



Terms of Reference of Communication Expert

Nagoya Protocol project/ABS

In The Gambia

Name of the Project- Effective Implementation of Access and Benefit Sharing of the Nagoya Protocol and Integration into Planned Comanagement Arrangements in the Nyambai Forest Park

2.1. Background and context

The Gambia has a wealth of biological diversity and biodiversity is key to human survival. The majority of Gambians depend directly on biological diversity for social, ecological, economical, cultural and spiritual purposes. Much food production is only possible because of natural benefits like fertile soil and water, and bees that pollinate plants and trees. Natural systems provide us with vital materials, and many medicines like aspirin have natural origins. The country has various ecosystem types, including; forest ecosystems (close & open woodland ecosystem), agricultural ecosystems (crop land ecosystems), marine and coastal ecosystems, inland water ecosystems (wetlands), as well as terrestrial ecosystems.

Gambia's economy is predominantly agrarian, with agricultural use accounting for approximately 20-30% of land area. Agriculture contributes to 26% of the gross domestic product, employing 45% of the country's population and is the major source of food. It is estimated that 320,000 ha (57% of total arable land of 558,000) was cultivated annually between 2000 and 2010¹. Cash crops oil seeds groundnut and sesame occupy 48.4% of the arable land and cereals make up about 51.6% of this area. Agriculture in the Gambia is almost entirely rain-fed and is highly dependent on the amount and distribution of seasonal rains.

i) Agro-ecological zones

The Gambia has three major agro-ecological zones (the Sahelian, Sudano-Sahelian, and Sudano-Guinean agro-ecological zones).

1) The Sahel Zone or Semi-Arid Zone covers mainly the Central River Division - North. It has relatively low rainfall, below 900 mm and concentrates on cultivation of early maturing cereals such as maize, early millet and "Findo" *Digitaria Exelis*. The cultivated area within this zone has increased rapidly through the extensive use of animal traction. The total area of this zone is approximately 147,684 ha, with only 44% of cultivable area. The zone has a fairly high livestock population, putting pressure on natural resources. Only about 12% of production units are situated in this zone. The Sahel-Savannah Zone contributes 11% of total national crop production of mainly early maturing crops. The National Agricultural Statistics Service Report indicates 18% of maize and sorghum, 14% of early millet, 14% of groundnuts, 2% of swamp rice and has an important livestock activity.

2) The Sudano-Sahelian Zone: this zone covers a great part of the country (Central River Division-South, North Bank Division and Lower River Division). It has moderate to high rainfall of approximately 900-1000mm per annum. The main production in this area is early millet, groundnuts, sorghum, maize, cotton and irrigated rice. The land area covered by this zone is 492,999 Ha, of which 372,377 ha is cultivable land, employing 75% of the farming population. More than 60% of production units country-wide live in this zone. The Sudano-Sahelian Zone contributes approximately 75% of national crop production (82% of sorghum, 81% of early millet, 80% of groundnuts, 75% of maize and 50% of late millet and upland rice). The entire production of cotton comes from this zone, likewise most livestock and artisanal fish production.

3) The Guinea-Savannah Zone is located around the coastline (i.e. Western Division and North Bank Division). It has high and moderately reliable rainfall (1,000 mm and above). Major cereals produced comprise late varieties such as late millet, sorghum and upland rice. This zone spans 179,790 ha, of which 66% is cultivable. It has a large cattle population, which explains the extensive use of animal

¹ Jaiteh, M.S. 2010. Challenges to Ecosystem Goods and Services. Climate Change and Development in the Gambia

traction in production. The zone also has an important horticultural component, comprising of medium to large commercial farms, small backyard and private gardens as well as communal garden schemes. Most of the modern agricultural sector in The Gambia is found in this zone; activities are relatively highly capital intensive and more commercially oriented. The Guinea Savannah zone is the second most productive zone, with major access to urban markets. Its total contribution to national crop production is approximately 18% of which 43% comes from late millet and 39% from upland rice. The zone also accounts for over 75% of artisanal fish production and 100% of industrial fishing.

ii) Climate conditions

The country has a sub-tropical climate with two variations of distinct dry and rainy seasons. The dry season commonly known as ‘Harmattan’ usually starts mid-October and ends around mid-June every year with an average temperature of 32°C. The rainy season (rainfall averaging 1020 mm and ranging from 800mm in the east to 1700mm at the western end of the country) usually starts around mid- June and ends around mid-October with August being the wettest month of the year, temperatures can reach up to 41°C. The Gambia has a total area of 11,300 km² out of which approximately 1,300 km² comprise water bodies. Latest assessments revealed that the annual rainfall amount is decreasing drastically. This change is creating changes in the way livelihood activities are practiced in the country. There is a growing concern that the erratic rainfall and its decreasing quantity is putting pressure on the agricultural practices of the country². About 17% of total land area is covered by wetlands consisting of mangroves, barren flats, and freshwater swamps, the remaining 83% is under various Sudanian-Guinean savannas woodland formations.

Changes in ecosystems that provide goods and services which enhances the adaptation potential are also posing their own challenges. For instance, the woodland ecosystem which supports the majority of the pastoral communities and generates wood and non-wood products for most of the community has shrunk significantly – from 80% of the land area in 1940s to about 42% in 2001³. The degradation trend has kept on rising and the ongoing changes are affecting the land cover that used to provide goods and services that contributed to the adaptation potential. The ongoing deforestation leads to changing local microclimatic conditions. Such changes increase the level of vulnerability of the community to climate change impacts.

UNDP and GoTG⁴ reported that The Gambia is the 10th most vulnerable country to sea level rise impacts globally. Flash floods of 2002-2004 and the 2010 flood that affected almost all parts of the country remind us that there is a very strong exposure to such climate change related effects. Drought was amongst the most recurring climate induced disaster that the country has been experiencing frequently.

iii) Forests

The National Forest Assessment (NFA) of 2010 explained the degraded nature of the forest cover across the country. The forest policy of (1995-2005) seeks to reserve, maintain and develop 30% of the country’s total land area into forest and ensure that the local communities manage 75% of this forest

² Jaiteh, M.S. 2010. Challenges to Ecosystem Goods and Services. Climate Change and Development in the Gambia

³ ICRAF. 2018. Baseline study report. Large-scale Ecosystem-based Adaptation in the Gambia River Basin: Developing a Climate Resilient, Natural Resource-based Economy, The Gambia. World Agroforestry Centre (ICRAF).

⁴ UNDP, & GoTG. (2012). An Assessment of Investments & Financial Flows in The Gambian Forestry Sector. United Nations Development Program; Government of the Gambia.

area. The importance of forest resource management in view of the economic and environmental values of forest resources and the forest ecology is recognized by the Government.

According to the 2010 National Forest Report⁵, Gambia lost about 97400 ha of forest between 1997 and 2009. This represents about 8000 ha of forest lost every year. The important aspect of this deforestation is that the closed forest of the country has almost disappeared from the map of the nation. For, the same report above stated that it declined from 60.1% in the 1946 to 0.7% in 1993⁶. In the same time frame, the population density of the Gambia increased by three-fold– from 35/ km² to about 108/km² .

Project Objective

To create the enabling environment for the implementation of the Access and Benefit Sharing of the Nagoya Protocol in The Gambia and pilot testing of some promising genetic resources in Nyambai Forest Park.

Justification

The global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description) The Gambia is endowed with a rich genetic resource base. The country has a rich heritage of biodiversity and biological resources. The coastal and marine ecosystem, and more importantly the riverine ecosystem, harbor a highly diversified flora and fauna and support considerable agricultural, forestry and fishing activities. In rural production for food and nutrition about 80% of the rural populations are engaged in biodiversity-driven activities.

⁵ NFA (2010). National Forest Assessment 2008-2010 - The Gambia. Government of The Gambia, and Food and Agriculture Organization of the United Nation (FAO)

⁶ ICRAF. 2018. Baseline study report. Large-scale Ecosystem-based Adaptation in the Gambia River Basin: Developing a Climate Resilient, Natural Resource-based Economy, The Gambia. World Agroforestry Centre (ICRAF).



Terms of Reference of a Finance Officer

Nagoya Protocol project/ABS

In The Gambia

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2.2. Background and context

The Gambia has a wealth of biological diversity and biodiversity is key to human survival. The majority of Gambians depend directly on biological diversity for social, ecological, economical, cultural and spiritual purposes. Much food production is only possible because of natural benefits like fertile soil and water, and bees that pollinate plants and trees. Natural systems provide us with vital materials, and many medicines like aspirin have natural origins. The country has various ecosystem types, including; forest ecosystems (close & open woodland ecosystem), agricultural ecosystems (crop land ecosystems), marine and coastal ecosystems, inland water ecosystems (wetlands), as well as terrestrial ecosystems.

Gambia's economy is predominantly agrarian, with agricultural use accounting for approximately 20-30% of land area. Agriculture contributes to 26% of the gross domestic product, employing 45% of the country's population and is the major source of food. It is estimated that 320,000 ha (57% of total arable land of 558,000) was cultivated annually between 2000 and 2010⁷. Cash crops oil seeds groundnut and sesame occupy 48.4% of the arable land and cereals make up about 51.6% of this area. Agriculture in the Gambia is almost entirely rain-fed and is highly dependent on the amount and distribution of seasonal rains.

iv) Agro-ecological zones

The Gambia has three major agro-ecological zones (the Sahelian, Sudano-Sahelian, and Sudano-Guinean agro-ecological zones).

1) The Sahel Zone or Semi-Arid Zone covers mainly the Central River Division - North. It has relatively low rainfall, below 900 mm and concentrates on cultivation of early maturing cereals such as maize, early millet and "Findo" *Digitaria Exelis*. The cultivated area within this zone has increased rapidly through the extensive use of animal traction. The total area of this zone is approximately 147,684 ha, with only 44% of cultivable area. The zone has a fairly high livestock population, putting pressure on natural resources. Only about 12% of production units are situated in this zone. The Sahel-Savannah Zone contributes 11% of total national crop production of mainly early maturing crops. The National Agricultural Statistics Service Report indicates 18% of maize and sorghum, 14% of early millet, 14% of groundnuts, 2% of swamp rice and has an important livestock activity.

2) The Sudano-Sahelian Zone: this zone covers a great part of the country (Central River Division-South, North Bank Division and Lower River Division). It has moderate to high rainfall of approximately 900-1000mm per annum. The main production in this area is early millet, groundnuts, sorghum, maize, cotton and irrigated rice. The land area covered by this zone is 492,999 Ha, of which 372,377 ha is cultivable land, employing 75% of the farming population. More than 60% of production units country-wide live in this zone. The Sudano-Sahelian Zone contributes approximately 75% of national crop production (82% of sorghum, 81% of early millet, 80% of groundnuts, 75% of maize and 50% of late millet and upland rice). The entire production of cotton comes from this zone, likewise most livestock and artisanal fish production.

3) The Guinea-Savannah Zone is located around the coastline (i.e. Western Division and North Bank Division). It has high and moderately reliable rainfall (1,000 mm and above). Major cereals produced comprise late varieties such as late millet, sorghum and upland rice. This zone spans 179,790 ha, of which 66% is cultivable. It has a large cattle population, which explains the extensive use of animal traction in production. The zone also has an important horticultural component, comprising of medium to large commercial farms, small backyard and private gardens as well as communal garden schemes. Most of the modern agricultural sector in The Gambia is found in this zone; activities are relatively highly capital intensive and more commercially oriented. The Guinea Savannah zone is the second most productive zone, with major access to urban markets. Its total contribution to national crop production

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is approximately 18% of which 43% comes from late millet and 39% from upland rice. The zone also accounts for over 75% of artisanal fish production and 100% of industrial fishing.

v) Climate conditions

The country has a sub-tropical climate with two variations of distinct dry and rainy seasons. The dry season commonly known as 'Harmattan' usually starts mid-October and ends around mid-June every year with an average temperature of 32°C. The rainy season (rainfall averaging 1020 mm and ranging from 800mm in the east to 1700mm at the western end of the country) usually starts around mid- June and ends around mid-October with August being the wettest month of the year, temperatures can reach up to 41°C. The Gambia has a total area of 11,300 km² out of which approximately 1,300 km² comprise water bodies. Latest assessments revealed that the annual rainfall amount is decreasing drastically. This change is creating changes in the way livelihood activities are practiced in the country. There is a growing concern that the erratic rainfall and its decreasing quantity is putting pressure on the agricultural practices of the country⁸. About 17% of total land area is covered by wetlands consisting of mangroves, barren flats, and freshwater swamps, the remaining 83% is under various Sudanian-Guinean savannas woodland formations.

Changes in ecosystems that provide goods and services which enhances the adaptation potential are also posing their own challenges. For instance, the woodland ecosystem which supports the majority of the pastoral communities and generates wood and non-wood products for most of the community has shrunk significantly – from 80% of the land area in 1940s to about 42% in 2001⁹. The degradation trend has kept on rising and the ongoing changes are affecting the land cover that used to provide goods and services that contributed to the adaptation potential. The ongoing deforestation leads to changing local microclimatic conditions. Such changes increase the level of vulnerability of the community to climate change impacts.

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vi) Forests

The National Forest Assessment (NFA) of 2010 explained the degraded nature of the forest cover across the country. The forest policy of (1995-2005) seeks to reserve, maintain and develop 30% of the country's total land area into forest and ensure that the local communities manage 75% of this forest area. The importance of forest resource management in view of the economic and environmental values of forest resources and the forest ecology is recognized by the Government.

According to the 2010 National Forest Report¹¹, Gambia lost about 97400 ha of forest between 1997 and 2009. This represents about 8000 ha of forest lost every year. The important aspect of this deforestation is that the closed forest of the country has almost disappeared from the map of the nation. For, the same report above stated that it declined from 60.1% in the 1946 to 0.7% in 1993¹². In the same

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¹⁰ UNDP, & GoTG. (2012). An Assessment of Investments & Financial Flows in The Gambian Forestry Sector. United Nations Development Program; Government of the Gambia.

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time frame, the population density of the Gambia increased by three-fold– from 35/ km² to about 108/km² .

Project Objective

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Justification

The global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description) The Gambia is endowed with a rich genetic resource base. The country has a rich heritage of biodiversity and biological resources. The coastal and marine ecosystem, and more importantly the riverine ecosystem, harbor a highly diversified flora and fauna and support considerable agricultural, forestry and fishing activities. In rural production for food and nutrition about 80% of the rural populations are engaged in biodiversity-driven activities on which their livelihoods depend. The medicinal properties of diverse plant and animal species provide enormous health benefits. It is estimated that 80% of the rural population in The Gambia depend on traditional medicine, their livelihoods are tied to the integrity and functioning of biodiversity, both at the floral and faunal levels.

The Gambian genetic resource integrity has faced a serious case of biopiracy. In the 1970s, rapamycin, an immunosuppressive drug that is used in medicine (for, example, to prevent rejection of organ transplant) was discovered from a *Streptomyces* sample collected on the Easter Island.[2] It has been reported that Glaxo SmithKline company has claimed ownership of a compound from a *Streptomyces* strain that, according to its patent, was isolated from a termite hill at Abuke, Gambia. The strain produces a rapamycin-related compound called 29-desmethylrapamycin and, according to the patent, it is useful both as an antifungal and as an immunosuppressant. It is unclear what research and development has been conducted by Glaxo on 29-desmethylrapamycin. The 2001 patent application indicates recent interest in the candidate drug. Generally, rapamycin and related compounds remain a subject of considerable scientific interest. However, there is no documented information about any benefit sharing arrangements between SmithKline Beecham and Gambia as a nation or local communities in Abuko.

The Gambian forest contributes immensely to the country's economy and the social well being of its population and provides several environmental services. In addition to maintaining the micro-climatic balance, the stabilisation of the river banks and providing life support systems to many other plants, animals and aquatic life, forests are important to the local communities who depend on them for food, medicines, wood products for construction and energy (particularly to women who rely on the forests for their subsistence). Forest products are particularly important for the wellbeing of women.



Terms of Reference of a Gender Specialist

Nagoya Protocol project/ABS

In The Gambia

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2.3. Background and context

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traction in production. The zone also has an important horticultural component, comprising of medium to large commercial farms, small backyard and private gardens as well as communal garden schemes. Most of the modern agricultural sector in The Gambia is found in this zone; activities are relatively highly capital intensive and more commercially oriented. The Guinea Savannah zone is the second most productive zone, with major access to urban markets. Its total contribution to national crop production is approximately 18% of which 43% comes from late millet and 39% from upland rice. The zone also accounts for over 75% of artisanal fish production and 100% of industrial fishing.

x) Climate conditions

The country has a sub-tropical climate with two variations of distinct dry and rainy seasons. The dry season commonly known as 'Harmattan' usually starts mid-October and ends around mid-June every year with an average temperature of 32°C. The rainy season (rainfall averaging 1020 mm and ranging from 800mm in the east to 1700mm at the western end of the country) usually starts around mid- June and ends around mid-October with August being the wettest month of the year, temperatures can reach up to 41°C. The Gambia has a total area of 11,300 km² out of which approximately 1,300 km² comprise water bodies. Latest assessments revealed that the annual rainfall amount is decreasing drastically. This change is creating changes in the way livelihood activities are practiced in the country. There is a growing concern that the erratic rainfall and its decreasing quantity is putting pressure on the agricultural practices of the country¹⁹. About 17% of total land area is covered by wetlands consisting of mangroves, barren flats, and freshwater swamps, the remaining 83% is under various Sudano-Guinean savannas woodland formations.

Changes in ecosystems that provide goods and services which enhances the adaptation potential are also posing their own challenges. For instance, the woodland ecosystem which supports the majority of the pastoral communities and generates wood and non-wood products for most of the community has shrunk significantly – from 80% of the land area in 1940s to about 42% in 2001²⁰. The degradation trend has kept on rising and the ongoing changes are affecting the land cover that used to provide goods and services that contributed to the adaptation potential. The ongoing deforestation leads to changing local microclimatic conditions. Such changes increase the level of vulnerability of the community to climate change impacts.

ii) Forests

The National Forest Assessment (NFA) of 2010 explained the degraded nature of the forest cover across the country. The forest policy of (1995-2005) seeks to reserve, maintain and develop 30% of the country's total land area into forest and ensure that the local communities manage 75% of this forest area. The importance of forest resource management in view of the economic and environmental values of forest resources and the forest ecology is recognized by the Government.

According to the 2010 National Forest Report²¹, Gambia lost about 97400 ha of forest between 1997 and 2009. This represents about 8000 ha of forest lost every year. The important aspect of this deforestation is that the closed forest of the country has almost disappeared from the map of the nation.

¹⁹ Jaiteh, M.S. 2010. Challenges to Ecosystem Goods and Services. Climate Change and Development in the Gambia

²⁰ ICRAF. 2018. Baseline study report. Large-scale Ecosystem-based Adaptation in the Gambia River Basin: Developing a Climate Resilient, Natural Resource-based Economy, The Gambia. World Agroforestry Centre (ICRAF).

²¹ NFA (2010). National Forest Assessment 2008-2010 - The Gambia. Government of The Gambia, and Food and Agriculture Organization of the United Nation (FAO)

For, the same report above stated that it declined from 60.1% in the 1946 to 0.7% in 1993²². In the same time frame, the population density of the Gambia increased by three-fold– from 35/ km² to about 108/km² .

Project Objective

To create the enabling environment for the implementation of the Access and Benefit Sharing of the Nagoya Protocol in The Gambia and pilot testing of some promising genetic resources in Nyambai Forest Park.

Justification

The global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description) The Gambia is endowed with a rich genetic resource base. The country has a rich heritage of biodiversity and biological resources. The coastal and marine ecosystem, and more importantly the riverine ecosystem, harbor a highly diversified flora and fauna and support considerable agricultural, forestry and fishing activities. In rural production for food and nutrition about 80% of the rural populations are engaged in biodiversity-driven activities on which their livelihoods depend on medicinal properties of diverse plant and animal species provide enormous health benefits. It is estimated that 80% of the rural population in The Gambia depend on traditional medicine, their livelihoods are tied to the integrity and functioning of biodiversity, both at the floral and faunal levels.

The Gambian genetic resource integrity has faced a serious case of biopiracy. In the 1970s, rapamycin, an immunosuppressive drug that is used in medicine (for, example, to prevent rejection of organ transplant) was discovered from a *Streptomyces* sample collected on the Easter Island.[2] It has been reported that Glaxo SmithKline company has claimed ownership of a compound from a *Streptomyces* strain that, according to its patent, was isolated from a termite hill at Abuko, Gambia. The strain produces a rapamycin-related compound called 29-desmethylrapamycin and, according to the patent, it is useful both as an antifungal and as an immunosuppressant. It is unclear what research and development has been conducted by Glaxo on 29-desmethylrapamycin. The 2001 patent application indicates recent interest in the candidate drug. Generally, rapamycin and related compounds remain a subject of considerable scientific interest. However, there is no documented information about any benefit sharing arrangements between SmithKline Beecham and Gambia as a nation or local communities in Abuko.

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Terms of Reference of a National Coordinator

Nagoya Protocol project/ABS

In The Gambia

Name of the project- Effective Implementation of Access and Benefit Sharing of the Nagoya Protocol and Integration into Planned Co-management Arrangements in the Nyambai Forest Park

2.5. Background and context

The Gambia has a wealth of biological diversity and biodiversity is key to human survival. The majority of Gambians depend directly on biological diversity for social, ecological, economical, cultural and spiritual purposes. Much food production is only possible because of natural benefits like fertile soil and water, and bees that pollinate plants and trees. Natural systems provide us with vital materials, and many medicines like aspirin have natural origins. The country has various ecosystem types, including; forest ecosystems (close & open woodland ecosystem), agricultural ecosystems (crop land ecosystems), marine and coastal ecosystems, inland water ecosystems (wetlands), as well as terrestrial ecosystems.

Gambia's economy is predominantly agrarian, with agricultural use accounting for approximately 20-30% of land area. Agriculture contributes to 26% of the gross domestic product, employing 45% of the country's population and is the major source of food. It is estimated that 320,000 ha (57% of total arable land of 558,000) was cultivated annually between 2000 and 2010²³. Cash crops oil seeds groundnut and sesame occupy 48.4% of the arable land and cereals make up about 51.6% of this area. Agriculture in the Gambia is almost entirely rain-fed and is highly dependent on the amount and distribution of seasonal rains.

xi) Agro-ecological zones

The Gambia has three major agro-ecological zones (the Sahelian, Sudano-Sahelian, and Sudano-Guinean agro-ecological zones).

1) The Sahel Zone or Semi-Arid Zone covers mainly the Central River Division - North. It has relatively low rainfall, below 900 mm and concentrates on cultivation of early maturing cereals such as maize, early millet and "Findo" *Digitaria Exelis*. The cultivated area within this zone has increased rapidly through the extensive use of animal traction. The total area of this zone is approximately 147,684 ha, with only 44% of cultivable area. The zone has a fairly high livestock population, putting pressure on natural resources. Only about 12% of production units are situated in this zone. The Sahel-Savannah Zone contributes 11% of total national crop production of mainly early maturing crops. The National Agricultural Statistics Service Report indicates 18% of maize and sorghum, 14% of early millet, 14% of groundnuts, 2% of swamp rice and has an important livestock activity.

2) The Sudano-Sahelian Zone: this zone covers a great part of the country (Central River Division-South, North Bank Division and Lower River Division). It has moderate to high rainfall of approximately 900-1000mm per annum. The main production in this area is early millet, groundnuts, sorghum, maize, cotton and irrigated rice. The land area covered by this zone is 492,999 Ha, of which 372,377 ha is cultivable land, employing 75% of the farming population. More than 60% of production units country-wide live in this zone. The Sudano-Sahelian Zone contributes approximately 75% of national crop production (82% of sorghum, 81% of early millet, 80% of groundnuts, 75% of maize and 50% of late millet and upland rice). The entire production of cotton comes from this zone, likewise most livestock and artisanal fish production.

3) The Guinea-Savannah Zone is located around the coastline (i.e. Western Division and North Bank Division). It has high and moderately reliable rainfall (1,000 mm and above). Major cereals produced comprise late varieties such as late millet, sorghum and upland rice. This zone spans 179,790 ha, of which 66% is cultivable. It has a large cattle population, which explains the extensive use of animal

²³ Jaiteh, M.S. 2010. Challenges to Ecosystem Goods and Services. Climate Change and Development in the Gambia

traction in production. The zone also has an important horticultural component, comprising of medium to large commercial farms, small backyard and private gardens as well as communal garden schemes. Most of the modern agricultural sector in The Gambia is found in this zone; activities are relatively highly capital intensive and more commercially oriented. The Guinea Savannah zone is the second most productive zone, with major access to urban markets. Its total contribution to national crop production is approximately 18% of which 43% comes from late millet and 39% from upland rice. The zone also accounts for over 75% of artisanal fish production and 100% of industrial fishing.

xii) Climate conditions

The country has a sub-tropical climate with two variations of distinct dry and rainy seasons. The dry season commonly known as ‘Harmattan’ usually starts mid-October and ends around mid-June every year with an average temperature of 32°C. The rainy season (rainfall averaging 1020 mm and ranging from 800mm in the east to 1700mm at the western end of the country) usually starts around mid- June and ends around mid-October with August being the wettest month of the year, temperatures can reach up to 41°C. The Gambia has a total area of 11,300 km² out of which approximately 1,300 km² comprise water bodies. Latest assessments revealed that the annual rainfall amount is decreasing drastically. This change is creating changes in the way livelihood activities are practiced in the country. There is a growing concern that the erratic rainfall and its decreasing quantity is putting pressure on the agricultural practices of the country²⁴. About 17% of total land area is covered by wetlands consisting of mangroves, barren flats, and freshwater swamps, the remaining 83% is under various Sudanian-Guinean savannas woodland formations.

Changes in ecosystems that provide goods and services which enhances the adaptation potential are also posing their own challenges. For instance, the woodland ecosystem which supports the majority of the pastoral communities and generates wood and non-wood products for most of the community has shrunk significantly – from 80% of the land area in 1940s to about 42% in 2001²⁵. The degradation trend has kept on rising and the ongoing changes are affecting the land cover that used to provide goods and services that contributed to the adaptation potential. The ongoing deforestation leads to changing local microclimatic conditions. Such changes increase the level of vulnerability of the community to climate change impacts.

iii) Forests

The National Forest Assessment (NFA) of 2010 explained the degraded nature of the forest cover across the country. The forest policy of (1995-2005) seeks to reserve, maintain and develop 30% of the country’s total land area into forest and ensure that the local communities manage 75% of this forest area. The importance of forest resource management in view of the economic and environmental values of forest resources and the forest ecology is recognized by the Government.

According to the 2010 National Forest Report²⁶, Gambia lost about 97400 ha of forest between 1997 and 2009. This represents about 8000 ha of forest lost every year. The important aspect of this deforestation is that the closed forest of the country has almost disappeared from the map of the nation.

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For, the same report above stated that it declined from 60.1% in the 1946 to 0.7% in 1993²⁷. In the same time frame, the population density of the Gambia increased by three-fold– from 35/ km² to about 108/km² .

Project Objective

To create the enabling environment for the implementation of the Access and Benefit Sharing of the Nagoya Protocol in The Gambia and pilot testing of some promising genetic resources in Nyambai Forest Park.

Justification

The global environmental and/or adaptation problems, root causes and barriers that need to be addressed (systems description) The Gambia is endowed with a rich genetic resource base. The country has a rich heritage of biodiversity and biological resources. The coastal and marine ecosystem, and more importantly the riverine ecosystem, harbor a highly diversified flora and fauna and support considerable agricultural, forestry and fishing activities. In rural production for food and nutrition about 80% of the rural populations are engaged in biodiversity-driven activities on which their livelihoods depend on medicinal properties of diverse plant and animal species provide enormous health benefits. It is estimated that 80% of the rural population in The Gambia depend on traditional medicine, their livelihoods are tied to the integrity and functioning of biodiversity, both at the floral and faunal levels.

The Gambian genetic resource integrity has faced a serious case of biopiracy. In the 1970s, rapamycin, an immunosuppressive drug that is used in medicine (for, example, to prevent rejection of organ transplant) was discovered from a *Streptomyces* sample collected on the Easter Island.[2] It has been reported that Glaxo SmithKline company has claimed ownership of a compound from a *Streptomyces* strain that, according to its patent, was isolated from a termite hill at Abuko, Gambia. The strain produces a rapamycin-related compound called 29-desmethylrapamycin and, according to the patent, it is useful both as an antifungal and as an immunosuppressant. It is unclear what research and development has been conducted by Glaxo on 29-desmethylrapamycin. The 2001 patent application indicates recent interest in the candidate drug. Generally, rapamycin and related compounds remain a subject of considerable scientific interest. However, there is no documented information about any benefit sharing arrangements between SmithKline Beecham and Gambia as a nation or local communities in Abuko.

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Terms of Reference of a Lead Technical Expert

Nagoya Protocol project/ABS

In The Gambia

Name of the Project- Effective Implementation of Access and Benefit Sharing of the Nagoya Protocol and Integration into Planned Co-management Arrangements in the Nyambai Forest Park

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