

Authors: John Chavarro (Javeriana university, CENIGAA), Andres Peña (Javeriana University), Jorge Escobar (Javeriana University), Wilfredo Marimon Bolivar (CENIGAA), Ricardo Arguello (Consultant).

Pathway Narratives

| | A) CURRENT TRENDS | B) NATIONAL COMMITMENTS | C) GLOBAL SUSTAINABILITY | JUSTIFICATION |
|--|---|---|--|---------------|
| General description | We do not act differently than the past decade / today | National actions/policies are aligned with national commitments | National actions/policies are aligned with global sustainability targets | |
| Country Narrative - in a concise way explain the main elements that have guided the selection of the assumptions under each pathway | <p>In the framework of the Current Trends pathway, we foresee a scenario shaped by a variety of interconnected factors. A moderate population growth is projected, rising from 51.1 million people in 2020 to 62.8 million by 2050. Alongside this, the agricultural frontier is anticipated to persist in its expansion, even into currently protected areas. Afforestation efforts are expected to remain moderate, following the trend of the last few decades. This scenario does not include plans to expand existing protected areas but does project modest increases in agricultural productivity. The share of domestic consumption met by imports will maintain its current ratio. On the economic front, we expect an uptick in exports for select agricultural commodities like coffee, plantain, palm oil, banana, and sugar.</p> <p>Overall, although existing policies and historical trends will contribute to a moderate slowing of population growth,</p> | <p>The National Commitments Pathway aligns with Colombia's New National Development Plan for 2022-2026 and the policies that are intended to be developed, such as the Draft Law to Promote Agroecology and the Comprehensive Rural Reform. Compared to the Current Trends, this pathway allows for moderate economic growth in Colombia. It is characterized by anticipated modest reductions in both food loss and post-harvest losses. In terms of international trade, consumer goods imports are expected to remain stable, while exports are projected to double by 2050. A slight yet consistent growth is expected in both the livestock and agricultural sectors.</p> <p>Environmentally, the trajectory aims to halt deforestation by 2030, while also focusing on restoring areas impacted by agricultural expansion, persistent organic pollutants (POPs), and the implementation of the National Restoration Plan. Furthermore, it</p> | <p>The Sustainable Pathway corresponds to a vision of the future in which Colombia adopts a set of ambitious sustainable policies and practices within the higher boundary of feasible action. Compared to the Current Trends Pathway, this future would lead to a medium speed economic growth, a transition to more sustainable diets, higher livestock and crop productivity, higher exports, and lower food waste. This vision of the future is based on the implementation of policies that would see considerable progress with regards to: (i) increased productivity and competitiveness through the sustainable use of natural capital and the promotion of social inclusion, compatible with policies such as the Green Growth; (ii) increasing productivity for prioritized crops (i.e. rice, corn, potato, sugar cane for panela, and avocado) as a result of national production management plans (POPs); (iii) increasing livestock productivity in line with mitigation</p> | |

| | | | | |
|--|---|--|---|--|
| | <p>they are unlikely to sufficiently address ongoing environmental challenges. Deforestation rates will continue at approximately 150,000 hectares per year, and only minimal afforestation efforts are expected through the National Restoration Plan. This paints a picture of a pathway where some progress is achieved, but significant challenges still persist.</p> | <p>aims to expand the portfolio of protected areas in alignment with AICHI's Goal 11. This trajectory represents a more balanced approach to growth, resource management, and environmental conservation than the Current Trends pathway, offering a roadmap for a more sustainable future for Colombia.</p> | <p>measures (e.g. sustainable livestock); (iv) diversifying exports and destinations for crops and livestock, and; (v) reducing food waste in line with Colombia's Policy for Preventing Food Waste and Loss.</p> | |
|--|---|--|---|--|

| Pathway Assumptions | | | | | |
|---------------------|---------------------|--|---|--|--|
| | | A) CURRENT TRENDS | B) NATIONAL COMMITMENTS | C) GLOBAL SUSTAINABILITY | JUSTIFICATION |
| 1. Macroeconomics | 1.1) GDP per capita | Over the past decade (2010-2019), the annual GDP Growth (%) has demonstrated a declining trend. Given this pattern, we project a decrease of 2% in GDP by the year 2030. (SSP 1) | Increase by 4% between 2020 and 2030. (SSP 2) | Same as NC | World Bank National Development Plan (2022-2026) |
| | 1.2) Population | By 2050 Colombia's Total Population will reach 57,7 million (UN_medium) | Same as CT | Same as CT | DANE (2000) - Total Population 39,140,080 (2030) - Total Population 54,705,567 - (1.40) (2050) - Total Population 57,713,467 - (1.47) |
| | 1.3) Inflation | Increase by 257% between 2020 and 2050 | Increase by 200% between 2020 and 2050 | Increase by 144% between 2020 and 2050 | National Development Plan (2022-2026) Monetary Policy Report (Bank Of Republic, July, 2023) |

| | 1.4) Inequalities | To be determined | To be determined | To be determined | |
|----------------|---|--|--|---|---|
| 2. Land | 2.1) Constraints on agricultural expansion / deforestation | No constraint on the expansion of the agricultural land beyond protected areas | Reduce national deforestation by 20%, which is equivalent to about 35,000 fewer hectares compared to 2021 (limit of 140.000 Ha by 2026). Reduce net deforestation of natural forest to 0 hectares/year by 2030, based on the implementation of both policy tools and cooperative and market measures. | Same as NC | Ley 2169 Del 22 De Diciembre De 2021 National Development Plan (2022-2026) Climate Action Law (2169/2021) Delimitación Frontera Agrícola, UPRA, 2018 |
| | 2.2) Afforestation, and forest plantations targets | Afforestation/reforestation target in line with Bonn Challenge commitment | By 2030, increase by 100,000 hectares the areas in the process of rehabilitation, recovery, or restoration in the areas of the National Park System and its zones of influence. | By 2030, Colombia will expand the areas in the process of restoration, recovery, and rehabilitation of degraded ecosystems to 1.7 million hectares. That is, 750,000 more than in 2022. | Ley 2169 Del 22 De Diciembre De 2021 National Development Plan (2022-2026) Climate Action Law (2169/2021) |
| | 2.3) Urban and settlements area | Current Trend of urban land use change | Increase by 10% between 2020 and 2050 | Increase by 5% between 2020 and 2050 | National Development Plan (2022-2026) Regulation and implementation of the determinants for the protection of rural land as a guarantee of the right to food |
| | 2.4) Protected areas | No expansion of protected areas beyond current. | Increase by 5% between 2020 and 2030 | Increase by 15% between 2020 and 2030 | National Development Plan (2022-2026) Participatory restoration of ecosystems, protected areas and other environmentally strategic areas |

| | | | | | |
|--|--|---|--|---|--|
| <p>3. Productivity and management</p> | <p>3.1) Crop productivity for the key crops</p> | <p>The top 10 key products in Colombia between 2005 and 2020 were coffee, Rice (Irrigated, Rainfed, Mechanized), Oil Palm, Corn, Plantain, Sugar Cane (Industrialized and traditional), Cocoa, Cassava, and Potato. These crops represented 81.12% of the total planted area in 2020.</p> <p>By 2050, crop productivity will continue growth at a low level according to the last 15 years trends.</p> <ul style="list-style-type: none"> - From 1.1 Ton/Ha to 1.3 Ton/Ha for Coffee - From 4.5 Ton/Ha to 4.7 Ton/Ha for Rice - From 3.2 Ton/Ha to 3.3 Ton/Ha for Palm Oil - From 2.1 Ton/Ha to 2.2 Ton/Ha for Corn - From 7.6 Ton/Ha to 8 Ton/Ha for Plantain - From 113.7 Ton/Ha to 118.8 Ton/Ha for Sugar Cane - From 0.7 Ton/Ha to 0.9 Ton/Ha for Cocoa - From 11 Ton/Ha to 11.7 Ton/Ha for Cassava - From 17.3 Ton/Ha to 19.5 Ton/Ha for Potato | <p>Between 2020 and 2050, crop productivity increases:</p> <ul style="list-style-type: none"> - From 1.1 Ton/Ha to 1.4 Ton/Ha for Coffee - From 4.5 Ton/Ha to 5.9 Ton/Ha for Rice - From 3.2 Ton/Ha to 4.2 Ton/Ha for Palm Oil - From 2.1 Ton/Ha to 2.7 Ton/Ha for Corn - From 7.6 Ton/Ha to 10 Ton/Ha for Plantain - From 113.7 Ton/Ha to 149.1 Ton/Ha for Sugar Cane - From 0.7 Ton/Ha to 0.9 Ton/Ha for Cocoa - From 5.1 Ton/Ha to 6.6 Ton/Ha for Sugar Cane (Traditional) - From 11 Ton/Ha to 14.5 Ton/Ha for Yucca - From 17.3 Ton/Ha to 22.7 Ton/Ha for Potato <p>We also include new crops according to the new National Development Plan (2022-2026):</p> <ul style="list-style-type: none"> - From 1.6 Ton/Ha to 2.1 Ton/Ha for Beans - From 9.2 Ton/Ha to 12.1 Ton/Ha for Avocado - From 10.7 Ton/Ha to 14.1 Ton/Ha for Banana - From 2.6 Ton/Ha to 3.4 Ton/Ha for Soybean | <p>Between 2020 and 2050, crop productivity increases:</p> <ul style="list-style-type: none"> - From 1.1 Ton/Ha to 1.6 Ton/Ha for Coffee - From 4.5 Ton/Ha to 7.5 Ton/Ha for Rice - From 3.2 Ton/Ha to 8 Ton/Ha for Palm Oil - From 2.1 Ton/Ha to 5 Ton/Ha for Corn - From 7.6 Ton/Ha to 15 Ton/Ha for Plantain - From 113.7 Ton/Ha to 150 Ton/Ha for Sugar Cane - From 0.7 Ton/Ha to 1.5 Ton/Ha for Cocoa - From 5.1 Ton/Ha to 12 Ton/Ha for Sugar Cane (Traditional) - From 11 Ton/Ha to 16 Ton/Ha for Yucca - From 17.3 Ton/Ha to 25.1 Ton/Ha for Potato - From 1.6 Ton/Ha to 2.5 Ton/Ha for Beans - From 9.2 Ton/Ha to 15 Ton/Ha for Avocado - From 10.7 Ton/Ha to 15 Ton/Ha for Banana - From 2.6 Ton/Ha to 6 Ton/Ha for Soybean | <p>UPRA-Minagricultura Agronet Statistics EVA, 2007-2020</p> <p>UPRA - MINAGRICULTURA PRODUCTIVE REGULATION PLANS (POP) For Rice, Meat, Dairy, Forestry, Corn, Potato and Sugar Cane (Traditional)</p> <p>National Development Plan (2022-2026) Participatory restoration of ecosystems, protected areas and other environmentally strategic areas</p> |
|--|--|---|--|---|--|

| | | | | | |
|-----------------|--|---|---|--|--|
| | 3.2) Cropland under agroecological practices | No Change | 10% of total cropland under agroecological practices by 2030 | 16.4% of total cropland under agroecological practices by 2030 | National Development Plan (2022-2026) Productive Transformation, Internationalization and Climate Action: Productive economy through reindustrialization and bioeconomy Sustainable and regenerative production models in Agriculture and Livestock |
| | 3.3) Livestock productivity for the key livestock products | Same productivity growth as over 2010-2020 | Between 2015 and 2050, the productivity per head increases: - From 32 kg/head to 46 kg/head for Cattle -From 6.36L/day by dairy cow to 10.65 L/day - For Chicken and Pork to be determined | Between 2015 and 2050, the productivity per head increases: - From 32 kg/head to 60 kg/ha for Cattle -From 6.36L/day by dairy cow to 12.5 L/day - For Chicken and Pork to be determined | UPRA - Minagricultura Productive Regulation Plans (POP) For Meat and Dairy |
| | 3.4) Pasture stocking rate | Same ruminant density as 2020 | Increase from 1.1 heads per Ha to 1.5 heads per Ha between 2020 and 2050 | Increase from 1.1 heads per Ha to 2 heads per Ha between 2020 and 2050 | UPRA - Minagricultura Productive Regulation Plans (POP) For Meat and Dairy |
| | 3.5) Forest management | To be determined | To be determined | To be determined | |
| 4. Trade | 4.1) Share of consumption which is imported for key imported products (%) | In 2021, Colombia imported \$59.6B, making it the number 52 trade destination in the world. During the last five reported years the imports of Colombia changed by \$15.6B from \$44B in 2016 to \$59.6B in 2021. By 2020, vegetable and animal products imports of Colombia | The share of total consumption which is imported is: - from 85% in 2020 to 50% in 2050 for Corn, Wheat, Barley, and sorghum - stays constant for the other products | The share of total consumption which is imported is: - from 85% in 2020 to 35% in 2050 for Corn, Wheat, Barley and sorghum - stays constant for the other products | Gaulier, G. and Zignago, S. (2010) BACI: International Trade Database at the Product-Level. The 1994-2007 Version. CEPII Working Paper, N°2010-23 DANE National Development Plan (2022-2026) Productive transformation, internationalization and climate action |

| | | | | |
|---|---|---|---|--|
| | <p>are led by <u>Cereals</u> (\$ 1.78B), <u>Animal or vegetable fats, oils, & waxes</u> (\$ 0.54B), <u>Oils seeds, oleaginous fruits, grains, straw & fodder</u> (\$ 0.28B), <u>Meat & edible offal</u> (\$ 0.27B), <u>Edible fruits, nuts & fruit peels</u> (\$ 0.21B) and <u>Fish, crustaceans, & molluscs</u> (\$ 0.21B).</p> <p>In fact, the trend is increasing the share of total consumption which is imported reach 100%</p> | | | FENALCE Cereal Indicator |
| <p>4.2) Evolution of exports for key exported products (1000 tons)</p> | <p>In 2021, Colombia exported a total of \$42.5B, making it the number 60 exporter in the world. During the last five reported years the exports of Colombia have changed by \$10.2B from \$32.4B in 2016 to \$42.5B in 2021.</p> <p>The most recent exports are led by Crude Petroleum (\$11.3B), Coal Briquettes (\$5.11B), Coffee (\$3.22B), Gold (\$2.61B), and Refined Petroleum (\$2.14B). The most common destination for the exports of Colombia are United States (\$11.7B), China (\$3.69B), Panama (\$2.4B), India (\$2.27B), and Brazil (\$2.07B). According to data from DANE, the exports from the agricultural sector, including livestock, hunting, and</p> | <p>Increases by 150% in 2050 related to 2020 <i>(Projections for each product to be determined)</i></p> | <p>Increases by 220% in 2050 related to 2020 <i>(Projections for each product to be determined)</i></p> | <p>Gaulier, G. and Zignago, S. (2010) BACI: International Trade Database at the Product-Level. The 1994-2007 Version. CEPII Working Paper, N°2010-23</p> <p>DANE National Development Plan (2022-2026)</p> <p>Human Right to Food: Goal 04 Production for Life</p> |

| | | | | | |
|----------------|--|---|---|---|--|
| | | <p>forestry, grew by 136% between the year 2000 and the year 2020. (Key Products: Coffe, Flowers, Plantain, Palm Oil, Banana, Raw and Processed Sugar, Fruits, Cocoa, Soybean Oil and Wood).</p> <p>By 2050, export products increase by 136%.</p> | | | |
| 5. Food | 5.1) Average dietary composition | By 2030 the average daily calorie consumption per capita will be 2986.6 Kcal | Same as CT | Same as CT | <p>ICBF Food Balance Sheet of Colombia 2014</p> <p>CISAN-ICBF Roadmap - Colombia Advances towards equitable, healthy, sustainable and resilient Food Systems 2021</p> <p>MINSALUD Law 2120/2021</p> |
| | 5.2) Share of food consumption which is wasted at household level | By 2030, Colombians wasted about 15.6% of their household production at the household level. | By 2030, Reduces by 5% compared to 2010 level | By 2030, the total losses and waste are 3%. | <p>DNP Estudio de Perdidas y Desperdicio de Alimentos en Colombia</p> <p>Minagricultura - Cisan Comprehensive Public Policy for the prevention and reduction of food loss and waste. With the aim of contributing to the Sustainable Development Goals (SDGs) and in response to Law 1990 of 2019, CISAN proceeded with the formulation of the policy for the prevention of food loss and waste, which is adopted through Decree 375 of 2022. This decree adds Part 22 to Book 2 of</p> |

| | | | | | |
|--------------------|---|--|---|---------------------------------------|--|
| | | | | | Decree 1071 of 2015, the Unified Regulatory Decree of the Agricultural, Fisheries, and Rural Development Administrative Sector, related to the reduction of food loss and waste. |
| 6. Biofuels | 6.1) Targets on biofuel and/or other bioenergy use | By 2030, Biofuel demand accounts for 26.1% of total Palm Oil production and 18.3% of total sugarcane production. | Same as CT | Same as CT | Fedepalma Minagricultura Fedebiocombustibles |
| | 6.2) Targets on other non-food use | NA | NA | NA | |
| 7. Water | 7.1) Irrigated crop area | Same irrigated harvested area as in 2020 | Increase by 15.8% between 2020 and 2050 | Increase by 25% between 2020 and 2050 | National Development Plan (2022-2026) Irrigation National Plan (2020-2039) |