



SCOTLAND'S FOREST MANAGEMENT OUTLOOK: A LESSON FOR ENHANCED SUSTAINABLE FOREST MANAGEMENT IN YOBE, NIGERIA

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Abstract

The paper presents a report of seven visited forest communities, agencies, and private organizations in Scotland undertaken by postgraduate forest business management students from Yobe, Nigeria. The excursion visit aimed at understanding the forest management perspective in Scotland and evaluate its applicability in the forest sector in Yobe, Nigeria. Qualitative data were obtained through field observations, discussions and presentations delivered by various stakeholders. The data of the study was analyzed using content analysis. The findings revealed that forests in Scotland are both owned and managed by individuals, family, public, and private firms as opposed to public forest management in Yobe, and regardless to ownership status of the forest and plantations, forest management focused on all the three aspects of sustainability comprising timber and wood production and processing, and employment) (Economic), recreations, education, ecotourism (social), restoration and reclamation of degraded land, in-situ and ex-situ conservation of trees and wildlife (environment). Most importantly, system approach to management is a conspicuous characteristics of the forest sector as all units and partners were involved in planning decision making. Additionally, decision making is bottom-up approach in Scotland unlike the existing top-down approach in Yobe. The study also observed the presence of effective and cordial partnership between government agencies, private owners, individual forest owners, and communities that ensure benefit sharing of the forest goods and services. The Scotland's forest management style, perspective and approach can be borrowed and implemented in Yobe for enhanced sustainable forest management.

Keywords:

Forest
Management perspective
Approach Sustainability
Economic aspects Environment
Social

JEL Classification:

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1. Introduction

Yobe state government sponsored 33 academic staff from four (4) tertiary institutions in Yobe (College of Agriculture Gajba, College of Education, Gashua, College of Administration and Business Studies Potiskum and State Polytechnic, Geidam). The sponsorship was aimed for the training of large postgraduate students in same field (Forest and Business Management) at the University of Central Lancashire, Preston in UK through an educational consulting organization called HIPACT. Training of large number was targeted to produce large number of managers of enterprise that can manage a firm and further train and develop others. Therefore, HIPACT directly played the role of identifying the appropriate and best university in UK, sourced admission to students, and mediate in the signing of memorandum of understanding between the state government of the developing countries like Nigeria, and the institutions in UK (Eze, 2003).

The efforts of Yobe state government for indulging in such program was in line with the recommendations of the above-mentioned consulting firm that proposed a resource management control strategy to different state government in Nigeria based on “*One State, One Resource*” with the aim of boosting revenue and provide the state an identity on specialised production, processing and exportation of a product and produce, in which Yobe state focused on Gum Arabic tree plantation and production. Additionally, understanding of the forest management perspective and approach to solving forest-related issues in UK may be applied in solving issues such as exploitation of forest products by communities, utilization of forest as grazing areas in in Yobe. This was the first effort by Yobe state to use forestry as a tool for integration and diversification of the sources of revenue, build a strong economy, reduce over reliance on money from Federal allocation that is mainly sourced from oil exploration, promote the conservation of vulnerable and endangered tree

species, reduce pressure on natural forests and increase biodiversity.

A Gum Arabic plantation and production was recommended by the consulting firm to Yobe state as the potential exporting forest product, since the state is one of the highest producers of the best quality Gum Arabic in Nigeria (Alkali, 2010; Sagay and Mesike, 2011; Ibrahim, Gani, and Abdul, 2014), in addition to the presence of favourable climate for the growth of *Acacia Senegal* and *Acacia seyal* in the state (Sagay and Mesike, 2011; Ibrahim et al. 2014). Additionally, there exist research institutions comprising Rubber Research Institute of Nigeria (RRIN), State University and Federal University, whose responsibilities among others include knowledge sharing, human development, capacity building of farmers, Youth and Women in species identification, farming and Agroforestry Techniques, Harvesting and Processing of Gum Arabic and stable crops, Good Agricultural Practices, as well as conducting other relevant research for human and national development.

During the training of the post graduate Nigerians in UK, excursion was part of the customized curriculum aimed to acquaint the trainees the approach to forest governance, management, partnership, and approach to decision making that Scotland to be recognized as one of the best in the management of forest in Europe. This exposure has enabled the trainees to compare situations between Scotland and the situation in Yobe, and Northern Nigeria at large, build-up skills and be able to tackle issues arising in the forests in Nigeria, while focusing on how to promote Gum Arabic tree species plantation for the economic (production and marketing, fodder). Social (education, medicines) and environmental (shelterbelt, erosion control), The focus on Gum Arabic production was the direct simulation of Scotland’s effort of production and management of *Sitka spruce* for economic, social and environmental contributions (Eze, 2003).

Additionally, Gum Arabic production has been found successful as intensive plantation and

agroforestry with stable crops such as sesame, beans, guinea corn and millets) in Yobe (Dugje, Gambo, and Adewusi, 2007); Sagay and Mesike, 2011; Adekola and Festus, 2015). The Acacia tree species have also been found useful in the production of fodder and fuelwood, contribute to minerals thereby enriching the soil, use to control desert encroachment, as well as providing source of income through the tapping of the exudates/gum (Muhammad, Ilu, Jibo, and Salami, 2020; Ali et al. 2022). This report therefore, provide the experiences acquired during the period of postgraduate study, which could be adapted not only in Yobe, but in all state in Northern Nigeria in using forestry as a tool for addressing economic issues (poverty alleviation, revenue and means of livelihood), social issues (enhance participation of males and females in forest management) and environmental (forest protection and conservation of flora and fauna), as enshrined in the approved National Forest Policy of 2006 (National forest Policy, 2006; Erunke, 2020)

2. Literature Review

2.1 Concept of Forest Management

A Forest refers to a large area of land of at least 0.5 ha inhabiting plants that are dominated by woody trees of at least 5m height, and has a canopy cover of 10% of the total area that provide food and shelter for wild animals and man, in addition to other tangible products and non-tangible resources (Adekunle, and Oluwalana, n.d; Ali et al. 2022). On the other hand, management: entails planning, organizing, controlling, directing and supervision of activities to get things done right (Agrawal, et al. 2013). On the other hand, management is the art and science of administration of an organization (business, non-profit or government body) and its resources (human, financial, and materials) to get things done in the right time and right way, and in the right place and for the right purpose (Ali et al. 2022). It can be referred to as the branch of forestry whose function is the organization of a forest property in such a way that appropriate equipment

and operations are use and carried out at the right time and the right place for the purpose of economic growth, conservation and protection and social benefits (Adekunle and Oluwalana, n.d.).

Forest Management is also the practical application of scientific principles, as well as technical and business skills to get things done right in the forest, and for the forest sustainability (Adekunle and Oluwalana n.d.). Forest Management is the practical application of scientific principles, and economics and business skills to the administration of forest in order to ensure the normal, functioning of a forest estate (timber, recreation, fruits, habitat, watershed management, tourism, soil stabilization, carbon sequestration etc (Agrawal et al. 2013).

2.2 Current issues bedeviling Forest Management in Nigeria and Yobe

According to Agrawal et al. (2013) and United Nation (2013), the problems associated to, forest management in Nigeria falls under the followings:

Low exchange among and between professionals: Limited exchanges between professionals in the forest and other sectors is a known nature of forestry agencies in Nigeria. Forest sector activities are separated between private, public, and civil society sectors based on the nature of forest tenure. Therefore, a greater integration between the forest and other sectors are a precondition to enhance the recognition of the economic contributions of forests. Such integration will require major changes in policies and institutional arrangements.

Low efficiency of operations in the forest sector as there is no major technological changes that influence levels of value addition in the forest sector as in the developed countries.

Illegal and unsustainable harvesting that is often influence by politics and politicking. This has affected the forest toward the economic development of a country. Therefore, efforts to address the legality of harvesting of forest products as well as prosecution of forest laws offenders

should be reality rather than selective. Efforts should be made to address the legality of harvesting of forest products to improve substantially can be made through catalytic donor funding aim to improve fundamentally the existing data systems and data related to forests. There is also the need to improve fundamentally the existing data systems and data related to forests, forest benefits, and forest tenure and governance for improved decision making, which is critical to improve understanding and management of data and bridge information gaps.

Low awareness of sustainable production and utilization of forest resources. There is the need to carryout holistic awareness and research to promote the understanding and roles of forests. Information on the contributions of forests in the form of NTFPs is important and will attract the attention of government, international organization and NGOs on its benefits to poverty alleviation, rural development and national economic development.

Valuing NTFPs/NWFPs at national level: Little is known about the growth and reproductive characteristics of many or most NTFPs. The investment in basic research that would indicate what sustainable exploitation of NTFPs would look like is important to promoting the role of forest on economic development of a country.

3. Methodology

3.1 Study areas

This study reviewed the Scotland and Yobe as a study areas because all observations, discussions and presentations were made in Scotland, while the description of Yobe is seen important in order to give the readers an understanding of where the lessons are learnt and where is needs to be transferred,

Scotland is located in Northern Europe (Fig. 1A), and comprises the Northern third of the island of Great Britain (Munro, 1999). Edinburgh is the capital and political centre of the country (Fig. 1B). However, Glasgow is the largest city in

Scotland.(Mid, 2004). The areas visited were the Central Scotland Forest Trust (CSFT) in Moffatt, Tay Valley, Boat of Garten, Abriachan Forest Trust Abernethy, Laggan Community Forest and Royal botanic garden, Edinburgh (Fig. 1B). Scotland has a total area of 30,090 sq. mi (77,900 km²). About 97%, of the total area is recognized as land, while water occupy the remaining 3%. Scotland is surrounded by 790 Island encompassing the major archipelagos of the Shetland (Region and Country Profile, 2013). Scotland is bordering England, with a distance of 96 mi/154 km (Munro, 1999). The climate include Temperate, Subarctic, Tundra, with variable terrains that comprise mountains, hills, forest, bod, and urban. Scotland has the majority of mountainous terrain in the UK (Munro, 1999). While the Lowlands are less elevated, upland and mountainous terrain is located across the Southern Uplands (Munro, 1999). There are abundance of natural resources such as coal, iron and zinc that contributed significantly to the industrial growth of Scotland during the 19th and early 20th Scotland (Summers and Proctor, 1999), Other available natural resources include potash, silica, sand, fish, timber, wildlife, petroleum, natural gas hydropower. The dominant tree species is *Sitka spruce*, Scots pine (*Pinus sylvestris* L), and a few other broadleaved species, mainly birch (*Betula pendula* ROTH). Ground vegetation is predominantly composed of heather (*Calluna vulgaris* L.), bearberry (*Arctostaphylos uva-ursi* L.), blueberry (*Vaccinium corymbosum* L.), bracken (*Pteridium aquilinum* L.), and a range of mosses (*Sphagnum* sp. L). There is also an extensive shrub layer of juniper (*Juniperus communis* L.). Scotland Forest hosts large populations of birds, including Capercaillie (*Tetrao urogallus* L.), Crested tits (*Lophophanes cristatus* L.), Scottish Crossbill (*Loxiascotica Hartert*) and in the summer Ospreys (*Pandion haliaetus* L.). The forest is also home to mammalian species such as red deer (*Cervus elaphus* L.) and pine marten (*Martes* L.). The presence of red squirrels (*Sciurus vulgaris* L.) in

the area has been previously confirmed by Summers and Proctor, (1999), who investigated

foraging competition levels between red squirrels and crossbills.

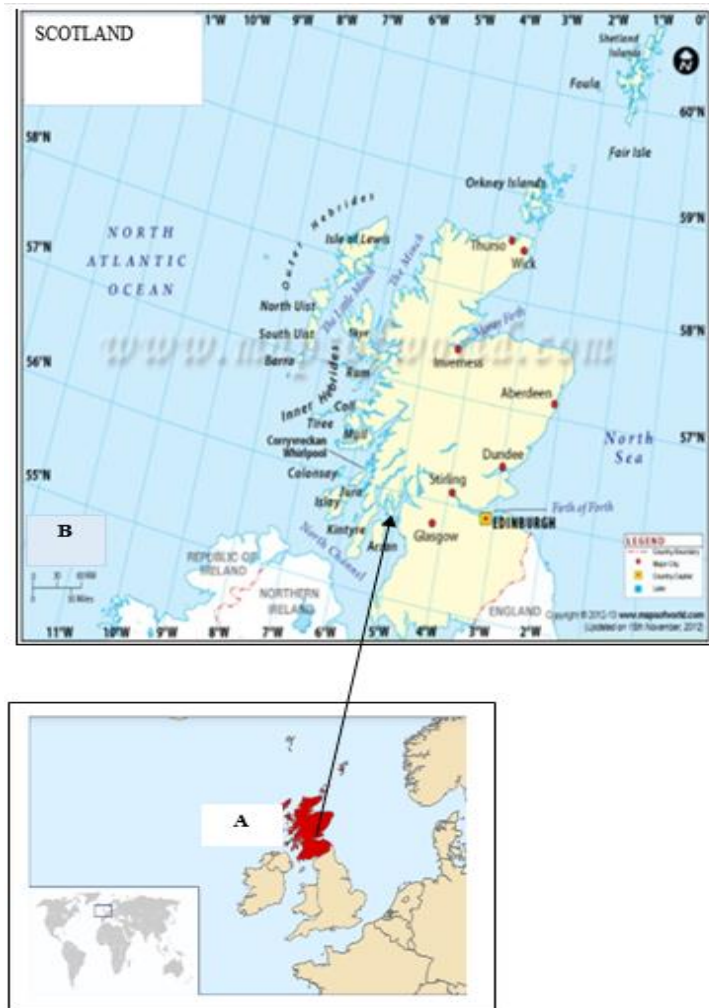


Fig. 1: Map of the Study area; A: Map of Europe showing Scotland; B: Map of Scotland
(Source: Adopted from https://www.mapsofworld.com/lat_long/scotland-lat-long.html)

3.2 The geography of Yobe state

Nigeria (Fig, 2A). It has 17 local government council (Fig, 2B). Yobe state lies within latitude 11 north and longitude 13.5 East with a total land area of about 47,153 square kilometres. It shares boundaries with Borno state at the eastern part, Jigawa at the southeast, Bauchi at the northwest, and Gombe states to the southwest. It also shares an international border with the Republic of Niger. This boundary extend over 323kilometres to the

Yobe state is located in the North-eastern.

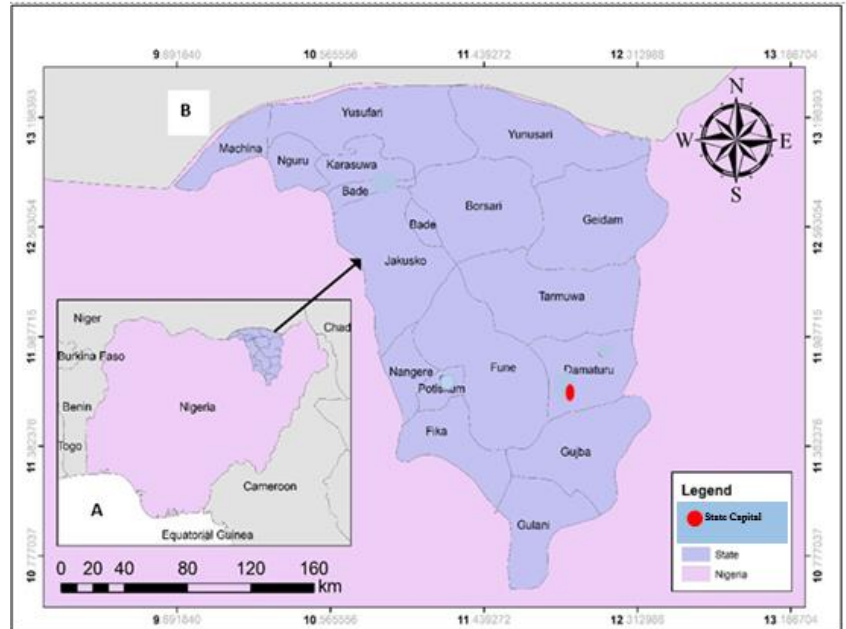
north of the State. According to the National Head Count conducted in 2006, the population of the Yobe state is 2.6 million (CIRDDCOC, 2016). However, is estimated to reach and 3,294,137 (NPC 2017).

Yobe state lies within the Sahel savannah where the vegetation is made up of thorny, open, and short trees between 5m to 10m in height. Rainfall across the state is variable with a low record rainfall of 275 mm in the Northern parts and

as high as 700mm as the average annual rainfall in the Southern parts of Yobe, within three to four months respectively (Zemba et al. 2018; Ali et al. 2022). The mean annual temperature is 34°C (Ali et al. 2022). The main livelihood of the population is farming, livestock rearing, and fishing (WFP

2018). Alarming, the Human Poverty Index (HPI) in Yobe is very high i.e., 72.34%, and the unemployment rate has reached 29% (Statista, 2020). The literacy level of the adult population in Yobe is only about 58.3% (World Data Atlas, 2020).

Fig. 2: Map of Yobe State, Nigeria (A: Map of Nigeria showing Yobe state; B: Map of Yobe showing the 17 local government in the state)
Source. Adapted from Ali et



3.2 Data Collection and Analysis

The study is empirical research that collected qualitative data through field observation and face-to-face interaction (presentations, discourses and discussions) with the directors/administrators of the forest-related organizations, forest managers, tour guides and head of community forests. The data are presented according to the seven forest organizations (government agencies, private firm, and community) visited in Scotland that comprised: Central Scotland Forest Trust (CSFT) in Moffat, Tay Valley, Boat of Garten, Abriachan Forest Trust Abernethy, Laggan Community Forest and Royal botanic garden, Edinburgh. A narrative analysis was therefore, employed to

present and discuss the data. Attempts were made to compare the situations in Yobe and Scotland.

4. Experiences and Discussions

4.1 The Central Scotland Forest Trust (CSFT)

The Central Scotland Forest Trust was the first area visited. The excursion visit started from Penrith, a town with the Preston County towards the Scottish borders via a well-known city of Moffat, noting a typical upland plantation forestry. There were observed array of family and individuals plantations as opposed the situation in Yobe, Nigeria, where forests originate from natural regeneration and owned by the state government (Naibbi, 2015; Ali et. al. 2022). After a two-hour drive, the trainees reached the Central

Scotland Forest Trust's (CSFT) offices. The trainees were welcomed by the Trust's Director in person of Mr. Simon Rennie, who provided an illuminating overview of the CSFT's activities which have spanned 25 years. According to Mr. Rennie, Central Scotland Forest Trust has a collection of woodlands spread across 1,600km² of Central Scotland bounded by Edinburgh, Glasgow, Falkirk and Lanark, and the trust is supported by Scottish government in conjunction with forestry commission for Scotland. It was understood that the CSFT has in many ways pioneered the concept of forest as a delivering tool for land reclamation (environmental aspects), as well as an important vehicle for social cohesion and development in an areas devastated by industrial decline and high unemployment. (Forestry Commission Scotland. 2008). Rennie further state that the focus of CSFT was later extended from its original focus on economic and environmental benefits to a more of community focused goals that include social benefits such as improving the health status of the elderly people in Glasgow and Edinburgh, where the population of the area had the worst health record in the whole of UK (Health, 2013). Therefore, walking and cycling were introduced as recreational activities in the forests, interestingly, the trainees noticed a higher cycling activities compared to vehicular movement, which has been affirm in previous report (Health, 2013).

The CSFT has proposed different projects on Central Scotland Green Network that helped addressed climate change in the next two decades through woodland creation and peatland protection that can store carbon as well as utilising biodiversity net gain (Rennie, 2012). The term green network is used in broader perspective in Scotland and referred to as set of connected areas of green space and habitats such as parks, paths and woodlands within an urban or sub urban region, which provide range of social, ecological and economic benefits such as increasing the quality of life within an area, and creating sustainable communities (Whitehead, 2012). Past experiences had demonstrated that CSFT was

more successful when it allowed communities to choose their own destiny, while the CSFT facilitate, provide the funding and expertise to deliver the community's needs. This assertion was confirmed by the observations made at Newmains and Greenhead Moss. At the Newmains, which is a site characterized with an open cast coal mine, undergoing a second and final phase of restoration to open habitats and woodland. The trainees were also shown how brown fields (old polluted mining sites) been restored using phytoremediation. The second site, the Greenhead Moss, was an example of a restored and maturing open cast site with wetlands. This was an obvious success story of the trust activities. Most importantly, the trainees witnessed recreational activities comprising walking and jogging in a community woodland park, managed by a group the local residents, who were able to employ wardens and volunteers to manage and upkeep the site. These environmental promotion efforts and social roles of the forests is quite not visible in forested areas of Yobe, Nigeria. Where natural forests are considered a commodity (Sagay and Mesike, 2011; Naibbi, Ali et al. 2022). Mr. Rennie further pointed to the trainees, an existing local housing and market that demonstrated people and housing developers been attracted to the area, Furthermore, Linda McConaghie, a community liaison officer, who was together with Rennie, also stated that the formation of a community woodland resident's group, marked the first attempts of the community to come together and work co-operatively to improve their own environments. Linda, added that working with children by the CSFT has also yielded some successes as the children were able to inspire and involve their parents.

4.2 Tay Valley (The Big Tree County)

The trainees were able to enjoy a glorious June morning in the heart of Scotland's "Big Tree County" with the Forestry Commission's Tay District. The theme of the morning was a presentation on a commercial upland forestry and timber production. In the evening, the trainees

moved to observation sites. The first site was a harvesting site that illustrated some technical and economic difficulties of steep terrain to the extent that the site was left to regenerate back to native Birch woodland. The second site at the Tay Valley, was the Schehallion, one of Scotland's most mysterious mountains, in which a thinning operation by a harvester was observed. It was observed that there were two skilled operators working double shifts, and responsible for the selection and control of thinning and maximisation of produce. This observed operation opposed what is traditionally obtainable in forests of the northern Nigeria, specifically Yobe, where majority of forest staff remain unskilled, while most operations are carried by forest guards, while the forest managers remain in their offices given directives, a typical top-down approach (Naibbi, 2015).

It was also observed that many Sitka spruce (*Picea sitchensis*) species are managed on non-thin regimes or with very limited thinning because of the risk of wind throw (Mason, 2015). The discussions clearly indicated the difficulty faced by the forest industry to recruit and employ chainsaw operators in remote locations and that harvesters offered a solution, although with additional cost (£350,000 plus), unlike in Nigeria, where labour remain cheaper (Naibbi, 2015; Ali et al. 2022).

In Scotland, *Sitka spruce* dominates the commercial forestry sector accounting for over half of the total forest area of conifers of nearly one million hectares (Cameron, 2015). A sample of trees planted in arboreta showed that the specie is fast growing, hardy in exposed conditions and capable of growing on site that was mainly planted by Norway spruce (*P. abies* (L)) or Scots pine (*Pinus sylvestris*). It is now the most widely planted conifer in Great Britain covering about 700,000 ha of forest or 30% of the total forest estate (Pâques, 2013). And agroforestry as Gum Arabic trees were proven capable of growing with other tree species and stable crops (Dugje, et al. 2007; Alkali, 2010; Muhammad, et al. 2020).

The third visited site of the Tay Valley was more typical upland clear-fell on good terrain, harvesting high quality Sitka spruce. The importance of Sitka spruce to the UK forest industry was explained and used as an example of how appropriate introduced species can provide successful solutions to afforestation and plantation management. This busy harvesting site illustrated the variety of wood products and markets needed to ensure timber maximisation with timber being transported to board manufacturers in Central Scotland, sawmills near Inverness and pulp as far as Irvine on Scotland's South-west coast. Interestingly, in Yobe, Nigeria, there are also specific trees that adapted to the climate of the area including *acacia senegal* and *seyl*, *Balanites aegyptiaca*, which are used for different purpose including a source of gum Arabic, pole for fencing, construction of farm implement, kitchen utensils and crockeries (Larinde and Aiyeloja, 2015).

The Deer park is another adventure for the trainees in Tay Valley, in which Mr Liz Miller guided the trainees with a fascinating lecture on Deer management, which has a good historical connotation to the Royal family leisure activities. The workings of a modern estate was illustrated as a mix of farming (forestry, deer management and tourism) with the clear impression that tourism has been contributing to income and employment in the Highlands. Additionally, there exist another site called the majesty of Diana's grove (a superb mature arboretum) of larches trees. Diana's Grove boasts some of the Country's finest and tallest trees. It is a typical exhibition of In-situ conservation strategy. Different species including Larches trees are part of the historical importance in Scottish forestry having brought from London, a place with noticeable nurseries of Larche tree species. It was documented that there are about 1620. 9 larch trees were believed to grow in the Blair Castle, with the tallest reaching a high of 135 feet and girths range up to 14 feet (Mitchell, 1968).

4.3 Abriachan Forest Trust Abernethy

Abriachan is a small scattered settlement of 200 people perched above the waters of Loch Ness, 15 miles west of a town (Inverness). Abriachan along with Laggan are the founders of Rural Community Forestry in Scotland, pioneering new ways of community action and woodland ownership. Abriachan forest became the largest community-owned forest in Scotland in 1998 (Ritchie and Haggith, 2005). Suzann Barr, among the host team, outlined the history of the Trust from the early attempts of the community to secure access to a Forestry Commission woodland, which had been proposed for sale to eventually buying the woodland and establishing a Trust who manage the woods and employ a local labour force to manage it. In March 1998 they succeeded in buying a 534ha part of it (Ritchie and Haggith, 2005).

Abriachan forest trust consist of a combination of a commercial plantation of mostly exotic tree species and few Scots pines trees and a large area of naturally regenerating open woodland (Ritchie and Haggith, 2005). The history of Abriachan Trust is also the history of the Forestry Commission's awaking to a new political movement in rural Scotland to acquire land and the capacity to exercise responsibility and control, which extends far beyond the traditional community consultation processes. Backed by political will and finance from within the Scottish Assembly, and the Forestry Commission, community forests are expanding across the highlands and providing opportunities for local rural development. Forest schools, local employment and training initiatives, innovative sustainable small buildings, art and historical interpretation were all present in woodland. The Trust has a full bookings diary for school groups from Inverness for the next year and the woods are full of family groups at the weekend.

4.4 Boat of Garten Saw mill

An industrious community surroundings of BSW's Boat of Garten sawmill under the guidance of Northern Timber Buyer John Pargitter was also

visited. BSW is the UK's largest integrated forestry and business group, while the Boat of Garten mill is a small and relatively un-mechanised mill employing about 60 staff. Interestingly, the utilization of Sitka spruce was evident at the Boat of Garten mill, in which 90% of the mill's production relied on woods from Sitka spruce. According to Forestry commission (2010), Sitka spruce plantations covers approximately 730,000 ha of land and commercial wood products industry in the UK (Moore et al. 2013). Additionally, the mill also produced a number of niche products such as decking for the home housing and DIY market. In fact, the sawmilling industry can be regarded as one that were able to offer a long-term commitment to rural development and rural employment in Scotland. The availability of similar saw mill can be seen in Yobe even though, the woods are transported from Southern Nigeria.

4.5 Royal Society for the Protection of Birds (RSPB)

The Royal Society for the Protection of Birds (RSPB) control the Abernethy reserve. Abernethy national nature reserve is 13,714 hectares of forest land near Boat of Garten and Nethybridge inside Abernethy forest. It's an iconic RSPB nature reserve aimed at landscape-conservation of some iconic wild birds notably Osprey and Capercaillie. It is one of the most biodiverse reserves in the RSPB's management having over 4,800 recorded species from which, 800 are nationally important. The reserve is one of the largest UK's birdwatchers scene (Mchaffie et al. 2002). Osprey bird has been sighted in Nigeria as migratory bird on 25/10/2018 at Malam Madori, Jigawa, which was reported to have come from University of Helsinki, Finland (Jigawa, 2018).

The Loch garten Osprey centre lies at the heart of the RSPB's second largest nature reserve Abernethy. It is a home to about 5,000 recorded species and is UK's largest remnant of Caledonian Pine forest (Reserve, 2022). The reserve comprises of 29km² of pinewood on the northern slopes of the

Cairngorm Mountains and extends down into strathspey (Denny and Summers, 1996). While, the Capercaillie, was linked with Abernethy's ancient pine woods and increasingly providing an important tourism attraction. Rapid spread of Capercaillie was helped by reforestation of scots pine (*Pinus sylvestris* L.). A coincidence between western palearctic ranges of the capercaillie with that of scots pine, was identified as the food of the bird mainly constitutes the needles of the scots pine (Picozzi et al. 1996). The Scots pine *Pinus sylvestris* L. is the most abundant tree species in the area (Summers et al. 1997). Richard Thexton, a reserve warden that spent over 10 years, showed to the trainees some sites undergoing restoration through a two phased thinning operation over 10 to 12 years, which was characterized by a mix of heavy thinning, selective felling and retention of groups of close spaced trees could mimic natural woodland.

Deer management was also paramount to the successful restoration, and stalking was a permanent feature of reserve management to keep red deer numbers down to the point that natural regeneration was not prevented (Summers et al. 1997). The importance of public recreation was also demonstrated. The importance of tourism and recreation for health enhancement among the objectives of forest management in Yobe is far from reality. Most importantly, there is a clear understanding that forests are declining from over demand of fuelwood in Yobe, little has been done to reverse the situation (Naibbi, 2015; Ali et al. 2022).

4.6 Laggan Forest Community

Laggan forest community is remote and isolated community that manage an area of about 1400 ha forest. The Forestry commission was initially the sole management agency, but later partner with the community. The partnership had evolved from early attempts to ensure that forest maintenance and small-scale harvesting activities were sourced within the community to the Trust, now offering a contract management option for the Forestry

Commission. The community forest inhabit mainly Scots pine and Sitka spruce (Ritchie and Haggith, 2005). The community forest provide local employment, retain the local population and attract new families and businesses. The initial aim of Laggan Forest Trust was to create local employment. This was a success story for Laggan as it was reported that in 2000, there was an increase job creation within the local community (Laggan Forest Trust Highlands, Scotland, 2014). There was also a new pony trekking trail network and this was being utilised by a trekking business in the community. There was a clear sense of businesses using the forest and it was possible to envisage a sustainable future for the initiatives, which is important to be replicated in Yobe, and other part of Nigeria.

4.7 The Royal Botanic Gardens in Edinburgh

The Royal Botanic garden was founded over 350 years ago by two doctors - Sir Robert Sibbald (1641-1722) and Andrew Balfour (1630-1694) (Knott, 2020). The primary aim was to teach students of botany about plants and their identification particularly medicinal plants. The Garden holds a living collection of 15,600 species across four gardens, with over 2.5 million preserved herbarium specimens and provides expertise in all areas of botanical sciences (Ellis and Gibby, 2007). The Garden is a non-departmental public body largely funded by the Scottish government with over 280 full- and part-time staff at the institution over four gardens in Scotland (Hughes and Foulkes, 2022). With health and environmental challenges facing the society, the mission of the Garden includes exploring, conserving and maintaining the world of plants for a better future (Foulkes, 2017). The trainees observed and identify plants of Africa's origin including those of the native of southern Nigeria in a controlled area called a Palm houses. Furthermore, the trainees were also given an exclusive preview of the new Queen Mother's Garden with plants collected from around the

commonwealth including a number of medicinal shrubs from Nigeria.

5. Conclusion

Being a common tradition of simulating a system, program, project, leadership and management style, with some modifications where necessary. The forest management perspective of Scotland can be copied to help promote the economic, social and environmental roles of forests in Yobe, and Northern Nigeria at large, particularly in yielding products such as Gum and fruit from trees, provision of employment for improve livelihood, provision of ecotourism services for revenue, underscores the concept of environmental conservation as a priority in the urban and rural areas, ensure the recreational and educational roles of the forests are exploited, promote and preserve the historic forest environment in Yobe, provide opportunities and security in the forest to provide social roles ranging from outdoor recreational activities (e.g., jogging, trekking, walking, hiking) that help improve health of the elderly people, and opportune the young and youth to learn (educational service). Despite the existing multiple roles of forest, little is tapped in Yobe and many states in Northern Nigeria. It is therefore imperative that government and other stakeholders view decision making in forestry is best from the bottom to top, provide opportunities of own land for a forest to be owned at individuals and family level as well as private firm, create suitable environment for partnership by developing new policies and programs. This report has further shown that the principles of sustained yield, forest economics, and social forestry has been recognized as part and parcel of Scotland economic, social and environmental development which could be borrowed and implemented in Yobe, and other part of Nigeria. The results from this manuscript can help not only Yobe but northern Nigeria in general to solve different forest management problem/issues by adoption of bottom-up approach in decision making, adopting analytical approach to solving communities

utilization of forests products issues, practicing community forestry management, focusing on three aspect of sustainable development without neglecting and under-estimating the contributions of either, providing supports and opportunities to individuals, firms, women, elderly, children and communities to benefits from forests goods and services.

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