participate in the training process on the topic in 2013, he or she will naturally take longer to get updated on the simulation and ultimately act in a limited way in the first months.

6. Perspectives for 2014 Second Stage and for 2015 Cycle

2014 Second Stage

The following activities are scheduled for the period between September and November 2014:

- An auction in October, and a 2014 cycle closing auction on November 28th.
- A meeting in the beginning of December with the participant companies to present preliminary results related to the 2014 cycle and discussion of possible changes of EPC ETS rules and parameters for their 2015 cycle operations.
- Publishing, in December, of the analytic report concerning this second stage of EPC ETS 2014 cycle (from September to November 28th).
- Announcement of 2014 cycle conclusive result in August 2015, when the inventories corresponding to 2014 will have been published or at least delivered to the Brazilian GHG Protocol Program.
- Publishing of 2014 cycle final report and establishment of fines to the companies that do not meet their emission conciliation goals in August 2015.

Perspectives for the 2015 Cycle

For the 2015 cycle, EPC will initially work with the following perspectives to be discussed in December's meeting with the companies:

- Improvement of inter-sector indicators as determined in 2014.

- Removal of EPC ETS Scope 2 emissions, considering only Scope 1 (direct emissions) in the global cap calculation plus other items related to it, namely: emissions in the base year, carbon intensity indicators, sector benchmark, performance indicators and volume of bonds for conciliation.
- Design of an action plan to develop internal processes and tools aimed at measuring and reporting GHG emissions per facility and per product.
- Increase the number of EPC ETS participant companies by establishing rules for adherence of member companies in the Brazilian GHG Protocol Program.
- Inclusion of bonus per performance in the financial result indicator.
- Establishment of 2013 as the fixed base year and extension of the emission reduction goal to 15%, which corresponds to an incremental goal of 5%, thus eliminating the adjustment and resuming the original characteristics of an absolute cap.
- Adoption of two simulation periods: first semester and second semester, making a partial conciliation in July and offering bonus to those companies that had better performance in the (physical and financial) indicators in the second half.
- Inclusion of a derivatives market in EPC ETS, futures market for emission allowances, with the goal to offer the companies new possibilities for operation strategies and attract their financial department representatives to the simulation.

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