Benefits of Inland Water Transport in Barotse Sub Basin of Zambia

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ABSTRACT

Inland Water Transport (IWT) industry in Zambia has suffered neglect for a long time despite its importance to many rural settlements of Zambia such as the Barotse Sub Basin (BSB). The study assessed the socio-economic benefits of IWT in BSB. It employed a quantitative approach. Data was collected using structured questionnaires and field observations in three districts namely Mongu, Senanga and Kalabo. A sample of 200 respondents was drawn purposively. Data was analysed using descriptive statistics generated through SPSS and Excel. Results of this study indicated that IWT is very important to the socio-economic well-being of this region because it is a source of employment, tourism and recreation as well as cheap bulky cargo transportation.

Keywords: Inland Water Transport, Waterways, Barotse Sub Basin, SPSS, Zambia

INTRODUCTION

Transport is a crucial sector in the sustainable socio-economic development of nations. Inland Water Transport (IWT) has contributed to the development of mature economies over many centuries and created many bridges between nations (OECD, 2006). For example, the Tennessee River navigation system in the USA has proved to be a valuable asset to the Tennessee Valley region and to the nation as well. It has been a major factor in reducing transportation rates charged by other modes, increasing commodity movements by valley shippers, and attracting high-wage industry to the region. About 54 million tons (49 million metric tonnes) of diverse commodities move on the Tennessee River each year, saving shippers and consumers about $500 million in transportation costs (Tennessee Valley Authority, 2008).

Globally, IWT has been used for a very long time to foster socio-economic developments. For example, in North America, the St. Lawrence River and Great Lakes provided access to the interior of what is now the United States and Canada, enabling exploration and later settlement of the area (Tennessee Valley Authority, 2008). The need to maintain and improve navigation on this system stimulated early international treaties between the United States and Canada. Similarly, the Ohio, Mississippi, and Missouri rivers opened up the western frontiers of the United States (Bonnerjee et al, 2009).

In Europe, IWT promotes economic development and supports environmental sustainability as has been successfully demonstrated by navigation on the Rhine and Danube Rivers. According to the Central Commission for Navigation of the Rhine (2007), the Rhine River, with a watershed of some 185,000 km and a length of 1,320 km, of which some 850 km are navigable, might not be one of the largest rivers in the world, but perhaps the busiest inland waterway, with more than 300 million tonnes of cargo and 2 million containers transported each year. The Danube River, on the other hand, is navigable for 85 per cent of its length (2,411 kilometres), from the city of Kelheim in Bavaria in southeast Germany to Sulina, Romania's easternmost point. In the city of Kelheim, the Danube is linked to the Rhine-Main-Danube canal. Since the

completion of the canal in 1992, the river has been part of a trans-European waterway from Rotterdam on the North Sea to Sulina on the Black Sea a distance of 3,500 kilometres (European Conference of Ministers of Transport, 2006).

Furthermore, inland waterways stimulate and support rapid economic growth in countries in the Far East and South America. In China, for instance, the rapid economic development of Jiangsu, Shanghai, Zhejiang and Guangdong provinces is largely attributed to the presence and effective use of an extensive system of waterways. This system includes the Yangtze River, Grand Canal and many tributaries and canals with a total length of more than 24,000 kilometres (Hochstein, 2003). Similarly, improvements in the inland waterways in South America have aided the agricultural development of vast regions in Bolivia, Paraguay and Brazil by providing transport of soya beans and other agricultural products to the international market. Prior to this, the cost of transporting these products over land was prohibitively high.

In Africa, inland water transport has been of high economic significance to many countries. For example, Egypt has one of the most developed inland water transport system on the African continent through the Nile River. Rafimar Group (2006) explains that this comprises the Aswan Cairo Waterway (960 km), the Cairo-Alexandria waterway (220 km) and the Cairo-Damietta Waterway (225 km). The Egyptian network is linked to the Sudan and other upstream countries through the Aswan-Wadi Halfa Waterway (350 km). All these waterways have been equipped with hydraulic structures and navigation facilities to allow for 24-hour and all-year traffic. Therefore, transporting bulk goods between Khartoum and Alexandria is far cheaper through the Nile waterways than other forms of transport.

Additionally, according to the International Commission of the Congo-Oubangui-Sangha Basin (2007), the Congo River is also one of the most important inland waterway system in Africa. Within the territorial limits of the Democratic Republic of the Congo alone, there are 14,500 kilometres of navigable waterway. They further add that of this total, about 1,000 kilometres are accessible in all seasons to barges with capacities of between 800 and 1,100 tonnes depending upon the height of the water. The international Commission goes on to say that cargoes transported consist mainly of agricultural products, wood, minerals and fuel. The commercial traffic at the port of Kinshasa is less than a million tonnes per year. Yet, river transport is essential for communication with regions that are inaccessible by road. There are three principal water routes, all of which converge on the downstream terminus at Kinshasa on the Malebo Pool. These run from Kisangani, Ilebo on the Kasai and Bangui on the Oubangui.

In Nigeria, Ezenwaji (2010) notes that inland waterways transverse 20 out of the 36 states within the nation and that areas adjacent to the navigable rivers represents the nations' most important agricultural and mining regions. The direct impact of IWT, for instance, was highlighted for the deltaic areas of southern Nigeria by Abubakar (2002) who notes that IWT is very vital and critical for all facets of development in the region. Gray (2006) also notes that about 48% of all the rural residents in the southern deltaic region of Nigeria live in remote, isolated and inaccessible communities with no motorable roads and another 29% live in communities with limited services. For such people, IWT is absolutely imperative for survival and accessing social services such as education and health.

In Zambia, it is arguably believed that IWT is one of the most preferred form of transport in the rural parts of the country where waterways are in existence. Actually in some areas, inland waterways are the only mean of transportation available. Ministry of Communication and Transport (2011) explains that inland water transport plays an important role in the movement of people and goods especially in those areas where the movement depends entirely on water transport such as on lakes Bangweulu and the surrounding Bangweulu swamp area, Mweru, Tanganyika, Kariba, the Lukanga swamp area and the Zambezi flood plain. It is for this reason that this study attempted to assess the benefits and challenges of IWT in the Barotse Sub Basin.

STATEMENT OF THE PROBLEM

Water transport is critical to some places in Zambia including the Western, Northwestern, Northern and Luapula Provinces. In Western Province, for instance, water transport is the main alternative to road transport into and from Mongu (the provincial capital) and other surrounding areas. According to Chipungu (2004), during the wet season boats and canoes are used to transport people and commodities between Mongu and Kalabo using the Luanginga and Zambezi Rivers. However, the state of most of the waterways in the Barotse Sub Basin leaves much to be desired. They are mostly in the state of disrepair and neglect. Chukwuma (2014) observes that in Nigeria, like in Zambia, inland water transport has had a long history of neglect by both government and the private sector. Little efforts were made to develop inland water transport facilities prior to the 1980s. Arising from this, the waterways have continuously been clogged and stifled by silt, sediments and marine vegetation over the years. In Zambia, no specific studies have been undertaken in the area of socio-economic benefits of inland water transport save for Mutonga (1992) who dwelt more on the history of the construction and maintenance of canals in the Barotseland as well as Deneut et al (2014) who carried out an environmental, social impact assessment of the priority traditional canals in the Barotse Sub Basin. As the result, the sector has increasingly seen less attention and consideration paid to it as one of the major forms of transport in Zambia despite huge potential anticipated from the western frontier bordering Angola. It is against this background that this study endeavoured to assess the benefits and challenges of inland water transport in the Barotse Sub Basin.

REVIEWED RELATED LITERATURE

This study draws its inspiration from some studies done on Inland Water Transport in other African countries. In Zambia, however, there has not been sufficient studies that specifically looked at water transport sector. To this end, this study is therefore one of the few in this field and endeavours to add invaluable information to the body of knowledge in so far as inland water transport in Zambia is concerned.

Deneut et al (2014) conducted an Environmental and Social Impact Assessment (ESIA) for the Improved Use of Priority Traditional Canals in the Barotse Sub Basin of the Zambezi in 2011. This study highlighted the current state of traditional canals that traverse the Barotse Sub Basin and estimated how much each would cost for the purpose of rehabilitation and maintenance. However, the study based its findings on canals that are located primarily in one district-Mongu at the expense of other canals and waterways in other districts. Further, the research methods adopted by the study, social survey and workshops with stakeholders.

Chukwuma (2014) characterized inland water transport in Nigeria. The study methodology was appropriate. However, the study was conducted in a country that has a federal government system where developmental activities might vary from one federal state to another. This study was conducted in a country that is unitary state where the central government oversees each and every developmental project across the country. With this in mind, the study endeavoured to assess the socio-economic benefits and challenges of inland water transport in the Barotse Sub Basin of Zambia.

Similarly, El-Nakib and Roberts (2006) postulate that the IWT sector in Egypt is facing several challenges and barriers to development. Logistics of inland waterways of Egypt has unique characteristics and abilities to be utilised properly and efficiently. However, there are numerous reasons for establishing a sound logistics system in Egypt which therefore hinder the development of the inland waterways transport sector. The study is considered a basic trail to conceptualise the factors affecting the inland waterways transport sector in Egypt. Drawing from the Egyptian experiences, the focus of this study is to assess the socio-economic benefits and challenges of inland water transport in Zambia.

Mutonga (1992) in his study entitled 'Public Works in Bulozi: A Case Study of the Construction and Maintenance of Canals in Bulozi (1885-1980)' offered a historical perspective of the construction and maintenance of canals in the Barotse Sub Basin. He critically examined the process of construction and maintenance of canals in Bulozi during the period under review. The study was based on review of historical data and did not provide adequate interface with the inhabitants of the area under study. Furthermore, emphasis was not placed on the ability of the canals to enhance connectivity and navigability to the people that live in areas around these canals. Therefore, this study adopted a rather robust approach and had an interaction with the residents of the area under study and assessed the actual socio-economic benefits and challenges of inland water transport in Barotse Sub Basin putting the canals and waterways at the centre of the study.

In order to understand the operations and management of IWT, a study conducted by Obed (2013) was reviewed. The study looked at the nature, characteristics, scope, impact as well as effects of inland waterways and ascertained the relativity of the inland waterways operation and management on the development of the Nigerian Maritime Industry at large with much focus on the inland coastal shipping in Nigeria. The study focused more on the operation and management of inland waterways in Nigeria based on the coastal and inland shipping (cabotage) Act. This study focused on the socio-economic benefits and challenges of inland water transport in Zambia drawing lessons from the observations made on the study conducted in Nigeria.

MATERIALS AND METHOD

The study was premised on social constructivist world view or philosophical approach. According to Creswell (2009), social constructivists hold assumptions that individuals seek understanding of the world in which they live and work. Individuals develop subjective meanings of their experiences-meanings directed towards certain objects or things. These meanings are varied and multiple, leading the researcher to look for the complexity of views rather than narrowing meanings into a few categories or ideas. Since this studied was aimed at understanding the benefits and challenges of inland water transport in the Barotse Sub Basin, there was great need to rely as much as possible on the participants' views of the situation being studied. Bearing this in mind, the study carefully selected people with reliable information and asked questions from which participants constructed the meaning of a situation themselves and provided the much needed information for this study. Creswell (2009) emphasises that constructivist researchers often address the processes of interaction among individuals. They also focus on the specific contexts in which people live and work in order to understand the historical and cultural settings of the participants.

Mouton (1996) observes that a research design can be thought of as the master plan of a research that throws light on how the study is to be conducted and shows how major parts of the study work together in an attempt to address the research questions. Orondho (2009) adds that a research design can be thought of as the structure of the research and could be defined as the scheme outline used to generate answers to research problems. Kothari (2004) is of the view that a research design can be regarded as an arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance with the research purpose. It is the conceptual structure within which research is conducted. It constitutes the blueprint for the collection, measurement and analysis of data.

In this study, a mixed methods approach with elements of qualitative and quantitative aspects were used. Creswell (2009) explains that mixed methods procedures employ aspects of both quantitative methods and qualitative procedures. A case study design was adopted as a research strategy. According to Kombo and Tromp (2006), a case study seeks to describe a unit in detail, in context and holistically. It is a way of organising educational data and looking at the object to be studied as a whole. Yin (2003), on the other

hand, offers a more detailed and technical definition of case studies as an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident. He further posits that in a case study a 'how' or 'why' question is being asked regarding a contemporary set of events which the investigator has little or no control at all. The purpose of using the case study was to get in-depth details as much as possible about an event, person or process.

It was very convenient to assess the socio-economic benefits and challenges of inland water transport in Barotse sub basin using a case study because the focus of the research was on the relationship between the group of people and the setting. The case study relies on many of the same techniques as a history, but it adds two sources of evidence not usually included in the historian's repertoire: direct observation and systematic interviewing (Yin, 1994). With this in mind, information relevant to the study was obtained using research methods that are specifically tailored for case study such as observation and interviews.

SAMPLE AND SAMPLING TECHNIQUES

A sample is a small proportion of the selected population for observation and analysis (Creswell, 2009). By observing the characteristics of a sample which is diverse, representative, accessible and knowledgeable in a study area, findings can be reliable (Kombo and Tromp, 2006). For this study, the target population were the people that use water transport in the Barotse Sub Basin. A sample of 200 people was drawn purposively from various sections of the society of the Barotse Sub Basin. The study was conducted in three districts namely Mongu, Senanga and Kalabo. These districts hold the highest number of people in Western province (CSO, 2010). Therefore, for the sample to be representative and bearing in mind that a mixed methods approach was used, there was need to have a representative sample from each district under study resulting in the total number of participants alluded to earlier. They included official from the Ministry of Transport and Communication under the Maritime and Inland Water Transport Department, Zambia Police under the Marine Section, Motorised Boat Owners, Transporters, Passengers as well as Paddlers of wooden barges and canoes as shown in Table 1.

Table 1: The Breakdown of the Targeted Respondents in Mongu, Senanga and Kalabo Districts

RESPONDENT	**NUMBER**
Department of Maritime and Zambia Police (Marine Section)	5
Motorised Boat Transporters and Operators	25
Passengers and Paddlers of Canoes and Wooden Barges	170
Total	**200**

Sampling procedures or techniques refer to the part of the study that indicates how respondents were selected to be part of the sample. Purposive sampling and convenience were used in this study. According to Kombo and Tromp (2006), purposive sampling targets only the people believed to be reliable for the study. The researcher purposely targets a group of people believed to be reliable for the study. The strength of purposive lies in selecting information rich cases and sources for in depth analysis related to the central issue being studied. They further explain that convenience sampling technique is based on using people who are a captive audience, people the researcher meets inadvertently. Respondents are people who just happen to be walking by or show a special interest in the research.

For this study, purposive and convenience sampling techniques were of great help as the study required people with in depths information on the operation of water transport in western province. Furthermore, convenience sampling became useful because unlike road transport sector that has facilities that are

developed and highly organised, water transport in western province is underdeveloped and somewhat haphazardly operated. As such, finding respondents to certain concerns was a matter of chance. There was need to find people going about their various errands and engage them into a conversation of the issue relating to water transport. Therefore, the two sampling techniques were suitable for the study.

DATA COLLECTION AND RESEARCH INSTRUMENTS

Data collection refers to the gathering of specific information aimed at proving or refuting some facts. In doing this, it is important to use suitable research instruments. Kombo and Tromp (2006) explain that research instruments include the following: questionnaires, interview schedules, observation and focus group discussion. For this particular study, questionnaires, interview schedules and observation were used. The decision to use questionnaires was inspired by its ability to save time and uphold confidentiality. The use of semi-structured interviews is advantageous because they are flexible as both open and closed ended questions can be used. Furthermore, in depth information can be gathered by the use of closed ended questions. Kombo and Tromp (2006) further highlight that observation is a tool that provides information about actual behaviour. Direct observation is useful because some behaviour and phenomenon involves habitual routines of which people are hardly aware. Direct observation allows the researcher to put behaviour in context and thereby understand it better.

Data was collected between the months of June 2016 to July 2017. The questionnaires were administered to passengers and paddlers as well as to the motorised boat owners and operators while interviews were conducted to government officials from various departments in charge of water transport in the region. A total of 185 questionnaires were successfully administered to the respondents in the three districts under study. In Mongu, 85 questionnaires were administered and successfully responded to. In Senanga, a total of 60 questionnaires were administered whereas 40 were administered in Kalabo district. Interviews were conducted with the one official from the department of Maritime and Inland Waterways in Mongu and another in Kalabo. Further, 3 officers from the department of Marine of the Zambia Police were interviewed in each district. 4 Boat owners and operators and 6 passengers were also interviewed. Observations were also done on the banks of various waterways by way of water vessel traffic counts. The traffic counts were conducted at various locations during different times of the year (season) to measure the daily volume of water vessel traffic. For example, water vessel traffic counts were conducted at Liyoyelo, Nebubela, Ngongwe and Nangoma among others to establish how many vessels passed on the daily basis along these waterways at different times of the year (season). The data collected was mixed. The data from the Questionnaires gave quantitative form of data whereas that from the interviews gave qualitative data. Data from the observation was mostly numerical in nature.

DATA ANALYSIS

According to Kombo and Tromp (2006), data analysis refers to examining what has been collected in the survey or experiment and making deductions and inferences. It involves uncovering underlying structures extracting important variables, detecting any anomalies and testing any underlying assumptions. It involves scrutinizing the acquired information and making inferences. It may also involve the computation of certain measures along with searching for patterns of relationship that exist among data groups.

The collected data for this study comprised both quantitative and qualitative data. The quantitative data from the structured questionnaires and water vessel traffic count was analysed using descriptive statistics generated through the Special Package for Social Sciences (SPSS) IBM 2015 software and Microsoft Excel Spreadsheet 2010. This resulted into statistics and frequencies that have been used in the study. The qualitative data from the interviews was firstly transcribed and later on thematically analysed based on various responses. Themes were identified from the responses the respondents were giving and were

grouped based on the frequency with which such responses were coming up.

RESULTS AND DISCUSSION

Socio-Economic Benefits of Inland Water Transport in Barotse Sub Basin

The study revealed that inland water transport cannot be separated from the general livelihood of the people of Barotse Sub Basin. Respondents showed that water transport goes beyond the act of providing a way of travelling but is tied to everyday life activity of the people of this region. Accordingly, the study identified the following as the socio-economic benefits of inland water transport in the Barotse Sub Basin:

Source of Employment, Business and Income

This benefit recorded the highest response with 46% of the respondents identifying it. People of this region are traditionally pastoral farmers and fishermen who depend on water for their livelihood endeavours. CSO (2014) explains that the major economic activity in western province is agriculture, particularly cattle rearing which support about 80 percent of the people and crop production in some of the richer soils of the region. However, those that are not part of such economic activities are highly involved in water transport industry and its related enterprises. Bassey (2018) supports this assertion by stating that inland waterways transport is of significant importance to economy because it creates employment opportunities thereby ensuring engagement of workers and reduction of social problems induced by unemployment. The ship/boat building and repairs industry employs workers to meet its various needs.

Clearly, the forms of employment, business and income generated from inland water transport sector are diverse. Firstly, there are boat owners who run these vessels as commercial entities whose livelihood revolves around them and then there are young people that are employed to operate these motorised or manually operated water vessels. Such youths are employed as Coxswains or Paddlers as the case might be. These benefit from water transport by way of being employed as a part time or permanent employees depending on the agreement they would enter into with the vessel owners. Their lifestyles are dependent on this kind of business to the extent that they are able to send their children to school and fulfill other requirements of life.

Additionally, there is a booming boat and canoe making in different enterprise in most parts of the Barotse Sub Basin. Canoe making enterprise is very huge owing to the demand from the local population. Canoes and boats are used for various intents and purposes in this area, and every family endeavours to own one. Therefore, people in this type of business earn a living from making these vessels to satisfy the available local demand. Boats made range from small boats to the very large boats such as the famous *Nalikwanda*, the royal barge.

Tourism and Recreation

The other benefit identified by respondents is that of tourism and recreation. Some respondents (22%) indicated that water transport can enhance tourism and recreation. Bassey (2018) opines that inland waterways transport promotes tourism in the sense that tourists are able to cavies in boats on the lagoon, creeks and other inland waters and to visit various natural beaches on coastline for purposes of sight-seeing and relaxation. Tourism which inland waterways transport enhances and facilitates is an avenue through which the state government realizes revenue which is channeled to developmental projects.

Hochstein (2003) is of the view that the increasing number of trips by recreational boaters and tour vessels stimulates local tourism and helps create opportunities for riverside communities to redevelop their waterfronts. In line with this view, local business men (boat owners) in Mongu organise boat cruises that

attract a lot of people when water levels are high. These spectacular events normally take place around the same time as the *Kuomboka* ceremony and over long weekends. Similarly, speed boats and other motorised vessels are hired out to people who would want to have a feel of water transport.

With this in mind, it can safely be said that inland water transport is an important component of tourism in the Barotse Sub Basin especially during the *Kuomboka* ceremony which is an annual event in which the Litunga (paramount chief of the Lozi people) moves from Lealui (the summer palace) to Limulunga (the winter palace) when the water levels are high (Sikayomya, 2013). The study is of the considered view that without inland water transport, there would not be *Kuomboka* ceremony at all and the economic proceeds that come with it. Sikayomya (2013) explains that European, Asian and American tourists attend the *Kuomboka* ceremony which rivals Zambia's game parks and the Victoria Falls as a tourist attraction. Some tourists arrive in the country seven days before the ceremony. They are normally accommodated in international standard hotels like Inter Continental, Taj Pamodzi, Sun International and other fabulous lodges which provide them luxurious lodging besides the food of their country of origin as the proprietors of these hotels and lodges are mostly foreigners who provide international menus to their clients.

Sikayomya (2013) further observes that the Lealui palace, which is the starting point of the Kuomboka ceremony, is located in the plains and to get there to witness the royal departure, tourists and subjects alike have to get on boats at the Mulamba harbour in Mongu. A boat ride from Mulamba harbour to Lealui on an ordinary day costs between K10 and K15. However, during Kuomboka, a ride to Lealui costs a return fare of as much as K100. Furthermore, hiring a boat would cost someone as much as K1, 500. In the same vein, taxi rides around Mongu costs as little as K10 at any time other than the Kuomboka day when fares go to as high as K30. In short, prices of commodities also skyrocket during Kuomboka ceremony. This shows how important Kuomboka ceremony, a product of inland water transport, is to the socio-economic well-being of Zambia in general and western province in particular.

Additionally, inland water transport is highly utilised whenever tourists want to go to Liuwa National Park located in Kalabo district. African Parks (2012) observe that Liuwa Plains National Park is becoming a tourist destination of choice with many visitors returning year after year. The Park currently receives two types of tourists. There are those that drive all the way to Liuwa and camp at the community campsites provided inside the park, and those that fly-in with Robin Pope Safaris and stay at Matamanene Bush camp. African Parks (2012) further reveals that in the year 2012, the park received a total of 781 visitors against 425 the previous year representing an increase of 83%. For those tourists that opt to drive to Liuwa, they are faced with the challenge of crossing the Luanginga River in order to reach the national park which is located on the other side of the river. It is at this point that inland water transport becomes inevitably important. Without a bridge across the Luanginga River, tourists cross the river at Kalabo harbour using a pantoon that carries them and their motor vehicles to the other side of the river where the national park can later be accessed later using four wheel drive vehicles.

Affordability

The study (18%) revealed that one of the benefits of inland water transport is that it is a cheap form of transport. The study reiterates that it is cheap to transport heavy cargo using water transport than road or other forms of transport. Rodrigue et.al (2006) clarifies that inland water transport has traditionally been used to provide cheap transport of bulk commodities with large volumes of low value to and from the hinterland harbours. Hydro Transport Department (2008) explain that in Brazil, for example, moving freight on waterways costs 20 per cent less than on the highways. It also costs less to develop waterways. The average investment per kilometre required by the waterways system is US$34,000, as compared with $1.4 million for rail/roads and US$440,000 for major roads. With this in mind, inland water transport can be said to have the inherent advantages of low cost, low adverse environmental impact and high energy efficiency. Therefore, inland water transport being the cheapest means of transportation for bulk goods has enabled

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countries to reduce transport costs for bulk imports and exports.

The welfare of the remote and rural areas whose inhabitants are usually among the lowest of low income groups in the country depend on inland waterways transport. This group of people are underprivileged and cannot afford other means of transport. To augment this situation, CSO (2014) observes that western province is among provinces with the highest poverty levels. The living conditions monitoring surveys results of 2006 and 2010 shows that overall poverty levels in Western Province declined from 83.3 percent in 2006 to 80.4 percent in 2010 which is still very high by any standard. On the other hand, extreme poverty declined by merely 0.6 percentage points, from 64.6 percent in 2006 to 64.0 percent in 2010. From this statistical analysis, it is clear to see why most people opt to use water transport in this region. In the same vein, socio-culturally, the people of Barotse Sub Basin have a strong connection to the use of inland water transport. From childhood, young men and women are taught how to paddle a canoe, a skill that proves to be invaluable when they grow up. Therefore, with poverty levels that are so high in this region, people have no option but to paddle their way to their destinations.

Dependability and Accessibility

The other benefit identified by the study is that water transport is accessible and dependable (14%). The study contends that since the region has more rivers and canals than roads, inland water transport enables residents to access areas that are unreachable by other forms of transport. Inland water transport is a lifeline to the socio-economic welfare of the people of Barotse Sub Basin because of its accessibility. It enables the local people access the social services such as hospital, school and veterinary services which in most cases are located on the other side of the flood plain. Deneut et al (2014) explain that the fisheries sector is one of the most important sectors in western province that benefits from inland water transport. Fishing is mainly concentrated on the floodplains of the upper Zambezi, especially the Barotse flood plain. It plays a significant role in the provision of fish protein in the diets of the people of the province and the entire country. Fish mongers from all over the country flock to the Barotse Flood Plains to conduct business. It is at this point that inland water transport is highly utilised to enable such groups of people reach the fishing camps that are mostly located in the plains.

Furthermore, local fishermen and farmers transport their fish and agricultural products from the flood plains to the market centres, and groceries and other consumables from these urban centres to their homesteads using inland water transport. According to CSO (2014), the most important food crops in western province are rice grown in the wetlands and maize in the uplands. Rice production recorded an increase of 8,978 metric tonnes representing 425.5 percent over the 2005 production levels. Since these crops are mostly grown in the wetlands of the Barotse Sub Basin, the use of inland water transport in the ferrying of such commodities to the market cannot be overemphasized because of its accessibility. Inland water transport at the moment has proved to be the only alternative to road transport when people want to venture into the hinterlands of this region. It should be understood that the harsh sandy terrain of Barotse Sub Basin coupled with inaccessibility by other forms of transport has made water transport reign supreme in this region thereby making it the most preferred form of transport among the people. In Senanga, for example, government officials from Ministry of Health and those from the department of veterinary Services use inland water transport to cross with their motorbikes from one side of the Zambezi river to the other so that they can interact with their clients who are located on the other side of the river.

Similarly, school going children depend entirely on the availability of inland water transport for them to make it to school every day. In Kalabo, for example, school going children and their teachers have secured a wooden boat with the sitting capacity of 40 people that they use to cross the Luanginga River to access the school located on the other side of the river on a daily basis. Furthermore, along these waterways, patients with various medical conditions ranging from pregnancy related complications to other more serious ailments are transported to health centres where help is expected to be rendered. In the absence of this form

of transport, the local people will be socio-economically disconnected from the normality of life that have they known to have lived for many years.

CONCLUSION

Inland Water Transport (IWT) has contributed to the development of many major economies around the world and created many linkages within and between nations. It provides a safe, environmentally sustainable form of transport which is a key to sustainable economic development. In Zambia, it is arguably believed that it is one of the most preferred form of transport in the rural parts of the country where waterways are in existence. In Western Province, for instance, water transport is the main alternative to road transport into and from Mongu (the provincial capital) and other surrounding areas. The study revealed that IWT has a positive socio-economic impact of the people of Barotse Sub Basin. The benefits drawn from this form of transport include employment, business and income, tourism and recreation, affordability and reliability. However, water transport has suffered neglect for a long time in the Barotse Sub Basin despite its significance. Therefore, it should be noted that IWT is extremely important to the socio-economic well-being of the people of Barotse Sub Basin. It is not only an employment, income and business opportunity creator and earner but also a means through which social facilities such as hospitals and schools that are in most cases located on the other side of the rivers are accessed. In this regard, it can be inferred that IWT is lifeline of the people of this region. It is a form of transport without which the residents of this region cannot afford not to have.

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