

Proposal for Reducing Brazilian Greenhouse Gases Emissions in Agricultural Sector Based on Municipal Human Development Index



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Currently, Brazil presents itself as one of the countries that most emits Greenhouses Gases (GHGs), but also has a high potential for mitigation (IPCC, 2014). In order exploited this potential without compromising the socioeconomic performance of its less developed regions, it is of fundamental importance to discuss such reductions from a distributive equity perspective.

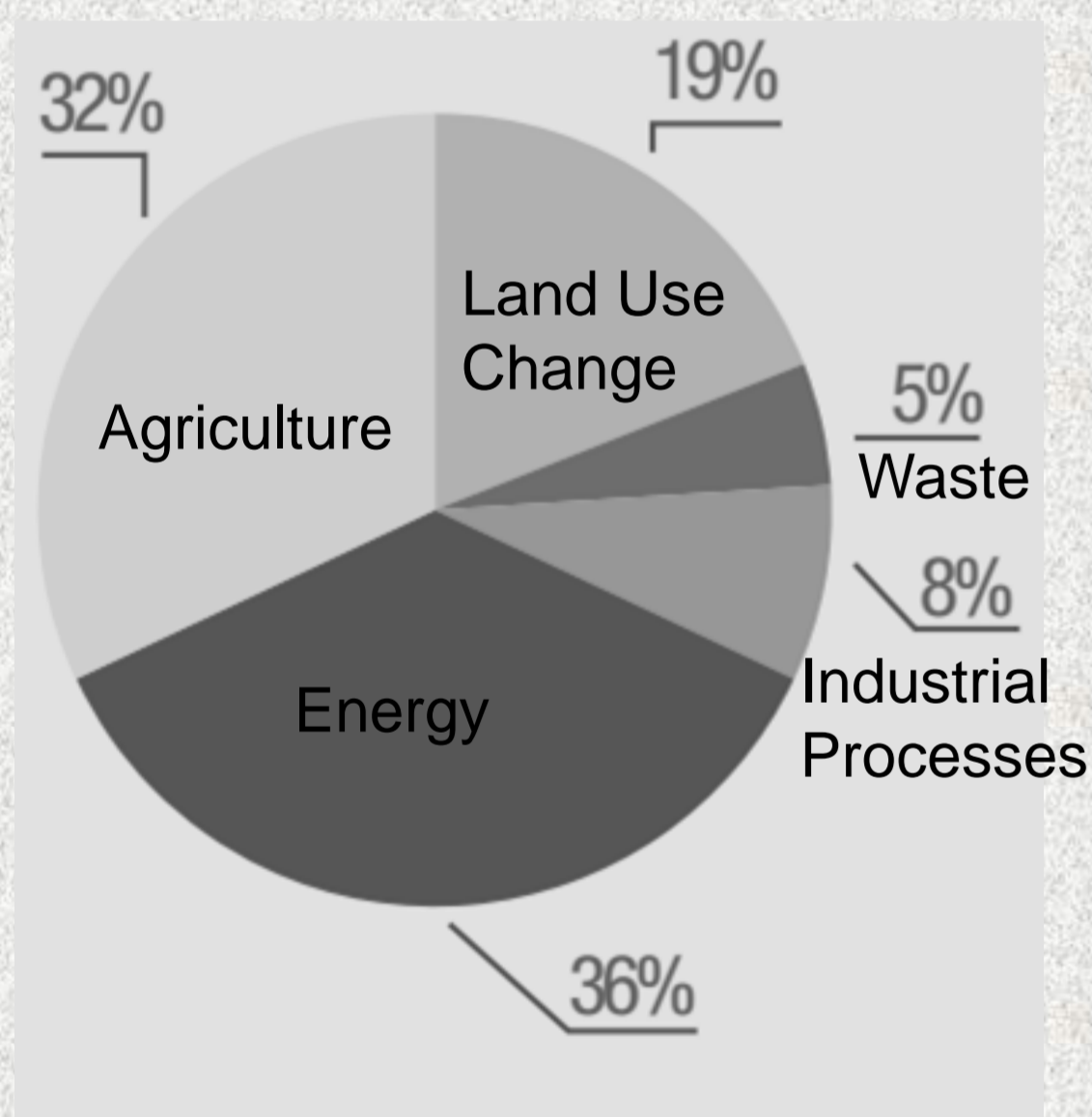


Figure 1: (a) Net GHG emissions in Brazil by sector. (b) Ranking of global GHG emissions by agriculture sector in 2015. Source: SEEG 2016 (a,b).

So, this study aims were to propose a scheme of greenhouse gas emission reduction for Brazilian Agricultural Sector, at municipal level, whereas mitigation targets are commensurate with local human development. Therefore, the Common but Differentiated Principles of Responsibility, introduced at the United Nations Conference on Environment and Development (Rio 92), is enforced. The focus on Agriculture Sector is based on the fact that the activities of this sector are extremely sensitive to climate change and, at the same time, has a high potential for the emission of methane (CH₄). Moreover, the agricultural gross domestic product (GDP) is very significant in certain regions, reaching up to one third in Brazilian Midwest region, for example.

The scheme of allocation emission reductions among Brazilian municipalities based on human development index was adapted from the study of Costa et al. (2011) as following:

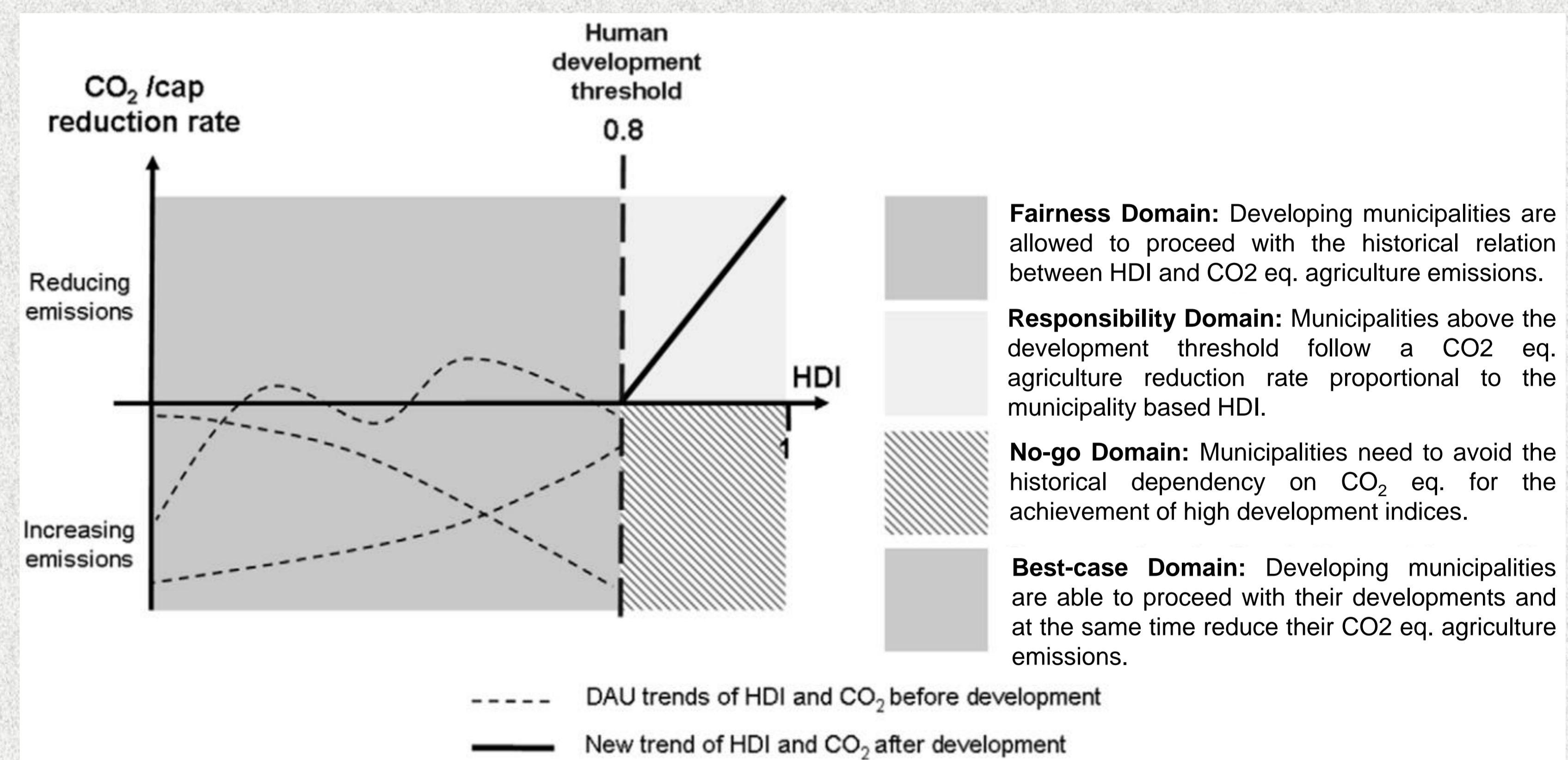


Figure 2: CO₂ eq. agriculture emissions reduction framework based on HDI of Brazilian municipalities. Adapted from Costa et al. (2011).

Thus, the HDI was projected until 2050 and it's correlation with agriculture GHG emission included CO₂, CH₄ and N₂O here represented as CO₂ equivalent. Mitigation targets proposed were based on Brazilian NDC established under the Paris agreement.

Considering that the HDI between 1970 and 2010 in agricultural municipalities has been higher increase (69%) than in non-agricultural municipalities (57% - KLFF, 2017), thinking differentiated emission reduction strategies among Brazilian agricultural municipalities becomes essential. The results of this study can highlight the heterogeneities between Brazilian geographical regions and stimulate discussions regarding the evaluation of Brazilian environmental policies.

Acknowledgments



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References

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