Songhaï
L'AFRIQUE RELÈVE LA TÊTE ! AFRICA STANDS UP !
NEWSLETTER
NEW BEGINNING

Songhai vision on Education and Human resource development in Africa

In search of a new Academic orientation for authentic human resource development for Africa today

(THE MAIDEN ISSUE)



Preamble

To a large extent, we in Africa have succumbed to a logic of poverty or underdevelopment, simply because we are no longer capable of generating the institutions and the appropriate human resources that will enable us to consistently produce the social values, goods, and services that correspond to our needs and desires. Passive consumerism, shallow and piecemeal solutions, and the quick adoption of other peoples' experiences, solutions, systems of production, and values have become easy and cheap substitutes for the hard and difficult

task of building appropriate human experiences and structures in line with the challenges of our time and people.

Indeed, when a community is no longer able to internally generate the human capacities and structures to adequately face its challenges in a sustained manner, that community has run into a logic of poverty or under development.

If on the other hand, a community becomes capable of continually unleashing appropriate internal capacities and building the appropriate environments or structures to enable it to face and meet its needs and desires, despite its internal and external constraints and challenges, then this community is solidly engaged in an authentic development process.

We need a new road map, a new compass.

The disheartening socio-economic situation today, I think, will definitely get worse if we continue to navigate with the present social infrastructure or the same "old social road map". Our present social compass is no longer pointing to "True North". This "wrong map," developed and adopted slowly since the beginning of the first industrial revolution and engineered by the Cartesian and Newtonian mechanistic worldview, is not much help to us today. This world view has led to the proliferation of fragmented, piecemeal solutions and symptomatic therapies that hardly work.

A NEW MAP TO NAVIGATE

It is interesting to note that today's crises (food security, social and environmental changes), seem to be all connected, suggesting that our present crisis is a fundamentally systemic one that requires a totally different approach compared to our current one. It **requires a holistic, comprehensive, and broad-based approach.**

Pope FRANCIS' encyclical "LAUDATO SI" on THE SAFETY OF THE COMMON HOME, in Chapter 4, eloquently and strongly pushes this idea of reality as radically relational, an integral ecology. Nothing stands alone.

"*As everything is interrelated, and that current problems require a look that takes into account all aspects of the global crisis, I now suggest that we stop in order to think about the various components of an integral ecology, which clearly has human and social dimensions*".

This is the foundational idea of the Songhai movement, a project of a new African society that will be truly aligned with basic principles of the workings of our planet.

Environmental, economic and social ecology

Ecology is the study of communities or super organisms that emerge or are born through organic and systemic relationships between the living organisms, groups or colonies of living organisms that make up these communities and the environment where they live and develop. These communities should be viewed as living. We must develop the audacity to rethink how well we view and manage our relationships, not just with human beings but also with the billions of other living entities and groups around us from microorganisms to the largest plants and animals. The quality of our lives and our big communities, the ecosystem, depends on the quality of these relationships.

I believe that the degrading quality of our individual lives and our communities should push us to challenge the models of development, production, and consumption we have adopted so far. It is difficult to over emphasize the fact that everything is connected. Time and space are not independent of each other and even atoms or sub-atomic particles cannot be considered separately. Just as the various components of the planet - physical, chemical, biological, social. economic and spiritual - are interconnected, so are living entities. They form a network that we have not finished identifying and understanding the roles they are playing within our planet. Much of our genetic information is shared with them. That is why fragmented and isolated knowledge can become a form of ignorance if we fail to integrate it into a broader vision of reality.

When we talk of "environment", we mean the bigger living entity that emerges from the relationships between nature (plants, animals, inorganic entities etc.) and the human society that inhabits it. This prevents us from seeing nature as separated from us. We are included in it, we are a part of it, and we are fused with it. The reasons why a place is polluted is because of the misguided functioning of society, its economy, its behavior and particularly its ways of understanding reality. It is evident from what we now know about our planet that it is no longer possible to find a specific response to each independent part of the problem without affecting other parts. We must seek comprehensive solutions that consider the interactions of different elements of natural systems not only with each other but also with elements of the social systems. There are not three separate crises, one environmental, another economic and the other social, but one complex socio-economic-environmental crisis. The possible solutions require a comprehensive approach that understands that you cannot fight poverty without giving dignity to the excluded people and preserving nature at the same time.

It is therefore comforting to note that more and more people, especially people in high positions, are sounding the alarm that we have reached a point in history that calls for dynamics and orientations that are deeper and broader than any attempts we have seen so far. Today's challenges require a radical shift not just in our vision of the world and how we think, but in every sphere of our lives - from the way we see ourselves and relate to each other; from our relationship with the environment to our intellectual, scientific, technical, and business orientations; from our production systems to the ways, we exchange and consume our products and services. This is central in the Songhai movement.

Once again, we welcome the strong and clear position of Pope Francis (in the sixth chapter of



his encyclical) concerning the challenges of today. The Holy Father insists that this situation requires a radical change in our educational system to enable us to develop new abilities and awareness that corresponds to the level of these challenges.

« ECOLOGICAL EDUCATION AND SPIRITUALITY»

Many things must be reoriented, but above all, humanity needs to change. It is important to know we all have a common origin. We don't only have a mutual beginning and belonging, but we also share a common future. This fundamental consciousness will help us to develop new and healthy belief systems, attitudes, and new socio-economic norms. These will be great cultural, spiritual, and educational challenges that we cannot afford to embrace without courage.

Faced with social and environmental challenges of an extremely complex dimension, our academic institutions, instead of restructuring to better cope with this complexity and multiple crises, perpetuate operational structures increasingly ineffective or even disconnected from reality. More often, they are reluctant to mount new operations to address these challenges. They would rather retreat to comfort zones of abstract knowledge.
Our new institutions of higher learning should embrace the idea of "the man in the arena" that the former President of the United States Theodore Roosevelt forcefully advocated in the famous speech- "CITIZENSHIP OF THE REPUBLIC", that he delivered at the Sorbonne on the 23rd of April 1910.

"It is not the critic who counts; not the man who points out how the strong man stumbles, or where the doer of deeds could have done them better. The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood; who strives valiantly; who errs, who comes short again and again, because there is no effort without error and shortcoming; but who does actually strive to do the deeds; who knows great enthusiasms, the great devotions; who spends himself in a worthy cause; who at the best knows in the end the triumph of high achievement, and who at the worst, if he fails, at least fails while daring greatly, so that his place shall never be with those cold and timid souls who neither know victory nor defeat."

TO ENGAGE IN THE NEWPARADIGM

At the new Songhai Leadership academy, we must clearly and convincingly convey the idea that the solutions to our problems today can no longer be found in our present-day attitudes and logic. We see this initiative as a "not easy but necessary" mission aimed at developing new mental and operational energies and frameworks that are based on what we now know about how our modern world works. Modern sciences, including neurosciences, cognitive and biological sciences, are providing us with fundamentally different and refreshing frameworks about our own human dynamics, as well as those of our planet.

From these sources, **a new paradigm** is emerging. This new paradigm has a completely new and different technological, organizational, and socio-economic orientation. This paradigm is challenging us to learn and operate from the basic principles of the functioning of our planet and human history.

We believe that by seeing our problems from this new world view, we will be in a better position to design and re-engineer our way out of the current crisis. This new paradigm must be appropriated and deployed by a critical mass of our people if we are really committed to creating, designing, and inventing organizations, industries and economic activities that will solve our present-day problems. The Songhai Leadership Academy is committed to this mission of raising a critical mass of young people that will be totally retooled for this new African society.

It is urgent to determine how to rebuild the institutional framework necessary to train human resources capable of harnessing the opportunities in the new paradigm.

Specifically, the Songhai movement exists for the emergence of an Agro-Ecological culture in Africa as a foundation of a sustainable broad-based and inclusive society of tomorrow. In clear terms, the challenge before us is how to appropriate and align ourselves with this emerging world view. We must create an enabling institutional framework that will enable us to produce a critical mass of a new human resource pool who are equipped with the right vision, values, and operational capacities to navigate more efficiently through this difficult and challenging period in our history. This is the "raison d'etre" of the Songhai Leadership Academy.

Songhai: A KNOWLEDGE INSTITUTION



The Songhai Leadership Academy is designed to be an innovative platform for the development of African human capital, capable of producing and continuously disseminating knowledge and creating tools to deal effectively with the challenges of the continent.

The socio-economic state of countries today no longer depends primarily on their natural resources or their geological and geographical situation. The key developmental indexes like economic prosperity, energy supply, industrial capacity, personal and public health, safety, and environmental quality, all depend now on knowledge. People who have more knowledge and have more access to knowledge and technology are more successful than those who do not have them. The significant improvement in the quality of people's efforts and productivity therefore depends on the level and quality of their investment in human capital. But although knowledge and technology are the primary capital and social resources in the world today, they are the forms of capital that are still poorly developed and distributed in our world. ***The problem is that quality education is not only rare in Africa, but it is largely elitist and inaccessible where it exists.***

How does Songhai deal with this reality? At Songhai, the concept of human capital is viewed as a measure of the value of knowledge, know-how, creativity, and humanity (imbedded in a person) that can be generated in a comprehensive incubation space. In today's world,

knowledge has therefore become the main capital and the basic social resource for development. It is civilizing. We therefore urgently need in Africa a pool of creative and engaged citizens, entrepreneurs and inventors and skilled workforce to turn things around- ***The New African Silicon Valley***

- ***Songhai is designed and managed to incubate and produce functional socio-economic entrepreneurs. A mentor-Mentee platform that incubates and seeds apprentices.***



The implementation strategy

Songhai is not a conventional institution. It is an expression of a vision of a horizontal economy - a "distributed economy". The heart of this project lies in the quality of the preparation of a core group of facilitators or mentoring entrepreneurs to lead and manage this horizontal economy.

As successful implementation of the Songhai initiative in Africa requires above all a new generation of human resources equipped with knowledge- “Know- what”, Skill- "know-how" and "attitude" relevant in a development project that is systemic and integrated. That's why there must be coordination between the Songhai human resource development staff and this mission.

The Songhai initiative is therefore pushing our present-day educational system to revisit the functionality of its system. Graduates in conventional institutions are ill-prepared to face the

challenges of our time. These institutions train people for the problems and challenges of yesterday. We are today before a phenomenon of "large scale production of Non-Functional Graduates". We view the members of Songhai staff as being first and fore most producers of values (academic, social, economic, and spiritual) and mentors. It is their responsibility to awaken a spirit of observation, creativity and entrepreneurship that will enable the students and graduates to design, contextualize, plan, and implement the new Green and sustainable economy. They can do this not only by virtue of the managerial competences they have developed at Songhai, but also thanks to the new vision, technical competences, and the human values they have acquired during their long training. In other words, a Songhai staff member must have administrative, technical/rational, and social competences to get things moving in the right direction. They are the yeast that gets the dough to rise.

It must be known right from the start that it is not easy to acquire the skills required to manage the Songhai educational development project. The team must blend their knowledge, skills, and experiences as interdependent competences at all levels in an integrated development program. This requires training in areas such as mathematics, statistics, all branches of agriculture, economy, environment, sociology, administration, and town planning. Leadership and mentorship in the Songhai initiative requires professionals who have received training beyond their specific area of expertise. Even solid human training in liberal arts is essential.

It is therefore imperative to reorient the entire human resource development of the work force in such a way that absolute priority is given to the process of synergizing between action-oriented theory and practice…. A good blend between Orthodoxy, faith or grace, and Orthopraxis, correct conduct.

The long-term objective of Songhai is to build a critical mass of socio-economic leaders with the profile described above.

Specifically, Songhai is setup to promote the emergence of a pool of leader-entrepreneurs in Africa. These people will be a new type of leaders capable of building, promoting, and managing the emerging and distributed economy that is already underway in the world.

HOW TO DEVELOP AND INTEGRATE HUMAN CAPACITY / HUMAN CAPACITY BUILDING, SCIENCE AND TECHNOLOGY IN A DISTRIBUTED SOCIO-ECONOMIC INSTITUTION



The idea of a balanced human resource base being an overriding force sustainable development is not something new. Aristotle and the Greeks got it figured out centuries ago. We can use their insights to throw more light in our present endeavor.

Axis1: Episteme:

This means scientific knowledge or the understanding of principles. The English word *'epistemology'* is derived from this root. You could describe this as being the 'know-what' of a subject or in German language ***Wissenschaft***.

To get there, we must develop a culture or the ability of critical thinking, investigation, a culture, a research space where a person facing specific problems, is pushed to observe, to look critically and to analyze past experiences to find new ideas of what is going on. Mastering how it works.

We are constantly striving for the culture of *Wissenschaft* to take root in Songhai where members must not only learn continually from modern science, particularly biological science, and the digital space, but also develop the spirit of observation and "barefoot research" culture. The quality of investigations, scientific research and knowledge

development conducted at Songhai must be seen as one of the key components of the initiative.

Axis2: Techne:

This means having the skills to do something practical, using knowledge to make something happen or solve problems. The English words *'technique'* and *'technology'* come from this word. It is the 'know-how' of a subject. Technical development is simply harnessing knowledge to equip oneself to produce goods and services, to meet our needs and wants... Entrepreneurship is one of the manifestations of *techne*. It is called Bildung in German.

Axis 3: Phrenesis:

Sadly, there is no direct translation of this idea in English (which is a great pity). It indicates understanding of when and how to apply the other forms of knowledge, based on a moral, social, spiritual, and even environmental appreciation of the world. In English, we could use 'Wisdom', 'Experience', 'Contextual understanding', or 'Value-driven'. Phrenesis creates wholeness, balance, and integral wellbeing, common good etc. This is the 'know-why' of a subject.

Phrenesisis the foundation of our educational program as a holistic and integrated system.

Since the scientific revolutions of the Enlightenment (episteme)and then the Industrial Revolutions (techne), these two forms of knowledge have had an amazing expansion, transforming the world. However, the wisdom of our species to apply this knowledge (techne)to benefit all people, protect the common good and future generations and the planet is still desperately lacking.

Specifically, Phrenesis is the wise application of science and technology for the good of humanity. It is what we call today ECO-consciousness or sustainable development. Eco-consciousness or sustainable development implies that we can increase our productivity while protecting and enhancing our environment for the benefit of all. It does not mean producing less, it is actually producing more and better with less thanks to the principle of synergy and negative entropy on which it is based.

We must therefore review our production and development systems, based on our new understanding of nature and sustainability, to ensure that the future generation's right to a healthy and productive environment is not compromised (*phrenesis*).

Songhai: a holistic and integrated educational program



Another point of inspiration and reference for structuring Songhai comes from what we have learnt from the recent history of why and how the university systems evolved up to the present.

A combination of both systems (Oxbridge and Berlin)

Oxbridge Model (Oxford & Cambridge)

This model came from the 1650 charter articulating the objectives of university education.

- General and broad education (literature, arts, natural sciences, philosophy, history, etc.) is called "Liberal Arts", and is necessary to produce a cultured person, a good member of the society. Through this general training, the person learns the great cultural, spiritual, intellectual achievements of humanity. He is positioned to see further and wider because as **Isaac Newton** said, "*Rest on the shoulders of giants*". He becomes connected with the past efforts of humanity. He is equipped to dream, invent, and gets better equipped to face the challenges of today. This is largely the model followed by the seminaries and Church Institutions of higher learning.

Songhai is borrowing this framework to create an incubation space called "knowledge enterprises" to produce individuals who can create, invent, and produce new solutions when they “stand on the shoulders of giants".

This mission forthe university or higher education was dominant for nearly seven centuries with Cardinal Newman becoming a staunch defender. This elitist model of Oxford and Cambridge was replicated in the American colonies (Ivy leagues: Harvard, Yale, Princeton, Columbia, etc.).

Bildung* Phrenesis:** General, broad, humanistic education for personal development and "cultural development" of the person. This process involves not only the individual but also the dimension of ethics of the citizen in society, his ability to serve and build the community- A balanced person capable of (Phrenesis***).

Model of the University of Berlin (Humboldt)

We equally cropped from the German experience/model.

The German model is embodied in the establishment of the University of Berlin where teaching and research are seen as the core of university education. It is through the influence of *Wilhelm von Humboldt*, a Prussian minister, philosopher, and philologist that this form of university was born in Germany.

***Wissenschaft*:** The German model focused not just on research per se, but industrial research to extend and deepen knowledge with new discoveries and interpretations. In other words, this vision is geared to the development of a system that leads the individual to broad and deep knowledge. (Episteme) The What of things and how they work.

Johns Hopkins model: The Bildung and Wissenschaft combination move was consolidated after the death of John Hopkins in 1873 by creating the Johns Hopkins University. The managers of his fortune decided to create a university and a hospital that will focus on research.

This is how the logic: "***Production of knowledge (research/discovery), dissemination or sharing of knowledge (teaching/culturation) and Action/Transformation***” was born.



Songhai has emulated this integrated platform of research and education as a way out of our present educational crisis. The objective of this reform should not be only the production and dissemination of knowledge and its ownership for innovation and creativity, but also the production of a critical mass of social entrepreneurs who will become master-learners and be able to integrate the various disciplines to better cope with the challenges of today's world.

It is this model that contributed significantly to the economic take-off of Germany during the nineteenth century, after the unification of Germany. It was thanks to this innovation in Germany that Berlin University took the leadership of the socio-economic transformation of the country. The focus on university education was on philosophy, science, research and higher education and the freedom of teachers and students. It was a highly significant and revolutionary event.

Through different themes in the program, Songhai is striving to teach the ability to observe, analyze, and use their new strength -knowledge- to invent and advance the development of new products and services to better meet the challenges of today.

The Green and Sustainable Economic Revolution (GSER) is already upon us

There are three pillars in this emerging economy. Together they constitute the new foundation of the post-Industrial Revolution (PIR), which we must embrace if we are to re-engage ourselves on a sustainable pathway. These pillars are:

1) Distributed energy regime (material and non-material)

2) New Infrastructure for Syntrophic connectivity within the new regime: as empathic civilization rises. The Information and communication technology will be a driving force of this process.

Some of the principles at play within this new regime are:

- ***Synergy,***
- ***Symbiosis,***
- ***Complementarity***, **Collaboration** and ***Supplementarity***
- ***Empathy (moving from homo sapiens to homo empathicus)***

3) Rediscovering and harnessing the biological capital of the universe.

The Socio-economic implications of the new paradigm.

There is a need for a radical change not only in our energy policies and guidelines (physical and non-physical) but also how we organize our socio-economic activities. The big question now is the geopolitical and organizational implications of this concept. How do we see democracy, business and institutional organizations and nation building today?

The major issues in our project of a new humanity are:

- How can we harness and develop the relations of interdependence, connectivity and dormant empathic capacities in our communities, countries, and continents beyond the natural ethnic affiliations?
- How can we create new synergies and alliances to improve our chances in the new distributed and collaborative society of the future?
- How can we develop skills and relationships that will help us grow, not only in good times but also in times of trouble?
- How can we safely navigate in troubled waters?
- What level is our empathic ability of our different ethnic, social groups, religious groups and of communities towards each other?

A new Social-economic Infrastructure is overdue.

This new regime will be different from the current highly centralized one. It will help create completely different business and social models. This will result in thousands of distributed enterprises, organizations and communities of all kinds that merge in relationships of integrated collaboration networks. The GSER (Green Sustainable Economic Revolution) will therefore introduce a distributed capitalism, authentic democracy, and regenerative and sustainable developments everywhere.

In the new distributed/horizontal economy, competitive markets and institutions will gradually give way to collaborative networks. And elitist capitalism will be increasingly marginalized by the new forces of distributed capitalism and authentic democratic regimes powered and enabled by open and free communication and connectivity.

In the economy of the emerging GSER, millions of people at the bottom of the pyramid in our communities will be recognized as a huge socio-economic asset, rather than be seen as a social burden.

Most crises in the near future will come from our refusal to be aligned with the new paradigm.

This new socio-economic initiative must include a commitment to active and regenerative use of all resources. These resources must be put into circulation in the socio-economic fabric of our communities so that they can multiply. This initiative is designed to have a snowball effect. It revitalizes work and the basic structure of the modern economy, which is the **Enterprise**. New types of businesses will become socio-economic nodes where resources and human relations are oriented towards the continuous creation of social, environmental, spiritual, and economic wealth.

"Go to people. Live with them. Learn from them. Love them. Start with what they know. Plan with them. Build on what they have. Teach by showing. Learn by doing. Do not conform but transform. Do not relief but release. And when with the best leaders, work is done, the task accomplished, people will say 'we did it ourselves ".

Lao Tzu, Founder of Tao philosophy, 600 BC

By: Fr. Godfrey NZAMUJO

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SONGHAI: A NEW BEGINNING

Songhai is a laboratory of a new African society that is considered as an important and critical step in the African renaissance movement. This blueprint of a new beginning for the African continent must be based on an endogenous worldview anchored in the deep and fundamental insights on the socio-economic and scientific realities of the continent. That is why we believe that this initiative will not effectively take off without a radically reconstructed human resource base that is equipped with a transformative developmental philosophy, technical and human capacities that can strike an answering chord to the current multi-dimensional challenges on the continent.

It is important to note that even though Songhai is not an agricultural project, it is a sustainable, resilient, and integrated agricultural system aligned with the fundamental principles of the working of our planet, (the logic of biomimicry) and is the take-off point of this new socio-economic initiative. If this is done well, sustainable agriculture as being practiced by Songhai can become a weapon of mass socio economic construction.

The Tiny Invisible Giants Shaping Our World

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HOW MICROORGANISM CAN CONTRIBUTE SIGNIFICANTLY TO SOIL HEALTH (compost/super soil, plant, and animals)

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RESTORING OUR SOIL FOR SUSTAINABLE AGRICULTURE

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SUSTAINABLE WASTE MANAGEMENT IN AGRICULTURE: A SUSTAINABLE AND INNOVATIVE PRACTICE in SONGHAI

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AKWA IBOM STATE GOVERNMENT PARTNERS WITH SONGHAI CENTER TO REVOLUTIONIZE THE FOOD AND AGRICULTURAL SYSTEM UNDER THE UMO ENO ADMINISTRATION.

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THE TINY INVISIBLE GIANTS SHAPING OUR WORLD



Microorganisms, also known as microbes, are tiny living organisms that are invisible to the naked eye. They include a wide range of organisms, such as bacteria, fungi. Despite their small size, microorganisms play crucial roles in various aspects of life on Earth. Here's a brief overview:

Diversity: Microorganisms are incredibly diverse, with countless species identified and many are yet to be discovered. They inhabit virtually every environment on Earth, from the deepest oceans to the most extreme environments like hot springs and polar ice caps.



Size: Microorganisms are typically measured in micrometers (one per million) or even Nanometers (one per billion). This tiny size allows them to exist anywhere and often go unnoticed.

Roles: Microorganisms are involved in numerous essential processes. They play key roles in nutrient cycling, decomposition of organic matter, and the production of various substances like antibiotics, enzymes, and food products. Some microorganisms are also responsible for causing diseases in humans, animals, and plants.

Beneficial Microbes: Many microorganisms are beneficial to humans and the environment. They are used in industries such as biotechnology, agriculture, and wastewater treatment. Some are essential for processes like fermentation (e.g., making bread, yogurt, and beer), while others help fix nitrogen in the soil, making it available to plants.

Health Implications: Microorganisms have a significant impact on human health. The human microbiome, for instance, consists of trillions of microorganisms living in our bodies, and it plays a crucial role in digestion, immunity, and overall well-being.

Songhai Research for Development (R for D): Microbiology is one of the main pillars of the Songhai's technology park that includes digital (information and communication) and renewable energy. Songhai research on microorganism has led to the development of products that are

beneficial to plant, animals, and the whole environment. That is why we call these groups of microorganisms “Effective Microorganism” (EM).

Environmental Impact: As we said above, microorganisms do have significant impact on the environment. For example, they are involved in soil regeneration, the breaking down of pollutants, and they can equally influence climate change through processes like methane production mitigation.



In summary, these diverse, tiny microorganisms are influential organisms that impact nearly every aspect of life on Earth, from primary food production processes to human health and industry.

By: Honoré BOKO

HOW MICROORGANISMS CAN CONTRIBUTE SIGNICANTLY TO SOIL HEALTH
(Compost/super soil, plant, and animal)

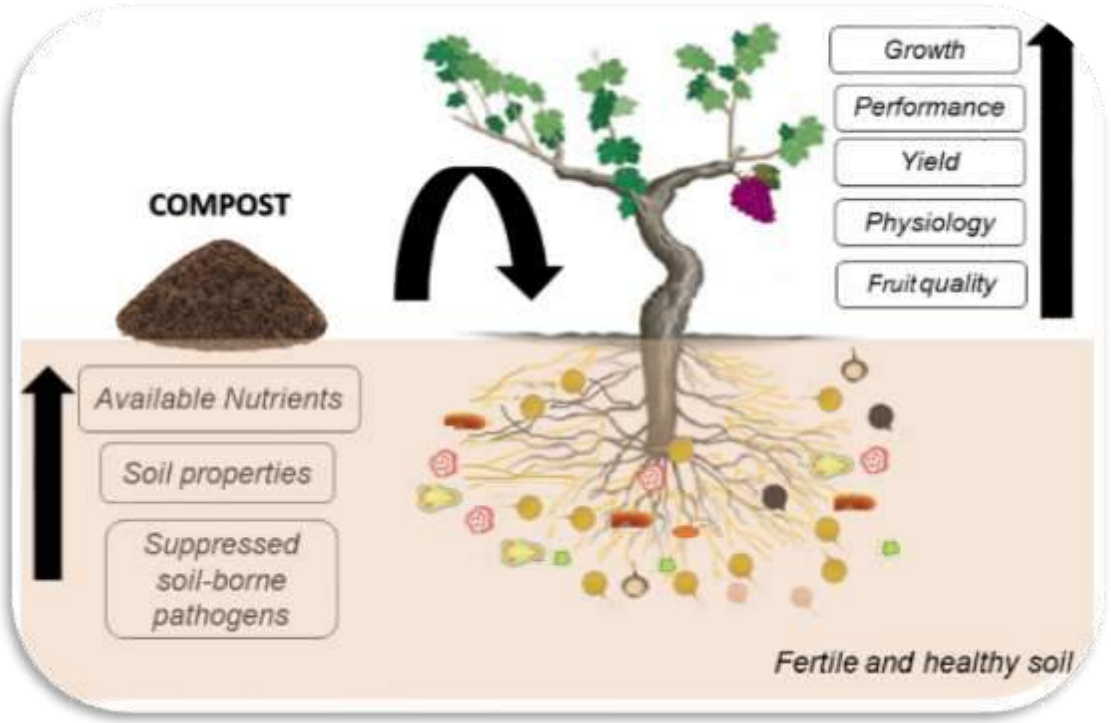


Figure 1 above shows the picture of microorganism and it effect to soil.

People all over the world come to Songhai today to see the positive results of integrative and regenerative agriculture because of the power, efficiency, and effectiveness of these microorganisms. It is unfortunate that most conventional agriculturists have abandoned the natural base of agriculture and rely heavily on chemicals that kill these microorganisms. By attacking these microorganisms, these practices are dangerously degrading the capacity of our soils and ecosystem to be regenerative and healthy. In this newsletter issue, we will see how Songhai harnesses the presence of microorganisms and their impact on the soil, water bodies, plants, and animals.

Super Soil production/composting by deploying Microorganisms.

If you take a closer look at the soil at Songhai, you will observe that the soil is quite different from every other soil around. This is because of the abundance of microbes and the level of soil carbon. The impact of microorganisms on the soil cannot be over emphasized. They form a symbiotic relationship with soil, plants, and animals. They are vital for regenerating soil health because they not only recycle waste materials, but also produce valuable substances and favorable physical environments (pH etc.), soil structures and textures through their metabolic processes. The nutrients and the soil structures produced contribute a great deal to the growth, productivity, and quality of plants.



Figure 2The figure above shows the significant microorganism on the soil.

Impact of Microorganism(s) on Animal(s) Microorganisms also have great impacts on animals through the multiple roles they play in their environments, digestive and health systems. These beneficial roles include but are not limited to neutralizing harmful bacteria in their environment and digestive systems. They equally boost their immune systems and mental health.



In a nutshell, beneficial microbes in soil promote healthy plant growth, which leads to increased crop yields, longer productive growing cycles, and better crop quality. Agricultural byproducts are also recycled by these microbes to produce energy and effluent as organic fertilizer that can be ploughed back into the soil to grow crops. These processes, when combined, will result in the creation of an ecosystem that translates into a sustainable socio-economic landscape that enables wealth, job creation, and healthy living.

By: Jude BERNARD

Restoring our soil for a new and a sustainable agriculture



A deep analysis of today's crises – encompassing issues such as food insecurity, malnutrition, health crisis, poverty, unemployment, environmental/Land degradation, and climate change – reveal that all are interconnected and inseparable.

As the world population continues to grow, particularly in Africa – it more than doubled between 1961 and 2016 – the demand for food is also increasing more and more. The pressure is exerted on the soil, which is a limited resource. The area of cultivated land per capita globally declined steadily between 1961 and 2020, and continues declining, …falling from approximately 0.45 to 0.21 hectares per capita (see Figure 1 below) (FAO Statistics Division)

Fig1: African population growth in 1980 -2050

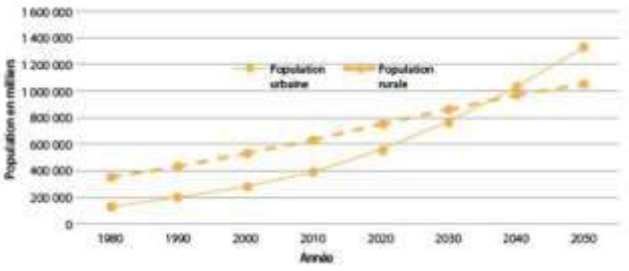
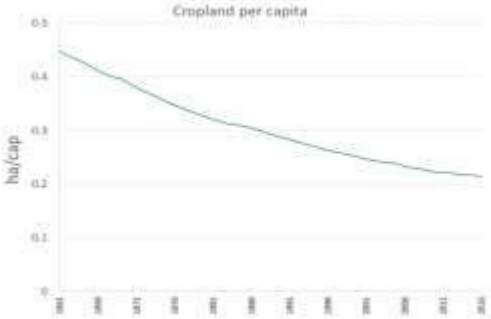
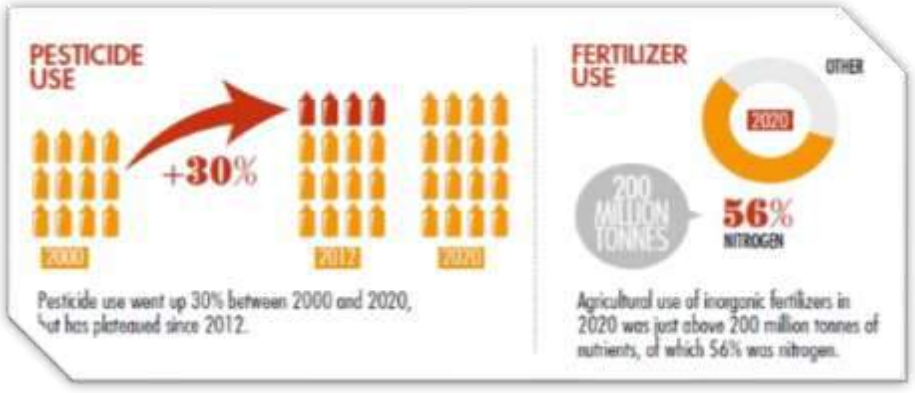


Fig2: area of cultivated land per capita



Also, our land is deteriorating in quality and becoming poorer because of the excessive use of inorganic fertilizers, pesticides, and herbicides threatening and affecting our health.



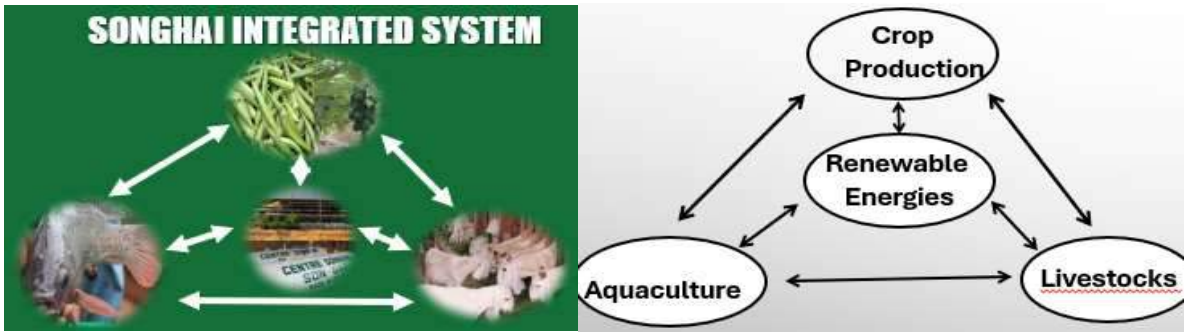
It is therefore urgent to implement diverse mitigation actions to restore our soil by turning our dying ecosystems and our Agrofood systems to sustainable, regenerative, and resilient to produce more and better with less in a sustainable manner.

What can we do for this dying and scarcer crucial resource called soil in the situation of an ever-growing population with higher food demands and poorer, unhealthy, and ever reducing cropland?

SONGHAI, as an innovative Institution, has found solutions for this worrying issue over the years through its zero waste and integrated production system.

With its radical and sustainable technologies, this regenerative Agriculture holds the key to addressing the challenges mentioned above.

The Songhai Integrated Production System



Background:

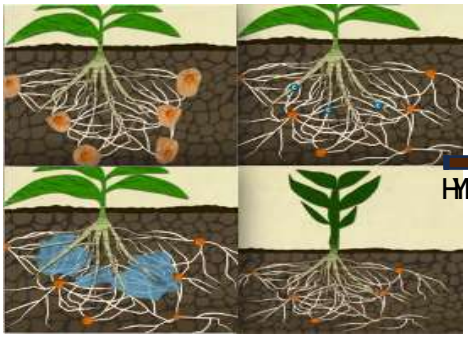
Land degradation is affecting more than two billion hectares, and more than 3.2 billion people are affected. What can we really do to restore our soil fertility to its full potential for sustainable and regenerative Agriculture?

The insights we are now getting from modern sciences indicate that our planet works on basic principles of radical connectivity, synergy symbiosis, supplementary and complementary. These are some principles that Songhai applies in developing its systems and technologies that it refers to as authentic technologies to solve the challenges mentioned above.

1- Harnessing our environmental capitals for soil and ecosystem restoration

- using the indigenous Microorganisms (Mycorrhiza, Hyphae, Effective Microorganism Activated Solution, EM-Fermented Plant Extracts, EM-Fruit Extracts)



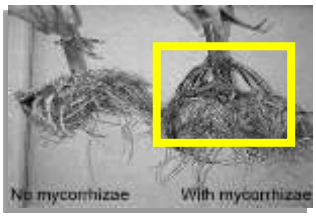


Hyphae play an important role in exchanging nutrients between plant and soil. They are drawn into the carbon released by the plant's roots. Attaching themselves to the roots, Hyphae supply plants with nutrients, minerals, and moistures, then developing a symbiotic relationship with the plant and now serving as extra roots that help taking nutrients to the plants with the help of fungi, crops absorb more nutrients and grow vigorously.

❖ **Mulching technology for carbon sequestration, nutrients mining in and** fertilization **(fertilizing?) the soil**



MYCORRHIZA





❖ **Composting to enrich the soil and to get good yield: turning waste to wealth.**



❖ **Biodiversity**

Integration of or coupling animal production and microorganisms with agriculture at the primary sector level. Recycling or turning a waste of one production unit to wealth/ inputs in another one.



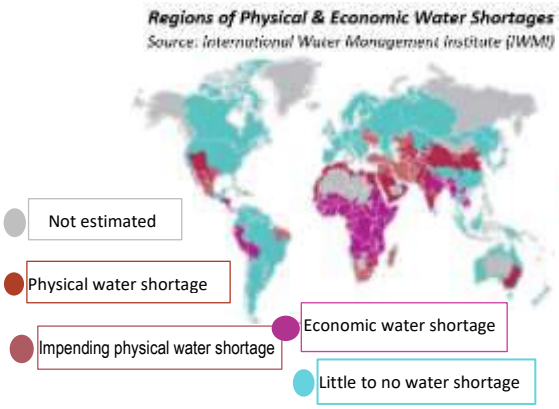


❖ **Water, an essential capital for agriculture**



A third of the emerged surfaces is devoted to agricultural use employing nearly 43% of the world's active population and theoretically covering the necessary food needs of 6.5 billion inhabitants. Yet hunger continues to affect a billion people, mainly in rural areas. In 2050, there will be 9 billion people that global agriculture will need to feed: the increase in population and income should translate into a 70% increase in demand for agricultural products. Water is a necessity for life; it is essential for domestic consumption and is essential for many economic sectors, including agriculture and food production. Agriculture depends very heavily on water and is the largest consumer of it. 70% of water taken is used for irrigation in the world and 84.1% in Africa. Improving water management in agriculture is therefore essential for the sustainability of a productive agri-food sector.

Songhai has developed technologies for water harvesting and management systems by collecting and recycling water from all sectors of production.





"Wealth and food grow where water flows on a healthy soil."

By: Luc HOUEMAGNON

SUSTAINABLE WASTE MANAGEMENT IN AGRICULTURE: A SUSTAINABLE AND INNOVATIVE PRACTICE IN SONGHAI

FROM WASTE TO WEALTH

In the world of agriculture, finding innovative and sustainable solutions for managing waste is a constant challenge. At Songhai, one of those solutions involves the production of maggots under the battery cage system in the layers section of agriculture. This method harnesses the power of nature to convert chicken droppings into valuable protein-rich maggots that can be used to feed fish, creating a closed-loop and eco-friendly system. In this article, we will delve into the fascinating process of maggot production in poultry farms and how these tiny creatures are transformed into a nutritious food source for aquatic life.



The Battery Cage System

Before we delve into maggot production, let's briefly understand the battery cage system in layer poultry farming in Songhai. Battery cages are small enclosures designed to house layers, primarily hens, for egg production. While this system maximizes egg production efficiency, it also generates a significant amount of waste in the form of chicken droppings.

Maggot Production from Chicken Droppings

One of the byproducts of the battery cage system is the accumulation of chicken droppings beneath the cages. Instead of considering this waste a problem, Songhai has found a way to turn it into a valuable resource. These droppings provide an ideal environment for the reproduction of house flies (Musca domestica Linnaeus), whose larvae, known as maggots, can be harvested, and used as a rich source of protein.

Here's how the process works:

1. **Introduction**

   As said before, waste accumulation is an inevitable byproduct of poultry farming, particularly in the context of battery cages where chickens are raised intensively. The waste primarily consists of chicken droppings, which comprise a mixture of organic matter,

uneaten feed, and feces. Over time, this waste accumulates under the battery cages, posing sanitation and environmental challenges.

2. ***Example of Waste hotspots in animal production***

   Chicken droppings are rich in nutrients, including nitrogen, phosphorus, and organic carbon. They are a valuable source of organic matter, which can be both a problem and an opportunity. On one hand, the accumulation of waste can lead to health issues for the birds and create unsanitary conditions in the poultry facility. On the other hand, it provides the basis for a sustainable solution involving house flies.

Attracting House Flies:

1. **Creating Waste Hotspots solutions**
   To address the issue of waste accumulation hotspots, Songhai has developed strategies to turn this problem into a solution. The harnessing waste hotspots here consists of deploying beneficial bacteria and flies (house flies etc.) on the chicken wastes to produce maggots and reduce smell. This is a part of waste management on poultry farms.
2. **Conditions for Attraction**

   Songhai has created these conditions to make these waste hotspots attractive to house flies. Factors such as temperature, humidity, and the presence of suitable substrates and EM (effective micro-organisms) are all incorporated. In other words, the waste hotspots in chicken production are carefully managed to encourage fly colonization.

Egg Laying:

1. **The Lifecycle Begins**
   Once house flies are attracted to the waste hotspot, they lay their eggs directly in the accumulated chicken droppings. This marks the beginning of their life cycle within the waste management system.
2. **Egg Hatching**

   The eggs of house flies hatch into small larvae, commonly referred to as maggots. These maggots are voracious eaters and play a pivotal role in waste decomposition.

Feeding and Growth:

1. **Maggot Diet**
   The maggots feed on the organic matter present in the chicken droppings. Their diet includes droppings, uneaten feed, and other organic materials. These microorganisms recycle the dropping to lower decomposition and environmental pollution. Converting them into valuable nutrients and biomass.

2. **Nutrient Recycling**

   House fly larvae are incredibly efficient at converting organic matter into higher nutritional values like protein (maggots).



Harvesting Maggots:

1. **Timing and Size**
   After approximately two weeks of feeding and growth, the maggots reach the desired size for harvesting. At this stage, they are rich in protein and can be a valuable resource for animal nutrition.
2. **Harvesting Methods**

   There are various methods for harvesting house fly maggots from the waste pile. Songhai uses techniques such as scooping or sifting to separate the mature maggots from the remaining waste material. These harvested maggots can then be processed for various purposes.

Benefits of Maggot Production as Fish Feed

The utilization of maggots as fish feed is an innovative and sustainable practice in Songhai that offers several advantages for the aquaculture industry:

1. **Nutrient-Rich Protein**:

   Maggots are a highly nutritious source of protein (60% crude protein and 20% crude fat). They contain essential amino acids, making them a valuable addition to animal diets, particularly for animals like fish that require high-protein feeds. This nutrient-rich protein contributes to the health and growth of animals, improving their overall performance in terms of weight gain and reproductive efficiency. Maggot meal's protein content can be comparable to or even exceed that of traditional fish meal, which has long been a staple in aquaculture feeds.

2. **Reduced Waste**:

   Maggot production offers a sustainable solution for managing organic waste, such as chicken droppings. By converting waste into maggots, this method effectively recycles

nutrients and reduces waste accumulation. This has several environmental and practical benefits:

- **Environmental Impact:** Waste from poultry farms, if not properly managed, can lead to pollution of soil and water sources due to runoff of excess nutrients like nitrogen and phosphorus. Maggot production mitigates these risks by converting waste into a valuable resource.
- **Odor Control:** Accumulated chicken waste can generate unpleasant odors. By reducing waste through maggot production, Songhai has significantly improved air quality and reduce odor-related issues using EMAS. Effective Microorganism Activated Solution (EMAS) is a natural fertilizer that induces the growth of beneficial microorganisms in the soil.
- **Pathogen Reduction:** Maggots can help control the population of harmful pathogens found in poultry waste, potentially reducing the risk of disease transmission among birds. Also, they have been shown to have antimicrobial properties, which can contribute to improved fish health. By reducing the prevalence of harmful microorganisms in fish diets, maggot meals may help mitigate disease outbreaks in aquaculture systems.

3. **Cost-Efficiency**: Producing maggots from waste is a cost-effective way to supplement animal feed, reducing the need for commercial feed sources.

    - **Lower Waste Management Costs:** Traditional waste disposal methods, such as hauling and land filling, can be costly. By reducing the expenses associated with waste management, the need for maggot production is essential as a valuable resource in bringing down the cost of waste generated from the poultry section.

4. **Sustainability:** Maggot production aligns with the sustainable agricultural practices at Songhai. It reduces the ecological footprint of poultry farming by minimizing waste and enhancing resource efficiency. Also, it contributes to a circular economy model where waste is repurposed into valuable products, promoting sustainability and responsible resource management. The growth rates and improved feed conversion ratios associated with maggot-fed fish can lead to higher yields and enhance the economic viability of aquaculture operations, ultimately benefiting fish farmers. This practice promotes sustainability on multiple fronts.



- **Reduced Pressure on Wild Fisheries:** Historically, fish meals have been a major component of aquaculture feeds, often derived from wild-caught fish. We must know that the environmental and economic costs of the use of fish meals in animal production are becoming unsustainable. By substituting fish meal with maggot meal, aquaculture and animal production reduces the demand for wild-caught fish, thereby alleviating pressure on the environment.
- **Reduced Dependency on Soy-Based Feeds:** Many aquaculture feeds incorporate soy-based ingredients, which can contribute to deforestation and other environmental issues. Maggot meal offers a more sustainable alternative to soy-based feeds, reducing the industry's reliance on soya cultivation.

5. **Diversification of Income Streams:** As part of Songhai's "waste to wealth" agenda, it has generated other streams of income by selling maggots as a feed supplement or as byproducts like maggot-based enhancer to other local farmers in its hubs and satellite farms in many parts of Africa. This diversification of income streams can help stabilize farm finances and reduce reliance on a single source of revenue.

In conclusion, the use of maggots in various agricultural contexts, such as poultry farming and aquaculture, exemplifies the synergy between innovation and sustainability at Songhai. It involves converting waste into valuable resources, improving nutrition, reducing costs, and supporting eco-friendly practices. These approaches offer multifaceted benefits for both the producers, the consumers, and the environment, promoting circular economy principles and contributing to more responsible and economically viable agricultural practices.

By: Prisca MADU

AKWA IBOM STATE GOVERNMENT PARTNERS WITH SONGHAI CENTER TO REVOLUTIONIZE THE FOOD AND AGRICULTURAL SYSTEM UNDER THE UMO ENO ADMINISTRATION



The Government of Akwa Ibom State in southern Nigeria has signed a Memorandum of Understanding (MoU) with the Songhai Center, aiming to spearhead a technologically advanced sustainable agricultural revolution in the state. This collaborative effort is intended to fulfill the objectives outlined in the ARISE Agenda blueprint, which forms the foundation of the state administration's goals.

The "ARISE" Agenda comprises a comprehensive five-point program, encompassing **Agricultural revolution, Rural development, Infrastructural maintenance/advancement, Security management, and Education advancement**. Pastor Umo Eno, the new Governor, regards this agenda as a binding commitment to the people of Akwa Ibom and envisions it as both robust and easily comprehensible. He firmly believes that its implementation will have a positive and enduring impact on the livelihoods of the state's residents. As such, he emphasizes the need for competent leadership capable of delivering on these promises.

During a brief meeting held at the Government House in Uyo to formalize the MoU, Governor Eno expressed admiration for the Songhai agricultural model, which he had learned about during his election campaign. He underscored that this MoU signifies a long-term partnership between the state government and the Songhai Center, with the objective of replicating a model farm in Akwa Ibom.

Governor Eno commended the Songhai delegation for their visit to the state and assured them of the feasibility of implementing their model in Akwa Ibom, given the state government's commitment to agricultural production as outlined in the A.R.I.S.E. Agenda blueprint. He emphasized his expectations for this agricultural investment, highlighting its potential to excel in food production, promote tourism, foster youth development, and create job opportunities.



Drawing upon his entrepreneurial background, Governor Eno emphasized the importance of a thorough examination of the business plan to assess its profitability within a reasonable timeframe. He stressed his responsibility to judiciously manage the state's funds by investing in lucrative ventures that benefit the people.

In his words, Governor Eno stated, *"I am an entrepreneur. I don't go into businesses that I don't understand the bottom line. What we want is what you have captured here. Be our development partner. Develop our youths, train them and use them."*

He also emphasized the need for a technology transfer plan as a prerequisite for expansion, allowing young Akwa Ibomites to manage the model farm effectively and profitably within his first term in office.

Governor Eno further shared his vision for the project, outlining a four-year tenure and expressing his desire to reap the benefits of the investment during his administration's tenure. He envisaged preparing a group of young people who could sustain the project's growth, ensuring its long-term success.



The leader of the Songhai Center team, Prof. Godfrey Nzamujo, who is the Founder and Director of Songhai, explained that their organization is more than just an agricultural project; but a project of a new African society that has now become a movement. He stressed the importance of nurturing a pool of human resources equipped with the moral, technical, and organizational competencies needed to realize the project's vision in Akwa Ibom.

Prof. Nzamujo commended the state administration's vision in partnering with the Songhai Center and assured that their collaboration would revolutionize food and agricultural production in the state that enable it to become socio-economically viable for its people. He also sought a cooperative investment partnership with the state administration.

The highlight of the meeting was the formal agreement signed between the Songhai Center and the Akwa Ibom State government. Dr. Offiong Offor, the Commissioner for Agriculture, represented the state government, while Prof. Godfrey Nzamujo signed on behalf of the organization. This agreement solidifies their commitment to advancing agricultural technology and production in Akwa Ibom State.

GOVERNOR UMO ENO'S TRANSFORMATIVE VISIT TO SONGHAI: A VISION FOR AGRICULTURAL ADVANCEMENT IN AKWA IBOM

In a remarkable stride towards transforming the agricultural landscape of Akwa Ibom State, Governor Umo Eno embarked on an enlightening journey alongside key members of his cabinet to Songhai, a renowned center of excellence in agro-ecological technologies and integrated



farming systems. This momentous visit was marked by a meeting with the Director of Songhai, aimed at gaining experiential knowledge and insights into the implementation of the model farm project in Akwa Ibom. The visit underscores the government's commitment to revolutionizing agriculture and fostering sustainable development in the state.

Songhai: A Beacon of Agricultural Innovation

The Songhai Center, situated in the picturesque heart of Porto-Novo, Benin, stands as a beacon of hope and innovation in the realm of agriculture. Founded by Father Godfrey Nzamujo, this establishment has earned international acclaim for its revolutionary approach to farming. The heart of Songhai's success lies in its integrated farming system, which leverages the synergy between various agricultural components, creating a sustainable and self-sufficient ecosystem.

These components are:

1. **The vision component** – Serving as the foundational component, Songhai adopts a perspective characterized by a holistic and systemic worldview of nature. This pivotal aspect accentuates the imperative for its human resources to gain profound insights into the fundamental principles governing our planet's dynamics. It entails recognizing that

the world operates as an intricately interconnected system, underlining the importance of comprehending this profound interconnectedness.

2. **The technology component** - Within the framework of Songhai, it operates as a dedicated technology park. The innovative ideas are systematically harnessed to give rise to novel tools, encompassing biological sciences, Renewable Energies, and Information and communication sciences. These tools are intricately aligned with the overarching vision component, reflecting the holistic and systemic worldview. This technology is aptly referred to as **"authentic technology."**

3. **Industrial component** - Songhai is an industrial park and production center. Innovative ideas and cutting-edge technologies are meticulously employed to establish enterprises spanning diverse sectors and value chains. The key objective is to foster seamless collaboration and synergy, collectively contributing to the production of goods and services that align with the needs and desires of consumers.

4. **Incubation component** - Songhai functions as an esteemed learning institution devoted to the cultivation of novel competencies. Young individuals undergo a comprehensive process of deconstruction and subsequent retooling, meticulously designed to refine their capabilities continually. During this phase, they accrue invaluable experiential knowledge while acquiring a diverse set of technical, organizational, and managerial competencies. This multifaceted training equips them with the versatility required to eventually thrive in their entrepreneurial pursuits, ensuring their functionality and effectiveness in society.

5. **Service component** - This is the service center of Songhaï. It is the largest component because it is grounded in the steadfast belief that the work remains far from completion. Within this sphere, Songhaï fulfills several vital roles. First, it serves as the nurturing ground for youth enterprises, providing them with essential support for them. These enterprises are thoughtfully connected to burgeoning and emerging markets, facilitating their growth and sustainability. This overarching support system encompasses an array of critical functions, including marketing, advocacy, networking, financial, and technical assistance.

   Moreover, a pivotal facet of Songhaï's service component entails the creation of an ecosystem—a conducive environment—in collaboration with other agro-businesses and institutions spanning various sectors and value chains. Within this expanding ecosystem, young entrepreneurs seamlessly integrate and become an integral part of its fabric.

   As this ecosystem naturally flourishes and expands, it leads to the organic generation of more employment opportunities and increased wealth. This holistic model fundamentally diverges from the fragmentary and short-term approach often observed in many job creation initiatives, transcending the limitations of piecemeal and quick-fix mentalities.

Governor Umo Eno's keen interest in Songhai is a testament to his vision for Akwa Ibom. He recognizes the potential for replicating Songhai's success story in his own state, where agriculture holds immense promise for economic growth, job creation, and food security.

Experiential Learning: A Catalyst for Change

During the visit, Governor Umo Eno and his delegation were immersed in the Songhai experience. They explored the various facets of the integrated farming system, which includes organic crop production, animal husbandry, aquaculture, and renewable energy production. These components are interconnected, creating a virtuous cycle of resource utilization and waste management.

One of the highlights of the visit was the opportunity to witness firsthand the eco-friendly practices that Songhai employs. The use of biogas from organic waste, solar power, and efficient water management techniques left a profound impression on the visiting delegation. Governor Umo Eno recognized that adopting these sustainable practices could significantly reduce the environmental footprint of agriculture in Akwa Ibom.

Furthermore, the Songhai approach to training and capacity building resonated with the Governor's commitment to empowering the youth and women in his state. Songhai's model integrates education and practical skills development, equipping individuals with the knowledge and skills needed to excel in modern agriculture.



A Blueprint for Akwa Ibom's Agricultural Transformation

The Governor's visit to Songhai was not just a fact-finding mission but a declaration of intent. He firmly believes that the integrated farming system practiced at Songhai can serve as a blueprint for

the model farm project in Akwa Ibom. By adopting these innovative techniques and fostering cooperation between government agencies, farmers, and the private sector, Akwa Ibom can usher in a new era of agricultural productivity and prosperity.

The integration of agro-ecological technologies, waste recycling, and renewable energy production, as demonstrated at Songhai, aligns perfectly with Akwa Ibom's quest for sustainable development under the A.R.I.S.E agenda of the Umo Eno administration. By promoting sustainable agriculture, the state can mitigate the triple challenges of environmental degradation, food insecurity and unemployment.



Conclusion

Governor Umo Eno's visit to Songhai represents a moment's journey towards transforming Akwa Ibom's agricultural sector. The invaluable insights gained from this experience will guide the implementation of the model farm project, driving economic growth, job creation, and food security in the state. The visionary leadership of Governor Umo Eno, coupled with the innovative spirit of Songhai, promises a brighter and more sustainable future for Akwa Ibom. As these efforts take root, the state stands poised to become a shining example of agricultural excellence in Nigeria and beyond.

By: Victor IBETO