Facilitating Artificial Intelligence and block chain systems, partnerships and technologies: emerging global actors and players in Sustainable Development

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ABSTRACT

With ever expanding possibilities for innovative advances and technological breakthroughs, the need for facilitating techniques to ensure that economic and environmental sustainability measures can match or rather keep up with such pace of development, is becoming more evident.

Artificial Intelligence (AI), vertical integration and block chain systems and technologies will have increasing roles to play, particularly in respect of areas which relate to global climate change, trade and energy, in facilitating transitional processes, complex transactions and changes which are consequential of such developments.

The Seychelles 'Debt Conversion for Marine Conservation and Climate Program" illustrates the complexity of transactions involved in the program – as well as the need for future and flexible provisional arrangements and technologies which will facilitate the achievement of the goals and objectives of the programs – in addition to the intended roles and engagements of stakeholders involved.

Challenges presented with Artificial Intelligence and Block Chain Systems incorporate the need for greater certainty and tested (and proven) procedures with controls and governance in respect of bionic collaborations between humans and technology.

In their publication "Harnessing Innovation to Lead the Bionic Lending Revolution (© 2019 PwC)", Pollini, Hernandez, Prescher and Shipley highlight the following in respect of the "Bionic Revolution":

"With the onset of the fourth industrial revolution (4IR), consumer lending organizations are facing altogether new questions about the future. The lending environment has already experienced vast change; yet, we are quickly seeing a transition into a marketplace of end-to-end home ownership offerings and financial health ecosystems that are likely to trigger a revolution rather than the next stage of evolution."

As well as illustrating and addressing certain questions and challenges which Artificial Intelligence and Block chain technologies face, possible steps forward, and why Blockchain technology, particularly, still has quite a way to go, this paper highlights how such technologies can play vital roles in sustainable development – and with particular reference to complex lending and financing arrangements which embody such programs as those relating to the 'Debt Conversion for Marine Conservation and Climate Program".

What possibilities also exist for wild life programs – particularly those aimed at preserving endangered species in environments not heavily affected by air or water pollution? Moreover, how can leading economies engage in programs more effectively to mitigate jurisdictional differences, facilitate disclosure and transparency in their collaborations – whilst also according appropriate

considerations to increasingly topical matters as trade, climate change and sustainable development?

Key words: Artificial Intelligence; Vertical Integration; Block chain systems; Sustainable Development; energy; climate, environment; Fourth Industrial Revolution; The Bionic Revolution; patents; intellectual property; trade relationships; transparency; information disclosure

Facilitating Artificial Intelligence and Block Chain Systems, Partnerships and Technologies: Emerging Global Actors and Players in Sustainable Development

Prof Marianne Ojo[1]

Introduction

Evolutionary responses and developments are fundamental to facilitating sustainability and revolutionary changes which have occurred over the decades. Such evolutionary developments are assuming greater prominence in the manifestation of innovative partnerships and collaborations. Emerging global actors and players are becoming more associated with areas revolving round trade, environment, energy and the need for better governance - in particularly the financing of such projects and facilitation of goals and objectives of alliances involved.

As well as illustrating the primary role which energy, and more specifically, cooperation in matters relating to energy, has assumed in the earlier stages of China-EU relations, Espa (2018) observes that such cooperation "initially, and principally relied on a few technical assistance programmes and best practices sharing." In highlighting the evolutionary phases of the cooperation, it is further stated that "more institutionalized cooperation models and mechanisms have developed over the decades, and that energy is now the second most important area of cooperation between China and the EU.[2]

Furthermore, it is re iterated that "the paradigm of China–EU relations in the energy sector is evolving from development aid to joint action-oriented partnership, allowing from a much wider set of cooperation projects to unfold, from more traditional government-led projects to business-to-business projects and joint research projects."[3]

The need for coordinating mechanisms and procedures has been illustrated as being pivotal in many collaborating and partnership projects which are related to development aid projects and environmental sustainability. The Seychelles 'Debt Conversion for Marine Conservation Climate Program is an illustration of the need for provision for future contingencies given the complexity of transactions involved in the Program.

Artificial Intelligence and Blockchain technologies constitute systems and technological advances which are emerging as fore runners in the "Fourth Industrial Revolution."

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[1] Centre and Institute for Innovation and Sustainable Development Visit: www.ciinnovationsd.org

[2] I Espa, "Climate, Energy and Trade in EU–China relations: Synergy or Conflict?" at page 63 China-EU Law J (2018) 6:57–80 https://doi.org/10.1007/s12689-017-0076-0

[3] See ibid, and particularly page 63

Such other systems which are characterizing such Revolution including:[4]

- ***Vertical Integration***
- ***Hyper-focused specialty lending***
- ***Lender-fintech partnerships***
- ***New engagement models***
- ***Consumer-focused Ecosystems***
- ***Alternative Data***
- ***Product Innovation***
- ***Income Shared Agreement***
- ***iBuyers***
- ***Shared Equity,***

To name but a few of such technological advances.

The ensuing section is aimed at introducing the conceptual framework underlying two of the afore named technological advances, namely Artificial Intelligence and Block chain systems – as well as illustrating how gaps in the literature relating to the facilitation of better technologies in addressing the changing needs of the financial and financing environment, can be addressed. Such gaps requiring reference to emerging global concepts, actors, and players in the fields of trade, environment and well as energy sectors.

Literature Review and Background to Topic

Artificial Intelligence tools "use advanced algorithms and machine learning to predict activity and manage business processes, such as projecting inventory levels, managing cash flow needs, or by enhancing monitoring and other activities in internal audit."[5]

Artificial Intelligence is referred to as "the ability of a machine to perform cognitive tasks associated (typically associated) with human minds."[6] Such cognitive functions including the following:[7]

- Problem solving

[4]See Pollini et al , PwC, "Harnessing Innovation to Lead the Bionic Lending Revolution" 2019 at page 6

[5] See The Centre for Audit Quality "EMERGING TECHNOLOGIES, RISK, AND THE AUDITOR'S FOCUS A RESOURCE FOR AUDITORS, AUDIT COMMITTEES, AND MANAGEMENT" at page 8. The potential of Artificial Intelligence in developing accounting estimates is further highlighted: "AI may be used in developing accounting estimates and potentially could incorporate data previously determined to not be relevant into the overall development of the estimate. AI may identify correlations in the data that were previously unknown."

[6] Centre for Audit Quality, " *"Emerging Technologies: An Oversight Tool for Audit Committees"* December 2018 page 3

[7] ibid; "Building blocks for Artificial Intelligence that have been around for a long time including such concepts like data, algorithms, computer storage and processing power"

- Reasoning
- Learning
- Perceptions

More recent advances which are regarded as having "propelled Artificial Intelligence into reality" and which are considered important in implementing Artificial Intelligence to solve business problems include: Classification[8], Clustering[9] and Regression techniques.[10]

Block chain technology is defined as "a distributed, shared, encrypted-database that serves as an irreversible and incorruptible public repository of information."[11] As well as highlighting the applications associated with blockchain technologies, namely, the facilitation of smart contracts, digital rights management, attractive business models for the Internet of Things (IoT), the protection of personal data, digital content distribution; voting and reputation system enhancement,[12]

The term "bionic" is considered to be " the optimal mix of humans and machines working together to achieve rapid, exponential success."[13] The Bionic Revolution is referred to as "the intersection between technology and humans."

As well as a consideration of governance related matters which revolve around system and technological advances, the need for changing tastes and preferences, socio cultural needs, as typified and characterized by the growing use and preferences for environmental friendly products, and countered by the need to achieve Sustainable Development Goals and objectives, this section also highlights challenges which constitute main areas in need of redress, as well as why blockchain systems and Artificial Intelligence still encounter several hurdles in the future of financial services and the facilitation of complex transactions typically associated with many innovative and partnership projects.

[8] "This involves training machines to recognize patterns in data, then categorizing new data into categories – such being illustrated through reconciliation – a process whereby reconciliatory functions are performed between internal and external systems and a history of actions which have taken, also being recorded." Further, it is added that " AI systems can learn patterns based on historical actions – as well as recommend actions for an unreconciled item."

[9] "This involves training machines to create sets of categories for purposes of fraud detection – as illustrated with insurance industries which engage machine learning facilities and technologies to identify clusters of fraud from historical claims, thereafter comparing to ascertain whether new claims are fraudulent."

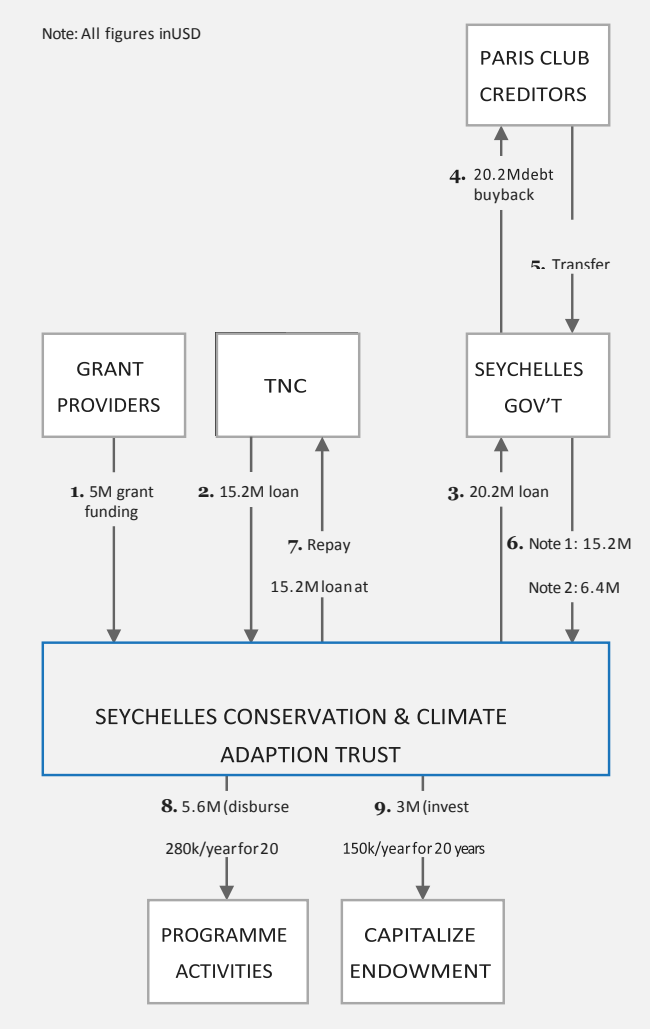
[10] With regression techniques, these are considered to engage training a machine to " estimate next numerical value in a sequence – as exemplified through forecasting, predicting techniques and forward looking statements." See ibid

[11] See L Trautman "Lawrence J. 69 The Consumer Finance Law Quarterly Report 232 (2016), *available at* http://ssrn.com/abstract=2786186). Also see Aaron Wright & Primavera De Filippi, "Decentralized Blockchain Technology and the Rise of Lex Cryptographia "(2015), http://ssrn.com/abstract=2580664.

[12] See ibid "*Is Disruptive Blockchain Technology the Future of Financial Services?,* 69 The Consumer Finance Law Quarterly Report 232 (2016) pp 238 and 239

[13] Pollini et al , PwC, "Harnessing Innovation to Lead the Bionic Lending Revolution" 2019 at page 11

Transaction structure of The Seychelles 'Debt Conversion for Marine Conservation Climate Program



Source: Convergence (2017), CASE STUDY :SEYCHELLES DEBT CONVERSION FOR MARINE CONSERVATION AND CLIMATE ADAPTATION MARCH 2017

In revisiting the risk theories discussed in the paper "Beyond the Financial Crisis: Addressing Risk Challenges", reference will be made particularly to the Governmentality Approach to Risk.[14]

Mitchell Dean's definition of government is as follows:

"Government is any more or less calculated and rational activity, undertaken by a multiplicity of authorities and agencies, employing a variety of techniques and forms of knowledge, that seeks to

[14] See M Ojo " Beyond the Financial Crisis: Addressing Risk Challenges in a Changing Financial Environment" Goettingen Journal of International Law 2 (2010) 1, 335-364 and particularly page 346.

shape conduct by working through our desires, aspirations, interests and beliefs, for definite but shifting ends and with a diverse set of relatively unpredictable consequences, effects and outcomes".

Governance is hence shaped and defined by the knowledge capabilities, partnerships, historical, as well as institutional and legal frameworks which have defined and shaped such governments over time. It is evident that a robust and well regulated system of governance and controls will effectively address changing needs and risks posed by changing environmental needs, economic and financial demands. In this sense, regulatory convergence and harmonization between legal regimes involved will also ensure the facilitation of greater coordination, coordinative mechanisms and accountability safeguards which are in place. Transparency, enhanced disclosure measures, robust corporate practices and effective communication also being crucial to fostering good relations, mutual respect, trust and understanding between the partnerships involved.

To what extent can the degree of trust (which exists between collaborating parties) be relied upon to ensure that knowledge sharing, capital and information resources are effectively exchanged and utilized when needed and in the most effective manner – on a time (and cost efficient basis)? Can stakeholders be relied upon to provide flexible alternative measures in the event that such measures are in need of implementation?

One of the attractive attributes and features of the Seychelles 'Debt Conversion for Marine Conservation Climate Program, relates to the fact that the benefits received – as well as the means for repayment of such loan terms do not center exclusively on monetary basis – but rather on the need for preservation of environmental resources as well as ecological considerations – a huge incentive for particularly low income based countries. This argument, however is also controversial on the basis of the sustainability of the terms of agreement – particularly if such a developing nation of 115 islands, also relies to a considerable extent on other sectors which could threaten the ecological environment.

In the case of Seychelles, the offer could be considered. against a background and cost benefit analysis which appears to be more beneficial for the island – when contrasted with other countries which rely exclusively on water pollutant and air pollutant industries and sectors for their economic survival.

Further, the benefits derived by virtue of its geographical location, natural touristic beauty and future income generating potential, should be weighed against the back drop of the destructive nature and potential of accepting lucrative oil contracts – which also could have been triggered as a result of its geographical location and potential for such oil explorations.

In their publication, "Harnessing Innovation to Lead the Bionic Lending Revolution", Pollini, Hernandez, Prescher and Shipley (PwC:2019) illustrate how three forms of capital, namely:

- Nature

- Human, and
- Financial capital

Have been pivotal in the success of many enterprises – and particularly the role of the management of such forms of capital in the determination of such success.

Further the emergence of three leading new forms of capital is illustrated thus (2019:11):

- Behavioral Capital
- Cognitive Capital
- Network Capital

The importance of optimizing the knowledge based information resource is also emphasized – particularly with reference to the need to adapt to sustainable change.

Other Issues to Be Considered

- The design and implementation of models and technological systems which can structure debt conversions that will support "ecosystem-based adaptation strategies" and facilitate the management of fisheries, wildlife and marine initiatives and projects.

- The funding of facilitative organisations and actors who can encourage other developing nations to engage in manageable and feasible programs which not only assess the sustainability of such projects before they are embarked upon, but also offer alternative flexible modes of repayments which are not exclusively tied to monetary resources.

Recommendations: Extension of Collaborative Programs and other Innovative Possibilities

- Whilst marine initiatives and projects could be considered to depend more heavily on water, air and environmental pollution, other less dependent projects which are aimed at preserving the natural habitat could also be considered. For example, greater encouragement of "anti- pouching" initiatives – whereby the government (local government) is provided with debt financing incentives as a means of tackling threats to the preservation of endangered species and wildlife – such threats not stemming principally from air or water pollution, but rather from those illegal and prohibited trade activities which endanger the preservation of wildlife and particularly endangered species.

Trade and cross border jurisdictional agreements – as well as customs measures operate effectively in many jurisdictions whereby many goods (ivory tusks, products from undesired activities which threaten wildlife – and particularly endangered wildlife) are confiscated by custom officials.

The challenges presented principally revolve around non complying jurisdictions whose governing authorities and official can easily be bribed or regional/federal authorities whose levels of poverty deter from effectively imposing the attributable and commensurate penal measures. Hence inherent institutional and socio economic challenges exist even where adequate legal and corporate governance structures are in place.

The engagement of non governmental organisations who can address poverty levels through direct engagement with locals, better understanding of their needs and challenges whilst also creating incentives for locals to preserve their wildlife – at local levels (rather than federal level) is thus recommended. Direct engagement with locals – as well as ensuring that they are compensated directly for preserving and imposing measures on perpetrators engaged in the sale of endangered wildlife, will not only ensure that poverty levels are tackled by giving funds to those who really merit such assistance, but serve as job creating channels whereby such initiatives , projects and programs can be monitored directly and efficiently by the agencies and organisations which are involved.

Conclusion

In view of ongoing trade wars between global players and leaders - such as exemplified in US China relations, as well as in respect of patents, copyrights and intellectual property issues and matters,

the potential for greater collaborative platforms which facilitate and engage Artificial Intelligence, block chain transactions and systems whilst fostering trust between stakeholders– as well as promoting sustainable development goals and initiatives, particularly in relation to the preservation of wildlife and marine ecosystems and the financing of similar initiatives as those related to the Seychelles 'Debt Conversion for Marine Conservation Climate Program, is greatly encouraged.

As highlighted in a previous paper,[15] the ability of responsive regulation to address such a complex factor as risk, its flexibility and responsiveness to regulatees and its environment, among other advantages, make it an increasingly desirable regulatory tool as compared to traditional regulation or risk based regulation. Whilst direct monitoring by the State would be required, the involvement of third parties such as non-governmental organisations would also be crucial towards ensuring that a situation, whereby the State could be captured, is avoided.

[15] See ibid

Mechanisms of accountability, in the form of non governmental organisations, as well as the need for coordination, harmonization and regulatory convergence whilst ensuring that systems of governance can be relied upon, are tested, trusted and reliable, will ensure the facilitation of smooth transition process for engaging leading and emerging technologies such as Artificial Intelligence, block chain technologies and vertical integration in the future of financing and financial services.

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