Convention on the Conservation of Migratory Species of Wild Animals

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Workshop on Sustainable Land Use in West Africa: National and International Policy Responses that Deliver for Migratory Birds and People (LUMB)

Abuja, Nigeria, 24 – 26 November 2016

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BACKGROUND PAPER

Contents

1. Acronyms

AEMLAP: African-Eurasian Migratory Landbird Action Plan

AEMLWG: African-Eurasian Migratory Landbird Working Group

AU: African Union

CA: Conservation Agriculture

CAADP: Comprehensive Africa Agriculture Development Programme

CBD: Convention on Biological Diversity

CMS: Convention on the Conservation of Migratory Species of Wild Animals

COP: Conference of the Parties

EbA: Ecosystem-based Adaptation

ECOWAP: ECOWAS Regional Agricultural Policy for West Africa

ECOWAS: Economic Community of West African States

ECOWEP: ECOWAS Environment Policy

ELD: Economics of Land Degradation Initiative

FAO: UN Food and Agriculture Organisation

GDP: Gross Domestic Product

NBSAP: National Biodiversity Strategy and Action Plan

SDG: Sustainable Development Goals

SLM: Sustainable Land Management

SRAP-WA: Sub-regional action program for climate change vulnerability reduction in West Africa

WAEMU: West African Economic and Monetary Union

UNCCD: UN Convention to Combat Desertification

UNFCCC: UN Framework Convention on Climate Change

WAWRP: West African Water Resources Policy

2. Executive summary

1. This paper has been prepared for the workshop, 'Sustainable land use in West Africa: supporting national and international policy responses that deliver for birds and people', to be held on 24 – 25th November 2016, in Abuja, Nigeria. Sustainable land use in West Africa is a prerequisite for sustainable livelihoods and biodiversity conservation, particularly for migratory landbirds, whose populations can act as an indicator of the biodiversity component of land use. This workshop aims to develop a shared understanding of the drivers of West African land use change and its impacts on birds and people, and to identify solutions for achieving sustainable land use using relevant policy frameworks.

2. Land use is changing rapidly across West Africa. Agricultural land is expanding, and will continue to do so. Intensification, historically low in the region, is also on the rise. Partly as a result of agricultural expansion and intensification, trees and forest cover is being lost and degraded across the sub-region, and wetlands are declining in extent, productivity and biodiversity richness. The direct drivers of these changes are agricultural expansion and intensification (including irrigation), timber and wood harvesting, infrastructure development (largely road construction and hydrodam development) and poor governance. The key underlying drivers are population growth (particularly of urban populations) and economic growth, both local and international market demand for commodities.

3. The impacts of these land use changes on people and biodiversity are largely negative. Although agriculture is a large and important sector in West Africa, unsustainable land management practices can degrade the productivity of land and endanger livelihoods. The loss of trees, woodlands, forests and wetlands is also driving an associated loss of ecosystem services, and their ability to support incomes and resilience. These changes are also leading to loss natural vegetation and habitat, which has a detrimental impact on biodiversity. This includes those species that require transboundary conservation, such as migratory birds. The loss of West African biodiversity also negatively affects people in the sub-region, and further afield.

4. Sustainable land use in this context is defined as sustainable land management activities that, taken together over a defined area, support resilient livelihoods for communities, ecosystem services and sufficient natural and semi-natural habitat to ensure healthy populations of native species. Such practices must also be adapted to climate change and take into account a landscape approach to managing the needs of people and biodiversity.

5. Sustainable land management practices are 'those that serve to maintain ecological resilience and the stability of ecosystem services indefinitely, while providing sustenance and diverse livelihoods for humans' (ELD, 2015). Agroecology and agroforestry are two areas where sustainable land management practices have great potential to benefit people – particularly smallholders – and birds.

6. We present the significant challenges to achieving sustainable land use alongside some solutions, which are clustered in three main areas: engaging with a broad partnership; integrating action across sectors and landscapes; and providing incentives. Meaningful engagement with local communities is critical, but there is a wide constituency of stakeholders required to achieve sustainable land use, including scientific experts and the private sector. Equally, the range of issues

involved requires joined up thinking across landscapes and policy areas, and support for solutions such as integrated land use planning that may cut across traditional sectors and departments.

7. At the international, regional and sub-regional level, there are policy frameworks that support sustainable land use in West Africa. All countries and development partners are considering how they can deliver the new Sustainable Development Goals, which provide a clear framework for integrated delivery of development and environment objectives. The UN Convention on Biological Diversity (CBD) and UN Convention to Combat Desertification (UNCCD) are actively working on sustainable land use in West Africa, through analysis of country implementation on Aichi targets 5 and 15 (on ecosystem restoration), and through supporting targets on land degradation neutrality respectively. The CBD analysis shows that country-level action to deliver Aichi targets 5 and 15 could be stronger in the sub-region, and that there are a variety of national situations with regards to progress under these targets. At a regional level, the Comprehensive Africa Agriculture Development Programme highlights the need for sustainable land and water management; its implementation at a regional and national level in West Africa is a key opportunity to support more sustainable land management practices. Similarly, programmes focusing on restoration in the sub-region provide opportunities to integrate biodiversity delivery through an integrated approach.

3 Background to the workshop

8. In November 2014, Resolution 11.17 of the 11th Conference of the Parties (COP) of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) adopted the African-Eurasian Migratory Landbird Action Plan (AEMLAP), and mandated the African-Eurasian Migratory Landbird Working Group (AEMLWG) to facilitate its implementation.

9. The Action Plan was developed in response to the steep declines amongst African-Eurasian migratory landbirds that spend part or all of the non breeding season south of the Sahara, from the Sahel to the Guinea forest zones of West Africa, such as Eurasian Turtle dove and Whinchat (Zwarts et al., 2009, Vickery et al., 2014). This area includes the countries represented at this workshop: Burkina Faso; Côte d'Ivoire; Ghana; Nigeria; and Senegal.

10. AEMLAP specifically '*urges* Parties... to address the issue of habitat loss and degradation of migratory landbird species through the development of policies that maintain, manage and restore natural and semi-natural habitats within the wider environment' (UNEP-CMS, 2014). It identifies a series of actions at the level of the African-Eurasian flyway to address loss of natural vegetation, including through tackling land use change, under the following headings: intensive and traditional agriculture; timber and non-forest products; water management; energy; re-vegetation; and integrated land-use management.[1] AEMLWG prioritised action to address land

[1] Adams et al. (2014) found that there are only a small number of field studies evaluating direct evidence of the impact of land use change on Afro-Eurasian migratory landbirds in the Sahel region. Nevertheless, taking into account the negative impacts of land use change on wider biodiversity, the synergies between resilient natural habitats and human well-being, and the precautionary principle, it is appropriate that this remains a core area of both research and policy activity.

use change at its meeting in Abidjan in November 2015, in the first instance through the present workshop.[2]

11. Identifying the relative impact of land use change factors on bird population trends still requires more detailed experimental work, because migratory birds respond to a suite of interacting factors rather than individual aspects of land use (Chamberlain et al., 2001). For example, in agricultural settings, they may respond differently to different components of intensification such as crop area, fertilizer and pesticide use (Chamberlain et al., 2000). However, although detailed investigations on the effects of increasing intensification of agriculture on migratory bird species in West Africa are rare, it is reasonable to assume that these species (and biodiversity in general) are, by tendency, similarly affected by intensified land use practices and habitat modifications in the West African region as in European countries. A holistic conservation strategy that encourages a decrease in the intensity of land use practices will be most likely to benefit bird communities (Chamberlain et al., 2001). In particular, we can say that 'interventions that meet local development needs while sustaining tree and woodland cover could be beneficial for migrant landbirds', and that 'forms of development (for example large-scale commercial farming, or commercial woodland monocultures of fast-growing exotic species such as *Eucalyptus* or *Prosopis [juliflora]*) could have negative impacts on both birds and local people' (Atkinson et al., 2014).

12. Bird populations have a special role to play in monitoring the sustainability of land use, since the health of their populations can act as a powerful indicator of the biodiversity component of land use. These needs can also be consistent with objectives relevant to human development and ecosystem services, including those of the UN Convention to Combat Desertification (UNCCD) and the UN Framework Convention on Climate Change (UNFCCC).

13. Additionally, CMS Resolution 11.14 on a Programme of Work on Migratory Birds and Flyways includes a specific request to implement actions to manage landscapes to meet the requirements of migratory birds, including through integration of these requirements into land use policies, designation of protected transboundary habitat corridors and ecological networks. The Resolution also requests identification of mechanisms under AEMLAP to address land use change jointly with the development aid community, agriculture and forestry sectors.

14. Achievement of AEMLAP objectives related to land use will depend on CMS working in partnership with those who have overlapping interests in land use. Prominent amongst these are local communities, state and non-state actors working at national and sub-regional levels on human development and security, the conservation of biodiversity and protection of ecosystem services. Key actors include the UNCCD, the UNFCCC, the CBD and the UN Food and Agriculture Organisation (FAO). Identifying and effectively prioritising shared interests amongst these communities will allow the development of a shared vision for sustainable land use in West Africa that will have the power and backing to deliver for multiple objectives.

15. The objectives of the workshop are:

[2] Programme of Work for the African-Eurasian Migratory Landbirds Action Plan: goo.gl/0lO1w5.

- To agree the major recent and likely future land use changes that are driving loss of natural vegetation in agricultural and forest landscapes, and associated wetlands, and the main challenges to achieving sustainable land use;
- To agree the priority actions needed to influence the key land use changes identified in b) to achieve sustainable land use;
- To identify initiatives that can address priority challenges to sustainable land use in each country involved in the workshop (Burkina Faso, Côte d'Ivoire, Ghana, Nigeria and Senegal) and a sub-regional initiative that includes transboundary cooperation; and
- To develop a draft resolution on land use in West Africa, for submission to CMS COP12 in October 2017, and a parallel declaration for adoption by other instruments or forums.

4. Definitions

Agroecology: 'The integrative study of the ecology of the entire food systems, encompassing ecological, economic and social dimensions' (Francis et al., 2003). Also defined through a series of principles by the Nyéléni Forum (See Section 6.1).

Agroforestry: A 'dynamic, ecologically-based, natural resource management system that, through the integration of trees on farms and in the landscape, diversifies and sustains production for increased social, economic and ecological benefits' (Leakey, 1996). To be 'ecologically-based' agroforestry should prioritise native tree species that support biodiversity and ecosystem services.

Habitat loss: 'Habitat loss, used with reference to an individual species, is the permanent conversion of former habitat to an area where that species can no longer exist' (CBD, 2016).

Land cover: 'The observed physical and biological cover of the earth's land, as vegetation or man-made features' (FAO, 1997; FAO/ UNEP, 1999).

Land degradation: 'A persistent decline in the provision of all services that land otherwise provides, especially that of food provision' (Lal et al., 2012).

Land use: 'The total of arrangements, activities, and inputs that people undertake in a certain land cover type' (FAO, 1997; FAO/ UNEP, 1999).

Natural vegetation: Native plant species

Migratory birds: bird species that 'cyclically and predictably cross one or more national jurisdictional boundaries' (UNEP-CMS, 1979), including African-Eurasian and Intra-African migrants.

Sustainable land management practices: 'Those that serve to maintain ecological resilience and the stability of ecosystem services indefinitely, while providing sustenance and diverse livelihoods for humans.' It refers to practices that are 'implementable at the local scale', 'involve all relevant and affected stakeholders', are 'supported by the broader cultural, economic, environmental, legal, political, technical, and social framework and environment' and are 'adaptive' (ELD, 2015).

Sustainable land use: Sustainable land management practices that, taken together over a defined area, support resilient livelihoods for communities, ecosystem services and sufficient natural and semi-natural habitat to ensure healthy populations of native species. Such practices must also be adapted to climate change and take into account a landscape approach to managing the needs of people and biodiversity.

5. Land use change in West Africa, its drivers and its impacts

16. This section sets out how land use and land cover (and hence habitats) in West Africa are changing, what is driving the changes, and how the changes are affecting people, biodiversity and ecosystem services. Differentiating between land use, land cover and habitat is difficult, but here we refer to land use / land cover change to capture all alterations to ecosystems that might affect species' habitats. This section examines three categories of land cover/ use: agricultural land; trees, woodlands and forests; and wetlands.

17. There are a number of overarching studies of land use and its impacts. The Economics of Land Degradation (ELD, 2015) has summarised the drivers of land degradation (Table 5) and highlighted the estimated costs of ecosystem service value losses from land degradation in Western Africa: Haberl et al. (2007) estimated $1,160/ person and $66,516/ km^2; and Imhoff et al. (2004) estimated $1,945/ person and $111,551/ km^2 (ELD, 2015). They also identified the percentage change in the value of land by country (see Table 4).

Table 4: Percentage change in the value of land due resulting from the Haberl and Imhoff representations of land degradation, by country

	Haberl et al. (2007)	Imhoff et al. (2004)
Western Africa	19.29%	32.35%
Burkina Faso	22.6%	46.6%
Côte d'Ivoire	22.7%	10.2%
Ghana	20.4%	32.3%
Nigeria	23.2%	48.2%
Senegal	18.2%	37%

Table 5: Drivers related to land degradation and their causes (from ELD, 2015, adapted from von Braun et al., 2013, Table 1).

Driver	Proximate	Underlying	Natural	Anthropogenic
Togography	✓		✓	
Land cover	✓		✓	✓
Climate	✓		✓	
Soil erodibility	✓		✓	
Pest and disease	✓		✓	
Unsustainable land management	✓			✓
Infrastructure development	✓			✓
Population density		✓		
Market access		✓		
Land tenure		✓		
Poverty		✓		
Agricultural extension service access		✓		
Decentralisation		✓		
International policies		✓		
Non-farm employment		✓		

Key	Stronger anthropogenic drivers	Weaker anthropogenic drivers
	Stronger natural drivers	Weaker natural drivers

5.1 Agricultural land

Changes and trends

Arable expansion and intensification

18. Brink and Eva (2009) found that between 1975 – 2000 agricultural land cover increased across West Africa[3], with an average increase of 16.4%. Phalan et al. (2013) showed significant increases in cropland in West Africa between 1999 – 2008, both in annual crops and perennial crops; Nigeria (10,258 km^2), Burkina Faso (1,939 km^2) and Ghana (1,568 km^2) were in the top 10 countries globally with the greatest annual increases in cropland, Côte d'Ivoire (652 km^2) and Senegal (242 km^2) were in the top 30.[4] Figures submitted by individual countries and compiled by FAO support this, indicating that the area under agriculture has increased in all countries since 1997 (FAO, 2016c).

19. Phalan et al. (2013) also looked at which regions have the potential for the greater cropland increases, finding that areas with high cultivation potential and little current cropland include the

[3] I.e. in the Sahel, Sudanian, Guinea-Congolia/Sudania and Guineo-Congolian eco-regions.
[4] Phalan et al. also note, however, that cropland is an 'incomplete proxy for impact', since some crops tend to replace habitat of higher value, such as coffee.

savannah woodlands in the Sahel and much of Sierra Leone and Liberia. These areas may therefore be considered particularly at risk of losing habitat, due to cropland expansion.

20. Since the food price crisis in 2008, the sub-region has seen major intensification efforts, mainly in terms of access to fertilizer and improved seeds, which has seen yields begin to rise (FAO, AfDB, ECOWAS, 2015). Historically, cereal yields in West Africa have been low, increasing by less than 1% annually between 1980 – 2009 (FAO, AfDB, ECOWAS, 2015). The increasing focus on intensification will need to include greater adaptation to climate change, without which West Africa could see 5 – 25% declines in yields of rainfed crops between 2000 – 2050, and GDP declines of 2 – 4% by 2100 (Rhodes et al., 2014). Globally, studies have found that most of the increase in food demand in developing regions could be met from current area of agricultural land, with sustained growth in per-hectare yields (Mason and Vitousek, 2006).

Livestock expansion and intensification

21. The livestock industry in West Africa is also growing: animal product supply is increasing at a rate of 2%/ year (OECD/SWAC and ECOWAS, 2008); animal product demand is growing at 4%/ year, with projections that it will rise more than 250% by 2025 (OECD/SWAC and ECOWAS, 2008). With 60 million cattle, 160 million small ruminants and 400 million poultry in 2008, this would mean an extra 111 million cattle by 2018. Global Harvest have suggested a scenario where 'meat consumption more than doubles in Africa over the 2000 to 2050 period' (Kruse, 2010). Natural vegetation is already being lost and degraded due to over-grazing; a recent UN report suggests that the rapidly increasing African demand for livestock products will require expansion of cropland *and* grassland on top of sustainable intensification of livestock farming, and that 'continuous land conversion in grasslands and natural land' is likely to be the pattern up to 2050 (Herrero et al., 2014).

Expansion of irrigation

22. As the extent and intensity of crop production and the populations of domestic grazing animals has increased, so has demand for water. Large numbers of hydrodams have been developed or are under development in the region, many designed to provide irrigation (ECOWAS, 2011; Skinner et al. 2009). Agricultural water use is still low, with only 12% of suitable land currently irrigated (ECOWAS, 2012b). However, promoting irrigation is the first amongst the six objectives of the ECOWAS Regional Agricultural Policy for West Africa.

Drivers

23. Agricultural expansion and intensification in West Africa is driven by human population growth, national economic growth and associated local market demand for resources. Global market demand and increasing agricultural commodity prices have also been identified as drivers of expansion and intensification (Hererro et al., 2014). Equally, a 2010 UK workshop on, 'Diagrams linking drivers, changes in management and the likely winners and losers amongst the Afro-Palearctic migrant bird community' suggested that both increases *and* decreases in rural household wealth, increases in rural population and also in urban wealth and economic activity might be major drivers for agriculture and grazing (Cambridge Conservation Initiative (CCI), 2010). In addition, they suggested that NGO, Government and donor agricultural development policies were important.

Impacts

On people

24. Agriculture is a major West African sector, employing some 60% of the population and contributing 36% of sub-regional GDP (as the wider food economy), including 16% of export earnings (ECOWAS, 2005; Allen and Heinrigs, 2016). Agriculture is particularly important for the poor: a large proportion of those on the lowest incomes are in employed in this sector (UNDP, 2015), and many also rely on subsistence agriculture.

25. Agricultural development can provide more and better livelihoods for West Africans, but unsustainable land management practices can have significant negative effects, particularly on smallholders. For example, irrigation without drainage management can cause salinization. ELD have found that costs of not acting on such salt-affected lands can result in up to 69% crop production losses (ELD, 2015). Declining productivity due to land degradation can also lead to forced migration of individuals, households and whole communities (NEPAD, 2009).

26. Agricultural development can also take land out of local hands. Osinubi et al. (2016) note the concern over who benefits from 'increasing demand for, and ownership and use of African land and agro-commodities, from outside of Africa (Land Matrix, 2016; Lowe, 2015; Vidal, 2010).' They point out that 'multinational companies, operating privately or in some cases with the support from their host government, have in recent years bought up African land in at times vast 'land grabs' where the rights and needs of local communities have been ignored or illegally violated' (Vidal, 2010).

On biodiversity

27. Agricultural expansion and intensification has tended to lead to negative effects on ecosystems and biodiversity, particularly through conversion of natural habitats and vegetation. As identified below, agricultural expansion has led to widespread loss of forests, woodlands and trees; Brink and Eva (2009) show that at the same time as agricultural area increased by an average 16%, there was an average 24% loss of natural non-forest habitat across West Africa (apart from the Guinea-Congolia/Sudanian region, which saw a small increase). Assuming the current forest-agricultural mosaic was once dense forest, Norris et al. (2010) estimated that 83% of Guinea rainforest has been converted, mainly to agricultural use.

28. Across Africa, agricultural expansion and intensification is the greatest threat to bird populations (BirdLife International, 2013), and AEMLAP identifies it as a major threat to landbirds. This is due, inter alia, to the loss of trees through conversion of woodlands to cropland, or loss of trees on farmland through intensification, which detrimentally affects overwintering migratory landbirds (Mallord et al., 2016). Comparative studies among different European countries have shown that population declines and range contractions of farmland birds were significantly greater in countries with more intensive agriculture (Donald et al., 2001, Wretenberg et al., 2006). Periods of stability or increase in farmland bird abundance coincided with a decline in the use of pesticides and fertilizers and an expansion of organic farming (Fox, 2004).

29. There has been significant agricultural pressure on West African wetlands over the 20th

century (Zwarts et al., 2009). Wood and van Halsema (2008) report that the impacts in Africa have included degradation of soils (40% of reported state changes in wetlands), water resources (33%) and biodiversity loss (22%).

5.2 Trees, woodlands and forests

Changes and trends

Loss of trees and forests

30. Between 1975 – 2000, forested areas decreased in West Africa, with 16 – 19% decreases in every eco-region except the Sahel (Brink and Eva, 2009).[5] Using different methods, Hansen et al. (2013) found that between 2000 – 2012 West Africa had a net loss of 49,775km^2 of tree cover (50% of which came from just two countries, Nigeria and Côte d'Ivoire). In terms of trees on farmland and scrubland, Gonzalez et al. (2012) found significant declines in tree density and tree species richness across the Sahel, from the 1960s – 2000. Figures supplied by countries themselves, based upon a variety of sources and collated by FAO, suggest that in Burkina Faso, Côte d'Ivoire, Nigeria and Senegal there was a reduction in the percentage of other wooded land from 2000 – 2015, and that in Burkina Faso, Nigeria and Senegal there was a reduction in forest extent; over the same period, Côte d'Ivoire saw no change in forest extent and Ghana reported a small increase (FAO, 2015a). According to Hansen et al. (2013), however, none of these countries made a net gain in tree cover. Well-known differences in methods could account for these discrepancies.

Forest expansion

31. FAO (2015a) suggest that Burkina Faso, Ghana, Nigeria and Senegal saw some forest expansion in 2010, the majority of which is afforestation rather than natural regeneration (Nigeria does not distinguish). All five countries saw between 5,000 – 9,000 ha naturally regenerated forest, and 250 – 500 ha for other planted forest. Of these, Ghana reports 100% of naturally regenerated forest as introduced but naturalised species.

Drivers

32. The underlying drivers of tree, woodland and forest loss include economic growth and associated pressure on natural resources, policy/ governance (particularly energy and land use policy), technological innovation, demographic changes and associated pressures on natural resources (Raedemakers, 2010). Geist and Lambin (2002) found that amongst the underlying economic drivers, growth of relevant sectoral markets[6] – particularly in relation to timber markets – was important.

33. Geist and Lambin (2002) reported that direct drivers of tropical deforestation in Africa were – in order of importance – agricultural expansion, wood extraction and infrastructure expansion (very largely road construction). Increased consumption of agricultural products by the

[5] The Sahel saw only 1.5% loss, albeit from a low starting point, and the methods used would not detect loss of scattered trees in this area.

[6] Markets for wood, agricultural products and minerals.

growing urban population has spurred agricultural expansion at the expense of forests in West Africa (Rudel, 2009; DeFries et al., 2010). It is particularly small-scale agricultural processes that dominate deforestation in Africa; large-scale agriculture accounts for only one-third of deforestation on the continent, but may become the dominant force in coming years (FAO, 2016b; Geist and Lambin, 2002; Hosonuma et al., 2012). Other drivers of forest conversion to agriculture include land-tenure security and the governance of land use change (FAO, 2016b; DeFries et al., 2010).

34. Fuelwood collection and charcoal production is the greatest driver of forest *degradation* in Africa (Hosonuma, 2012; Asante and Benefoh, 2013; Energy Commission, 2012). Geist and Lambin (2002) reported that wood extraction is dominated by the collection of fuelwood and poles for domestic use, but that charcoal production (domestic and industrial) and commercial wood extraction were also drivers of loss. Vickery et al. (2014) also identified conversion of natural floodplain woodlands to plantations of exotic species as a driver of tree loss. The 2010 CCI workshop suggested that fuelwood collection and timber cutting was driven not just by village level demand for domestic use, but also by increased commercial demand at a regional and urban level. In Ghana and Senegal, bush fires have also been noted as an issue (Attuquayefio and Gbogbo, 2001; CSE, 2014).

35. The International Energy Agency (IEA) has suggested that fuelwood consumption (including fuelwood used to make charcoal) in West Africa is set to rise by more than 50% between 2012 and 2040, from 247 to 389 million tonnes. Demand for charcoal will increase with the growing urban population, for which fuelwood provides both the raw materials and the means of production (IEA, 2014; Iiyama et al., 2014). Olagunju (2006) found that charcoal production can provide a rate of return on investment of 78%.

Impacts

On people

36. West African trees, woodlands and forests provide people in the sub-region with vital food, fuel, timber and non-timber products, the loss of which impacts negatively on their livelihoods. FAO (2016b) notes that beyond this, 'Forest degradation can have direct negative effects on vulnerable people and lead to severe social unrest and conflicts.' The Forest Peoples Programme has published figures on forest peoples in each country (Table 6).

Table 6: Forest peoples by country (adapted from Chao, 2012)

Country	Forest people	Notes
Burkina Faso	13,109,000	The rural population who depend primarily on savannah and dry forests for their livelihoods.
Côte d'Ivoire	13,816,500	The number of people who make direct use of forest resources. No disaggregated data found.
Ghana	11,000,000	The number of Ghanaians living in forest areas. About two thirds of livelihoods are supported by forest activities.
Nigeria	110,896,000	The 70% of the population who depend on fuelwood
Senegal	471,800	

On biodiversity

37. As noted above, loss of native trees has been found to be a significant driver of bird declines in West Africa (Zwarts et al., 2009; Hewson and Noble, 2009; Adams et al., 2014). The reduction in the density of indigenous trees, the associated vegetational changes, plantations of exotic trees unsuitable for migratory birds and overgrazing by livestock are indicated as drivers of the reduced number of migratory landbirds in the Sahelian zone (Zwarts et al., 2009). Mallord et al. (2016) found that apart from selection of individual species, probability of Wood warblers (*Phylloscopus sibilatrix*) occupying an area increased with increasing woodland cover.

38. The European Union's *Larger than Elephants* study notes that lowland and mountain forests in West Africa have greater biodiversity richness than other such forests in Africa (and that West African forests are at the same time the most threatened ecotype in the sub-region) (EU, 2015).

5.3 Wetlands

Changes and trends

Loss of wetlands

39. Major West African wetlands include the Senegal and Niger River Basins, the Inner Niger Delta, the Hadejia Jamare Komadogu Yobe Basin (including the Hadija-Nguru wetlands and some parts of Lake Chad), coastal wetlands including mangrove forests, and countless smaller rivers and wetland areas across the sub-region. Much of the Senegal River has been embanked and its floodplains are now largely irrigated farmland and salt plains. The variation in its water level, which used to be 3.5m over the season, has been reduced to a 0.5m variation. Zwarts et al. (2009) found that the floodplains of the Inner Niger Delta are 7.5% smaller than in their natural situation, that Lake Chad has declined from 15,000 – 25,000km^2 in 1970 to 5,000 – 10,000km^2 since 1980 (although the lake's floodplains have increased in size), and that the Hadeija-Nguru wetlands have decreased in size by 200 – 500km^2 compared to their natural situation.

Drivers

40 The underlying drivers of wetland loss and degradation are population growth, food shortages, market opportunities and land dynamics, and the need to earn cash income, as well as climate variability and urbanisation (Wood and van Halsema, 2008; McCartney et al., 2010; UNDP et al., 2012; Adams et al., 2014). Increasing population pressures, food shortages and land dynamics are particularly pronounced in seasonal inland wetlands (Wood and van Halsema, 2008).

41 The direct drivers are agricultural development, hydrodam and irrigation developments (whose impacts have included growth of invasive species) and declines in rainfall. McCartney (2010) found that 'clearing and draining wetlands for agricultural expansion and the modification of hydrological and other fluxes have been the primary cause of wetland degradation in the past. Damming of rivers, withdrawal of river water and groundwater abstraction have all resulted in the desiccation of many wetlands.' Wood and Van Halsema (20008) note that agricultural expansion is markedly more pronounced in subsistence economies than agricultural intensification or water use. Zwarts et al. (2009) note that irrigation for agriculture is a particularly important driver of

wetland loss at Lake Chad. UNDP et al. (2012) report that agriculture in the Niger Delta 'is characterised by ever expanding land clearing activity… subsistence, shifting cultivation using slash-and-burn to prepare the land from site to site.' They also note a recent rise in clear-cutting for industrial plantations of oil palm and introduced rubber (*Hevea brasilensis*), and plantations of fast growing non-native tree species, such as *Gmelina*, teak and pine for timber and pulp to feed paper mills (UNDP et al., 2012).

42 Zwarts et al. (2009) found that upstream dams and irrigation schemes have affected both the magnitude and timing of the annual flood in the Inner Niger Delta in recent years: the reductions in the extent of the Inner Niger Delta have been attributed to dam construction (the Manantali and Diama dams), and if new upstream and downstream dams are constructed, the Delta could see further reductions in floodplain extent of up to 20%. Where dams newly flood areas on a permanent basis, they open up the way for invasive species, as has happened in the Senegal River and the Hadeija-Nguru wetlands. In Hadeija-Nguru, the part of the floodplain that is now constantly covered with water, due to water release upstream during the dry season, has been overgrown with Cattail (*Typha*) (Zwarts et al., 2009).

43 Hydrodam development is largely driven by the need for energy, irrigation for agriculture and water supply in West Africa. In 2012, the IEA estimated that 195 million West Africans lacked access to electricity (nearly half of them in Nigeria) (IEA, 2014). In 2010, 35% of West Africans lacked access to drinking water (ECOWAS, 2012b), and only 12% of potentially irrigable land was being irrigated (ECOWAS, 2012b). Only around 4101 MW of West Africa's hydropower potential – 16% – is currently being exploited (World Energy Council, 2015; Agbonaye et al., 2012), but with the West Africa population forecast to grow by 27% by 2020, to around 400 million, the associated increase in the need for energy, irrigation and water supply means that the estimated 25,000 MW of potential hydropower in West Africa is unlikely to be overlooked (OECD/SWAC, 2009).

Impacts

On people

44 The loss and degradation of wetlands has significant impacts on people, who depend on them for a range of ecosystem services, from water supply and fisheries, to water purification. For example, the Hadejia-Nguru wetlands in Northern Nigeria 'play a major role in recharging aquifers which provide domestic water supplies to approximately one million people as well as supplying water for agriculture' (McCartney et al., 2010; Hollis et al. 1993). Wood and van Halsema (2008) found that the impacts of agriculture on the state of wetlands were most prominently changes in soil characteristics (40%), water resources (33%) and biodiversity loss (22%).

45 Hydrodams that provide public water supply and irrigation create benefits for people, but if they degrade wetlands they undermine those goods. Upstream dams and irrigation schemes in the Inner Niger Delta have reduced average annual rice production by 15%, and fish trade by 18% in recent years (Zwarts et al., 2009). This, in an area that supports one million people, 300,000 of whom depend on fisheries for their livelihood (Zwarts et al., 2009). McCartney et al. (2010) report that 'the construction of the Bakolori Dam on the Sokoto River, a tributary of the Niger River, to supply irrigation water for 30,000 ha of crops, resulted in decreased downstream wetland

inundation and the loss of 12,000 ha (out of 17,000 ha) of flood recession agriculture on which some 50,000 people depended. The predicted irrigation benefits of the dam did not materialize and, in addition, fish populations declined, with lower catches and smaller sizes forcing more and more households to abandon fishing. As a result, many people were forced to migrate from the area.' The beneficiaries of large dams are often industry and middle-class consumers (Bosshard, 2013).

46 Subsistence farmers can see up to 70% increases in crop production when farming in wetlands. But at the same time they can also see 25 – 35% decreases in fisheries, gathering, livestock, *and* crop production (Wood and van Halsema, 2008). The same study found that market-orientated and commercial agriculture achieved are 60% gains in cereal production and 45% gains in vegetable production when farming in wetlands.

47 Wood and van Halsema (2008) found that nearly 50% of the studies of wetland agriculture they examined showed increased socio-economic differentiation, more than 30% showed increased conflict and around 15% showed increased marginalisation and poverty; only 5% saw poverty alleviation benefits. USAID emphasise the point on conflict, noting that 'Shrinking wetlands are increasingly creating conflict situations among multiple stakeholders. Pastoralists, who also use these wetlands for grazing during the drier periods, are often confronted with traditional farmers who utilize the same wetlands for cultivation during the wetter periods, with agricultural operations extending into a greater part of the drier period' (USAID, 2013).

On biodiversity

48 The ecological value of West African wetlands is significant. They provide a home to millions of migratory birds, both Afro-Eurasian and Intra-African migrants as well as migratory waterbirds and other biodiversity, and their loss is an important driver of declines for migratory landbirds (Zwarts et al., 2009; Adams et al., 2014; UNEP-CMS, 2014). Zwarts et al., (2009) note that the importance of the Inner Niger Delta for migrating African-Eurasian migratory birds can hardly be overestimated. West African inland wetlands also support a high diversity of aquatic species, with high levels of endemism (EU, 2015).

49 A purely financial valuation of African wetlands put their worth at $5.25 billion, and noted that 'the replacement costs for wetland ecosystems are generally far greater than the opportunity costs of maintaining them intact' (McCartney et al., 2010).

6. Sustainable land use for birds and people in West Africa

50 In this section we characterise sustainable land use practices that have the potential to address the drivers of land use change are affecting people and birds through loss of natural vegetation and ecosystem services. We go on to look at the approaches that are needed to achieve sustainable land use, identifying challenges and presenting potential solutions.

51 The benefits of sustainable land management practices are usefully illustrated by Branca et al. (2011, taken from UNCCD (2016)) in Figure 1. This shows the benefits of a suite of sustainable land management practices in terms of increased yield and greenhouse gas emissions

reductions, which can in turn benefit people through increased incomes and resilience to climate change, and increasing biodiversity.

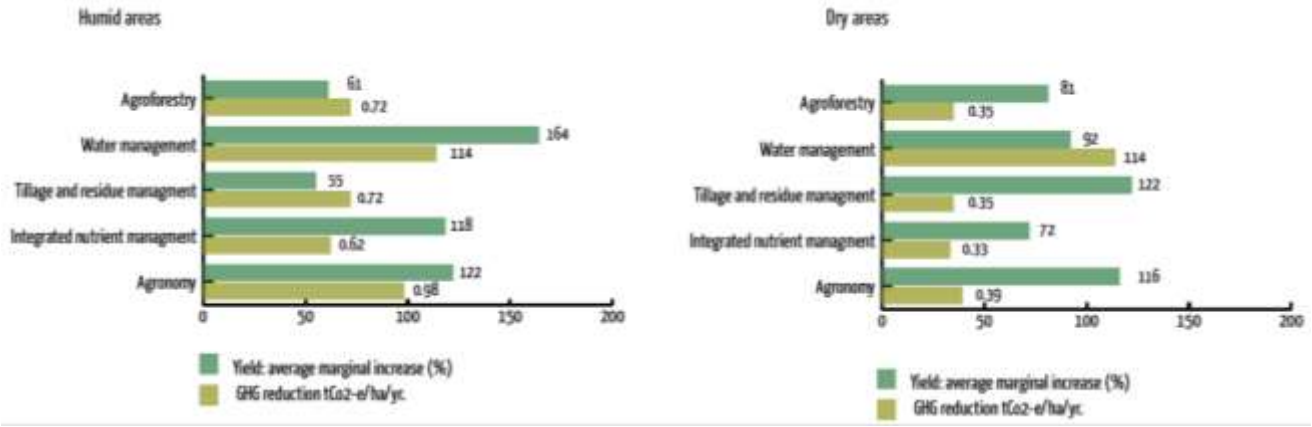

Figure 1: Effects of sustainable land management practices on productivity and climate change mitigation (Branca et al., 2011)

6.1 Sustainable land use practices

Agroecology

52 The Declaration of the International Forum for Agroecology, published in 2015 by small-scale producers and consumers at the Nyéléni Forum identifies intercropping, traditional fishing and mobile pastoralism, integrating crops, trees, livestock and fish, manuring, compost, local seeds and animal breeds, as examples of agroecological practices. Beyond this, the Declaration presents political, social and economics aspects of agroecology (Peoples' Food Sovereignty, 2015):

- Promotion of agroecological production through policies that are territorial and holistic in their approach to social, economic and natural resources issues, that secure access to land and resources, that integrate democratized planning processes;
- Knowledge sharing through horizontal and intergenerational exchange, and giving people control over research agendas;
- Recognition of the central role of women;
- Building local economies through promotion of local markets and alternative financial infrastructure, institutions and mechanisms to support both producers and consumers;
- Protection of biodiversity and genetic resources, including seeds and reproductive material; and
- Recognition of agroecology as a primary solution to tackling and adapting to climate change.

52 The 2015 Regional Symposium on Agroecology in Sub-Saharan Africa suggested a similar set of priorities (IED Afrique et al., 2015):

- Increased management and control of natural resources by local communities, partly facilitated by use of local development plans, which should integrate context-specific agroecological practices;
- Support for local markets for agroecological produce and national agroecology policies and action plans;

- Support for regional knowledge-sharing platforms;
- A debate around the direction of the Comprehensive Africa Agriculture Development Policy (CAADP), and greater support for agroecology through the 10% agricultural investment target; and
- A debate around the influence of agribusinesses in African agriculture.

53 There are multiple agricultural systems that can be described as sub-sets of agroecology, including conservation agriculture, ecosystem-based adaptation, climate-smart agriculture and agroforestry.

54 Conservation agriculture (CA) is characterised by adoption of three key practices: minimal soil disturbance; permanent soil cover; and crop rotations (FAO, 2015b). It 'facilitates good agronomy, such as timely operations, and improves overall land husbandry for rainfed and irrigated production', and it delivers cost-effective greenhouse gas emission reductions, as well as reductions in energy and fertilizer costs (Kassam et al., 2010). When 'complemented by other known good practices, including the use of quality seeds, and integrated pest, nutrient, weed and water management, etc., CA is a base for sustainable agricultural production intensification' (Kassam et al., 2010). FAO (2009) have suggested the following key factors for scaling up CA: mainstreaming CA in government agricultural education development and extension services; initial advancement of CA equipment and other inputs; access to cover crop seed; flexibility and adaptability; weed control; advocacy around the benefits of CA to governments, private sector and development agencies; and emergence of new market based opportunities.

55 Vignola et al. (2015) have defined ecosystem-based adaptation (EbA) in agricultural systems as 'agricultural management practices which use or take advantage of biodiversity or ecosystem services or processes (either at the plot, farm or landscape level) to help increase the ability of crops or livestock to adapt to climate change and variability.' They stress the importance of such systems particularly for smallholders, noting that promotion of agricultural practices that are ecosystem-based and support livelihood security of smallholders could 'promote farming systems that are more ecologically and socially sustainable, and resilient to climate change.' They suggest that scaling up EbA in agricultural systems requires: greater evidence of the long-term benefits; incentives that 'maintain the ability of agroecosystems to provide on-and off-site ecosystem services and help improve farmer livelihoods in the face of climate change' alongside achievement of production targets; and greater government support for 'agricultural extension programs, farmer field schools, agricultural technical programs and universities' to integrate EbA practices.

56 The Permanent Interstates Committee for Drought Control in the Sahel (CILSS) (2015) has suggested that techniques such as zaï pits, assisted natural regeneration, system of rice intensification and demi-lunes are part of climate smart agriculture. The Committee suggests that they could be scaled up through:

- Mixing climate smart agriculture with limited use of chemical inputs, e.g. via micro-dosage;
- Bringing long-established agriculture techniques up to date with climate smart thinking;
- Using mechanisation to rapidly improve degraded land, e.g. via scarification;

- Forming a critical mass of land users who can use the funds made available; and
- Ensuring land tenure security.

57 The CBD has examined how sectors can contribute to the sustainable use and conservation of biodiversity (CBD, 2014), and has identified the options set out in Table 1.

Table 1: Main technical and behavioural options to contribute to the halt of biodiversity loss the food production sector (from CBD, 2014)

Food production
Crop production Livestock
Increase crop and grassland yield and feed efficiency
Reduce nutrient and pesticide losses and greenhouse gas emissions
Stimulate local farmland biodiversity
Stimulate improved land and water management
Reduce food losses and waste
Lower consumption of meat, dairy and fish

58 Many of these practices overlap with those identified as supporting sustainable land and water management under CAADP Pillar I: (i) crop management (e.g. crop rotation and intercropping, integrated pest management, inter-planting with trees and agroforestry, mulching and residue management); (ii) pasture and rangeland improvement (e.g. planned grazing processes, enclosures for recovery or enrichment planting, fire prevention); (iii) forest improvement (e.g. planting, natural regeneration, shelterbelt planting, fire protection); (iv) improved soil management (e.g. retention of crop residues and soil cover, additions of organic amendments including compost and manure and cover crops, integrated nutrient management, reduced tillage); and (v) improved rainwater management (e.g. contour ridges, natural vegetative strips, soil cover and residue management, reduced tillage) (NEPAD, 2009).

FAO (2014) has suggested five principles for a transition towards sustainable food and agriculture:

- Improving efficiency in the use of resources
- Direct action to conserve, protect and enhance natural resources
- Protecting and improving rural livelihoods, equity and social well-being
- Enhanced resilience of people, communities and ecosystems
- Responsible and effective governance mechanisms

Agroforestry and sustainable wood production practices

59 Agroforestry is a sustainable land management practice relating to the integration of trees on farms and in the landscape, and is linked to productivity, increased revenue, land value and poverty alleviation, food diversity and seasonal nutritional security, climate resilience – including groundwater recharge – and biodiversity protection (ELD, 2015; FAO, 2013; FAO, 2016a; Ilstedt et al., 2016). Zwarts (2015) and Mallord (2016) have shown that including native trees within

agroforestry systems supports biodiversity, and previous studies have also shown the benefits of native trees and shrubs for both resident and migrant species in Africa (Douglas et al., 2014).

60 Agroforestry typically includes intercropping of tree species with crops. Aymeric et al. (2014) examined the intercropping of *Acacia senegal* with sorghum in Sudan, and showed that within a single watershed it could deliver benefits including aquifer recharge, carbon sequestration, enhanced nitrogen fixation, soil moisture, avoided soil erosion, and fuelwood and gum arabic production. Over a 25-year period, the value of these benefits was calculated to be up to 3.9 billion USD.

61 FAO has noted that where agroforestry combines trees, crops and livestock, it 'mitigates environmental risk, helps create a permanent soil cover against erosion, minimizes damage from flooding and enhances water storage, benefitting crops and pastures' as well as supporting nitrogen fixation (FAO, 2013).

62 West African examples of agroforestry include the widespread tree and shrub rehabilitation in Burkina Faso and Niger, where 200,00 – 300,00ha and 500,000ha respectively have been restored since the 1980s, using techniques of Farmer-Managed Natural Regeneration and zaï pits (IFPRI, 2009; Garrity et al., 2010). The Great Green Wall is a sub-regional initiative that aims to promote sustainable land use across 12 West and East African countries, including through tree planting and reforestation activities.

63 CBD (2014) has identified practices to halt biodiversity loss in the wider wood production sector (Table 2).

Table 2: Main technical and behavioural options to contribute to the halt of biodiversity loss in the wood production sector (from CBD, 2014)

Wood production
Woodworking (e.g. construction) Paper and pulp production Local fuel wood, charcoal and wood pellets
Responsible management, including reduced impact logging
Plantations in suitable areas whilst managing High Conservation Values
Reduce wood consumption by increasing wood processing efficiency, re-use and recycling
Technological innovation in use of residual and 'low quality' (soft) woods
Fuel efficient cookstoves and alternative energy sources for cooking

6.2 Sustainable land use approaches

Engaging with a broad partnership

64 Effectively addressing land use change requires participative engagement with local communities who have experience and expertise in land use (ELD, 2015; Marques, 2016). Equally, Rhodes et al. (2014) note the importance of engagement scientists and experts. They note that the barriers to uptake of research for policy formulation are 'limited or no involvement of

policymakers in the research process, delays in reports reaching policymakers, ineffective forms of communicating research results, short term perspectives of politicians and linear research-policy linkage.'

65 Tackling the drivers of land use change cannot be achieved without engagement from the private sector, who will need to see evidence of the returns from sustainable land management (ELD, 2015; Marques et al., 2016). CBD (2014) identified barriers for the private sector to mainstreaming sectoral approaches to sustainable use and conservation of biodiversity. They include a lack of awareness and sense of urgency, lack of knowledge and capacity to deliver on opportunities and solutions, and short-term interests combined with a lack of economic incentives. Some solutions to these issues are also identified: achieving normative agreement on the importance of biodiversity and sustainable land use; business initiatives in partnership with others to build knowledge and capacity; and sustainability reporting and consumer awareness. Alongside 'soft' measures, FAO suggest that 'regulatory frameworks are needed to mitigate the potential negative social and environmental impacts of agricultural subsidies' to avoid forest loss, for example by 'adjusting support for commercial agriculture by introducing environmental safeguards such as a cross-compliance measures' (FAO, 2016b).

66 Formal governance at all levels is a key part of engagement and building partnerships. IIED/ AMFN (2015) note that 'Good landscape governance and economic activity are necessary "social accelerators" for rural transformation' and that 'collaborative local, national, and regional governance is essential for successful approaches to landscape transformation.' Rhodes et al. (2014) identify key governance-related barriers to implementation of sustainable land use policy: 'weak institutions, lack of political will and inadequate funding.' ELD (2015) note that political leaders must be willing to support sustainable land management across the wide range of policy areas it encompasses.

Integrating action across sectors and landscapes

67 Addressing sustainable land use requires a coordinated policy approach across different departments and stakeholders, which links sustainable land use into existing policies and priorities. Examples include addressing forest conversation by agriculture and promoting agroforestry through coordinated forest, land, agriculture and environment policies (FAO, 2013; FAO, 2016a), addressing fuelwood and charcoal use through effective policies for land use, forest management and sustainable wood production (IEA, 2014) and mainstreaming solutions to land and environmental degradation into development frameworks (ELD, 2015; Roe and Mapendembe, 2013). In terms of tackling the impacts on biodiversity, IUCN note that, 'drivers of pressure on wildlife populations occur simultaneously and the effect of a single factor is impossible to disentangle from another'; thus, there is a need for 'much better integration of wildlife issues in agricultural, land use, climate change, poverty reduction, food security, and health policies' (Mallon, 2015).

68 FAO/CBD (2016) identify some key approaches to achieve mainstreaming of ecosystem services and biodiversity in to agricultural production and management:

- 'involving stakeholders in policy development;
- supporting training and education programmes for farmers and land managers;
- boosting the capacity and quality of extension services;

- supporting research for identifying measures that enhance ecological intensification and for providing information on values, risks and multidimensional benefits of such measures;
- encouraging flexible implementation of policy to account for local conditions and… spatial scales;
- recognizing that farmers, applying holistic practices, provide public goods… and should be supported;
- linking payments for ecosystem services to the value of the public goods provided by the farmers;
- providing incentives for cross-boundary collaboration in the provision of ecosystem services.'

69 Looking specifically at agricultural land use and biodiversity, FAO/CBD (2016) also recommends that the following be supported in policy to promote mainstreaming: 'reducing inputs and supporting "whole-system" approaches to pests and disease; opportunities to consider functional biodiversity should be enhanced, to support ecological weed management; soil fertility should be supported by excluding vulnerable soils from land uses likely to lead to loss of soil organic carbon, better management practices, promotion of sources of nutrients that increase soil organic carbon, and better financial incentives and technical advice; landscape level integrated water resources management; support for pollinators; integrating the knowledge and practices of pastoral communities; and support for agroforestry.'

70 Alongside an integration of different sectors, debates around conservation and development have begun to focus on spatial integration, looking at a 'landscape scale' approach. This is characterised as an 'integrated multi-sector approach to development planning and environmental management covering a particular area/ ecosystem' (IIED/ AMFN, 2015). For the Landscapes for Food, People and Nature (LPFN) partnership, 'integrated landscape management' is a 'long-term collaboration to achieve landscapes that provide livelihoods, ecosystem services, and biodiversity as well as supportive markets and policies' (LFPN, 2014). LFPN suggest that common characteristics include: 'generating an agreed vision among stakeholders of landscape goals; adopting practices that achieve multiple objectives; devising strategies to manage spatial and seasonal interactions across different land uses and users; linking institutions and establishing mechanisms for stakeholder dialogue, negotiation and action; and shaping markets, planning frameworks and policies to support desired outcomes' (LFPN, 2015).

71 Many commentators have noted the importance of integrated land use planning in this context, which 'provides an essential strategic framework for balancing land uses' (FAO, 2016b; UNEP-CMS, 2014). Integrated planning should include support for clear and transparent land and natural resources rights (including trees), which can in turn create incentives that increase food security and economic growth (FAO, 2013; ELD, 2015; Vira et al., 2015; CILSS, 2015; IIED/ AMFN, 2015; FAO, 2016a).

72 In West Africa, implementation of the Bonn Challenge has a spurred a suite of forest-related initiatives that aim to work across the wider landscape in order to address the drivers of deforestation and forest degradation. These include AFR 100, the Forest Landscape Restoration Mechanism and the Great Green Wall, whose 2016 conference was subtitled 'Restoring Africa's landscapes: the way forward'. The Sahel and West Africa Program in support of the Great Green

Wall is described as being implemented following the landscape approach, which integrates people's livelihood objectives into the management of the different ecosystems within the landscape (TerrAfrica, 2016). In order to be successful in achieving multiple objectives across the landscape, these initiatives must focus on sustainable land management practices, including native tree and forest restoration that will deliver biodiversity value.

Providing incentives

73 Incentives are necessarily an important aspect of rolling out sustainable land management approaches, and policy alignment must come along with alignment of budgetary processes (Roe and Mapendembe, 2013; ELD, 2015; Marques et al., 2016). Economic instruments that can support scaling-up of sustainable land management practices including 'state land ownership and regulatory mechanisms to more incentive-based approaches, including financial instruments (e.g., subsidy reform, or tax breaks) and the development and enhancement of new markets for different ecosystem services' (ELD, 2015).

74 FAO (2013) has noted that both delayed return on investment and under-developed markets are barriers to agroforestry development. Further, incentives that focus on commercial agriculture prevent development of agroforestry, and sustainable land management requires a reduction in perverse incentives, such as encouraging overharvesting (FAO, 2013).

7. Policy frameworks

This section examines international, regional and sub-regional level policy frameworks that can support sustainable land use.

7.1 International

Sustainable Development Goals (SDGs)

75 In September 2015, world governments adopted the SDGs as the successor to the Millennium Development Goals and a new overarching framework to achieve environment and development aspirations. Although the SDGs take the form of 17 individual goals, they stress the requirement for integrated delivery of environment and development aims. Almost every goal has relevance for sustainable land use in West Africa. FAO noted that 'signatory countries… will need to ensure that sufficient emphasis is given to land-use change in their national policies and in the implementation of existing policies' (FAO, 2016b).

UN Framework Convention on Climate Change (UNFCCC)

76 The UNFCCC seeks to facilitate financing and technical support for mitigation of and adaptation to climate change in developing countries, including in relation to emissions arising

from land use and land use change. The Paris Agreement, adopted in 2015, aims to keep global temperature rise well below 2°C, to attempt to limit the temperature increase to 1.5°C and to strengthen the ability of countries to deal with the impacts of climate change. UNFCCC parties are obliged to put forward Nationally Determined Contributions to reduce greenhouse gas emissions, to strengthen them in years ahead and to report on their efforts. The Governments of Burkina Faso, Côte d'Ivoire, Ghana, Nigeria and Senegal are parties to the UNFCCC.

Convention on Biological Diversity (CBD)

77 Under its Aichi targets, the CBD requires that parties integrate biodiversity values into development policies (target 2), reduce the loss of natural habitats by at least half (target 5), sustainably manage productive areas (target 7), designate/ protect and manage at least 17% of terrestrial areas (target 11) and enhance ecosystem resilience and restore at least 15% of degraded ecosystems (target 15). Delivery of these targets is supported through countries' National Biodiversity Strategies and Action Plans (NBSAPs). The Governments of Burkina Faso, Côte d'Ivoire, Ghana, Nigeria and Senegal are parties to the CBD, and have all submitted a revised NBSAP. See Section 8.4. for national level information on progress against Aichi targets 5 and 15.

UN Convention to Combat Desertification (UNCCD)

78 UNCCD's 10-year Strategic Plan and Framework (2008 – 2018) aims to reduce the total area affected by desertification/land degradation and drought, and sustainable management of productive areas. The Strategy includes an indicator on Abundance of Bird Species that has not been developed. The Governments of Burkina Faso, Côte d'Ivoire, Ghana, Nigeria and Senegal are parties to the Convention, and are engaged in the process of setting national targets for 'land degradation neutrality', as a method of implementing the Convention.[7]

Convention on Migratory Species of Wild Animals (CMS)

79 In November 2015, CMS Resolution 11.17 adopted the African Eurasian Migratory Landbirds Action Plan (AEMLAP), which addresses the severe declines in many African-Eurasian migratory landbird species. The Action Plan '*urges* Parties... to address the issue of habitat loss and degradation affecting migratory landbird species through the development of policies that maintain, manage and restore natural and semi-natural habitats within the wider environment' (UNEP-CMS, 2014). The Governments of Burkina Faso, Côte d'Ivoire, Ghana, Nigeria and Senegal are parties to the CMS.

New York Declaration on Forests and the Bonn Challenge

80 The Declaration aims to cut natural forest loss in half by 2020, and strive to end it by 2030. It was endorsed at the UN Climate Summit in September 2014, including by the governments of Burkina Faso and Côte d'Ivoire. The Declaration endorses the Bonn Challenge, which aims restore 150 million hectares of the world's deforested and degraded land by 2020 and 350 million hectares by 2030. The governments of Burkina Faso, Côte d'Ivoire, Ghana and Nigeria support the Bonn

[7] Land Degradation Neutrality is a 'state where the amount and quality of land resources, necessary to support ecosystem functions and services, remains stable or increases... At its core are better land management practices and more rational land use planning. It is really the combination of avoiding or reducing the rate of land degradation and increasing the rate of recovery' (UNCCD, 2016).

Challenge; Côte d'Ivoire has committed to restore 5 million hectares, whilst Ghana has committed to restore 2 million hectares.

7.2 Regional

Comprehensive African Agricultural Development Programme (CAADP)

81 Under the 2003 Maputo Agreement, refreshed under the 2014 Malabo Declaration, African heads of state adopted CAADP. The Programme's twin core aims are to increase agricultural productivity by 6% and to reach 10% GDP investment in agriculture in all African countries. CAADP's four overarching pillars are:

- Extending the area under sustainable land and water management;
- Improving market access through improved rural infrastructure and trade-related interventions;
- Increasing food supply and reducing hunger across the region by increasing smallholder productivity and improving the response to food emergencies; and
- Improving agricultural research and systems to disseminate appropriate new technologies as well as increasing the support to help farmers adopt them.

82 These objectives are cascaded down through Regional and National Agricultural Investment Programmes, with which development partners are encouraged to align their support. There are a number of regional programmes and alliances working to support sustainable agriculture with reference to CAADP, amongst them TerrAfrica, the Climate Smart Agriculture Alliance and the Ecosystem Based Adaptation for Food Security Assembly.

African land use policy

83 The African Union issued its *Framework and Guidelines on land policy in Africa* in 2011, which aims to support land policy that reinforces land rights and improves agricultural productivity. The Framework found that West African states have a wide variety of different, sometimes overlapping land tenure regimes. Land rights issues (ownership and resource use) and security of tenure are an increasing focus as populations grow and states seek to modernise tenure regimes. There is a need to provide security of tenure to farmers, so that they can safely invest in improvements to support greater – and more sustainable – productivity. The Framework found increasing integration between natural resource management and land policy; in some cases land policy is contained within environmental or agricultural policies.

Forest landscape and restoration pledges

84 Building on the New York declaration and the Bonn Challenge, the African Forest Landscape Restoration Initiative aims to restore 100 million hectares of land in Africa by 2030. In July 2016, a group of African states including Ghana, Liberia, and Ivory Coast from West Africa signed the Kigali declaration on forest landscape restoration in Africa, which reconfirms their support for Bonn Challenge implementation.

7.3 Sub-regional

ECOWAS Regional Agricultural Policy for West Africa (ECOWAP)

85 West African states adopted ECOWAP in 2005. It focuses on six areas, following the CAADP framework: improved water management (irrigation, integrated water resources management); improved management of other natural resources (livestock, forests, fisheries); sustainable agricultural development at farm level (integrated soil management, extension, technologies); developing agricultural supply chains and markets; preventing and managing food crises; and institution building (ECOWAS, 2005).[8]

86 Within the framework of the Malabo Declaration, West Africa is currently re-defining its agricultural investment plans towards 2025 (ECOWAP 2025) and developing a second generation Regional Agricultural Investment Programme.

87 In 2015, ECOWAS adopted its Invention Framework on Climate Smart Agriculture to support ECOWAP, the WAEMU Agricultural Policy and the CILSS Strategic Framework for Food Security to guide and frame the technical, scientific, policy, institutional, and financing initiatives developed to foster climate smart agriculture through the agricultural investment programs. The Intervention Framework is supported by the West Africa Alliance for the Convergence and Coordination of Climate-Smart Agriculture Initiatives.

WAEMU Agriculture Policy

88 In 2015, WAEMU adopted its Decadal Community Programme for Transformation of Agriculture for Food Security and Nutrition (2016 – 2026).

Sub-Regional Action Program for climate change vulnerability reduction in West Africa (SRAP-WA)

89 The second SRAP-WA was adopted in 2013, and aims to improve the implementation of the UNCCD in West Africa through improved institutional and sectoral coordination, delivering the following three objectives:

- Improve living conditions and food security in arid and semi-arid zones of West Africa;
- Improve the state of transboundary and/or shared ecosystems; and
- Establish efficient partnerships (in transboundary and/or shared resources management) among sub-regional, national, local and international partners in order to speed up the implementation of the Convention at national and sub-regional levels.

ECOWAS West African land use policy

90 Building on the AU *Framework and Guidelines on land policy in Africa*, ECOWAS is in the process of developing a Land Tenure Directive that supports its objectives, particularly food security and nutrition.

ECOWAS Environment Policy (ECOWEP)

[8] National Agricultural Implementation Programmes have been completed for all West African states, but financing remains a significant issue, with between 50 – 95% dependence on external funds (OSIWA, 2014; Mamadou, 2014).

91 ECOWAS adopted ECOWEP in 2008. The policy seeks to address land degradation and biodiversity loss, in the context of adaptation to climate change, and has a specific remit to support migratory birds.

WAEMU Common Environmental Improvement Policy

92 WAEMU adopted Common Environmental Improvement Policy in 2008.

ECOWAS West Africa Water Resources Policy (WAWRP)

93 In 2008, ECOWAS adopted the WAWRP, which sets out objectives, means and actions to improve the management of water resources in West Africa to support sub-regional development and poverty alleviation. In particular, it works to guarantee access to water and to sanitation, support economic development and ensure the health of ecosystems. It focuses on water governance reform that moves towards integrated water resources management, promotion of investments in the water sector, and promotion of cooperation and regional integration in the water sector. It is founded on the 2001 *Permanent Framework for Coordination and Monitoring of water resources* in West Africa, which aims to improve the management of water resources through integrated water resource management.

ECOWAS Convergence Plan for the Sustainable Management and Utilisation of Forest Ecosystems

94 In 2015, ECOWAS finalised the Convergence Plan for the Sustainable Management and Utilisation of Forest Ecosystems in West Africa. The Convergence Plan aims to harmonise national forest policies in the sub-region, regulate forest management, reduce forest degradation, increase restoration of forests, agro-sylvo-pastoral areas and agroforestry systems, and to support biodiversity conservation. Overall, the Convergence Plan is concerned with maximising the economic potential of timber, fuelwood and non-timber forest products. It also supports the sustainable management of forests – and trees outside forests – that will sustain wildlife and the natural resource base from which economic benefits can flow.

ECOWAS West African Power Pool Revised Master Plan and Renewable Energy Policy

95 ECOWAS has two strategies that guide hydropower development. The West African Power Pool *Revised Master Plan* was adopted in 2011. It covers large hydropower, and sets out the aspiration for 21 large-scale hydropower projects, each over 150MW, which will generate 76% of the total 10.3 GW of new capacity set out in the Master Plan. ECOWAS' 2012 *Renewable Energy Policy* identifies the contribution of small scale (up to 30MW) and medium scale (30 – 100 MW) hydropower, with small-scale hydropower anticipated to provide an additional 787 MW by 2020 and 2449 MW by 2030.

7.4 National

96 National level data provided by the CBD Secretariat illuminates country level action towards achieving Aichi target 5 (By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced) and target 15 (By 2020, ecosystem resilience and the contribution of

biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification), which are highly relevant to sustainable land use.

97 The results reported by countries to CBD suggest that, with the exception of forest ecosystems, assessment of the extent and distribution of natural ecosystems, and the extent and rate of their loss, is largely weak in the sub-region and amongst the focal countries for this workshop. Nigeria and Burkina Faso have made some assessment of non-forest ecosystems. Burkina Faso, Ghana, Nigeria and Senegal have made ecosystem-based nationally determined contributions to climate change mitigation and/ or adaptation under the Paris Agreement. However, more information may exist at a country level within other institutions. This could be used to fill these gaps in reporting, and to support the development of policy responses to meet the Aichi targets.

98 In terms of countries' diagnosis of the drivers of loss and degradation of ecosystems, as Table 7 shows, these are not complete within NBSAPs or 5th national reports to CBD.

Table 7: Diagnosis of the drivers of loss and degradation of ecosystems in NBSAPs and 5th national reports to CBD

		Burkina Faso	Côte d'Ivoire	Ghana	Nigeria	Senegal
Diagnostic of drivers of loss and degradation of ecosystems	Description of drivers of loss and degradation	✓	✓	✓	✓	✓
	Identification of specific drivers per ecosystem			✓		
	Identification of proximate and underlying drivers	✓				
	Spatially explicit information on drivers of loss and degradation	✓				
Implementation measures	Description of measures taken to implement steps			✓		
	Specific measures are related to specific drivers			✓		
	Spatial planning of implementation measures					

8 Annex

Marques et al. (2016) recommendations for scaling up sustainable land management practices:

Global level

- Endorse scientific panels to advise international policy organizations.
- Use international organizations to increase awareness of the relations between different aspects of sustainable land management (SLM) that favor land care, food and water security, climate change mitigation, and biodiversity.

National level

- Maintain policies that promote education and support the spread of knowledge on SLM.
- Promote the involvement of national television and radio media to address environmental issues related to land management.
- Subsidize SLM and restoration projects until land users perceive benefits in the medium/long term (e.g., economic aids to mitigate any increases of labor costs due to SLM practices).
- Create land tenure arrangements to motivate land users to invest in SLM practices.
- Facilitate availability of funds for projects when including both biophysical and socio-economic aspects.
- Facilitate and finance the long-term monitoring of biophysical and socio-economic as well as on- and off-site impacts of SLM through research institutions.

Local level

- Provide training, material, and technical assistance.
- Provide appropriate resources to obtain long-term monitoring of SLM results.
- Provide appropriate resources for medium to long-term monitoring of social acceptance of SLM.
- Ensure that implementation follows the principle "the simpler, the better"; complicated measures, high investment costs, or the need for specific or heavy machinery can hinder the adoption of SLM.
- Promote social cohesion to solve catchment-scale environmental problems.
- Ensure early involvement of local communities in the decision making process for the long-term success of SLM and increase of trust between stakeholders.
- Recognize and support local practices and innovation before promoting new external practices.
- Encourage and fund local research.

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