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LAND AND WATER RESOURCES ACROSS NIGERIA: MAXIMIZING RESOURCES POTENTIAL TOWARDS RESOLVING HERDERS-FARMERS CONFLICT

Introduction

This piece provides some basic data about Nigeria land and water resources which is at the center of the present conflict among different users across the states and geopolitical zones. The pressure on land and water has become multiplied due to population increase and climate change realities.

However, a quick look on the available land resources and the distribution of water development infrastructure such as dams, show that the utilization over the years have been skewed really unevenly. It is constitutional to argue in favor of free movement and siting of businesses anywhere as citizens, however, inability to fairly and scientifically allocate finite resources like land and water in the most sustainable way surely aggravates conflict among stakeholders. Therefore, it is important to explore what is available in terms of land and water resources, where do we still have higher advantage/potential and how best can these be managed going forward.

Table 1: Nigeria States, land area, population and Ecological zone

States	Land area (sqkm)[1]	Population 2016 estimate[2]	Pop density (persons/sqkm)	Geo Political Zones	Ecological zone[3]
Borno	72609	5,860,183	80.7	NE	Sudan Savannah
Niger	68925	5,556,247	80.6	NC	Guinea Savannah
Taraba	56282	3,066,834	54.5	NE	Guinea Savannah
Bauchi	49119	6,537,314	133.1	NE	Guinea Savannah
Yobe	46609	3,294,137	70.7	NE	Sudan Savannah
Kaduna	42481	8,252,366	194.3	NW	Guinea Savannah
Adamawa	38700	4,248,436	109.8	NE	Sudan Savannah
Zamfara	37931	4,515,427	119.0	NW	Sudan Savannah
Kebbi	36985	4,440,050	120.1	NW	Sudan Savannah
Kwara	35705	3,192,893	89.4	NC	Guinea Savannah
Benue	30800	5,741,815	186.4	NC	Guinea Savannah
Nassarawa	28735	2,523,395	87.8	NC	Guinea Savannah

[1] Source: Nigeria Bureau of Statistic (2010) – Data from Office of the Surveyor General of the Federation

[2] Demographic Statistic Bulletin (2018), Nigeria Bureau of Statistics

[3] Samuel Olajuyigbe (2018). Green gold of Africa: Nigeria's forest, a depleted but resilient renewable resource. Forest Perspective. Irish Forestry 2018, Vol. 75. pp 92 - 112

Sokoto	27825	4,998,090	179.6	NW	Sudan Savannah
Kogi	27747	4,473,490	161.2	NC	Guinea Savannah
Plateau	27147	4,200,442	154.7	NC	Guinea Savannah
Oyo	26500	7,840,864	295.9	SW	Guinea Savannah
Katsina	23561	7,831,319	332.4	NW	Sudan Savannah
Jigawa	23287	5,828,163	250.3	NW	Sudan Savannah
Cross River	21787	3,866,269	177.5	SS	Moist Rainforest
Kano	20282	13,076,892	644.8	NW	Sudan Savannah
Edo	19187	4,235,595	220.8	SS	Dry Rainforest
Delta	17108	5,663,362	331.0	SS	Moist Rainforest
Gombe	17100	3,256,962	190.5	NE	Sudan Savannah
Ogun	16400	5,217,716	318.2	SW	Dry Rainforest
Ondo	15820	4,671,695	295.3	SW	Moist Rainforest
Rivers	10575	7,303,924	690.7	SS	Fresh Water Swamp
Bayelsa	9059	2,277,961	251.5	SS	Fresh Water Swamp
Osun	9026	4,705,589	521.3	SW	Dry Rainforest
FCT	7607	3,564,126	468.5	FCT	Sudan Savannah
Enugu	7534	4,411,119	585.5	SE	Sudan Savannah
Akwa Ibom	6900	5,482,177	794.5	SS	Moist Rainforest
Ebonyi	6400	2,880,383	450.1	SE	Sudan Savannah
Ekiti	5435	3,270,798	601.8	SW	Dry Rainforest
Imo	5288	5,408,756	1022.8	SE	Dry Rainforest
Abia	4900	3,727,347	760.7	SE	Moist Rainforest
Anambra	4865	5,527,809	1136.2	SE	Dry Rainforest
Lagos	3671	12,550,598	3418.8	SW	Fresh Water Swamp

NOTE:

The charts are based on the data from the references cited above. The details are in Reference section

WHERE DO WE HAVE EXTRA LAND RESOURCES FOR AGRICULTURAL DEVELOPMENT?

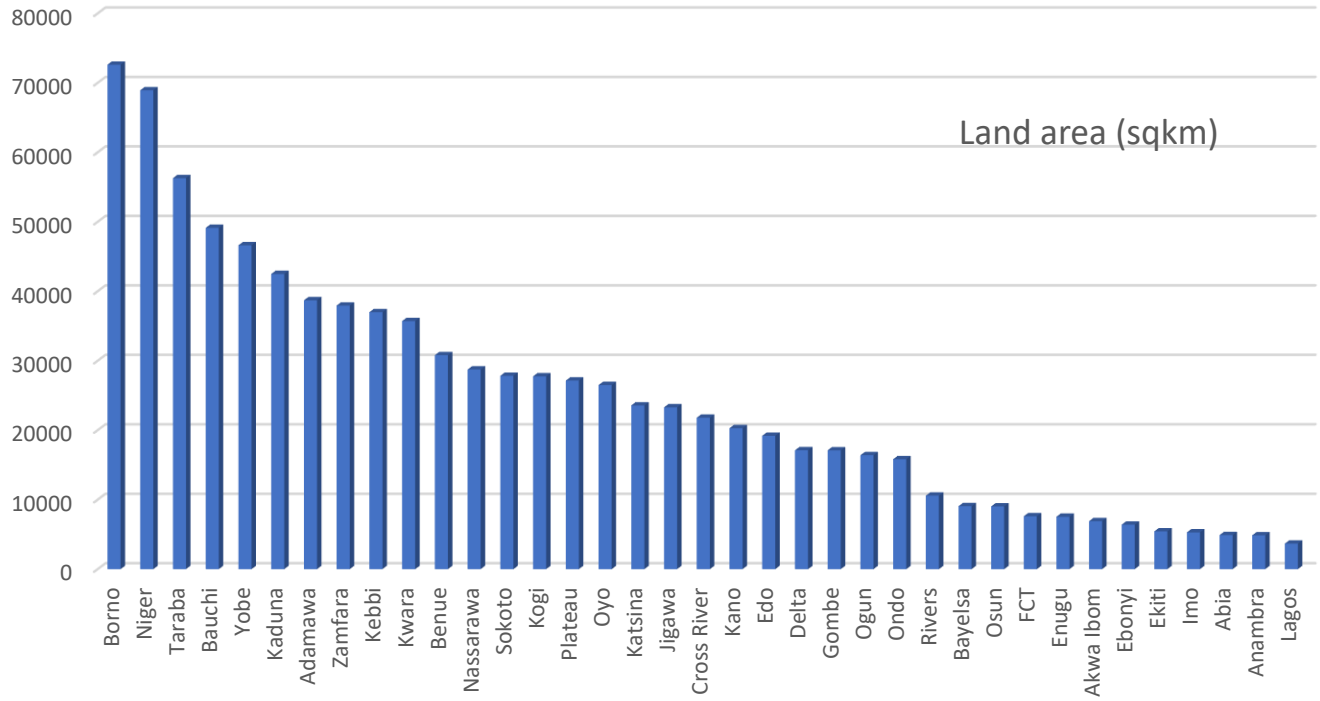

Figure 1: Nigeria states and Land Area (NBS, 2010 - Data from Office of the Surveyor General of the Federation)

OBSERVATION 1: The North has about 4 times the land mass of the south

- 11 Northern states are bigger than the entire SE geopolitical zone (Table 3). Borno for instance is 2.5 times the land area of the entire south east

Table 3: Land area of 11 Northern States compared to the South East land area

States	Land area	x South East Land area
Borno	72609	2.5
Niger	68925	2.4
Taraba	56282	1.9
Bauchi	49119	1.6
Yobe	46609	1.6
Kaduna	42481	1.5
Adamawa	38700	1.3
Zamfara	37931	1.3
Kebbi	36985	13

Kwara	35705	1.2
Benue	30800	1.1

- The land area in the North is about 4 times the land area of the South.

	Land Area (sqkm)	Population	Pop density (persons/sqkm)	Remark
North	723,570.0	100903458	139.4522	The north is about 4 times (3.74) the South in land mass
South	193,777.0	89041962	459.5074	
FCT	7315.0	3564126	487.2353	

- The North East and North West hold about 54% of the total land area in Nigeria (Figure 2). States in these geo political zones have high potential for agriculture with shallow groundwater for irrigation.

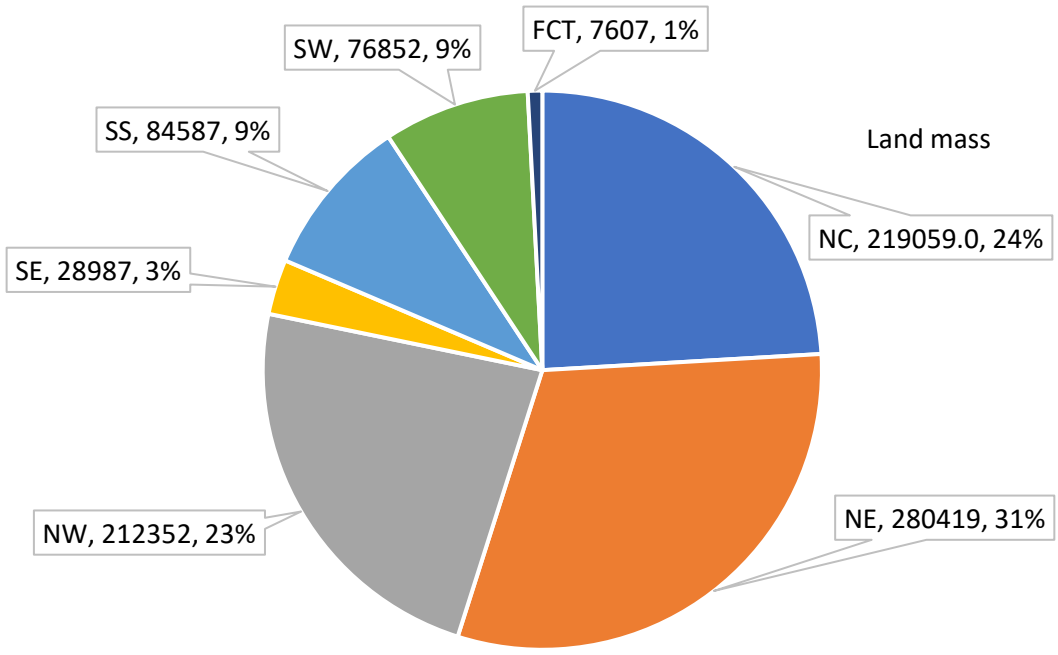

Figure 2: Available land mass across the 6 geopolitical zones in Nigeria as percentage of total land area

WHERE DO WE HAVE HIGHER PRESSURE ON LAND FOR SETTLEMENT AND DEVELOPMENT?

OBSERVATION 2: Many states in the South have high population density with pressure on social amenities which in any case are short supply. The population density in the South is already many folds above the national average of 212 persons/sqkm (using the 2016 population estimate)

- Population density in the North range between 644persons/sqkm in Kano and 54 persons/sqkm in Taraba whereas Lagos has a population density of 3418 persons/sqkm while the lowest population density in the South is observed in Cross River state with 177 persons/sqkm (Figure 3)
- There is huge pressure on land for industrial development, housing and agricultural development in the South. It is already hitting a crisis point with the pressure from herders who have huge alternative in the North (Table 4)

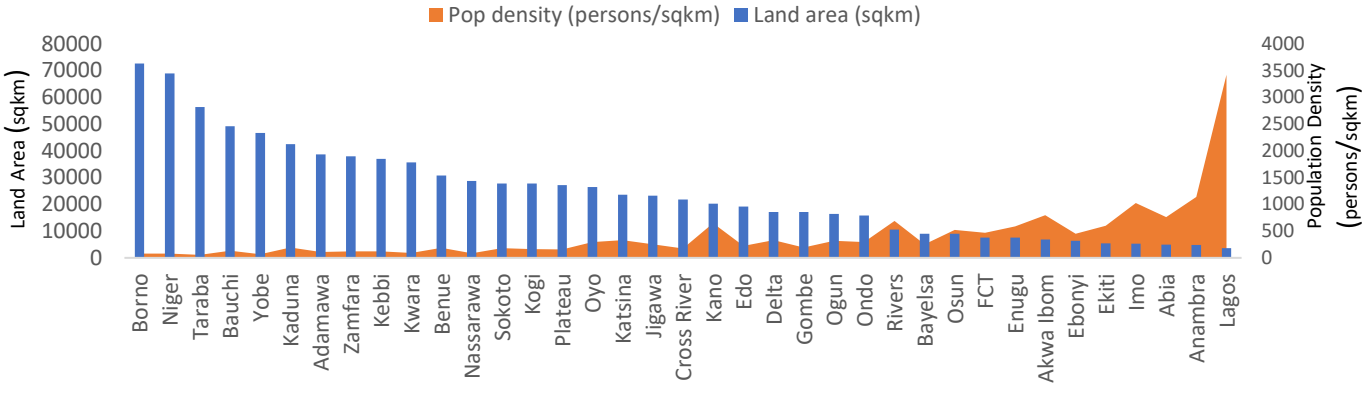

Figure 3: Nigeria states - land mass and population density

Table 4: Highest and Lowest population density across the North and South

Population density	South (persons/sqkm)	North (persons/sqkm)
Highest	Lagos (3418)	Kano (644)
Lowest	Cross River (177)	Taraba (54)
FCT	468	

- With the exception of Kano (644), Katsina (332) and Jigawa (250), all other northern states have population density less than the National average (212 persons/sqkm).
- Presently, all the states in the South (SE, SW and SS) except Cross Rivers have population density above the National average.

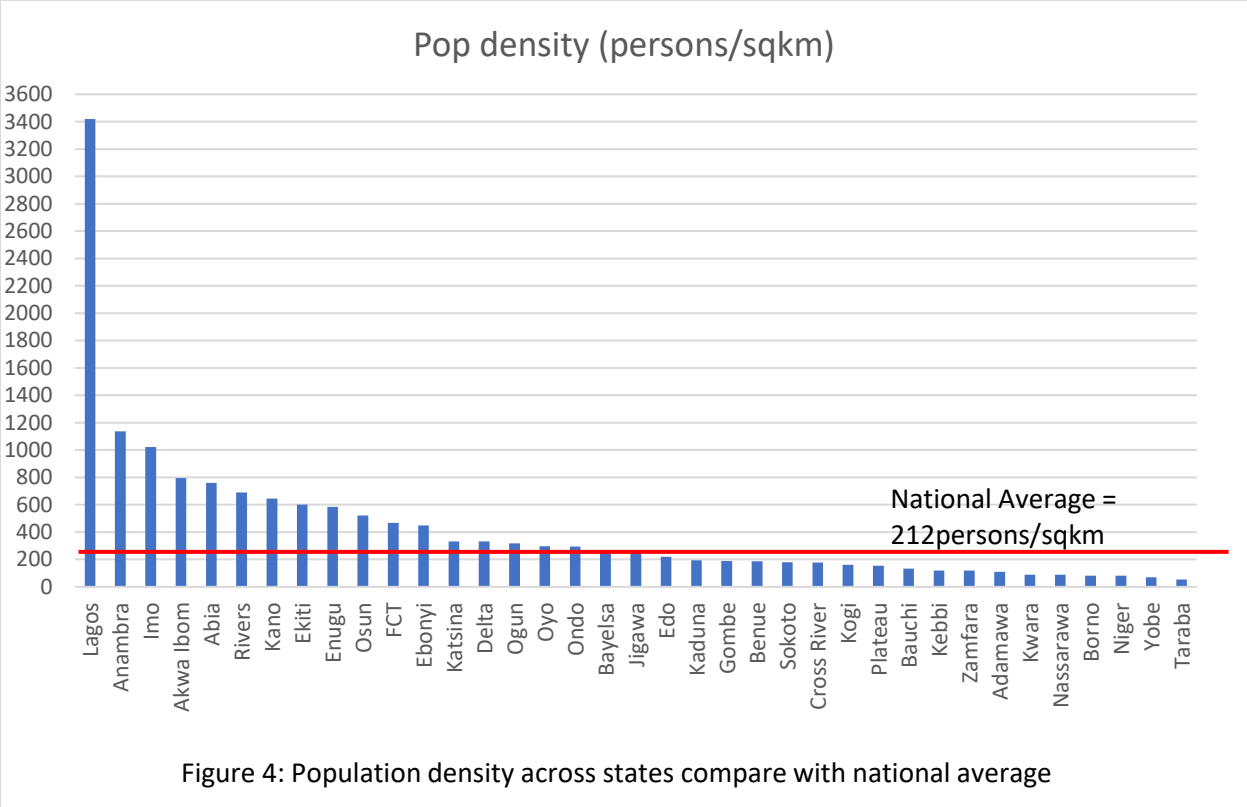

Figure 4: Population density across states compare with national average

WHERE DO WE HAVE MORE LAND RESOURCES FOR RANCHES?

OBSERVATION 3

The possibilities of establishment of ranches cut across many states in the North and South. However, in terms of the volume of land mass required, such land area is no longer feasible in the many of the Southern states as established in Section 2.

- If grazing is possible in Oyo State, it is possible in Niger, Kaduna, Plateau, Bauchi, Kano, Zamfara and Katsina.
- These states have either completely or areas with the same ecology – Guinea Savannah as Oyo State. (Figure 5)
- These 7 states have a combined land area of 269,446 sqkm which is 1.4 times the entire Southern Nigeria or 9.3times the South East
- With pressure on the south with high population density, ranches are not feasible in the South without huge displacement to human settlement.
- These are the reasons why RUGA, CATTLE COLONY and lately WATER RESOURCES BILL (with the provisions that seeks to take control of land areas along river course by FG) will be resisted fiercely

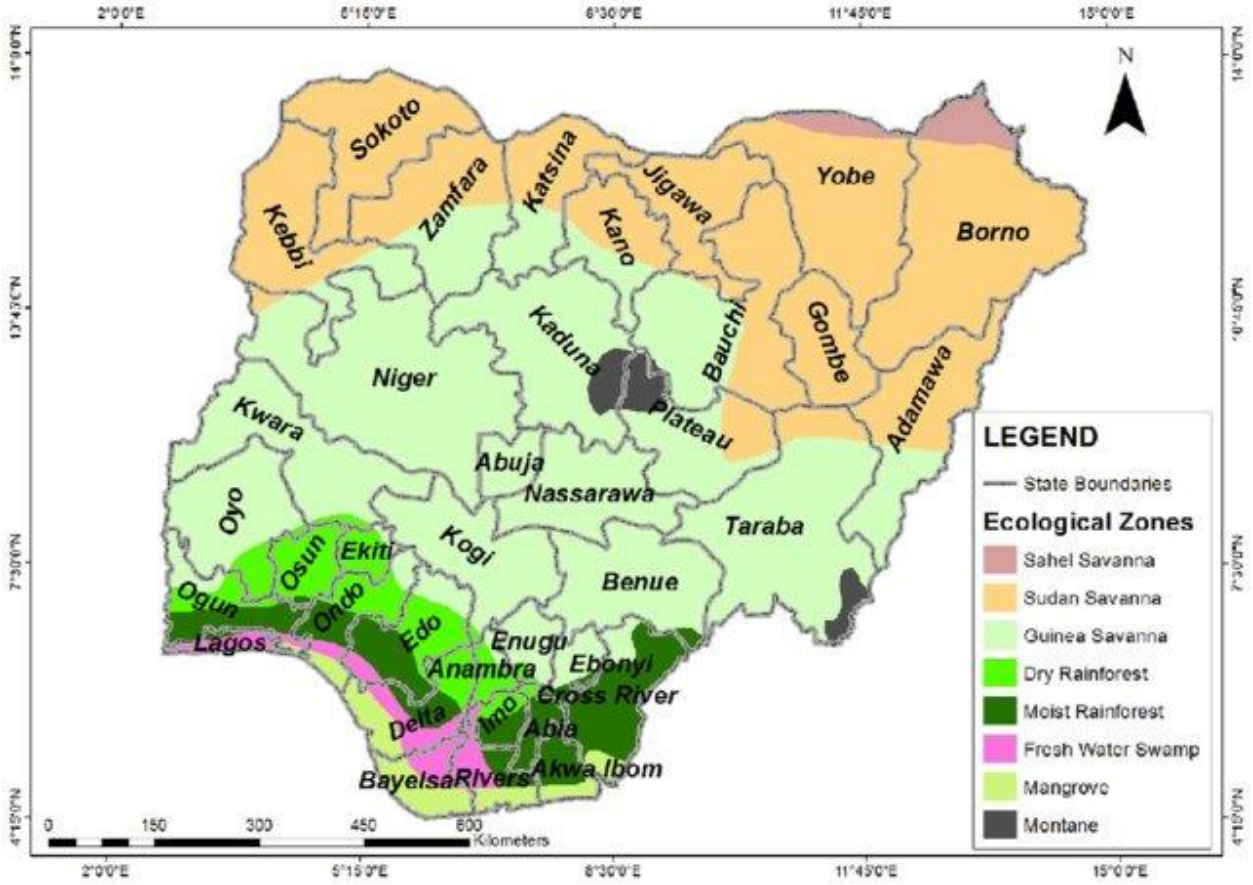

Figure 5: Nigeria Ecological Zones (Samuel, 2018)

WHERE DO WE HAVE MORE ADVANTAGE AS REGARDS WATER RESOURCES DEVELOPMENT AND IRRIGATION?

OBSRVATION 5

Dams and developed water infrastructure are more in the North than in the South. There has been a strategic development of water resource in the north as against the south. **Not a single irrigation dam is FULLY COMPLETED IN THE SOUTH – with irrigation infrastructure (intakes, canals, equipment etc.) in place and functional – NOT A SINGLE ONE!**

BY 2030: THE WATER INFRASTRUCTURE WILL NOT BE SUFFICIENT TO MEET THE WATER DEMAND

- Isaiah and Abubakar (2013) in a study revealed that there are 323 large, medium and small dams, which have been constructed and are being operational in Nigeria. They have a total storage capacity of more than 30×10^9 m3 or 30 Billion Cubic Metre. Eighty-five percent of the larger dams are located in the Sudano-Sahelian zone of the country.
- Comparing 90% dependable available water, 9,020 million cubic metre (MCM/year) of water is feasible with the existing dams which are already operational (at various degree of use) in the North as against 3,863MCM/year of water in the South with existing dam infrastructure. (Table 5)

- If the uncompleted dams (UC) are added, the volume of water available become 11,264 MCM/year and 5465MCM/year in the North and South respectively.
- The water demand by 2030 is projected to be 7491 million cubic metre (MCM/year) in the north and 6698 MCM/year in the South (Table 5).

Table 5: Hydrological area, Dams and Water Demand across the Geopolitical zones

		90%Yearly Dependable (MCM/Year)		80%Yearly Dependable (MCM/Year)		Water Demand (MCM/year)	
		90%Yearly Dependable (MCM/Year)		80%Yearly Dependable (MCM/Year)			
Inserted	Hydrologi-cal Area.	with existing dams	with existing & UC dams	with existing dams	with existing & UC dams	Existing (2010)	Future (2030)
NORTH							
NW	HA-1	1,190	1,208	1,665	1,666	489	754
NW, NC	HA-2	2,032	2,466	3,218	3,492	796	1,783
NE	HA-3	2,195	2,306	2,421	2,594	172	1,679
NW, NC	HA-4	2,496	4,177	3,993	5,097	275	2,405
NE	HA-8	1,107	1,107	1,348	1,348	411	870
	TOTAL	9,020	11,264	12,645	14,197	2,143	7,491
SOUTH							
SS, SE	HA-5	2,098	3,069	6,000	6,402	1,150	4,660
SW	HA-6	1,306	1,840	2,086	2,324	345	1,697
SS, SE	HA-7	459	556	1,427	1,502	89	341
	TOTAL	3,863	5,465	9,513	10,228	1,584	6,698
N.B: Supply Capacity – MSFR (without Large hydropower dams (Kainji, Jebba and Shiroro) ***							

Source: From JICA, 2014

- This shows that by this projection – by 2030 – the South will not be able to meet its water demand from the existing water infrastructure except with further development. The available water in the North is expected to be in excess to meet future demand (at 90% yearly dependable available water) (See Table 6)
- Water Demand by 2030 = 6698MCM/year while Potential Available Water from Existing infrastructure (with uncompleted dams) = 5465MCM/year

Table 6: Future water demand and available water from existing dams

	North	South
Present Water Demand - 2010 (MCM/year)	2143	1584
Water Demand Projected – 2030 (MCM/year)	7491	6698
Potential available water from Existing Dams including the uncompleted (MCM/year)	11264	5465

- Water and irrigation are key to the development of cattle ranches
- Is the FG and various southern states government making efforts to increase water infrastructure to mitigate this deficit by 2030? Can the states in the afford adding water demand from cattle to already stressed water infrastructure if the water required for ranches are added?
- What is the justification for considering location of ranches – RUGA, Cattle Colony in the south when the land and water resources for such business are available in NE and NW especially?

There is a huge land and water resources advantage presently in the North. Beyond politics, ranches may be feasible in parts of the South, the Northern states of NE and NW have comparative advantages in this regard and this should be better exploited.

References

- Source: Nigeria Bureau of Statistic (2010) – Data from Office of the Surveyor General of the Federation
- Demographic Statistic Bulletin (2018), Nigeria Bureau of Statistics.
- Samuel Olajuyigbe (2018). Green gold of Africa: Nigeria's forest, a depleted but resilient renewable resource.
- Forest Perspective. Irish Forestry 2018, Vol. 75. pp 92 – 112
- Nigerian Water Resources Master Plan – JICA 2014

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