

CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND: DEFORESTATION FROM THE GLOBAL PERSPECTIVE

Deforestation is one of the adverse effects of modernisation and growth. It has also established that less attention is given to forestry department all over the world, thus, policy capacity continues to be a challenge which has kept the scholars in dilemma to chart a holistic blueprint that could address this endemic problem of deforestation. Further, it is argued that there has been generally scanty consideration paid to whether nations will have the capacity or the policy analytical capacity to screen, collect and present the essential information and pointers required for the array of boards planned (Wu, Howlett, & Ramesh, 2018). This is regarded as a challenge for policy decisions making because environmental figures are either not reported or not accurate to be able to make an informed decision. The organisational capacities are either weak or malfunction to carry out the responsibilities effectively and efficiently because the required resources and skills are not there to support operations of the organisation.

Initial review of literature on deforestation so far has it that worldwide forest loss has been slowdown but forest cover continues to reduce with an annual rate of 3.3% (FAO, 2016, p. 23). It is established from the literature that capacity is not adequate to support forest governance which is believe serve as a remedy to deforestation problem through REDD+ approach. It is also gathered from the literature that economics are shifting towards an alternative resources that are harmless to the environment and economically viable (Jabeen et al., 2021, p. 270). The literature also shows that more emphasis needs to be put on capacity and forest governance mechanism to further reduce the deforestation problem. This is so because, the importance of forest cover cannot be over emphasis. It is argued that the significance of timberlands has been broadly known, mutually for

the natural administrations they give and for the welfare of the communities that derive their livelihood from them. As such, their misfortune is seen as having negative socioeconomic and natural impacts (Ordonez, Baylis, & Ramirez, 2018, p. 2). The literature defined deforestation as the massive exploitation of forest product without replenishing them for either farming, industrial, or development purposes, etc. The over exploitation of forest products contributes to climate change and global warming. Trees offer assistance to normalise the climate by retaining CO₂ from the atmosphere. People rely on plants to get oxygen to support their respiratory system while plants depend on humans for CO₂ in the process called photosynthesis. When the trees are cut down without replacement, the effects are severe and the carbon put away within the trees is discharged into the air making it dangerous for people. The empirical evidence shows that deforestation contributes up to 11% of the worldwide greenhouse gas discharges into atmosphere (IPCC, 2014) and it results to negative impacts on different species' territories and biodiversity (Sanchez-Cordero et al., 2009 in (Ordonez et al., 2018, p. 2). The literature pointed out that since early 1950s to date, a high percentage of forest cover in the world has been losing its vitality because of human action due to the cutting down of trees mostly done by irresponsible humans for several purposes. "It is obvious the humans play crucial role in changing the biosphere and therefore, human actions need to be checked to ensure resilience of socio-economic development" (Danso & Yuadi, 2019, p. 42). The World Wildlife organisation (2015) reports that eleven (11) regions around the world are likely to experience 80% of deforestation between the year 2010 – 2030. The report further states that if something is not done promptly, the world forest cover will be lost up to 656, 000 square miles. In addition, the report continued to stress that changing climate could have severe consequences on the forest in boreal region and perhaps affect regeneration of the forest. It is evident that the region has generally low levels of

biodiversity at a worldwide scale and it is the world’s final non-tropical timberland with expansive, free-ranging populaces of main predators and herbivores; this gives it tall preservation esteem. Apparently, the report underlines that this may alter subsequent inquiry into climate change impacts on boreal timberland regeneration (WWF, 2015).

Table 1. 1 The number of forest cover loss as projected in 11 regions of deforestation front can be seen from the table below.

DEFORESTATION FRONTS	PROJECTED LOSS (Million ha) 2010 - 2030
Amazon	23 - 48
Atlantic Forest/ Gran Chaco	10
Borneo	22
Cerrado	15
Choco-Darten	3
Congo Basin	12
East Africa	12
Eastern Australian	3 - 6
Greater Mekong	15 - 30
New Guinea	7
Sumatra	5
Total from 11 Deforestation Fronts	127 - 170

Source: (WWF, 2015)

This table shows that 11 regions of deforestation fronts and their projected loss of forest cover from 2010 – 2030 in millions ha. It is evident that in order to stop these projections from happening; it requires concerted effort from all and sundry being it poor or rich. It is emphasis that “in recent decades, changes in climate have caused impacts on environment and human systems on all continents and across the oceans. The impacts are due to observed climate change, irrespective of its cause, indicating the sensitivity of natural and human systems to changing climate” (FAO,

2016). This means that there are host of issues affecting global climate system which will eventually have serious impact on the lives of the people especially the poor who depend more the environment for their livelihoods. However, the effects of climate change could be severe if care is not taking and the poor or less privilege will have to injure the negative consequences because they are more vulnerable to these effects.

Table 1. 2 The table below indicates the global forest area change from 1990 – 2015 and annual net change in thousands of ha.

TABLE 1 Global Forest Area Change, 1990 - 2015				
		Annual Net Change		
Year	Forest (thousand ha)	Period	Area (thousand ha)	Rate'' (%)
1990	4 128 269			
2000	4 055 602	1990-2000	-7267	-0.18
2005	4 032 743	2000-2005	-4572	-0.11
2010	4 015 673	2005-2010	-3414	-0.08
2015	3 999 134	2010-2015	-3308	-0.08
*Calculated as the compound annual growth rate				

Source: (FAO, 2016)

This table above revealed that there was only slide decline in global forest area 3.1% as the period under study from 4.1 Billion ha to just 4 Billion. This indicates that global forest area loss has been slow down for about 50% within this time span. In addition, it was projected that if certain measures are not put in place to protect the forest cover, more destruction could occur which may lead to lost in biodiversity, among other. It is asserted that indeed if we know that human exercises are basically capable for climate alterance, it is essential to decide how much temperatures will rise and what impact this will have on such things as sea-level rise, expanded climate occasions

(more visit dry spells, tropical storms, tornados, etc.), the effect on biodiversity and eco-systems, the effect on infection, and so on (Kooten, 2013, p. 4).

Table 1. 3 This table below shows the effects of human activities on the environment which resulted to deforestation and changing climate conditions. These human activities also contribute immensely to land degradation.

	 Livestock	 Large-scale agriculture	 Small-scale agriculture & colonization	 Unsustainable logging	 Pulp plantations	 Fires	 Charcoal and fuelwood	 Mining	 Infrastructure	 Hydroelectric power
Amazon	■	■	■	■		■		■	■	■
Atlantic Forest/ Gran Chaco	■	■		■	■	■	■	■	■	■
Borneo		■	■	■	■	■		■	■	■
Cerrado	■	■					■	■	■	■
Chocó-Darién	■	■	■	■				■	■	
Congo Basin	■	■	■	■			■	■	■	
East Africa	■	■	■	■		■	■	■	■	
Eastern Australia	■		■	■				■		
Greater Mekong		■	■	■	■		■		■	■
New Guinea		■	■	■	■	■				
Sumatra		■	■	■	■	■			■	

Table 2: Summary of main pressures on forests in different deforestation fronts

The most common pressures causing deforestation and severe forest degradation are: large and small-scale agriculture; unsustainable logging; mining; infrastructure projects; and increased fire incidence and intensity. New roads can have a small direct impact but a large indirect effect through opening up forests to settlers and agriculture. Poor forest management, destructive logging practices and unsustainable fuelwood collection degrade forests and often instigate an increasing spiral of degradation that eventually leads to deforestation ("death by a thousand cuts"). Table 2 gives a summary of these pressures.

- Primary cause of forest loss and/or severe degradation
- Important secondary cause of forest loss and/or severe degradation
- Less important cause of forest loss and/or severe degradation
- Not a cause of forest loss and/or severe degradation

Source: (FAO, 2016)

The diagram shows the activities of the man that put pressure on the environment causing deforestation and severe forest degradation. The pink colour indicates the potential threat to forest loss and orange signifies cause of forest loss while yellow indicates less important effect on forest loss and white no effect on forest loss or degradation.

Moreover, it has implied that assessing the harms maintained a strategic distance from relieving climate change may be a much more troublesome and dubious prospect than estimating the costs; indeed, in spite of the fact that discovering costs may be a troublesome sufficient errand (Kooten, 2013, p. 5). The PRISMA SLR further stress that deforestation is one of the contributing factors to global warming and changing global climate. The climate system gets warmer in every year. Scientists and climate experts are warning the people to check their actions or activities on the environment and the atmosphere for centuries now. Many people are not convinced about the existence of global warming and its effect. Some criticize from the literature questioned if global warming is in fact part of natural phenomenon or if it is actual a man-made phenomenon as it was alluded by scientists and climatologists such as James Hansen, Michael Mann, etc. Further, there are individuals who accept that 'global warming' does not exist or will have irrelevant results on the soil and its biosphere, in the event that at all, it exists (Majumdar, 2001, p. 3). The literature highlighted that the causes of global warming are blamed on the actions of the humans on environment as the human society expands it tend to have some level of effects on the environment. The literature describes the term global warming which is used in climate system to designate the rising average temperature of the earth and its effects on the atmosphere and environment. Many scientists are 95% or more certain that global warming is cause by higher concentration of greenhouse gases and they are man-made causes of emission into the atmosphere. It is argued that, global warming is very vital and broadly talked about environmental issues of later times. In basic terms, global warming is the warming up of the environment due to an increment within the concentration of greenhouse gasses e.g. CO₂, CH₄, N₂O, CFCs (Majumdar, 2001, p. 4). Greenhouse gases effects appeared to be consequences of increasing CO₂ emission in the

atmosphere for last 100 years which has serious impact on the earth resulting to the depletion of ocean layers and making the earth warmer than before. It is evident that the earth is warming up steadily because of human actions or activities through the emission of greenhouse gases. Global warming is a phenomenon of climate change characterised by a general increase in average temperature of the earth transform the weather balances and ecosystem for a long time. It is directly linked to the increase of greenhouse gases in the atmosphere by worsening the effects of greenhouse gases on the changing global climate system which has severe consequences on the lives of the people and environmental quality. Currently, CO₂ emission worldwide made Scientists to predict an increase of average temperature between 1.5⁰ and 5.3⁰C (2.7⁰ – 9.54⁰F) by 2100 (<https://climate.nasa.gov/evidence/>). In addition, “it is determined that a warming of 4.2⁰ C would result in a sea level rise of 7.1 cm by 2100” (Ecsedy & Murphy, 1992, p. 2). If human actions are not checked, it might have severe consequences on humanity in general and biosphere in particular. It is stressed that the current warming float is of specific noteworthiness since most of it is inconceivably likely (more basic 95 per cent likelihood) to be the result of human activity since the mid-20th century and continuing at a rate that's uncommon over decades to centuries (<https://climate.nasa.gov/evidence/>).

The politicians were also made to believed that global warming is real and it need concerted effort to address. According to former President of USA Barrack Obama at climate summit in New York, USA, 2014; he said, ‘this summer is the hottest ever recorded and global carbon emission is still on the rise; so, the climate is changing faster than our efforts to address it. The alarm bell keeps ring and no nation is immune; thus, we have to cut our carbon emission to prevent the worst effects of the climate change, he stated. Climate change mitigation issues proceed to overwhelm policy agendas and development

agendas. In any case, researchers point to ought to address the looming dangers related to effects of climate change and climate change adaptation (Wellstead & Stedman, 2011, p. 461). However, most of the twentieth century scientists believed that human actions or activities are responsible for global warming and changing global climate because of the fossil fuels, deforestation, intensive farming, mining, overconsumption, and waste disposal or indiscriminative dumping of waste, among others. It is important to state that deforestation is one of the contributing factors to global warming because trees serves as carbon sink; so, when trees are cut down in large quantity, the carbon that the trees used to store are release into the atmosphere thereby making the climate hotter. It is alluded that the greenhouse impact could be a supported, characteristic marvel; gasses which are radiatively dynamic have warmed the surface of the Soil since the planet and its climate was shaped approximately four and a half billion a long time prior. Mankind's exercises specific those partners with industrialization, large-scale land clearance and chemically made strides horticulture are including progressively expansive sums of those radiative dynamic gasses to the environment (Jones & Henderson-Sellers, 1990). As described in Nasa's website;

“the planet's normal surface temperature has risen almost 1.62-degree Fahrenheit (0.9 degree Celsius) since the late 19th century, are alter driven to a great extent by an expanded in carbon dioxide and other human-made emanations into the environment. Most of the warming took put within the final 35 a long time with the five hottest a long time on record taking put since 2010. Not as it were was 2016 was the hottest year as recorded but eight of the 12 months that make up the year from January through September with the exemption of June which is the hottest period of time in a year” (<https://climate.nasa.gov/evidence/>).

Figure 1. 1 The bar chart below is the graphical representation of the decomposition of the change in Total Annual CO₂ Emission from Fossil Fuel combustion by decade.

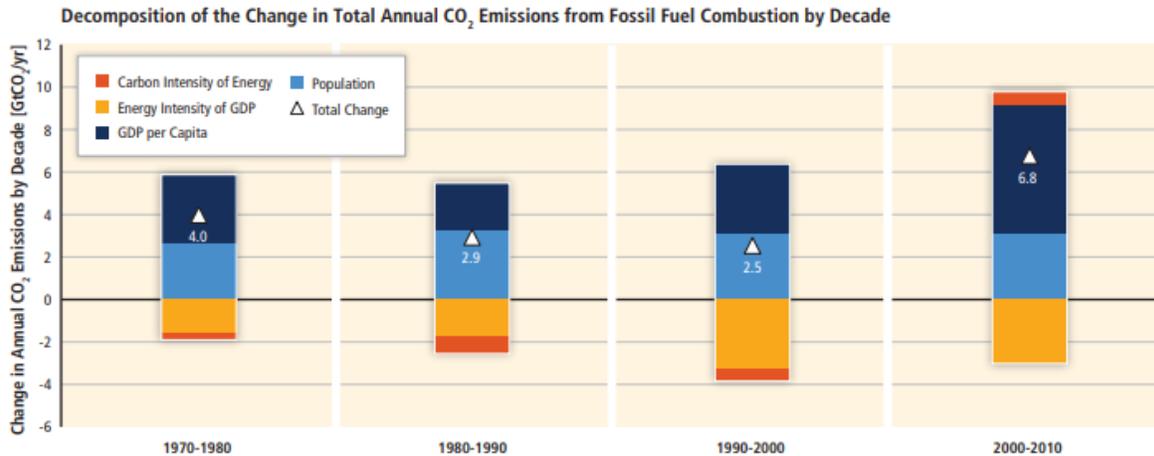
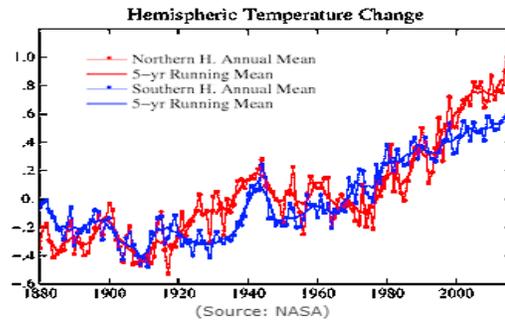
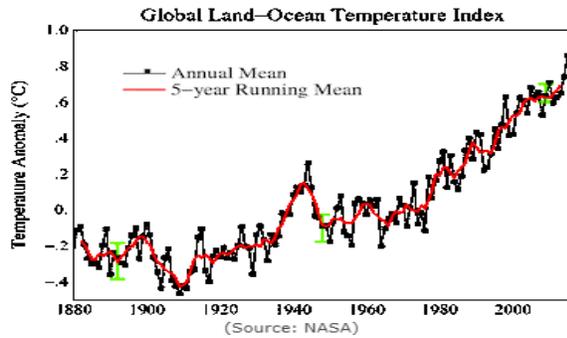


Figure SPM.3] Decomposition of the change in total annual CO₂ emissions from fossil fuel combustion by decade and four driving factors: population, income (GDP) per capita, energy intensity of GDP and carbon intensity of energy. The bar segments show the changes associated with each factor alone, holding the respective other factors constant. Total emissions changes are indicated by a triangle. The change in emissions over each decade is measured in gigatonnes of CO₂ per year [GtCO₂/yr]; income is converted into common units using purchasing power parities. [Figure 1.7]

Source: (IPCC, 2014)

This bar chart shows the drift of decay of the alter in add up to yearly CO₂ emission from fossil fuel by decade. This is to clarify that the climate is changing steadily and it will keep going up if we don't limit our greenhouse gases emission into the atmosphere. Therefore, both small and big economies need to cut down the greenhouse gases emission to a larger percentage so that the future generation will not suffer the consequence of our actions today. It is important to note that “in generating a global greenhouse warming, man has embarked on vast unplanned planetary experiment that poses unprecedented challenges to his wisdom, foresight, and scientific capacity” (Mathews, 1987, p. 5). This ignites the scholar to question about the policy capacity to understand the substance of the policy science for better implementation to benefit all.

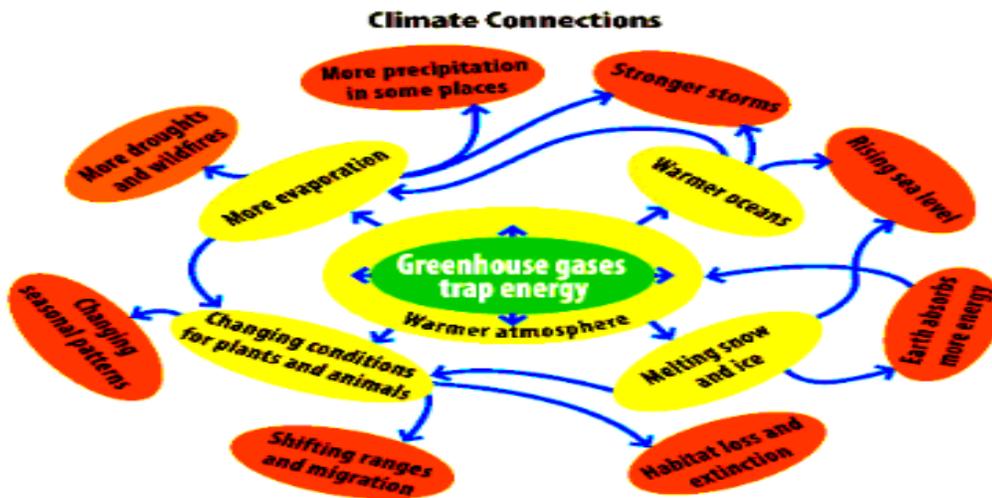
Figure 1. 2 The scatter graph below is the graphical representation of Global Land-Ocean Temperature Index and Hemisphere Temperature change in decade.



Source: (<https://warmheartworldwide.org/climate-change/>)

This shows the rising global land-Ocean Temperature and hemispheric temperature change in the world. It is evident that global temperature is on the rise from the inception of scientists' intervention to alert about the cause and effects of the global warming. It was asserted that there is nearly an agreement among climate researchers that the build-up of greenhouse gasses within the climate will inevitably cause worldwide warming which in turn leads to genuine natural, financial and political suggestions of all-inclusive, territorially and at national levels (Oroud, 2018, p. 5). This means that it is now a collective responsibility to fight against this threat on lives and more sustainable measures should be adapted to replenish our forest cover because they are of value to lives not only humans but biodiversity in general which provides ecosystem services. Trees serve for different purpose which are of beneficial to both humans and other species that derive the livelihoods from the ecosystem. For example, rainfall is something that is important to every living or non-living things on the earth surface.

Figure 1. 3 The diagram below shows connectedness of the climate issues to better understand the effects of greenhouse gasses on the global climate system.



(Source: US Environmental Protection Agency)

Source: (<https://warmheartworldwide.org/climate-change/>)

This diagram shows how global warming led to change in global climate system and also to indicate the interconnectedness of systems in the global climate system. Therefore, change in one part of the system will result to change in another part of the system. The warmer the oceans the more the atmosphere gets warmer; as a result, it will lead to melting of snow and ice. In addition, changes in atmosphere will resulted to changing conditions of plants and animals as well as more water will evaporate to the atmosphere which perhaps cause precipitation. It is stated that “the greenhouse gas is part of a bigger picture; it is closely linked to stratospheric ozone depletion and acid deposition. These three phenomenon are tied together by many of the chemical species by the same human activities that generate them and by the effects of one phenomenon on the timing and severity of the other” (Wentz, Wentz, Ricciardulli, Hilburn, & Mears, 2013). It has been proven by scientists and climate experts beyond reasonable doubt that human actions or activities are the main causes of changing climate conditions through land degradation, pollution,

exploitation of forest resources, endangering the biodiversity and ecosystem, amongst others. This is so because of weak policy capacity in the forestry sector in many parts of the world especially in the developing countries.

1.2 IMPORTANCE OF SYSTEMIC LITERATURE ON POLICY CAPACITY AND THEORIES OF DEFORESTATION

The PRISMA SLR indicates that deforestation is a global problem that contributes to global climate issues such as global warming, changing climate, and environmental degradation. This introduction discussed about the background information on deforestation and the reason why the researcher is interested in this particular topic. It also discussed how policy capacity could help address deforestation in general. This is then followed by discussion on the significance of the research topic, the research problems, aims and objectives of the research. In this background, it began with discusses about deforestation from the global perspective by linking it to global warming and climate change in which examples are drawn from Indonesia and Gambia.

Over the last two decades, the PRISMA SLR stress that deforestation is a critical issue that leads to changes in the global climate system and environmental destruction. On that note, policy analytical capacity was used in this study to examined literature on policy capacity in relation to forestry sector by engaging evidence-based approach to policy making. The PRISMA SLR has it that policy capacity does not have theory of its own but uses governance theories to discuss issues and it also uses governance indices to measure policy capacity of an organisation. In governance, the general policy capacity of the nation in some sense described by the indicators with the most noticeably awful performance; higher performance on a few pointers is regularly incapable to

compensate for low performance on others (Wu et al., 2018, p. 82). It is factual from the PRISMA SLR that policy capacity is key to complement governance system, it is crucial to use governance indices to measure policy capacity of a nation or an organisation. As cited in Wu et al. (2018), Hope (2009) describe building capacity as improvement of the competency of the many social actors to involve in exercises in a feasible way for positive advancement impacts such as poverty diminishment, advancements in administration quality (Wu et al., 2018, p. 82). It is therefore vital to consider change in individual, institution, and societal stage when it comes to capacity building initiatives in developing countries. “The policy capacities of organizations both public and private guarantees to supply a few clarity of the issues through thorough analyses and expert advice” (Gen & Wright, 2015, p. 1).

The PRISMA SLR mentioned that forest governance is characterized as the way in which public and private actors, counting formal and casual institutions, smallholder and indigenous organizations, little, medium-sized and large cooperation, civil society organizations and other partners arrange, make and implement binding decisions about the administration, utilize and preservation of forest resources (FAO, 2010; Muir, 2018). Evidently, forest governance involves multiple actors at multiple levels of forest management. It encourages sustainable management of forest and forest resources in transparent and accountable manner. Thus, policy capacity is key in augmenting governance system which will help put the forest management in perfect footing. This is so because policy capacity is concerned with quality of government. The literature indicates that successful forest governance processes engage forest partners, address key forest-related issues, and include other sectors that influence, or are influenced by, forest governance (Muir, 2018, p. 1).

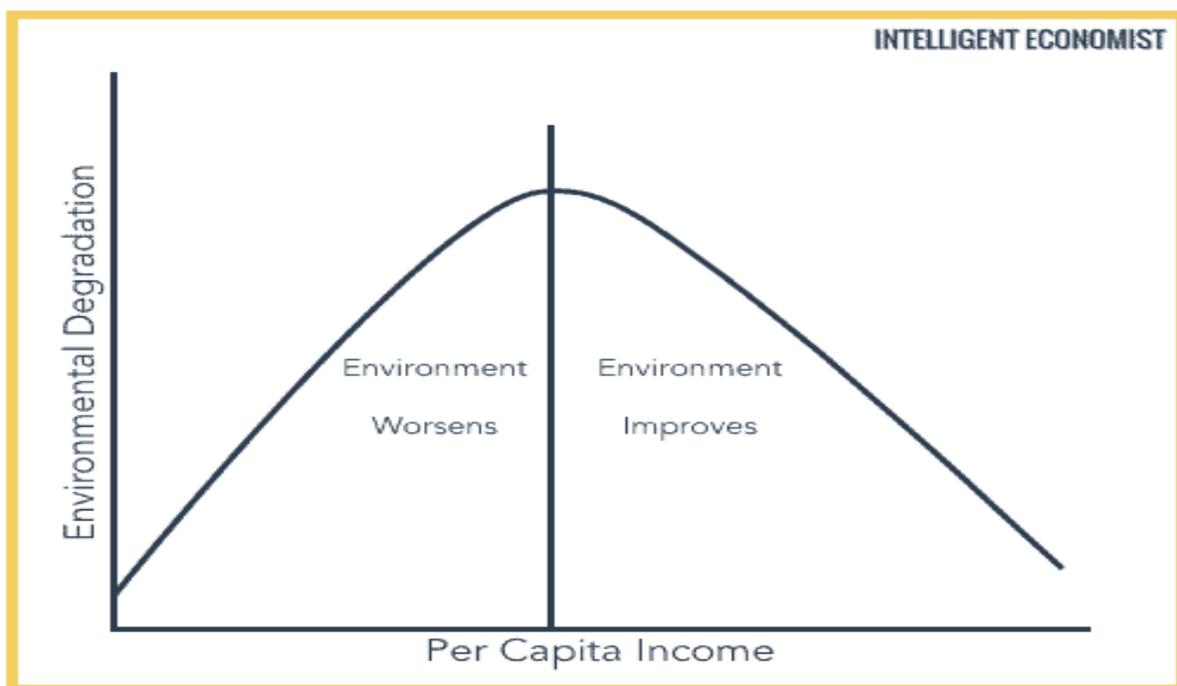
This PRISMA research protocol has examined the issue of policy capacity at organisational level systematically. The protocol stressed that “the capacity of expansive bureaucratic organizations like Department of Forestry or Ministry of Environment, to address climate change issues is a range that numerous consider being imperative however there's exceptionally small experimental prove available” (Wellstead & Stedman, 2011, p. 461). The empirical evidence shows that the use of evidence-based policy making involves knowledge and skill to analysis data available in order to make an intelligent policy decision. This is important in the study of public policy, as cited in Wu et al., 2018, Parsons (2004) argued that, “the connexion between knowledge and policymaking is central in the event that not the central association for public policy studies” (Wu et al., 2018, p. 8). The literature has it that knowledge is key in policy decisions and public policy studies augment the knowledge base of the policy makers. Therefore, it will be important to improve policy analytical capacity in all sectors of development and forest being one of the most important sectors in the environment which contributes to the livelihoods of both humans and animals. The literature indicates that forest contributes to sanity of the atmosphere in which they serve as carbon sink. As cited in Wellstead and stedman (2011), Howlett (2009) postulates that policy capacity is vital to evidence-based policy making and represents an endeavour to upgrade the possibility of policy success by moving forward the sum and sort of data handled in public policy decision making as well as the strategies utilized in its assessment (Wellstead & Stedman, 2011, p. 462).

The literature agreed that forests is a key element in sustaining the quality and healthy environment. The literature caution that deforestation could have negative consequences on economic development and technological advancement. It is attested that EKC recommends for

an increments in per capita income at first raise of deforestation rates until a nation accomplishes a tall sufficient salary development to experience abating or indeed inversion of forest loss (Joshi & Beck, 2017, p. 196). The Environmental Kuznets Curve (EKC) was adapted for deforestation theory and it provide answer to questions on how does income level affect forest cover? It was initially embraced from economics field proposed by Kuznets (1955) who relates between income per capital and deforestation rate. The natural economic analysts have created EKC to explore pay and its impact on natural debasement. Besides, the beginning exertion in looking at EKC application is done by Grossman & Krueger (1991), who examines the natural impacts of exchange liberalization. A short time later, EKC has been connected in ranger service segment, known as EKC for deforestation which hypothesize the comparative idea of EKC. Theoretically, the concept of the EKC for deforestation was discussed by López (1994) and he stated that as economic or income growth is rising, deforestation will be declined when the stock impacts of timberland asset on agrarian generation are internalized. In expansion, deforestation may be a function of income or economic development shaping an altered U-shaped bend in which deforestation circumstance might alter be that as it may improve the prosperity of the individuals. Within the early stage of improvement when the level of pay or GDP development is generally moo, expanding pay per capita will quicken deforestation rate until a certain turning point when individuals will figure it out the annihilation of the woodland cover and choose to re-establish the timberland cover through afforestation. Amid this early arrange, deforestation is likely one of the negative results of improvement. At that point, as pay risings, the rate of deforestation will decay whereas moo pay brought about to rise deforestation since individuals tend to depend more on the woodland item to meet their day-by-day needs. To reiterate this point, Beck & Joshi (2017) states that deforestation

EKC, subsequently, begins at a country's starting stage of financial extension, where the perfect old-growth timberlands stay for the most part untouched past a few essential subsistence, building, and vitality employments (Joshi & Beck, 2017, p. 197). However, an increase in income will motivate individuals to make strides their woodland assets and natural quality.

Figure 1. 4 The graph below is the Environmental Kuznets Curve (EKC) showing relationship between environmental degradation and per capita income.



Source: (<https://www.intelligenteconomist.com/environmental-kuznets-curve/>)

The graph above shows the relationship between environment and per capital income which is a U-shape. This means that the more the economy of a particular country is advancing the more people will shift their dependency on the environment, vis vasa.

Moreover, the empirical studies has it that “EKC for deforestation has been theoretically conceptualized and many empirical studies have been done at various levels relating to economic growth and deforestation” (Egli & Steger, 2007).

It is asserted in the literature that an improved organisational capacity and full disclosure of environmental information will enhance environmental qualities and sustainable forest management (Hsu, 2015, p. 199). Evidently, environmental law and policy have not emphasized data and its divulgence as an essential concern, resulting in a vulnerability being the “hallmark of the natural space (Esty 2004, in (Wu et al., 2018)). In order to avoid uncertainties in the policy process, policy analytical capacity and evidence-based approaches is important for the use of information in the policy making process. Environmental law and policies are significant to the sustainable development process which advocate for wise use of resource. The forest resource should be protected for the better function of the environment. Moreover, there are skills and competence deficit in environmental sector especially the forestry sector which is either neglected or abandoned. Scholars in this field of study have notice technical and analytical limitations in the environmental management which is fundamental to shaping responsive policy making and revitalising the forest cover. Further, the literature acknowledge that the acknowledgement of these information deficiencies are at the root of policy failure has persuaded a move toward examining the part of data, and its divulgence and straightforwardness, in environmental decision-making (Esty 2004, Mol 2006, in (Wu et al., 2018)). Many public policy scholars are with the believe that policy failures have everything to do with insufficient policy analytical capacity or lack of information to make an informed decision in the policy cycle. On that note, evident-based approaches and policy analytical capacity will help augment policy capacity with the right resources and competence.

Several actors have a stake in the policy process. As it was mentioned earlier that some policy actions will require skills and knowledge from different stakeholders in that policy process while some other policy action may not require that rigor. Arguably, advocates of such evidence-based approaches, in any case, tend to miss the part of capacity in embracing these strategies, which at their centre emphasize policy failure as a result of information holes but don't fundamentally recognize the capacity of actors or frameworks to successfully utilize data in a decision-making (Fritzen & Wu, 2013; Wu et al., 2018). This triggers the attention of policy scholar to elaborate on evidence-based approaches and analytical policy capacity as crucial to policy studies. Howlett (2009) stressed that frail policy analytical capacity can overcome the centre precept of evidence-based approaches in which way better choices result when the foremost accessible data is joined and connected (Michael Howlett & Joshi-koop, 2011). This emphasis the significance of the use of relevant information in decision making process. In the same vein, "researchers of the policy learning field would contend that made strides policy analytical capacity, at that point, impacts the learning prepare in that it can upgrade data handling and utilization, expanding know-how and the plausibility for fruitful policy outcomes [Bennett and Howlett 1992; Sabatier and Jenkins-Smith 1993, in (Michael Howlett, 2015)]. It is vital to note that knowledge and information are panacea to better decision making in the policy cycle.

Furthermore, common pool resource theory refers to natural or man-made resource system such as irrigation system, fishing ground or pone, forest, water, etc that could be used for common purpose and the characteristics makes it costly but not impossible. The literature caution that resources are prone to over exploitation or misuses which many cause erosion or other negative impacts on the environment. Over two decades or so, restricted commons ventures have been an

unmistakable country improvement technique in the least developed nations. The ventures commonly combine preservation and advancement aspirations and are advanced as methodologies that provide nearly individuals more control over assets that are imperative for their jobs. It is argued that “in expansion to the particular organisation plan standards distinguished in Ostrom’s work, the complex relevant concept characteristic inside common pool of resources hypothesis such as interest, social learning and strengthening have demonstrated troublesome to create into common ventures”(Saunders, 2014, p. 638). Common-Pool Resources (CPR) theory, as connected to forestry, to a great centres on the prospect for collective activity to illuminate commons situations at the nearby or town level (Tucker 2010; Araral 2014 in (Fleischman, Loken, Garcia-Lopez, & Villamayor-Tomas, 2014, p. 305). Essentially, “CPR theory is one of the most prominent contemporary theories of environmental governance, there have not been systematic tests of its applicability to large-scale forest governance” (Fleischman et al., 2014, p. 306). This is important in augmenting policy capacity of an organisation to employ policy analytical capacity which is crucial to improving policy outcome. It advocates for sound policy making process which require skills and resources or competences and capabilities in the policy making process in order to undertake policy functions.

The PRISMA SLR emphasis that the dynamics of forest cover is also captured in time dimension, theorized as the forest transition theory. This theory was introduced by A. S. Mather (1992) who originally developed this idea based on basic sequence of natural resource destruction and conservation. This model argues that, at an early stage, natural resource destruction is inevitable to meet the human needs. In the long-run, the rising demand and price of natural resources will incentivize people to conserve and to restore their natural resources or even over

exploit the forest products. For example, rosewood in the Gambia was and still very valuable for exportation to China which has affected the Gambian environment. The literature encourages foresters to apply and develop further idea in the context of discouraging deforestation and the literature capture that community capacity should be improve to help shape and strengthening the forest management. In addition, “forest transition theory focuses more on the temporal changes of forest cover or a change in forest cover trend over time” (Mora et al., 2012, p. 8). Thus, the literature confirmed this “notion of the theory to investigate the transition point at the time of the lowest forest cover in a given region” [Mather, 1992 in (Brack & Bailey, 2013, p. 6)]. The other simple understanding of this concept is the change in forest cover from shrinking to expanding forest areas (Mather, 1992 in (ibid)) or shifting from deforestation to reforestation (ibid). It is important to note that transition happens when decline in deforestation trend reverse into increasing forest cover trend with improvement on the environmental quality. Angelsen (2009) “further depicts the forest transition within the arrangement as given. After that stage when timberland cover is still high and the deforestation rate is low; as the improvement taking put, at that point woodland cover and deforestation rate are low due to shortage of forest” (Brack & Bailey, 2013). At the end, an increasing forest rent could stimulate the transition by incentivizing forest plantation or reforestation/afforestation.

Forest transition in literature is generally considered taking place in one cycle of transition from high forest cover to the lowest point of the forest cover with economic advancement and then increase when the society gets more advance. The literature identified a problem for most countries which is decreasing forest cover is an inevitable effect of their development processes. The literature further states that at early stage of development, an increasing population and high

demand for food or forest products will bring a significant pressure on forest land because of agricultural land expansion. As countries develop further, an increasing demand for forest products and services will incentivize the process of reforestation. By examining the pattern of forest transition from different countries and regions will reveal a delay of time from declining to increasing trend of forest cover”(Barbier, Burgess, & Grainger, 2010, p. 100). Further, “authors argued that postponing reforestation happens when individuals still keep utilizing logged-over woodland negligible arrive for cultivating particularly within the case of agricultural subsistence and within the setting of commercial purposes, tree planting on negligible arrive may be deferred since of the delay of market flag” (Barbier et al., 2010, p. 7; Leblond, 2019, p. 4; Singh, Bhojvaid, de Jong, Ashraf, & Reddy, 2017, p. 2). In addition, “a recent study finds a more complex pattern in which forest transition may exhibit in multiple transition phases” (Leblond, 2019, p. 5). This study argues that policy plays an important role in the forest cover transition of Asia. Therefore, capacity of policies needs to be studied to help explain some of the weaknesses of the forest management in developing countries.

This research employed PRISMA systematic literature review to examine the policy capacity to help address deforestation problem. The PRISMA research protocol was design but it is not register or approve. The motive of using PRISMA research protocol to critically assess and analyse the existence literatures that are relevant to this study. PRISMA SLR helps to ensure validity, relevance, transparency and enhance the integrity of the review to achieve the review objectives.

1.3 PROBLEM STATEMENT

In this study PRISMA research protocol is used to examine how literature has discussed policy capacity in addressing deforestation and identify how adequate policy capacity can help to address deforestation problem. The research protocol identified that bad governance results to forest policy failure because of low capacity in forest management in most developing countries. Further, policy capacity is more focus on the decision making aspect of the policy process because policy implementation is viewed as a bureaucratic process (Gen & Wright, 2015, p. 1). Indeed, it was a bureaucratic process since 1970s until recently when policy capacity involves research, analysis, policy decision-making, and evaluation. The study examines the capacities of policy and its related discourse around environmental issues as well as relevance of information to environmental decision-making. According to Hsu (2018), policy analytical capacity is critical to advance evidence-based approaches to environmental decision-making and governance (Wu et al., 2018). It is evident that environment sector is considered information poor for the fact that environment figures are either under-reported or not available. Howlett (2009) made mentioned that more empirical research is needed on the policy work in specific context. That is why this research explore policy capacity in specific environmental issues called deforestation. Moreover, the literature indicates that policy capacity is either lacking or neglected in most of the policy formulation and implementation process which led to policy failure in many countries. “The weak policy capacity found among most of the major actors included in policy analysis, even in rich nations like Canada, is exceptionally problematic within the setting of managing with the challenges of improving policy-making via the appropriation of evidence-based methods for managing with complex modern policy challenges” (Michael Howlett, 2009, p. 168). There are three categories of policy capacity mentioned by Wu et al (2018) such as individual,

organisational, and systemic level. Concisely, this study looked at organisational capacity in the framework of policy analytical capacity through evident-based approaches in the policy decision-making process which is discussed in relation to addressing deforestation problem and information gap. Therefore, this research studied policy capacity discourse around the world from 2010 – 2020. This study aimed at finding out how scholars are engaged in the discussion of policy capacity according to subject area and countries. This is to ascertain the claim from the literature that there are more scholarly discussions on policy capacity in developed countries than developing countries especially in the area of environment or prove otherwise.

1.4 RESEARCH QUESTIONS

In line with PRISMA SLR methods that is employed in this research, this research seeks to examines the literature on policy capacity in its relation with deforestation. From the literature, the PRISMA research protocol will focused on to answered these specific questions below:

1. To what extent has the literature on policy capacity has addressed deforestation?
2. From the literature, how is inadequacy of policy capacity impacting on deforestation and what does literature identified as a strategy that needs to be employed?
3. What are the policy options to augment policy capacity in policy making process and implementation to improve environmental quality?

1.5 RESEARCH AIMS AND OBJECTIVES

The study achieved the following aims and objectives according to PRISMA research protocol,

1. To examine the policy capacity discourse from 2010 – 2020 and to identify the policy capacity gap in the forestry sector.
2. How the existing literature has identified the factors that resulted to policy failures and advocate for improvement of policy capacity at the organisational level.
3. To discuss the best practices of addressing deforestation problem which could help improve policy capacity in the forestry sectors and improve environmental quality.

1.6 SIGNIFICANCE OF THE STUDY

This topic is very important to quality of life because trees are very significant to the lives of the human and other species. There is a symbiotic relationship between environment and the humans. If deforestation is eradicated, the quality of lives will be improved.

This study is vital to academic or professionals and it will add value to body of knowledge in environmental protection measures and policy studies. This research findings could be used in academia, governments, NGOs or anyone that have interest in the environment and policy capacity to improve the management of the forestry sectors. The research shall reliably inform the policy makers about the significance of policy analytical capacity in designing environmental policies and programs. It shall reserve as a guide to policymakers to include policy analytical capacity in the policy making process.