

# Contribution of Livestock NAMAs<sup>1</sup> to NDCs<sup>2</sup> in Latin American Countries

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## Abstract

This article summarises the background, analysis and conclusions of the study “Contribution of cattle NAMAs to NDCs in Latin America” carried out by the *Centro Agronómico Tropical de Investigación y Enseñanza* (CATIE, by its acronym in Spanish) in October 2020. The applied methodology, in the study, was the formulation of possible implementation scenarios for livestock NAMAs based on information provided by the World Governance Index (WGI), the Doing Business Index (DBI), and the Human Development Index (HDI). This article focuses on the scenarios derived from the consolidated and weighted indexes; it also analyses the opportunities for success that each country currently offers, and provides conclusions that contribute to the design, implementation and monitoring of livestock NAMAs in countries that currently have it duly registered. In addition, Uruguay was included due to the importance of livestock production, as was Nicaragua due to the progress made so far in the design process of the livestock NAMAs.

<sup>1</sup> NAMAs: Nationally Appropriate Mitigation Actions

<sup>2</sup> NDC: Nationally Determined Contributions

## Introduction

Over the past 50 years, global CO<sub>2</sub> emissions have doubled. In 1961, global emissions from the agricultural sector add up to 2.7 billion tons CO<sub>2</sub>eq, rising to 5.4 billion tons CO<sub>2</sub>eq by 2012. On the other hand, the biggest global emitter in agricultural and livestock production has been enteric fermentation with 40 %.

Latin America and the Caribbean is the region with the highest level of emissions (almost 1.3 billion tons of CO<sub>2</sub>eq.) compared to other regions on the planet, driven by an important specialized cattle production (FAO, 2014).

Since the establishment of the United Nations Framework Convention on Climate Change (UNFCCC) in 1992, a series of instruments have been developed to strengthen the capacity of governments to reduce greenhouse gas (GHG) emissions. In 2007, in Bali, the convention incorporated the concept of Nationally Appropriate Mitigation Actions (NAMAs) with the objective of enhancing reduction efforts, in the context of sustainable development.

NAMAs are considered the implementation tool for the countries' public policy measures to meet their nationally determined contribution (NDC) commitments. The question that arises is whether livestock NAMAs will be an effective and efficient contribution to the reduction of greenhouse gases. The answer emerges from the analysis of the countries' governance, competitiveness, and social development indexes.

### Background

Governance is a concept that elicits a variety of positions among academics and public affairs specialists. UNESCO defines governance as the “assessment of structures and processes that are designed to ensure accountability, transparency, responsiveness, rule of law, stability, equity and inclusiveness, empowerment and broad-based participation. Governance also represents the norms, values and rules of the game through which public affairs are managed in a manner that is transparent, participatory, inclusive and responsive”<sup>3</sup> (UNESCO, 2020). The World Bank's World Governance Index (WGI) (World Bank, 2018) examines six dimensions of governance:

1. Voice and Accountability.
2. Political stability and absence of violence.
3. Government effectiveness.
4. Regulatory quality.
5. Rule of law.
6. Control of corruption.

The public policy status that livestock NAMA acquire derives from the use of both national public resources and international cooperation funds; therefore, the analysis of these, based on the variables examined

by the WGI, is highly relevant. In this regard, public institutions play a key role in the implementation of livestock NAMA, particularly by guaranteeing transparency and participation. Overall, a high correlation is observed between a well performing WGI and the results of the gross national product per capita and the social development of a country.

Productivity and emission reductions are two of the stated objectives of livestock NAMA. However, productivity encompasses legal and regulatory aspects, which are adequately captured in the DBI (World Bank, 2020), by its ten indicators. Through these, it is possible to identify the critical areas in which each country must make regulatory changes or adjustments to enhance business competitiveness and improve the conditions for the emergence of new business opportunities. These indicators measure, mainly:

1. Starting business.
2. Dealing with construction permits.
3. Getting electricity.
4. Registering property.
5. Getting credit.
6. Protecting minority investors.
7. Paying taxes.
8. Trading across borders.
9. Enforcing Contract.
10. Resolving insolvency.

Although these indicators may seem to be quite distant from daily reality of small-scale livestock producers, regulatory measures impact the industry; in this regard, all actors are affected, directly or indirectly, by the regulations. It is, therefore, appropriate to consider them when identifying possible barriers to the implementation of the measures foreseen to increase livestock productivity and reduce emissions.

<sup>3</sup> <http://www.ibe.unesco.org/en/geqaf/technical-notes/concept-governance>

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The institutional set up of governance and the legal framework for competition play an important role in a country's social development. In this context, Latin America has experienced living conditions marked by inequality, poverty and violence in all its dimensions; which results in very complex scenarios for the implementation of sectoral development projects with national coverage. Even though livestock NAMAs have been formulated mainly as an instrument aimed at reducing emissions, they cannot be isolated from the social context in which they must be implemented. The Human Development Index (HDI) allows for the contextualisation, through its variables, of both the social conditions of countries with livestock NAMAs and the social impact objective that should guide their implementation. The variables of the HDI (World Bank, 2018) are:

1. Life expectancy at birth.
2. Expected years of schooling.
3. Mean years of schooling.
4. Gross National Product per capita.

In short, the performance of each country is assessed in the following table (Table 1).

### Findings

The countries with livestock NAMAs that show the best governance performance are Costa Rica and Uruguay, both scoring above 50 p.p. (on a 100-point scale) on the six variables of this index. On the other hand, the countries with the lowest performance are Guatemala, Honduras and Nicaragua. The variables that can have the greatest impact on the implementation of NAMAs are: 1) Rule of law and 2) control of corruption. In this sense, Costa Rica and Uruguay stand out positively,

**Table 1.** Performance indexes by country World Governance Index (WGI) – Doing Business Index (DBI) – Human Development Index (HDI).

Country	Indexes		
	WGI	DBI	HDI
Uruguay <sup>4</sup>	80,10	59,00	80,78
Chile	79,96	72,60	84,69
Costa Rica	70,67	69,20	79,35
Panama	54,59	65,30	79,51
Peru	45,83	70,10	75,91
Colombia	44,81	66,60	76,09
Argentina	42,18	57,70	83,01
Brazil	42,18	59,50	76,12
Dominican Republic	42,04	68,70	74,46
Paraguay	37,87	59,10	72,43
Mexico	37,64	75,70	76,74
El Salvador	36,92	54,40	66,67
Ecuador	35,22	62,60	75,79
Guatemala	27,90	61,50	65,10
Honduras	27,73	56,30	62,30
Nicaragua	18,50	51,70	65,11

Source: WGI 2018, DBI 2020, HDI 2018. Own elaboration. Highlighted in yellow the countries discussed in this report.

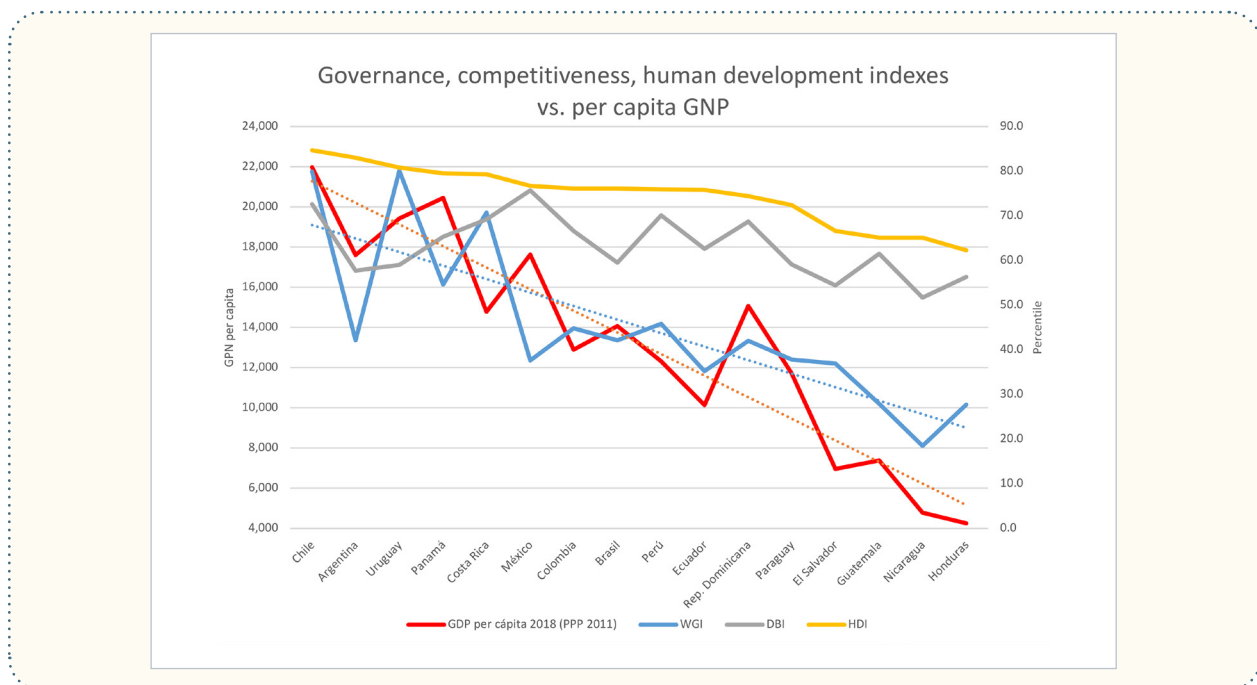
while the Dominican Republic, Guatemala, Honduras, and Nicaragua have serious difficulties in guaranteeing basic conditions of Rule of Law and the efficient management of public resources. Figure 1 shows a high correlation between WGI and Gross National Product (GNP) per capita. Consequently, strengthening the governance through livestock NAMAs becomes more relevant, as the outcome will depend largely on institutional performance.

<sup>4</sup> Countries highlighted in yellow correspond to those with climate actions, NAMAs or other.

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The competitiveness of countries shows a lower degree of correlation with some countries' income (see Figure 1). However, the importance of competitiveness for NAMAs, as measured by the DBI, lies in the quantification of variables that can become barriers if faced by actors in an agricultural value chain. The measurement of these variables facilitates the analysis and allows the design of the strategy that NAMAs may adopt to overcome the identified barrier. The barriers will vary according to the NAMAs' emphasis. Nonetheless, the most significant barriers may be linked to the security of property, to access credit, to cross-border trade, and those relating to the costs and time required to enforce a contract. The countries that show the best conditions for business development are Colombia and Costa Rica, with scores above the global average of 63.6 points; while Guatemala, Uruguay and the Dominican Republic are in the middle range, below the global average and above the regional average of 59.50 points. Finally, Honduras and Nicaragua show high deficiencies for business development.

The social development of countries is correlated with both their competitiveness and their per capita income level (see Figure 1). In this respect, human capital has far-reaching effects on the economy and life in society. In this paper, both, acquired and innate human capital are mentioned. The HDI provides information on the concept of acquired capital through the variables of 1. - expected years of schooling and 2. - mean years of schooling. On the other hand, innate human capital, which includes physical and intellectual skills, is inferred through the HDI variable of life expectancy at birth. Consequently, innate human capital can change due to food and health conditions (Comisión económica para América Latina, CEPAL, August 2005), and acquired human capital can be affected by public education policies. In the countries analyzed, Uruguay ranks among the countries with very high human development; while Costa Rica, Colombia and the Dominican Republic follow, they are among the countries with high human development. Finally, Guatemala, Nicaragua and Honduras classify among the



**Figure 1.** Governance, competitiveness, and human development indexes vs. per capita GNP in selected Latin American countries. Source:WGI 2018, DBI 2020, HDI 2018. Own elaboration.

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countries with a medium level of human development. Therefore, it is highly probable that, if the structural base conditions are maintained, the change promoted and the expected impact of livestock NAMAs will be hindered, and a sustainable improvement of living conditions will be slower.

### *Will the implementation of livestock NAMAs, in the countries analyzed, contribute to the emission reduction targets of the NDCs?*

Based on the information provided by the indexes, an arithmetic weighting was carried out; which generated a consolidated index (Table 1, Table 2).

Thus, it is possible to obtain two scenarios in each table. In Table 1, with a 1/3 weighting for each index, it is noticeable that Costa Rica, Uruguay, and Colombia are countries with a score above the average (61.20 p.p.). These countries offer greater opportunities for the successful implementation of livestock NAMAs. Whether they are successful will depend on many other factors that are not considered in these indicators; for example, the capacity and experience of the technical teams, the strength of the producer organizations, the institutional leadership and the capacities of the companies and research institutions, among others. In the second scenario, with a weighting that reduces the relative importance of the DBI to 1/5 and increases the importance of the WGI and HDI to 2/5 each, the same countries (i.e., Costa Rica,

**Table 2.** Scenario 1: weighted average of three indexes: World Governance Index (WGI) – Doing Business Index (DBI) – Human Development Index (HDI) where the consolidated Index derives from 1/3 WGI + 1/3 DBI + 1/3 HDI.

Country	Consolidated Index
Chile	73,25
Costa Rica	73,07
Argentina	69,70
Uruguay	66,23
Colombia	63,21
Ecuador	62,55
Panama	62,04
Brazil	60,96
El Salvador	59,87
Mexico	58,68
Honduras	57,91
Peru	57,48
Guatemala	54,51
Nicaragua	53,77
Paraguay	52,98
Dominican Republic	52,95

Source: WGI 2018, DBI 2020, DHI 2018. Own elaboration.

**Table 3.** Scenario two: weighted average of three indexes: World Governance Index (WGI) – Doing Business Index (DBI) – Human Development Index (HDI) where the consolidated Index derives from: 2/5 WGI + 1/5 DBI + 2/5 HDI.

Country	Consolidated Index
Chile	70,76
Costa Rica	69,14
Argentina	65,66
Uruguay	62,88
Colombia	59,80
Panama	58,99
Brazil	58,80
Ecuador	57,58
El Salvador	56,06
Mexico	55,38
Honduras	53,63
Peru	53,62
Guatemala	51,65
Dominican Republic	50,40
Paraguay	50,17
Nicaragua	49,58

Source: WGI 2018, DBI 2019, HDI 2018. Own elaboration.

Uruguay, and Colombia) are found with a score above average (57.76 p.p.). Regarding the countries that are below average, it is possible to achieve some results, but it is unlikely that, under the conditions verified by the indicators, regional and national impacts will be obtained and, above all, sustainability will be achieved in the medium and long term. Institutional weaknesses are a barrier that can hardly be addressed by livestock NAMAs and are impossible to circumvent.

### Conclusions

- NAMAs provide a great opportunity for countries to organize their public agenda for low emission livestock production in line with the GHG reduction targets, proposed in the NDCs. In most countries with NAMAs, high rates of violence, public perception of poor control of corruption and low competitiveness may reduce incentives for private investment to accelerate a technological change in the primary production and value chain. Except for Costa Rica and Uruguay, the other countries require sustained efforts to strengthen institutions; therefore, it is important that the governance model for livestock NAMAs seeks to ensure transparency in decision-making and resource allocation. Additionally, it is important to identify and quantify the effect of the weaknesses evidenced by the indicators in the livestock NAMAs management cycle, in order to consider these variables in monitoring, planning and risk management.
- The institutional setup of countries is crucial for their social, economic, and cultural development. Countries with high WGI perform better in human development and, as shown in Figure 1, have higher per capita incomes. The low level of perception of the variables regarding the rule of law and of the control of corruption are crucial variables in the process of development and economic growth. Unfortunately, in both indicators, only two of the seven countries with livestock NAMAs are above average. In the Central American region, Costa Rica obtains a high score while the Dominican Republic, Guatemala, Honduras, and Nicaragua register a low perception of respect for this fundamental institution. In South America, Uruguay ranks among the leaders with a high perception on both indicators, while Colombia shows progress but still has much room for improvement.
- The effectiveness of the government, which is measured through the WGI, indicates that only two of the six countries with climate actions are above 50 p.p. out of a total of 100 points; these are Uruguay and Costa Rica. Among the countries positioned below 50 p.p., in the period 2000-2018, Honduras and Guatemala dropped 4 p.p. and 5 p.p. respectively. Contemplating this information on the perceived effectiveness and quality of public services, it should be considered when designing livestock NAMAs that are aimed at increasing the sector's productivity; since the transformation process requires high-quality public responses, in order to effectively and efficiently impact the reality to be changed.
- Economic performance depends largely on the policy and regulatory structure, on the existing capacities and the conditions of quality and access to social services (education, health, security) of the population, and on other variables such as the quality of governance of the countries. However, the objectivity of the DBI shows that there are countries with regulatory and legal weaknesses that make it difficult for the productive sectors to perform better. Overall, the livestock NAMAs formulated so far, do not address regulatory and legal barriers; on the contrary, they focus their proposal on the specific technical tools of livestock production technology. It should be noted, that analysing regulatory barriers and seeking to overcome them can lead to an acceleration in the achievement of the NAMAs objectives. In addition, it is extremely important for decision-makers to specify the benefits that public policy can bring

in terms of growth, generation, and quality of formal jobs; as well as increased tax collection, modernisation of industry, and conquest of new markets, among other benefits. In this sense, the livestock NAMAs proposals limit their impact to emission reductions, while the effects of a public policy affect many areas of people's lives and the territories in which the initiatives are implemented.

- The study, Governance Analysis of Nationally Appropriate Mitigation Actions for Livestock Systems in the Latin American Region, also revealed a major weakness in terms of monitoring, reporting and verification (MRV). In this regard, a substantial and significant contribution that livestock NAMAs can make, in a first stage, is to help improve the public institutionality of the MRV services, i.e., of

the actions implemented in the agricultural sector. This effort can become the fundamental basis for generating national information, which will allow decision-makers to evaluate the efficient allocation of public resources aimed at improving productivity and, eventually, transforming gradually the current production system, which is oriented towards reducing emissions and increasing productivity. The information generated is crucial to advancing in the scalability that a public policy, sustained with its own resources and those of international cooperation, can have. An important piece of information will be the cost of reducing emissions per ton, and the contribution that each sector makes to the objectives proposed by each country, in the medium and long term.

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