Reconfiguring South Sudan: Breaking the Deadlock with 20 States and 9 Federal Territories

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Summary

The proposal developed an objective criteria for creating states and sharing power and wealth among states. In fact, the study demonstrated that the number of states is less important as long as boundaries and criteria for creating states and equitably sharing power and wealth are fair, rational and meet people's aspirations.

Population, Geographical area and Ethnic factors were utilized to develop the criteria. These factors, in interplay, influence peaceful coexistence, economic viability, development and promotion of traditional heritages and native languages and construction and consolidation of national unity, integration and identity.

Population and geographical area (size of the land) determines economic viability of a state. Land size, location, natural resources (minerals, hydrocarbons, etc) and agricultural soil fertility constitute major contributions to the economic potential and productivity of a state. Population and geographical area size are also critical in national revenue sharing and political power dispensation at national, state and local levels.

All the factors constituting the criteria were given 200 points in total as a way of quantifying them. The study assigns 60 points to population (people need services) and 40 points to geographical area (the services have to be delivered over a distance) whereas ethnic elements of ethnic factor; ethnic language (NEL), homogeneity and harmony were assigned 30, 30 and 40 points respectively.

Ethnic language, homogeneity and harmony were examined, related and utilized to generate ethnic contribution to administrative states formation. Every ethnicity of South Sudan has a unique contribution to the overall character of the country in a similar manner as individual metals contribute to the higher strength of a metal alloy and for which one could think of a well-structured and peacefully, ethnically coexisting South Sudan as a "Cultural Alloy". It is for this reason exists a constitutional recognition of every native South Sudanese language as a national language. For this to be a reality, South Sudanese native ethnic languages must be developed, promoted and utilized in education, economy and technology. Ethnic factors must therefore play an important role in creation of states.

For any geographical area to qualify as a state, it must have;

1. A population of 200,000 to 850,000 people at minimum and maximum respectively
2. A geographical area of 20,000 to 45,000km^2 at minimum and maximum respectively
3. A total ethnic score of at least 60% with at least 67% (20/30) harmony and 75% (30/40) homogeneity

The proposed states, to varying degrees, are a combination of some of the 21 colonial districts (or SPLM-IO states), current 32 states or former 10 states (or 79 counties). The various maps of these and total geographical area of South Sudan as per SSBS and other independent sources provided inputs for determination of maps and geographical sizes of 20 states.

The 20 States are:

(a) based on former 79 counties or 10 states; 1. Ponggo (former Raja and Wau Counties), 2. Awil (former NBG state), 3. Pinymid (former Jur River, Twic, Gogrial East and West Counties), 4. Aramweer (former Lakes State), 5. Torit (former Lapon, Torit, Magwi, Ikotos and Budi counties) and

(b) based on 32 states; 6. Rol (Maridi and Amadi states), 7. Supiri (Yei River, Jubek and Terkeka States), 8. Tony (Tony State), 9. Sue (Gbudwe and Tamura states), 10. Kapoita (Kapoita State minus former Budi County under 79 counties), 11. Pibor (Boma state), 12. Jonglei (Jongeli state), 13. Pow (Pangak state), 14. Bie (Bie, Akobo, Latjor and Maiwut states), 15. Pajak (Northern Upper Nile state), 16. Sobat (Central Upper Nile state), 17. Pacoda (Pacoda state), 18. Liec (Northern and Southern Liec states) 19. Ruweng (Ruweng state) and 20. Abyei (Abyei Administrative Area).

The 9 Federal Territories are Wau, Malakal, Juba, Ramcel (Capital Terrritory) and 5 unnamed Federal Territories to be identified, demarcated and named later.

Some changes that might happen in the future include (a) Ponggo State may be divided along Sopo River into Ponggo and Raja states, (b) Once the status of Abyei (and Heglig) are finally resolved, the two should be merged into one state, Atungdiak. Pacoda, which is underqualified based on the criteria, is exceptionally made a state of its own due to the fact that ethnic harmony factor does not qualify it to be merged into Sobat, Pajak nor Ruweng states and the need for the preservation of Collo culture and language. The same applies to Sobat state.

State names were drawn mostly from national geographic features particularly native names of rivers/lakes and historical towns whereas some were coined from natural characteristics of the lands making up the states or common words from the constituent languages of the states.

Federal Territories, headed by Chief Mayors and with their own legislative councils and courts, shall form part of the administrative units and shall fall under the jurisdiction of the Federal Government. The Federal Government shall have the responsibility of developing all the Federal Territories especially their Capital Cities which should be modern cities with state of the art technology just like the National Capital. Federal Territories including the Capital Territory will play the role of ensuring even infrastructural development and adequate security across the country as well as forging national unity and integration.

Parties to R-ARCSS should discuss this proposal amongst themselves and with their respective support bases; their respective governors and communities. To operationalize the proposal, the parties should form a committee of representatives of the parties and civil society at national level and in each of the 20 proposed states to make popular consultations. These consultations should involve academics, youths, women groups, church groups, chiefs and elders, local administrators in each state to collect and gauge their views on 20 states

1.0 Introduction

For much of post-independence South Sudan's history, inter- and intra-ethnic conflicts, civil wars and shaky peace agreements have featured more commonly than any meaningful national programmes stemming from ambitious national vision and policies. This was not expected of a country emerging from decades of war, destruction and ethnic/religious discrimination from the Islamist-Arabist regimes of the then Sudan. While the driving factors of the fiasco, awful turn from high hopes to hopelessness and self-destruction by the South Sudanese emanate from poor governance and blurry governance structures, much of the root cause and reasons for continued conflicts have to do with short-sighted, bloody power struggle fueled by ethnicized and visionless personal interest ridden politics, going as far back as the days of SPLM liberation struggle. People's aspirations are only maneuvered by the leaders to advance their political ambitions and calculations. As such federalism, devolution of power to the people and the issue of number of states, deemed by both leaders across the political divide as people's aspirations, have been a source of serious, endless contention and contradictions and, at worst, now threaten the viability of Revitalized Agreement on the Resolution of Conflict in South Sudan (R-ARCSS).

At one point it was pre-independence SPLM that preached the gospel of devolving power and taking towns to the people but, at another after independence, hesitant on adopting federal system of governance once in power and in full control. On another hand, it was SPLM-IO that first proposed 21 states as a practical step towards adopting federalism and bringing power and control of resources closer to the people but later revert to maintenance of 10 states that existed at independence. The incumbent SPLM government in 2015 decrees in more, 28 later expanded to 32, states on grounds that such is the demand of the people. Fast forward to today, the incumbent SPLM government and SPLM-IO are deadlocked on the issue of number of states even if they have had the same demand and claim, "demand of the people of South Sudan". So, the deadlock between President Salva Kiir of the incumbent TGONU and Dr. Riek Machar of the SPLM-IO has essentially become the Jang-Nuer adage "bul ku nyop", intending to do the same thing as the other person intends but not taking the other person's word for and how to do it. Else we won't be where we are today given their declared objectives of 28/32 and 21 states.

However, we know that the most important aspect, albeit not sufficiently delved into by all R-ARCSS parties and the rest in the debate on the issue of number of states, is clear, fair and rational formation criteria and boundaries of the states. Instead, the debate has focused more on defending each one's position and shooting down the other's on grounds of constitutionality in the making when constitutionality has never been the case with the creation of all the administrative states/provinces/districts South Sudan ever had as a region of the then Sudan and as an independent country. In fact the number of states is less important as long as the boundaries and criteria for creating states and equitably sharing power and wealth are fair, rational and meet people's aspirations. With such, compromise and final solution would be more likely.

Besides the forth and back changes in position on the number of states by the two main parties to R-ARCSS rendering their rhetoric and proposals as merely political maneuvers rather than substantive attempts to restructure the country into viable, peacefully coexisting administrative units, there is an obvious lack of clarity and substantive criteria for the number of states each party

including the other parties to R-ARCSS proposes. This paper aims to address fair and meaningful criteria for the formation of any number of states and determination of their boundaries and providing an alternative proposal on number of states that could critically break the current deadlock on the formation of Revitalized Transitional Government of National Unity (R-TGONU) mainly between the incumbent TGONU and SPLM-IO. The paper also proposes a formula that can be used for sharing national cake with equality and equity amongst states and further administrative units in a state. The study leaves out, for another day/article, the governance system and structure that should be adopted and which would be applied to the number of states so proposed in Part 1. But there is no question that federalism, in our own context and making, is the most suitable system that should be applied to the states proposed herein this study.

It should be borne in mind that an average South Sudanese needs a functional government, state or national, that is capable of and actually does bring about service delivery and security for them. The common citizens need states that are interconnected and intra-connected by highways and paved roads, provide quality basic and tertiary education and health care, and guarantee conducive environment for the practice of their livelihoods and attainment of food sufficiency, economic productivity and realization of their human and land potential. Paramount to them is to be able to go about their livelihoods without fear for their own lives and safety of their property owing to their ethnic identity or political affiliation. It is in the best interest of ordinary South Sudanese to peacefully co-exist in the states they are administrated in and in the entire country so that they can travel and transact in business from Yei to Abyei, Akobo to Ezo and Raja to Kapoita without insecurity or infrastructural hindrance. The common citizens also aspire to have states that are economically viable and culturally coherent or, to the least extent, related enough to be able to benefit from their cultural/linguistic proximities and relationships. All they want is an administrative state and country that preserve, promote and thrive their cultural heritages and languages for their progenies and to be able to stand shoulder to shoulder in cultural theatres of the world with others from other countries in showcasing their National Culture embodied by varied traditional heritages that they hold dear to them with pride and glory.

Therefore, any proposal on the number of states and boundaries including the type of governance that should be applied to those states which doesn't guarantee the aforementioned basic needs, rights, aspirations and basic elements for decent human living conditions serve no purpose. To arrive at the states that work well for all the above people's aspirations, needs and expectations to be possibilities and practical realities requires the right criteria that should be borne out of objective research, rational, honest, open and fair engagements and inclusive participation of the citizens; youth, local administrators and traditional authorities rather than just politicians as it has been with the formation of 10 states and 79 counties, 21 states and 32 states. The incumbent TGONU and SPLM-IO have not publicly provided such a criteria and convincing reasons for their proposals – to account elaborately why some ethnicities were put together or divided between two states and why some states, given their too small or big geographical size and populations could qualify as states. To account for this missing link and following objective research on ethnicities and their demographics and geographical localities, the number of states and boundaries proposed in this study were developed from a bottom-up approach starting with development of criteria and ending with the qualification of certain geographical areas as states based on the criteria. As a result of

applying those criteria, some of those states making up the previous 10 states were retained while others were broken up. Subsequently, some of the proposed states are a combination of some of the 21 colonial districts, current 32 states or former 79 counties as shown in Figure 1 below.

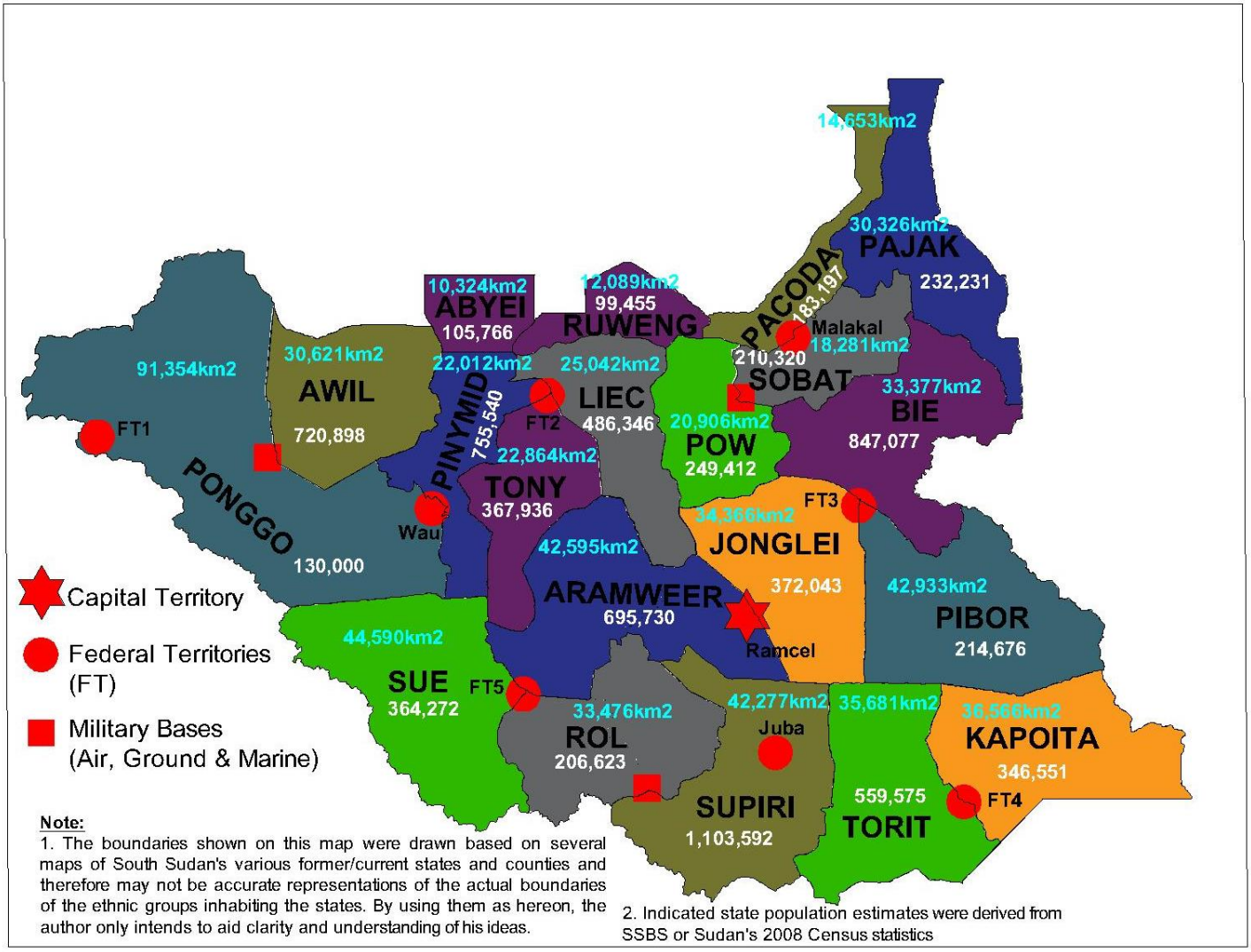

Figure 1: Map of South Sudan Showing 20 Proposed Administrative States

2.0 Methodology

At this point, the reader must be craving to know how the 20 states were created and why they were so named/renamed and bounded. The creation of the 20 states (19 plus Abyei) and nine Federal Territories, one of which is a Capital Territory, was based on the following primary and secondary factors. Put together, the primary factors in turn manifest as secondary factors.

Table 1: Factors constituting the criteria for states formation and power and wealth sharing

#	Primary Factors	Secondary Factors
1	Population	Peaceful coexistence
2	Geographical area	Economic viability
3	Ethnic factors (language, homogeneity and harmony)	Efficient and effective administration/governance
4		Development and promotion of traditional heritages, national culture and native languages
5		National unity, integration and identity

As explained in the next section, the primary factors constitute the criteria/methodology applied to form the 20 states and their boundaries so indicated in Figure 1. The 20 states represent the best possible state formations of all other possible ways in which states could be formed. To understand the fairness, substantiveness and relevance of the criteria, the following definition and analysis of the criteria and the proposal are provided. For any geographical area to qualify as a state, it must have;

4. A population of 200,000 to 850,000 people at minimum and maximum respectively
5. A geographical area of 20,000 to 45,000km^2 at minimum and maximum respectively
6. A total ethnic score of at least 60% with at least 67% (20/30) harmony and 75% (30/40) homogeneity

Data for the design of the criteria was either directly obtained or derived from primary sources such as South Sudan Bureau of Statistics (SSBS), for population and geographical size of South Sudan. The various maps of South Sudan, 10, 21 and 32 states and as well as 79 counties and total geographical area of South Sudan as per SSBS and other independent sources provided inputs for determination of maps and geographical sizes of 20 states. Maps and geographical areas of the 20 states were respectively drawn and calculated using an Engineering software, AutoCad. While effort was made for the highest accuracy in maps drawing, including all the territories of South Sudan (including the so called disputed territories of Kafia Kgenji Enclave, Illemi Triangle and Abyei) and estimating the exact areas (in km^2), the author has no doubt that there could be mistakes and therefore makes no claim that the boundaries so depicted are the actual boundaries of the states.

3.0 The Proposal: Analysis of the Criteria and Proposal Interpretation

Table 2: The 20 administrative states of South Sudan

State or Federal Territory	Permanent Capital	Provisional Capital	Geographical Area (km^2)	Population (People)	Position by Geographical Area	Position by Population	Constituent Former 79 Counties or 10 states
Ponggo	Uyujuku	Raja	91,354	130,000[1]	1	18	Raja, Wau
Sue	Yambio	-	44,590	364,272	2	10	Najero, Tombura, Ezo, Nzara, Yambio
Pibor	Pibor	-	42,933	214,676	3	14	Pibor, Pochala
Aramweer	Rumbek	-	42,595	695,730	4	5	Former Lakes State
Supiri	Lainya	Yei	42,277	1,103,592[2]	5	1	Central Equatoria
Kapoita	Kapoita	-	36,566	346,551	6	11	Kapoita North, Kapoita South & Kapoita East
Torit	Torit	-	35,681	559,575	7	6	Lapon, Torit, Magwi, Ikotos, Budi
Jonglei	Boor	-	34,366	372,043	8	8	Duk, Twic East, Bor South
Rol	Yalo	Maridi	33,476	206,623	9	16	Ibba, Maridi, Mvolo, Mundri West, Mundri East
Bie	Nasir	-	33,377	847,077	10	2	Nyirol, Uror, Akobo, Ulang, Nasir, Maiwut, Longochuk
Awil	Awil	-	30,621	720,898	11	4	Former NBG State
Pajak	Akorwet	Renk	30,326	232,231	12	13	Reng, Maluth, Maban
Liec	Bentiu	-	25,042	486,346	13	7	Mayom, Rubkona, Guit, Koch, Mayendit, Leer, Panyijar
Tony	Tony	-	22,864	367,936	14	9	Tony North, Tony East, Tony South
Pinymid	Kwajjok	-	22,012	755,540[1]	15	3	Twic, Gogrial West, Gogrial East, Jur River
Pow	Pangak	-	20,906	249,412	16	12	Pangak, Ayod
Sobat	Baliet	-	18,281	210,320[3]	17	15	Baliet, Piji, Malakal
Pacoda	Kodok	-	14,653	183,197[3]	18	17	Manyo, Pacoda, Panyikang, Malakal
Ruweng (Atungdiak)	Riaangnhom	-	12,089	99,455	19	20	Pariang, Abiemnhom
Abyei (Atungdiak)	Abyei	-	10,324	105,766[4]	20	19	Abyei

[1] These two population figures each include half of the population of former Wau County because about half of the residents of Wau town are now in Ponggo and Pinymid states.

[2] With this population, Supiri qualifies to be two states based on the criteria but with Juba being the national capital inhabited by a significant population of non-natives, this population is approximated to be 75% natives of Supiri, an equivalent of 827,694. It is this figure which is considered in the criteria.

[3] These population figures each include half the population of former Malakal County because the residents of Malakal town are now resident in Sobat and Pacoda states.

[4] Population figures for Abyei are reported as 52,883 in South Sudan and 197,681 in Sudan as from June, 2010 Census of South Kordofan State. This study took a conservative approach and doubled 52,883 as it may be half of Ngook people counted in both cases.

3.1 Population and Geographical Area Factors

Population and geographical area (size of the land) determines economic viability of a state. Land size, location, natural resources (minerals, hydrocarbons, etc) and agricultural soil fertility constitute major contributions to the economic potential and productivity of a state. Conversely, population contributes human resource and revenue generation through business or trade of goods and services and taxes (business and personal income taxes).

Likewise, population and geographical area size are also critical in national revenue sharing and political power dispensation at national, state and local levels. Government provision of healthcare, education and security services requires providing, for example, a hospital, school (secondary/tertiary) and a police post per a certain number of people and within a specific distance that would enable efficient delivery to and equal access of such services by the people. It is for this reason that, under this study, population is given 60 points (people need services) and geographical area with 40 points (the services have to be delivered over a distance).

Hence, population and geographical area are such important primary factors that cannot be ignored in administrative states formation as well as wealth and power sharing. But without a fair methodology of employing such factors, their importance can easily be lost in the formation of states, local administrative units, parliamentary constituencies and wealth sharing from the topmost to the very bottommost level of administration. This can create inequality/inequity, discontent and a multitude of problems as has already been the case in the previous 10 states or 79 counties and current states and counties.

The relevance of population and geographical area to administrative states (and also counties and parliamentary constituencies) formation are gauged at 100 points with each factor having a total of 60 and 40 points respectively. Each state share of these points are then calculated from their respective population and geographical area figures expressed as a fraction of or ratio to national figures.

Having established each state population and geographical area ratios or percentages with respect to national population and geographical area, the resultant state ratios or percentages are then multiplied by the points (60 and 40) to be shared to get each state population and geographical area scores for the determination of number of states as in Table 3 below. Similarly, for wealth sharing, the state population and geographical area scores will be expressed as fractions or ratios of 100 shared points and multiplying the subsequent ratio/fraction by the total national revenue allocated to states gives each state share of national revenue.

Table 3: State scores for all factors making up the criteria

#	State or Federal Territory	Capital		Population (P) Where P = 60pts			Geographical Area (GA) Where GA = 40pts			Total P&GA Score	Total E Score	Overall Total Score	Overall Total Score (%)
		Permanent	Provisional	P	P Factor	P Score	GA	GA Factor	GA Score				
1	Atungdiak (Abyei)	Abyei	-	105,766	0.0128	0.8	10,324	0.0160	0.6	1	100	101	72.0
2	Atungdiak (Ruweng)	Riaangnhom	-	99,455	0.0121	0.7	12,089	0.0188	0.8	1	100	101	72.0
3	Awil	Awil	-	720,898	0.0874	5.2	30,621	0.0475	1.9	7	83	90	63.6
4	Ponggo	Uyujuku	Raja	130,000	0.0158	0.9	91,354	0.1418	5.7	7	66	72	51.2
5	Pinymid	Kwajjok	-	755,540	0.0916	5.5	22,012	0.0342	1.4	7	81	88	62.4
6	Tony	Tony	-	367,936	0.0446	2.7	22,864	0.0355	1.4	4	75	79	55.9
7	Aramweer	Rumbek	-	695,730	0.0843	5.1	42,595	0.0661	2.6	8	73	81	57.4
8	Sue	Yambio	-	364,272	0.0441	2.6	44,590	0.0692	2.8	5	80	86	60.7
9	Rol	Yalo	Maridi	206,623	0.0250	1.5	33,476	0.0520	2.1	4	80	84	59.3
10	Supiri	Lainya	Yei	1,103,592	0.1337	8.0	42,277	0.0656	2.6	11	78	88	62.6
11	Torit	Torit	-	559,575	0.0678	4.1	35,681	0.0554	2.2	6	71	77	54.5
12	Kapoita	Kapoita	-	346,551	0.0420	2.5	36,566	0.0567	2.3	5	100	105	74.4
13	Pibor	Pibor	-	214,676	0.0260	1.6	42,933	0.0666	2.7	4	62	66	46.6
14	Jonglei	Boor	-	372,043	0.0451	2.7	34,366	0.0533	2.1	5	100	105	74.4
15	Liec	Bentiu	-	486,346	0.0589	3.5	25,042	0.0389	1.6	5	100	105	74.6
16	Pow	Pangak	-	249,412	0.0302	1.8	20,906	0.0324	1.3	3	100	103	73.2
17	Bie	Nasir	-	847,077	0.1027	6.2	33,377	0.0518	2.1	8	62	70	49.6
18	Sobat	Baliet	-	210,320	0.0255	1.5	18,281	0.0284	1.1	3	71	74	52.3
19	Pajak	Akorwet	Reng	232,231	0.0281	1.7	30,326	0.0471	1.9	4	78	82	57.9
20	Pacoda	Kodok	-	183,197	0.0222	1.3	14,653	0.0227	0.9	2	100	102	72.6
21	Wau	Wau	-	0	0	0	0	0	0	0	0	0	0
22	Juba	Juba	-	0	0	0	0	0	0	0	0	0	0
23	Malakal	Malakal	-	0	0	0	0	0	0	0	0	0	0
Total (South Sudan)				8,251,240	1	60	644,330	1	40	100	41	141	

Interpreting the above table in terms of population and geographical scores, let's take Awil and Ponggo for illustration. Awil and Pongo states have populations of 720,898 and 130,000 people, geographical area of 30,621km^2 and 91,354km2 and a combined population and geographical area score of 7 points each respectively as shown in Table 2 below. When sharing anything such as national revenue, Awil and Ponggo will each have a share ratio of 0.07 (7/100) which can that be multiplied by the national revenue allocated to states.

From the above illustration, even though Ponggo is three times as big as Awil in terms of geographical area and less than one fifth of Awil in terms of population, the two states have the same sharing ratio and get equal share of the national cake due to the combined relevance and effect of population and geographical area. During ten states time and still with the current 32 states, a bad precedence of equalizing states in terms of power-sharing (MPs, Commissioners, etc) and revenue sharing amongst states was developed and made worse by lack of transparency on sharing criteria and budgetary allocations. Some states unjustifyingly had more national MPs and Commissioners/counties than others creating in the minds of the people a notion that *"if our bigger states and counties are divided into more states and counties, the more political power and participation and in turn the more jobs, revenue allocations and services we shall get"*. This is one of the main reasons people are now clinging to 32 states when in reality no more services, revenue and political power and participation can come from merely subdividing states without due diligence to criteria for states creation and sharing of power and wealth. However, with the criteria proposed herein and above illustrated with Ponggo and Awil, every state will get a fair share of political participation, power, national cake and access to services. Thus, people of Awil or Sue, for example, will not feel the need to have more states but rather remain as one despite their big size or high population respectively. Instead, they will view more states as reducing their state budgetary allocation to infrastructural developments and service delivery in the face of having to pay a higher remuneration for two or more states (more state governors, ministers, MPs, etc).

3.2 Ethnic Factors

Ethnic factors are equally crucial in administrative states formation and more especially in forging national unity, integration and identity. Three ethnic factors of language, homogeneity and harmony were examined, related and utilized to generate ethnic contribution to administrative states formation. Every ethnicity of South Sudan has a unique contribution to the overall character of the country; from languages and culture to livelihoods. These can be likened to individual metal and metal alloy characteristics and for which one could think of a well-structured and peacefully, ethnically coexisting South Sudan as a "Cultural Alloy".

South Sudanese experience with Arabization and Islamization policies which promoted one race and one religion over the rest has taught them that recognition of ethnic plurality and coexistence, and freedom of ethnic language expression are important pillars of the South Sudanese nation. Out of this experience was born the constitutional recognition of every native South Sudanese language as a national language. For this constitutional provision to become a practical reality that every South Sudanese can cherish and live, South Sudanese native ethnic languages must be developed, promoted and utilized in education, economy and technology.

This can be best done by starting with identification of ethnic language commonalities and proximities and utilizing the same for developing shared language resources. In other words, native languages that show close linguistic proximity can benefit from each other when situated in the same administrative unit and so are better placed together in the same state so that efforts to develop them can be complementary and synergized. For languages that have a high degree of lexical relationship, they could develop over time into a common intelligible language and transform into dialects of the resultant standardized common language. This will reduce the risk of language extinction in the face of threats from other main national and international languages as has been the case already with some extinct languages (Homo and Togoyo) and families living in the cities of former bigger Sudan or diaspora. This is where ethnic homogeneity comes in as a sub-ethnic factor that can be used to determine if a geographical region with a particular ethnic homogeneity can qualify as a state or third tier administrative unit (county or district).

However, grouping ethnic languages together on the basis of lexical similarity or linguistic proximity brings in the question of harmony (peaceful coexistence) of the linguistically closely related ethnicities in a state. Do ethnicities with closely related languages peacefully coexist? Of course not always and not in all cases. In cases where ethnicities closely relate linguistically but have a history of hostility to each other, it is better to place them in separate states or group them in the same state with other ethnicities with whom they have historical and/or contemporary peaceful co-existence and close cultural/customary values and practices as gauged by livelihoods and intermarriages among other factors.

It is for this same reason that, despite linguistic proximity between them, some ethnicities are placed in different states or given states of their own as exceptions even though they are less qualified to be states based on the established criteria. Good examples of such states are Ruweng and Pacoda which, even though they are underqualified in terms of population and geographical factors, cannot be merged into the neighboring Nuer and Jang dominated states respectively neither can the two merge into one state. Conversely, some ethnicities that differ markedly in linguistic relation but have close cultural relations or customary interactions and/or peaceful co-existence have been placed together in the same state as in Torit, Ponggo and others. In other words peaceful co-existence and common customs/culture, which contribute more to state stability and viability, predominate over linguistic proximity.

While population and geographical area factors are easy to quantify, ethnic factors are not. However, indirect inference from the following was utilized to quantify ethnic factors;

a) Demographic figures from 2008 Sudan census as held by South Sudan Bureau of Statistics (SSBS),
b) Greenberg's Classification of African Languages,
c) History of relations between ethnicities during SPLM/A liberation war and after independence and
d) Colonial history or information on South Sudanese ethnicities, communities and their relationships.

Ethnic homogeneity factor was determined by expressing ethnic population derived from (a) in a particular geographical area/state as a fraction/percentage of the whole population of the area/state. Whereas native ethnic language (NEL) factor was determined by assigning fractional numbers (lexical comparative indices, LCIs) to the relationships between languages as classified in (b) where 0 and 1 mean zero and 100% linguistic relationship respectively.

Ethnic harmony was determined by assigning fractional numbers (Ethnic Harmony Indices, EHIs) to the relationship or extent of co-existence between two ethnicities based on historical information from (c) and (d) and in contemporary/recent times. Numerical 0 and 1 mean 100% hostility and harmony between two ethnicities respectively. Conservative approach was taken to assign 1 to a single ethnicity meaning that an ethnicity is assumed to be 100% in harmony with itself. Of course, this is not exactly the case in real situation. But there is always a tendency, and bountiful evidence exists, for communities of the same ethnicity to choose peace and harmony over their internal differences in the face of a common threat or cooperate in matters concerning existence and cultural benefits despite internal differences. Hence, such a conservative approach, especially that it is applied equally across all ethnicities, does no harm to the criteria.

Altogether, ethnic factors were weighted against 100 points just like population and geographical area factors. Factor-wise, ethnic language (NEL), homogeneity and harmony share these 100 points in 30, 30 and 40 respectively. Every ethnicity scores against these points by multiplying its language (NEL) factor, homogeneity (EHo) factor and harmony (EHI) factor by the points in each category and the scores in all the three categories summed up to obtain total ethnic score for that ethnicity as shown in Table 4 below.

Table 4: State scores for all elements of ethnic factor

#	State/Federal Territory	Native Ethnic Languages (NEL) Where NEL =30pts				Ethnic (E) Where Ho = 30pts, Ha = 40pts				
		No. of NEL	2 Main NEL	NEL Factor[5]	NEL Score	EHo Factor[6]	EHo Score	EHa Factor[7]	EHa Score	Total E Score
1	Atungdiak (Abyei)	1	Jang	1.00	30.0	1.00	30.0	1.00	40.0	100
2	Atungdiak (Ruweng)	1	Jang	1.00	30.0	1.00	30.0	1.00	40.0	100
3	Awil	2	Jang, Joklwo	0.80	24.0	0.95	28.5	0.75	30.0	83
4	Ponggo	13	Balenda, Gbaya	0.20	6.0	0.85	25.5	0.85	34.0	66
5	Pinymid	3	Jang, Joklwo	0.80	24.0	0.90	27.0	0.75	30.0	81
6	Tony	2	Jang, Bonggo	0.50	15.0	0.99	29.7	0.75	30.0	75
7	Aramweer	3	Jang, Beli	0.50	15.0	0.94	28.2	0.75	30.0	73
8	Sue	6	Azande, Balanda	0.70	21.0	0.97	29.1	0.75	30.0	80
9	Rol	9	Avokaya, Moru	0.90	27.0	0.70	21.0	0.80	32.0	80
10	Supiri	4	Bari, Lolubo	0.50	15.0	0.95	28.5	0.85	34.0	78
11	Torit	10	Lotuho, Acholi	0.70	21.0	0.65	19.5	0.75	30.0	71
12	Kapoita	1	Toposa	1.00	30.0	1.00	30.0	1.00	40.0	100
13	Pibor	4	Murle, Anywak	0.60	18.0	0.65	19.5	0.60	24.0	62
14	Jonglei	1	Jang	1.00	30.0	1.00	30.0	1.00	40.0	100
15	Liec	1	Nuer	1.00	30.0	1.00	30.0	1.00	40.0	100
16	Pow	1	Nuer	1.00	30.0	1.00	30.0	1.00	40.0	100
17	Bie	3	Nuer, Anywak	0.80	24.0	0.99	29.7	0.20	8.0	62
18	Sobat	2	Jang, Collo	0.80	24.0	0.90	27.0	0.50	20.0	71
19	Pajak	2	Jang, Maban	0.80	24.0	0.80	24.0	0.75	30.0	78
20	Pacoda	1	Collo	1.00	30.0	1.00	30.0	1.00	40.0	100
21	Wau	47	All	-	0.0	0.00	0.0	0.00	0.0	0
22	Juba	47	All	-	0.0	0.00	0.0	0.00	0.0	0
23	Malakal	47	All	-	0.0	0.00	0.0	0.00	0.0	0
24	FT1	47	All	-	0.0	0.00	0.0	0.00	0.0	0
25	FT2	47	All	-	0.0	0.00	0.0	0.00	0.0	0
26	FT3	47	All	-	0.0	0.00	0.0	0.00	0.0	0
27	FT4	47	All	-	0.0	0.00	0.0	0.00	0.0	0
28	FT5	47	All	-	0.0	0.00	0.0	0.00	0.0	0
South Sudan		47[4]	Jang, Nuer	0.85	25.5	0.38	11.4	0.10	4.0	41

[5] Refer to Appendix 1 for how NEL factors and the actual number of ethnicities/tribes in South Sudan were derived

[6] Refer to Appendix 2 for how Ethnic Homogeneity (EHo) factors were derived

[7] Refer to Appendix 3 for how Ethnic Harmony (EHa) factors were derived

3.3 Exceptions and Future Adjustments

Looking at the proposed states with respect to the criteria, the following disparities can be observed and which have been made exceptions as follows;

a) Ponggo state is too huge geographically and too small demographically to be a state but qualifies, due to the combined effect of both population and geographical area criteria. However, in the nearest future once consensus on the criteria as proposed here in and as may be amended is reached, Ponggo State may be divided along Sopo River into Ponggo and Raja states while giving consideration to the ethnic boundaries so that the same ethnicities are not divided between the resultant states.
b) Ruweng and Abyei states are both too small and hence unqualified geographically and demographically to be states. Once the status of Abyei (and Heglig) are finally resolved, the two should be merged into one state, Atungdiak. This is why they are given the same colour in the current 20 states map.
c) Pacoda State is barely qualified in terms of population and underqualified in terms of geographical area to be a state. But to preserve Collo culture and language and given the fact that ethnic harmony factor does not qualify it to be merged into Sobat, Pajak nor Ruweng state, Pacoda is exceptionally made a state of its own. The same qualifying reasons apply to Sobat State.
d) Sobat State is barely qualified geographically but qualified demographically and so is made a state of its own pending final resolution of the land dispute between Collo and Jang and the demarcation of Malakal Federal Territory which may end in Sobat being merged into Pajak state if it becomes disqualified demographically and geographically or may remain a state still if it does qualify.

Overall, it is expected in the future that geographical area of the states may remain constant but the state population will always change. State population ratios will be updated based on each state's latest population with respect to the latest national population as updated through a countrywide national census. The new population ratios will then be used for national revenue sharing amongst states in that period until the next census results. However, no further division of states into more states shall be permitted just because states have exceeded the formation criteria in this studies.

3.4 State Names and Boundaries

One of the challenges the South Sudanese State faces is the fact the concepts of modern state and government are alien or obscure to the people and communities. This is made worse by the land policy that defines the land as entirely community's limiting or complicating the jurisdiction of the state over the land over which the state is supposed to exercise territorial integrity as an independent state. The common perception is that government is supposed to provide everything to the people and that what belongs to the government belongs to nobody, hence an apparent lack of shame and accountability when a public official steals a colossal sum of money in corruption or embezzlement of funds compared to when someone steal a bag of corn, goat or cow. This misconception has also led to a bad mentality commonplace across the South Sudanese communities where other South Sudanese citizens who are not native to an administrative unit

(state, county, Payam or Boma) are viewed as foreigners who should not have the same rights and entitlements to enjoy the opportunities and resources offered by that land/administrative unit just as much as the natives. It is for these reasons that whenever an administrative unit, say a state, is carved out of a former bigger unit/state, the citizens of the subsequent smaller states, say A and B, engage in segregation and feuds trying to deny jobs or access to resources and services, say in State A, to members of State B just because they consider their new State A as theirs and only theirs and so the citizens of State B should go to access such resources, services or opportunities in their new state. As a result, conflicts and frictions over limited resources, opportunities and local land boundaries evolve out of such a mentality. This explains why there is such a big fuss about certain communities being combined with other communities in a state or the widespread desire for communities to have a state or county of their own and hence the apparent demand for increased number of states.

To do away with these misconceptions and mentality and usher in a new paradigm shift from having everything decided by a small clique of people far away from the concerned people to whom consequences of such decisions could be inflicting or disastrous;

a) Administrative units should be named in a manner that preserve national character and national unity.
b) Prior awareness and popular consultation should be made to the concerned communities at elites, chiefs, youth and local authority levels on the criteria of the intended administrative division and its purpose and advantages before combining or dividing communities into administrative units.
c) Local land boundaries should be fairly determined and demarcated through proper avenues that involve participation of elders, chiefs and other enlightened members of the communities.
d) Land Act and policy should be reviewed and reshaped in the impending permanent constitutional making process to guarantee protection of land rights for communities and at the same time entail the rights and role of the State or government in land issues
e) Regular civic education and awareness programmes should be created and effectively implemented by all levels of government through various media and in all native languages for people and communities to have the right understanding of the concepts of State and government.
f) Increased and meaningful public participation by civil society actors and citizen groups such as women, youth, faith-based and academics in all matters of governance and public policy to alleviate exclusion and mistrust in government promulgations and policies.

In view of the above, the names of the states were drawn mostly from national geographic features particularly native names of rivers/lakes and historical towns whereas some were coined from natural characteristics of the lands or words that are common between state's constituent languages. Out of 20, 9 states bear names of rivers, namely; Ponggo, Sue, Rol, Tony, Aramweer, Supiri, Pibor, Pow and Sobat. It is assumed that such names are genuinely native names. Otherwise, foreign or pejorative names are discouraged and if any of these 9 names is foreign or pejorative, as unknown to the author, it shall be changed. Four names; Awil, Torit, Kapoita and

Abyei derive from the names of prominent towns which at the same times are the state capitals. The rest of the names are either already existing names with presumably appropriate meanings reminiscent of characteristics of the land (or national character) or names coined from common words of the native languages of the state (e.g Pinymid, "sweet land" in both Dhoklwo and Thuongjang) or characteristics of the land (e.g Pajak, being a fertile and oil-rich land that has been a national bread basket of Sudan and South Sudan).

From Figure 1 and Table 2, it can be seen that some states are a combination of counties or ethnicities that have never been administered together under the previous 21 districts, 10 or 32 states (e.g Pinymid comprising Joklwo and Jang) or an ethnicity falls into two adjacent states with continuous land boundary and yet separated into those two states rather than being placed under one state where it is predominant (e.g Sobat comprising Collo and Jang). Also some ethnicities are detached from 32 or 21 districts/states, although this is not indicated on the maps in some cases, and merged into other states where the same or related ethnicities are dominant. These ethnic communities include Anywak from Akobo, Lokoya who were previously divided between former Central and Eastern Equatoria states and ethnicities (Boya, Didinga, etc) in former Budi County who were placed in Kapoita state under 32 states. These are now transferred, subject to Community Popular Consultation, to Pibor and Torit states respectively based on ethnic criteria qualification. On another hand, some ethnicities have yet to be determined which states they should actually be included into subject to their consultation. These include Jokthuri (Thuri/Shaat) and Jokbor (Debor/Balanda-Bor) and Bonggo now in Ponggo state, Beli and Moda now in Aramweer state and Jiye now in Pibor state who will be engaged and consulted during Community Popular Consultations to determine if they should remain in those states or joined with their ethnic counterparts or related ethnicities in Pinymid or Awil (Jokthuri and Jokbor) and Rol (Beli and Moda) respectively based on ethnic language criteria. In light of these peculiarities, it is important to make the following notes on some striking separations, transfers and merger of these ethnic communities into those states as indicated or explained.

The convergence of Jang and Joklwo in one state, Pinymid, subject to Popular Consultation of Joklwo Community, is a result of ethnic criteria – more closely related languages and cultures/customs, as typified in intermarriages and livelihoods between Jang and Joklwo, than between Joklwo and "Fertit" ethnicities.

However, the convergence of Jang and Collo in Sobat is more on the basis of the boundary that is ambiguous or disputed by Jang and Collo communities in former Malakal County and other disputed Jang-Collo borders between Sobat and Pacoda states. In addition, another reason is the fact that the proposed Federal Territory of Malakal whose jurisdictions will fall under the Federal Government, just like all other proposed federal territories, is located between Pacoda and Sobat states which do not have jurisdiction over it and whose boundaries will yet be determined. So, if it happens that all the Jang-Collo disputed borders fall under Malakal Federal Territory, then only Jang will remain in Sobat state. After the demarcation of Malakal Federal Territory borders and resolution of Jang-Collo land dispute, the remaining part of Sobat state will be subjected to the same criteria and data as was used for all the other states initially to see if it qualifies to remain a state on its own or if it can be merged into Pajak State.

The proposal of merging Anywak into Pibor, Lokoya into Torit, Jokthuri and Jokbor into Pinymid or Awil and Jiye into Kapoita is necessitated by the high ethnic criteria qualification to do so and more especially for the reasons of affording these ethnicities better chances and opportunities to preserve their languages and benefit from proximal cultures of their counterparts or related ethnicities/languages in the aforementioned states where they are dominant and have more opportunities and resources for development and promotion. The case of transfer of Bonggo (living around Bussere and Bazia) from Ponggo to Pinymid is subject to the possible transfer of their neighbors, Jokbor, to Pinymid since their inhabited areas will be disconnected from Ponggo.

As for the case of Beli and Moda in Aramweer state, their merger into Rol is qualified by language criteria (their languages being more related to those in Rol state) but their inclusion in Aramweer is equally qualified by close cultures/customs (as typified by intermarriages and livelihoods) and hence ethnic harmony/co-existence. Wherever they end up is entirely subject to their decision during community popular consultations.

4.0 Federal Territories

Federal Territories is a new concept and yet a critical feature of this proposal. These will be territories within which lie a well-developed modern city. Federal Territories shall be headed by Chief Mayors, shall have their own legislative councils and courts and shall fall under the jurisdiction of Federal Government. They will be language neutral, meaning all native languages of South Sudan can be taught in private schools subject to their own arrangements but official languages of government business/work and instructions in public primary schools, high schools and tertiary institutions shall be exclusively English. The Federal Government, through an Act of parliament, shall negotiate with concerned states for the land on which a Federal Territory sits and demarcation of its borders. The Federal Government shall have the responsibility of developing all the Federal Territories especially their Capital Cities which should be modern cities with state of the art technology just like the National Capital. The objective of Federal Territories are;

a) To balance development across the country and reduce inequality in infrastructural development across the country.
b) To improve security amongst communities and across the country by locating them within the vicinity of ethnic conflict hotspots to create some sort of security buffer zone.
c) To better service delivery and access to modern urban life and opportunities as well as re-enforce the efforts of state governments thereby compensating for any imbalances as a result of weak or economically poor states.
d) To forge national unity and integration by providing national integration incubating conditions and models that can set precedence that may be adopted by state governments or municipalities under the jurisdiction of state governments.
e) To promote tourism and improve standards of living in the local areas where federal territories are located or adjacent to.

5.0 Recommendations towards Implementation of 20 States and 8 Federal Territories during and after the Transitional Period as per R-ARCSS.

As 22nd February, 2020 approaches, all hopes and worries are at mix and on rise for the formation of R-TGONU. While the parties to R-ARCSS are deadlocked by the issue of number and boundaries of states, the suffering of our people and the unjustifiable denial of services to them haunts our conscience especially when one recalls that they have ability to avert the situation either through compromise of demands or in ways unthought-of but which could be moments that turn leaders into visionaries and heroes of their people. I would like to invoke this, in retrospection and meditation, upon the leaders of R-ARCSS parties especially President Salva Kiir Mayaardit and Dr. Riek Machar Teny. You both know that the independence of our country came at a price that you had a great share of in payment and which many of your colleagues paid wholesomely with their dear blood and lives and yet they or their families today have not benefited a single bit from that patriotic sacrifice. Better you who are alive, have witnessed the ultimate birth of the country and now in charge of it in different capacities. I believe it is high time you reflected and, as a loving citizen of our Republic, urge you to break this "Bul ku Nyop" deadlock and reach a compromise. This proposal, if considered with all honesty and seriousness it deserves, could be the ultimate deadlock breaker or provide the precursor required to settle the issues of states and boundaries and federalism at large.

In the spirit of compromise and for the sake of our beloved Republic, I hereby put forth the following recommendations on the adoption of 20 states and 8 federal territories in a practical step of laying the foundation for implementation of federalism in the Republic of South Sudan.

1. Parties to R-ARCSS should discuss this proposal amongst themselves and with their respective support bases; the governors of 32 states plus Abyei and SPLM-IO governors.
2. The parties should form a committee of representatives of the parties and civil society at national level and in each of the 20 proposed states to make popular consultations. These consultations should involve academics, youths, women groups, church groups, chiefs and elders, local administrators in each state to collect and gauge their views on 20 states.
3. The parties should continue with formation of R-TGONU and give a period of 90 days from the day of R-TGONU formation for the committee to conduct and finalize popular consultations and produce a report to R-TGONU Council of Ministers within the same or at the end of the period. The R-GONU will deliberate on the report and pass their endorsement or recommendations to R-TGONU Parliament for further debate and/or final enactment into law.
4. Parties to R-ARCSS should renew the mandates of TBC and IBC or set up similar bodies to look into the boundaries of 20 states and 9 Federal Territories including the Capital Territory and other disputed internal boundaries between communities that lie at the borders of 20 states and 9 Federal Territories (FTs). When necessary arbitration at The Hague should be considered in cases where boundaries could not be resolved by the IBC or similar body that will be set up. This process should not prevent the adoption of 20 states and 9 federal territories as the results of the arbitration can be adjusted into the states or FTs later.

6.0 Conclusion

This study examined factors that inform the criteria for administrative states formation, wealth and power sharing and developed objective criteria thereof that can be applied in the same. Explanation and illustrations of how the criteria work were made. Various sources were examined to obtain data and analyze it to develop the proposal on the number and boundaries of states. The methodology employed AutoCad, an engineering software, to draw the maps of different states based on different maps of South Sudan and its and various administrative units and to calculate their respective geographical areas.

Based on the criteria, the study concludes in re-structuring South Sudan into 20 administrative states and 9 federal territories to which federalism should be applied. As long as the proposed criteria for power and wealth sharing are applied, equitable power and wealth sharing will be exacted and 20 states and 9 federal territories are ideal for effective governance of South Sudan.

While the parties to R-ARCSS and every other opinion writer, think tanks, opinion writers and citizens differ on the best way to divide South Sudan into appropriate states, it is important that peace must be given a chance through implementation of R-ARCSS. As provided in the above recommendations, parties to R-ARCSS especially incumbent TGONU and SPLM-IO have the choice to keep South Sudan in a limbo and abyss or take the chance to compromise, heed the calls for the formation R-TGONU by the international and regional fraternities and citizens like this author. It is also incumbent upon them to adopt such ideas as put forth in this proposal. At the end of the day the legacy, bad or good, is their own and we, as good and loving citizens of this land, will have tried the best we could possibly do by expressing our ideas and partaking in the national discourse to help a thing or two in fixing our beloved South Sudan. Oh God bless South Sudan!

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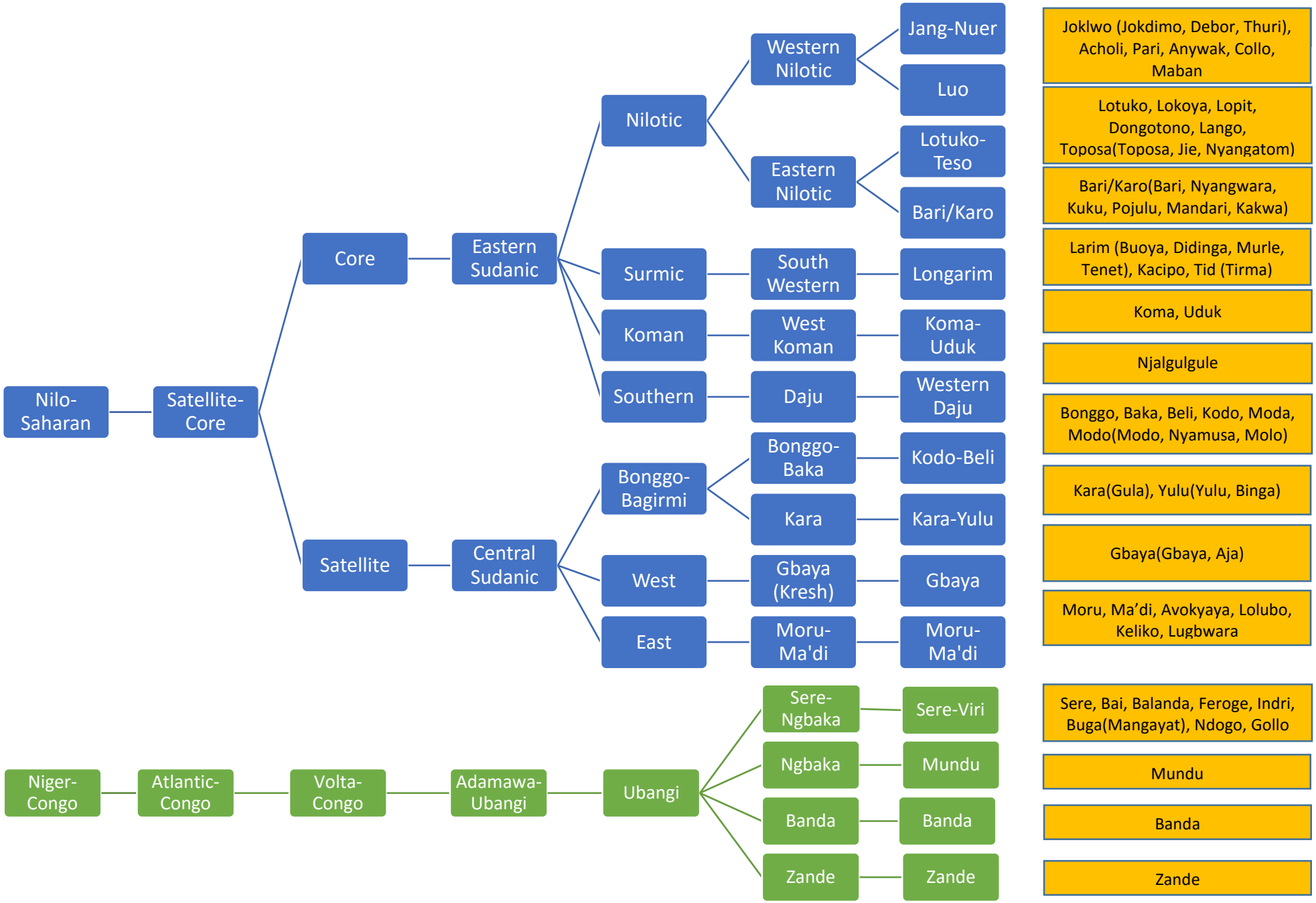
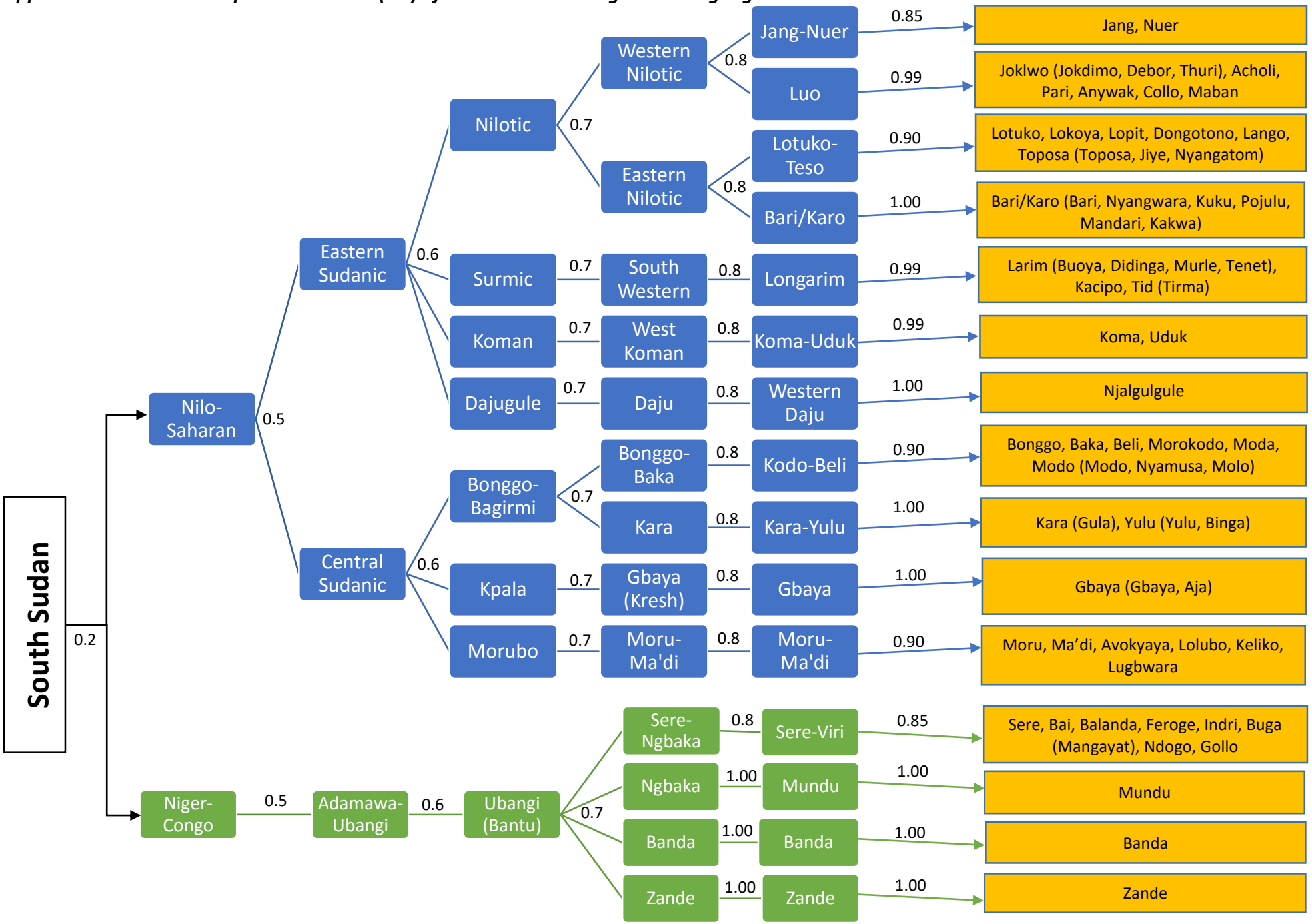
8.0 Appendix

Appendix 1: NEL factors or Lexical Comparative Indices (LCIs) and the actual number of ethnicities/tribes in South Sudan

Appendix 1.1: South Sudan's Indigenous Ethnicities as per Greenberg's Classification



Appendix 1.2: Lexical Comparative Indices (LCI) of South Sudan's Indigenous Languages



Lexical Comparative Indices (LCIs) among South Sudan's indigenous ethnic languages were estimated following Greenberg's classification of African languages and Ethnologue's lexical similarity percentages among related South Sudanese indigenous languages/dialects. Greenberg's classification is based on;

1. "The sole relevance in comparison of resemblances involving both sound and meaning in specific forms."
2. "Mass comparison as against isolated comparisons between pairs of languages."
3. "Only linguistic evidence is relevant in drawing conclusions about classification."

Note that, for simpilicity and shortening of the classification dichotomy, some of Greenberg's classification groups and terms in Figure 1 were either deleted or renamed as in Figure 2. Furthermore, while it may be convenient to use pejoratives/exonyms that had become popular such as Jurchol, Jurbel, Lokora, Dinka/Jenge, etc for these ethnics, it is offensive to refer to a people by a name they detest or do not willfully/naturally identify themselves with and as such, the author avoids and discourages using such names. Instead, appropriate alternative names that are autonyms or acceptable to these communities should be used. In light of this, the author uses Jokdimo, Beli, Pari, Jang, Gbaya, etc for Jurchol, Jurbel, Lokora, Dinka and Kresh respectively. Subject to acceptance by the respective communities and linguists, some of the names used herein to replace pejoratives/exonyms are author's own suggestions based on existing autonyms, legends and historical figures of the particular ethnic communities. These suggested names which replace/combine the bracketed names, as already given in the above charts, include Joklwo (Jokdimo, Jokthuri and Jokbor), Jokdimo (Jurchol), Jokthuri (Jurshat), Jokbor (Balanda-Bor), Larim (Buoya, Didinga, Murle and Tennet), Dajugule (Southern Central Sudanic), Kpala (Kresh-Aja) and Morubo (Moru-Ma'di).

The comparative indices (decimal numbers in Figure 2) are a measure of the close lexical relationship, ethnographic (ethno-historical) relationship amongst and the actual number of South Sudanese native ethnic languages. They should not be mistaken for lexical similarity percentages. Thus, there are **47 independent indigenous South Sudanese languages and in tandem 47 ethnics/nations** of South Sudan subject to confirmation of whether Uduk and Tid/Tirma are really native to South Sudan. It should be noted that the comparative indices are author's own deductions, not Greenberg's nor Ethnologue's, and were obtained on a largely conservative approach. Hence, any errors therein and in determining independent languages and their respective ethnics/nations are solely author's. To illustrate the meaning of the comparative indices, 0.85, 0.99, 1.00 and 0.90 for Jang-Nuer, Luo, Bari and Moru-Madi mean that the ethnics/languages making up these groups are lexically and ethnographically related by 85%, 99%, 100% and 90% respectively. Similary, Nilo-Saharan and Niger-Congo languages/ethnics are to a 20% extent related lexically and ethnographically.

In linguistics, intelligibility and lexical similarity constitute striking criteria for determining independence or subsetness of related ethnics/tribes or languages whereby those with at least 75% intelligibility/lexical similarity are classified dialects of the same language whereas those with less than 75% are considered separate languages. However, different countries have, for different

national advantages, adopted their own standards with a lexical similarity percentage that could be as low as 60% as in Manderin, for example. In this study, indigenous South Sudanese languages/ethnics with at least 70% lexical similarity are classified as dialects of the same language/ethnic rather than different languages/tribes as are currently considered. Notable in this group are;

1. Bari, Nyangwara, Pojulu, Kuku, Mandari and Kakwa which constitute one language/ethnic, Bari,
2. Toposa, Jiye and Nyangatom which together constitute Toposa language/ethnic,
3. Gbaya (Kresh) and Aja which together make up Gbaya,
4. Buoya, Didinga, Murle and Tenet which constitute Larim/Narim language/ethnic
5. Jokdimo (Dimo), Jokbor (Debor) and Jokthuri (Thuri) which together constitute Joklwo ethnic/Dhoklwo language.
6. Modo, Nyamusa and Molo which together combine into one language/ethnic, Modo
7. Yulu and Binga which together make up Yulu language/ethnic.

On the other hand, the following groups of languages/ethnics show lexical similarities less than 65% and are treated as separate ethnics/languages in this study.

1. Lotuho, Lokoya, Lopit and Dongotono show 63% average lexical similarity with Lotuho as the root dialect.
2. Morokodo, Moda and Modo (Modo, Nyamusa, Molo) have 61% average lexical similarity with Modo as the central dialect.
3. Morokodo, Moda, Modo, Bonggo and Beli show 53% average lexical similarity with Modo as the central dialect.
4. Morokodo, Moda, Modo, Bonggo, Beli and Baka show 50% average lexical similarity with Modo as the central dialect.
5. Joklwo, Anywak, Acholi, Pari and Collo show 60% lexical similarity
6. Komo and Uduk show 52% lexical similasrity.

In the interest of a more robust language conservation and greater educational benefits, some of these groups may forge a common language subject to consensus by the respective speech communities. Bear in mind that smaller ethnic minorities face a greater risk of their language extinction than the bigger ethnics. Already, although there may be ethnic Togoyos alive today, Togoyo, Mittu and Homo languages have gone extinct owing to their small size and pressure from bigger neighbouring indigenous languages and Arabic which their members adopted instead.

Appendix 2: Ethnic Homogeneity (EHa) factors

#	State or Federal Territory	Native Ethnic Languages (NEL)					
		No. of NEL	All Constituent NEL	2 Main NELs	EHI of 2 Main Ethnics	1 Main NEL	EHo (%) of 1 Main NEL
1	Atungdiak (Abyei)	1	Jang	Jang	1.00	Jang	100
2	Atungdiak (Ruweng)	1	Jang	Jang	1.00	Jang	100
3	Awil	2	Jang, Joklwo	Jang, Joklwo	0.75	Jang	95
4	Ponggo	13	Gbaya, Balanda, Ndogo, Ferroge, Banda, Bai, Buga, Gollo, Indri, Sere, Njalgulgule, Yulu, Kara	Balanda, Gbaya	0.85	Balanda	15
5	Pinymid	3	Jang, Joklwo, Bonggo	Jang, Joklwo	0.75	Jang	90
6	Tony	2	Jang, Bonggo	Jang, Bonggo	0.75	Jang	99
7	Naam	3	Jang, Beli, Moda	Jang, Beli	0.75	Jang	94
8	Sue	6	Zande, Balanda, Bai, Joklwo, Ndogo, Moda	Zande, Balanda	0.75	Zande	97
9	Rol	9	Avokaya, Baka, Mundu, Zande, Balanda, Morokodo, Moru, Moda, Modo	Avokaya, Moru	0.80	Moru	30
10	Supiri	4	Bari, Loluba, Keliko, Lugbwara	Bari, Lolubo	0.85	Bari	95
11	Torit	10	Lotuho, Acholi, Madi, Pari, Lokoya, Lopit, Dongotono, Tid, Lango, Larim	Lotuho, Acholi	0.75	Lotuho	35
12	Kapoita	1	Toposa	Toposa	1.00	Toposa	100
13	Pibor	4	Larim, Anywak, Jiye, Kacipo	Larim, Anywak	0.60	Larim	65
14	Jonglei	1	Jang	Jang	1.00	Jang	100
15	Liec	1	Nuer	Nuer	1.00	Nuer	100
16	Pow	1	Nuer	Nuer	1.00	Nuer	100
17	Bie	3	Nuer, Anywak, Komo, Uduk	Nuer, Anywak	0.20	Nuer	99
18	Sobat	2	Jang, Collo	Jang, Collo	0.50	Jang	90
19	Pajak	2	Jang, Maban	Jang, Maban	0.75	Jang	80
20	Pacoda	1	Collo	Collo	1.00	Collo	100
South Sudan		47	Jang, Joklwo, Gbaya, Balanda, Ndogo, Ferroge, Banda, Bai, Buga, Gollo, Indri, Sere, Njalgulgule, Yulu, Kara, Zande, Bonggo, Beli, Moda, Avokaya, Baka, Mundu, Morokodo, Moru, Modo, Bari, Loluba, Keliko, Lugbwara, Lotuho, Acholi, Ma'di, Pari, Lokoya, Lopit, Dongotono, Tid, Lango, Larim, Toposa, Anywak, Kachipo, Nuer, Komo, Uduk, Collo, Maban	Jang, Nuer	0.10	Jang	38

Appendix 3: Ethnic Harmony (EHa) factors or Ethnic Harmony Indices (EHIs)

#	Ethnic	1	2	3	4	5	6	7	8	9	10	1	12	13	14	15	16
		Njalgulgule	kara	Yulu	Gbaya	Sere	Ferroge	Bai	Indri	Buga	Ndogo	Balanda	Gollo	Banda	Lotuho	Lokoya	Lopit
1	Njalgulgule	1.00	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
2	Kara	0.85	1.00	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
3	Yulu	0.85	0.85	1.00	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
4	Gbaya	0.80	0.80	0.80	1.00	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
5	Sere	0.85	0.85	0.85	0.85	1.00	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
6	Ferroge	0.85	0.85	0.85	0.85	0.85	1.00	0.85	0.85	0.85	0.85	0.85	0.85	0.85			
7	Bai	0.85	0.85	0.85	0.85	0.85	0.85	1.00	0.85	0.85	0.85	0.85	0.85	0.85			
8	Indri	0.85	0.85	0.85	0.85	0.85	0.85	0.85	1.00	0.85	0.85	0.85	0.85	0.85			
9	Buga	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	1.00	0.85	0.85	0.85	0.85			
10	Ndogo	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	1.00	0.85	0.85	0.85			
11	Balanda	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	1.00	0.85	0.85			
12	Gollo	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	1.00	0.80			
13	Banda	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	1.00			
14	Lotuho														1.00	0.90	0.90
15	Lokoya														0.90	1.00	0.90
16	Lopit														0.90	0.90	1.00
17	Dongotono														0.90	0.90	0.90
18	Lango														0.80	0.80	0.80
19	Tid														0.80	0.80	0.80
20	Larim														0.75	0.75	0.75
21	Pari														0.75	0.75	0.75
22	Acholi														0.75	0.75	0.75
23	Ma'di														0.75	0.75	0.75
24	Zande										0.75	0.75					
25	Mundu																
26	Baka																
27	Avokaya																
28	Morokodo																
29	Moda																
30	Modo																
31	Beli																

32	Moru																
33	Bari																
34	Loluba																
35	Keliko																
36	Lugbwara																
37	Anywak																
38	Kacipo																
39	Toposa														0.50		
40	Bonggo											0.80					
41	Komo																
42	Uduk																
43	Maban																
44	Collo																
45	Joklwo				0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.70	0.80	0.80			
46	Nuer																
47	Jang				0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50			
No. of NE		7	7	7	12	7	11	11	11	6	10	7	4	11	9	4	8

Key

	Ethnicities are neighbors and in the same state
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	Ethnicities are not neighbors but in the same state
	Ethnicities are not neighbors and are not in the same state
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1.00	Full Harmony (no hostility at all) between the two ethnicities

#	Ethnic	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
		Dongotono	Lango	Tid	Larim	Pari	Acholi	Ma'di	Zande	Mundu	Baka	Avokaya	Morokodo	Moda	Modo	Beli	Moru
1	Njalgulgule																
2	Kara																
3	Yulu																
4	Gbaya																
5	Sere																
6	Ferroge																
7	Bai																
8	Indri																
9	Buga																
10	Ndogo								0.75								
11	Balanda								0.75								
12	Gollo																
13	Banda																
14	Lotuho	0.90	0.80	0.80	0.75	0.75	0.75	0.75									
15	Lokoya	0.90	0.80	0.80	0.75	0.75	0.75	0.75									
16	Lopit	0.90	0.80	0.80	0.75	0.75	0.75	0.75									
17	Dongotono	1.00	0.80	0.80	0.75	0.75	0.75	0.75									
18	Lango	0.80	1.00	0.80	0.75	0.75	0.75	0.75									
19	Tid	0.80	0.80	1.00	0.75	0.75	0.75	0.75									
20	Larim	0.75	0.75	0.75	1.00	0.75	0.75	0.75									
21	Pari	0.75	0.75	0.75	0.75	1.00	0.90	0.90									
22	Acholi	0.75	0.75	0.75	0.75	0.75	1.00	0.75									
23	Ma'di	0.75	0.75	0.75	0.75	0.75	0.75	1.00									
24	Zande								1.00	0.70	0.70	0.70	0.70	0.70		0.70	
25	Mundu								0.70	1.00	0.85	0.85	0.80	0.80	0.80	0.80	
26	Baka								0.70	0.85	1.00	0.85	0.80	0.80	0.80	0.80	0.80
27	Avokaya								0.70	0.85	0.85	1.00	0.80	0.80	0.80	0.80	0.80

28	Morokodo								0.70	0.85	0.80	0.80	1.00	0.90	0.90	0.90	0.85
29	Moda								0.70	0.80	0.80	0.80	0.90	1.00	0.90	0.90	0.85
30	Modo									0.80	0.80	0.80	0.90	0.90	1.00	0.90	0.85
31	Beli								0.70	0.80	0.80	0.80	0.90	0.90	0.90	1.00	
32	Moru										0.80	0.80	0.80	0.85	0.85		1.00
33	Bari						0.80	0.80		0.80	0.80	0.80	0.70	0.70	0.70		0.70
34	Loluba						0.80	0.80									
35	Keliko																
36	Lugbwara																
37	Anywak				0.60												
38	Kacipo				0.60												
39	Toposa			0.50	0.20												
40	Bonggo															0.80	
41	Komo																
42	Uduk																
43	Maban																
44	Collo																
45	Joklwo								0.70							0.80	
46	Nuer																
47	Jang								0.30					0.60	0.60	0.75	
No. of NE		8	7	2	8	3	7	7	8	8	9	9	8	9	9	10	6

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1.00	Full Harmony (no hostility at all) between the two ethnicities

#	Ethnic	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	No. of NE
		Bari	Loluba	Keliko	Lugbwara	Anywak	Kacipo	Toposa	Bonggo	Komo	Uduk	Maban	Collo	Joklwo	Nuer	Jang	
1	Njalgulgule																7
2	Kara																7
3	Yulu																7
4	Gbaya													0.80		0.6	12
5	Sere													0.80		0.6	7
6	Ferroge													0.80		0.6	11
7	Bai													0.80		0.6	11
8	Indri													0.80		0.6	11
9	Buga													0.80		0.6	6
10	Ndogo													0.80		0.6	10
11	Balanda								0.80					0.70		0.6	7
12	Gollo													0.80		0.6	4
13	Banda													0.80		0.6	11
14	Lotuho							0.50									9
15	Lokoya																4
16	Lopit																8
17	Dongotono																8
18	Lango																7
19	Tid							0.50									2
20	Larim					0.60	0.60	0.20									8
21	Pari																3
22	Acholi	0.80	0.80														7
23	Ma'di	0.80	0.80														7
24	Zande													0.70		0.3	8
25	Mundu	0.80															8
26	Baka	0.80															9
27	Avokaya	0.80															9
28	Morokodo	0.70															8
29	Moda	0.70														0.5	9
30	Modo	0.70														0.5	9
31	Beli								0.80					0.80		0.6	10
32	Moru	0.80															6

33	Bari	1.00	0.85	0.85	0.80											0.5	13
34	Loluba	0.85	1.00	0.85	0.80												3
35	Keliko	0.85	0.85	1.00	0.85												2
36	Lugbwara	0.80	0.80	0.85	1.00												2
37	Anywak					1.00	0.80								0.20		3
38	Kacipo					0.80	1.00										2
39	Toposa							1.00									3
40	Bonggo								1.00					0.90		0.75	4
41	Komo									1.00	0.90	0.90			0.60		3
42	Uduk									0.90	1.00	0.90					2
43	Maban									0.90	0.90	1.00			0.50	0.75	4
44	Collo												1.00		0.70	0.5	2
45	Joklwo								0.90					1.00		0.75	14
46	Nuer					0.20				0.60		0.50	0.60		1.00	0.1	5
47	Jang	0.50							0.75			0.75	0.50	0.75	0.10	1.00	20
No. of NE		13	3	2	2	3	2	3		3	2	4	2	14	5		

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