



# Greenhouse Gas Emissions in South Sudan

## South Sudan Numbers at a Glance (2012)

**1.33 MtCO<sub>2</sub><sup>a</sup>**

Total CO<sub>2</sub> emissions  
(0.0036% of world total)

World: 36,422 MtCO<sub>2</sub><sup>\*</sup>

**10,980,623<sup>a</sup>**

Population

World: 7,043,181,414

**0.12**

tCO<sub>2</sub> per capita

World: 5.17 tCO<sub>2</sub>

**US\$ 10,369 Million<sup>a</sup>**

GDP<sup>\*\*</sup>

World: US\$55,261 Billion

**128.3**

tCO<sub>2</sub> /million US\$ GDP

World: 659 tCO<sub>2</sub> /million US\$ GDP

**+0.12 MtCO<sub>2</sub> (+9%)**

Change in CO<sub>2</sub> emissions  
(2012–2013)

Sources: World: WRI CAIT 2.0, 2016.

<sup>a</sup> World Bank Data. [South Sudan, 2012](#).

<sup>\*</sup>Emissions including Land-Use Change and Forestry

<sup>\*\*</sup>Gross Domestic Product (GDP) in constant 2005 US\$

## Greenhouse Gas (GHG) Emissions by Sector

South Sudan gained its independence from the Republic of Sudan on July 9, 2011<sup>1</sup> and acceded to the UNFCCC on February 17, 2014.<sup>2</sup> South Sudan's [Intended Nationally Determined Contribution \(INDC\)](#),<sup>3</sup> submitted to the UN Framework Convention on Climate Change (UNFCCC) in November 2015, states that the country has no GHG emissions data due to its history of conflict, limited capacity, and lack of financial resources. However, in its INDC, South Sudan commits to developing a national GHG inventory as part of its Initial National Communication to the UNFCCC in 2016.

The INDC estimates South Sudan's total GHG emissions to be relatively low and dominated by land use, land-use change and forestry (LULUCF) and agriculture sector emissions. GHG emissions from these sectors are mainly driven by reliance on wood fuel by an estimated 96% of the population coupled with the increasing demand for agricultural lands and urban development. In the energy sector, despite only 1% of the population having access to the electricity grid, energy emissions are mainly from electric power generation followed by transportation. Waste and industrial processes contribute minimally to total GHG emissions.<sup>4</sup>

The World Resources Institute Climate Analysis Indicators Tool (WRI CAIT) includes country-level GHG emissions data for 185 countries that are Parties to the UNFCCC, but does not provide GHG emissions for South Sudan due to inadequate emissions data.<sup>5</sup> The World Bank provides carbon dioxide (CO<sub>2</sub>) emissions (excluding emission from LULUCF and agriculture) for the country for 2012 and 2013. Excluding LULUCF and agriculture emissions, CO<sub>2</sub> emissions were 1.33 MtCO<sub>2</sub> in 2012 and 1.45 MtCO<sub>2</sub> in 2013.<sup>6</sup> Emissions from the main GHG emitting sectors, LULUCF, agriculture, and energy, are described below.

**LULUCF:** As of 2013, forests covered 11.3% of the total land area of South Sudan.<sup>7</sup> According to the United Nations Development Programme and Ministry of Electricity and Dams, the South Sudanese population depends heavily on forest resources for daily needs including fuel wood and charcoal for cooking and lighting. This has led to a catastrophic loss of forest area. In particular, during the last ten years, savannah forest and many government forest reserves near Juba have been depleted. In urban areas including Juba, charcoal is the most used energy source for cooking. It is estimated that Juba needs 65 square kilometers (Km<sup>2</sup>) of forest to supply its yearly need for fuel. In rural areas, nearly 90% of the population use firewood as their main source of energy for cooking and half also use firewood for lighting.<sup>8</sup>

To reduce environmental degradation, the Ministry of Environment has developed an Environment Policy Framework and Environmental Bill to regulate the exploitation of natural resources and socio-economic development in the country.<sup>9</sup> South Sudan also participates in

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<sup>1</sup> The Republic of South Sudan formally seceded from Sudan on 9 July 2011 after an internationally monitored referendum held in January 2011. It was admitted as a new [Member State](#) by the United Nations (UN) General Assembly on 14 July 2011.

<sup>2</sup> UNFCCC. [Status of Ratification of the Convention, South Sudan](#), and [LDC Country Information](#), viewed on October 31st, 2016.

<sup>3</sup> Republic of South Sudan. South Sudan's [Intended Nationally Determined Contribution \(INDC\)](#) to the UNFCCC, 2015.

<sup>4</sup> Ibid.

<sup>5</sup> World Resources Institute. [CAIT Country Greenhouse Gas Emissions: Sources & Methods](#), 2015.

<sup>6</sup> World Bank. [South Sudan CO<sub>2</sub> emissions \(kt\)](#), viewed on October 31<sup>st</sup>, 2016. Note: Carbon dioxide (CO<sub>2</sub>) emissions are those stemming from the burning of fossil fuels and the manufacture of cement. They include carbon dioxide produced during consumption of solid, liquid, and gas fuels and gas flaring.

<sup>7</sup> Food and Agriculture Organization. Global Forest Resources Assessment, [Country Report – South Sudan](#), 2014.

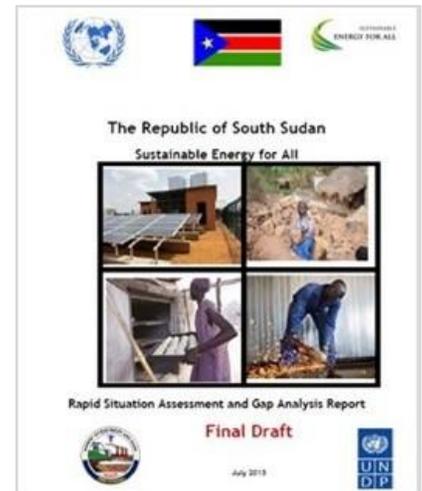
<sup>8</sup> United Nations Development Programme and Ministry of Electricity and Dams of South Sudan. [Republic of South Sudan Sustainable Energy for All. Rapid Situation Assessment and Gap Analysis Report](#), 2013.

<sup>9</sup> Republic of South Sudan, 2015.

the UN-REDD Programme and the Forest Carbon Partnership Facility, which both support national level planning and implementation for Reducing Emissions from Deforestation and forest Degradation and the conservation and sustainable management of forests and enhancement of forest carbon stocks (REDD+). An ongoing Country Needs Assessment aims to identify needs and opportunities to engage in or complete REDD+ readiness and assess the stages of readiness.<sup>10</sup>

**Agriculture:** South Sudan relies heavily on low productivity, subsistence agriculture and pastoralism, which account for less than 15% of Gross Domestic Product (GDP) but engage about 78% of the population. Despite abundant arable land, only 4% is under cultivation. Modern agriculture is almost non-existent and cultivated areas and yields are extremely low.<sup>11</sup> South Sudan has one of the largest livestock populations in Africa. However, it is threatened by the loss of pasture lands and reduced access to water resources.<sup>12</sup> The World Bank notes that economic growth in South Sudan is likely to remain mainly dependent on the agriculture sector, complemented by the service and the construction industries. The country will have to invest revenue from its oil resources to develop a modern economic and infrastructure base.<sup>13</sup>

**Energy:** Oil plays a vital role in South Sudan's economy and constitutes almost 98% of the government revenues. However, South Sudan has no refineries and remains dependent on Sudan to transport its crude oil through Sudan's pipelines to the Bashayer Port along the Red Sea for export.<sup>14</sup> South Sudan imports fuel for power generation and for transportation.<sup>15</sup> Electric power generation is extremely carbon intensive with high per capita emissions.<sup>16</sup> However, South Sudan has the lowest per capita electricity consumption in Africa, with only 1% of the population connected to the electricity grid. The 12MW diesel-fired Warsila plant in Juba is the largest source of electric power but aging equipment and limited maintenance have reduced its efficiency.<sup>17</sup> In 2011, the government approved the [2011-2013 South Sudan Development Plan](#) (SSDP) which addresses four pillars of the government's growth agenda: (i) governance; (ii) economic development; (iii) social and human development; and (iv) conflict prevention. The energy sector targets are outlined in the economic development pillar and include improving access to electricity, increasing generation capacity, and establishing regional electricity interconnection.<sup>18</sup> In 2013, the government extended the implementation period of the SSDP to 2016 in order to streamline its planning initiatives.<sup>19</sup>



## Carbon Intensity: CO<sub>2</sub> Emissions Relative to Gross Domestic Product (GDP)

Despite its low carbon intensity vis-à-vis the World average and being classified as one of the least developed countries in Africa, South Sudan is embarking on a sustainable development path and would like to employ the latest clean technologies to realize a low carbon and climate-resilient development outcome.<sup>20</sup>

## Climate Change Mitigation Targets and Plans

In its INDC, South Sudan commits to undertake policies and actions in the energy and LULUCF sectors. These efforts are contingent on the availability of technical assistance to develop the necessary regulations, policies, and standards as well as financial support for investing in low carbon options. In electricity generation and energy use, South Sudan aims to: increase the use of clean and carbon-neutral energy, construct a hydroelectricity plant at the Fula Rapids, increase the use of solar and wind energy, increase the efficiency of biomass use (particularly firewood and charcoal), increase the efficiency of electricity usage, and ensure the best use of hydropower through management of the country's water resources. In transportation, South Sudan aims to establish emission standards for vehicles and to consider measures to restrict the import of vehicles that do not meet the allowable emission levels. In the LULUCF sector, South Sudan aims to declare approximately 20% of its natural forests as reserves to protect them from deforestation and plant 20 million trees over a period of ten years (2 million trees in each of its 10 states).

<sup>10</sup> UN-REDD Programme. Regions and Countries – Africa, [South Sudan](#), viewed on October 31st, 2016.

<sup>11</sup> World Bank. [Interim Strategy Note \(FY 2013-2014\) for the Republic of South Sudan](#), 2013.

<sup>12</sup> Republic of South Sudan, 2015.

<sup>13</sup> World Bank, 2013.

<sup>14</sup> US Energy Information Administration (EIA). [Country Analysis Brief: Sudan and South Sudan](#), 2014.

<sup>15</sup> United Nations Development Programme and Ministry of Electricity and Dams of South Sudan, 2013.

<sup>16</sup> World Bank. [Electricity Sector Strategy Note for South Sudan](#), 2013.

<sup>17</sup> US EIA, 2014.

<sup>18</sup> Republic of South Sudan. [2011-2013 South Sudan Development Plan](#), Realizing freedom, equality, justice, peace and prosperity for all, 2011.

<sup>19</sup> Republic of South Sudan, Ministry of Finance and Economic Planning. [Development Plan](#), viewed on November 10, 2016.

<sup>20</sup> Republic of South Sudan, 2015.