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How To Manage Potential Conflicts Within The Volta Basin To Sustain Hydro Power Generation

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Abstract
Approximately 80% of the Volta basin is occupied by Ghana and Burkina Faso and the remaining shared by Mali, Togo, Cote d'Ivoire and Benin. The demand for water use in the basin is on the increase; Burkina wishes to increase its irrigation and hydro power generation capacity; Togo and Cote D'Ivoire are equally considering putting up dams for hydroelectric purposes, Ghana relies on inflows from these states for hydroelectric generation, domestic water supplies and other irrigation purposes. In 2005, low inflows from Burkina resulted in power shortages in Ghana and nearly resulted in disagreement between the two states. The spilling of the Bagr dam in Burkina causes series of deaths and destruction of farms in Northern Ghana on yearly basis. This paper seeks to do a legal analysis of Volta Basin Convention in the context of rising multiple uses and how emergency responses and notification of planned measuresare addressed.

Keywords
hydroelectric–dam–convention–policy framework.

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1. Introduction

".. stark choices ahead for the world's shared waters."[22] Whether water crises or water stress, water wars are imminent. Watercourse states confront issues that fall outside the ambits of their sovereign powers, and find themselves having to deal with challenges that may originate outside their territorial boundaries.[23]

Ghana's hydro power provision solely relies on inflows from upper riparian states. Due to erratic electricity supplies, the Bui dam along the Black Volta is now on-stream. Similar dams are expected to be constructed within the basin by neighbouring states and hence apart from the resulting environmental issues such as flooding(currently caused annually by the spilling of the Bagre dam in Burkina Faso[24]), there will also be competition for water within the basin. Recent oil discovery in Ghana is going to accelerate industrial growth. Thus, the demand for water both for domestic and industrial uses will increase. The Government of Burkina Faso is dent on reducing poverty from 46% as at 2003 to 30% by the end of 2015 (7% higher than the MDG requirement) through

the promotion of irrigation activities.[25] All these will increase the competition for water within the Volta basin and consequently impose some environmental challenges on states of the basin. Although the basin states have put up the Volta Basin Convention (VBC), its ability to fully address the issues within the basin and to prevent future conflicts is questionable and lacks the necessary provisions to do so.

This report seeks to consider the key provisions of the United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses (UN IWCC), its current status and the significant roles it has played in ensuring cooperation within and between states for the amicable resolution of disputes on transboundary watercourses. The geographical parameters of the Volta Basin, the distribution of the basin area among the shared nations as well as dominant water uses are all evaluated. Further, a critical look at the VBC in the light of the analytical framework is also considered. A comparison is made between the VBC and the UN IWCC. Some inadequacies in the VBC are identified and how these are addressed in the UN IWCC.

2. The UN Watercourses Convention

The 1997 United Nations Convention on the Law of the Non-Navigational Uses of International Watercourses Convention referred here as the United Nations Watercourses Convention, is the only framework governing internationally shared freshwaters.[26]

Before 1959, the field of international rivers was a grey area. But the general assembly haven recognised the significance27 of this field adopted resolution 1401 (XIV) on November 21, 1959 to start some work in this field. This demonstrated a commitment to '... initiate preliminary studies on the legal problems relating to the utilization and use of international rivers with a view to determining whether the subject is appropriate for codification.'[28] The resolution thus requested the Secretary-General to furnish member states with a report, outlining existing laws, judicial decisions, bilateral and multilateral agreements as well as surveys conducted by non-governmental organisations relating to this field.[29]

In furtherance to this, the general assembly adopted another resolution: resolution 2669 (XXV) in 1970 which recommended that the International Law Commission (ILC) 'take up the study of the law of non-navigational uses of international watercourses with the view to its progressive development and codification.'[30]

But not until in the 1960's, not much was heard about the work of the ILC. Beaumont puts it that the work of the International Law Association (ILA) (an independent organisation which also wavered into this area) leading to the publishing of the Helsinki Rules on the Uses of the Waters of International Rivers, forms the basis of the later works of the ILC.[31] After series of meetings and discussions, the convention was adopted in 1997.

3. The current status

The Convention, after over ten years since its overwhelming endorsement and adoption, recently entered into force on 17th August, 2014 following the accession by Viet Nam on 19th May, 2014. This brings the number of parties required to trigger the entry into force of the convention to 35. [32]According to Article 36 of the convention, its entry into force is due on the ninetieth day after the thirty-fifth instrument of ratification, acceptance, approval or accession is made.[33]

Currently, the convention has only twenty four (24) parties with Burkina Faso being the latest state to become a party.[34] Despite the struggles the convention has gone through before its entry into force, ithas and is increasingly becoming more influential in watercourse agreements and perhaps the more reason why meeting the thirty-fifth party mark became a difficult target to achieve. For instance, only a few months after its adoption, the International Court of Justice in

the Gabcikovo-Nagymaros Project case, made reference to the convention in its ruling,35 thus giving credence to its ability to addressing watercourse disputes. The revision of the Protocol on Shared Watercourses of the Southern African Development Community in 2000 is yet another typical example of the influence the convention has chopped in smaller watercourse agreements.[36]

4. The Importance of The Convention

Speaking on the current status of the convention to the European Parliament, the chairman of the Green Cross France, elaborated on the importance of the Convention, reiterating that with water rising in the international agenda, the convention is the spotlight to turn back to.[37] Even though cooperative management exists at very few of the world's river basins, most of them do not involve all the shared states and even where all the interested states are involved, inadequacies such as floods and droughts, lack of dispute settlement mechanisms and no time limits for consultation and negotiation processes exist.38 All these gaps are filled by the UN IWCC.

The UN IWCC opens with a call for 'international cooperation and good-neighbourliness'39 in the area of shared watercourses. Its importance is therefore harnessed by the fact that it is a framework for cooperation and consultation among states with stake on a common watercourse.

With regards to the structure and scope of the UN IWCC, it is very exact with its provisions and leaves no gaps for misinterpretation and possible sources of disputes. The definition of the scope of some basin agreements is ambiguous for example, the use of 'the Mekong River

system'40 in the Mekong River Basin Agreement. The UN IWCC applies to non-navigational uses of international watercourses41 and assigns very precise definitions[42] to all the terms used to avoid any possible conflicts.

A major strength of the UN IWCC is the striking balance it has made in terms of meeting the aspirations of both lower and upper riparians in the use of shared watercourses. Watercourse states are entitled to utilize an international watercourse in their respective territories in an 'equitable and reasonable' manner.43 While it is not opposed to optimal utilization of watercourses, it encourages participation and imposes a 'duty to cooperate' in the protection and development of watercourses.[44] Lower riparians are usually concerned with how much water is available for their needs but more importantly, the impacts of uses by upper riparians are increasingly becoming problematic.[45] Uses such as irrigation by upper riparians alter both the flow and quality of the water running down to lower riparians. Hence, Article 6 outlines the relevant factors that should be considered in utilizing watercourses with the aim of sustaining the environment. Article 7 calls on watercourse states to 'take all appropriate measures to prevent the causing of significant harm to other watercourse States' and where nonetheless harm is caused, to take 'all appropriate measures, having due regard for the provisions of articles 5 and 6, in consultation with the affected State, to eliminate or mitigate such harm.'[46]

As a framework for cooperation, states are granted the choice to decide whether or not the establishment of a joint commission will boost their relationships or not. Data and information sharing relating to the condition of the watercourse and any other forecasts that are capable of informing other watercourse states is encouraged and member states can request for further information from other states.[47]

Planned measures and the issues that come with them are systematically outlined and addressed in part III of the UN IWCC. Notification of planned measures with possible adverse effects, time limits for the reply to such notifications and the obligation on the notifying state to assist the notified state with further information are all addressed.48

Dispute resolution is not a science of management but an opportunity to transform such disputes into creative cooperation.49 This is the basis of dispute settlement under the convention. Negotiations, jointly seeking the good offices of, mediation and conciliation by a third party, use of joint institutions and submission of dispute to an arbitration or the International court of Justice are the methods to adopt under the convention in the peaceful settlement of disputes.50 The method to use must be agreed upon by both parties and are not obliged to any one of them. This further deepens cooperation and ensures trust in the outcome of the settlement.

All these essential areas addressed by the convention make it a perfect framework 'fit for purpose' for the sustainable utilization of shared watercourses. Emergency issues are well addressed and the duty to make conscious effort not to harm other watercourse states is well embracing.

5. The Volta Basin

Geographically, the Volta basin is located in the western part of Africa as shown in box 3.1 below. Shared by six (6) different countries namely Burkina Faso, Ghana, Togo, Mali, Cote d'Iviore and Benin, the basin covers a land area of 400,000 Km2 with Ghana and Burkina Faso occupying approximately 80% (almost equally shared) while the remaining 20% is occupied by the other four riparian countries.[51]

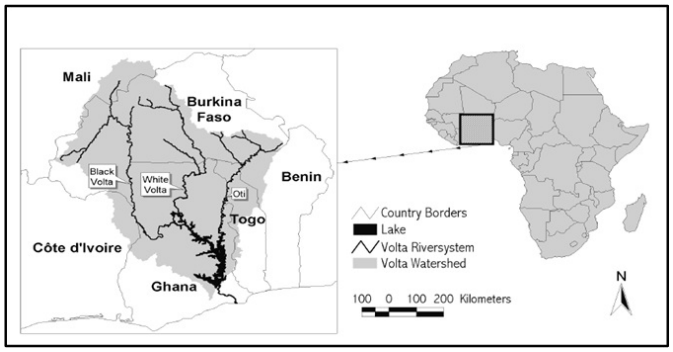

Figure 1. The Volta basin

The basin is largely drained by three major tributaries: the Red Volta (also referred to as river Oti), the White Volta and the Black Volta with mean annual run-off patterns of 11,215 x 106, 9,565 x 10^6 and 7,673 x 10^6 respectively[52], all of which originate from different parts of Burkina Faso. Ghana occupies the lower zone of the basin and thus the sole lower riparian, sharing all the river systems with either one or more of the other riparian countries.

6. Water Use in the Volta Basin

The Volta basin is characterized by diverse uses at different scales. Water use within the basin fall within four broad categories namely: Hydro power generation, Irrigation activities, Domestic water supply systems and Industrial uses.

Akosombo dam, the first hydropower plant constructed within the Volta basin, was built in 1965 with a 588 MW capacity to serve as a major step to industrialization and economic growth after the attainment of Ghana's independence. The capacity was subsequently increased by 324 MW in 1972 and between 1999-2005, the total power generation capacity was upgraded to 1020 MW.53 A further 239 MW small capacity dam was also built downstream of the Akosombo dam at Kpong to meet the

growing demands of power. Electricity supply in Burkina Faso is only around 10% to households and about half of this capacity is supplied by southern countries with the remaining taken care of by the Bagre and Kampiega hydroelectric plants in Burkina Faso.[54]

Irrigation activities in all the six riparian countries are spread across these states with some of these areas within the basin coverage. Approximately 67% and 64% of Burkina Faso and Ghana fall within the basin area respectively. It is estimated that 142,000 ha of irrigated area of Burkina Faso falls within the basin area, 90, 000 ha of Togo's irrigated land is within the basin and about 25,000 ha of Cote d'Ivoire's irrigated land is within the basin while about 1.2 million ha of Ghana's irrigated land is within the basin area.[55] In all, a total of 1,487,000 ha of irrigated lands are within the basin area. Cote d'Ivoire, Burkina Faso and Mali have long histories of rice production at multiple scales.

These countries are dent on ensuring secure food supply to reduce the reliance on imports. Although rice production on rainfed lands is the most cost effective and productive way of producing rice[56] to meet this objective, unpredictable rainfall patterns have gradually shifted the dependence on rains by rice producers to irrigated lands. This deepens the dependence on the Volta river systems. Between 2000-2005 where there was a major decline of water level in the volta river, rice production was drastically affected in all the shared countries apart from Benin. Perhaps this is attributable to the small share of irrigated lands in this state. Countries such as Ghana and Burkina Faso were worst hit while Togo, Mali and Cote d'Ivoire though experienced decline in yields were moderately affected.[57] This reiterates how significant the river is to all the countries especially Ghana and Burkina Faso. 'Vulnerability of household water insecurity is a widespread problem in the basin.'58 Access to good drinking water is a major problem for developing countries especially in areas characteristic of high variability in rainfall patterns. Water is abstracted from the basin for the purposes of household water supplies. For example, the Ghana Water Company Limited abstracts water from the Volta River at Kpong; one of the two water reservoirs in Accra (the capital) for the purposes of domestic water supply.59 Various quantities are abstracted for same purposes across the length and breadth of the country.

In Burkina Faso, the Loumbila reservoir on a tributary of the Nakanbe (which enters Ghana at the border as the white volta) currently supplies water to the capital. Due to anticipated high population growth rates, the Ziga reservoir was built on the Nakanberiver itself to cater for any deficit in water supply. The Bagre Dam mainly serves the purposes of hydro power generation

and is sited downstream of the Ziga reservoir (see box below). Other dams include the Lac de Bam and the Toece Dams mainly for the sustenance of irrigation activities.[60]

Figure 2. Source:Schönige, M., (2005)

Major industries such as the Pure Company Limited of Ghana abstract water from the volta river systems to support their operations.61 Dredging of the Volta River systems is also common practice with large mining companies. Other minor uses include navigation around the water body created by the Akosombo dam and this is solely dependent on the volume of water available.[62]

7. Transboundary Water Management in the Volta Basin

Despite the fact that each of the riparian countries has interest in the Volta basin, there was no formal coordination of the activities within the basin until the establishment of the Volta Basin Authority (VBA) in 2006.63 Before this time, each country used and managed the Volta river systems within its jurisdiction independent on the other states though adverse impacts may be imposed on neighbouring countries. Projects were undertaken without any prior communication between interested states. For example, the Akosombo dam though solely relies on influxes of water from upstream states for power generation, no communication was made between Ghana and the upper riparian states so as to ensure that water is allowed to arrive at the dam.[64]

A similar incident occurred in the case of the Bagre Dam of Burkina Faso. However, in line with the World Bank's operational policies on projects on international waterways which requires that for the bank to finance any project on international waterways, '... the beneficiary state, if it has not already done so, formally should notify the other riparians of the proposed project and its details,'[65] Burkina Faso in 1996 invited a Ghanaian delegation to visit and assess the project site for the ziga dam and subsequently signed a 'no-objection' document to pave way to the start of the project.[66] This then served as a lee way for more formal engagement between Ghana and Burkina Faso on the state of the Volta basin.

However, the need for more formal coordinated efforts was realised in 1998 when water level in the Akosombo dam fell short following which Ghana blamed

Burkina Faso for withholding more water from coming downstream.[67] This led to power crisis in Ghana. This also affected

Ghana's energy export to Benin and Togo. The attention of development partners as well as independent institutions was thus drawn to the need to create a more formalised platform for effective coordination to ameliorate any future conflicts.

To this effect, IUCN initiated a "Project for Improving Water Governance in the Volta River Basin" to bring together the two major users, Ghana and Burkina Faso to agree on cogent water management principles and formal institutional mechanisms within the basin.[68]

In July 2004, the Volta basin technical committee (VBTC) was created with a membership of two experts each from the six riparian states. It was mandated to identify the issues and challenges towards the establishment of an institutional body for the Volta basin.[69] The work of the VBTC led to the signing of a memorandum of understanding by the ministers in charge of water resources for all the states, to create the VBA and also draft a convention for the basin.[70]

The draft convention was approved by the council of ministers in July 2006, and Ougadougou, the capital of Burkina Faso was agreed upon to be the Headquarters of the VBA.[71] Coordination of activities in the Volta basin is thus coordinated as such. The diagram in box 3... shows the series of events and drivers that led to the formation of the VBA.

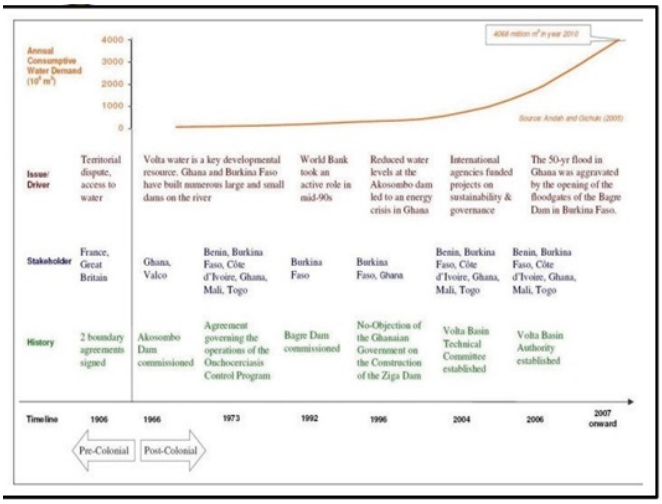

Figure 3. Sequence of Transboundary water management in the Volta Basin. Source: Yongxuan G., & Amy M., (2009)

8. The Volta Basin Convention (VBC)

The signing of the VBC itself by all the riparian states is a major step towards cooperation and the readiness of all the states to regularise their activities within the basin. For countries such as Ghana, the signing of the Convention was not just for the amelioration of potential conflicts within the basin especially between Ghana and Burkina Faso, but also a 'manifestation of the policy of good neighbourliness and economic integration.'72 The suitability of the Convention to addressing the challenges of water use within the basin is not questioned at this stage as it is seen as a step in the right direction.

8.1 The VBC in the Light of the Analytical Framework

Customary International Law as well as the UNWCC follows an analytical framework in their provisions to incorporate the most important elements in most watercourse agreements. These key elements include:73

1. Scope
2. Substantive rules
3. Procedural rules
4. Institutional mechanisms
5. Dispute settlement

This section seeks to critically analyse the VBC in the light of these key elements and to evaluate its suitability in terms of addressing the key transboundary water issues in the volta basin.

'Scope' is an important element that sets the geographical, hydrological and use limits of every agreement. It also identifies the parties to which such agreements may be applicable to.[74] There are eminent issues with the non-specificity of the scope of some legislations and this have led to disputes in some cases. The River Oder case is a practical example of dispute ensuing between states over boundaries relating to the scope of an international watercourse agreement. In this particular case, the court was asked to make a ruling on the following: 'Does the jurisdiction of the International Commission of the Oder extend, under the provisions of the Treaty of Versailles, to the sections of the tributaries of the Oder, Warthe (Warta) and Netze (Notec), which are situated in the Polish territory, and, if so, what is the principle laid down which must be adopted for the purpose of determining the upstream limits of the Commission's jurisdiction?'[75]

Although the details of the court's decision are not discussed in this paper, this case typifies disputes arising out of scope. Article 2 of the VBC stipulates that the Volta River and its tributaries as well as sub-tributaries within Ghana, Benin, Mali, Togo, Cote d'Ivoire and Burkina Faso are an international river.[76] Reservoirs, lakes, groundwater, wetlands, aquatic and land ecosystems linked the basin are also under the jurisdiction of the convention.[77] Thus any of these states becomes a state party after ratifying the convention.78 Navigational uses are permitted79 and states could also enter into agreements regarding

other uses and projects at any portion of the basin.[80] While this may seem simple for member states to do, the inability of the convention to specify such uses permissible could spark conflicts between states in the future. Emerging uses other than those already known may be difficult to agree upon.

8.2 Substantiverules

The principles of equitable utilization and no harm rule emerged out of state practice81 and relations on internationally shared watercourses and have since evolved over the years. In the light of the VBC, member states are encouraged to use water in the basin in an 'equitable and reasonable manner' and to ensure that no damage is caused.[82] Unlike the UNWCC, no factors are provided to serve the basis of whether a particular use is reasonable and equitable.

8.3 Institutional mechanisms and Procedural rules

The rules of entitlement are only attainable through cooperation, prior notification of planned measures, exchange of data and information and negotiation.83 While all these provisions are made in the VBC[84], no time limits are assigned to these processes as provided for in the UN IWCC. The VBA is an institution established under the VBC with the status of an International Organisation85 to among other things 'promote permanent consultation tools among the parties for the development of the basin.'[86] Even the statutes of the volta basin authority developed to 'organise and reinforce consultations among the riparian countries'[87], does not fully address this.

8.4 Dispute settlement

Consistent with the UN Charter[88], member states of the Volta basin are encouraged to peacefully resolve their disputes through negotiation, conciliation and mediation within the VBA and thereafter, submit such disputes to the Economic Community of West African States, or Africa Union and subsequently to the International Court of Justice if no amicable solution is arrived at.89 Again, these provisions are not detailed and issues such as 'how' and at 'what stage' are not addressed.

9. Challenges of the VBC

9.1 Inadequate Provisions for the Protection of the Environment

Apart from the obligation to protect and conserve ecosystems provided in the VBC[90], no other provision is made in relation to the environment. Very important environmental issues such as prevention, reduction and control of pollution, introduction of alien species, preservation of the marine environment, regulation of the flow of waters and sound operations of installations on the watercourse as comprehensively addressed in Part IV of the UN IWCC[91], are not addressed in the VBC.

9.2 Inadequate Response to Emergency Situations

While member states within the Volta basin are required to notify other member states of emergency situations92, the meaning of an 'emergency situation' itself is not defined in the VBC. The process of notification, time to effect such notifications as well as the steps to mitigating effects of these emergencies are not heeded to. The UN IWCC stipulates that, in the event of an emergency situation, 'a watercourse state shall, without delay and by the most expeditious means available, notify other potentially affected States . . . '[93] Furthermore, the state is obliged to 'take all applicable measures' to 'prevent, mitigate, and eliminate' the effects of such emergencies.[94] The UN IWCC deals more appropriately with the harmful conditions and emergencies and thus well oriented to supplement the VBC in this light.[95] Inadequate Protection of Vital Human Needs

As mentioned earlier, the substantive principles of equitable and reasonable utilisation and the duty not to cause significant harm are explored by both conventions. However, among the relevant factors as per the provisions made in the UN IWCC to consider whether a particular use is equitable and reasonable or not, the social and economic needs of states are given due recognition.[96] Additionally, in the event of conflict of use situations, special regard is being given to human needs.[97] This ensures that human needs are not compromised for other projects in the name of 'equitable and reasonable' utilisation.

9.3 Inadequate Provisions for the Notification of Planned Measures

Notwithstanding the obligation to notify other states of planned measures encapsulated by both conventions, only the UN IWCC deals more detail with notification. The time to allow for replies to be made, giving further information of such planned measures if requested and the steps to take should a state fails to reply to a notification within the prescribed time[98], are all spelt out in the UN IWCC. This in itself is a catalyst for proper evaluation of projects and prevents the hasty implementation of projects which often are not environmentally sustainable.

Although the UN IWCC is argued to have struck a balance between upstream and downstream interests99, the type of uses within a particular basin, the dependence of a particular state on the shared watercourse(s) and how routinely a state is adversely affected by the activities of others states accounts for how significant it will be for such states to advocate for the ratification and subsequent entry into force of the UN IWCC.

As indicated earlier, Ghana occupies the lower zone of the Volta Basin and shares all of the

tributaries of Volta River with either one or more of the other states. irrigation activities within the basin is

purported to make astronomic increases[100] perhaps to meet the millennium development goals and increase food security. Ghana thus serves as the recipient of all the discharges from the rest of the states.

Flooding in certain parts of Northern Ghana is now becoming an annual ritual. In 2010, several lives were lost as a result of the instantaneous spilling of the Bagre Dam by the Burkinabe authorities, with several other properties and farms submerged and destroyed.[101] Fear now grips the farmers of northern Ghana as many of them hold the view that it might be a waste of resources taking to farming this year.[102] This part discusses the add-ons of the UN IWCC to the VBC.

10. CONCLUSION

Water is gaining more attention at the global level. Yet a tall list of conflicts between states over shared watercourses exists and tensions are still brewing between states. Such conflicts are not peculiar to only watercourses without any agreement but also those with agreements that do not deal appropriately with the substantive rules of use.

The Volta basin is only one of the many river basins with agreements that do not address the issues that spark up conflicts between nations. While the joint agreement of all the riparian states to unanimously manage the Volta basin holistically is commendable and a sign of good neighbourliness, important details of the VBC must not be ignored. The UN IWCC is a perfect framework that addresses all the issues relating to shared

watercourse. This stems not only from its use in dispute settlement by the courts soon after its adoption, but also its influence in the drafting of new agreements and the amendment of existing once to include some of its key provisions. Fortunately but not enough, Burkina Faso has acceded to the UN IWCC. Burkina Faso and Ghana are the two major users of the Volta basin and Burkina's accession to the convention is a further commitment to the sustainable use of the basin and it is time Ghana and the rest of the riparian countries do same.

While the scope of the VBC is undisputed, the principles of equitable utilisation and the obligation not to cause harm are skeletal and do not clearly define the rules of entitlement. The UN IWCC, elaborates some key factors that should be considered in justifying whether a particular use is equitable and reasonable. These factors also provides for environmental and social considerations. The further address issues that may arise in instances where two uses are both equitable and reasonable and which should be given priority, it provides for human needs to be given consideration first. The VBC have no provisions in relation to these.

Procedural mechanisms such as negotiations, consultation, notification, exchange of data and information are all specified in the VBC. However, these are not addressed into detail. The time limits for these processes to occur are not specified as clearly outlined in the UN IWCC. Emergency measures and the issues that come along with them are all fully addressed in the UN IWCC and thus an antidote to the numerous issues that culminate the yearly spilling of the Bagre dam and the flooding in Ghana and neighbouring Cote d'Ivoire that comes with it.

Hydropower generation still remains one of the most reliable and cost effective sources of energy at least within the Volta Basin and thus, the shared states must harness on cooperation to sustain the power generation capacities of existing hydro dams within the basin.

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