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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROGRAM DOCUMENT FOR A PROPOSED LOAN

IN THE AMOUNT OF

US\$500 MILLION

TO

THE REPUBLIC OF COLOMBIA

FOR THE

SECOND SUSTAINABLE DEVELOPMENT AND GREEN GROWTH  
DEVELOPMENT POLICY FINANCING

November 8, 2017

Environment and Natural Resources Global Practice  
Colombia and Mexico Country Management Unit  
Latin America and the Caribbean Region

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**REPUBLIC OF COLOMBIA -GOVERNMENT FISCAL YEAR**

*January 1 – December 31*

**CURRENCY EQUIVALENTS**

(Exchange Rate Effective as of November 7, 2017)

Currency Unit = Colombian Pesos

COP 3,036.1 = US\$1.00

**ABBREVIATIONS AND ACRONYMS**

ASA	Advisory Services and Analytics
AFD	French Agency for Development ( <i>Agence Française de Développement</i> )
AMVA	Aburrá Valley Metropolitan Area ( <i>Área Metropolitana del Valle de Aburrá</i> )
CAD	Current Account Deficit
CAF	Development Bank of Latin America
CAR	Capital Adequacy Ratio
CCE	Colombia Efficient Purchase ( <i>Colombia Compra Eficiente</i> )
CEA	Country Environmental Analysis
CO <sub>2</sub>	Carbon Dioxide
CONPES	National Council of Economic and Social Policy ( <i>Consejo Nacional de Política Económica y Social</i> )
COP	Colombian Peso
CPF	Country Partnership Framework
DAASU	Directorate for Sectoral and Urban Environmental Issues ( <i>Dirección de Asuntos Ambientales Sectorial y Urbana</i> )
DAGMA	Administrative Department of Environmental Management ( <i>Departamento Administrativo de Gestión del Medio Ambiente</i> )
DALYs	Disability Adjusted Life-Years
DNP	National Planning Department ( <i>Departamento Nacional de Planeación</i> )
DPF	Development Policy Finance
DRM	Disaster Risk Management
EPA	Environmental Protection Agency
FARC-EP	Revolutionary Armed Forces of Colombia-People's Army ( <i>Fuerzas Armadas Revolucionarias de Colombia-Ejército del Pueblo</i> )
FCL	Flexible Credit Line
FDI	Foreign Direct Investment
FENOG	Non-Conventional Energies and Energy Efficiency Fund ( <i>Fondo de Energías No Convencionales y Gestión Eficiente de la Energía</i> )
FNGRD	National Fund for Risk Management ( <i>Fondo Nacional de Gestión de Riesgo de Desastres</i> )
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GoC	Government of Colombia
GRS	Grievance Redress Service
IBRD	International Bank for Reconstruction and Development
IDB	Inter-American Development Bank ( <i>Banco Interamericano de Desarrollo</i> )
IDEAM	Institute of Hydrology, Meteorology, and Environmental Studies ( <i>Instituto de Hidrología, Meteorología y Estudios Ambientales</i> )

IFN	National Forestry Inventory ( <i>Inventario Forestal Nacional</i> )
IMF	International Monetary Fund
INDC	Intended Nationally Determined Contribution
ISA	International Standards on Auditing
KfW	German Development Bank ( <i>Kreditgesellschaft für Wiederaufbau</i> )
MADS	Ministry of Environment and Sustainable Development ( <i>Ministerio de Ambiente y Desarrollo Sostenible</i> )
MDG	Millennium Development Goals
MHCP	Ministry of Finance and Public Credit ( <i>Ministerio de Hacienda y Crédito Público</i> )
MME	Ministry of Mines and Energy ( <i>Ministerio de Minas y Energía</i> )
MSPS	Ministry of Health and Social Protection ( <i>Ministerio de Salud y Protección Social</i> )
MT	Ministry of Transport ( <i>Ministerio de Transporte</i> )
MTFF	Medium-Term Fiscal Framework
MVCT	Ministry of Housing, Cities and Territories ( <i>Ministerio de Vivienda, Ciudades y Territorios</i> )
NDC	Nationally Determined Contribution
NDP	National Development Plan
HC	Human Capital
NC	Natural Capital
OECD	Organization for Economic Co-operation and Development
PA	Prior Action
PES	Payments for Environmental Services
PM	Particulate Matter
PFM	Public Financial Management
PGIRS	Solid Waste Integrated Management Plan ( <i>Plan de Gestión Integral de Residuos Sólidos</i> )
PISA	Policy on Integrated Environmental Health ( <i>Política Integral de Salud Ambiental</i> )
PNER	National Rural Electrification Plan ( <i>Plan Nacional de Electrificación Rural</i> )
PMSB	National Program for Monitoring and Follow-Up of Forest Ecosystems ( <i>Programa de Monitoreo y Seguimiento a los Bosques y Áreas Forestales</i> )
PPP	Public-private Partnership
REDD+	Reduced Emissions from Deforestation and Forest Degradation
REDI	Recent Economic Developments in Infrastructure
PRTR	Pollutants Release and Transfer Registry
ROE	Return on Equity
SCD	Systematic Country Diagnostic
SDA	District Environmental Secretariat ( <i>Secretaría Distrital de Ambiente</i> )
SDR	Special Drawing Rights
SETP	Public Transportation Strategic System ( <i>Sistema Estratégico de Transporte Público</i> )
SIN	National Interconnected System ( <i>Sistema Interconectado Nacional</i> )
SINERGIA	National System on Management and Evaluation of Results ( <i>Sistema Nacional de Gestión y Evaluación de Resultados</i> )
SIRH	Water Resources Information System ( <i>Sistema de Información del Recurso Hídrico</i> )
SITM	Integrated Mass Transport System ( <i>Sistema Integrado de Transporte Masivo</i> )
SITP	Integrated Public Transport System ( <i>Sistema Integrado de Transporte Público</i> )
SIVIGILA	National Public Health Monitoring System ( <i>Sistema Nacional de Vigilancia en Salud Pública</i> )
SITR	Integrated Regional Transport System ( <i>Sistema Integrado de Transporte Regional</i> )
SLCP	Short-lived Climate Pollutant
SMBC	Forest and Carbon Monitoring System ( <i>Sistema de Monitoreo de Bosques y Carbono</i> )

SNIF	National System of Forest Information ( <i>Sistema Nacional de Información Forestal</i> )
UNGRD	National Disaster Risk Management Unit ( <i>Unidad Nacional para la Gestión del Riesgo de Desastres</i> )
VAT	Value-Added Tax
WBG	World Bank Group
WHO	World Health Organization

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**COLOMBIA**  
**SECOND SUSTAINABLE DEVELOPMENT AND GREEN GROWTH**  
**DEVELOPMENT POLICY FINANCING**

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**SUMMARY OF PROPOSED LOAN AND PROGRAM  
COLOMBIA  
SECOND SUSTAINABLE DEVELOPMENT AND GREEN GROWTH  
DEVELOPMENT POLICY FINANCING**

Borrower	Republic of Colombia
Implementation Agencies	Ministry of Finance and Public Credit ( <i>Ministerio de Hacienda y Crédito Público, MHCP</i> ) and National Planning Department ( <i>Departamento Nacional de Planeación, DNP</i> )
Financing Data	<p>IBRD Flexible Loan. Commitment-linked with a variable spread and a bullet repayment on July 15, 2029, with a 11.5 years of Grace period and 12 years of final maturity, with all conversion options and Front-end-Fee paid by the borrower. Currency conversion is not available if the borrower exercises the CAT Bond option.</p> <p>Amount: US\$500 million.</p> <p>The Loan Agreement includes a Catastrophe Bond (a “CAT Bond”) option according to which, upon request, the Bank will intermediate a risk management transaction to transfer potential losses arising from natural disasters to the market, and the premium payments of a Catastrophe Risk Transaction will be charged as an additional fee or a spread added to the interest rate spread within the loan to facilitate the payment arrangements for the borrower (more details are provided in Annex 11).</p>
Operation Type	Second in a series of two single tranche programmatic Development Policy Financing (DPF) operations.
Pillars of the Operation and Program Development Objective(s)	The DPF’s development objective is to support a set of policy and institutional measures for (i) green growth in transport, energy, environmental health and natural resources; and, (ii) improving environmental quality by reducing PM 2.5 in the air, strengthening regulations for sanitation, and increasing capacity to reuse and dispose solid waste.
Results Indicators	<p><b>Pillar 1 – Establish a set of policy and institutional measures for green growth in transport, energy, environmental health, and natural resources.</b></p> <p>– GOC has submitted the Nationally Determined Contributions which includes targets for reduction of greenhouse gas emissions for 2030 and plans and actions for climate change adaptation  <i>[Baseline: No Target 2018: Yes]</i></p> <p>– Share of passenger journeys done in public and non- motorized transport in 8 cities (Barranquilla, Bucaramanga, Medellín, Bogotá-Soacha, Cali, Cartagena, Pasto, and Montería). (percent)  <i>[Baseline 2015: 27 percent; Target 2018: 33 percent]</i></p> <p>– FENOGÉ provisioned with a minimum funding (bn COP)  <i>[Baseline 2015: 0; Target 2018: 20]</i></p> <p>– People that benefit from non-conventional renewable energy projects commissioned in areas not covered by the national interconnected system.</p>

	<p><i>[Baseline 2015: 0; Target 2018: 8433]</i></p> <p>–Model (software and hardware) for the Registry of Emissions and —Transfer of Pollutants completed</p> <p><i>[Baseline 2015: No; Target 2018: Yes]</i></p> <p>– Forest land use change early-warning reports produced</p> <p><i>[Baseline 2016: 2 times per year; Target: 2018: 4 times per year]</i></p> <p>– Projects established under the Forest for Peace program or the Payment for Environmental Services (PES) system with the involvement of environmental authorities and territorial entities (number)</p> <p><i>[Baseline 2015: 0; Target 2018: 5]</i></p> <p><b>Pillar 2 – Improvement in the quality of life by reducing PM<sub>2.5</sub> in air; improving access to and the quality of drinking water and sanitation in rural areas; reducing water pollution; enhancing integrated solid waste management; and increasing capacity for solid waste reuse and disposal.</b></p> <p>– Reduction in the mean annual concentration of PM<sub>2.5</sub> in at least 7 prioritized monitoring stations in the cities of Medellín, Itagui, and Bogotá (percentage)</p> <p><i>[Baseline 2014: See footnote for details;<sup>1</sup></i>  <i>Target 2018: 5 percent reduction at each station]</i></p> <p>– People provided with access to improved water sources (corporate results indicator) (only in rural areas)</p> <p><i>[Baseline 2014: 7,937,296</i>  <i>Target 2018: 8,517,296]</i></p> <p>– Increase in the rate of treated wastewater from the hydrocarbon sector for reuse in agricultural activities (percentage)</p> <p>(percentage)</p> <p><i>[Baseline 2015: 1,075,000 Mm<sup>3</sup>/yr; Target 2018: 20 percent]</i></p> <p>–Municipalities disposing solid waste in sanitary landfills in compliance with the legal framework. (number)</p> <p><i>[Baseline 2015: 874; Target 2018: 916]</i></p> <p>–Share of recyclable solid waste not disposed in sanitary landfills. (percentage)</p> <p><i>[Baseline 2014: 17 percent; Target 2018: 20 percent]</i></p>
Overall Risk Rating	Moderate
Climate and disaster risks	<p>Are there short and long term climate and disaster risks relevant to the operation (as identified as part of the SORT environmental and social risk rating)? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>
Operation ID	P161642

<sup>1</sup> 2014 Baseline values are: Medellín – 29.9µg/m<sup>3</sup> (UNNV), 37.9µg/m<sup>3</sup> (MANT), 28.6µg/m<sup>3</sup> (UNFM); Bogota – 35.1µg/m<sup>3</sup> (Carvajal), 31.5µg/m<sup>3</sup> (Kennedy); Itagui – 32.0µg/m<sup>3</sup> (CJUS), 25.1µg/m<sup>3</sup> (CONC). Additional information is provided in Annex 9.



**IBRD PROGRAM DOCUMENT FOR A PROPOSED  
SECOND SUSTAINABLE DEVELOPMENT AND GREEN GROWTH DEVELOPMENT POLICY FINANCING  
TO THE REPUBLIC OF COLOMBIA**

**1. INTRODUCTION AND COUNTRY CONTEXT**

1. **Green growth is both necessary and desirable for Colombia.** Colombia's recent growth performance has been sustained by rising wealth and by a relatively important, albeit declining, stock of natural capital. Natural capital represents a significant share of Colombia's total wealth (10 percent, compared with 73 percent for human capital and 18 percent for produced capital),<sup>2</sup> but is under threat from air and water pollution in urban areas, forest and land degradation and from a growing vulnerability to natural disasters and climate change effects. The value of its renewable natural resource capital (forests, biodiversity, agricultural land) declined by 19 percent between 1995 and 2014.<sup>3</sup> This trend is not sustainable, as continuing degradation of the country's natural capital would threaten its medium- and long-term human, economic, and ecological health.

2. **Green growth is essential to balance growth with improved quality of life and reduced vulnerability to disasters and climate change.** Environmental health problems impose high physical and monetary costs in terms of human illness and death. In 2015, more than 13,000 direct deaths were directly attributable to urban air pollution, indoor air pollution from burning solid fuels for household cooking, and inadequate access to improved water sources and sanitation, with an estimated valuation of over COP 20.7 billion (2.6 percent of 2015 Gross Domestic Product (GDP)).<sup>4</sup> Colombia is highly exposed to climate induced extreme weather events that have the potential to exacerbate natural disaster risks. On average, more than 600 natural disasters are reported each year; some 64.7 percent of the population and 86.6 percent of assets are in areas exposed to two or more natural hazards.<sup>5</sup> Floods and landslides are the most frequent disasters that afflict cities and rural areas, and their frequency is expected to rise due to climate change effects and greater climate variability. The increase frequency and intensity of these natural disasters have the potential to cause urban, river and coastal floods, as well as landslides affecting the quality and quantity of reservoirs and wetlands, and changing the natural river courses. In 2007 combined natural resources losses and pollution damages were estimated to cost the equivalent of 3.7 percent of GDP. Damages caused by the La Niña event of 2010-2011 were estimated to have affected approximately three million people and reducing GDP by 2 percent. High vulnerability to natural disasters calls for a strengthened institutional approach to disaster risk management and prevention.

3. **The GoC has made green growth an overarching strategy of its National Development Plan (NDP) 2014-2018.** The Plan's five strategies -- (i) Strategic Competitiveness and Infrastructure; (ii) Social Mobility; (iii) Field Transformation; (iv) Security, Justice and Democracy for Peacebuilding; and (v) Good Governance - are framed by an overarching green growth strategy that meets the Constitutional commitment for economically, socially and environmentally sustainable growth. This green growth strategy has three objectives: (a) to advance sustainable growth compatible with climate change; (b) to protect and ensure the sustainable use of natural capital and improve environmental quality; and (c) to strengthen resilience by reducing vulnerability to natural disasters and climate change. The World Bank has accompanied the GoC's efforts to prepare and implement its green growth strategy.

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<sup>2</sup> World Bank, Forthcoming, Changing Wealth of Nations 2017.

<sup>3</sup> The other component of natural capital, Colombia's subsoil assets such as fossil fuels and minerals, increased in value during these years.

<sup>4</sup> Departamento Nacional de Planeación (DNP), Costos en Salud Asociados a la Degradación Ambiental en Colombia 2015.

<sup>5</sup> World Bank, *Hacia la paz sostenible, la erradicación de la pobreza y la prosperidad compartida. Notas de política: Colombia*. (Bogotá D. C., 2014).

4. **This DPF supports the implementation of Colombia's green growth strategy.** The Second Sustainable Development and Green Growth Development Policy Loan (DPF2) is the second in a series of two single-tranche programmatic DPF. The Program is organized around two pillars, namely: (i) establishment of a set of policy and institutional measures in transport, energy, environmental health and natural resources management; and (ii) improvements in the quality of life by reducing PM2.5 in air; improving access to and the quality of drinking water and sanitation in rural areas; and increasing capacity for solid waste reuse and disposal.

5. **This DPF complements and strengthens Colombia's planned accession to the OECD, its approval of the Paris Climate Agreement, and supports peace building to accelerate reforms that will improve quality of life and economic growth in newly opened regions and for all of Colombia's citizens.** This unique opportunity, coupled with elections in mid-2018 have led to the second and third DPFs proposed under the original Program being consolidated into one DPF. This second DPF is also strengthened by adding new prior actions on climate change, forests and sanitation compared to the original program design.

6. **The OECD accession process, which begun in May 2012, is both meaningful and challenging.** The DPF supports the GoC efforts to adhere to the OECD Declaration on Green Growth, and the OECD accession roadmap, which requires moving towards a low carbon economy (transport, energy and forests protection), improving chemicals risk management, and securing quality of life (air, water and soil pollution protection).

7. **The nation's pledge in July 2017 to abide by the Paris Agreement to reduce greenhouse gas emissions and adapt to climate change provides another impetus towards green growth.** The Paris Agreement could be a significant driver of green growth. For example, Colombia's push to cut emissions should benefit from the country's largely untapped non-conventional renewable energy potential, a sector this DPF supports. In addition, with support of this DPF the GoC would promote massive public transportation, non-motorized transportation, reduction of particulate matter (PM2.5) and a circular economy that minimizes solid waste disposal.

8. **The GoC recognizes that the conflict has affected different territories in a differentiated way.** While the DPF Program originally focused on urban issues, due to close dialogue with the GoC, DPF2 also supports the consolidation of peace efforts in rural areas. Significant additions include reforms to better monitor forest land use changes, to establish a Payment for Ecosystem Services Program, to support the Forests for Peace Program, and to strengthen the National Rural Electrification Plan. The peace process and green growth are compatible. For example, the country's strengthened legal and institutional framework for promoting non-conventional renewable energies will contribute to decreasing the chances of energy shortages and increasing productivity in rural areas.

9. **The DPF Program's support to the GoC's National Development Plan and green growth agenda reinforces the stability of the macroeconomic framework in the short and medium term.** By supporting green growth reforms in sectors such as transport (e.g. use of greener modes of transport), chemicals (e.g. promotion of risk management measures) and forestry (e.g. establishing state of the art monitoring systems), the DPF is supporting green technology development and green competitiveness. In addition, growth engines need to be managed sustainably and made more resilient to disasters and climate change to be able to support development. Annex 5 qualitatively assesses the potential macroeconomic impacts of the DPF in terms of (i) natural and human wealth; (ii) income and growth, and (iii) fiscal impacts, and finds the results largely positive.

## 2. MACROECONOMIC POLICY FRAMEWORK

### 2.1 Recent Economic Developments

10. **Colombia's robust macroeconomic policy framework has made possible gradual and orderly fiscal and external adjustments to the significant external shocks experienced since 2014.** The country experienced a significant terms of trade shock in 2014, estimated at nearly 4 percent of GDP, one of the largest in the region and its largest from an historical perspective. Yet the economy recorded one of the best performances in Latin America, a resilience underpinned by far-reaching macroeconomic and structural reforms undertaken in the last decade. Economic growth decelerated to 2 percent in 2016, down from 3.1 percent in 2015, compared with a 4.7 average annual growth in the 2003-2014 period. Private consumption supported growth, notwithstanding higher inflation and an uptick in unemployment to 9.2 percent in 2016. Meanwhile, heightened uncertainty and lower oil prices affected gross fixed capital formation, which declined nearly 4 percent in 2016 after many years of strong expansion. On the supply side, growth was led by financial services, commerce, and construction, partially compensating for the slump in the extractives sector. High frequency indicators point to continued subdued growth in the first quarter of 2017.

11. **The sharp deterioration in terms of trade led to a widening in the current account deficit in 2014-5, which has been gradually narrowing since 2016.** Exports declined by 40 percent between 2014 and 2016, largely because of the sharp decline in oil exports, down 71.7 percent over this period, and in other traditional exports such as coal, coffee, and ferronickel. The current account deficit widened to 6.4 percent of GDP by 2015, before narrowing to 4.3 percent in 2016. Consistent with the macroeconomic policy framework, the flexible exchange rate acted as the first line of defense cushioning the shock, with the Colombian peso (COP) depreciating close to 80 percent vis-à-vis the US dollar between mid-July 2014 and February 2016, before appreciating by 10.3 percent to COP 2934.23/US\$1.00 by late August 2017. While the sharp depreciation induced expenditure switching and a marked compression in imports, non-oil exports have been responding only gradually. The external demand shock coming from depressed import demand in key export markets partly explains the weaker-than-expected export response. Net Foreign Direct Investment (FDI) flows increased slightly, to 3.2 percent of GDP in 2016, even as weaker prospects for extractive investments caused FDI into this sector to decline to US\$1.6 billion, compared with US\$5.1 billion in 2013. The sale of the government's share in energy generation firm "*ISAGEN Energía Productiva*" in January 2016 attracted US\$3.4 billion in FDI, representing close to 29 percent of 2016 FDI inflows. International reserves remained broadly stable, ending the year 2016 at US\$46.7 billion, enough to cover more than 10 months of imports, and representing 3.2 times the outstanding external short-term debt.

12. **The Central Bank tightened monetary policy gradually to bring inflation towards the target range.** Inflation has remained above the targeted range since February 2015, reaching a peak at 8.96 percent in July 2016, as currency depreciation pass-through to domestic prices, drought-induced higher food prices, and the truck drivers' strike in mid-2016 contributed to higher consumer prices. Strongly committed to price stability, the Central Bank gradually raised its policy rate by 325 basis points between September 2015 and August 2016 to 7.75 percent. With consumer price inflation decelerating to 3.4 percent by July 2017, and remaining within the targeted range in August 2017, and with rising uncertainty in the external environment, the monetary authorities cut the policy rate by a cumulative 250 basis points to 5.25 percent by early September 2017, maintaining however an ex-ante slightly restrictive stance, as the deceleration in core inflation was more modest.

13. **The bank-dominated financial system appears to be sound and resilient despite the economic slowdown, but risks need to be monitored.** Banks are profitable, liquid, and well capitalized with soundness indicators broadly adequate. The capital adequacy ratio remains above the regulatory minimum and well above the Basel III requirements, at 17.6 percent. Banks' profitability is within historical averages, with return

on equity (ROE) declining marginally to 13 percent by early 2017. In line with monetary tightening and slower economic growth, domestic credit to the private sector growth decelerated to below 7.7 percent by February 2017, reaccelerating to 11.6 percent by May 2017, in line with previous year growth. Meanwhile non-performing loans (NPLs) have increased to 4.2 percent by June 2017, reflecting slower growth, with rising unemployment and slower real income growth contributing to the increase. NPLs were highest for consumer loans and micro-credits at 5.9 percent and 7.7 percent respectively, although these two combined represent only about a third of gross loans. In July 2016, Moody's revised to negative the outlook for Colombia's banks, following stress tests for five banks. Currency mismatches from dollar-denominated loans and unhedged borrowers are relatively modest in Colombia. However, the deterioration in recent years of corporate balance sheets represents a source of vulnerability, and financial conglomerates that are part of the economic conglomerates also face risks, including foreign exchange risk and country risk given an increase in cross-border operations.

**14. Expenditure containment measures were important throughout 2016 to maintain the path anchored by the Fiscal Rule<sup>6</sup>.** Central government revenues fell to 14.9 percent of GDP in 2016, as oil-related fiscal revenues<sup>7</sup> declined and as tax revenues contracted by an amount equal to nearly 1 percent of GDP. The government consolidation efforts concentrated on reducing general operating expenses and some capital spending to protect critical social spending. Meanwhile, the sharp currency depreciation caused interest payments to rise 0.3 percentage points of GDP to 2.9 percent of GDP. In this context, the central government fiscal deficit widened to 4 percent of GDP with a structural fiscal balance of 2.2 percent of GDP, within the path planned under the Fiscal Rule. The Fiscal Rule mandates a reduction of 3 percentage points of GDP in the central government fiscal deficit between 2016 and 2022, which is equivalent to cutting the structural deficit of the central government to 1 percent of GDP by 2022 (See Figure 1, Annex 6). Fiscal pressures from compensations and reparations under the Victims' Law, land restoration and other commitments related to the peace agreement with the FARC-EP require additional fiscal consolidation measures going forward. Meanwhile, the consolidated non-financial public sector<sup>8</sup> finance remained flat at 3.4 percent of GDP, which is in part explained by slow project execution by local governments.

**15. To continue to comply with the Fiscal Rule, create fiscal space for post-conflict related spending, and increase the efficiency of the tax system, Colombia approved a structural tax reform at the end of 2016.** The authorities are now implementing the structural tax reform to increase tax revenues to GDP, which are lower than the regional average (See Figure 2, Annex 6). The structural tax reform is comprised inter alia of an increase of 3 percentage points in the Value-Added Tax (VAT) to 19 percent, a far-reaching simplification of the tax code (primarily of income taxes), a modest reduction in exemptions, and reforms of selected excise and subnational taxes, including taxes on cigarettes and alcohol. The reform reduces the high corporate income tax burden, and allows VAT paid on capital goods purchases to be credited against the corporate income tax. It also contains measures to further incentivize formalization and to strengthen tax administration (including higher penalties for evasion and the adoption of the electronic invoice). The GoC estimated that the tax reform would generate 0.7 percentage points of GDP in tax revenues in 2017 and a cumulative 3.1 percentage points of GDP by 2022 (see Table 1). These measures are incorporated into the projections presented in Table 2 and Table 3.

<sup>6</sup> The Fiscal Rule, effective since 2012, targets the reduction in the structural fiscal deficit of the Central Government to 1 percent of GDP by 2022, with intermediate target of 1.9 percent of GDP in 2018.

<sup>7</sup> Oil-related revenues are comprised of incomes taxes, dividend payments from Ecopetrol for previous-year earnings.

<sup>8</sup> The consolidated non-financial public sector includes the central government, regional and local governments, social security, and public sector enterprises excluding Ecopetrol.

**Table 1. Expected additional revenues from 2016 Tax Reform**  
(selected measures in percent of GDP)

	2017	2018	2022
<b>Total</b>	<b>0.7</b>	<b>0.8</b>	<b>3.1</b>
VAT and consumption tax	0.7	0.8	0.9
Green taxes	0.1	0.1	0.1
Personal income tax	0.0	0.1	0.1
Corporate incomes tax	-0.1	-0.3	-0.1
Financial Transaction tax	0.0	0.0	0.9
Formalization Measures 1/	0.0	0.1	0.7
Anti-evasion measures	0.0	0.0	0.6

*Source: National authorities and Fund staff estimates. Includes revenue from taxation to non-profit entities; single tax for small taxpayers (monotributo)*

**Table 2. Colombia: Key Macroeconomic Indicators, 2012–2019**

					Prelim.	Proj.		
	2012	2013	2014	2015	2016	2017	2018	2019
<b>Real sector</b>								
	Annual percentage change, unless otherwise indicated							
Real GDP	4.0	4.9	4.4	3.1	2.0	2.0	3.1	3.4
Contributions:								
Consumption	3.9	3.7	3.5	2.9	1.6	1.7	2.4	2.7
Investment	1.3	1.8	2.7	0.5	-1.0	0.7	0.8	0.9
Net exports	-1.4	-0.7	-2.4	-0.2	1.6	-0.4	-0.1	-0.3
Imports	9.1	6.0	7.8	1.4	-6.2	3.1	3.3	4.0
Exports	6.0	5.3	-1.3	1.2	-0.9	2.8	4.6	5.0
Unemployment rate (nat. def.)	10.4	9.6	9.1	9.1	9.2			
GDP deflator	3.0	2.0	2.1	2.5	5.9	6.6	5.4	4.0
CPI (average)	3.2	2.0	2.9	5.0	7.5	4.8	4.1	3.8
<b>Fiscal accounts (Central Government)</b>								
Revenues	16.1	16.9	16.6	16.1	14.9	15.4	15.5	15.8
Expenditures	18.4	19.2	19.1	19.2	18.9	19.0	18.3	18.3
Fiscal balance (CG)	-2.3	-2.3	-2.4	-3.0	-4.0	-3.6	-2.8	-2.5
<b>Fiscal accounts (Non-Financial Public Sector)*</b>								
	Percent of GDP, unless otherwise indicated							
Revenues	28.4	28.1	27.7	26.4	24.9	25.4	25.6	26.2
Expenditures	28.3	29.0	29.4	29.8	28.3	28.6	27.9	28.0
Fiscal balance (NFPS)	0.1	-0.9	-1.8	-3.4	-3.4	-3.3	-2.3	-1.7
Gross public debt**	34.1	37.8	44.2	50.7	52.0	50.2	49.7	48.9
<b>Selected monetary accounts</b>								
	Annual percentage change, unless otherwise indicated							
Base money	10.0	15.3	7.0	18.4	2.5			
Credit to private sector	16.3	12.1	14.7	18.1	9.2			
Policy interest rate	4.3	3.3	4.5	5.8	7.5			
<b>External sector</b>								
	Percent of GDP, unless otherwise indicated							
Current account balance	-3.1	-3.2	-5.2	-6.4	-4.3	-3.8	-3.4	-3.2
Imports GNFS (% change, real)	9.1	6.0	7.8	1.4	-6.2	3.1	3.3	4.0
Exports GNFS (% change, real)	6.0	5.2	-1.3	1.2	-0.9	2.8	4.6	5.0
Foreign direct investment (net)	4.2	2.3	3.3	2.6	3.2	2.6	2.6	2.6
Gross reserves (US\$ billion, eop)	37.5	43.6	47.3	46.7	46.7			
In months of next year's imports	6.4	7.0	9.2	10.3	41.4			
As % of short-term external debt	363	362	331	321	318			
External debt	21.3	24.2	26.8	38.4	42.5			
Terms of trade (% change)	3.1	-2.0	-3.4	-18.8	-0.5			
Exchange rate (COP/US\$, average)	1,798	1,869	2,000	2,743	3,051			
<b>Memo items</b>								
Nominal GDP (COP billion, current)								
Oil production (hundred thousand barrels/day)	664,240	710,497	757,506	799,312	862,675	928,302	1,001,633	1,077,352

Oil price (Brent spot price, US\$/barrel)	944	1,010	990	1,006	886	865	861	857
*Excludes Ecopetrol								
**Includes Ecopetrol	112	109	99	51	43	55	60	61

**Table 3. Colombia: Key Fiscal Indicators for the Central Government, 2012-2019 (% of GDP)**

	2012	2013	2014	2015	2016	Proj. 2017	2018	2019
<b>Total revenues</b>	<b>16.1</b>	<b>16.9</b>	<b>16.6</b>	<b>16.1</b>	<b>14.9</b>	<b>15.8</b>	<b>15.7</b>	<b>16.0</b>
Tax revenues	14.3	14.2	14.3	14.5	13.6	14.5	14.4	14.6
Net income tax and profits	6.6	6.3	5.0	4.6	4.1	4.2	4.0	4.1
Value-added tax	5.5	4.9	5.1	5.3	5.1	5.9	6.1	6.0
International trade	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.5
Financial transactions tax	0.8	0.8	0.9	0.8	0.8	0.8	0.8	0.7
Stamp and other taxes	1.0	1.6	2.8	3.2	3.1	3.1	3.1	3.3
Non-tax revenues	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Capital revenues	1.6	2.5	2.2	1.5	1.2	1.3	1.2	1.3
o/w Ecopetrol dividends	1.1	1.9	1.4	0.5	0.3	0.5	0.7	0.9
<b>Total expenditures</b>	<b>18.4</b>	<b>19.2</b>	<b>19.1</b>	<b>19.2</b>	<b>18.9</b>	<b>19.6</b>	<b>19.1</b>	<b>18.9</b>
Current expenditures	14.5	14.6	14.8	14.9	15.5	15.6	15.7	15.6
Wages and salaries	2.1	2.1	2.3	2.3	2.3	2.9	3.1	3.0
Goods and services	0.8	0.9	0.8	0.8	0.7	0.8	0.8	0.9
Interest	2.4	2.2	2.2	2.6	2.9	2.8	2.9	2.7
Current transfers	8.7	9.2	9.4	9.2	9.6	9.2	9.0	9
Other	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Capital expenditures	3.9	4.5	4.3	4.4	3.3	4.0	3.4	3.3
Fixed capital formation	2.8	3.2	3.0	3.1	2.0	2.5	2.2	2.1
Capital transfers	1.1	1.3	1.3	1.3	1.3	1.55	1.2	1.2
Primary balance	0.1	-0.1	-0.2	-0.5	-1.1	-1.0	-0.5	-0.2
<b>Overall fiscal balance</b>	<b>-2.3</b>	<b>-2.3</b>	<b>-2.4</b>	<b>-3.0</b>	<b>-4.0</b>	<b>-3.8</b>	<b>-3.4</b>	<b>-2.9</b>
Structural fiscal balance^	-2.4	-2.3	-2.3	-2.3	-2.2	-2.1	-1.9	-1.7
<b>Financing needs</b>	<b>6.5</b>	<b>5.7</b>	<b>7.1</b>	<b>8.5</b>	<b>8.3</b>	<b>7.0</b>	<b>6.8</b>	<b>6.2</b>
Overall fiscal balance	2.3	2.3	2.4	3.0	4.0	3.8	3.4	2.9
Amortizations	3.0	2.8	2.9	3.2	1.9	1.9	1.7	2.2
Other*	1.2	0.6	1.7	2.3	2.3	1.3	1.6	1.1
<b>Financing sources</b>	<b>6.5</b>	<b>5.7</b>	<b>7.1</b>	<b>8.5</b>	<b>8.1</b>	<b>7.0</b>	<b>6.8</b>	<b>6.2</b>
Domestic	3.8	4.2	4.6	3.8	4.5	3.6	4.1	
External	0.7	1.1	1.4	2.3	1.7	1.9	1.4	
Carryover and other	2.0	0.4	1.1	2.3	1.9	1.6	1.3	
<b>Memo items</b>								
Non-oil Central Government tax revenue	12.7	12.7	13.1	14.1	14.7	15.0	15.1	15.3
NFPS revenues	28.3	28.1	27.7	26.4	25.9	25.3	25.7	26.0
NFPS expenditure	28.3	29.0	29.4	29.8	28.3	28.3	27.9	27.8
Non-financial Public Sector (NFPS) balance	0.1	-0.9	-1.8	-3.4	-2.4	-3.1	-2.3	-1.8

\*Includes arrears, judicial claims, and savings.

**16. External debt has increased markedly in recent years, in part due to valuation effects and higher fiscal deficits.** External debt increased to 42.4 percent of GDP in 2016, from 37.9 percent of GDP the previous year, and is significantly higher than in the recent past. The external public sector debt increased by 2.5 percentage points of GDP to 25.2 percent of GDP explaining, to a large extent, the overall increase in the external debt burden, while the private sector external debt increased by 2 percentage points of GDP in 2016 (Figure 3, Annex 6). Gross international reserves provide an important buffer, representing more than 180 percent of the short-term external debt plus the current account deficit, and 9.8 months of prospective GNFS imports as of end-August 2017. Gross public debt increased to above 50 percent of GDP in 2015 due to the large oil income shock and sharp peso depreciation, increasing further to 52 percent of GDP in 2016 (Figure 4, Annex 6).

## **2.2 Macroeconomic Outlook and Debt Sustainability**

**17. Growth in 2017 is expected to hover at the same level as in 2016 and to strengthen gradually over 2018-19 on the back of the gradual recovery of non-oil exports and oil prices and on the benefits of the fourth generation (4G) infrastructure program.** Economic growth is expected to remain below potential, around 2 percent in 2017, weighed down by further increases in unemployment domestically and still high external volatility. Output declined 0.2 percent in the first quarter of 2017, on a seasonally adjusted basis, as imports rose linked in part to a pick-up in investments, while exports and consumption remained relatively flat. On the supply side, weaker-than-expected oil production in the first part of 2017, and heavy rains and floods, have negatively affected economic expansion. Output recorded a broad-based contraction in the first quarter, but activity has been particularly weak in retail trade, mining, and construction with the bright spots coming from agriculture and social and business services. Growth is expected to strengthen gradually to 3.4 percent by 2019, supported by the 4G infrastructure program, strengthened non-traditional exports, and oil price recovery. It is likely to observe stronger private consumption, as inflation decelerates and formal employment rises in 2018-19, and external demand strengthens. Ongoing structural reforms will enhance competitiveness and foster diversification, thereby supporting the growth recovery over the medium term.

**18. The current account is expected to improve gradually, after a strong adjustment in 2016.** The current account deficit is expected to narrow further to below 4 percent of GDP, supported by a gradual recovery in non-oil exports, tourism revenues, and higher oil revenues despite a continued, albeit much slower decline in oil production, estimated at 3 percent for 2017. Furthermore, sluggish domestic demand and the lagged effects of the large currency depreciation are expected to limit the upside in imports. Gross external financing needs will remain sizeable this year, comprised primarily of private short and medium-term debt (Table 4). Net FDI and portfolio inflows will continue to finance the current account deficit, with the remainder being financed by external debt.

**19. Inflation will gradually converge to the upper bound of the targeted range.** Inflation is expected to remain near the upper limit of the targeted range of  $3 \pm 1$ pp in 2017, aided by prudent monetary policy, anchored near-term inflation expectations, and less depreciation, despite a one-off effect from the increase in the VAT rate by 3 percentage points in early 2017. Core inflation is expected to decline more gradually, as indexation appears to fuel inflation inertia. The Central Bank remains strongly committed to price stabilization.

**20. Further fiscal consolidation is likely necessary for complying with the Fiscal Rule while safeguarding the already low level of public capital investment and accommodating peace-related expenditures.** Complying with the Fiscal Rule requires cutting the central government fiscal deficit by roughly 3 percentage points of GDP (1.2 percentage points of GDP in structural terms) between 2016 and 2022. At the same time, higher pressures from post-conflict spending and the need to protect public investment to avoid affecting medium term growth require further fiscal space. Thus, additional fiscal consolidation measures over the

2018-2022 period are necessary, particularly on the expenditure side. Expenditure containment, rationalization, and efficiency-enhancing measures would be necessary in addition to the full implementation of the 2016 tax reform.

**Table 4. Balance of Payments Financing Requirements and Sources, 2013-2019 (US\$ million)**

	2013	2014	2015	2016	2017	2018	2019
<b>Financing requirements</b>	<b>36,030</b>	<b>45,612</b>	<b>42,884</b>	<b>36,191</b>	<b>36,889</b>	<b>32,697</b>	<b>31,522</b>
Current account deficit	12,501	19,611	18,642	12,236	11,863	11,728	9,544
External debt amortization	16,582	21,564	23,827	23,790	24,992	20,640	22,033
Medium and long term	6,272	9,591	9,586	9,162	11,208	7,346	8,813
Short term	10,310	11,973	14,240	14,628	13,784	13,294	13,220
Gross reserve accumulation	6,946	4,437	415	165	33	329	-55
<b>Financing sources</b>	<b>35,854</b>	<b>45,612</b>	<b>42,884</b>	<b>36,191</b>	<b>36,889</b>	<b>32,697</b>	<b>31,522</b>
FDI (net)	8,557	12,426	7,514	9,076	7,837	8,075	8,271
o/w inward (net)	16,209	16,163	11,732	13,593	10,393	10,494	11,056
External debt disbursements	29,173	31,190	32,854	30,347	29,659	27,379	25,711
Medium and long term	17,200	16,950	18,226	16,563	16,365	14,159	14,183
Short term	11,973	14,240	14,628	13,784	13,294	13,220	11,527
Other capital flows (net)	-1,876	1,997	2,516	-3,232	-607	-2,757	-2,460

21. **The public debt sustainability analysis indicates that non-financial public debt will stabilize in 2017 and begin a downward path thereafter in the baseline scenario.** In the baseline scenario, the public-debt to GDP ratio will decline to close to 50 percent of GDP in 2017, declining further to below 45 percent of GDP by 2022. Over the projection horizon, primary deficits are expected to add 5 percentage points to the public debt ratio, the real interest rate between 1.3-1.8 percentage points annually, while growth will lessen public debt burden by between 1.1 and 1.8 percentage points annually. With more than 52 percent of the public debt denominated in local currency and a large part contracted at fixed interest rates, depreciation and interest rate shocks do not have a significant impact on the debt trajectory over the short to medium term. Slower than expected economic growth in the short run would push public debt levels up to close to 60 percent of GDP, while the combined macro-financial shock<sup>9</sup> would cause public debt to rise to above 65 percent of GDP by 2018, before declining by 2022. The analysis suggests that the public debt ratio is resilient to the shocks considered and expected to remain sustainable over the projection horizon, falling below 50 percent of GDP by 2022 (Figure 5, Annex 6).

22. **The Colombian economy faces relatively balanced external and domestic risks.** On the external front, uncertainties related to the policy mix of major advanced economies could result in disruptive trade and capital flows to emerging economies, including Colombia, affecting economic sentiment and growth outturns. A faster-than-expected deceleration in the growth of emerging economies, particularly in China, or failure by OPEC members to comply with production cuts, would put downward pressure on commodity prices including oil, negatively affecting Colombia's oil export revenues. A larger-than-expected decline in oil production and a tepid response from non-oil exports would negatively affect the current account. Colombia continues to be vulnerable to such disruptions given its still important gross external financing needs over the short term, and a change in investors' sentiment could result in lower FDI and/or portfolio inflows. As investors reassess risks in an increasingly uncertain global environment, borrowing costs could rise. On the domestic front, the pace of the implementation of the peace agreement represents the main source of risks, both to the upside and to the downside. Faster implementation could result in a boost to domestic demand

<sup>9</sup> The combined macro-financial shock entails interest rate shock, depreciation shock, and lower growth.



and faster growth, but also more back-loaded fiscal consolidation. Delays in the implementation of important structural reforms, including the December 29, 2016 tax reform, and reforms to bolster productivity and competitiveness, could undermine growth prospects over the medium term. Moreover, failure to comply with the Fiscal Rule would have important negative effects on investors' confidence.

**23. Colombia has built important macroeconomic buffers that mitigate to some extent these risks and has a strong record of prudent macroeconomic management.** The macroeconomic policy framework remains sustainable and has been further strengthened by the approval of the structural tax reform. The macroeconomic policy framework is adequate for the proposed operation.

## **2.3 IMF Relations**

**24. On June 5, 2017, the IMF Board affirmed Colombia's continued qualification for the precautionary Flexible Credit Line (FCL) facility.** This is an extension of the 2016 arrangement, which replaced the 2015 FCL, cancelled ahead of its expiration to accommodate higher access in the face of increased global risk.<sup>10</sup> The two-year Special Drawing Rights (SDR) 8.18 billion FCL (equivalent to about US\$11.35 billion) is a precautionary measure used by the GoC. The FCL arrangement will support the authorities' efforts to complete the adjustment to the oil shock and will serve as an additional buffer against global and regional shocks. The IMF Board's review concluded that Colombia has a track record of very strong policy and institutional frameworks, and that the authorities are firmly committed to undertaking further initiatives to strengthen the resilience of the economy and boost competitiveness and growth. This view was also reflected in the May 2017 Article IV staff report, which acknowledges the role of the Government's monetary and fiscal tightening efforts, the soundness of the financial system, and the resilience of corporate and household balance sheets in the smooth adjustment, while also recognizing the downside risks to the outlook. The authorities said they intend to reduce access in possible requests for subsequent FCL arrangements, to the extent that the reduction of the global risks affecting Colombia allow it.

## **3. THE GOVERNMENT'S PROGRAM**

**25. The GoC is implementing an ambitious reform program that makes green growth a central element of the NDP 2014–2018 titled 'Everyone for a New Country'.<sup>11</sup>** The NDP was developed based on a multi-sectoral and inter-regional dialogue that is aligned with Colombia's accession process to the OECD. The NDP's approach to green growth calls for achieving three objectives: (i) to advance sustainable growth compatible with climate; (ii) to protect and ensure the sustainable use of natural capital and improve environmental quality; and (iii) to strengthen resilience by reducing vulnerability to natural disasters and climate change. Implementing this approach has required integrating environmental considerations in key sector policies and enhancing the efficiency of production activities. Recognizing that policies in themselves are not sufficient to ensure green growth outcomes, but that they need to be complemented with investments in physical resources, notably infrastructure, and human resources, GoC estimated the total investments required to implement sector reforms with environmental targets at US\$3.5 billion, and to reduce vulnerability to natural disasters and climate change at US\$2 billion.

**26. Implementation of the NDP has been strong and the National Planning Department (*Departamento Nacional de Planeación, DNP*) estimated an achievement rate of 62 percent of the green growth targets for 2016.** Under objective 1, key achievements include, among others, the fact that 557 thousand vehicles were using alternative sources of fuel (92 percent of the NDP target); 41 thousand new users were covered

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<sup>10</sup> Colombia has had access to FCL arrangements since 2009, renewed every 2 years.

<sup>11</sup> The NDP 2014–2018 is available at <https://www.dnp.gov.co/Plan-Nacional-de-Desarrollo/Paginas/Que-es-el-Plan-Nacional-de-Desarrollo.aspx> Last visit to this site October 8, 2017.

by electric energy services (179 percent of the NDP target); electricity generation installed capacity from non-conventional and renewable sources increased (11 percentage points above the NDP target); and the average age of heavy load transport vehicles was reduced from 19 to 18 years. Under objective 2, key achievements, among others, include the fact that land under restoration processes increased from 400,021 to 477,538 hectares between 2014 and 2016 (29.2 percentage points above the target for the period and 37 percent of the NDP target); significant progress was made in the implementation of the National Strategy for Reduction of Emissions from Deforestation and Forest Degradation (REDD+) and the Amazon Vision initiative; new watershed management plans were formulated (100 percent of the NDP target); and 27 territorial entities included climate change criteria in their territorial planning instruments (19 percentage points above the target for 2016). In addition, 8,517, 296 persons have access to potable water in rural areas (96.7 percent of the NDP target). Finally, under objective 3, key achievements include the fact that a National Plan for Disaster Risk Management was published; technical assistance on risk management was provided to 26 municipal councils (100 percent of the NDP target); monitoring stations increased by 1053 units to improve information availability about natural disasters; and a Climate Change Plan for Seaports was formulated.<sup>12</sup>

**27. The GoC's program is gaining depth and is setting the stage for a long-term policy on green growth, through the Green Growth Mission.** The 2014-2018 NDP projects to expand the green growth agenda as signaled by the launch in February 2017 of a Green Growth Mission<sup>13</sup> that is preparing the analytical underpinnings of a green growth policy to 2030. The mission includes the following thematic axes: (i) efficient use of resources (water, soil, energy, materials and waste); (ii) new economic opportunities (energy transition, forest economy, bioeconomy); (iii) demand and supply of labor (labor productivity, formalization of the economy); (iv) science, technology and innovation; and (v) harmonization of economic instruments. The World Bank is supporting this effort not only through this DPF Program but also through technical assistance to the Green Growth Mission, made possible by the financing of the Korean Green Growth Trust Fund. Adoption of the new policy is expected by May 2018.

#### **4. THE PROPOSED OPERATION**

##### **4.1 Link to Government Program and Operation Description**

**28. Through this DPF, the World Bank is accompanying the GoC in its efforts to deepen and accelerate implementation of structural reforms in key areas for green growth.** The DPF's development objective is to support a set of policy and institutional measures for (i) green growth in transport, energy, environmental health and natural resources; and, (ii) improving environmental quality by reducing PM 2.5 in the air, strengthening regulations for sanitation, and increasing capacity to reuse and dispose solid waste.

**29. The delivery of the program has been accelerated in line with the National Development Plan's timetable, resulting in the consolidation of the DPF series from three to two operations.** Furthermore, in light of the 2018 national elections, consolidating the series would allow the Ba and the next administration to launch a new SCD/CPF cycle less constrained by prior commitments. In addition, the accelerated speed of

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<sup>12</sup> Data from "Sistema Nacional de Gestión y Evaluación de Resultados (SINERGIA) Seguimiento": <http://sinergiapp.dnp.gov.co/#HomeSeguimiento> accessed on 8/29/17.

<sup>13</sup> The Green Growth Mission is an initiative led by the National Planning Department (DNP) which seeks to define inputs and guidelines for public policy to orient Colombia's economic development to green growth. The mission will produce the technical basis for the formulation of a long term Green Growth policy, which is a goal of the NDP 2014-2018.

the peace process, the OECD accession process, and the Paris climate change negotiations together created opportunities to consolidate the DPF series.

**30. The DPF series has a complementary set of actions to enhance living, working and equity conditions in rural areas and encourage the development of a low carbon and cleaner economy.** Prior actions on the approval of the Paris Agreement (PA1), on risk management of chemicals (PA4) on rural electrification (PA3), on forest protection (PA5), and on drinking water and sanitation (PA7) have been included in the operation. Some of these additions strengthen the earlier agreed prior actions and also contribute directly to the peace process. For example, the Forest for Peace program (PA5), the regulation for payment of environmental services (PA5), the National Rural Electrification Plan (PA3) and the promotion of appropriate drinking water and sanitation in rural and remote areas (PA7) would create work opportunities and enhanced living conditions for former FARC-EP members remaining in rural areas. In addition, the approval of the Paris Agreement (PA1), and policy action on the risk management of chemical substances (PA4) complement policy actions on waste management (PA8) and reductions of GHGs (PA2 and PA3) for a low carbon and cleaner economy that is gradually aligned to OECD standards. Finally, a policy track on disaster risk management was dropped because it could not be brought forward from the third DPF to the second DPF. Annex 10 presents the adjustments in detail.

**31. This DPF builds on a solid and diverse body of analytical and technical work conducted by the Bank, the GoC, and other financial and technical partners over the last decade.** The Bank has accompanied the GoC in conducting an in-depth analysis of the broad range of existing research and reviews. The design of this DPF has benefited from a growing knowledge base on environmental sustainability and green growth, including the Policy Note on Environmental Sustainability/Green Growth in Colombia (P147717). Annex 7 lists the key analytical underpinnings by prior action.

**32. The design of this operation builds on lessons and good practices from the first DPF, previous Bank-supported DPFs in Colombia and globally.** Key lessons include the following:

(i) *Political commitment to DPF reform programs can often be strengthened by a government's active participation in analytical work that support the reform objectives, extensive consultations with public and private stakeholders and by a deliberate effort to integrate the DPF reform programs into national development plans.* The significant involvement of the DNP and the sectors in the NDP 2014-2018 has provided strong client ownership of the green growth strategy and a logical and consistent chain from policy actions through the results indicators and the DPF's development objective.

(ii) *Broad and complex reforms such as those involved in the green growth strategy could be more effective if they focus on the incentives at the national level for reform implementation at the subnational level.* Colombia's national and subnational government structure illustrate the difficulties for policy implementation when subnational administrations do not report to the national level. For example, implementation of massive public transportation could be constrained by local vested interests that control low capacity and outdated vehicles for public transportation. In this political context, incentives that create an enabling environment could enhance policy implementation effectiveness. For example, access to specialized funds or national resources offers territorial administrations additional funds to address local needs such as potable water, public transportation or energy in rural areas, if these resources are consistent with implementation of national policies. However, because there is a risk that special funds could indirectly promote fragmentation and poor coordination of public investments, governance of special funds should prevent its capture by special interests and ensure that their investment policies are aligned with national public investment priorities.

(iii) *Programmatic series offer many advantages, including the ability to support reform implementation in the medium term and to create enabling conditions for longer-term government commitments to reforms.* The green growth strategy, launched by the GoC, not only has involved an ambitious green growth agenda

through improving natural resource use and environmental quality over a four-year period but it has also been the first step towards the preparation of a long term green growth policy for Colombia.

## 4.2 Prior Actions, Results and Analytical Underpinnings

33. **The selection of prior actions included in the Policy and Results Matrix (Annex 1) reflects the GoC's commitment to deliver a cohesive program of policy and institutional actions and the Bank's acknowledgement of the significance of this program for the sustainable development Colombia.** This operation promotes green growth through two complementary pillars. Pillar 1 focuses on key sectors to reduce pollution, mitigate and adapt to climate change, improve environmental health, and conserve forests. These benefits result from efficiency gains in transport, power generation, chemicals management and forestry and, therefore, promote growth. In addition, acknowledging the growth benefits from a healthier population, Pillar 2 focuses on quality of life gains through reducing air, water and soil pollution. Pillars 1 and 2 reinforce each other because improved sector efficiency is reinforced by greater productivity of labor (reductions in morbidity and mortality due to less pollution) and natural capital (reductions in natural resource depletion per unit of output).

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**Pillar 1: Establish a set of policy and institutional measures for green growth in transport, energy, environmental health and natural resources.**

### ***Enhancement of the climate change policy framework***

34. **Although the contribution of greenhouse gas emissions of Colombia is low in absolute terms in comparison to other countries, impacts of climate change on the economy could be significant.** In 2010 greenhouse gas emissions were estimated at 224 million tons, which represents only 0.46 percent of the global emissions. However, Colombia is vulnerable to climate change impacts. For example, the climate variability brought by La Niña phenomenon between 2010-2011 caused damages of approximately US\$ 6 billion that affected 3.2 million people, flooded 3.5 million hectares and damaged 845 main and secondary roads.<sup>14</sup> The DNP estimates that climate change would annually reduce GDP by 0.5 percent. Impacts would be heterogeneous among sectors and regions. Losses in agriculture yields may increase to 7.4 percent and families may reduce consumption by 2.9 percent per year.<sup>15</sup> Power generation would also be affected due to changes in rainfall and temperature affecting river basins where hydroelectric plants are located.

35. **The Paris Agreement on Climate Change<sup>16</sup> reinforces and boosts the efforts of the GoC in climate change mitigation and adaptation.** Colombia's Intended Nationally Determined Contributions (INDC) covers specific targets on reductions of GHGs emissions; adaptation plans and actions to climate change; and means of implementation to reach these targets. These elements were initially established in the overarching green growth strategy of the NDP 2014-2018.

**DPF 2 – Prior Action 1:** *The GoC, through its Legislative branch, has approved the Paris Agreement, which establishes the legal framework for international cooperation on climate change, including, inter alia: (i) the adoption every five years of progressive national targets to reduce greenhouse gas emissions; (ii) the option to engage in cooperative approaches to use internationally transferred mitigation outcomes to achieve national targets; and (iii) enhancing action on adaptation through sharing information and good practices,*

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<sup>14</sup> DNP-Inter-American Development Bank- Economic Commission for Latin America and the Caribbean. 2011. "Valoración de daños y pérdidas por la ola invernal 2010-2011 ("La Niña") en Colombia."

<sup>15</sup> <http://www4.unfccc.int/submissions/INDC/Published%20Documents/Colombia/1/INDC%20Colombia.pdf>

<sup>16</sup> Approved on July 14, 2017 by Law 1844.

*improving scientific knowledge on climate and early warning systems, and periodically updating a national communication on climate adaptation.*

**36. Expected Program Results.** Following the approval of the Paris Agreement, the GoC will submit a Nationally Determined Contributions (NDCs) which will include targets for reduction of greenhouse emissions for 2030 and plans and actions for climate change adaptation. [Baseline 2016: No. Target 2018: Yes].

### **Transport**

**37. Increased motorization and vehicle-use intensity make traffic congestion, road safety, and pollution more prevalent.** The transport sector accounts for 12 percent of Colombia's CO<sub>2</sub> emissions. Because of urbanization and the accelerated growth of motorization, Colombia's vehicle fleet has nearly tripled between 1990–2013, increasing from 3 million to 9.7 million vehicles. The use of private vehicles has increased from 18 percent to 29 percent during the 2002–12 period. The share of motorcycles in Colombia's vehicle fleet has grown dramatically, exceeding that of private cars, to more than 45 percent of the total vehicle fleet.<sup>17</sup> If current trends continue, Colombia will see a threefold increase by 2030. CO<sub>2</sub> emissions from transport could increase from 24.2 million tons in 2012 to 46 million tons in 2040.<sup>18</sup> In addition, road fatalities and respiratory diseases associated with increased air pollution have a disproportionate effect on the poor and most vulnerable. In 2016, pedestrians accounted for 25.5 percent of those killed in road accidents, which is the leading cause of death among young children (5–14 year-old cohort).<sup>19</sup> The health costs associated with urban air pollution were equivalent to an estimated 1.93 percent of GDP in 2015.<sup>20</sup> Approximately 5,000 premature deaths and 65 million Disability Adjusted Life-Years (DALYs) are related to urban air pollution each year.<sup>21</sup>

**38. In this context, the GoC has prioritized reforms aimed at sustainable transport solutions that benefit health (from improved air quality), reduce accidents, increase access to transport for low-income groups, improve public transport, and foster low carbon development.** Under the mandate of the NDP Law and the support provided by DPF1, the GoC promoted efficient urban transport in metropolitan and regional areas and discouraged motorization and private car use, while promoting non-motorized modes of transport. In addition, the Law entitled territorial entities to establish new funding resources for public transportation systems and infrastructure for non-motorized transportation.

**39. Complementing these measures and supported by DPF2, the GoC has introduced incentives for the use of bicycles, along with promoting public mass transportation and setting policy guidelines for the co-financing of public mass transportation systems.** Because Colombia has a large potential for the increased use of bicycles, the GoC established that users of the Integrated Mass Transport System (*Sistema Integrado de Transporte Masivo, SITM*), Integrated Public Transport System (*Sistema Integrado de Transporte Público, SITP*), Public Transportation Strategic System (SETP), and Integrated Regional Transport System (*Sistema Integrado de Transporte Regional, SITR*) will be awarded a free public transit ticket for every 30 times they commute via bicycle. Law 1811 establishes that public servants who commute 30 times to their offices, by bicycle, will also benefit with a half-day of paid leave. In addition, in a two-year period, entities responsible for SITM, SITP, SETP and SITR should build safe and adequate facilities for parking bicycles.<sup>22</sup> For enhancing the ability of territorial entities to finance public mass transportation systems, policy criteria for the eligibility

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<sup>17</sup> Colombian MT, *El Transporte en Cifras* (2013).

<sup>18</sup> Bjorn Larsen and Skjelvik, *Environmental Health in Colombia: An Economic Assessment of Health Effects and their Costs*. (Consultant's report prepared for the World Bank, 2014)

<sup>19</sup> Instituto Nacional de Medicina Legal y Ciencias Forenses.

<sup>20</sup> DNP, *Costos en Salud Asociados a la Degradación Ambiental en Colombia* 2015.

<sup>21</sup> Elena Golub et al., *Environmental Health Costs in Colombia. The Changes from 2002 to 2010* (World Bank, 2014).

<sup>22</sup> Law 1811 (Ley Pro bici), October 21, 2016.

of projects to be co-financed by the GoC is defined in CONPES 3882, which also applies these criteria to the mobility policy of the region Bogota-Cundinamarca and the SITM of Soacha, phases II and III.

40. **Sustainable transportation and low carbon development are also promoted by regulating the registration and the technical and safety inspections of motorcycles, three-wheeled motorcycles and quad-trucks.** Integrated into the massive transportation systems, motorcycles, three-wheeled motorcycles and quad-trucks can provide public transportation for the first and last sections of a commuting trip. However, this service is usually provided informally, involving safety and pollution risks. Regulating this service will have a dual benefit. The formation of companies or cooperatives able to enforce better safety and regular vehicle maintenance would be encouraged. Users of transport services will be better protected and served by the control exercised by the transport authorities.

**DPF 2 - Prior Action 2:** *The GoC has established a regulatory framework for the promotion of clean energy transportation which, inter alia, (i) defines incentives for the use of bicycles and for increasing the number of trips using bicycles; (ii) regulates the registry, and technical and safety inspections applicable to motorcycles, three-wheeled motorcycles and quad-trucks; and (iii) sets policy guidelines for the co-financing by the GoC to local public transport investments.*

41. **Expected Program Results.** Sustainable transport mode usage defined as the percentage of passenger journeys using public and non-motorized transport in the cities of Barranquilla, Bucaramanga, Medellin, Bogotá-Soacha, Cali, Cartagena, Pasto, and Monteria is expected to increase. [Baseline 2015: 27 percent. Target 2018: 33 percent].

### **Non-Conventional Energy**

42. **Green growth in Colombia requires increasing the contribution of non-conventional renewable energies in its energy matrix.** Almost 78 percent and 22 percent of energy consumption in Colombia originates in fossil fuels and renewable energies, respectively. In 2014, hydropower provided between 70 and 80 percent of electricity generation, while non-conventional renewable energies such as wind, and solar only generated 2.71 percent.<sup>23</sup> To reduce the vulnerability to climate phenomena and the effects of climate change, Colombia's objective is to increase the use of non-conventional and preferably renewable energies considering its natural advantages (i.e., solar, eolic, biomass, and geothermal). Moreover, the development of non-conventional energies in remote areas is essential for communities to access to basic services and development opportunities. Thus, this DPF supports the GoC's efforts to establish a National Rural Electrification Plan (*Plan Nacional de Electrificación Rural, PNER*) as a key component of the Integral Rural Reform that seeks a structural transformation of rural areas in Colombia. The PNER prioritizes the use of non-conventional and preferably renewable energies for the promotion and use of appropriate technological solutions for power generation.

43. **A key constraint for the development of non-conventional energy is the lack of funding.** In response to this situation, in 2014, the GoC established the Non-Conventional Energies and Energy Efficiency Fund (*Fondo de Energías No Convencionales y Gestión Eficiente de la Energía, FENOGE*) that supports programs, projects, and studies on non-conventional renewable energy and energy efficiency. FENOGE is unique because it can operate in rural and urban areas and receive and manage funds from the GoC, public and private institutions, and international and multilateral organizations. Supported by DPF1, the NDP law earmarks US\$0.40 to FENOGE of the US\$1.90 charge per kilowatt-hour dispatched to the Energy Wholesaler Bourse that established a permanent source of funding to FENOGE. Supported by DPF2, the GoC has designated FENOGE as a trust account, which enables FENOGE to receive resources from other sources. It

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<sup>23</sup> Unidad de Planeamiento Minero Energético, UPME, (2015), *Integración de las Energías Renovables no Convencionales en Colombia*, Convenio ATN/FM-12825-CO, Bogota.

also supported the defining of FENOGÉ's funding sources and the composition and functions of its Board of Directors. In addition, FENOGÉ's resources will fund energy programs and projects for low-low, low and middle-low income housing owners and small scale self-generation projects. While it is the Operational Manual that will set in detail the type of programs, projects and studies to be funded by FENOGÉ, the draft Manual focuses on non-conventional renewable energies.<sup>24</sup>

**DPF2 – Prior Action 3:** *The GoC has strengthened its legal and institutional framework for promoting non-conventional energies by (i) defining FENOGÉ as a stand-alone Trust Account (Fiducia mercantil - patrimonio autónomo); (ii) defining FENOGÉ's funding sources, eligibility criteria for allocating funds, the composition and functions of its Board of Directors and the criteria for selecting the fiduciary entity that will manage FENOGÉ's financial resources; and, (iii) setting criteria that prioritizes the use of non-conventional energies in the National Rural Electrification Plan.*

44. **Expected Program Results.** By 2018, FENOGÉ will be provisioned with a minimum cumulative funding [Baseline 2015: 0. Target 2018: COP 20 billion]. In addition, by 2018, the National Rural Electrification Plan will add new beneficiaries from non-conventional energy projects commissioned in areas not covered by the national interconnected system [Baseline 2015: 0. Target 2018: 8433].

### **Chemical Substances Risk Management**

45. **Capacity gaps in territorial administrations regarding their ability to implement national policies on environmental health have led the GoC to refocus its efforts on risk management of chemical substances.** The preparation of the Integrated Environmental Health Policy (*Política Integral de Salud Ambiental, PISA*) has been constrained by shortcomings in inter-sectoral coordination and limited clarity, regarding the roles of the national and territorial governments. This situation delayed the approval of the PISA and made the GoC reconsider its environmental health priorities by aligning them with the planned accession to the OECD. Thus, a critical component of environmental health policy is risk management along the life cycle of chemical substances to reduce morbidity and mortality due to chemical substance poisoning. In addition, risk management of chemical substances is consistent with the environmental and occupational health components of the proposed PISA and it is also linked to the green growth strategy of the NDP 2014-2018 that promotes a comprehensive management of chemical substances.

46. **The inadequate management of chemical substances poses a significant risk to health and the environment.** In the chemical substances sector more than 600 industries are represented, including fertilizers, plastics, synthetic rubber, basic chemical substances, and other chemical products. In 2015, including only the industrial group, the chemical substances sector was amongst the most dynamic industries, amounting to 7.1 percent of Colombia's manufacturing. However, also in 2015, more than 33,000 cases of poisoning were registered due to the inadequate handling and management of chemical substances.<sup>25</sup> The 2015 updated study on the National Profile of Chemical Substances in Colombia shows that current norms are too general and lack instruments for the control of chemical substances. Furthermore, regulations for designating liabilities, identification of dangers, risk assessment, registering incidents, developing contingency plans, and government control and monitoring are insufficient and inadequate.

47. **Gradually closing the legal, regulatory and procedural gaps that constrain effective chemical risk management requires a comprehensive strategy for chemicals risk management.** In line with OECD standards, the GoC has adopted three lines of action to strengthen risk management of chemical substances. First, the Program of Chemical Substances for Industrial Use supports the enhancement of the regulatory

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<sup>24</sup> ECONOLER, *Programa para la Promoción de FNCE- FENOGÉ, Ministerio de Minas y Energía, Manual de Operaciones*, September 2016.

<sup>25</sup> Departamento Administrativo Nacional de Estadística, *Encuesta Anual Manufacturera 2015*.

framework for the categorization of chemical substances, data validation and good laboratory practices, registry, and permitting. Second, the Major Accidents Prevention Program supports the identification of dangers and assessment of risks; the development of regulations to integrate risk prevention measures in industrial work safety procedures, contingency plans for industrial facilities and municipal plans; and, measures to enhance systems for monitoring, inspection and control. Third, the Plan supports development of instruments to enhance institutional, financial, and legal capacities for managing chemical substances and preventing major accidents.

**DPF2 – Prior Action 4:** *The GoC has adopted a risk management policy on chemical substances that establishes: (i) a program to manage chemical substances for industrial uses; (ii) a program to prevent major chemical accidents; and (iii) measures for strengthening risk management capacity of chemical substances.*

48. **Expected Program Results.** A model (software and hardware) for the Pollutants Release and Transfer Registry (PRTR), which is a web based public information system that provides data on the source, nature, quantity, and transfer of hazardous chemicals to the environment, will be completed. This means a developed PRTR ready to move to the pilot phase. [Baseline 2015: No. Target 2018: Yes]

### **Forest Management**

49. **Colombia's large forest estate holds unique biodiversity reserves and important carbon sinks, but faces major deforestation pressures.** Over half of the country area is covered by forests.<sup>26</sup> Since 1959, Colombian law has defined different management and protection regimes for natural forests, but until very recently Colombia did not have effective instruments to protect and manage forests. Increasing pressure from extensive cattle ranching, the expansion of the agricultural frontier, illegal logging, and other factors, have led to a gradual loss of 8 percent of the national forest cover since 1990, which represents an area of 6.25 million ha.<sup>27</sup> Deforestation accounts for 36 percent of Colombia's emissions in 2012. Colombia is one of 53 countries participating in the UN-REDD Program, and the National REDD+ Strategy is in the advanced stages of development. Colombia has also confirmed its commitment to establishing and scaling up low-carbon development models, with strategies, such as the "Low Deforestation Development Vision for the Colombia Amazon" (*Visión Amazonía*) and the Bio Carbon Fund in the Orinoquia region.

50. **In addition, the GoC has improved forests information and monitoring systems to increase technical capacities for forest management.** Forest information, when systematically and periodically collected, enables implementation of policies, detection of deforestation pressures, and monitoring and verification. The Meteorological Institute of Hydrology, Meteorology, and Environmental Studies (*Instituto de Hidrología, Meteorología y Estudios Ambientales, IDEAM*) has structured a National Program for Monitoring and Follow-Up of Forest Ecosystems (*Programa de Monitoreo y Seguimiento a los Bosques y Áreas Forestales, PMSB*) to study, update, and model forest supply and demand as a way of informing decision makers. With the aim of improving information and monitoring systems under the framework of the PMSB, the GoC has, with the support of this DPF, created the National Forestry Information System (*Sistema Nacional de Información Forestal, SNIF*); and regularized the National Forestry Inventory (*Inventario Forestal Nacional, IFN*); and the Forest and Carbon Monitoring System (*Sistema de Monitoreo de Bosques y Carbono, SMBC*). Together, these three tools form a solid system of forest monitoring that will inform planning and policy evaluation.

51. **Complementing these efforts, DPF2 supports the GoC's efforts to promote forest conservation and rural development in former conflict zones which enables the reintegration of former FARC-EP members in areas rich in natural resources and, therefore, contributes to peace in Colombia.** The GoC established the

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<sup>26</sup> 52.2 percent in 2015, MADS (2017). FCPF Mid-Term Project Report.

<sup>27</sup> Own estimates.



key elements of a payments for environmental services (PES) system, which include (i) the agents to be involved; (ii) the beneficiaries; (iii) the voluntary aspects for participating in a PES scheme; and (iv) the conditions for setting incentives which should be based on the opportunity cost of alternative productive uses of land. PES is an instrument that the national and local governments can use to carry out environmental management and promote development. With this purpose, MADS will establish specific technical, legal, institutional, and financial requirements for the formulation, design, and implementation of PES projects and the DNP will ensure availability of local and regional budgetary resources for financing PES projects. Because of the relevance of forest in territories affected by the former FARC-EP members, the GoC has also established the Forest for Peace program to integrate biodiversity conservation in production projects to benefit communities, and contribute to peace consolidation. The criteria to participate in the program defines the stakeholders that can present projects to MADS, and establishes means of implementation, including PES. Finally, the GoC has established the Intersectoral Commission for Deforestation Control and Comprehensive Management for Protecting Natural Forests to lead and coordinate actions among sectors, territorial entities, communities and civil society and recommend to the national government policies, plans and programs to control deforestation.

**DPF2 – Prior Action 5:** *The GoC has adopted measures to increase forests protection and improve forest management information and monitoring by: (i) establishing a system of PES; (ii) setting up the organization and functions of the National Information System of Forests (SNIF), the National Forests Inventory (IFN) and the Forests and Carbon Monitoring Systems; and (iii) establishing the Forests for Peace program and the Intersectoral Commission for Deforestation Control and Comprehensive Management for Protecting Natural Forests.*

**52. Expected Program Results.** Number of projects established under the Forests for Peace program and/or the PES system with the involvement of environmental authorities (CARs) and territorial entities implemented [Baseline 2016: 0. Target 2018: 5]. In addition, with the regularizing of SNIF and IFN, early-warning reports on forest cover per year will be increased [Baseline 2016: 2 times. Target 2018: 4 times].

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**Pillar 2: Improvement in the quality of life by reducing PM<sub>2.5</sub> in air; improving access to and the quality of drinking water and sanitation in rural areas; reducing water pollution; enhancing integrated solid waste management; and increasing capacity for solid waste reuse and disposal.**

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### **Air Pollution**

**53. Ambient air pollution continues to be a significant contributor to environmental degradation and health damages in Colombia.** The use of diesel in cargo transport represents a significant source of air emissions, including toxic substances, with adverse impacts on human health. Per data from 2015, urban air pollution resulted in 10,527 deaths and 67.8 million cases of sickness, equivalent to 1.93 percent of GDP in 2015.<sup>28</sup> The GoC has taken several steps over the years to reduce the concentration levels of air pollutants, including the prohibition to distribute, sell, consume and/or transport diesel with sulphur content more than 50 ppm. The GoC also consolidated regulations for reducing polluting air emissions from mobile sources. Supported by DPF1, the reform included the update of diesel quality parameters to permanently reduce aromatic substances, increase the cetane rating of diesel, and limit the content of polyaromatic substances.

**54. DPF2 supports the deepening of this reform by the approval of Ministerial Resolution 2254 that, upon publication, will update standards for criteria air pollutants in line with WHO standards.** This update

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<sup>28</sup> DNP, *Costos en Salud Asociados a la Degradación Ambiental en Colombia 2015*.

of the air quality regulation is a substantial step forward in the implementation of the policy for the Prevention and Control of Air Pollution (PPCCA). Among other things, the Resolution defines a path that progressively will establish more stringent annual permissible concentration levels for PM<sub>10</sub>, PM<sub>2.5</sub>, and SO<sub>2</sub>, starting in 2018 through 2030. Because standards setting is important but not sufficient for improving air quality, the Resolution also will establish (i) technical and institutional mechanisms for monitoring and control of criteria pollutants, non-conventional pollutants and short-lived climate pollutants (SLCPs); (ii) procedures for air-pollutant modeling to estimate concentration levels and predict their behavior; (iii) instruments to manage exceptional situations, early-warning systems, and air quality indices; and, (iv) requirements for the socialization and dissemination of air quality data and information. The Resolution has already been signed by the Minister of Environment and Sustainable Development and its publication is expected not later than December 31, 2017.<sup>29</sup>

**55. In addition, DPF2 supports increases in the use of biofuels to reduce the generation of air pollutants as PM 2.5 and black carbon.** The transport sector is the largest source of air pollution in urban areas in Colombia because of its use of hydrocarbon fuels. Efforts to control pollution from transport sources have been undertaken by the GoC and some of them were supported by DPF1. DPF2 continued supporting these efforts by promoting regulations that increase from 8 to 9 percent the use of biofuel in diesel and the setting up of more stringent parameters and requirements for the production and commercialization of ethanol to oxygenate gasoline. This will reduce emissions of CO, VOC and NO<sub>x</sub> by 0.5 percent, 5 percent and 7 percent, respectively.

**DPF 2 - Prior Action 6:** *The GoC has taken measures to strengthen air quality management by: (i) approving a resolution that, upon publication, will update outdoor air quality norms by setting new progressive maximum permissible levels (starting in 2018 through 2030) for “criteria pollutants” including PM<sub>2.5</sub>; (ii) increasing the biofuel component to 9 percent in diesel(B-9); and (iii) revising the parameters and requirements of ethanol in gasoline.*

**56. Expected Program Results.** The expected outcome of the program is the percentage reduction in the mean annual concentration of particulate matter (PM<sub>2.5</sub>) in at least seven prioritized monitoring stations in the cities of Medellín, Itagui, La Estrella, and Bogotá.<sup>30</sup> [Baseline 2014: See footnote for details.<sup>31</sup> Target 2018: 5 percent reduction at each station.]<sup>32</sup>

### **Water Quality and Sanitation**

**57. Untreated wastewater discharges generated by industrial sources and urban centers are a major and growing cause of deterioration in the quality of water resources in Colombia.** From 1979 to 2008, a GoC analysis found an increasing trend in the total volume of wastewater discharged from various industrial

<sup>29</sup> Prior to the publication of the MADS Resolution 2254, MADS is completing the preparation of a communication plan, which may include a public launching event of the Resolution.

<sup>30</sup> The specific monitoring stations in each city are listed in Annex 9.

<sup>31</sup> 2014 Baseline values are: Medellín – 29.9µg/m<sup>3</sup> (UNNV), 37.9µg/m<sup>3</sup> (MANT), 28.6µg/m<sup>3</sup> (UNFM); Bogotá – 35.1µg/m<sup>3</sup> (Carvajal), 31.5µg/m<sup>3</sup> (Kennedy); Itagui – 32.0µg/m<sup>3</sup> (CJUS), 25.1µg/m<sup>3</sup> (CONC). Additional information is provided in Annex 9.

<sup>32</sup> A study undertaken in mid-2017 to assess progress in this policy track showed conflicting trends in PM<sub>2.5</sub> concentration in Colombian cities: generally higher in the *Área Metropolitana del Valle de Aburrá* (AMVA), lower in Cali, and mixed in Bogotá. 2016 was one of the driest years on record for the Medellín area, with many forest fires. The higher average PM levels in the AMVA could be due to smoke from forest fires, or the dry conditions in general, or they could be due to increasing traffic due to a more dynamic economy. To reduce the effect of year-to-year variations and within-year variations on the achievement of the target, the slope of a linear regression over the five-year period from 2014 to 2018 will be considered rather than just the two data points at the beginning and end of the period.

activities.<sup>33</sup> Bogota, Antioquia, and Valle del Cauca are the largest contributors, accounting for 15.3 percent, 13 percent, and 9.87 percent, respectively, of the total volume generated. Most municipalities directly discharge untreated wastewater into water bodies within urban limits. In addition, over 50 percent of wastewater treatment systems do not operate properly or regularly. Forty percent of the principal water basins in the country are vulnerable to deterioration—with areas of major economic activity being most affected—due to receiving highly polluted wastewater discharges from point and diffuse sources. The growing specter of climate change impacts, notably low and variable flows, would further exacerbate the degradation of water resources.

**58. Moreover, inadequate water supply, sanitation, and hygiene impose a high economic burden and are an important cause of death and disease in Colombia.** Between 1993 and 2003, coverage of water supply and sewerage services increased significantly, from 79.7 percent to 86.1 percent and from 73.2 percent to 82 percent, respectively. The number of municipalities with wastewater treatment increased from 218 in 2002 to 355 in 2006. Notwithstanding this increase, total coverage is low—estimated at 32.3 percent of all the municipalities in the country. In 2015, the Water Quality Risk Index in urban areas was 9.58 percent while in the rural areas it reached 45.20 percent. The World Bank in 2013 estimated the annual health cost associated with inadequate water sanitation and hygiene at 0.24 percent of GDP. Underlying this high-risk level and health costs are the constraints in rural municipalities, small towns and remote communities to reach the efficiency, coverage and quality standards set by law, which were mostly developed for urban areas. Because of these constraints, informal suppliers or unregulated systems will fill the gap for drinking and sanitation services that has resulted in high costs in morbidity and mortality. To address these constraints, article 18 of the NDP 2014-2018 Law establishes that GoC can set differential schemes for the provision of water supply, sewage and sanitation services. This opened the way for supplying appropriate services, within their investment capacity, that satisfy minimum and gradually progressive requirements to protect people's health rather than be abided by unachievable stringent requirements.

**59. DPF 1 represented an important step in the GoC's efforts to reduce pollution of water bodies, by supporting the strengthening of rules and regulations related to the quality of wastewater discharges.** It established parameters, limits, and procedures for the discharge of treated wastewater originating from selected agricultural, industrial commercial, and service activities, with the objective of reducing the overall pollution of water bodies. The updated norms expanded the control of 49 productive, agricultural, industrial, commercial and service activities—in addition to the 24 activities that were regulated in eight economic sectors.

**60. DPF2 supports the setting of appropriate requirements to access sanitation and drinking water in rural and remote communities of Colombia.** For water supply, sewage and sanitation services, suppliers are required to (i) set a transition period to comply with the national water and sanitation quality standards while, in the meantime, they can implement temporary arrangements such as water supply using public taps or water trucks; and, (ii) ensure community participation in the definition of community arrangements for water supply or sanitation services. Health authorities will follow up results during the transition period to protect the health and wellbeing of the population. Further, the GoC has set the conditions for the formulation of appropriate solution projects when they are implemented and funded by public entities such as municipalities; and, establishes the conditions for accessing technical assistance and funding from the GoC to implement and run these projects.

**61. In addition, DPF2 supports the setting up of requirements for any potable water and sanitation projects that require financial support from the GoC.** Because of their size and complexity, potable water and sanitation projects involve significant investments that many times are beyond the financial capacity of territorial governments. This operation supports the setting of a governance system to assess territorial

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<sup>33</sup> Ministerio de Ambiente y Desarrollo Sostenible, *Memoria Técnica. Resolución No. 63* (Bogotá, 2015).

government projects that require financial support from the GoC. Amongst other requirements, this governance system would need to establish (i) a project technical committee, (ii) project eligibility criteria, (iii) a supervision mechanism and (iv) the procedures for project evaluation and funding. By facilitating access to financial resources, the GoC aims at unlocking the potential of urban and rural territorial entities to develop and implement potable water and sanitation projects.

**DPF2 – Prior Action 7:** *The GoC has established measures to improve access to, and quality of, service for potable water and sanitation in rural areas, and improve the formulation of water and sanitation investments by (i) regulating appropriate requirements for the provision of potable water and sanitation services; (ii) regulating appropriate solutions for domestic wastewater management; and (iii) issuing preparation guidelines for water and sanitation sector investments by entities that request financial support from the GoC.*

**62. Expected Program Results.** The GoC expects that with these reforms people provided with access to improved water sources (only in rural areas) will be increased [Baseline 2014: 7,937,296.<sup>34</sup>Target 2018: 8,517,296].

### **Integrated Solid Waste Management**

**63. Colombia's new approach to integrated solid waste management is centered on the notion of a circular economy that maximizes the reuse of waste.** Colombia's first solid waste management policy dates to 1997, when the Ministry of Environment (now MADS) developed the Integrated Solid Waste Management Policy, which established a management and waste disposal system, while reducing the quantity of hazardous waste production. However, the results of this policy have been limited because of its short-term approach, the lack of a system for monitoring and review, weak pollution control and insufficient coverage from sanitary landfills. The NDP 2014-2018 and its green growth strategy proposed reforming solid waste management policy with a long term and green growth approach. In the new policy, integrated solid waste management links environmental aspects to socioeconomic development through reducing waste generation, resource optimization, and improving energy potential.

**64. Although Colombia has made important strides in the collection and final disposal of solid waste, a significant amount of waste continues to be disposed in a manner that is harmful to the environment and human health.** In 2014, 13.8 million annual tons of urban and rural waste were generated, which comes out to 283 kilograms of solid waste per person. The national solid waste recollection coverage was 80 percent and urban solid waste recollection coverage was 97.8 percent. Even though important progress has been made in final waste disposal, the limitations are at the rural level. In 2009, there were 573 municipalities with final waste disposal sites, while in 2014 the municipalities with final waste disposal sites increased to 803 out of a total of 1122 municipalities. To increase the number of municipalities with final solid waste disposal, with support of DPF1 the GoC adopted a methodology to formulate, implement, evaluate, monitor, control, and update the Solid Waste Integrated Management Plan (*Plan de Gestión Integral de Residuos Sólidos, PGIRS*). In this context, as part of a gradual process towards establishing a circular economy, the GoC, with support of DPF2, has identified the need for updating operation standards for sanitary landfills and regulations for complementary solid waste treatment activities in line with the recommendations of the OECD.

**DPF2 – Prior Action 8:** *The GoC has (i) updated operation standards for sanitary landfills; and (ii) updated regulations for complementary solid waste treatment activities.*

**65. Expected Program Results.** These GoC's actions are essential to continue improving solid waste management. An indicator of these improvements will be the number of municipalities disposing solid waste in sanitary landfills in compliance with the legal framework [Baseline 2015: 874. Target 2018: 916].

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<sup>34</sup> Population covered in 2014 as per the annual target of the National Development Plan.

## **Solid Waste Reuse**

66. **Despite the progress that Colombia has made on solid waste disposal, reuse is still very low and most recycling workers face social exclusion.** While 91 percent of municipal solid waste is disposed in landfills or treatment plants, only 13 percent of total solid waste was recovered and reused in 2015. Of the 13 percent, only 7 percent - which is less than 1 percent of the total solid waste generated - was recovered and sold by self-employed recycling workers. Around 50,000 self-employed recycling workers, and the livelihoods of approximately 300,000 people, depended on this informal activity. Self-employed recycling workers are not only poor but are affected by uncertainty in accessing recyclables, price variability, police harassment, social discrimination, complex regulations, and lack of transparency in public bidding.<sup>35</sup> Only a small percentage of all municipalities currently incorporate some form of formal reuse in their solid waste management activities.

67. **Supported by DPF2 the GoC has approved and regulated the operational framework for the reuse of solid waste and the timeline for the compliance of waste pickers as formal suppliers in the reuse activity.**<sup>36</sup> Among other things, the framework defines mechanisms for recyclers to be remunerated by tariff, as soon as they register to the Superintendence of Public Utilities through a simplified process. The resources obtained through the payment of receipts and the sales of materials that are managed by the organizations of recyclers can enable them to acquire administrative and operational skills and dignify their work. Also, the resources may promote the development of infrastructure to encourage separation at source, and to facilitate the collection, transportation, classification, weighing, and formalization/social inclusion of recyclers, thereby supporting the social mobility of this vulnerable population. The organizations of waste pickers/recyclers should gradually formalize in the next five years to improve their administrative, operational, technical, and financial capacity for recycling. Finally, the regulation improves access to transfer stations. This likely will encourage solid waste reuse and alleviate a major constraint affecting recycling workers.

**DPF2 - Prior Action 9:** *The GoC has established measures to improve solid waste management by establishing the operational framework for the reuse of solid waste and the timeline for the compliance of waste pickers as formal suppliers in the reuse activity.*

68. **Expected Program Results.** These policy actions will increase the share of recyclable solid waste not disposed in sanitary landfills. [Baseline 2015: 17 percent. Target 2018: 20 percent]. This result, in combination with other actions, will improve the performance of existing sanitary landfills in the long term.

### **4.3 Link to CPF, other Bank Operations, and the World Bank Group Strategy**

69. **The proposed operation is closely aligned with the objectives of the World Bank Group's (WBG) Colombia Country Partnership Framework (CPF) FY2016-2021, discussed by the Executive Directors on April 7, 2016 (Report No. 101552-CO).** The CPF supports the NDP 2014-2018 through a portfolio of financial, knowledge, and convening services. This DPF contributes directly to Pillar 1 of the CPF (Fostering Balanced Territorial Development), as green growth and environmental sustainability are key dimensions for territorial development. More specifically, this DPF contributes to GoC's efforts of Theme 1 ("Towards a New Colombian

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<sup>35</sup> Angélica Acosta Táutiva y Rovitzon Ortiz Olaya, *Estudio de Monitoreo de la Economía Informal: Recicladoras y recicladores de Bogotá, Colombia* (Manchester, R.U.: WIEGO, 2013). <http://www.inclusivocities.org/wp-content/uploads/2014/03/IEMS-Bogota-City-Report-WP-spanish.pdf>, accessed January 15, 2017.

<sup>36</sup> Ministerial Decree 596 dated April 11 2016; Ministerial Resolution 276, dated April 29, 2016; and Ministerial Decree dated July 2017. Ministerial Decree 596 was jointly developed with representatives of more than 90 organizations of recyclers nationwide for nine months.

Countryside: Comprehensive Rural Reform”) by supporting peace building through rural electrification, PES and the Forests for Peace. These policy actions will assist in balancing uneven territorial development that is required for peace consolidation. This DPF also responds to the WBG Climate Change Action Plan (2016) specifically on themes related to resilience with low-carbon growth and is aligned to the WBG Forest Action Plan FY16-20 in the area of governance and institutions.

**70. This DPF complements a series of Bank DPF and investment operations in Colombia.** The Bank has been actively assisting the GoC with environmental enhancements (e.g. Río Bogotá Environmental Recuperation and Flood Control Project - P111479) and policy-based reform programs (e.g. First Territorial Development Policy Loan - P158520 and the First Colombia Fiscal and Growth DPF1 - P158739) that in combination with this operation provide the ground for the implementation of the current NDP. The Forest Carbon Partnership Facility Readiness Grant (P120899) and the Forest Conservation and Sustainability in the Heart of the Colombian Amazon (P144271) is part of the strong portfolio that supports a set of key issues on the environmental and territorial development agenda. In addition, the Second Colombia Fiscal and Growth DPF2 (P162858), is supporting green tax reforms that are closely complementary to the reforms supported by the current operation

**71. World Bank support to the Green Growth Mission dovetails with and provides for longer-term support to the agenda set forth at the beginning of this programmatic DPF.** Since the beginning of 2017 the World Bank has been supporting the GoC with a program of technical assistance under the Green Growth and Sustainable Development Programmatic Approach (P161334). As part of the Programmatic Approach, grant funding from the Korean Green Growth Trust Fund is providing resources to finance policy and diagnostic studies on renewable energy, circular economy, bio economy and the use of economic instruments for green growth. This funding complements support from other partners such as the French Development Agency (*Agence Française de Développement AFD*), the German Development Bank (*Kreditgesellschaft für Wiederaufbau, KfW*) and the Global Green Growth Institute which are financing studies on land and water productivity, green jobs and technology development, among others.

#### **4.4 Consultations, Collaboration with Development Partners**

**72. The policy and institutional program supported by the DPF2 has undergone extensive consultations and has benefited from a participatory process associated with the NDP 2014–2018.** The preparation and implementation process of the NDP 2014-2018 provided a strong platform for collaboration and consultation with other donors and relevant stakeholders throughout 2014–15 but also during implementation. Technical inputs were furnished by renowned experts, government bodies, and civil society. At least 34 seminars and workshops were carried out to discuss the NDP 2014-2018 at the subnational level (*Diálogos Regionales para la Construcción del Plan Nacional de Desarrollo 2014–2018*). The dissemination process related to the NDP 2014-2018 has been documented on the DNP website.<sup>37</sup> The policy actions included under this operation were drafted and agreed by the relevant sectors (including MHCP, Ministry of Transport (MT), MADS, Ministry of Mines and Energy (*Ministerio de Minas y Energía, MME*), Ministry of Housing, Cities and Territories (*Ministerio de Vivienda, Ciudades y Territorios, MVCT*), and the National Disaster Risk Management Unit (*Unidad Nacional para la Gestión del Riesgo de Desastres, UNGRD*), in consultation with DNP. In addition to the strategic context provided by the NDP consultations, all prior actions included under this operation were subject to public consultations, following the GoC’s criteria and procedures.

**73. The DPF series complements efforts led by other development partners.** The GoC has partnered with other international agencies to prepare policy-based programmatic operations in support to the NDP agenda. AFD and Development Bank for Latin America (CAF) are preparing an operation focused on rural

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<sup>37</sup> <https://www.dnp.gov.co/sala-de-prensa/Paginas/Presentaciones-.aspx>, accessed January 8, 2017.

development in the post conflict context. KFW is developing an operation focused on natural resources management and general aspects of green growth and a second one to support the GoC's peace building agenda. The IADB has supported the GoC to address energy sector priorities supporting the diversification of the country energy matrix and access to new geographic areas.

**74. Collaboration with the IMF has ensured the DPF's consistency with the IMF's policy advice.** The Bank has collaborated closely with the IMF in the review and assessment of macroeconomic developments. The macroeconomic framework for the operation is fully consistent with the IMF.

## **5. OTHER DESIGN AND APPRAISAL ISSUES**

### **5.1 Poverty and Social Impact**

**75. While the prior actions under the DPF are not expected to have significant adverse effects on poverty and inequality, minor adverse impacts could potentially arise from a narrow set of reforms.** For example, minor adverse impacts could arise from the informal labor implications of promoting the use of bicycles and regulating tricycles and from the formalization of waste pickers. The GoC is studying how to implement mitigation mechanisms for potential negative impacts in labor market outcomes of regulations associated with informal public transportation. The impact on informal waste pickers will likely be short-lived given the program's partial phase-out. A summary of the expected adverse and positive effects is included in Annex 4.

**76. In fact, the DPF is expected to have significant direct positive effects on the health of the population.** Positive health effects are expected from the use of cleaner modes of transport and improved air pollution. Moreover, positive health impacts will arise from regulations to set cost-effective procedures for wastewater disposal into soil and from measures aimed at providing isolated rural communities with access to drinking water and sanitation services, leading to a decrease in the incidence of waterborne diseases. Improving solid waste management and operating procedures of sanitary landfills will also benefit health outcomes from a decrease in illness and injury from soil and water pollution stemming from landfilling. Other positive impacts include lower risk of infectious diseases; improved living standards of waste pickers through regularized tariff schedules; and less flooding and water-borne illness because of solid waste blocking runoff to channels and gullies.

### **5.2 Environmental Aspects**

**77. The prior actions supported by DPF2 are expected to have significant positive effects on the environment, forests and natural resources.** By its nature this DPF supports expansion of environmental policies to accelerate green growth, protects forest assets and sets limits on pollutants that would otherwise damage natural capital and environmental health. Improvements in quality of life would result from cleaner air and reductions in accidents associated with using chemicals. Access to power for low income households, rural and remote communities and small scale generation projects will draw on the advantages of Colombia's non-conventional renewable energies. The programs and projects supported by this DPF do not promote the construction of large scale generation plants and will promote, among others, the development of solar, wind and geothermal energy. Potential negative cumulative effects in the environment from these technologies would be addressed through guidelines for the preparation of Compensation Plans for the Loss of Biodiversity and procedures for environmental benefit certification to new investments in renewable energy projects.<sup>38</sup> Reforms supported by this operation on forest protection and biodiversity conservation will reduce losses of

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<sup>38</sup> <https://www.minminas.gov.co/documents/10180/18995913/Res.MADS+1283+03-08-2016+Requisitos+Certificado+beneficio+ambiental+FNCER.pdf/6e5c9758-6f05-407d-9d9b-e4e6119ff0a1>, accessed June 1, 2017.

natural capital favoring, particularly, vulnerable rural communities. Fostering climate change adaptation will indirectly enhance productivity by reducing damages to infrastructure and production capacity and reduce floods that affect homes of poor people, who are most severely affected by climate events such as el Niño o la Niña. Potential adverse effects such as flue gases from incineration or excessive noise levels related to alternative technologies to dispose waste or leakages from production of biofuel to deforestation would be mitigated through the existing systems for environmental impact management, which are robust and have been proved effective in prior Bank operations. Annex 4 contains a summary of the potential environmental effects.

**78. The reforms supported by this operation will accelerate mitigation and adaptation to climate change across Colombia.** Climate co-benefits are fundamental in Colombia's Green Growth strategy. As climate models predict that natural disasters will be exacerbated due to an increase in extreme weather events, Colombia's key challenge is to address its climate change vulnerability with effective mitigation and adaptation measures. This operation will contribute to climate change mitigation through Prior Actions 1, 2, 3, 5, 6, 8 and 9 and to climate change adaptation through Prior Actions 1, 4, 6 and 7. Annex 8 summarizes the climate change co-benefits of each Prior Action.<sup>39</sup>

### **5.3 PFM, Disbursement and Auditing Aspects**

**79. Colombia's public financial management (PFM) systems are generally strong.** The national-level PFM systems show advanced levels of performance that are moving toward good international practices. A new Public Expenditure and Financial Accountability Assessment for Colombia was finalized in year 2016;<sup>40</sup> Overall, Colombia's PFM system exhibits reasonable alignment with international best practices at the National Government level. The policy-based fiscal strategy and budgeting has particularly noteworthy positive performance on the institutional capacity to establish a credible fiscal strategy and comply with it. The same can be said of management of assets and liabilities, with room to strengthen the fiscal risk reporting.

**80. Performance on fiscal transparency is generally aligned with international best practices, except for budget classification and the inclusion of performance information in the budget allocated to the direct delivery of public services to the population.** It confirms the decision of the GoC to focus a substantial part of the reform effort in these areas; predictability and control in budget execution have practices adjusted to international standards in Treasury Management, and Internal Control Management; in contrast with Payroll controls. The GoC has also initiated actions to strengthen the instruments required to foster improvements in these processes, with an aim to consolidate them over the medium term.

**81. Performance on accounting and reporting, and external scrutiny and audit indicate opportunities for improvement, which suggest the existence of gaps in relation to international best practices.** If pursued diligently, the ongoing reforms, especially those aimed at strengthening the consolidation of government financial information on the National Balance Sheet and inter-agency coordination of regulators and oversight agencies, may reverse these shortcomings over the medium term. Salient features of the PFM systems are summarized below.

**82. The budget is comprehensive, well documented, and implemented as planned, with actual expenditures deviating only slightly from planned levels.** Budget planning is based on a multiyear

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<sup>39</sup> The methodology for assessing the Climate Co-Benefits can be found at:

<http://pubdocs.worldbank.org/en/740431470757468260/MDB-joint-report-climate-finance-2015.pdf>

<sup>40</sup> Public Expenditure and Financial Accountability Assessment (PEFA) 2015 of Colombia's Public Financial Management Systems, October 14, 2016



perspective,<sup>41</sup> and annual formulation reflects a mostly well-functioning policy-based system.<sup>42</sup> Execution of budgeted expenditures suggests a largely credible budget. The GoC has published its annual budget in a timely fashion.<sup>43</sup>

**83. Revenue and expenditure controls are comprehensive, and there is a continuous effort to improve them.** Of significant relevance are strong measures to safeguard the overall integrity and accuracy of revenue data by integrating or reconciling the different accounting systems used by the tax administrator, ensuring consistency between the information from accounting and statistical records, and guaranteeing timely recording of transactions. Records and controls on cash flows, balances, and public debt support sound fiscal management and provide public institutions with the tools for predicting funding to execute their budgets in an orderly manner.

**84. The consolidated public accounts are prepared within six months after the end of the fiscal year.** They include full information on revenues, expenditures, and financial assets and liabilities. Year-end accrual-based financial statements are issued by the Accountant General and presented by May 15 of the following year to the Controller General for audit purposes. The Controller General's auditing policies and procedures provide for the application of financial, compliance, and performance procedures consistent with the National Government's auditing standards. Audit reports are submitted before July 1 of the following fiscal year to the Congress and the President.

**85. The Government is implementing an accounting and auditing reform agenda to adopt and implement international accounting (International Financial Reporting Standards and International Public Sector Accounting Standards) and auditing standards (International Standards on Auditing, ISA).** In the last three years, there have been significant developments toward implementing this reform, including issuing the new regulation for public sector entities (October 2015) to be adopted in January 2018. The new accounting framework will be used to consolidate the Government public accounts for year ended December 31, 2018, and will facilitate Government's fiscal and financial reporting for decision-making. Going forward, there are still a few challenges for the Government to overcome in the reform process.

**86. Disbursement arrangements.** Once the DPF becomes effective and the borrower complies with any withdrawal tranche release conditions, following the borrower's request, the Bank will deposit the funds into an account denominated in U.S. dollars at the Central Bank (*Banco de la República*) for subsequent credit into the Treasury Single Account of the MHCP, thus becoming available to finance budgeted expenditures. The MHCP will provide the Bank with a written confirmation of the transaction within the 30 days after the funds are disbursed by the Bank. If the Bank determines at any time that an amount of the loan was used to make a payment for an excluded expenditure, the borrower shall promptly, upon notice from the Bank, refund an amount equal to the amount of such payment to the Bank; and amounts refunded to the Bank upon such notice shall be cancelled from the loan.

**87. The banking control environment into which the DPF proceeds would flow is adequate.** This conclusion is based on a review of the 2016 external audit report of the Banco de la República, the latest IMF Central Bank safeguards assessment (2012), and the 2016 IMF Article IV Consultation. Because the borrower's PFM systems and the fiduciary arrangements for this financing are assessed as adequate, the Bank will not require an audit of the designated account and no additional fiduciary arrangements are considered necessary, at this time.

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<sup>41</sup> The country has developed key PFM multiannual instruments since 2003, such as the MTFE and Medium-Term Expenditure Framework. However, they are presently not used adequately because they are developed in parallel with the budget instead of sequentially.

<sup>42</sup> See PEFA 2015, IMF 2012 and the World Bank 2013 reviews for more information.

<sup>43</sup> Law 1815 of December 2, 2016.

88. **Colombia has made significant progress over the past six years in strengthening the performance of its procurement systems.** Procurement is based on the legal framework—Law 1150/2007—and ruling decrees, the most recent being 1510/2013. One of the most relevant steps forward is the creation of a Procurement Directorate (*Agencia Nacional de Contratación Pública, Colombia Compra Eficiente; CCE*), in November 2011, to oversee and lead the procurement reforms. The agency has undertaken important steps to further improve the system, consolidate gains, and ensure sustainability. To this end, the newly created agency is working to implement an ambitious program, including (i) adopting a more strategic approach to procurement as an essential component of public sector expenditure management; (ii) establishing a transactional electronic procurement system; and (iii) professionalizing the procurement staff, while providing increased exposure to new, more efficient ways of doing business in Colombia and around the world. However, as per the results of the 2016 PEFA Assessment Report important challenges remain to: (i) continue adjusting the legal, institutional and operational frameworks to respond to the challenges in the market for new technologies and international practices; (ii) expand the availability and increase the quality of the public procurement data by extending the use of SECOP II; (iii) decrease the extensive use of non-competitive methods and; iv) establish an independent and specialized body to deal with Procurement complaints.

#### 5.4 Monitoring, Evaluation and Accountability

89. **MHPC is the main coordinating agency for this DPF, while DNP is the technical coordinator of budget support loans in Colombia.**<sup>44</sup> As part of the supervision of DPF1, DNP has collected and reported to the Bank the information related to the implementation progress of the program. The ongoing dialogue and the permanent monitoring and evaluation has allowed the adjustments of the policy matrix to capture the changes and timeline established by the GoC for the reform supported by this programmatic DPF.

90. **The program outcomes have been and will be monitored through the results indicators included in the Policy and Results Matrix (Annex 1).** This monitoring seeks to assess progress toward the implementation of the policy and institutional measures supported by the proposed DPF series and will be evaluated following the disbursement of the loan. The DNP will have the responsibility of presenting the information related to the implementation of the policy actions in a timely manner and in a format satisfactory to the Bank.<sup>45</sup>

91. **Grievance redress.** Communities and individuals who believe they are adversely affected by specific country policies supported as prior actions or tranche release conditions under a Bank supported DPF may submit complaints to the responsible country authorities, appropriate local/national grievance redress mechanisms, or to the Bank's Grievance Redress Service (GRS). Complaints to GRS are promptly reviewed. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit <http://www.worldbank.org/GRS>.

92. **Affected communities and individuals may submit their complaints to the Bank's independent Inspection Panel, which determines whether harm occurred or could occur because of Bank noncompliance with its policies and procedures.** Complaints may be submitted at any time before project closure after concerns have been brought directly to the Bank's attention and the Bank management has been given an opportunity to respond. Information on how to submit complaints to the Bank's Inspection Panel is available at [www.inspectionpanel.org](http://www.inspectionpanel.org)

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<sup>44</sup> Article 145 of the Law that establishes the NDP 2014-2018

<sup>45</sup> The DPF will benefit from DNP's already established monitoring and evaluation system *Sistema Nacional de Gestión y Evaluación de Resultados* (SINERGIA), which will provide feedback and strengthen policy implementation through the systematic use of information about government performance.

## 6. SUMMARY OF RISKS AND MITIGATION

93. **The overall risk of the operation is the same of DPF1 and is assessed as *moderate*.** The main risks are related to political and governance and the institutional capacity for implementation. The macroeconomic risks are moderate. These risks will be closely followed up during the implementation of DPF2.

- **Political and Governance risks are substantial.** Political and Governance risks are deemed Substantial, as the rural and forestry actions could potentially be affected by the fact that rural populations are in flux and live near contentious forest areas – some of which are former conflict zones. To mitigate this risk, the Bank would continue to support the GoC in strengthening forest management through forestry and the Biocarbon Fund programs at the national and regional levels directly benefiting these areas. The Bank would also continue its support for the roll out of the multi-purpose cadaster which aims at improving land tenure issues over time. The GoC would ensure broad discussions of the issues among the national ministries, subnational entities, and stakeholders, thereby ensuring that shared ownership is built. Finally, the risks to the urban and pollution actions are likely only moderate, given gains in pollution management are common to virtually all upper middle-income countries, have low costs compared to high welfare gains, and are expected and even appreciated by foreign investors.
- **Institutional capacity for implementation and sustainability.** The multi-sectoral and complex nature of the GoC's reform program may place additional demands on institutional coordination, creating a substantial risk for the proposed DPF. Decentralization in Colombia includes evolving power relationships between the different levels of government and territorial authorities may be hesitant to implement national policies. The GoC, through DNP, is committed to ensure broad discussions of the issues among the national ministries, subnational entities, and stakeholders, enhancing the credibility and effectiveness of policy actions, which will help to mitigate this risk. The implementation of DPF1 has demonstrated that DNP can play an effective coordination role, which they have already done during the preparation and implementation of DPF2. As part of the NDP 2014-2018 implementation, the technical assistance and investment gaps that need to be addressed to ensure a successful implementation of the program of reforms have been identified and served the GoC to assign clear institutional responsibilities and budget allocations for each policy action.
- **Macroeconomic.** Macroeconomic risks arise from the uncertainty in the external outlook and domestic developments. A further fall in oil prices, depressed demand from export partners, and greater volatility in international markets could deepen Colombia's economic slowdown and fiscal pressures. Some of the proposed tax policy may prove to be politically contentious and in their absence market credibility may be harder to retain, causing a rise in financing costs for the economy. There is also the possibility that domestic factors, such as the impact of El Niño and the tightening of monetary and fiscal policy, could have a greater than expected dampening effect on economic growth. These scenarios could result in slower progress of the DPF program than currently foreseen. However, the fiscal and structural reforms, so far undertaken by the GoC and its strong commitment to abide with its Fiscal Rule, strengthen its resilience to exogenous shocks in the medium term. Overall, risks in this category are assessed as moderate.

**Table 5. Risk Categories**

<b>Risk Categories</b>	<b>Rating (H, S, M, or L) (*)</b>
Political and governance	S
Macroeconomic	M
Sector strategies and policies	M
Technical design of project or program	M
Institutional capacity for implementation and sustainability	S
Fiduciary	L
Environment and social	L
Stakeholders	M
Other	–
Overall	M

(\*) H: High; S: Substantial; M: Moderate; and, L: Low

## ANNEX 1. Policy and Results Matrix

Prior Actions – DPF 1	Prior Actions – DPF 2	Results Indicators <sup>(a)</sup>
Pillar 1 – Establish a set of policy and institutional measures for green growth in transport, energy, environmental health, and natural resources <sup>(b)</sup>		
<p>Prior Action 1: As a part of the National Development Plan, the GoC set forth a green growth strategy which, inter alia: (a) defines guidelines for developing and improving public transportation systems; (b) entitles territorial entities (including districts and municipalities) to establish new funding resources for public transportation systems and infrastructure for non-motorized transportation; and (c) provides financial resources to the FENOG, as evidenced, respectively, by articles 32, 33, 34 and 190 of Law No. 1753, dated June 9, 2015, published in the Official Gazette on June 9, 2015.</p> <p>Responsible Agency: DNP</p>	<p><b>Prior Action 1:</b> The GoC, through its Legislative branch, has approved the Paris Agreement, which establishes the legal framework for international cooperation on climate change, including, inter alia: (i) the adoption every five years of progressive national targets to reduce greenhouse gas emissions; (ii) the option to engage in cooperative approaches to use internationally transferred mitigation outcomes to achieve national targets; and (iii) enhancing action on adaptation through sharing information and good practices, improving scientific knowledge on climate and early warning systems, and periodically updating a national communication on climate adaptation.</p> <p><b>Means of verification:</b> Law No. 1844 of July 14, 2017, published in the GoC's Official Gazette on 14 July 2017.</p> <p><b>Responsible Agency:</b> DNP, <i>Cancilleria</i> and MADS</p>	<p>GOC has submitted the Nationally Determined Contributions which includes targets for reduction of greenhouse gas emissions for 2030 and plans and actions for climate change adaptation</p> <p><i>[Baseline: No Target 2018: Yes]</i></p> <p>Data source: NDC registry. United Nations Framework Convention on Climate Change</p>
	<p><b>Prior Action 2:</b> The GoC has established a regulatory framework for the promotion of clean energy transportation which, inter alia, (i) defines incentives for the use of bicycles and for increasing the number of trips using bicycles; (ii) regulates the registry, and technical and safety inspections applicable to motorcycles, three-wheeled motorcycles and quad-trucks; and (iii) sets policy guidelines for the co-financing by the GoC to local public transport investments.</p> <p><b>Means of verification:</b> Law 1811 (<i>Ley Probici</i>), dated October 21, 2016; Ministry of Transport, Resolution 160 of February 2, 2017; and, Document CONPES 3882 of January 10, 2016.</p> <p><b>Responsible Agency:</b> MT</p>	<p>Share of passenger journeys done in public and non- motorized transport in 8 cities (Barranquilla, Bucaramanga, Medellín, Bogotá-Soacha, Cali, Cartagena, Pasto, and Montería). (percent)</p> <p><i>[Baseline 2015: 27 percent; Target 2018: 33 percent]</i></p> <p>Data source: Traffic survey data presented by Sinergia</p>

Prior Actions – DPF 1	Prior Actions – DPF 2	Results Indicators <sup>(a)</sup>
	<p><b>Prior Action 3:</b> The GoC has strengthened its legal and institutional framework for promoting non-conventional energies by (i) defining FENOGE as a stand-alone Trust Account (<i>Fiducia mercantil - patrimonio autónomo</i>); (ii) defining FENOGE's funding sources, eligibility criteria for allocating funds, the composition and functions of its Board of Directors; and, the criteria for selecting the fiduciary entity that will manage FENOGE's financial resources; and, (iii) setting criteria that prioritizes the use of non-conventional energies in the National Rural Electrification Plan.</p> <p><b>Means of verification:</b> Article 368 of Law 1819 dated December 29, 2016; Decree 1543 dated 16 September 2017; and, Law Decree 884, dated, May 26, 2017.</p> <p><b>Responsible Agency:</b> MME</p>	<p>FENOGE provisioned with a minimum funding (bn COP)  <i>[Baseline 2015: 0; Target 2018: 20]</i>  Data source: Reporte de Sistema de Proyectos de Inversión SPI - DNP</p> <p>People that benefit from non-conventional energy projects commissioned in areas not covered by the national interconnected system.  <i>[Baseline 2015: 0; Target 2018: 8433]</i>  Data source: Review of energy project records provided by Sinergia</p>
	<p><b>Prior Action 4:</b> The GoC has adopted a risk management policy on chemical substances that establishes: (i) a program to manage chemical substances for industrial uses; (ii) a program to prevent major chemical accidents; and (iii) measures for strengthening risk management capacity of chemical substances.</p> <p><b>Means of verification:</b> CONPES 3868, dated October 5, 2016.</p> <p><b>Responsible Agencies:</b> MADS, UNGRD and IDEAM</p>	<p>Model (software and hardware) for the Registry of Emissions and Transfer of Pollutants completed  <i>[Baseline 2015: No; Target 2018: Yes]</i>  Data source: Sisconpes – DNP Report</p>
	<p><b>Prior Action 5:</b> The GoC has adopted measures to increase forests protection and improve forest management information and monitoring by: (i) establishing a system of PES; (ii) setting up the organization and functions of the National Information System of Forests (SNIF), the National Forests Inventory (IFN) and the Forests and Carbon Monitoring Systems; and (iii) establishing the Forests for Peace program and the Intersectoral Commission for Deforestation Control and Comprehensive Management for Protecting Natural Forests.</p> <p><b>Means of verification:</b> Law Decree 870, dated May 25, 2017; Decree 1655 dated October 10, 2017, Resolution 470, dated February 28, 2017; and Decree 1257, dated July 25, 2017.</p> <p><b>Responsible Agencies:</b> MADS</p>	<p>Forest land use change early-warning reports produced  <i>[Baseline 2016: 2 times per year; Target: 2018: 4 times per year]</i>  Data source: IDEAM through the Forests and Carbon Monitoring System</p> <p>Projects established under the Forest for Peace program and/or the Payment for Environmental Services (PES) system with the involvement of environmental authorities and territorial entities (number)  <i>[Baseline 2015: 0; Target 2018: 5]</i>  Data source: REAA (<i>Registro Único de Ecosistemas y Áreas Ambientales</i>)</p>

Prior Actions – DPF 1	Prior Actions – DPF 2	Results Indicators <sup>(a)</sup>
<b>Pillar 2 - Improvement in the quality of life by reducing PM<sub>2.5</sub> in air; improving access to and the quality of drinking water and sanitation in rural areas; reducing water pollution; enhancing integrated solid waste management; and increasing capacity for solid waste reuse and disposal.</b>		
<p><b>Prior Action 2:</b> The GoC adopted a regulation to update the quality parameters for diesel fuel at the national level, with the objective of reducing toxic emissions in air contamination, as evidenced by Resolution No. 90963, dated September 10, 2014, issued jointly by the Government's Ministry of Mines and Energy and the Ministry of Environment and Sustainable Development, published in the Official Gazette on September 11, 2014.</p> <p>Responsible Agency: MADS</p>	<p><b>Prior Action 6:</b> The GoC has taken measures to strengthen air quality management by: (i) approving a resolution that, upon publication, will update outdoor air quality norms by setting new progressive maximum permissible levels (starting in 2018 through 2030) for "criteria pollutants" including PM<sub>2.5</sub> (ii) increasing the biofuel component to 9 percent in diesel(B-9); and (iii) revising the parameters and requirements of ethanol in gasoline.</p> <p><b>Means of verification:</b> Resolution No. 2254, dated November 1, 2017, issued by the Ministry of Environment and Sustainable Development. Ministerial Resolution 40351 dated April 28, 2017 (which modifies Resolution 182142/2007) and Ministerial Resolution 40527, dated June 7, 2017 both issued by the Ministry of Mines and Energy.</p> <p><b>Responsible Agency:</b> MADS and MME</p>	<p>Reduction in the mean annual concentration of PM<sub>2.5</sub> in at least 7 prioritized monitoring stations in the cities of Medellín, Itagui, and Bogotá (percentage)</p> <p><i>[Baseline 2014: See footnote for details;<sup>(c)</sup> Target 2018: 5 percent reduction at each station]<sup>(d)</sup></i></p> <p>Data source: SISAIRE (SIAC-Modulo Aire)</p>
<p><b>Prior Action 3:</b> The GoC established parameters, limits, and procedures for the discharge of treated wastewater originating from selected agricultural, industrial, commercial, and service activities, with the objective of reducing the overall pollution of water bodies, as evidenced by Resolution No. 631, dated March 17, 2015, issued by the Government's Ministry of Environment and Sustainable Development, published in the Official Gazette on April 18, 2015.</p> <p>Responsible Agency: MADS</p>	<p><b>Prior Action 7:</b> The GoC has established measures to improve access to and quality of service for potable water and sanitation in rural areas, and improve the formulation of water and sanitation investments by (i) regulating appropriate requirements for the provision of potable water and sanitation services; (ii) regulating appropriate solutions for domestic wastewater management; and (iii) issuing preparation guidelines for water and sanitation sector investments by entities that request financial support from the GoC.</p> <p><b>Means of verification:</b> Decree 1898 dated November 23, 2016. Ministerial Resolution 1063 of 30 December 2016.</p> <p><b>Responsible Agency:</b> Ministry of Housing, City and Territory</p>	<p>People with access to improved water sources (corporate results indicator) (only in rural areas)</p> <p><i>[Baseline 2014: 7,937,296 Target 2018: 8,517,296]<sup>(e)</sup></i></p> <p>Data source: Sinergia</p>

Prior Actions – DPF 1	Prior Actions – DPF 2	Results Indicators <sup>(a)</sup>
<p><b>Prior Action 4:</b> The GoC established a set of rules, including quality parameters, regulating the reuse of treated wastewater for selected industrial and agricultural activities, as evidenced by Resolution No. 1207, dated July 25, 2014, issued by the Government's Ministry of Environment and Sustainable Development, published in the Official Gazette on August 13, 2014. Responsible Agency: MADS</p>		<p>Increase in the rate of treated wastewater from the hydrocarbon sector for reuse in agricultural activities (percentage) [Baseline 2015 Mm3/yr: 1,075,000 Mm3/yr; Target 2018: increase in 20 percent] (This is related to Prior Action 4 – DPF1) Data source: ECOPETROL web page: Reporte Integrado de Gestion Sostenible. (Integrated Report on Sustainable Management)</p>
<p><b>Prior Action 5:</b> The GoC established a methodology for the formulation, implementation, evaluation, management, control, and update of Solid Waste Integrated Management Plans (PGIRS) by municipalities, districts, and other selected local entities within its territory, as evidenced by Resolution No. 754, dated November 25, 2014, issued jointly by the Government's Ministry of Housing, City and Territory and the Ministry of Environment and Sustainable Development, published in the Official Gazette on December 1, 2014. <b>Responsible Agency:</b> MVCT and MADS</p>	<p><b>Prior Action 8:</b> The GoC has (i) updated operation standards for sanitary landfills; and (ii) updated regulations for complementary solid waste treatment activities. <b>Mean of verification:</b> Decree 1784, dated November 2, 2017. <b>Responsible Agency:</b> MVCT</p>	<p>Municipalities disposing solid waste in sanitary landfills in compliance with the legal framework. (number) [Baseline 2015: 874; Target 2018: 916] Data source: data presented by Sinergia</p>
<p><b>Prior Action 6:</b> The Government established a set of incentives to promote the recycling of solid waste, including an additional fee to be charged per ton of solid waste finally disposed in sanitary landfills, as evidenced by Article 88 of Law No. 1753, dated June 9, 2015, published in the Official Gazette on June 9, 2015. Responsible Agencies: DNP, MVCT and MADS.</p>	<p><b>Prior Action 9:</b> The GoC has established measures to improve solid waste management by establishing the operational framework for the reuse of solid waste and the timeline for the compliance of waste pickers as formal suppliers in the reuse activity. <b>Means of verification:</b> Ministerial Decree 596 dated April 11, 2016 and Ministerial Resolution 276, dated April 29, 2016. <b>Responsible Agency:</b> MVCT and DNP</p>	<p>Share of recyclable solid waste not disposed in sanitary landfills. (percentage) [Baseline 2014: 17 percent; Target 2018: 20 percent] Data source: data presented by Sinergia</p>



## Notes to the Matrix

- (a) The NDP 2014-2018 and this program were prepared following a universal approach for the delivery of basic services, which does not differentiate between male and female beneficiaries because the services provided are measured at the household level. Therefore, the results indicators cannot be disaggregated by gender.
- (b) Results indicators for Pillar 1 have been proposed by the GoC based on the NDP 2014-2018 targets.
- (c) 2014 Baseline values are: Medellin – 29.9µg/m<sup>3</sup> (UNNV), 37.9µg/m<sup>3</sup> (MANT), 28.6µg/m<sup>3</sup> (UNFM); Bogota – 35.1µg/m<sup>3</sup> (Carvajal), 31.5µg/m<sup>3</sup> (Kennedy); Itagui – 32.0µg/m<sup>3</sup> (CJUS), 25.1µg/m<sup>3</sup> (CONC). Additional information is provided in Annex 9.
- (d) The protocol to verify compliance with the indicator should be based on the air pollutants concentration database consolidated by IDEAM, which was used as the basic input for carrying out the calculations and analyses in order to determine the air quality in Colombia between 2011 and 2015. The process consisted of six main activities: 1) evaluation of the management functions carried out by environmental authorities regarding the temporal representativeness of the information reported, considering that permanent Air Quality Surveillance Systems (SVCA, for their acronym in Spanish) must have a minimum temporary coverage of 75% per year with respect to the total possible valid data to be obtained; 2) determination of regulatory compliance through the comparison of criteria pollutant concentrations with the maximum permissible limits established in Resolution 610 of 2010; 3) analysis of the temporal and spatial trends of air quality monitored in the different SVCAs; 4) estimation of the Air Quality Index (ICA, for its acronym in Spanish) for each pollutant and monitoring station, which allows to identify the potential adverse effects of air pollutant concentrations on public health; 5) crossing information of atmospheric pollutant concentrations with information on meteorological variables; and 6) initial approximations from crossing information of particulate material with Acute Respiratory Infections (IRA, for its acronym in Spanish) cases.
- (e) Population covered in 2014 as per the annual target of the National Development Plan.

## ANNEX 2. Letter of Development Policy



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PAZ EQUIDAD EDUCACIÓN

Bogotá D.C., 2 de noviembre de 2017

Señor  
**JIM YONG KIM**  
Presidente  
Grupo Banco Mundial  
Washington, D.C.

Asunto: Segunda Fase, DPL Desarrollo Sostenible y Crecimiento Verde

Apreciado Presidente Kim:

Colombia se ha caracterizado históricamente por su permanente compromiso por generar y promover crecimiento económico, salvaguardando la sostenibilidad de las finanzas públicas. Contar con grado de inversión y con un buen programa de políticas públicas ha sido de vital importancia para consolidar los fundamentales de la economía, así como su resiliencia a choques internos o externos. A pesar de que el reto en esta materia es permanente y a que aún tenemos enormes desafíos por delante para reducir la desigualdad y la pobreza, disminuir brechas regionales e incrementar nuestra competitividad y productividad, desde el Gobierno nacional estamos satisfechos con el trabajo realizado hasta el momento.

Entre 2010 y 2016 la economía colombiana mantuvo un crecimiento económico promedio anual de 4,1 %. Gracias a esta dinámica en este mismo periodo se redujo el desempleo a niveles de un solo dígito, partiendo de una tasa del 11,8 % en 2010 y cerrando el 2016 con una tasa promedio del 9,2 % y 22,2 millones de ocupados, siendo este el nivel más alto en los últimos 16 años. De la misma manera, el PIB per cápita de los colombianos en dólares constantes de 2011, ajustando por paridad de poder adquisitivo, se incrementó de manera importante ya que según el Fondo Monetario Internacional este se habría ubicado en US\$ 13.099 en el 2016, frente a US\$ 10.998 del 2010. En consecuencia, avanzamos de manera importante en mejorar el bienestar de los colombianos, tal como lo evidencian la reducción en la tasa de pobreza monetaria de 37,2 % en 2010 a 28,0 % en 2016, la caída en la incidencia de la pobreza multidimensional de 30,4 % en 2010 a 17,8 % en 2016, y la caída de la desigualdad en la distribución del ingreso ya que el coeficiente de Gini pasó de 0,560 en 2010 a 0,517 en 2016.

Por otro lado, la inflación en 2016 se ubicó en 5,75 %, inferior en 1,02 puntos porcentuales a la cifra de 2015 y significativamente por debajo al máximo de 8,96 % que se observó en julio de 2016. Continuando esta tendencia, desde junio de 2017 la inflación se encuentra en el rango meta del Banco de la República (entre 2 % y 4 %), lo cual no ocurría desde enero de 2015. Este resultado confirma la senda de corrección que han tenido los precios desde la segunda mitad de 2016, una vez desaparecidos los choques temporales provenientes de la depreciación del peso y del Fenómeno del Niño. El descenso de la

inflación también ha sido consecuencia de las oportunas acciones del Banco de la República de impulsar una política monetaria contractiva para que la inflación retornara al rango meta y las expectativas se mantuvieran ancladas.

Ha sido evidente cómo la economía colombiana ha mostrado una notable resiliencia al choque ocasionado por la caída de los precios del petróleo. El crecimiento, a pesar de su reducción, fue uno de los más altos en la región que también se vio afectada y debió ajustarse al fin del boom de los precios de las materias primas que componen buena parte de su canasta exportadora. Entre 2012 y 2016 la economía colombiana creció en promedio 3,7 %, siendo el segundo país de mayor crecimiento entre las seis economías más grandes de América Latina, solo después de Perú (4,3 %). De la misma manera, a pesar del choque, la tasa de inversión continuó en niveles históricamente altos en 2016 y 2017, manteniéndose como la más alta de la región.

Adicionalmente, el Gobierno nacional es consciente de que la sostenibilidad económica depende del desarrollo de buenas políticas ambientales que aumenten la resiliencia del país a los retos derivados del cambio climático. Es por esto que el Plan Nacional de Desarrollo (PND) 2014-2018: "Todos por un nuevo país", incorporó la estrategia envolvente de 'Crecimiento Verde' a través de la cual se ha promovido un modelo de desarrollo que busca el bienestar económico y social de las generaciones actuales y futuras, asegurando la provisión de los bienes y servicios ambientales en el largo plazo.

Durante el año 2015, el Gobierno de Colombia solicitó al Banco Mundial un préstamo de política, bajo la modalidad Development Policy Loan (DPL), en virtud del cual pudiera tener apoyo y acompañamiento para avanzar en la implementación de dicha Estrategia. En ese sentido, importantes reformas de política en los temas referentes a transporte y energía sostenible, salud ambiental, contaminación del agua, manejo de riesgo de desastres y mejoras en la calidad del aire fueron apoyadas por el Banco.

Durante el año 2016 el Gobierno de Colombia solicitó al Banco Mundial una segunda fase de dicho préstamo con la intención de dar continuidad al apoyo ofrecido a esta importante apuesta. El programa para esta segunda fase se concentra en los dos siguientes pilares: (i) definición de un conjunto de medidas políticas e institucionales para el crecimiento verde en transporte, energía, salud ambiental y recursos naturales y (ii) mejoras en la calidad ambiental debido a la reducción del Material Particulado (PM2.5) en el aire; mejorar el acceso a la calidad del agua potable y saneamiento en zonas rurales, reduciendo la contaminación del agua, mejorando el manejo integral de residuos e incrementando la capacidad de reusos de residuos sólidos y su disposición.

En lo que concierne al primer pilar, el programa reconoce las siguientes cinco acciones de política que ha emprendido el gobierno colombiano y que dan continuidad a las reformas alcanzadas durante la primera fase del crédito, las cuales denotan avances en:

1. Reducción de Gases Efecto Invernadero (GEI) mediante la ratificación del Acuerdo de París. Lo anterior se evidencia a través de la expedición de la Ley 1844 de 2017 por medio de la cual se aprueba la ratificación de dicho Acuerdo adoptado el 12 de diciembre de 2015 en París, Francia y en donde Colombia se comprometió a reducir en un 20 % sus emisiones de gases efecto invernadero antes de 2030.

2. Establecimiento de un marco regulatorio para la promoción del transporte con energía limpia. El país ha avanzado en dicho propósito mediante la expedición de la Ley 1811 de 2016, la cual tiene como objeto principal el de incentivar el uso de la bicicleta como medio principal de transporte en todo el territorio nacional e incrementar el número de viajes en bicicleta; la Resolución 160 de 2017 mediante la cual se determinan las condiciones para llevar a cabo el registro de los vehículos automotores de tipo ciclomotor, tricimóvil y cuatriciclo de combustión interna, eléctricos y/o de cualquier otro tipo de generación de energía y el documento CONPES 3882 de 2016 en el cual se establecen los lineamientos de política para la cofinanciación del gobierno central a las inversiones locales de transporte público.
3. Fortalecimiento del marco legal e institucional para promover las energías renovables no convencionales. Colombia ha cumplido con el mandato del PND en lo relacionado con el Fondo de Energías Renovables (FENOGE) a través del artículo 368 de la Ley 1819 de 2016, mediante el cual se establece la administración de dicho Fondo y el Decreto 1543 de 2017 por el cual se reglamenta. Adicionalmente, a través del Decreto 884 de 2017 por el cual se expiden normas tendientes a la implementación del Plan Nacional de Electrificación Rural con criterios que priorizan el uso de energías renovables.
4. Adopción de una política de gestión de riesgos sobre sustancias químicas. El Gobierno nacional ha avanzado en dicha materia a través del documento CONPES 3868 de 2016, el cual tiene como objetivo el de fortalecer la gestión del riesgo asociado al uso de sustancias químicas en todo su ciclo de vida.
5. Adopción de medidas para aumentar la protección de los bosques y mejorar la información y el monitoreo de la gestión forestal. Lo anterior se evidencia a través del Decreto 1655 de 2017, adicionalmente el Decreto 870 de 2017 aporta a dicha acción mediante el establecimiento de las directrices para el desarrollo de los Pagos por Servicios Ambientales y otros incentivos a la conservación y la Resolución 470 de 2017 por medio de la cual se crea el Programa "Bosques de Paz" como modelo de gestión sostenible de los territorios que busca integrar la conservación de la biodiversidad con proyectos productivos en beneficio de las comunidades organizadas. Finalmente, el Decreto 1257 de 2017 a través del cual se crea la Comisión Intersectorial para el Control de la Deforestación y la Gestión Integral para la Protección de Bosques Naturales como instancia institucional orientadora y coordinadora de todas las políticas y actividades relacionadas con estos asuntos.

En lo que concierne al segundo pilar, el programa reconoce las siguientes cuatro acciones de política realizadas por el gobierno colombiano y que denotan avances en:

6. Adopción de normas más estrictas para el manejo de la contaminación del aire exterior para fortalecer la gestión de la calidad del aire. Lo anterior se evidencia a través de la Resolución 2254 de 2017 por medio de la cual se establece la norma de calidad del aire y adopta disposiciones para la gestión del recurso aire en el territorio nacional, la Resolución 40351 de 2017 por medio de la cual se modifica el porcentaje de mezcla de biocombustible (incremento el componente de biodiesel a

9%) para el uso en motores diésel en Bogotá, centro del país y llanos orientales, y la Resolución 40527 de 2017 en la cual se revisan los parámetros y requisitos de etanol en la gasolina.

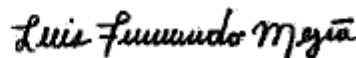
7. Establecimiento de medidas para mejorar el acceso y la calidad del servicio de agua potable y saneamiento en las zonas rurales y mejorar la formulación de las inversiones en agua y saneamiento. Lo anterior se evidencia mediante el Decreto 1898 de 2016 que, entre otros, tiene por objeto definir esquemas diferenciales para la prestación de los servicios de acueducto, alcantarillado y aseo en zonas rurales del territorio nacional y la Resolución 1063 de 2016 en la cual se establecen los requisitos y el mecanismo para la presentación y viabilización de los proyectos del sector de agua potable y saneamiento básico que sean presentados por las entidades territoriales y soliciten apoyo financiero de la nación.
8. Actualización de las normas para actividades complementarias en el tratamiento de residuos sólidos, lo cual se evidencia a través del Decreto 1784 de 2017.
9. Establecimiento de medidas para mejorar la gestión de residuos sólidos. Lo anterior se evidencia mediante el Decreto 596 de 2016, a través del cual se define el esquema operativo de la actividad de aprovechamiento y la transitoriedad para la formalización de los recicladores de oficio y la Resolución 276 de 2016 que establece los lineamientos de dicho esquema operativo y del régimen transitorio para la formalización de acuerdo con el Decreto 1077 de 2015.

En conclusión, los pilares y sus correspondientes acciones de política nombrados anteriormente se encuentran plenamente alineados con los objetivos fundamentales de la Estrategia Envolvente de Crecimiento Verde, en lo relacionado con avanzar hacia un crecimiento sostenible y bajo en carbono y con la protección y aseguramiento del capital natural, continuando así con el valioso apoyo por parte del Banco al cumplimiento de los objetivos planteados en nuestro Plan Nacional de Desarrollo vigente.

Agradeciendo su atención, reciba un cordial saludo.



**Mauricio Cárdenas Santa María**  
Ministro  
Ministerio de Hacienda y Crédito Público



**Luis Fernando Mejía Alzate**  
Director General  
Departamento Nacional de Planeación

Revisó: Lina Ma. Mondragón, Subdirectora de Financiamiento con Organismos Multilaterales y Gobiernos,  
MHCP  
Mónica Peñueta, Subdirectora de Crédito, DNP

MP

## Unofficial Translation – Letter of Development Policy



Bogota D.C., November 2, 2017

**Dr. JIM YONG KIM**  
President  
World Bank Group  
Washington, D.C.

Subject: Second Phase, Sustainable Development and Green Growth DPL

Dear President Kim,

Colombia has historically been characterized by its permanent commitment to generate and promote economic growth safeguarding the sustainability of public finances. Having a good investment grade and a good program of public policies have been essential to consolidate the economic fundamentals, as well as the economy's resilience to internal or external shocks. Although the challenges in this matter are pervasive, and since we still have tremendous obstacles ahead to overcome for reducing inequality and poverty, narrowing regional gaps and increasing our competitiveness and productivity, from the national government we are satisfied with the work carried out to date.

Between 2010 and 2016, the Colombian economy maintained a 4.1% yearly average economic growth. Thanks to this dynamic, during this same period unemployment was reduced to single digits, from a rate of 11.8% in 2010 to close 2016 with an average rate of 9.2%, and 22.2 million of employed persons, representing the highest level in the last 16 years. In the same way, the GDP per capita of Colombians, in constant 2011 dollars, adjusted for purchasing power parity increased significantly. According to the International Monetary Fund, in 2016 GDP per capita would have been at US\$ 13,099, compared to US \$ 10,998 in 2010. As a result, we made significant progress improving the welfare of Colombians, as it is evidenced by the reduction in the monetary poverty rate, from 37.2% in 2010 to 28.0% in 2016, the fall in the incidence of multidimensional poverty, from 30.4% in 2010 to 17.8% in 2016, and the fall in inequality in income distribution, since the Gini coefficient changed from 0.560 in 2010 to 0,517 in 2016.



On the other hand, inflation in 2016 stood at 5.75%, 1.02 percentage points lower than the figure for 2015 and significantly below the maximum of 8.96% observed in July 2016. Continuing this trend, since June 2017 the inflation is in the target range of the Bank of the Republic (between 2% and 4%), which did not occur since January 2015. This result confirms the correction path followed by prices since the second half of 2016, once the temporary shocks from the depreciation of the peso and the El Niño Phenomenon disappeared. The decline in the inflation has also been a consequence of the timely actions by the Bank of the Republic through a contractive monetary policy so that the inflation returned to the target range and expectations remained anchored.

It has been evident how the Colombian economy has shown a remarkable resilience to the shock caused by the fall in oil prices. Growth, despite its reduction, was one of the highest in the region, which was also affected and had to adjust to the end of the boom raw materials prices that make up a good portion of its export basket. Between 2012 and 2016, the Colombian economy grew by an average of 3.7%, positioning the Colombia as the second fastest growing country among the six largest economies in Latin America, only after Peru (4.3%). In the same way, despite the shock, the investment rate continued at historically high levels in 2016 and 2017, remaining the highest in the region.

Additionally, the national government is aware that economic sustainability depends on the development of sound environmental policies that enhance the country's resilience to climate change challenges. It is for this reason that the 2014-2018 National Development Plan (PND): "Everyone for a New Country" (Plan Nacional de Desarrollo 2014-2018: "Todos por un nuevo país") embraced the overarching "Green Growth" strategy, with a development model designed to advance the economic and social well-being of present and future generations, while ensuring the provision of environmental goods and services over the long term.

In 2015, the Government of Colombia applied to the World Bank for a policy loan under the Development Policy Loan (DPL) modality to provide support and assistance for the implementation of this strategy. In this regard, the Bank supported critical policy reforms in the areas of transport and sustainable energy, environmental health, water pollution, disaster risk management and improvements in air quality.

In 2016, the Government of Colombia requested the World Bank to implement a second phase of this loan to ensure that continued support would be provided for this significant initiative. The program for the second phase focuses on the following two pillars: (i) the definition of a set of policy and institutional measures for green growth in transport, energy, environmental health and natural resources; and (ii) improvements in environmental





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quality arising from the reduction of PM2.5 in the air; enhancing access to safe drinking water and sanitation in rural areas, reducing water pollution, improving integrated waste management, and strengthening capacity to reuse and dispose of solid waste.

In relation to the first pillar, the program recognizes the following five policy actions undertaken by the Colombian Government that provide continuity to the reforms implemented during the first phase of the loan, with progress in the following areas:

1. Reduction in Green House Gasses (GHG) emissions through the ratification of the Paris Agreement, as reflected in the enactment of Law No. 1844 of 2017 approving the ratification of this agreement adopted on December 12, 2015 in Paris, France, and by virtue of which Colombia made a commitment to reduce its greenhouse gas emissions by 20 percent by 2030.
2. Establishment of a regulatory framework for the promotion of transport using clean energy. The country has made progress in this area through the enactment of Law 1811 of 2016, the main aim of which is to encourage the use of bicycles as the principal means of transport throughout the national territory and to increase the number of cycling trips; as well as through Resolution 160 of 2017, setting out the conditions for registering automotive vehicles such as mopeds and three- and four-wheeled internal combustion vehicles, electric vehicles and/or any other type of energy generation; and CONPES document 3882 of 2016 establishing the policy guidelines for the central government's co-financing of local investments in public transport.
3. Strengthening of the legal and institutional framework for the promotion of non-conventional renewable energy. Colombia has fulfilled the PND mandate in relation to the Renewable Energy Fund (*Fondo de Energías Renovables-FENOGE*) through Article 368 of Law 1819 of 2016 establishing the administrative structure for the Fund, and Decree 1543 of 2017 that regulates it; as well as through the Decree 884 of 2017 that outlines the rules applicable to the implementation of the National Rural Electrification Plan (*Plan Nacional de Electrificación Rural*), with emphasis on the use of renewable energies.
4. Adoption of a risk management policy for chemical substances. The National Government has made progress in this area through CONPES 3868 of 2016, the aim of which is to strengthen the management of risk associated with the use of chemical substances at all stages of their life cycle.





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NUEVO PAÍS**  
PAZ EQUIDAD EDUCACIÓN

5. Adoption of measures to enhance the protection of forests and improve information on, and the monitoring of, forest management. This is reflected in Decree 1655 of 2017. In addition, Decree 870 of 2017 supports these measures by establishing the guidelines for the development of Payments for Environmental Services and other conservation incentives, while Resolution 470 of 2017 establishes the "Forests of Peace" (*Bosques de Paz*) Program as a model of sustainable management for territories that seek to integrate biodiversity conservation with productive projects targeted at organized communities. Finally, Decree 1257 of 2017, through which the Intersectoral Commission for the Control of Deforestation and Comprehensive Management for the Protection of Natural Forests is created as an institutional body that guides and coordinates all policies and activities related to these matters.

In relation to the second pillar, the program recognizes four policy actions undertaken by the Colombian Government, with progress in the following areas:

6. Adoption of stricter norms for the management of outside air pollution in order to strengthen air quality management. This is reflected in the Resolution 2254 of 2017 by which ambient air quality standard is adopted, the Resolution 40351 of 2017, which modifies the percentage mix of biofuel (an increase in the biodiesel component to nine percent) for use in diesel engines in Bogota, the center of the country and the eastern plains, as well as in Resolution 40527 of 2017, which revises the parameters and requirements for the percentage of ethanol in gasoline.
7. Establishment of measures to improve access to, and the quality of, drinking water and sanitation services in rural areas, and to improve the design of investments in water and sanitation. This is reflected in Decree 1898 of 2016 which, among other things, aims to define a number of different plans for the provision of water, sewage and waste collection services in rural areas of the national territory; as well as in Resolution 1063 of 2016, which establishes the requirements and the mechanism to be followed by territorial entities that may decide to submit and implement basic sanitation and drinking water projects, with a request for financial support from the Nation.
8. Updating of the operating rules governing sanitary landfills and updated regulations for complementary solid waste treatment activities, as reflected in Decree 1784 of 2017.
9. Establishment of measures to improve solid waste management. This is reflected in Decree 596 of 2016, which establishes the operational framework for the activities

of recycling plants and the procedures for the formalization of their operations; as well as in Resolution 276 of 2016, which sets out the guidelines for this operational framework and the transitional arrangements for the formalization of operations in accordance with Decree 1077.

In conclusion, the pillars and their corresponding policy actions outlined above are fully aligned with the fundamental objectives of the Overarching Green Growth Strategy (*Estrategia Envolvente de Crecimiento Verde*) as they relate to the attainment of sustainable, low-carbon growth and the protection and safeguarding of natural capital. In this way, they continue, with the valuable support of the Bank, to meet the objectives set forth in our current National Development Plan.

Very truly yours,

**Mauricio Cárdenas Santa María**  
Minister  
Ministry of Finance and Public Credit

**Luis Fernando Mejía Alzate**  
Director General  
National Planning Department (DNP)

Reviewed by: Lina Mondragón –Assistant Director of Financing from Multilateral Agencies and Governments, MHCP (Ministry of Finance and Public Credit)  
Mónica Peñuela – Assistant Director of Credit, DNP

### **ANNEX 3. Fund Relations**

May 4, 2017

On May 1, 2017, the Executive Board of the International Monetary Fund (IMF) concluded the Article IV consultation<sup>[1]</sup> with Colombia.

In 2016, Colombia continued a remarkably smooth adjustment to a combination of large external and domestic shocks, with economic growth outpacing regional peers and achieving further improvements in poverty and inequality. Growth moderated as investment declined and exports were constrained by weak demand from neighbor countries. A further decline in oil prices eroded fiscal revenue and contributed to peso depreciation. Inflation reached a multi-year high in July partly due to El Niño and other supply shocks, but has moderated since. Despite declining exports, the current account deficit narrowed faster than expected as imports contracted, with FDI and portfolio inflows providing ample financing. The central bank continued to increase rates early in the year to anchor inflation expectations, but lowered them in recent months as inflation pressures subsided. The central government complied with the Fiscal Rule deficit target through primary expenditure cuts and some improvements in tax administration while protecting priority social and infrastructure spending.

Colombia faces a favorable outlook underpinned by the peace agreement and the structural tax reform together with the authorities' infrastructure agenda. Economic activity will rebound slightly this year as investment will strengthen boosted by reduced corporate taxation and confidence stemming from the peace agreement. Non-traditional exports are gaining steam in part due to ongoing efforts to reduce trade barriers and this will contribute to bring the current account deficit to its equilibrium level. Medium-term growth will be driven by economic diversification away from oil which will benefit from the infrastructure agenda and the peace agreement that will improve competitiveness and regional development. Risks to this outlook are to the downside with the main near-term risk stemming from the still large (but moderating) external financing needs. Domestically, while the banking system appears sound and broadly resilient to shocks, some pockets of corporate vulnerability have emerged. On the upside, a faster than expected implementation of the peace agreement could strengthen medium-term growth even more.

#### **Executive Board Assessment<sup>[2]</sup>**

Executive Directors commended the authorities for their strong policy framework and timely policy actions, which supported Colombia's smooth adjustment to a combination of external and domestic shocks. Despite the growth slowdown, the country achieved social gains with improvements in poverty and inequality. While the medium-term outlook is favorable, downside risks remain including possible financial volatility amid the country's relatively high gross external financing needs.

Directors noted that Colombia's favorable medium-term outlook will be helped by the implementation of the peace agreement and the structural reform agenda. After a decade of favorable demographics and a commodity-related investment boom, growth prospects will depend in part on finding new engines of growth. The peace agreement stands to improve regional development and foster social inclusion; while the infrastructure agenda will help reduce important infrastructure gaps and improve productivity.

Directors welcomed ongoing efforts to reduce trade barriers to facilitate export diversification, and encouraged further measures to improve the business environment and develop human capital.

Directors welcomed the structural tax reform approved last year, which will help finance key social and infrastructure programs while adhering to the Fiscal Rule. They concurred that reduced corporate taxation and the overall simplification of the tax system will improve competitiveness. Directors also noted that continued efforts on tax administration will be essential to achieve the target revenue yield. They welcomed the authorities' efforts to finance the implementation of the peace agreement, while noting that the mild negative fiscal impulse is appropriate and will help place the public debt-to-GDP ratio firmly on a downward path.

Directors welcomed the central bank's focus on guiding inflation expectations back to the target range while protecting the external adjustment. Timely policy decisions helped offset inflationary pressures last year and supported a welcome moderation in domestic demand. Directors noted that there is scope to ease the policy stance this year depending on the evolution of inflation expectations, but emphasized that the path of policy rate cuts should remain data-dependent. They considered that the flexible exchange rate regime has served the country well and should remain the first line of defense against global shocks, and the Flexible Credit Line with the Fund represents an additional buffer.

Directors were encouraged by the authorities' plans to further strengthen financial sector supervision and regulation. While the strength of the financial system has withstood the economic slowdown in recent years, some pockets of vulnerabilities have emerged. In this regard, they called for continued monitoring of household and corporate balance sheets. Directors also encouraged the authorities to implement the remaining key recommendations from the FSAP. They agreed that the adoption of Basel III capital standards and the approval of the Conglomerates Law will provide additional tools to manage corporate and overseas risks. Adopting international standards on loan classification and restructuring practices will further enhance the resilience of the financial system.



## **IMF Executive Board Completes Review of Colombia's Performance under the Flexible Credit Line Arrangement**

- IMF Board reaffirms Colombia's continued qualification to access US\$ 11.35 bln Flexible Credit Line
- Colombia is adapting smoothly to the oil price shock, but country continues to face elevated global and regional risks
- The FCL will help authorities' efforts to complete the adjustment to the oil shock and serve as an additional buffer against external shocks

On June 5, 2017, the Executive Board of the International Monetary Fund (IMF) completed its review of Colombia's qualification for the arrangement under the Flexible Credit Line (FCL) and reaffirmed Colombia's continued qualification to access FCL resources. The Colombian authorities stated their intention to continue treating the arrangement as precautionary.

Following the Executive Board's discussion on Colombia, Mr. Tao Zhang, Deputy Managing Director and Acting Chairman of the Board, issued the following statement:

"Colombia is adapting smoothly to the oil price shock experienced since 2014, but the country continues to face elevated global and regional downside risks, including possible capital flow reversals. Despite these uncertainties, the outlook is for a gradual increase in growth and a further reduction of the current account deficit.

"The resilience of the Colombian economy in the face of a complex external environment reflects the country's very strong policy and institutional frameworks and excellent track record of policy implementation. The inflation-targeting regime, flexible exchange rate, fiscal rule, and effective financial supervision and regulation will continue to be integral parts of Colombia's strong policy framework.

"The FCL arrangement will support the authorities' efforts to complete the adjustment to the oil shock and will serve as an additional buffer against external shocks. The authorities will continue to treat the arrangement as precautionary, and intend to reduce access in possible

requests for subsequent FCL arrangements, to the extent that the reduction of the global risks affecting Colombia allow it.”

### **Background:**

The two-year FCL arrangement for Colombia in an amount equivalent to SDR 8.18 billion (about US\$11.350 billion<sup>1</sup>) was approved by the IMF’s Executive Board on June, 2016 (see [Press Release No. 16/279](#)). Colombia’s first FCL arrangement was approved on May 11, 2009 (see [Press Release No. 09/161](#)) and was renewed on May 7, 2010 (see [Press Release No. 10/186](#)), May 6, 2011 (see [Press Release No. 11/165](#)), June 24, 2013 (see [Press Release No. 13/229](#)), and June 17, 2015 (see [Press Release 15/281](#)). The FCL was established on March 24, 2009 and further enhanced on August 30, 2010 (see [Press Release No. 10/321](#)). The FCL is available to countries with very strong fundamentals, policies, and track records of policy implementation and is particularly useful for crisis prevention purposes. FCL arrangements are approved for countries meeting pre-set qualification criteria (see [Press Release No. 09/85](#)). The FCL is a renewable credit line, which could be approved for either one or two years. Two-year arrangements involve a review of eligibility after the first year. If the country draws on the credit line, the repayment period is between three and a quarter and five years. There is no cap on access to Fund resources under the FCL, and access is determined on a case-by-case basis. Qualified countries have the full amount available upfront, with no ongoing conditions. There is flexibility to either draw on the credit line at the time it is approved, or treat it as precautionary.

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<sup>1</sup> Amount based on the Special Drawing Right (SDR) quote of June 06, 2017 of 1 USD = SDR 0.720682.

#### ANNEX 4. Environmental and Poverty/Social Analysis Table

Prior Actions	Positive or negative environmental effects	Poverty, social or distributional effects
<b>Pillar 1: Establish a set of policy and institutional measures for green growth in transport, energy, environmental health and natural resources</b>		
<p><b>Prior Action 1:</b> The GoC, through its Legislative branch, has approved the Paris Agreement, which establishes the legal framework for international cooperation on climate change, including, inter alia: (i) the adoption every five years of progressive national targets to reduce greenhouse gas emissions; (ii) the option to engage in cooperative approaches to use internationally transferred mitigation outcomes to achieve national targets; and (iii) enhancing action on adaptation through sharing information and good practices, improving scientific knowledge on climate and early warning systems, and periodically updating a national communication on climate adaptation.</p>	<p>This prior action would have significant positive effects on the environment and natural resources, including forests. The GoC's goal to reduce GHG emissions by 20 percent by 2030 as part of its INDC will catalyze national and sub-national mitigation and adaptation efforts to maximize the carbon efficiency of economic activities and to develop mitigation plans in the land use sector, therefore building a more resilient and low-carbon economy in line with the environmental priorities of the country while lessening the costs associated with urban air pollution.</p>	<p>No significant adverse impacts on poverty or shared prosperity in the short-term. In the medium to long-term positive but small distributional impacts are expected due to the mitigation of some of the impacts of climate change.</p>
<p><b>Prior Action 2:</b> The GoC has established a regulatory framework for the promotion of clean energy transportation which, inter alia, (i) defines incentives for the use of bicycles and for increasing the number of trips using bicycles; (ii) regulates the registry, and technical and safety inspections applicable to motorcycles, three-wheeled motorcycles and quad-trucks; and (iii) sets policy guidelines for the</p>	<p>Significant positive environmental effects are expected from this prior action. The incentives for the use of bicycles would represent a reduction in the use of motorized vehicles, thus, a decrease in the levels of urban pollution, which would lead to lower rates of mortality and morbidity. These incentives would also have indirect positive effects in the</p>	<p>This prior action is not expected to have significant direct distributional effects. However, mild positive indirect impacts due to improvements in health and moderate negative impacts through labor markets are expected.</p>

Prior Actions	Positive or negative environmental effects	Poverty, social or distributional effects
co-financing by the GoC to local public transport investments.	cardiovascular fitness of individuals.	
<p><b>Prior Action 3:</b> The GoC has strengthened its legal and institutional framework for promoting non-conventional energies by (i) defining FENOGE as a stand-alone Trust Account (<i>Fiducia mercantil - patrimonio autónomo</i>); (ii) defining FENOGE's funding sources, eligibility criteria for allocating funds, the composition and functions of its Board of Directors; and, the criteria for selecting the fiduciary entity that will manage FENOGE's financial resources; and, (iii) setting criteria that prioritizes the use of non-conventional energies in the National Rural Electrification Plan.</p>	<p>The small scale of the power generation programs and projects makes technically and economically unfeasible the development of atomic energy under the activities supported by this PA. Moreover, the GoC has prioritized non-conventional renewable energy to be eligible for funding by FENOGE and supported by the National Rural Electrification Plan. Renewable energy projects would have significant positive environmental and health benefits, including a decrease in GHG, black carbon, and other particulate matter (PM), which will, in turn, reduce the costs associated with urban and rural air pollution. The installation of wind farms, solar, and geothermal energy plants could have indirect cumulative negative effects. However, these are expected to be moderate.</p>	<p>No significant positive distributional impacts are expected. Any indirect impact would be positive but moderate.</p>
<p><b>Prior Action 4:</b> The GoC has adopted a risk management policy on chemical substances that establishes: (i) a program to manage chemical substances for industrial uses; (ii) a program to prevent major chemical accidents; and (iii) measures for strengthening risk management capacity of chemical substances.</p>	<p>Positive environmental effects are expected from this prior action, as prevention and control mechanisms of industrial chemical substances would lead to a lower frequency of accidents during their transport and processing, reducing the risk of water, air, and soil pollution. The health and economic benefits include a reduced incidence of unintentional and occupational poisoning, a reduction in the use of emergency medical systems, and an early detection and</p>	<p>No direct distributional effects are expected from this prior action. Indirect positive impacts in welfare due to lower risks of environmental pollution could occur, but no effects in poverty or inequality are expected.</p>



Prior Actions	Positive or negative environmental effects	Poverty, social or distributional effects
	elimination of unusually hazardous commercial products through repackaging or reformulation.	
<b>Prior Action 5:</b> The GoC has adopted measures to increase forests protection and improve forest management information and monitoring by: (i) establishing a system of PES; (ii) setting up the organization and functions of the National Information System of Forests (SNIF), the National Forests Inventory (IFN) and the Forests and Carbon Monitoring Systems; and (iii) establishing the Forests for Peace program and the Intersectoral Commission for Deforestation Control and Comprehensive Management for Protecting Natural Forests.	Significant positive effects are expected from this prior action. Benefits include better air quality, regulation of watersheds, and improvements in the livelihoods of local communities. By providing an additional source of income for private and collective land owners, the system of payments for environmental services would promote forest and natural resources conservation.	Policies aimed at improving forest protection and management promoted by prior action 5 are not expected to have any positive nor negative direct impact on poverty or inequality in the short-run.
<b>Pillar 2: Improvement in the quality of life by reducing PM2.5 in air; improving access to and the quality of drinking water and sanitation in rural areas; reducing water pollution; enhancing integrated solid waste management; and increasing capacity for solid waste reuse and disposal.</b>		
<b>Prior Action 6:</b> The GoC has taken measures to strengthen air quality management by: (i) approving a resolution that, upon publication, will update outdoor air quality norms by setting new progressive maximum permissible levels (starting in 2018 through 2030) for “criteria pollutants” including PM2.5; (ii) increasing the biofuel component to 9 percent in diesel(B-9); and (iii) revising the parameters and requirements of ethanol in gasoline.	This prior action would translate into positive environmental health effects by reducing the costs associated with premature mortality, lower respiratory illnesses, chronic bronchitis, asthma, restricted activity days, hospital admissions, as well as emergency room and outpatient hospital visits.	This prior action is not expected to have significant distributional impacts in the short-term.

Prior Actions	Positive or negative environmental effects	Poverty, social or distributional effects
<p><b>Prior Action 7:</b> The GoC has established measures to improve access to and quality of service for potable water and sanitation in rural areas, and improve the formulation of water and sanitation investments by (i) regulating appropriate requirements for the provision of potable water and sanitation services; (ii) regulating appropriate solutions for domestic wastewater management; and (iii) issuing preparation guidelines for water and sanitation sector investments by entities that request financial support from the GoC.</p>	<p>This prior action would have positive effects on health, particularly in more isolated rural areas, by reducing the incidence of waterborne diseases and preventing the spread of infectious illnesses and the pollution of soil and water associated with the inadequate management of solid waste.</p>	<p>This action is not expected to have direct effects in poverty or shared prosperity, but it may have moderate, although positive, indirect effects in the medium-run through health improvements.</p>
<p><b>Prior Action 8:</b> The GoC has (i) updated operation standards for sanitary landfills; and (ii) updated regulations for complementary solid waste treatment activities.</p>	<p>This prior action would have positive effects on the environment and health, as alternative technologies, such as waste-to-energy do not produce methane and generate almost ten times more electricity from each ton of waste compared to landfilling. Other positive effects include a reduction in soil and water pollution, stemming from landfilling; lower risk of infectious diseases; and less waste blocking channels and gullies. However, alternative technologies could have adverse environmental and health effects. Mechanical reduction and sorting of solid waste could lead to occupational health risks i.e., excessive noise levels. Flue gases from incineration methods include various air pollutants, most of which are carcinogenic. To</p>	<p>No direct effects on poverty or shared prosperity, but will foster favorable health conditions by reducing the pollution of solid waste.</p>

Prior Actions	Positive or negative environmental effects	Poverty, social or distributional effects
	address these potential effects, the GoC has developed legal instruments and has carried out a comprehensive assessment to identify the best technology options.	
<b>Prior Action 9:</b> The GoC has established measures to improve solid waste management by establishing the operational framework for the reuse of solid waste and the timeline for the compliance of waste pickers as formal suppliers in the reuse activity.	This prior action has a positive effect on the environment, including a reduction of solid waste in landfills; the conservation of natural resources; the prevention of pollution due to the less need to collect new raw materials.	The team does not expect significant distributional impacts in the short-run due to this prior action. Negative impacts on labor market outcomes are expected to be mitigated by the partial phase-out of the program

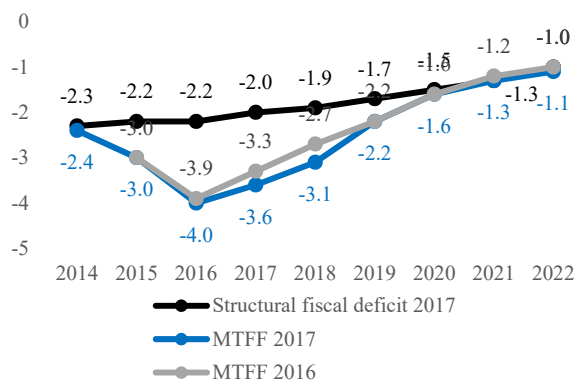
### ANNEX 5. Expected long-term impacts on natural and human wealth, income and fiscal revenue from DPF2 prior actions

Prior Action	Wealth (Natural and Human Capital)		Income growth		Fiscal	
	Sign	Mechanism	Sign	Mechanism	Sign	Mechanism
<b>PA1:</b> Approval of the Paris Agreement	(+)	* Human Capital(HC): better information about adaptation options and enhancement of climate resilience. Analysis done in the context of the Partnership for Market Readiness shows that welfare increases with the implementation of mitigation measures, while there are no substantive changes in income distribution. * Natural Capital (NC): reduced deforestation from meeting targets in the forest sector.	(+)	* Efficiency gains may derive from the savings in the use of energy resources. Supply-side growth may result from investments in technology deriving from pursuing NDC targets. Analysis done in the context of the Partnership for Market Readiness shows that short term reduction in growth are more than compensated by medium and long-term increases in growth. It also shows that mitigation measures focused on final energy consumption have positive effects on the economy.	(~)	* Positive impacts deriving from increased access to international finance for mitigation and adaptation. Negative impacts deriving from increased public spending to meet NDC targets.
<b>PA2:</b> Establishing a promotion and regulatory framework for clean energy transportation	(+)	* HC: improved health via decrease in air pollutants, road safety, and exercise. * NC: reduced demand for fuels.	(+)	* Increased demand for other goods/services as households reduce expenditure in transportation and low income households access transportation.	(~)	* Possible decrease in revenue from fuel tax if fuel consumption drops in absolute terms.
<b>PA3:</b> Strengthening the legal and institutional framework for promoting non-conventional energies	(+)	*HC: improved health from reduced air pollution from coal plants.	(+)	*Decrease chances of energy shortages via diversification of energy matrix. *Increase productivity in rural areas via access to electricity * Increase in rural household demand.	(~)	
<b>PA4:</b> Adopting a risk management policy on chemical substances	(+)	*HC: improved health from reduced exposure to chemical substances. *NC: decreased chemical pollution.	(~)		(~)	
<b>PA5:</b> Adopting measures to increase forests protection and improve forest management information and monitoring	(++)	*NC: increased protection in forest timber and non-timber resources. * increase in land productivity via reduced soil erosion and improved water regulation.	(+)	*Increased agricultural productivity via ecosystem services provision (better soils, water regulation). * Increased rural household demand because of increased income from Payment for Ecosystem Services and Forest for Peace programs participants * Diversification of the economy in rural areas.	(~)	*Increased expenditure to finance forest protection and monitoring programs.

Prior Action	Wealth (Natural and Human Capital)		Income growth		Fiscal	
	Sign	Mechanism	Sign	Mechanism	Sign	Mechanism
<b>PA6:</b> Adoption of stricter regulations for outdoor air pollution to strengthen air quality management	(~)	*HK: improved health via reduced air pollution. *NC - potential contribution to deforestation via the expansion of the agricultural frontier from sugar cane and palm oil crops.	(+)	* Increase in rural demand from rural jobs.	(-)	* Decrease in revenue due to increase in ethanol and biodiesel mix that does not pay taxes.
<b>PA7:</b> Establishment of measures to improve access to and quality of service for potable water and sanitation in rural areas, and improve the formulation of water and sanitation investments.	(+)	*HC: improved health via reduced death and disease from access and better quality of water and sanitation services.	(~)		(~)	
<b>PA8:</b> Updated operation standards for sanitary landfills and updated regulations for complementary solid waste treatment activities	(+)	*HC: improved health from adequate waste disposal *NC: increase in value of lands.				
<b>PA9:</b> Establishing measures to improve solid waste management through establishing the operational framework for the reuse of solid waste and the timeline for the compliance of waste pickers as formal suppliers in the reuse activity.	(+)	*HC: improved health from adequate waste management.	(+)	* Increased demand from solid waste pickers.	(+)	*Increase in revenue from additional charge to final disposals.
Note: (+) Positive impact; (~) undetermined impact; (-) negative impact. HC: Human capital; NC: Natural capital.						

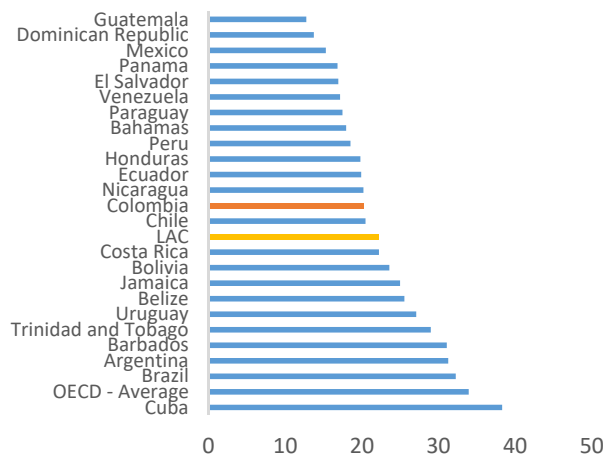
## ANNEX 6. Macroeconomic Details

**Figure 1. Central Government Deficit Path**



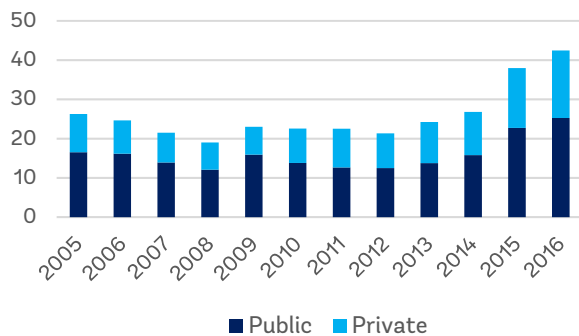
Source: Fiscal Rule Consultation Committee.

**Figure 2. General Government Tax Revenues to GDP Ratio, 2012-2015 Average**

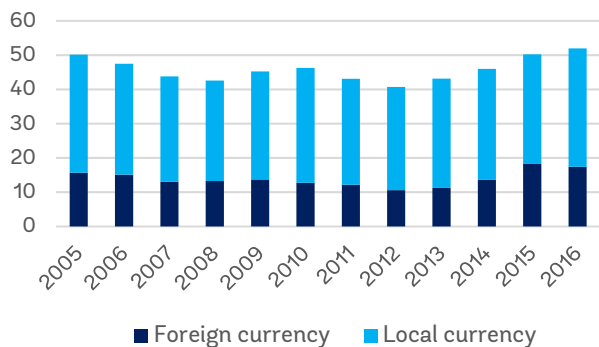


Source: OECD.

**Figure 3. External debt (% of GDP)**

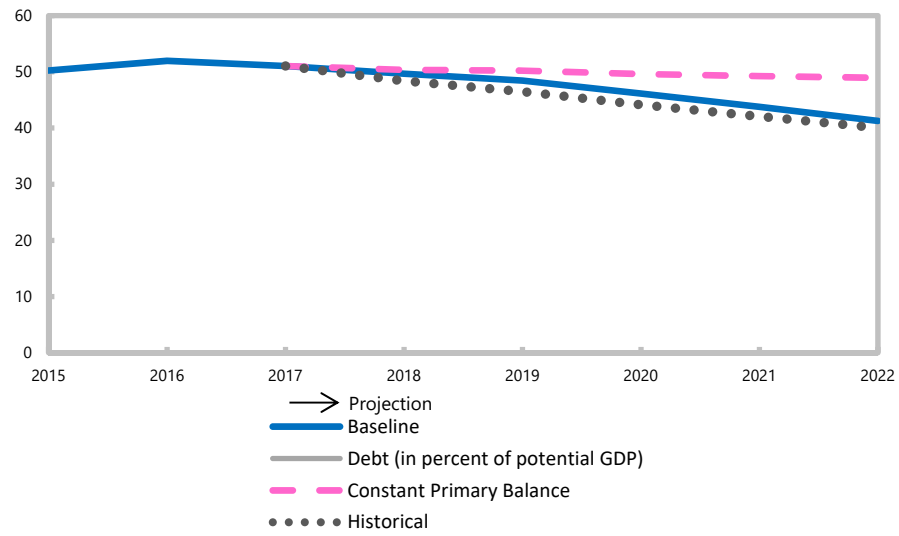


**Figure 4. Gross public debt (% of GDP)**



Source: Central Bank, IMF and World Bank staff calculations.

**Figure 5. Debt Sustainability Analysis (public debt, % of GDP)**



## ANNEX 7. Analytical Underpinnings

Prior Actions under DPF 2	Analytical Underpinnings
<b>Pillar 1 – Establish a set of policy and institutional measures for green growth in transport, energy, environmental health, and natural resources</b>	
<p><b>Prior Action 1:</b> The GoC, through its Legislative branch, has approved the Paris Agreement, which establishes the legal framework for international cooperation on climate change, including, inter alia: (i) the adoption every five years of progressive national targets to reduce greenhouse gas emissions; (ii) the option to engage in cooperative approaches to use internationally transferred mitigation outcomes to achieve national targets; and (iii) enhancing action on adaptation through sharing information and good practices, improving scientific knowledge on climate and early warning systems, and periodically updating a national communication on climate adaptation.</p>	<ul style="list-style-type: none"> <li>• The <i>Country Partnership Framework</i> prepared by the World Bank which promotes Sustainable Growth with Enhanced Climate Change Resilience in sectoral focus areas of: transport, energy, water and sanitation, agriculture, forestry and livestock, housing, health and natural resources.</li> <li>• The Bank prepared the report <i>Low-Carbon Development for Colombia</i> (2014) jointly with the DNP. This report was intended to contribute to Colombia's climate change strategy and action plan. It represents a two-year effort by a team of Colombian and international experts to identify and evaluate policies and actions to reduce GHG emissions. The study used two important tools for undertaking low carbon assessments: an economic methodology for estimating the costs of low carbon measures across sectors and a macroeconomic model developed by the DNP to assess the integrated impacts of specific low carbon measures on the rest of the economy, including economic growth and employment.</li> <li>• The <i>Intended Nationally Determined Contributions (iNDCs) of Colombia</i> which sets the country's commitment to the fight climate change and adoption of a new legal binding agreement.</li> <li>• The <i>Bases del Plan Nacional de Desarrollo 2014–2018, Todos por un Nuevo País. Versión para el Congreso. Departamento Nacional de Planeación (DNP) of Febrero de 2015</i>, which provide the strategic guidelines to achieve a resilient growth and reduce risks of natural hazards under the climate change scenario while promoting climate change mitigation and adaptation activities.</li> <li>• The <i>Panorama del cambio climático en Colombia</i> prepared by the <i>Departamento Nacional de Planeación (DNP)</i> with support of CEPAL and Inter-American Development Bank (IDB) provides an overview of the economic costs of climate change in Colombia.</li> <li>• The “<i>Mainstreaming Climate Change in Colombia</i>” prepared by the UNDP addresses the challenges of the different sectors of Colombia regarding climate change impacts.</li> </ul>
<p><b>Prior Action 2:</b> The GoC has established a regulatory framework for the promotion of clean energy transportation which, inter alia, (i) defines incentives for the use of bicycles and for increasing the number of trips using bicycles; (ii) regulates the registry, and technical and safety inspections applicable to motorcycles, three-wheeled motorcycles and</p>	<ul style="list-style-type: none"> <li>• The Bank prepared the policy note <i>Hacia la paz sostenible, la erradicación de la pobreza y la prosperidad compartida. Notas de política: Colombia. Bogotá D. C.: Banco Mundial</i> (2014) which identifies priority issues on the environmental agenda through the lens of sustainable growth. Considering that natural resources are the backbone of the Colombian economy, the note presents the technical justification to (a) address pollution management as the main priority on Colombia's environmental agenda, with a focus on shared prosperity and (b) invest in wastewater treatment and solid waste management to keep up with growing urban areas.</li> <li>• The trigger related to transport is supported by the analytical underpinnings that the Bank was leading between 2007 and 2014. In addition, the Bank prepared the report <i>Low-Carbon Development for</i></li> </ul>



Prior Actions under DPF 2	Analytical Underpinnings
<p>quad-trucks; and (iii) sets policy guidelines for the co-financing by the GoC to local public transport investments.</p>	<p>Colombia (2014) jointly with the DNP. This report was intended to contribute to Colombia's climate change strategy and action plan. It represents a two-year effort by a team of Colombian and international experts to identify and evaluate policies and actions to reduce GHG emissions. The study used two important tools for undertaking low carbon assessments: an economic methodology for estimating the costs of low carbon measures across sectors and a macroeconomic model developed by the DNP to assess the integrated impacts of specific low carbon measures on the rest of the economy, including economic growth and employment. The recommendations provided by this report support the proposed prior action and are consistent with the <i>Plan de acción sectorial de mitigación. Sector Transporte</i>, which was prepared by the Minister of Transport as part of the Low Carbon Strategy for Colombia. For the transport sector, in particular, the DNP has requested the preparation of the report <i>Crecimiento Verde e Inclusivo para el Sector Transporte en Colombia</i> by Darío Hidalgo (2014). This report discusses the principles for green and inclusive growth in the transport sector, including a diagnosis and proposals to be included in the NDP 2014–2018.</p> <ul style="list-style-type: none"> <li>• The overarching Green Growth reform builds on the <i>Bases del Plan Nacional de Desarrollo 2014–2018, Todos por un Nuevo País. Versión para el Congreso. Departamento Nacional de Planeación. Febrero de 2015</i>. This document, prepared by the DNP, is the analytical basis for the NDP and provides the strategic guidelines for public policy in Colombia. Green growth has been defined by this document as one of its six structural strategies for the achievement of development based on peace, education, and equity. The NDP has been supported, among others, by key analytical documents entrusted by the DNP to different experts such as the <i>Bases Conceptuales sobre Economía Verde e Identificación de Sectores Potenciales para su Implementación de acuerdo a la experiencia internacional</i>, Mariet Alejandra Sánchez Abril, 2013</li> <li>• The trigger related to transport is supported by the analytical underpinnings that the Bank was leading between 2007 and 2014. In addition, the Bank prepared the report <i>Low-Carbon Development for Colombia (2014)</i> jointly with the DNP. This report was intended to contribute to Colombia's climate change strategy and action plan. It represents a two-year effort by a team of Colombian and international experts to identify and evaluate policies and actions to reduce GHG emissions. The study used two important tools for undertaking low carbon assessments: an economic methodology for estimating the costs of low carbon measures across sectors and a macroeconomic model developed by the DNP to assess the integrated impacts of specific low carbon measures on the rest of the economy, including economic growth and employment. The recommendations provided by this report support the proposed prior action and are consistent with the <i>Plan de acción sectorial de mitigación. Sector Transporte</i>, which was prepared by the Minister of Transport as part of the Low Carbon Strategy for Colombia. For the transport sector, in particular, the DNP has requested the</li> </ul>

Prior Actions under DPF 2	Analytical Underpinnings
	<p>preparation of the report <i>Crecimiento Verde e Inclusivo para el Sector Transporte en Colombia</i> by Darío Hidalgo (2014). This report discusses the principles for green and inclusive growth in the transport sector, including a diagnosis and proposals to be included in the NDP 2014–2018.</p> <ul style="list-style-type: none"> <li>• The Aide Memoire from workshop “Strengthening of the Strategic Public Transportation Systems” organized by DNP in May 2016. The objective of the workshop was to strengthen management in public transportation systems for knowledge exchange.</li> </ul>
<p><b>Prior Action 3:</b> The GoC has strengthened its legal and institutional framework for promoting non-conventional energies by (i) defining FENOGE as a stand-alone Trust Account (<i>Fiducia mercantil - patrimonio autónomo</i>); (ii) defining FENOGE’s funding sources, eligibility criteria for allocating funds, the composition and functions of its Board of Directors; and, the criteria for selecting the fiduciary entity that will manage FENOGE’s financial resources; and, (iii) setting criteria that prioritizes the use of non-conventional energies in the National Rural Electrification Plan.</p>	<ul style="list-style-type: none"> <li>• The Bank prepared the report Low-Carbon Development for Colombia (2014) jointly with the DNP. This report was intended to contribute to Colombia’s climate change strategy and action plan. It represents a two-year effort by a team of Colombian and international experts to identify and evaluate policies and actions to reduce GHG emissions. The study used two important tools for undertaking low carbon assessments: an economic methodology for estimating the costs of low carbon measures across sectors and a macroeconomic model developed by the DNP to assess the integrated impacts of specific low carbon measures on the rest of the economy, including economic growth and employment.</li> <li>• This prior action and related trigger is supported by the report <i>Integración de las energías renovables no convencionales en Colombia</i>, prepared by MINMINAS y UMPE (2015) with the support of the Global Environment Facility and the Inter-American Development Bank (IDB). This report has served to develop activities, analyses, and proposals to promote enabling conditions for penetration of nonconventional renewable energy sources through the identification of major barriers at the national level and the determination of potential regulatory measures and policy recommendations as well as the necessary actions to develop a strategy targeted to these sources in Colombia. In addition, ISAGEN developed specific technical work in the field of geothermal energy which is under this same technical cooperation.</li> </ul>
<p><b>Prior Action 4:</b> The GoC has adopted a risk management policy on chemical substances that establishes: (i) a program to manage chemical substances for industrial uses; (ii) a program to prevent major chemical accidents; and (iii) measures for strengthening risk management capacity of chemical substances.</p>	<ul style="list-style-type: none"> <li>• This prior action is informed by the report <i>Evaluaciones del desempeño ambiental. Colombia</i>, prepared by the OECD (2014). This OECD report provides a wide-ranging assessment of environmental conditions and policies, including the management of chemical substances.</li> <li>• The report, <i>Intoxicaciones con Sustancias Químicas</i> prepared by the <i>Sistema Nacional de Vigilancia en Salud Pública (SIVIGILA) del Instituto Nacional de Salud (INS)</i>, (2015).</li> <li>• <i>Marco conceptual para la construcción del programa de prevención de accidentes mayores en Colombia. Bogotá</i>. Prepared by MDAS and MinTrabajo (2016).</li> <li>• <i>Perfil Nacional de Sustancias Químicas en Colombia. Bogotá</i>. Prepared by MADS (2012).</li> <li>• Updates of chapter 2 and 3 of the <i>Perfil Nacional de sustancias Químicas en Colombia. Bogotá</i>. Prepared by MADS (2015).</li> </ul>

Prior Actions under DPF 2	Analytical Underpinnings
<p><b>Prior Action 5:</b> The GoC has adopted measures to increase forests protection and improve forest management information and monitoring by: (i) establishing a system of PES; (ii) setting up the organization and functions of the National Information System of Forests (SNIF), the National Forests Inventory (IFN) and the Forests and Carbon Monitoring Systems; and (iii) establishing the Forests for Peace program and the Intersectoral Commission for Deforestation Control and Comprehensive Management for Protecting Natural Forests.</p>	<ul style="list-style-type: none"> <li>• The Bank prepared the report Low-Carbon Development for Colombia (2014) jointly with the DNP. This report was intended to contribute to Colombia's climate change strategy and action plan. It represents a two-year effort by a team of Colombian and international experts to identify and evaluate policies and actions to reduce GHG emissions.</li> <li>• This prior action is informed by a number of analytical products generated as part of the development of the National Reduced Emissions from Deforestation and Forest Degradation (REDD+)<sup>46</sup> Strategy led by MADS, and supported by FCPF and UN-REDD programs.</li> <li>• In addition, this prior action is informed by the results and lessons learned from several operations financed by the Bank, that are piloting the use of PES as public policy instrument for forest protection. These operations include the Sustainable Low-Carbon Development in Orinoquia region Project (P160680), Forest Conservation and Sustainability in the Heart of the Colombian Amazon (P144271).</li> </ul>
<p><b>Pillar 2 - Improvement in the quality of life by reducing PM<sub>2.5</sub> in air; improving access to and the quality of drinking water and sanitation in rural areas; reducing water pollution; enhancing integrated solid waste management; and increasing capacity for solid waste reuse and disposal.</b></p>	
<p><b>Prior Action 6:</b> The GoC has taken measures to strengthen air quality management by: (i) approving a resolution that, upon publication, will update outdoor air quality norms by setting new progressive maximum permissible levels (starting in 2018 through 2030) for "criteria pollutants" including</p>	<ul style="list-style-type: none"> <li>• The GoC and the Bank maintained a long-lasting dialogue on pollution management that started in 2007 and was finalized by the report entitled <i>Environmental Priorities and Poverty Reduction: A Country Environmental Analysis in Colombia</i>. This study was carried out in parallel with the preparation of the first Sustainable Development DPF to provide the GoC with an analytical framework to support its efforts toward achieving the Millennium Development Goals (MDGs), with its findings expected to support the design and implementation of policies focused on protecting the most vulnerable groups, especially children under five years of age in poor households. By achieving this objective, the CEA provided a basis for the structure of that loan and for the future development of related operations. This study was followed by more recent analytical efforts which have updated some of the variables originally considered in 2007:</li> </ul>

<sup>46</sup> Reduced Emissions from Deforestation and Forest Degradation, and the conservation, sustainable management and the enhancement of forest carbon stocks.

Prior Actions under DPF 2	Analytical Underpinnings
<p>PM2.5 (ii) increasing the biofuel component to 9 percent in diesel(B-9); and (iii) revising the parameters and requirements of ethanol in gasoline.</p>	<p>(a) <i>Overcoming Institutional and Governance Challenges in Environmental Management Case Studies from Latin America and the Caribbean Region</i>. Environment and Water Resources LCSEN, Occasional Paper Series; (b) <i>Environmental Health Costs in Colombia: The Changes from 2002 to 2010</i>. The World Bank, Latin America and Caribbean Region (2014); (c) <i>Environmental Health in Colombia: An Economic Assessment of Health Effects and their Costs</i>. Prepared for the World Bank by Bjorn Larsen and John Magne Skjelvik, December 2014; and (d) <i>Benefits and Costs of Household Air Pollution Control in Colombia</i>. Prepared for the World Bank by Bjorn Larsen, December 30, 2014. These subsequent updates confirm the trends and the priorities identified in 2007.</p> <ul style="list-style-type: none"> <li>• The prior action is also supported by the study, <i>Informe del Estado de la Calidad del Aire en Colombia 2011-2016</i>, prepared by IDEAM (2016). The study reports on the levels of concentration of seven air pollutants from 2011-2015.</li> <li>• The <i>Assessment of Colombia's crematoriums</i> by Ambar Tech (2012) provides an analysis of information on the sector's compliance with environmental requirements.</li> <li>• <i>National Inventory of the Colombian Brick Sector 2015</i> by the Corporación Ambiental Empresarial CAEM (2015).</li> </ul>
<p><b>Prior Action 7:</b> The GoC has established measures to improve access to and quality of service for potable water and sanitation in rural areas, and improve the formulation of water and sanitation investments by (i) regulating appropriate requirements for the provision of potable water and sanitation services; (ii) regulating appropriate solutions for domestic wastewater management; and (iii) issuing preparation guidelines for water and sanitation sector investments by entities that request financial support from the GoC.</p>	<ul style="list-style-type: none"> <li>• This prior action is informed by the report <i>Agua Potable, Saneamiento y los Objetivos de Desarrollo del Milenio en América Latina y el Caribe</i>, prepared by the Inter-American Development Bank (IDB) (2013) and the <i>Valoración de Daños y Pérdidas por la Ola Invernal 2010-2011 ("La Niña")</i>, prepared by the IDB and the Economic Commission for Latin America and the Caribbean (CEPAL) (2011). These reports served as resources to elaborate the diagnosis water and sanitation sector status to subsequently identify the areas needed for improvement.</li> </ul>
<p><b>Prior Action 8:</b> The GoC has (i) updated operation standards for sanitary landfills and (ii) updated regulations for</p>	<ul style="list-style-type: none"> <li>• In the context of the Recent Economic Developments in Infrastructure (REDI) Preparation of National Strategy for Infrastructure Development (P151249), the Bank has conducted the study <i>COLOMBIA: Desarrollo Económico Reciente en Infraestructura. Preparación de la Estrategia Nacional para el Desarrollo de la Infraestructura Sector Aseo</i> (2014). The</li> </ul>

Prior Actions under DPF 2	Analytical Underpinnings
complementary solid waste treatment activities.	<p>objective of the REDI was to support the preparation of a national strategy for infrastructure development. The strategy will serve as a basis for the implementation of new infrastructure policies in the country (policies related not only to sectoral issues but also to infrastructure financing and public-private partnership [PPP] schemes). Additionally, it will serve as a tool for sectoral planning and investment prioritization.</p> <ul style="list-style-type: none"> <li>• This prior action is supported by the study, <i>Estudio de técnicas alternativas de tratamiento, disposición final y/o aprovechamiento de residuos sólidos - propuesta de ajuste decreto 838 de 2005 (compilado en el decreto 1077 de 2015)</i>, May 13, 2016.</li> </ul>
<p><b>Prior Action 9:</b> The GoC has established measures to improve solid waste management by establishing the operational framework for the reuse of solid waste and the timeline for the compliance of waste pickers as formal suppliers in the reuse activity.</p>	<ul style="list-style-type: none"> <li>• This prior action is informed by the report, <i>Informe sobre la política pública de inclusión de recicladores de oficio en la cadena de reciclaje Barranquilla, Bogotá, Bucaramanga, Manizales y Medellín</i> prepared by Oscar Andrés Jiménez (2014) for the GoC. This document contains an analysis of the model of public policy for inclusion of the recyclers in five cities in Colombia.</li> <li>• In addition, the report <i>Recicladoras y recicladores de Bogotá, Colombia</i> prepared by Angélica Acosta Táutiva y Rovitzon Ortiz Olaya (2013) for the GoC as part of a study to monitor the informal economy. The study combines quantitative and qualitative methods of research and seeks to provide a thorough understanding of how three groups of home informal workers, street vendors, and waste pickers are affected by (and respond to) economic, political trends and urban practices, the dynamics of the value chain, and other economic and social drivers.</li> <li>• This prior action is also supported by the study <i>Estudio de técnicas alternativas de tratamiento, disposición final y/o aprovechamiento de residuos sólidos - propuesta de ajuste decreto 838 de 2005 (compilado en el decreto 1077 de 2015)</i>, May 13, 2016.</li> </ul>

## ANNEX 8. Climate Change Co-Benefits

Prior Action (Sector)	Climate Change Mitigation (CCM) / Climate Change Adaptation (CCA)
PA 1 (Climate Change)	<p>CCM: GHG emissions reduction (20 percent of GHG reduction by 2030) results from the implementation of the NDC.</p> <p>CCA: Development of plans for the most vulnerable sectors (transport, housing, energy, agriculture and health) and territories is in line with the National Adaptation Plan to Climate Change.</p>
PA 2 (Transport)	CCM: GHG emissions reduction results from the promotion of urban transport modal change, by increasing public and non-motorized transport in eight major cities of Colombia.
PA 3 (Energy)	CCM: GHG emissions are reduced due to the integration of renewable energies into the existing energy grid.
PA 4 (Chemical Substances)	<p>The life cycle of the chemical industry (production/import, intermediate storage, transportation, usage/export, final disposal) is energy intensive.<sup>47</sup> Therefore, strengthening the risk management capacity of industrial chemical substances contributes to reduce energy consumption<sup>48</sup>.</p> <p>CCA: Indirect contribution to the quality of soil, air, and water resources through reductions in risks of chemical contamination by leaks and accidents, which are exacerbated by climate-induced natural hazards (flooding events and extreme hydrometeorological events).</p>
PA 5 (Forests)	CCM: Reduced GHG emissions from deforestation, forest degradation, and the conservation, enhancement, and sustainable management of forest carbon stocks.
PA 6 (Air pollution)	<p>CCM: Indirect GHG emissions reduction from lower carbon fuel use in diesel and gasoline.</p> <p>CCA: Strengthening air quality management norms will reduce outdoor air pollution, which can be exacerbated by climate change (e.g. through temperature rise leading to increased ground-level ozone concentration and</p>

<sup>47</sup> Organization for Economic Co-operation and Development; OECD, Environmental Outlook for the Chemicals Industry, 2001

<sup>48</sup> In 2015, more than 33,000 cases of poisoning were registered due to the inadequate management of the risks of using chemical substances, including facilities that do not comply with basic industrial safety standards and untrained personnel (CONPES 3868, *Política de gestión del riesgo asociado al uso de sustancias químicas*, 2016).

Prior Action (Sector)	Climate Change Mitigation (CCM) / Climate Change Adaptation (CCA)
	higher risk of wildfires with an associated rise in particulate matter concentration).
PA 7 (Water and Sanitation)	CCA: Improving access and quality of service to potable water and sanitation in rural areas will increase the resilience against the impacts of climate change (extreme flooding and drought cycle events), by improving water resources and water security (quality and quantity of water for water system distribution).
PA 8 (Landfills)	CCM: Regulating operation standards for sanitary landfills and updating regulations for complementary solid waste treatment activities will contribute to GHG emissions reductions from solid waste disposal sites (methane-rich landfill gas).
PA 9 (Solid Waste reuse)	CCM: GHG emissions reductions will result from improved solid waste management measures (waste collection, reuse of materials and incentives for posterior recycling).

## ANNEX 9. Establishment of Baseline - Mean Annual Concentration of Particulate Matter (PM<sub>2.5</sub>)

### Background

1. Air pollution, notably PM<sub>2.5</sub> (fine particulate matter less than 2.5 microns in aerodynamic diameter), has been identified as a significant environmental risk to health in several Colombian cities and urban centers. Colombia's standards for mean ambient PM<sub>2.5</sub> concentrations are 25 µg/m<sup>3</sup> annually and 50 µg/m<sup>3</sup> for a 24-hour period. In comparison, the World Health Organization (WHO) air quality guideline values for PM<sub>2.5</sub> are 10 µg/m<sup>3</sup> annual mean, and 25 µg/m<sup>3</sup> 24-hour mean. The proposed DPF includes policy actions to reduce ambient air pollution, specifically PM<sub>2.5</sub> concentrations.

### Objectives

2. The purpose of this annex is to present the methodological approach taken to establish an appropriate baseline of mean annual concentration of ambient PM<sub>2.5</sub>, in the cities of Medellin, Bogota, and Cali prior to the approval of the DPF program. Upon completion of the DPF program (currently envisaged to take place in 2018), measurements of mean annual PM<sub>2.5</sub> ambient concentrations will be compared to the baseline in order to assess whether the DPF target for improved air quality has been met.

### Study Area

3. Three cities were initially examined as part of this exercise, namely Medellin, Bogota and Cali, given the high levels of air pollution and populations in these cities. Each of these cities forms part of a metropolitan area, so that in establishing a baseline, it is important to specify the limits to be considered. For the city of Bogotá, the limits of the Federal District were considered; while for Cali, those of the Municipality of Santiago de Cali were considered. Medellín shares the Aburrá Valley air shed and metropolitan area with a number of municipalities, which jointly comprise the *Área Metropolitana del Valle de Aburrá* (AMVA). For Medellin, the entire AMVA was considered to be the limit.

### Publicly Available Data Sources

4. Air quality monitoring and measurement in Colombia are conducted by local and regional environmental authorities (*Autoridades Ambientales*). Data from these activities are publicly available on the internet at the websites of the respective environmental authorities. For the cities of Bogotá and Cali, the environmental authorities are the District Environmental Secretariat (*Secretaría Distrital de Ambiente*, SDA) Bogotá; and Administrative Department of Environmental Management (*Departamento Administrativo de Gestión del Medio Ambiente*, DAGMA), Cali. For the metropolitan area including Medellín, the environmental authority is the *Área Metropolitana del Valle de Aburrá* (AMVA). Published data on the mean annual PM<sub>2.5</sub> concentrations taken for the latest available calendar year - 2014 - are presented and discussed below.

5. **Bogota.** Monthly average PM<sub>2.5</sub> concentrations for several air quality monitoring stations were downloaded from the *Observatorio Ambiental de Bogotá*. Until 2013, only very limited PM<sub>2.5</sub> data were available for Bogotá, but several new PM<sub>2.5</sub> monitors began operation in late 2013 and 2014.

6. Table 9.1 shows the mean of the reported monthly averages for the seven monitoring sites for which at least nine monthly average values were reported during January to December 2014.



**Table 9.1: Average 2014 PM<sub>2.5</sub> concentrations (in µg/m<sup>3</sup>) for seven air quality monitoring sites in Bogotá**

	Air Quality Monitoring Site						
	Kennedy	Carvajal	CdAR	Usaquen	Tunal	Ministerio del Ambiente	Suba
PM <sub>2.5</sub> concentration	32.0	35.1	20.3	13.6	23.3	15.9	21.8
Months observed	11	9	10	10	12	9	9
Environment	Urban	Urban	Urban	Urban	Urban	Urban	Suburban
Type	Back-ground	Traffic	Back-ground	Back-ground	Back-ground	Back-ground	Back-ground

7. Table 9.1 shows, the annual average PM<sub>2.5</sub> concentrations for Kennedy and Carvajal - the two monitoring sites in the southwest - exceed the Colombian air quality standard of 25 µg/m<sup>3</sup>. Next highest are the concentrations at the Tunal (south central), Suba (northwest), and CdAR (central) locations, while the lowest average PM<sub>2.5</sub> concentrations are found at the MinAmbiente (east central) and Usaquen (northeast) sites. Nonetheless, all seven sites exceed WHO guidelines for annual average PM<sub>2.5</sub> concentrations. Except for Carvajal, each of the PM<sub>2.5</sub> monitoring stations is considered a “background” site - located to avoid the influence of nearby pollution sources. Most of these are in parks and other green areas. The resulting measurements will likely tend to understate the typical citizen’s exposure to PM<sub>2.5</sub> from sources such as vehicle traffic.

8. **Medellín.** Table 9.2 shows the annual average PM<sub>2.5</sub> concentrations published for the nine air quality monitoring sites that measured PM<sub>2.5</sub> concentrations during 2014, as well as the number of days of valid measurements obtained at each site. Eight of the sites were equipped with continuous PM<sub>2.5</sub> monitors, while the Medellín-UNFM site was equipped with a filter-type PM sampler that operated about every three days.

**Table 9.2: Average 2014 PM<sub>2.5</sub> concentrations (in µg/m<sup>3</sup>) for nine air quality monitoring sites in the Valle del Aburrá Metropolitan Area (Medellín)**

	Air Quality Monitoring Site								
	Medellin					Itagüí		Caldas	La Estrella
	UNNV	MANT	UNFM	PJIC	UNEP	CJUS	CONC	LASA	METR
PM <sub>2.5</sub> concentration	29.9	37.4	21.3	17.9	25.0	32.1	25.1	24.9	41.2
Days observed	349	354	92	281	334	336	341	339	292
Environment	Urban	Urban	Urban	Urban	Sub-urban	Urban	Urban	Urban	Urban
Type	Back-ground	Traffic	Traffic	Traffic	Back-ground	Industrial	Industrial	Back-ground	Industrial

9. As Table 9.2 shows, three of the PM<sub>2.5</sub> monitoring sites in the Medellín metropolitan area are located so as to reflect the influence of traffic, three to reflect that of industry, and three to measure background concentrations. This contrasts with Bogotá, where six of the seven sites were classed as “background.” Surprisingly, two of the “traffic influenced” sites have the lowest average PM<sub>2.5</sub> concentrations among those measured. The highest PM<sub>2.5</sub> concentrations were found in the industrial area of La Estrella (at the metro station), and at the traffic-influenced MANT site in central Medellín. Overall, five of the nine sites exceeded the

Colombian air quality standard of 25  $\mu\text{g}/\text{m}^3$ , with two more barely meeting the limit. All nine sites far exceeded WHO guidelines for PM<sub>2.5</sub>.

10. **Cali.** The PM<sub>2.5</sub> monitoring network in Cali is less dense than those in Bogotá and Medellín.

11. Table 9.3 shows the annual average values for the three PM<sub>2.5</sub> monitoring stations for which data were reported by DAGMA. The three stations are located in the suburban periphery of Cali. No annual average data are available for the urban center, or for other areas with heavy traffic. The highest PM<sub>2.5</sub> concentration is found at the Base Area station in the northeast, which is affected by nearby industries. All three stations are well within the Colombian PM<sub>2.5</sub> standard of 25  $\mu\text{g}/\text{m}^3$  but exceed WHO guideline values.

**Table 9.3: Average 2014 PM<sub>2.5</sub> concentrations (in  $\mu\text{g}/\text{m}^3$ ) for three air quality monitoring sites in Cali**

	Air Quality Monitoring Site		
	Uni Valle	Base Aérea	Compartir
<b>PM 2.5 concentration</b>	15.6	18.7	17.1
<b>Percentage observed</b>	92.6	68.8	70.1
<b>Environment</b>	Suburban	Suburban	Suburban
<b>Type</b>	Background	Industrial	Background

#### Data Set and Methodology Used to Define Baseline

12. The dataset that was used to establish the baseline was reviewed and jointly agreed upon by the Bank and the Ministry of Environment and Sustainable Development (*Ministerio de Ambiente y Desarrollo Sostenible, MADS*) during the World Bank Appraisal Mission that took place on August 10–13, 2015 (presented in table 9.4). It can be noted that at some of the stations- namely Bogotá-Kennedy, Medellín MANT, and Medellín-UNFM - the values presented in tables 9.4 and 9.5 differ from the values presented for the same stations in table 9.1 and table 9.2. During the August 2015 mission, MADS informed the Bank mission of corrections to the published data (annual average PM<sub>2.5</sub> concentrations) at the aforementioned stations. The dataset used to establish the baseline incorporates the corrected data as provided by MADS.

13. Given the available data, a number of approaches were considered for defining the baseline. The approach proposed by GoC was selected for the definition of the baseline. Under this approach only monitoring stations that complied with the following criteria were selected: (a) deficient PM<sub>2.5</sub> data are available to be “representative” (i.e. minimum 75 percent valid data coverage) as required in Colombia by the Protocol for monitoring and for air quality; (b) the 2014 annual average PM<sub>2.5</sub> concentrations exceed the Colombian air quality standard of 25  $\mu\text{g}/\text{m}^3$  (Resolution 610 of 2010); and (c) the local environmental authority that operates the station has an active air pollution control program.

14. The data from the seven monitoring stations presented in Table 9.4 meet the above criteria, and jointly provide the baseline for annual average PM<sub>2.5</sub> concentration as required in the policy matrix for the DPF program.

**Table 9.4: Dataset Used to Establish Baseline of Mean Annual PM<sub>2.5</sub> Concentration (in  $\mu\text{g}/\text{m}^3$ )**

	Air Quality Monitoring Site						
	Bogotá		Medellin			Itagüí	
	Kennedy	Carvajal	UNNV	MANT	UNFM	CJUS	CONC
<b>PM 2.5 concentration</b>	31.5	35.1	29.9	37.9	28.6	32.0	25.1
<b>Environment</b>	Urban	Urban	Urban	Urban	Urban	Urban	Urban
<b>Type</b>	Background	Traffic	Background	Traffic	Traffic	Industrial	Industrial

## Advantages and Limitations Related to Selected Data Set

15. This selected methodological approach has the advantage of simplicity, in that it is based on monitoring results for individual sites. At the same time, the possibility of overweighting less-polluted sites is minimal, since only severely polluted sites are included in the baseline. Furthermore, the approach reflects the on-the-ground realities associated with data quality and quantity available on air quality (specifically PM<sub>2.5</sub>), and air quality management in Colombia.

16. The main limitation to this approach is that it could potentially shift attention from seeking a general reduction in PM<sub>2.5</sub> concentrations in major urban areas, to reducing PM<sub>2.5</sub> concentrations in the areas of the Aburrá Valley and in southwestern Bogotá. Furthermore, while the approach would focus strongly on the Aburrá Valley, much of this focus would not necessarily be due to greater air quality needs but to AMVA's more aggressive approach to the siting of its monitoring stations. Six of the nine AMVA PM<sub>2.5</sub> monitoring sites (Table 9.2) are considered to be affected by traffic or industry, and five of those sites are captured by GoC's prioritization process according to the criteria discussed above. In contrast, only one of seven sites in Bogotá (Table 9.1) is so affected, and none of three sites in Cali (Table 9.3). Had Bogotá and Cali focused more strongly on monitoring of critical points rather than background levels, it is likely that additional priority sites would have been identified in those cities.

17. In discussions with GoC, the Bank was informed that by law, MADS could not require environmental authorities to comply with air quality concentrations that are below the Colombian standard of 25µg/m<sup>3</sup>; and that PM<sub>2.5</sub> reduction efforts going forward will not be limited to the specific monitoring sites listed in Table 9.5, but will continue across major urban areas, including the listed sites.

### Summary of Baseline (2014) and Target (2018) Values for Annual Average PM<sub>2.5</sub> concentration, Proposed Indicator, and Considerations for 2018 Measurements

Table 9.5 summarizes the baseline and target values (based on 5 percent reduction of PM<sub>2.5</sub> concentrations) for annual average PM<sub>2.5</sub> concentration at the seven monitoring stations that are incorporated in the policy matrix.

**Table 9.5: Summary of Baseline and Target Values of Mean Annual PM<sub>2.5</sub> Concentration**

Environmental Authority	City	Monitoring Site	2014	2018
			Baseline PM <sub>2.5</sub> concentration (µg/m <sup>3</sup> )	Target PM <sub>2.5</sub> concentration (µg/m <sup>3</sup> )
Secretaria Distrital de Ambiente (SDA) Bogotá	Bogotá	Kennedy	31.5	29.9
		Carvajal	35.1	33.3
Área Metropolitana del Valle de Aburrá (AMVA)	Medellin	UNNV	29.9	28.4
		MANT	37.9	36.0
		UNFM	28.6	27.2
	Itagüí	CJUS	32.0	30.4
		CONC	25.1	23.8

**Proposed Indicator** – *Percentage reduction in the mean annual concentration of PM<sub>2.5</sub> in at least seven prioritized monitoring stations in the cities of Medellín, Itagüí, and Bogotá.* The GoC will take the steps necessary to ensure that representative annual average PM<sub>2.5</sub> monitoring results are available for the same seven monitoring stations (listed in table 9.5) in 2018.

# ANNEX 10. Comparison of original indicative triggers with prior actions

(Indicative) Triggers – DPF 2	Indicative Trigger – DPF 3	Prior Action – DPF 2	Status and Explanation if there is material change
<b>Pillar 1 – Establish a set of policy and institutional measures for green growth in transport, energy, environmental health, and natural resources</b>			
<b>No trigger included.</b>	<b>No trigger included.</b>	<b>Prior Action 1:</b> The GoC, through its Legislative branch, has approved the Paris Agreement, which establishes the legal framework for international cooperation on climate change, including, inter alia: (i) the adoption every five years of progressive national targets to reduce greenhouse gas emissions; (ii) the option to engage in cooperative approaches to use internationally transferred mitigation outcomes to achieve national targets; and (iii) enhancing action on adaptation through sharing information and good practices, improving scientific knowledge on climate and early warning systems, and periodically updating a national communication on climate adaptation.	This new Prior Action in DPF2 builds on the opportunity afforded by the Paris Agreement, and establishes a framework for enhancing climate change mitigation and adaptation under the Paris Agreement which support climate change mitigation and adaptation efforts. Through activities in climate change adaptation across all sectors, this PA contributes to disaster risk adaptation
<b>No trigger included.</b>	<b>Indicative Trigger 1:</b> The GoC has established a regulatory framework to increase and regulate the use of non-motorized and clean energy transport. Responsible Agency: MT	<b>Prior Action 2:</b> The GoC has established a regulatory framework for the promotion of clean energy transportation which, inter alia, (i) defines incentives for the use of bicycles and for increasing the number of trips using bicycles; (ii) regulates the registry, and technical and safety inspections applicable to motorcycles, three-wheeled motorcycles and quad-trucks; and (iii) sets policy	Prior Action (PA) 2 consolidates the green growth reform in the transport sector to reduce air pollution, traffic congestion and to deliver on the NDC commitments for Colombia.  Indicative trigger (IT) 1 of DPF3 has been brought forward to DPF2. The program has been refined by including an all-encompassing policy action on

(Indicative) Triggers – DPF 2	Indicative Trigger – DPF 3	Prior Action – DPF 2	Status and Explanation if there is material change
		guidelines for the co-financing by the GoC to local public transport investments.	sustainable transport that would consolidate the reform providing the institutional and financial basis to ensure sustainability.
<p><b>Indicative Trigger 1:</b> The government has established the institutional structure of the FENOGE on governance, fundraising, and eligibility criteria to allocate public funds in investment projects on alternative energy and energy efficiency.</p>	<p><b>Indicative Trigger 2:</b> The GoC has established the regulatory and operational framework for the implementation of a financing mechanism for renewable and energy efficiency projects (FENOGE). Responsible Agency: MME</p>	<p><b>Prior Action 3:</b> The GoC has strengthened its legal and institutional framework for promoting non-conventional energies by (i) defining FENOGE as a stand-alone Trust Account (<i>Fiducia mercantil - patrimonio autónomo</i>); (ii) defining FENOGE's funding sources, eligibility criteria for allocating funds, the composition and functions of its Board of Directors; and, the criteria for selecting the fiduciary entity that will manage FENOGE's financial resources; and, (iii) setting criteria that prioritizes the use of non-conventional energies in the National Rural Electrification Plan.</p>	<p>No significant changes in IT1. IT2 for DPF3 could not be brought forward to DPF2. However, the GoC is preparing this regulation. Moreover, a new action on the Rural Electrification Plan was added as this plan will strengthen the policy to promote non-conventional renewable energy and peace building in former conflict areas.</p>
<p><b>Indicative Trigger 2:</b> The GoC has established a national inter-sectoral framework for environmental health on (a) knowledge management, (b) governance, and (c) management of social determinants influencing environmental health.</p>	<p><b>Indicative Trigger 3:</b> Subnational inter-sectoral coordination mechanisms for improving environmental health have been established in the framework of the <i>Consejos Territoriales de la Salud Ambiental</i> (COTSAs). Responsible Agencies: MSPS, DNP and MADS</p>	<p><b>Prior Action 4:</b> The GoC has adopted a risk management policy on chemical substances that establishes: (i) a program to manage chemical substances for industrial uses; (ii) a program to prevent major chemical accidents; and (iii) measures for strengthening risk management capacity of chemical substances.</p>	<p>IT2 of DPF2 has been changed to pilot the principal in one area, namely chemicals managements. As part of the reform, the GoC has privileged the adoption of a measure to strengthen the risk management related to chemical substances along their lifecycle. This is a key policy with significant positive effect on environmental health.</p>

(Indicative) Triggers – DPF 2	Indicative Trigger – DPF 3	Prior Action – DPF 2	Status and Explanation if there is material change
<b>No trigger included.</b>	<b>No trigger included.</b>	<b>Prior Action 5:</b> The GoC has adopted measures to increase forests protection and improve forest management information and monitoring by: (i) establishing a system of PES; (ii) setting up the organization and functions of the National Information System of Forests (SNIF), the National Forests Inventory (IFN) and the Forests and Carbon Monitoring Systems; and (iii) establishing the Forests for Peace program and the Intersectoral Commission for Deforestation Control and Comprehensive Management for Protecting Natural Forests.	New Prior Action of DPF2 that strengthens forest conservation and provides a framework for payment for environmental services (PES) in response to the opportunities for peace building in Colombia.
<b>Indicative Trigger 3:</b> The GoC has established a framework with priorities, responsibilities, and action plan for the knowledge, reduction, and management of disaster risk. Responsible Agency: UNGRD	<b>Indicative Trigger 4:</b> The GoC has established the regulatory and operational framework for the Disaster Risk Management National Fund ( <i>Fondo Nacional de Gestión de Riesgo de Desastres, FNGRD</i> ) to support project implementation by national and regional entities. Responsible Agency: UNGRD		IT3 under DPF2 has been delivered as prior action as part of the GoC program. The trigger was removed from this operation as the GoC included it in a parallel operation with KfW and CAF.  IT4 under DPF3 was dropped from this DPF. To some extent, PA1 of DPF2 that supports actions on climate change adaptation address the gap left by leaving aside IT4 from the DPF2. However, is well advanced in the preparation of the regulatory and operational framework of the FNGRD.

(Indicative) Triggers – DPF 2	Indicative Trigger – DPF 3	Prior Action – DPF 2	Status and Explanation if there is material change
<b>Pillar 2 - Improvement of environmental quality by reducing PM<sub>2.5</sub> in air; strengthening regulatory and economic instruments for reducing water pollution; and increasing capacity for solid waste disposal and enhancing waste recycling.</b>			
<p><b>Indicative Trigger 6:</b> The GoC has updated and consolidated the norms associated with pollutant emissions to allow the renewal of the car fleet and to strengthen follow-up and control mechanisms.</p> <p><b>Indicative Trigger 7:</b> The GoC has updated the outdoor air quality norms to set new progressive maximum permissible limits for “criteria pollutants” (including PM<sub>2.5</sub>) to strengthen air quality management.</p>	<p><b>Indicative Trigger 5:</b> The GoC has strengthened the regulation on monitoring and control of pollutant emissions from stationary sources. Responsible Agency: MADS</p>	<p><b>Prior Action 6:</b> The GoC has taken measures to strengthen air quality management by: (i) approving a resolution that, upon publication, will update outdoor air quality norms by setting new progressive maximum permissible levels (starting in 2018 through 2030) for “criteria pollutants” including PM<sub>2.5</sub> (ii) increasing the biofuel component to 9 percent in diesel(B-9); and (iii) revising the parameters and requirements of ethanol in gasoline.</p>	<p>IT7 has been kept in this policy area. The GoC has changed IT6 to focus on a new standard for percentages of biofuel in diesel and requirements for ethanol in gasoline.</p> <p>IT5 has been dropped as the GoC is first focused on reducing air pollution on transport rather than diluting their efforts on air pollution control of stationary pollutant sources.</p>

(Indicative) Triggers – DPF 2	Indicative Trigger – DPF 3	Prior Action – DPF 2	Status and Explanation if there is material change
<p><b>Indicative Trigger 8:</b> The GoC has defined quality parameters and limits (including for pathogens and toxics) for the discharge of treated wastewater in the marine environment to protect water quality.</p>	<p><b>Indicative Trigger 6:</b> The GoC has established pollution charges (<i>Tasas Retributivas</i>) for pathogenic and toxic substances in domestic and industrial waste waters. Responsible Agency: MADS</p> <p><b>Indicative Trigger 7:</b> The GoC has defined quality parameters and limits (including for pathogens and toxics) for the discharge of treated wastewater in soils to protect water quality of aquifers. Responsible Agency: MADS</p>	<p><b>Prior Action 7:</b> The GoC has established measures to improve access to and quality of service for potable water and sanitation in rural areas, and improve the formulation of water and sanitation investments by (i) regulating appropriate requirements for the provision of potable water and sanitation services; (ii) regulating appropriate solutions for domestic wastewater management; and (iii) issuing preparation guidelines for water and sanitation sector investments by entities that request financial support from the GoC.</p>	<p>The GoC has adjusted the sequencing of the reform in this policy area.</p> <p>This new Prior Action in DPF2 aims at improving health standards in rural areas, by ensuring the provision of drinking water and sanitation services adapted to the local socioeconomic conditions.</p> <p>IT8 of DPF2 and IT7 of DPF3 were dropped to make room for other PAs related to climate change and peace building in Colombia since the water pollution issues were less of a priority than territorial development inland.</p> <p>Original IT6 under DPF3 was not included in DPF2 as it has been included in a parallel operation financed by KfW which focuses on pollution charges.</p>
<p><b>Indicative Trigger 9:</b> The GoC has defined technical guidelines for final disposal activities and has regulated standard operation of landfills.</p>	<p><b>Indicative Trigger 9:</b> The GoC has established requirements for the use of alternative technologies in sanitary landfills. Responsible Agency: MVCT</p>	<p><b>Prior Action 8:</b> The GoC has (i) updated operation standards for sanitary landfills and (ii) updated regulations for complementary solid waste treatment activities.</p>	<p>The GoC modified the sequencing of the reform without changing the substantive content. Original IT9 for DPF3 becomes the PA8 for DPF2 and the original IT9 under DPF3 was revised to focus on regulations for solid waste treatment activities only.</p>
<p><b>Indicative Trigger 10:</b> The GoC has established the operational framework for the reuse of solid</p>	<p><b>Indicative Trigger 10:</b> The GoC has issued regulations for the extra charge of the final disposal of non-recyclable solid waste to minimize</p>	<p><b>Prior Action 9:</b> The GoC has established measures to improve solid waste management by establishing the operational framework for the reuse of</p>	<p>Original IT10 for DPF2 becomes the PA10 for DPF2 and the original IT10 under DPF3 was dropped because these</p>



<b>(Indicative) Triggers – DPF 2</b>	<b>Indicative Trigger – DPF 3</b>	<b>Prior Action – DPF 2</b>	<b>Status and Explanation if there is material change</b>
waste and the timeline for the compliance of waste pickers as formal suppliers in the reuse activity.	the amount of solid waste disposed in sanitary landfills.  Responsible Agencies: MVCT y MADS	solid waste and the timeline for the compliance of waste pickers as formal suppliers in the reuse activity.	regulations cannot be completed within the timeframe of DPF2.

**Legend:** *PA*: Prior Action

***IT***: Indicative Trigger

***DPF***: Development Policy Financing

## ANNEX 11. Embedded Disaster Risk Management Hedge Option

### Background and Rationale

1. **As discussed in detail in the PD, Colombia is highly exposed to natural disaster risks and has identified the need to increase their fiscal resilience in the face of potential disaster losses.** This DPF provides an option for the GoC to request a disaster risk management transaction intermediated by the Bank to access protection against potential losses arising from natural disasters. The GoC requested the possibility to use a DRM hedge option to request a catastrophe (CAT) transaction in the DPF in conjunction with their intent to participate in a regional CAT Bond initiative by four countries (Chile, Colombia, Mexico and Peru) to obtain risk transfer coverage for earthquakes on affordable terms through the capital markets. The DPF loan embedding enables the borrower to pay the costs of this CAT Transaction as part of its debt service obligations under the DPF (as an additional fee or a spread added to the interest rate under the loan).

2. **The provision of the embedded CAT Transaction is part of an ongoing and extensive dialogue between GoC and the Bank on disaster risk management.** The CAT transaction relates to reforms supported by this DPF series by supporting Colombia to build resilience against adverse natural disaster events. The first operation under the series delivered in 2015 (DPF1) supported the establishment of an overarching green growth strategy as part of the 2014-2018 National Development Plan for Colombia (see Prior Action 1, DPF1, Annex 1). An objective of this strategy is to strengthen resilience and reducing vulnerability to natural disasters and climate change. Additionally, the partnership between the GoC and the Bank resulted in two CAT DDO loans for Colombia (Disaster Risk Management DPF with Catastrophe Deferred Draw Down Option, P113084, and Second Disaster Risk Management DPF with Catastrophe Deferred Draw Down Option, P126583) and multiple technical advisory and capacity building engagements.

3. **The Bank has authorization for embedding certain hedging products into loan agreements as well as to provide stand-alone disaster risk management products.**

- The rationale that prompts the embedding of hedging instruments in loan agreements is to facilitate the implementation of responsible risk management strategies by client countries through the use of financial products widely available in the market.
- The Bank is authorized by its Board to embed interest rate conversions, caps, collars or currency conversions in the loan agreements (since 1999<sup>49</sup>),
- The Bank is authorized to provide stand-alone disaster risk management products for meteorological and geological events since 2012<sup>50</sup>. The types of perils covered were expanded in 2015<sup>51</sup> to include pandemics, epidemics, and other events affecting human health. The types of instruments were expanded to include insurance, reinsurance contracts, and collateralized Catastrophe (CAT) bonds issued by the clients and purchased by the Bank.

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<sup>49</sup>“*Enhancing the Value of IBRD Financial Products: Proposal to Introduce New Loan and Hedging Products*”, March 1, 1999, SecM99-140.

<sup>50</sup>“*Proposal to Extend Intermediation of Natural Disaster Risk Management Products*”, October 18, 2012, R2012-0194.

<sup>51</sup>“*Proposal to Extend Intermediation of Disaster Risk Management Products to Include New Instruments and Perils*”, March 17, 2015, R2015-0015/1 and IDA/R2015-0010/1.

## Overview of the CAT Transaction

4. **The embedded CAT transaction provides the GoC with the mean of accessing market based risk transfer products, including CAT bonds.** CAT bonds are an example of insurance securitization to create risk-linked securities which transfer a specific set of risks (generally catastrophe and natural disaster risks) from an issuer or sponsor to investors. As noted above, the Bank is in process of collaboration with four countries, including Colombia, to structure the coverage through a joint CAT Bond through its Capital-at-Risk debt issuance platform<sup>52</sup>.

5. **This DPF with embedded CAT transaction option would follow the structure below:**

1. The borrower signs the loan agreement that incorporates the option to execute a CAT transaction covering natural disaster events.
2. On or after the first loan disbursement, the borrower can submit a request for the CAT transaction.
3. The Bank will access the market for the execution of an offsetting transaction (expected as a CAT Bond within the initiative with the four countries mentioned above) within the parameters agreed by the borrower.
4. A supplemental agreement to the loan agreement will contain the final terms of the CAT transaction, including covered events and triggers selected by the borrower, matching the terms obtained by the Bank in the capital markets.
5. After the execution of the CAT transaction, the borrower will pay the CAT transaction related costs and fees upfront or over time, in the latter case, at the same time as the interest and other charges payments under the loan.
6. Payouts are based on pre-agreed triggers:

**If a covered event occurs**, the borrower receives a contingent payout.

- **In case of full payout**, the embedded CAT transaction expires. The borrower ceases to pay the CAT transaction related costs and fees (after settling any outstanding costs and fees), and the debt service payments under the loan revert to regular charges (including the interest rate of 6-month Libor plus IBRD spread).
- **In case of a partial payout of a particular coverage**, the notional amount of the embedded CAT transaction is reduced proportionately. The borrower continues paying the loan at the interest rate of 6-month Libor plus IBRD loan spread and the CAT transaction related costs (with the premium adjusted on account of the reduced outstanding CAT coverage).

**If no event occurs**, the borrower continues servicing the IBRD loan at the interest rate set forth in the loan agreement plus CAT Transaction costs and fees on the full outstanding amount until the CAT Transaction expires.

7. Upon expiry of the CAT transaction and/or full payment of the CAT transaction costs and fees by the borrower, the debt service payments under the loan will revert to the regular charges, including the interest rate set forth in the loan agreement, unless the CAT transaction is renewed (or a different CAT transaction is requested, which is acceptable to the Bank).

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<sup>52</sup> The Capital-at-Risk Platform was most recently used to issue the Mexico CAT Bond in August 2017.