



Conflict, Environment and Climate Change in Colombia¹

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1. Introduction

Colombia is richly endowed with natural resources such as forests, oil, minerals and water and is classified as one of the world's most biologically rich countries. It has diverse ecosystems and an extraordinarily high number of endemic species found within its borders. Similar to many other resource rich countries Colombia's rich natural capital has however not been translated into broad based development. Extreme inequality and violent conflict have led to a situation where 45% of the population live in poverty and 12% live in extreme poverty².

¹ This Policy Brief was written as a desk study at the request of the Swedish Embassy in Bogotá (att: Monica Wulfing) by Daniel Slunge at the Environmental Economics Unit (EEU), Department of Economics, University of Gothenburg, as part of Sida-EEU's institutional collaboration on environmental economics and strategic environmental assessment. Comments on an earlier draft are gratefully acknowledged. Further comments can be sent to Daniel.Slunge@economics.gu.se. The views expressed in this Policy Brief are those of the author and do not necessarily represent the views of Sida.

² Sida, 2008

Environment and natural resources are linked to violent conflict in Colombia in several ways. While conflicts over land rights is a well known cause of involuntary displacement, resources such as oil and illicit drugs fuel conflict through providing financing for armed groups. Conflict and unequal development also lead to environmental degradation and loss of ecosystem services³ which particularly affect poor men and women. They have least capacity to cope with health problems related to poor water and air quality, food insecurity or economic shocks following natural disasters. The links between climate change and conflict need to be further explored, but climate change can be viewed as adding to existing stresses and is likely to have profound effects on development in Colombia.

This Policy Brief outlines key environmental issues in Colombia and discusses how these are linked to conflicts and poverty. The analysis provides an input to the ongoing process to draft a new Swedish cooperation strategy for Colombia and responds to the Swedish Governments thematic priority of Environment and Climate Change in Development Cooperation. The report is based on a rapid desk study conducted in April 2008. The reader should note the limitations involved in doing a short analysis of this broad and highly complex theme, including access to data and the need to make general statements about locally specific environmental and social problems

The document is structured as follows. In section 2, the environmental problems considered to be most important from a poverty reduction perspective are identified. Expected impacts of climate change are described in section 3 as well as adaptation and mitigation initiatives. Section 4 focuses on linkages between environment/natural resources, climate change and conflicts. Section 5 concludes with five issues for Sida to consider.

2. Key links between Poverty and Environmental Degradation⁴

In 2004 the World Bank conducted an in depth Country Environmental Analysis in Colombia in collaboration with national authorities. The analysis shows that there are a number of important environmental problems that need to be tackled in order to combat poverty in Colombia⁵. The World Bank concludes that from a poverty reduction perspective it is of particular importance to address the severe environmental health related problems affecting the growing number of poor people living in and around urban areas. The severity of these problems has increased as a consequence of the comparatively fast rate of urbanization experienced during the last decades. Over 70 % of the population now lives in urban areas and this share is expected to continue to rise (to about 77% by year 2019).

2.1. Costs of environmental degradation

The most costly problems associated with environmental degradation are urban and indoor air pollution; inadequate water supply, sanitation and hygiene; natural disasters (such as flooding and landslides); and land degradation (Figure 1). The effects of environmental degradation

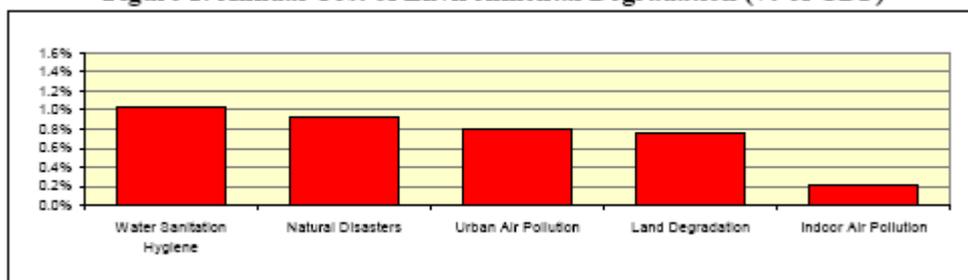
³ Ecosystem services can be defined as the benefits people obtain from ecosystems. Examples include timber, fresh water, climate regulation and water shed protection (Millennium Ecosystem Assessment, 2005. Ecosystems and Human Well-being: Synthesis, Island Press, Washington, DC)

⁴ Where nothing else is specified, the reference for this section is the Colombia Country Environmental Analysis conducted by the World Bank (2006)

⁵ While these environmental problems are not all necessarily directly linked to violent conflict, they should be considered as part of a multidimensional understanding of poverty in Colombia.

associated with these principal causes are estimated to cost more than 3.7 percent of GDP, mainly due to increased mortality and morbidity and decreased productivity.

Figure 1: Annual Cost of Environmental Degradation (% of GDP)



Source: World Bank, 2006

Even though the estimation of the cost of environmental degradation is associated with a number of methodological difficulties and should be considered only as a rough estimate, it does indicate that costs to society are considerable. From a poverty reduction perspective it is important to note that the burden of these costs falls most heavily on vulnerable segments of the population, especially poor children under age five.

2.2. The Perspectives of the Poor

These “expert cost estimates” were complemented by an interesting survey of public perceptions about environmental problems in Colombia, which included a sample of 2,600 individuals from a wide range of regions, sectors, government agencies, civil society organizations, and ethnic groups. Approximately 80 percent of respondents identified air pollution as the top environmental problem, but there were significant differences in the perception of priorities among income groups. Whereas low-income groups identified air pollution, noise, and natural disasters as major problems, upper-income groups tended to perceive global environmental impacts (such as global warming and loss of biodiversity) and inappropriate land use in urban areas as high priorities.

It should also be underlined that large parts of Colombia’s afro-Colombian and indigenous population live in areas which are particularly seriously affected by violent conflict and involuntary displacement⁶. Many of these areas are also particularly rich in biodiversity and generate ecosystem services of fundamental importance for the livelihoods of these groups. Loss of ecosystem services due to deforestation or water degradation can thus have particularly serious negative impacts on the afro-Colombian and indigenous minority⁷.

2.3. Key Environmental Problems

2.3.1. Inadequate Water Supply, Sanitation, and Hygiene

Although Colombia has achieved substantial reductions in child mortality from diarrhea and other diseases, the costs associated with diarrheal morbidity from contaminated water and poor hygiene in both children and adults remain high. The poorest groups often lack adequate sanitation and water supply services. About 9 percent of the population does not have access

⁶ COWI (2008), in a recent study commissioned by Sida, states that afro-Colombians and indigenous groups show higher than proportional levels of victimization to violent conflict.

⁷ See for example WOLA, 2008

to an improved water source, and the lack of sewerage in 20 percent of urban centers is a serious environmental problem for the country.

Although Colombia is endowed with abundant fresh water resources, water scarcity is a problem in some regions. If watersheds continue to be mismanaged it is estimated that vulnerability to surface water shortages will grow and pose significant problems in the Andes and the Caribbean regions. Chemical and organic pollution, primarily from agriculture, industry and urban centers, is a serious problem affecting many important water bodies in the country.

2.3.2. Urban and Indoor Air Pollution

Air pollution is one of the most widespread and serious problems in Colombia's cities and rural areas. Although air pollution levels are moderate in most cities, the fact that close to 50 percent of the population lives in cities with more than 100 000 inhabitants creates substantial aggregate health effects, associated mainly with particulate matter. This results in health impacts such as cardiopulmonary diseases and lung cancers among adults and acute respiratory illness, particularly in children, including death from related diseases such as pneumonia. Approximately 6000 premature deaths occur per year due to outdoor air pollution. An estimated 1100 premature deaths are related to exposure to *indoor air pollution*, associated with the use of fuelwood, charcoal, and other solid fuels used for cooking.

2.3.3. Natural Disasters

Colombia is vulnerable to natural disasters such as floods, droughts, and earthquakes, averaging almost 3 natural disasters per year, the third-highest rate among the 19 countries in the region. The largest number of natural disasters is related to floods and landslides. In the last quarter century the country experienced six major earthquakes, three volcanic eruptions, three major landslides and avalanches, with significant costs in terms of human and physical capital. It is estimated that more than 4 million Colombians were affected by natural disasters during 1993–2000, and that 30 000 deaths were caused by these natural disasters. The occurrence of these events has resulted in estimated losses of more than \$4.5 billion, or 11.5 percent of the country's 1995 GDP. The poorest have paid the highest costs for these disasters in damages, deaths, and lost assets. The frequency and magnitude of natural disasters are likely to rise due to climate change (see below).

2.3.4. Land Degradation

The two most salient components of land degradation in Colombia are erosion/salinization⁸ and problems associated with deforestation. Although data is limited, there are strong indications that both erosion and salinization are significant problems. Between 4 and 23 % of the country's soil is estimated to be seriously eroded and the problem appears to have worsened over the past 15 years. Serious soil erosion is most prevalent in the Caribbean, Andean, and Orinoquía natural regions, which are among the most populated and/or productive regions in the country. Soils in approximately 10 percent of the country are estimated to have levels of salinity high enough to adversely affect crop and rangeland productivity. Problem areas are basically located in the Caribbean natural region. Salinization is mainly caused by irrigation, while key drivers of erosion include the expansion of agricultural activities, particularly cattle ranching.

⁸ Salinization occurs when salt content of soil accumulates over time to above normal levels.

Soil erosion and salinity generate significant economic costs, not least stemming from lost agricultural productivity. Land degradation can also have other negative consequences, including siltation of low-lying dams and irrigation infrastructure, contamination of drinking water by agrochemicals, and loss of biodiversity and ecosystem services.

Deforestation is the major cause of biodiversity loss in Colombia and leads to loss of ecosystem services such as soil formation and water regulation. It is also a major contributor to emission of carbon dioxide (see climate change below). Despite efforts to combat reduce deforestation, the annual rate of deforestation increased from about 0,14% during the period 1986-1994 to 0,18% 1994-2001, corresponding to an area of more than 660 000 ha being deforested annually⁹. Total forest cover is about 47 percent of total land area, but forest cover in Colombia is distributed extremely unevenly across the country. Despite the relatively high forest cover, a significant percentage of the national territory has been “drastically altered” by human action, with varying impacts across regions. Relatively deforested areas extend over large sections east of the mountains, and in high population density areas, with the most affected ones found primarily along the arid peri-Caribbean belt, the Sierra Nevada, and the North Andean regions.

The causes of deforestation are complex and include illicit crop production, agricultural expansion, lumber production, firewood consumption, ranching and settlements, and forest fires.

2.4. Environmental Management in Colombia

The Colombian National Environmental System in Colombia (SINA) is considered as one of the most advanced institutional set-ups for environmental management in Latin America. Important institutions include the Ministry of Environment, the National Environmental Council, regional environmental authorities, urban environmental authorities, research institutes, and control agencies. The Colombian Constitution from 1991 includes a series of articles relevant to the environmental management of the country. The most important of these refers to the rights of the citizens to a clean environmental, and to the judicial mechanisms to protect those rights¹⁰.

The most important achievements are related to the control of deforestation and destruction of natural resources, through the establishment of National Natural Parks (on 8,5% of the country's territory) and natural reservation areas (more than 15% of the territory). There is also an important advance in the elimination of lead from gasoline and recently in the improvement of quality of life in the cities, particularly Bogotá. However, the severe environmental problems outlined above indicate that environmental management in Colombia falls short in addressing key challenges to poverty reduction and sustainable development. The World Bank Country Environmental Analysis for Colombia includes important recommendations regarding how the system for environmental management could be strengthened. One of the recommendations calls for an evaluation of the impact of the merge of the Ministry of Economic Development with the Ministry of Environment to create the new Ministry of Environment, Housing and Territorial Development. A report commissioned by the European Commission argue that this downgrading Ministry of Environment to a Vice-Ministry has significantly weakened the capacity for environmental management in Colombia¹¹.

⁹ IDEAM, 2004

¹⁰ Uribe, 2005

¹¹ European Commission, 2005

3. Climate Change

3.1. Expected Impacts of Climate Change

Predictions of impacts of climate change involve significant uncertainties, but an increasing body of scientific work indicates that continued climate change is likely to have profound effects on development in Colombia. Climate change is predicted to lead to rising temperatures, changing rainfall patterns and a rising sea level. Rather than creating totally new problems, climate change will add to existing stresses, including¹²:

- *Loss of ecosystem services*, such as soil protection, water regulation and coastal zone protection. While most ecosystems will be affected, the páramos¹³ areas in the Northern Andes have been identified as particularly vulnerable to climate change. These ecosystems are important for carbon storage, as water sources, but also for their capacity to absorb and moderate the consequences of flooding (and increased water flows from glacial melting). Large parts of the Andean inter-tropical glaciers might disappear affecting water availability and hydropower potential.
- *Natural disasters, such as flooding and landslides*, are expected to increase in frequency and magnitude, adding to the large costs that natural disasters cause Colombian society already today;
- *Increase in morbidity and mortality* associated with Malaria and Dengue, as changes in temperature and precipitation make these vector borne diseases more severe in currently exposed areas as well as spread to mountain areas not exposed today.
- *Sea level rise* in the magnitude of 40-60 centimetres by year 2050 is expected to affect around 1,4 million people. Colombia's Caribbean and its insular areas are particularly vulnerable.
- *Water scarcity* is likely to increase significantly and may affect 29 million people by year 2025. A 30% increase/decrease in annual rainfall is expected in some regions, affecting human consumption, agricultural production and electricity production (largely hydropower based).
- *Agricultural conditions* are also projected to change, with some areas affected by increasing soil erosion and desertification and others by floods and salt water intrusion. The economic effects from may be very large, for example one estimate projects that 5-10% of agricultural GDP in the Pacific and Caribbean coastal zones will be lost due to sea level rise¹⁴.

3.2. Adaptation to Climate Change

In the face of the big challenges outlined above, it is important to build a national capacity to adapt to climate change. Initial steps towards this purpose taken in Colombia include:

- The ratification of the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol;
- The First National Communication to the UNFCCC (March 2002). The Second Communication is planned for June 2009;
- The creation of a working group at the Ministry of Environment, Housing and Territorial Development which is coordinating the work on climate change adaptation and mitigation;

¹² The description of expected impacts of climate change is based on Republic of Colombia (2001) Colombia's First national Communication to the United Nations Framework Convention on Climate Change, IDEAM, 2007 and Republic of Colombia, 2008

¹³ Páramo is a neotropical ecosystem located in high elevations (about 3100-5000 m altitude). Nearly 57% of this ecosystem worldwide is found in Colombia. More than 50% of paramos are expected to disappear before year 2050 due to climate change.

¹⁴ Republic of Colombia, 2008

- The Integrated National Adaptation Plan, a USD 15 million pilot adaptation project partly funded by the Global Environment Facility which focus on information dissemination and high mountain ecosystems, Caribbean islands and human health.

The working group in the ministry would like to see a development of a national adaptation program building on the experiences from adaptation projects and is seeking finance for a range of smaller adaptation projects¹⁵. While these achievements and plans are important, big challenges lay ahead. For climate change adaptation to be successful it needs to go beyond a project focus and be seen as a long term effort requiring high level political support and the involvement of key sectors such as energy, agriculture and transports.

3.3. Mitigation of climate gases

As a non-Annex I Party to the Kyoto Protocol, Colombia is not bound by specific targets for greenhouse gas emissions. With 0.7% of the world's population, Colombia accounts for 0.2% of global emissions - an average of 1.2 tonnes of CO₂ per capita. These emission levels are below the Latin America and the Caribbean- average of 2,6 tonnes of CO₂ per capita¹⁶. These figures do however not include emissions caused by deforestation which currently is a hot topic at the ongoing UN climate convention negotiations.

Deforestation is a major contributor to climate change (accounting for 18-25% of global greenhouse gas emissions) and it is likely that incentive schemes will develop that compensate for carbon storage in forests. However these incentives for forest conservation may be offset by the efforts by mainly high income countries to substitute fossil fuels with renewables. While of minor importance for increasing food prices today, an expected drastic increase in future demand for biofuels could lead to increases in land (and food) prices, which in turn could increase incentives for conversion of forests to agriculture and cause deforestation.

How to use agricultural and forest land in Colombia is thus critically linked to the global climate change regime. The Colombian government has identified new economic opportunities arising from the emerging climate change regime in sectors such as forestry (the evolving market for CO₂ sequestration credits) and agriculture (bio-fuel production). The plausible links between climate change, land use and conflicts are further explored below.

4. Links between Environmental Problems, Climate Change and Conflicts

In its Country Strategy Paper 2007-2013, the European Commission stresses that *“...there is a direct link between developments in the internal armed conflict and the issue of access to and control over natural resources, and that the conflict has an impact on the environmental situation”*. The recent report *A Climate of Conflict*¹⁷ published by Sida and International Alert includes Colombia in its “List of States at Risk” and asserts that Colombia faces a *“high risk of armed conflict as a knock-on consequence of climate change”*. Unfortunately, these reports do not substantiate these claims or shed light on the complex inter linkages between environment, climate and conflict in Colombia. Nor do the Country Environmental Analysis of the World Bank link environment and conflicts in Colombia. There exists however a substantive Colombian¹⁸ and international literature that explores

¹⁵ Republic of Colombia, 2008

¹⁶ UNDP Human Development Report, http://hdrstats.undp.org/countries/country_fact_sheets/cty_fs_COL.html

¹⁷ Sida, 2008

¹⁸ For an overview see: Cardenas M, and Rodriguez M (eds), (2004), *Guerra, Sociedad y Medio Ambiente*, Foro Social Ambiental

these linkages. The analysis in this section draws on key findings from this literature as summarized by the OECD DAC Conflict Network ¹⁹.

4.1. Land use and conflict

Tensions over non-extractive natural resources (e.g. the use and availability of water and land) can drive conflict, usually on a local level. This may spill over into wider conflict, particularly where grievances are manipulated for political ends at the macro level. (OECD DAC, 2005)

Colombia is a highly unequal country regarding land holdings²⁰ and the issue of equitable land distribution and agrarian reform has challenged Colombia during the last decades. The European Commission asserts that “the historical trend towards the concentration of land ownership has been accentuated by the armed conflict and the acquisition and/or appropriation of land by drug traffickers and illegal armed groups. 1.3 million rural families (54%) have no land and 24% of heads of household are women”²¹

Land inequality is closely associated with involuntary displacement: About 78% of Colombia’s around 4 million displaced persons lived in rural areas before they fled to urban centers to escape armed conflict and violence. Estimates put the aggregate amount of land abandoned by internally displaced people to about 6 million hectares, which corresponds to three to four times more than has been redistributed during more than three decades of land reform²². Displacement may be driving what is often described as an agrarian counter reform and land re-concentration of massive proportions.

Territorial control is a key element in the war strategies of guerrillas and paramilitary forces and the displacement process of rural peasants to claim valuable land has been identified as a deliberate and forced relocation of the population in affected territories²³. In an analysis of the causes of displacement, the World Bank found that the strategic use of violence by armed groups aimed to get territorial control was a highly significant factor. Higher levels of landownership inequality were also found to have a significant impact on displacement²⁴.

Since many peasants do not hold legal title to their land, if they abandon it, they lose their legal rights to ownership. Even those who have legal title to land do not necessarily have recourse to judicial processes to regain their land or claim compensation. Land tenure issues will thus play a critical role in the eventual return of Colombia’s millions of displaced people.

Land inequality also constrains economic growth in rural areas: The European Commission states that in 2002, the agricultural sector accounted for 24% of total exports as against 60% in 1990. This decline is due in part to the conflict, but also to the lack of attention given to the sector and the unfair concentration of land ownership, resulting in poor use of land. The World Bank study on land policy in Colombia highlights that much of the land in Colombia is

¹⁹ OECD 2005

²⁰ The Gini coefficient for both area and land value reaches nearly 0.75 (with some regional differences), according to the recent study on conflict and poverty linkages commissioned by Sida, Cowi 2008. See also World Bank, 2004

²¹ European Commission, Country Strategy Paper 2007-2013

²² World Bank, 2004 and UN News Service, April 8, 2008

²³ World Bank 2000

²⁴ World Bank 2004

highly underutilized for agricultural purposes²⁵. Out of a total land area of 114.2 million hectares, about 13% is estimated to be suitable for agriculture, 17% is suitable for pasture, and the remainder is suitable only for forest and non agricultural uses. Comparing this to actual land use indicates heavy under use of the agricultural potential and heavy overuse of livestock. Only about 4% (or 30 % of the land suitable for agricultural crops) was in 1999 used for this purpose. At the same time, there was a huge overexploitation of pasture land. Although only about 17% of the total land is suitable as pastureland, more than 36% is actually used for that purpose. The high levels of underutilization of productive land have profound implications for household welfare in rural areas.

Land concentration is linked to environmental degradation, since inability to gain access to land drives the poor into marginal areas leading to deforestation and other forms of land degradation, including national parks areas (see section 2.1.). A large part of the involuntary displaced end up in urban slums with poor sanitary conditions. This represents yet another important link between conflict, displacement and environmental conditions.

4.2. Illicit cultivations

Wealth derived from natural resources may be used to finance patronage networks, militias or arms purchases. (OECD DAC, 2005)

Colombia has become the world's largest producer of coca leaf and the principal producer of opium poppies in the Americas. These plants are the basic raw materials used to produce cocaine and heroin. There are also substantial cultivations of marihuana. Estimates vary, but although massive resources are spent yearly on the war on drugs in Colombia, coca and cocaine production seem to remain robust²⁶. Illicit drugs are fuelling the violent conflict in Colombia and are closely linked to the finances of illegal armed groups²⁷. Illicit drugs are also linked to serious environmental problems, primarily deforestation and chemical pollution.

The environmental effects linked to the illicit cultivations arise during different moments of the processing cycle. The first step is *the choice of where to grow coca and poppy*. Illicit cultivations are often situated in remote and biodiversity rich areas, such as the Andean and Alto- Andean forests for poppy cropping, and the plains and rainforest of the Orinoquía and Amazonian regions for coca crops. Since the year 2000 a growth in illicit cultivations have also been observed in many of Colombia's national parks.²⁸ Coca cultivations have also spread to a larger number of Colombias 34 departments, from 12 in 1999 to 23 in 2006²⁹.

The preparation of land for illicit cultivations leads to deforestation of large areas, normally through burning and carbonization of biomass. Some studies indicate that in order to create one hectare of coca cultivations it is necessary to degrade four hectares of tropical forest and for one hectare of poppy 2,5 hectares of Andean forests. This deforestation drastically affects

²⁵ World Bank, 2004

²⁶ WOLA, 2008

²⁷ COWI, 2008

²⁸ In particular, there is a heavy overlap of coca growing and ecologically vulnerable zones in the extreme eastern section of the Sierra de la Macarena National Park, the southern part of Córdoba department and neighbouring areas in the northeastern part of Antioquia, in the south of Bolívar, Arauca, the midsection of the Patía River basin in Nariño, the Putumayo piedmont, and Sierra Nevada de Santa Marta.

²⁹ WOLA, 2008

local ecosystems, including effects such as change in local climate, loss of habitats, soil erosion, river sedimentation and emission of greenhouse gases.³⁰

The cultivation process requires the use of pesticides and fertilizers and it has been estimated that 200 000 gallons of herbicides and 16 000 tons of chemical fertilizer are used every year, ending up in soil and water.³¹

The processing of coca to cocaine normally takes place in processing plants close to the cultivations and close to a water body. A large quantity of different chemicals is used, including acetone, hydrochloric acid, ethylic ether and potassium permanganate (or other chemicals with similar characteristics). It has been calculated that some 750 000 tons of these chemicals have been used in processing plants within the Colombian tropical forest over the last 14 years³². The resulting chemical poisoning of soils and water bodies is likely to be very serious.

*The effects of aerial fumigation*³³ on human health and the environment is a debated subject. The US and the Colombian governments prefer to focus attention on the environmental damage caused by coca cultivation and cocaine processing, arguing that fumigation, rather than a threat to the environment, should be understood as a means of halting or containing the damage caused by coca growing. However, others claim that the fumigation program has contributed to the spread of coca cultivation to new, more remote areas of the country thereby causing deforestation. It is also argued that more research is needed to assess the impacts on health and environment of fumigation, e.g. effects on human reproduction and amphibians, and that a precautionary approach should be applied³⁴.

The fumigation program has also been heavily criticized for destroying the licit crops and livelihoods of many small producers. Fumigation can hit both licit crops of non-coca producers and coca producers. Most of the coca is produced by small producers (< 3ha) and often farmers grow a mixture of different crops.

4.3. Biofuels and Conflict

The environmental and social consequences of large scale cultivations of palm oil in Colombia, as well as alleged links to paramilitary groups, have lately received growing international attention³⁵. The hectares under cultivation have rapidly increased and now total around 300000 hectares. While palm oil is an ingredient in many different products, it is the growing biofuel market that can drastically increase the demand for palm oil. In Colombia the government has expressed interest in a massive expansion of palm oil cultivations to cover as much as 3 to 6 million hectares³⁶.

The Colombian government has provided political and financial support to the development of African palm plantations, as part of its effort to eradicate illicit crops, promote regional

³⁰ DNE, 2006

³¹ European Comisión, 2005

³² European Commission, 2005

³³ The following chemicals are used: Roundup Ultra Herbicide, the surfactant Cosmo-Flux 411 – a blend of two additives that enhance the mixture's adherence to and penetration of the leaves of the coca plants.

³⁴ WOLA, 2008

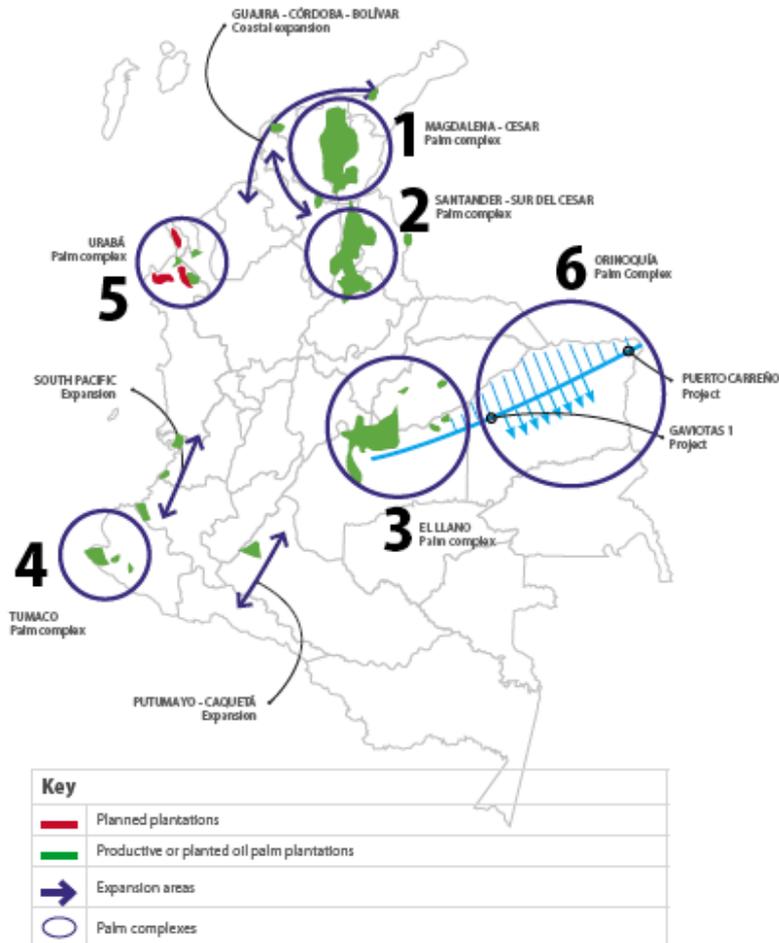
³⁵ E.g. in a seminar in the Swedish Parliament 2007, see also WOLA, 2008; Norwegian Refugee Council, 2007 and Avendaño, 2007.

³⁶ According to speeches given by President Uribe, cited in Mingorance, F. 2006.

development and to provide economic incentives for paramilitaries to give up their weapons in line with the government's Justice and Peace programme³⁷. International development aid, notably from US AID, has contributed significantly to this development.

As shown in figure 2, oil palm production is concentrated to six areas with distinct agro-environmental characteristics. The Orinoquia region accounts for a large part of the area where a possible expansion could occur.

Figure 2 Areas for Palm Oil Production in Colombia



Source: Mingorance, 2006

Although the number of small producers is growing, oil palm production in Colombia is characterized by large scale plantations and the level of investments needed are considerable³⁸.

Palm oil production in Colombia has been heavily criticized for causing deforestation and loss of biodiversity as well as being linked to human rights violations and forced displacement in some regions³⁹. However, the Colombian African palm oil producer association portrays palm oil production as both socially and environmentally benign and is member of the international

³⁷ Norwegian Refugee Council, 2007; WOLA, 2008

³⁸ In 2005, 91% of the extracted oil was marketed by large extraction plants, 8% by medium-sized, and 1% by the small processors. (Mingorance, 2006)

³⁹ Mingorance, 2006; Cordaid, 2007; Avendaño, 2007

working group developing criteria for sustainable palm oil production⁴⁰. Even though, in theory, it may be possible to grow palm oil under acceptable conditions, the many current reports on human rights violations related to palm oil production indicate that the current development of this industry is very problematic.

A recent report from the Norwegian Refugee Council finds that African palm companies are taking advantage of forced displacement in Choco and that they “with the apparent support of local paramilitary forces, have exerted pressure on the people displaced to sell or otherwise give up their land”⁴¹.

Although the situation in Choco may be particularly serious, there are studies indicating similar linkages to paramilitary groups, forced displacement and human rights violations in other parts of the country where oil palm is produced⁴².

4.4. Climate change and Conflict

Conservation and sustainable-management activities to tackle environmental degradation can risk driving conflict. Stakeholder dialogue and mediation is vital from the outset. (OECD, 2005)

The linkages between climate change and conflict is receiving growing attention by Sida, the World Bank and other development actors⁴³. However, rather than being a direct trigger of conflict, climate change should be viewed as putting additional strains on already fragile social and political systems. With its history of massive violence Colombia is characterized by some (but not all) the “high risk” characteristics identified in the report *A Climate of Conflict* published by Sida and International Alert: political instability, economic weakness, food insecurity and large scale migration.

In the paper *Implications of Climate Change for Armed Conflict*⁴⁴ three processes through which climate change could cause social instability and conflict are identified:

- Natural disasters: an increase in the frequency and magnitude of natural disasters, such as tropical storms, flash floods, land slides and wild fires, have obvious negative implications for human security and may also lead to increased migration. As described above Colombia is prone to natural disasters.
- Sea level rise risks causing massive population displacement. In Colombia 1,4 million people live in areas which are projected to be affected by a rising sea level (Colombia’s insular areas as well as the Caribbean and Pacific coastal areas).
- Resource scarcity: climate change risks affecting the availability of resources necessary for sustained livelihoods. In Colombia climate change may lead to changing agricultural conditions and lead to the disappearance of the Andean glaciers affecting water availability and seasonal river flows. This could trigger migration and local conflicts.

⁴⁰ <http://www.fedepalma.org/>. Roundtable on Sustainable Palm Oil, <http://www.rspo.org/>

⁴¹ Norwegian Refugee Council, (2007), Resisting displacement by combatants and developers: Humanitarian Zones in north-west Colombia,

⁴² Mingorance, 2006

⁴³ See Sida 2008 and Buhaug et al 2008 for recent overviews.

⁴⁴ By Buhaug et al 2008, presented at the World Bank conference on Social Dimensions of Climate Change in April 2008

In Colombia the possible increase in migration due to climate change should be seriously considered. In combination with the already large internally displaced population and unclear land tenure systems this could be a potential source of conflict.

The conflict implications of policies aimed at mitigating climate change through large scale biofuel production (see section 4.3) or forest plantations need also to be considered. One example is the “Gaviotas project” where there are plans to expand the reforestation project from the initial 8000 ha to about 6.3 million ha of savannah⁴⁵.

4.5. Extractive Resources and Conflict

The desire to control the exploitation of high-value “extractive” natural resources can drive violence and instability. Environmental damage and degradation (caused, for example, by extraction activities) often threatens livelihoods and can cause or aggravate tensions. (OECD DAC, 2005)

Although being a minor player on the international oil market, Colombia has a substantial production and exports of oil⁴⁶. The linkages between oil and conflict have a long history in Colombia⁴⁷. Oil has played an important role in fuelling conflict through financing both guerilla groups, the paramilitary and the armed forces. Since 1986 the guerrilla groups, mainly ELN, have bombed oil pipelines more than 1000 times and have kidnapped hundreds of oil-company executives and employees. Using these operations as leverage, the guerrillas have generated large sums in ransoms and extortion payment and “taxed” local contractors working for the companies. The paramilitary has been able to indirectly benefit from oil through taxing local contractors and extortion from local businesses, as well as accessing revenues from municipalities. They have also been hired by oil companies to protect oil pipelines. A “war tax” of more than \$1 per barrel on foreign oil corporations has since 1992 provided extra resources to Colombia’s official armed forces.⁴⁸

The oil industry and the attacks against oil installations have caused massive oil-spills with large environmental effects. In one tragedy in Catatumbo, near El Tama National Park, oil pipeline attacks and oil spills has resulted in major environmental destruction in an area of around 5000 hectares⁴⁹. Some estimate that total oil spills are equivalent to more than 7 times the internationally well known Exxon Valdez Accident in Alaska which is claimed to be the most serious oil disaster ever.⁵⁰

Oil exploration has also resulted in clashes with local groups. The most well known is the success of the U’wa indigenous community in northeastern Colombia in preventing Occidental and Ecopetrol to drill in its ancestral land⁵¹.

⁴⁵ www.zeri.org

⁴⁶ Colombia has a number of other extractive resources with potential conflict-environment linkages, but these are not covered in this document.

⁴⁷ Pearce, 2004

⁴⁸ Dunning, T. and Wirpsa, L. (2004)

⁴⁹ World Bank, 2000

⁵⁰ Cardenas and Rodríguez, 2004

⁵¹ Pearce, 2004

5. Conclusions and issues for Sida to consider

Environment or natural resource related issues have not explicitly been part of Swedish development cooperation with Colombia. However, as this review has shown, there are many important linkages between environment and Swedish areas of key concern, such as poverty reduction, conflict prevention, human rights and involuntary displacement. As part of developing a new cooperation strategy with Colombia Sida should consider the following issues:

Develop a good understanding of environment, climate change, poverty and conflict linkages:

Given the important linkages between these themes a good understanding of the issues at stake is crucial for sound planning of Swedish development cooperation with Colombia. Dialogue with other development actors, seminars, further studies etc should be considered. A focus on developing a better understanding of specific issues, such as land policy, climate change or biofuel and their implications for poverty reduction and conflict is suggested, in order to get a way from a single and general “environment is important discussion”.

Support initiatives in favor of a more equal and environmentally sustainable land use:

Sida stresses the importance of addressing “root causes” to development problems in Colombia⁵². The trend towards increased land concentration seems to be one such root cause. Sida should consider how issues related to land reform, land titling etc can be incorporated in the cooperation strategy. Links should be made to Sida’s ongoing methodological work on natural resources tenure.

Reduce conflict risks linked to biofuels and other mega-development plans:

Well managed, the growing market for biofuels and carbon sequestration⁵³ can become an important source of economic growth that yields social and environmental benefits. However a growing number of reports indicate a worrying link between large scale development plans and conflicts over land use. Most troubling are the alleged links between paramilitary groups, the rapid expansion oil palm plantations and human rights violations and displacement. As part of Sida’s work with conflict prevention and involuntary displacement Sida could highlight the importance of conducting social and environmental assessments of government supported large scale development plans. Of particular importance is to support the participation of vulnerable stakeholders in these assessments. Sida could also catalyze further studies about palm oil, land use and conflicts.

Include climate change and environmental concerns in Sida’s Cooperation Strategy, Country Plans and Country Reports:

Sida’s country reports, planning documents and poverty analysis for Colombia currently do not sufficiently integrate environmental and climate change considerations. To be multidimensional the poverty analysis should incorporate also the constraints and opportunities that environmental factors constitute for poor women and men. In line with Sida’s overall focus in Colombia, special attention should be put on analyzing climate change and environmental issues from a conflict prevention perspective. This should imply a relatively larger focus on predominantly rural environmental issues, despite the growing importance of urban environmental issues documented in this report.

⁵² Sida, 2008, Planning Document 2 - Cooperation Strategy Process Colombia 2009-2013

⁵³ I a post Kyoto international climate agreement

Include environment as a dialogue issue: Sida should consider the possibility of including specific conflict-environmental linkages in its dialogue with the government. Without opening up for environmental sector work, Sida could also support the lead donors on environmental management (the European Union and the Dutch Ministry of Foreign Affairs), by expressing the need for stepped up efforts for environmental management, in the dialogue with the government.

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Appendix 1: Map of Colombia

