

## STRATEGIC THINKING AND TECHNOLOGICAL INNOVATION IN THE AGRO-ALLIED INDUSTRY IN NIGERIA

Aja Akpuru-Aja\*

*Professor of Policy, Defence and Strategic Studies  
Department of Political Science, Abia State University, Uturu*

### Introduction

Strategy does not exist in vacuum. Strategy is a process rather than a packaged model. Its core root element is known as strategic thinking. It is a distinct mode of thought and a framework for analysis. It precedes strategy. To achieve any policy goals, strategic thinking process is a necessity to make deep reflections and decode the many sidedness of the problematic such as the **strengths, weaknesses, opportunities** and **threats**. No option is off the table for interrogation and consideration. It considers things taken as given as well as those things often taken for granted (Quin, 1988). Time taken to interrogate the various dimensions, including **thinking the unthinkable**, on any policy is worth it to guide against policy reversal. Strategic thinking calls for a good balance of judgment on both linear and non-linear mode of thought on a given policy. It accommodates intuitive, critical, creative and systemic thinking processes (Klyuver 2012:1).

In its original, narrow and specialized sense, strategic thinking is like an experimental thought process to strategy in military image. To the extent that war or battle establishes the closest link between life and death, it takes strategic thinking framework for analysis to come to terms with strategy as a survival necessity (David, 2005). In time function, its application has gone beyond the military strategy.

Presently, it has found considerable applications in business studies; strategic management and strategic marketing. In military strategy, there is even scanty literature on strategic thinking. On the contrary, there are vast literatures on strategic thinking in business and development studies (Mintzberg, 1987; Porter, 2011). In value, it is no longer restricted to the military domain. It is as much a discovery process and solution searching process in policy and development frameworks. For example, strategic thinking is a timely and useful framework for analysis on the "Theme" of Senior Executive Course (SEC) 39, NIPSS, Kuru 2017: *Science and Technology and Innovation for the Development of Agriculture and Agro-Allied Industries in Nigeria*. It is a highly problematic and challenging theme on the interplay of not only the two contending Ministries of Agriculture, and Science and Technology. It includes related Ministries, Departments and Agencies (MDAs) whose activities impinge on and facilitate the development of Agro-Allied Industries in Nigeria.

More importantly, at 57 year old, Nigeria which is richly blessed in resources of all sorts is haunted by **low level value chains to agricultural raw materials**. Nigeria is characterized by food import dependence, weak productive technologies

and policy inconsistencies. No nation can be stable, self-reliant and globally competitive by being a major producer and exporter of unprocessed raw materials. This is the fate of Nigeria. It is the security and development dilemma of Nigeria. Failure to maintain a balanced search on why previous policies failed in public expectations will make strategy a mere slogan. As previously noted, no element, no consideration, no factor or viewpoint is ruled out of relevance in strategic thinking.

### **Aim**

The aim of this discourse is to establish the linear and non-linear methodological values of strategic thinking to the understanding of strategy as the link between policy and vision.

### **Specific Objectives**

The specific objectives include:

- a) To provide clarity to the concepts of strategic thinking ,strategy and Innovation
- b) To examine the methodological levels of analysis in strategic thinking
- c) To make applications of strategic thinking to science, technology, and innovations in Agriculture and agro-allied industries in Nigeria.
- d) To employ SWOT analysis on S & T and Innovation on Agro-allied Industries in Nigeria.
- e) To come up with insightful ideas that will introduce new ways of addressing the innovation needs of the agro-allied industries in Nigeria.

### **Organization of the Discourse**

The discourse is organized into four main parts. The first is the introduction to the subject matter. The second is conceptual clarification of strategy strategic thinking and innovation. The third is the application of strategic framework for analysis on the SEC. 39 Theme on Science and Technology and Innovations and the development of Agriculture and Agro-Allied Industries in Nigeria. Finally, reflections will be made on the SWOT analysis and ways forward.

### **Strategy**

Survival is the first law of nature. To the extent that life activities are not driven by ad-hoc thoughts or trial and error approaches, strategy is a very thoughtful action process on the relations between means and the end state. Whether it works or not, planning is indispensable. Failure to plan is planning failure.

In its original, narrow and specialized form in Greek, strategy is known as *strategoies* meaning the art of generalship in battle. It is tailored to the Art of war, survival and victory in battle (Clausewitz 1971, Tzu Sun 2011). The military general is held as the chief custodian of strategy and its secrets. For the Greek city state in the 5<sup>th</sup> Century, “strategoos” or “strategika” refers to everything achieved by a military general or commander as may be characterized by the exercise of intellect, foresight, enterprise or resolution to attain desired policy objectives (Freedman 2013). The

most dominant view of strategy is the development and use of military force to attain policy objectives. Hence, strategy is a policy tool. Politics is the father of strategy. Strategy has assumed a generic concept in the works of Sun Tzu, Carl von Clausewitz, Jomini H, Liddel Hart, Michael Howard, Lawrence Freedman and C.S, Gray. In military strategy, nothing matters more than **victory** in battle. It is about **full spectrum dominance**. Thus, morality is too secondary.

There is no perfect strategy (Gray, 2000). No matter how well articulated, coordinated and synchronized a given strategy may be, it does not guarantee a scientific predictable outcomes. Time and space affect strategy. Resource availability affects strategy. The same is true of any countervailing forces by the opponent. Change in policy also directly affects any form of strategy. What this means is that strategy is no fixation. It is flexible and have alternatives. **There is no model strategy because strategy is situation specific.** (Goddard and Tony 2012:69)

Over time, strategy has gone through transformation. Presently, strategy is a forest word (Akpuru-Aja, 2000:1-2). It is used roundly and widely in both military and non-military terms, without losing the basic principles. For examples, it is popular to hear or read about peace strategy, economic strategy, business strategy, social strategy, political strategy and developmental strategy. The table below shows at a glance the bifocal nature of strategy in **military** and **non-military** concepts.

**Broad Difference in Strategy Concept**

<b>Military Strategy</b>	<b>Non-Military Strategy</b>
Military strategy is the art of generalship in battle, the art of warfare. It is a set of ideas, notions and articulated defence policy, which are articulated and coordinated by the military to pursue policy goals. Thus far, military strategy deals with planning and execution of campaigns; the movement and disposition of forces and manoeuvres of the enemy. Victory is the ultimate and not morality.	Non-Military strategy is development or business driven, which involves a well thought out, coordinated and synchronized plan of action to attain a set of governmental or organizational goals. It goes with short, medium and long term plans and involves a process of corporate planning and operational modalities in the most efficient, effective and cost saving means. It is a group-think process and the aim is not to destroy any but to gain competitive advantage and possibly stand out among others.

In sum, strategy is of universal value. The choice of strategy is not between the outcomes but the means. So, strategy is about the method to the end state and not the aim itself (Segal, 1989). In all forms of strategy, the language includes leadership and command, resource provisions, cost implications, timing, out competing opponents or outright victory. Strategy that works well is not necessarily about position or reputation, but insights into the link between means and ends as well the inter play of internal, external and psychological environments.

**Strategic Thinking**

Strategic thinking is a core concept in strategy and strategic studies (Walters, 2012). It is a framework for analysis. Put in another sense, thinking strategically is all

about the employment of intuitive, critical, creative and systemic approaches in interrogating the many sidedness of a policy and its problematic(s) in the attempt to attain policy objectives (Shafriz, 1989). Examining the policy from its many sidedness means that no idea or factor is left out of the table, or considered unimportant. For the problematic, there is need to penetrate the key issue by formulating probing questions to uncover the **strengths, weaknesses, opportunities, and threats** (SWOT). This is known as SWOT analysis. By its nature, it is distinct mode of thought. It gains from both linear and non-linear levels of analysis (Ohmae, 1982; Harvard Business Review, 1987). It tries to strike balance between the **real** and **imagined** world in a given policy and strategic environment.

To accomplish the policy goals of any kind, the starting point is to control any hasty action. Time must be taken to clearly understand its many sidedness or components such as the vision, mission statement, strategic goals, resources and political directive(s) (Akpuru-Aja, 2012; 2014). The strategic thinking process involves interrogating a problematic or issues through:

1. Linear and non-linear thinking
2. Conventional and non-conventional thinking
3. Symmetrical and asymmetrical thinking
4. Clockwise and anti-clockwise thinking
5. Common sense and uncommon nonsense thinking
6. Imaginative and unimaginative thinking
7. Better case scenario and worse case scenario thinking
8. Thinking inside the box and thinking outside the box.

From the foregoing, strategic thinking is a mental driven activity with intellectual elasticity or flexibility towards the roots of and solution discovery to the problematic. It is concerned about **the facts as well as the factors behind the facts** (Ohmae 1982:11-13). Solution oriented questions can be formulated only if the critical issue is localized and grasped accurately in the first place. When problems are poorly defined or vaguely comprehended both the critical and creative minds do not work sharply and resourcefully (Ohmae, 1982:17). Muddling through the issues hardly helps. Rather, isolating the crucial points of the problematic helps very well. In strategic thinking, Albert Szent-Gyorgy notes that **discovery process consists in seeing what everybody has seen and thinking what nobody has thought** (Goddard and Tony 2012:3).

The primary procedural step in strategic thinking is the **Diagnostic Level** of analysis (Walters, 2012). Time and curiosity are given to critical concerns such as to determine:

- (a) The nature of vision, policy and policy objectives
- (b) The history (trend) of the policy and threats or constraints
- (c) The sources of threats or policy failures
- (d) The gravity of threat or policy constraints or policy phobia
- (e) The nature of strategic environment/prevaling political environment
- (f) The link between means and ends

- (g) The strategic effect or cost implications
- (h) The nature of class interest and power relations and
- (i) The interplay of external and psychological environment.
- (j) The timelines/Timing

According to Walters Douglas (JFQ. 63: 2012), the ultimate goal of strategic thinking is to facilitate good judgment and inform decision makers or force planners on innovative military or technological innovations with alternative strategic choices. It demands thinking skills and levels of analysis. In sum, strategic thinking is a framework for analysis on either military dimensions of political directive or a typical policy development as the theme of SEC. 39, NIPSS suggests.

### **Innovation**

Great ideas are propellers of man and woman at work. Science, Technology and Innovation underpins and animates virtually every aspect of human activity. It drives productive technology and value chains for economic growth, prosperity and global competitiveness. As Borgese (1996:196-199) notes, in today's world, science and technology are prerequisites for the solution of basic problems. This is so because about 85% of economic growth does not depend on material inputs per se or raw materials, but on technological innovation (Imobighe, 2012). According to Goddard and Tony (2012), innovation is that stream of uncommon sense or knowledge management which can be experimented upon, packaged and utilized in ways that create value chains. Innovation is driven by the principle that there is no absolute best in productive technology as the best remains a process rather than a destination. The best can still be made out of the best. The second assumption is that with innovation, there is no limit to what could be made out of labour (skill), capital and material resources. The third is that innovation outlives any administration, if it must address the welfare and prosperity of future generation (Gasper, 2014: 3-7).

No nation develops industrially and technologically by majoring in the production and export of unprocessed raw materials. With abundant talented manpower, research institutes, universities of science and Technology, Polytechnics and Monotechnics, it still remains a paradox that the application of S & T and innovation is a serious constraint to the development of Agriculture and agro-allied industries in Nigeria. This is the challenge of the time to be confronted.

### **Strategic Thinking Skills and Policy Environment**

Walter Douglas (JFQ. 63) identifies special skills required by strategic thinkers, strategic planning cadres and force planners. The principles apply also to non-military domain. These include:

- (a) Use of history-thinking in time
- (b) Self-awareness
- (c) Openness to dialogue
- (d) Awareness of cultural diversity
- (e) Critical thinking

- (f) Creative thinking
- (g) System thinking
- (h) Ethical Reasoning
- (i) Application to problem solving

It is a structured choice to employ strategic thinking framework for analysis to enhance understanding and solution discovery to the theme: Science and Technology and Innovation and the development of Agriculture and the Agro-allied Industries in Nigeria.

### **Use of History-Thinking in Time Concept**

Thinking in time concept highlights the role of history in strategic thinking. It is an approach to solution discovery by establishing the relationship between the past history; the present and the desired future direction (Ohmae, 1982:32-72). By way of interrogation, having seen the future that we want to create what constitutes the fault lines of the past? What must we keep from the past? What must we lose from the past? How has the present differed from the past? What are the prospects in the future direction. Thus, History is very key in understanding, among others, the trend of development between Science and Technology, Agriculture and Agro-Allied – industries across the civil-military administrations in Nigeria. According to Bassey (2011:12) an effective response to the challenges of sustainable development in Nigeria must be holistic and requires that government seeks to understand the causes of the problem and the dynamics of international force that sustain the quagmire.

Use of History or thinking in time concept interrogates the past trend on:

- (a) The nature of policy and coordination frameworks
- (b) Performance rating on why the status quo is in crisis
- (c) The nature of institution. Is it extractive or inclusive socio-economic and political?
- (d) The level of funding of Research, Development and Innovation
- (e) Policy ownership of Research Products
- (f) The level of indigenous technology and innovation
- (g) International force at work

The fact on file shows that agriculture is the mainstay of the Nigerian economy rather than the alternative to the oil sector. The oil boom in the early 1970s led to the decline in Agriculture, Rural Development and Agro-allied industries in Nigeria. The early political economy fame of palm produce, cocoa, cotton, rubber and groundnut were gone. Presently, out of Africa's \$35 billion food imports, Nigeria spends an average of \$5 billion yearly (*Thisday*, Dec. 22, 2016:14). Nigeria imports virtually everything it has the capacity to produce with value chains. In 2014, the Central Bank of Nigeria revealed that Nigeria spent N1.34 trillion on the importation of rice, wheat, sugar and fish. Nigeria also imports toothpicks from China, just as it exports wood to import varieties of office and household furniture. Nigeria is a major

importer of palm produce even from Malaysia. The groundnut pyramid in the North is gone. The situation in the textile (cotton) industry is pathetic too. Nigeria loses about \$6.5 billion export opportunities in the textile industry. The lack of commitment to the rubber industry in Nigeria forced foreign investors, Michelin and Dunlop to relocate to Ghana and Liberia. This is against the obvious that Nigeria has millions of cars, trucks and cycles to promote the rubber industry and its allied value chains. On plantain and banana, though Nigeria is one of the highest producers in the world, the country has no export records to show.

Among the root crops, Nigeria is leading the world in cassava production, yet Nigerians are in scarcity of garri and the value chains. Cassava is produced in 24 out of 36 states in Nigeria. Cassava has about 20 varieties. It has 5 major industrial products: (i) Ethanol, (ii) Industrial starch, (iii) Cassava flour (iv) Glucose syrup and (v) sweetener. The same paradox is on yam production with over 60 species. Nigeria accounts for 61.7% of the world production. Yet, yam and its value chains are unaffordable in local markets (*The Authority*, March 1, 2017:13). Presently, Nigeria is planning to export yam to China in July, 2017.

Practically, the experiences in the Forestry, Water Resources, Livestock (animal) and Poultry Production are also in shortfall of value chains in; (a) Production (b) processing, (c) storage (d) packaging and (e) distribution/marketing. The way forward rests on reinventing the policy that will foster the application of S & T and innovation for the promotion of technological entrepreneurship, while enhancing productivity to drive agro-allied industries and the growth of SMEs (Gasper, 2014:10)

### **Self-Awareness/Idiosyncratic Consciousness**

In strategic thinking, as an intent-driven activity, individuals are necessarily involved in the process of achieving policy goals. It takes self-awareness to know that **personalities must not be stronger than institutions**. Lines of policy failures in most countries, including Nigeria are attributed to personalities getting far stronger than institutions, just for capital accumulation. To get the best out of the mental driven enterprise, individual traits or personality interests and variables must give way to the preeminence of the institutional procedures and processes (Sheffield, 2012:1-16), Akpuru-Aja, 2006 57-61). There should be no room for unregulated class interests and power relations. **This is because positions and privileges are public assets rather than personal or family or class fortunes**. Strategy belongs more to the crowd rather than persons. As logic expects too, personalities or staff should be disciplined and very policy focused to avoid operating **behind** or **ahead** of the institutional process.

What is the point of emphasis? It is that high sense of personal responsibility **as a public asset** is key to policy success. It leads to policy failure when staff or personalities invest in greed and corruption rather than show focus, commitment and dedication to achieve policy goals for public good. **So, for any policy to realize its noble objectives, institutional discipline insists on individual reforms or attitudinal change to allow procedures and processes deliver on the interplay of**

## **science and technology and innovation and the development of agriculture and agro-allied industries in Nigeria.**

### **Openness to Dialogue**

Each viewpoint should be examined on merit. Dialogue is a belief that open and frank debate or communication holds the key to effective and efficient functioning of a system or society. **Where dialogue prevails, knowledge gap is addressed and misjudgments controlled.** Even in personal problem, the solution discovery does not always rest on one's own head or brainpower. Solution discovery gets better or brighter in sharing ideas. Unlike in typical traditional military strategy, no single person or institution can drive the present strategic thinking on the application of science, technology and innovation to the development of agriculture and agro-allied industries. For example, on the link between Science, Technology and Innovation and the development of Agriculture and Agro-Allied industries in Nigeria, just trying to decode the many sidedness or solution discoveries is a group-think duty. **It is about pluralism of ideas.**

Strategic thinking skill casts its net very widely and roundly too. It encourages everyone or staff or stakeholder to get participatory by expressing ideas or initiatives (Akporu-Aja, 2012;2014). **Parties are expected to be issue based in debates on the principle of confidentiality and non-attribution.** No staff or stakeholder should be marked out for expressing or holding diverse and contrarian ideas. For Imobighe (1999:5):

*Diversity of views is not bad in itself as long as there is no deliberate attempt to suppress a free flow of ideas. Encouraging a free flow of ideas brings about mutual enrichment of such ideas, and this in turn makes for a better understanding of our complex world.*

The principle of openness to dialogue applies to both military and non-military institutions. Presently, the US Army War College (USWC) encourages free ventilation of views by both superior and subordinate officers. Informed viewpoints or initiatives do not go with ranks, positions or privileges. Everyone has mental power to tease out debatable and solution driven initiatives.

Stakeholders are so broad, including institutions and decision makers, executors, interest groups, donors and policy community. Openness to dialogue is about pluralistic nature of enquiry. Both experts and non-experts; government-academia –industry axis should sign into conversation drills for policy success. Just for example, In Turkey, solution discovery to any Public Policy involves three pillars:

- a) Representatives of Government
- b) Representatives of the Academia and
- c) Representative of the Industry.

In whatever the situation may be in policy, the starting point is to create a platform of interactive sessions to enhance **policy reflections, policy advice** and



**policy research.** The culture at NIPSS is just in line with openness to dialogue in strategic thinking. It takes root in syndicate group brainstorming, invitation of resource persons and MDAs to the plenary sessions; Local, African and Foreign Study Tours and Visits of Strategic Institutions. Each process is utilitarian.

### **Awareness of Cultural Factor**

Development in itself is an art of culture. Policy success is also in itself directed to culture. Thus, cultural characteristics of the people are key to policy and development because people and entities own intrinsic, spiritual, material, intellectual and emotional values.

Every policy and its implementation have its cultural milieu or environment. This too must be taken into account in strategic thinking. No policy or strategy can ignore cultural awareness or underestimates the push and pull factors of historical and anthropological ties (Ohmae, 1982:220-229). The prevailing culture can create or limit opportunities.

Value driven society is more easy-going with policy development. On the contrary, a society with distorted value system operates at across purposes with policy direction aimed at public good.

The point is that cultural awareness expresses a shared sense of national identity rather than sectionalism or ethnic nationalism in the interpretation of policy development. Thinking through previous Nigerian policies on Agriculture, Rural Development and Science and Technology, the success of each was limited by state-centric and sectional policy tendencies rather than more national consciousness. States and ethnic groups found it difficult to view federally initiated policies and programmes as truly national. Without the required consensus building and buying in process, broad based co-ordination of any national policy development will be a setback. **Rather than the perception of divisiveness, diversity is a necessity for survival.** It draws from the rich talents, abundant economic and natural resources and large consuming markets. **People must feel as one to think strategically together; work together and face the future with shared optimism.** Building culture into development in Nigeria is a way forward.

### **Critical Thinking**

Critical thinking involves questioning the existing order in terms of the causes, trajectory of events and implications. New ways of addressing a given policy issue must seek understanding of what the policy makers or executors did or failed to do, and the enduring effects of class interest and power relations. Considerations are given to the state of infrastructure, resource provisions, technology and innovation; leadership character and political will and the level of community participation.

For example, questioning the state of science and technology innovation and Agriculture in Nigeria is very critical. With so much annual allocation to Science and Technology, and Agriculture Rural Development, why is Nigeria too low in technology and innovation? Has there not been Science and Technology policy? What are the relations between Science and Technology Ministry and Research

Institutes? Or with the industries and markets? Reflecting also on the impact of technology and innovation on key national economic sectors like Agriculture holds much waters. The same goes with questioning why the Agricultural sector has been unable to generate value-added chains in the highly diversified produce areas for agro-allied industries in Nigeria.

### **Creative Thinking**

Creativity is novel and innovative. Creative thinking is the ability to **tease out uncommon senses**, new ways of making a progressive difference in the status quo (Goddard and Tony; 2012). It aims at combining, synthesizing or reshuffling previously unrelated phenomenon in such a way to get strategic advantage or value-added product. In a practical way, creative thinking is needed to identify and stimulate those habits, talents and conditions which nurture technology and innovation applications in societal development. To get pointed, **innovation is that uncommon sense or knowledge breakthrough which can be experimented upon, packaged and utilized in new ways** for value chains. It is also termed **knowledge management**. This means that with innovation, there is no limit to what one could make out of labour (talent) and capital. It also assumes that even what is commonly taken as the best is no destination. **It is still possible to get the best out of the best**. So understood, the best is a process. This is the assumption behind innovation, starting first in talent hunt and talent development.

Talent is the greatest asset a society needs for development inertia (Kuan Yee, 2000: 135-145). It has four known prototypes: (i) competence (ii) core competence (iii) distinguished competence and (iv) distinctive competence. The power of socio-economic and technological transformation is rooted in the place of talent in a society.

Talent hunt is no priority yet in Nigeria. Amazing indigenous levels of creativity and innovation do not tend to count. It should be the bedrock of interacting with foreign technologies. Creativity or innovation is wholly nurtured by **adequate funding of research**, which is directly related to produce area development or sectoral development. This is the practice which makes Asian Tigers of Singapore, Malaysia, Japan, South Korea and Indonesia very progressive in innovation map. In Malaysia specifically, every produce area has dedicated research funding as in palm produce, cotton, rubber among others. In Indonesia research innovation produces timber which grows in five (5) years. Though Indonesia is well in the tropics, it plants **one million** trees yearly to generate raw materials for the agro-allied industries. In Nigeria, research institutions are poorly funded. **Even when there are research products in Nigeria, there is hardly experimental policy ownership**. How to fire up the policy makers in both the public and organized private sector domains is the challenge of strategic discovery of the day. NIPSS SEC. 39, 2017 should interrogate it. Nigeria needs questioners; critical thinkers; sense makers, nonsense makers and experimental thinkers beyond the ivory towers.

In the United Kingdom (UK), the creative industry contributes 15% of its GDP. Unlike in Nigeria, it is approximately so in India. These have been the enabling

conditions:

- (a) Access to finance
- (b) Regular power supply
- (c) Policy ownership of research products
- (d) Encouragement of RDI
- (e) Private-public partnership
- (f) Mapping out talents and environment
- (g) Comprehensive data base to guide domestic and foreign investors
- (h) Identification of start-ups and entrepreneurs.

While all the enabling conditions are very important, access to financial provisions is the chief driver. MDAs should have access to budgetary votes timely to meet performance targets. It calls for a change of policy implementation in Nigeria.

**Federal Government Records Late Passage of Budget in Six Years, Says FRC**

<b>Fiscal Year</b>	<b>Date Budget Presented to NASS</b>	<b>Date Budget Signed by the President</b>	<b>Time Lag Between Budget Presentation &amp; Presidential Assent</b>
2011	15 December, 2010	26 May, 2011	5 Months
2012	13 December, 2011	13 April, 2012	4 Months
2013	10 October, 2012	26 February, 2013	5 Months
2014	19 December, 2013	21 May, 2014	5 Months
2015	17 December, 2014	07 May, 2015	5 Months
2016	22 December, 2015	06 May, 2016	5 Months

Source: *The Nation Daily* March 1, 2017:9

Without access to votes and highly controlled procurement processes, no noble policy will succeed. This is an important area of policy recommendation.

Thinking **outside the box concept** is the other element of creative thinking. It rests with **uncommon nonsense approach** to solution discovery. It probes beyond the known to the unknown; the symmetrical to the asymmetrical, the positive to the negative. In a bid to tease out the **factors** behind the fact or situation, it evokes worst case scenario or radically alternative viewpoint to have a more informed picture of the complex link between means, strategies and ends in a strategic environment. In the context of the theme of discourse, thinking outside the box may also take the form of alternative ways of financing the Agro-Allied industries outside the direct dispensation by the Central Bank, Ministry of Agriculture and Mortgage Banks. As will be demonstrated later, thinking outside the box frames up also experimental thinking on renewable sources of energy to meet the high and regular power needs of the agro-allied industries. With less than 6,000MW of power supply driven by insufficient gas supplies, the future of the SMEs and agro-allied industries Nigeria is endangered. Energy mix policy is the alternative way forward as the discussion which follows will show.

**Standard Capacities of Various Power Plants as at 20<sup>th</sup> July, 2016**

<b>Available Capacity</b>		<b>Generated Capacity</b>	<b>Stranded Capacity</b>
Egbin	880MW	201MW	679MW
Transcorp	529MW	280MW	249MW
Shiroro	450MW	412Mw	0MW
Geregu	276MW	0MW	276MW
Kainji/Jebba	836MW	656MW	170MW
Sapele	120MW	65MW	55MW
Others	4775MW	1190MW	356MW
<b>TOTAL</b>	<b>7856.52MW</b>	<b>2804MW</b>	<b>4991MW</b>

*Source: The Nation Daily March 1,2017:5*

Practically, no success will be recorded if the Power sector continues to record less than 6,000MW with a population of about 170m. This is unlike South Africa which manages 40,000 MW in a population of about 50 million.

This same goes with the degree of infrastructural decay in road and railway networks. It is about the distributive frameworks. Functionally too, the Ministry of Trade and Investment cannot be ignored just as the pride of place of allocation to Education and Research Institutes cannot be off the table. Each contributes to the value chain and its coordination details – financing, production, processing, storage, packaging, distribution and marketing.

**System Thinking**

Development is viewed as a system dynamics. System thinking has parts 1 and 2. It touches on value-chains and the level of coordination and synchronization. It is an all-inclusive stakeholders' approach in strategy making and execution. System I thinking goes beyond known facts and figures to somewhat intuitive judgments. It draws from the ability to read or interpret situations; foresee possibilities or outcomes, which less strategic intelligence would ignore or miss. It factors in uncertainties, doubts, fears, probabilities or worse case scenario. It has its origin in military strategy (Walters Douglas, 2012).

According to Clausewitz, it is one mark of a military genius-being able to see through the fog (Freedman 2013; 613). Napoleon Bonaparte saw it in the same light. Isaiah Berlin describes system I thinking thus "...a capacity for interrogating a vast amalgam of constantly changing multi-coloured, evanescent, perpetually overlapping data ... pinned down and labeled ... with their implications ... and future possibilities".

Viewed from the non-military development threshold, system I thinking is sensitive to the global dynamics and integrates the internal, external and the psychological environments in the context of any policy development. System I thinking is also vital, If the expected synergy between S & T and Agro-Allied

Industries in Nigeria will be sensitive to harnessing abundant human, natural and economic resources to meet global competitiveness rather than create or maintain the psychological dependence of Nigerians on standard and substandard foreign goods and services.

System 2 thinking in military image places emphasis on coordination of rational intelligence, sub-rational intellectual and emotional make ups of both superior and junior personnel in the accomplishment of a mission. It means that there should be no superiority –inferiority complex between the leadership, colleagues and subordinates.

In development context, system 2 thinking pins down on an integrated framework. The assumption is that to meet the global dynamics of any policy development, no single Ministry, or Department, or Agency can go it alone, or deliver a winning strategy. It is a team spirit duty (Abrashoff, 2002). International partnership frameworks are helpful too.

The emerging picture is the necessity of adopting or integrating system thinking approach in searching for solution discoveries and strategies on the interplay of Science and Technology and Agriculture on Agro-Allied industries in Nigeria. All the MDAs belong to a system. The failure of one to function along with others invariably constitutes a source of leakage, disruption, disequilibrium and dysfunctionality. There is need for wholesome policy coordination framework.

### **Ethical Reasoning**

Ethical reasoning is value driven. It is about institutional ethics, procedure and processes. It brings together the roles of morality, law, religion, human rights and humanitarian concerns. In both the military and development images, **character is everything that drives the wheels of success**. In Chinese proverb, **character is the foundation of leadership**. For a policy development to work beyond organic plan(s) of action, the character of those who plan and those who execute or influence execution is key. Senator Isa Misau, a member of the Committee on Anti-Corruption headed by Senator Chukwuka Utazi, noted that the monumental stealing of government money by officials is responsible for the current recession in Nigeria. It has been stealing with impunity (DailySun Feb. 21, 2017). The less corrupt the characters are, the more success in view. On the contrary, if corruption rate is high due to multiple channels of leakages or weak oversight functions, even a well thought out plan of action will fail to achieve the end state. Just imagine the over 50 years trillions of Naira on S & T Innovation, Agriculture and Rural Development with gross food imports to show. **There must have to be a strong recommendation and implementation strategy on corruption control and project management in Nigeria.**

### **SWOT Analysis**

The importance of SWOT analysis is to identify tangible points for making and reaching intended capacity and capability building aims. It is about the Strengths, Weaknesses, Opportunities and Threats.

<b>STRENGTHS</b>	<ul style="list-style-type: none"> <li>• Demography is Nigeria's destiny</li> <li>• Local, sub-Regional and Regional Market Sizes(Over 900m)</li> <li>• Talented and Innovated Youths</li> <li>• Abundant Onshore &amp; Offshore Produce Diversification</li> <li>• Agric-Business Financing by the CBN, BOI, BOA etc.</li> <li>• Large Informal Sector of SMEs</li> <li>• Dams for irrigation in the North</li> <li>• Favourable Climate Rich, Luscious Vegetation</li> <li>• High Potentials of Solar/Energy Policy Mix policy</li> <li>• Research Support by Strategic Institutions</li> <li>• Existence of Universities of Agriculture, Science d &amp;Technology</li> <li>• Agricultural Research Institutions</li> </ul>
<b>WEAKNESSES</b>	<ul style="list-style-type: none"> <li>• Low-Level Technology and Innovation</li> <li>• Weak Institutional Linkages and policy discontinuity</li> <li>• Post Harvest losses/lack of Storage Facility Technology</li> <li>• Low-Level Policy Ownership of Research Products</li> <li>• Low-Level relations between Solar Energy Power &amp; Industries</li> <li>• Low-Level Public-Private Partnership</li> <li>• Deficit in Micro-Credit Finance Management</li> <li>• Power Sector deficit</li> <li>• Inadequacy of Local fertilizer/Decay in NAFCON</li> <li>• Infrastructural deficit (Road, Railway, Airway, Sea Ports)</li> </ul>
<b>THREATS</b>	<ul style="list-style-type: none"> <li>• Insecurity Climate</li> <li>• Desertification</li> <li>• Drying up of the Lake Chad Basin</li> <li>• Phenomenal Corruption</li> <li>• Grossly inadequate Power Supply chain (less 6,000MW)</li> <li>• Unregulated Food Imports and food smuggling</li> <li>• Porous Borders/Transnational Crimes</li> <li>• Pest Menace</li> </ul>
<b>OPPORTUNITIES</b>	<ul style="list-style-type: none"> <li>• Economics of scale in Local-Regional Markets</li> <li>• Prospects of International Partnership</li> <li>• Untapped Solar Energy Power in Tropical Nigeria</li> <li>• Abundant Water Produce Resources</li> <li>• National Maritime Transport Policy Reform</li> <li>• International Trade Fair</li> <li>• PPP in New Export Processing and Special Economic Zones</li> <li>• Presidential Council on Ease of doing Business in Nigeria</li> <li>• Presidential Task Force on Cassava, Wheat and Rice Production</li> <li>• Potentials of RDI</li> <li>• Crisis in the Oil Sector</li> <li>• Equity and Debt Financing arrangements and Expanding Internally Generated Revenue (IGR)</li> </ul>

### **Recommendations**

The recommendations are rather options for selective considerations and appropriate implementation strategies. There are subdivided into:

- a) Agriculture & Agro-allied industries
- b) S & T and Innovation
- c) Research Fund and Financial Management
- d) Institutional Linkages

### **Agriculture & Agro-allied Industries**

- a) There should be Presidential Committee on a comprehensive Master Plan on Produce Diversification in the Agricultural Sector.
- b) The Federal Government should License investors in the Agro-allied industries to connect local farmers and manufacturers with value chains.
- c) Investors in Agriculture and Agro-allied industries should have a rebate in tax incentives to mitigate high cost of forex and power supply needs.
- d) Ministry of Trade and Investment should develop Data Piracy and Information Protection Policy on Agro-allied industries in Nigeria.
- e) There is need for Agro-allied Technology network for updating information on RDI
- f) The Federal and State Governments should create SMEs Commission in the Ministry of Trade and Investment.
- g) Every geo-political zone in Nigeria should organize Indigenous Technology and Innovation Trade Fair on Agriculture and Agro-allied industries.
- h) For maximum raw material production for the allied industries, the Federal Government should revive NAFCON.

### **Science, Technology and Innovation**

- a) Every state should establish S & T and Innovation village connected with the universities, polytechnics and industries.
- b) Ministry of Science and Technology should build local capacity in renewable energy through a Master Plan Committee.
- c) The Federal Government should return the Universities of Agriculture and Science and Technology to their dedicated mandates.
- d) Federal Ministry of Science and Technology should convocate a creative Industry Task Force for a blue print plan of action.
- e) Federal and States Ministries of S & T to create Innovation Advisory Council.
- f) Federal and State governments should create **a web portal to** which talented individuals could send innovative project designs for the attention of experts and potential investors.

### **Research Fund and Financial Management of SMEs**

- a) Capital Expenditure on SDI and Agro-allied industries should be removed from the parent MDAs to the Budgets of the Federal

- Government Specialized Banks (Bank of Agriculture, Bank of Industry and Mortgage Bank. (CBN and MDAs should be regulatory).
- b) Research Development Fund and Innovation should be Industry – Market driven
  - c) Research and Development Fund should be dedicated to harnessing the large potentials of innovative ideas emanating from schools at all levels.

### **Institutional Linkages**

- a) There should be collaborative policy framework for the government-academia-industry
- b) Research products should be owned up by the Public-Private Partnership framework
- c) Innovation Advisory Council to seek areas of international partnership with Brazil, Israel, India, Malaysia and Turkey on the application of Innovation to agro-allied industries.

The recommendations are in puts into strategic thinking process. It is technically a source material for the usually few synthesized policy recommendations and implementation strategies. Yet, for the non-accommodated recommendations, they should be located in appropriate spaces to enrich the contextual values as the real source of selected recommendations.

### **Conclusion**

In most cases, strategic thinking finds application in military strategy and national security. Aside the application of strategic thinking in business studies, marketing and management, it has not been a common feature in policy development studies. This discourse is somewhat a breakthrough in the application of strategic thinking framework for decoding the SWOTs of Science, Technology and Innovation and the development of Agriculture and Agro-allied Industries in Nigeria. From the contextual discussion, a hazard of intelligent guesses provided are a template of recommendations /implementation strategies to make the enterprise of SEC. 39 more engaging, directional and fruitful. The future of Nigeria depends a whole lot on what the political will of the political leadership will make out of the practical and sustainable recommendations and implementation strategies by SEC. 39, 2017 NIPSS, Kuru – Nigeria.

### **References**

- Akpuru-Aja A. (2006) *Leadership and Command: Leading issues in Contemporary Strategic Studies*, Enugu, Kenny & Bros.
- Akpuru-Aja A. (2009) *Policy and Strategic Studies*, Abakaliki, WillyRose & Appleseed Publishers.
- Akpuru-Aja A.(2012) *Strategic Thinking and Nigeria's National Security*, Kuru-NIPSS, Lecture Presented to SEC. 34, March.



- Akpuru-Aja A. (2014) *Strategic Thinking and Nigeria's National Security: Geo-Political Strategy in Africa*, Lecture Presented to Course 22 National Defence College, Abuja January 7.
- Abrashoff, D.M. (2002) *Managing Techniques from the Best Damn in the Navy*, New York – USA, Warner Books, 10020
- Bassey, Celestine O. (2011) *Grand Strategy for Achieving Peace and Sustainable Development*, Kuru – NIPSS, Paper to SEC. 33, March 16.
- Beaufre, Andre (1965), *An Introduction to Strategy*, London, Fabre and Fabre.
- Bourgese, E.M. (1996) *Ocean Governance and the United Nations*, Halifax: Dalhousie University, Centre for Strategic Studies.
- Clausewitz, von Carl (1971) *On War*, by Michael Howard and Peter Paret Translation, Princeton: Princeton Press.
- David, Moran (2005) “Strategic Theory and the History of War” in John Baylis *et al. Strategy in the Contemporary World: An Introduction to Strategic Studies*, Oxford and New York.
- Garnett, John (1975) “Strategic Studies and its Assumptions” in John Baylis *et al. Strategy in the Contemporary World: An Introduction to Strategic Studies*, Oxford and New York.
- Gaspar, O.I. (2014) Science and Technology, Innovation and Industrial Development in Lagos State, Ikeja-Lagos, Presented to SEC. 36, Kuru – NIPSS, April 29.
- Goddard Jules and Tony Eccles (2012) *Why Some Organizations outperform others: Uncommon Sense, Common nonsense*, London, Profile Books.
- Gray, C.S. (2000) *Strategy for Chaos: Revolution in military Affairs and the Evidence of History*, London, Frank Cass.
- Gray, C.S. (2010) *The Strategy Bridge: Theory for Practice in War History*, <http://www.Sagepublications.com>.
- Haggai, P.T. (2012) *Trends in Food Crops Production and Dimensions of Food Industry in Nigeria*, Kuru-NIPSS, Monograph Series No.4.
- Harvard Business Review*, July/Aug. (1987) “Crafting Strategy”
- Imobighe, T.A. (2012) *Technology and the Evolution of Modern Strategy*, Kuru-NIPSS, 34, March.
- Imobighe, T.A. (1999) *Management of National security in Nigeria*, Ekpoma, Ambrose Alli University, Inaugural Lecture.
- Kluyver, Cornelis A de and Pearce 11 John A. (2012) *Strategy: A view from Top*. 4<sup>th</sup> Ed. New York: Prentice Hall.
- Kuan Lee, Yee (2000) *From Third World to First World: The Singapore Story, 1965-2000*, USA, Harper Collins Publishers.
- Lawrence, Freedman (2013) *Strategy: A History*, USA: Oxford University Press.
- Liddel Hart (1967) *Strategy: The Indirect Approach* 4<sup>th</sup> Ed. London Harvard University Press.
- Ohamae, Kenichi (1982) *The Mind of the Strategist: The Art of Japanese Business*, USA: McGraw Hill Inc. 228-229.
- Orvik N. ed. (1978) *Teaching Strategic Studies*, Ontario, Centre for International Relations, Queen University, Kingston.

Porter, Michael (2011) *HBR's 10 Must Reads On Strategy*, USA: Harvard Business School Publishing coy (39-75).

Quin, J.*et al* (1988) *The Strategy Process*, New Jersey: Prentice Hall.

Segal, Gerlad (ed.) (1989) "New Directions in Strategic Studies: A Chatham, Debate" Royal Institute of International Affairs, Discussion Paper, No.17.

Tzu Sun (2001) *The Art of War*, London, Shambhala translation.

*\*This paper was first presented at National Institute for Policy and Strategic Studies, Kuru-Nigeria in March, 2017 to Senior Executive Course 39 participants.*