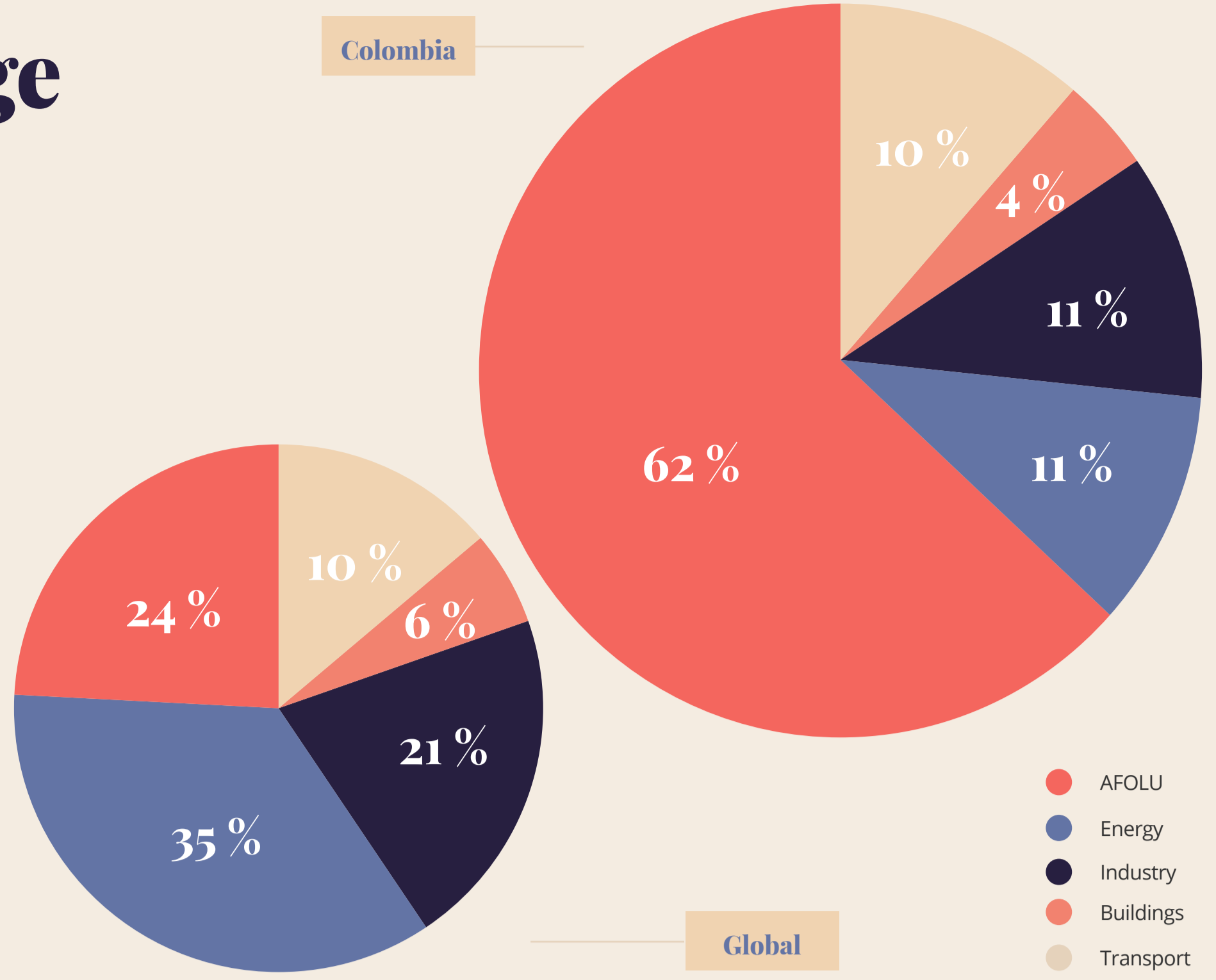


Nature-based Solutions for Climate Change Mitigation in Colombia

The Problem

The Agriculture, Forestry and Other Land Use (AFOLU) sector contributes a quarter of total global greenhouse gas (GHG) emissions (IPCC, 2019). In Colombia, the contribution of this sector increases to almost 60%, mainly associated with deforestation and conventional cattle ranching activities (IDEAM, 2016).



Natural Climate Solutions (NCS)

NCS are Nature-based Solutions* for climate change mitigation, which include conservation and restoration of natural ecosystems, as well as sustainable production activities.

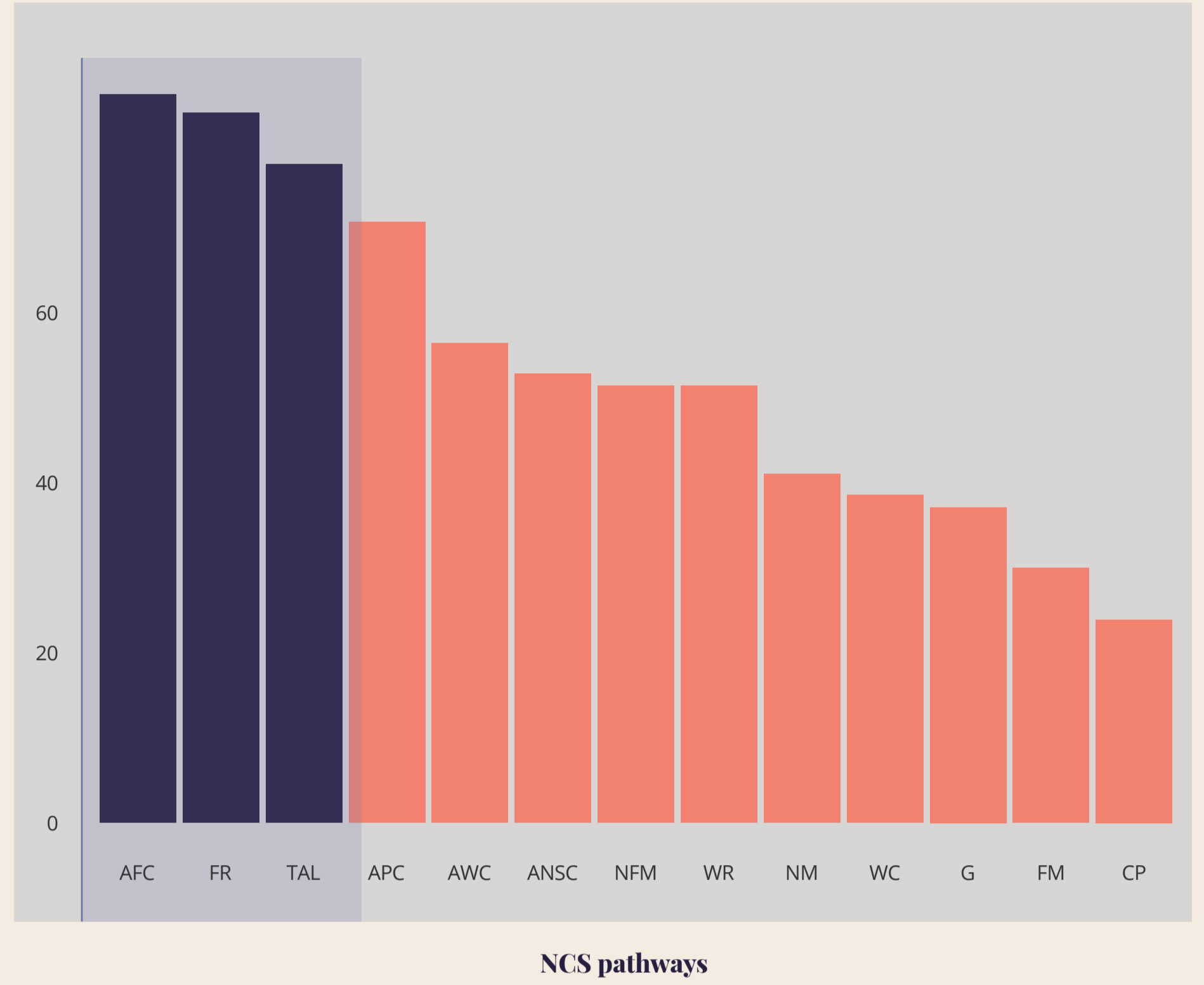
- Avoided Forest Conversion (AFC)
- Forest Restoration (FR)
- Trees In Ag Lands (TAL)
- Avoided Páramo Conversion (APC)
- Avoided Wetlands Conversion (AWC)
- Avoided Conversion of Natural Savannas (ANSC)
- Natural Forest Management (NFM)
- Wetland Restoration (WR)
- Nutrient (Fertilizer) Management (NM)
- Wood Fuel Collection (WC)
- Optimized Grazing (G)
- Fire Management (FM)
- Commercial Forest Plantations (CP)

*According to IUCN, Nature-based Solutions (NBS) are a new concept that encompasses all actions that rely on ecosystems and the services they provide, to respond to societal challenges (e.g. climate change, food security or disaster risk), generating benefits for society and biodiversity. NBS is considered an umbrella concept that includes different approaches such as Ecosystem-Based Adaptation, NCS, among others.

These types of solutions have the potential to provide around a third of the mitigation required to meet the GHG emissions reduction goal of the Paris Agreement and to limit global warming to less than 2°C (Griscom et al., 2017).

TNC reviewed all NCS pathways relevant to Colombia, and prioritized them based on different criteria (mitigation potential,

information availability, co-benefits, cost-effectiveness and TNC technical capacity), from which the top three were selected for further analysis in the NCS for NDCs project. The three prioritized pathways —Avoided Forest Conversion, Forest Restoration and Trees in Agricultural Lands (silvopastoral)— have a high potential to contribute to climate change mitigation, and to help Colombia achieve its 51% emissions reduction goal.



The NCS for NDCs Project in Colombia

With the support of Norad, TNC is implementing the project "Unlocking Natural Climate Solutions to Implement the Paris Agreement" (NCS for NDCs) in Colombia, China and Indonesia. In Colombia, the goal is for the government to improve and broaden its use of NCS information in the updated NDC, and expand ambition in the upcoming NDC. To achieve this, TNC is working on:

- 1 NCS assessment: develop a national assessment of the three priority NCS pathways, including mitigation potential, cost-effectiveness and co-benefits.
- 2 Policy and economic analysis: develop a policy analysis to identify barriers and opportunities to implementing NCS in Colombia, and an analysis of financial instruments to implement sustainable cattle ranching.
- 3 Private sector analysis: develop a private sector analysis to explore NCS implementation opportunities in Colombia.

Maximum biophysical mitigation potential for prioritized NCS Pathways

Country- and region-specific spatial information (including, but not limited to, biomes, ecosystems, past and projected deforestation, National Restoration Plan, agriculture frontier) and carbon trajectories in natural forests and during implementation of forest restoration and silvopastoral systems were used to estimate maximum mitigation potential of NCS pathways in Colombia

Results show that the maximum biophysical mitigation potential for selected NCS pathways by 2030 is **0.38 Gt CO₂e yr⁻¹ in 2030**, from which **Avoided Forest Conversion (avoided deforestation) accounts for 34% of the total potential**, and **Forest Restoration and Trees in Agricultural Lands (silvopastoral) represent 42% and 24% respectively**.

Avoided Forest Conversion

Maximum mitigation potential (t CO₂e ha⁻¹) from the Avoided Forest Conversion NCS pathway in Colombia during the period 2018-2030.

Forest Restoration

Maximum mitigation potential (t CO₂e ha⁻¹) from the Forest Restoration NCS pathway in Colombia during the period 2018-2030.

Trees in Agricultural Lands (silvopastoral)

Maximum mitigation potential (t CO₂e ha⁻¹) from the Trees in Agricultural Lands NCS pathway in Colombia during the period 2018-2030.

Based on information (scale: 1:100,000):

- 1 Forest – Non-forest 2018 (Institute of Hydrology, Meteorology and Environmental Studies of Colombia -IDEAM)
- 2 Carbon content in aboveground biomass based on IDEAM biotic zones
- 3 Deforestation model 2018-2030 (IDEAM)

Based on information (scale: 1:100,000):

- 1 Agricultural frontier (includes land aptitude/suitability) (Rural Agriculture Planning Unit -UPRA)
- 2 Ecosystems of Colombia 2017 (IDEAM)
- 3 Natural savannas and páramos (categories of the ecosystems map that was used as a mask to prevent afforestation activities), from the Ecosystems of Colombia map 2017 (IDEAM)
- 4 Forest – Non-forest 2018 (IDEAM)
- 5 Deforestation 2010-2018 (IDEAM)
- 6 National Restoration Plan 2015 (Ministry Environment and Sustainable Development -MinAmbiente)

Based on information (scale: 1:100,000):

- 1 Agricultural frontier (UPRA)
- 2 Ecosystems of Colombia 2017 (IDEAM)
- 3 Natural savannas and páramos (categories of the ecosystems map that was used as a mask to prevent afforestation activities), from the Ecosystems of Colombia map 2017 (IDEAM)
- 4 Forest – Non-forest 2018 (IDEAM)
- 5 Deforestation 2010-2018 (IDEAM)
- 6 National Restoration Plan 2015 MinAmbiente

Path to Carbon Neutrality of Ecopetrol



TNC is supporting Ecopetrol in designing a portfolio of **natural climate solution** projects to meet its emissions reduction goal and to contribute to mitigate climate change in Colombia, using the NCS information developed

Para más información sobre este proyecto, contacta a:

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