

Ariel Foundation International  
Report on  
**GREEN INNOVATION**



UNCTAD Youth Forum

United Nations, Geneva

*authors*

ALENA DIQUE

ASHISH POUDYAL

THUN THONG

# Ariel Foundation International Report: **GREEN INNOVATION**

UNCTAD Youth Forum 2018, Geneva



Alena Dique, Ashish Poudyal, and Thun Thong



YOUTH ENTREPRENEURSHIP:

A FORCE TOWARDS INCLUSIVE AND SUSTAINABLE GROWTH



Report written by Alena Dique (*Speaker and Moderator*),  
Ashish Poudyal (*Speaker*), and Jayson Thong (*Special Rapporteur*).  
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# Introduction

Green innovation is ever-increasingly becoming one of the more important mechanisms integral to achieving the goals of a sustainable future tomorrow, today. It is particularly effective when implemented alongside sustainable business practices, the modernisation of education, advancement in technology, and proper investment in the Sustainable Development Goals (SDG). With the release of the United Nations “Agenda 2030”, seventeen SDGs were created to highlight a robust interpretation of the needs that must be met to ensure a prosperous future for mankind.

The following report is born from these notions; sustainability, the importance of empowering the world to create impact and the future of innovation as a mechanism to achieve these goals. What is hoped to be achieved by the authors of this paper is to allow the reader to obtain a comprehensive understanding of the many facets and intricacies that sustainability has on the impact of society.

Each author has contributed an individual piece, reflective of their line of passion, interest and expertise - all in the aim of inspiring others to join them on their journeys as they work to create a sustainable future.

# GREEN INNOVATION

*By Ashish Poudyal*

Unlike the carrying capacity of earth, the rate of population growth is growing day by day. Along with population growth, the demands of people are also at its peak. Thanks to the unequal distribution of resources in the world, world politics and anti-globalization sentiments, we are in the track of scarcity of resources. In this adverse condition, an inclusive, environment friendly, and effective solution is needed i.e. Green Innovation.

If anyone was a part of this year World Investment forum, then anyone could have felt how Africa is progressing. The modern world is facing towards Africa due to its huge resources and manpower. It's time for people of Africa to understand this stage to progress rapidly. And green innovation can be a crucial aspect. Learning from development across the world, African union should negotiate with philanthropists, donor nations and most importantly to increase the use of green technologies. During the time of development, carbon emission and destruction of environment will be at its peak. African nations should build a plan to compensate every sorts of destruction. If African union can be effective then the green Africa will always exist in the society. Else green Africa can be a story of once upon a time.

China is the world largest green energy investor, producer and user. Ironically, it's also the world's largest

greenhouse gases producer followed by United States and European Union. Despite of developed nations constant progress in green innovation, carbon emission still exist and at highest point. The reason behind this is productivity. Green innovation don't seem to be as much as productive compared to that of fuel burning machineries. Despite of the fact that many railways lines across Switzerland, cars across Silicon valley and household products across China are being far more productive compared to that of carbon emitting products, when it comes to huge machineries of factories, fuel seems to be inevitable. For this more investment in AI is required by all countries in the world. Secondly, the price of these green innovative products are far higher than normal products. This is a serious issues for developing nations where more than the quality of products, its price matter. Hope to write about USA in 2020AD, and see some positive changes.

Nepal, a small Himalayan nation, is one of the effected countries by climate change. Tourism is its major economy and it relies on natural tourism. But its snowcapped mountains are being naked at higher pace, lakes are in case of drought, river levels are rising and air is degraded day by day. Thanks to its two giant neighbors, India and China who are world's largest greenhouse gases emitters. It hurts that due to these nations, we have

to suffer. So, even if one country realizes a fact that climate change is real, then consequences would be fruitful.

The month of November is harvesting season of rice across SAARC and BIMSTEC nations. This time when I and my family were harvesting, we realized that the local seeds of rice was near to extinct. Half a decade ago, as a part of green innovation, hybrid rice were introduced which produced rice in lesser time. After that the local seeds declined in number and currently you can rarely see it. Despite of the fact that local seeds takes time and much resources to foster, they are far healthier compared to the hybrid seeds. The maize, rice or wheat produced from the hybrid seeds changed the ancient culinary recipe across my village. For instance, 'Chamre' (A fluffy and tender rice cooked with various spices) is no longer fluffy or tender. You rarely get original taste of it. The rice plant planted during July in coordination with all villagers,

surrounded by music of 'Panche baja' (An ancient five musical instrument) and lyrics of Aasare (A poem sung during the time of plantation of paddy) are gold and silver for villagers. It's not just about plantation, but the culture linked with it. The skills via which the farmers farm is ancient and local. The job of green innovation movement is to utilize these skills of local people and innovate stuffs, not eradicate these skills. If green innovation wants to foster than it must be able to address the value, culture and skills of local people and move towards its concrete goal.

We are fighting for inclusiveness, respect, environment and 2030 plan. Many countries missed the Industrial revolution in past decades, but this green movement is for everyone. From the great African forest to main mountain ranges of the world, everyone are progressing. Let's make this movement achieve its goal. A goal of inclusiveness, productivity and progress.



# DOES BLOCKCHAIN ADD VALUE TO THE AGRICULTURAL INDUSTRY?

*By Alena Dique*

## 1. INTRODUCTION

During the past year or two, the word blockchain has created quite a buzz over media, press releases and publications with reference to entrepreneurship and technology advancement. This fame has been shared with two popular terms, cryptocurrency and bitcoins. Many articles written also state that the usage of blockchain technology has numerous benefits pertaining to the field of agriculture. The question to be asked is: Does blockchain add value to the agricultural industry?

Unlike crypto currency and bitcoins, Blockchain technology is not focused on digital currency. It is a technology focused on creating a strong, secure and reliable database (Blockgeeks, 2018). Blockchain is built on ledger of accounts and transactions that are simple to modify if you follow the correct procedure yet impossible to tamper with once noted in the system. Resulting in an extremely secure approach to document, verify and transfer resources without the system of a middleman such as brokers and banks.

In theory, the benefit of blockchain is abundant, however, farm owners and cultivators are interested in advancements that promote real value in the near future with visible results and improvements to the current system (FAO, 2018). Through the usage of blockchain, farmers can access a single point of actuality on their land, assets and contracts. A large number of growers in

today's world use different kind of software, record journals, applications and own memory to trace their data (Wolfert, 2017). Service providers double the effort for these services to collect data and information from the farmers. By using blockchain you enable a single point of contact and allow to reduce the struggle to maintain records on multiple data storage systems. Therefore, saving time and energy in the supply chain.

It's vital to understand that blockchain technology in itself does not produce more cash inflow for farmers, nevertheless it does deliver an infrastructure in technology to account for digitization, tracking and industry automation that is the base for modern agriculture.

## 2. AGRICULTURE SUPPLY CHAIN

Majority of the initial blockchain apps for agriculture relate to supply chain and tracking features. The role of a blockchain ledger aids in record keeping and maintenance of the produce status from the sowing to harvesting stage right up to the delivery phase (Brewster, 2017). The benefit for large scale operations is a reliable, secure and unalterable ledger that enables safety of information and content within. It also provides the real time update of all functions in the agriculture supply chain.

Due to the high demand for organic and bespoke methods of production, there is an increase in the incentive to producers who can

supply verifiable data on growth records, supply chain and authenticity of final product in the market. Example: Goods labelled and pure or raw; organic fruits and vegetables; pesticide free growing edibles etc. With the addition of blockchain to the agricultural supply chain, producers can meet with the regulatory compliance systems established plus meet customer expectations (Janssen, 2018).

An added advantage of being traceable is noticed when it the produce is sold wholesalers, manufacturers or food processing units. Farmers can safeguard the quality of their produce as well as achieve exchange of assets and instant payments through blockchain technology.

The tracking feature is not limited to the produce only, it can extend to data sources and field sensors, the producers can even receive added benefits to check the records about the quality of soil fertility, latest applications and practices, varieties of raw materials available and alternatives. The basic food supply chain and agriculture share a close link, since the produce from agricultural processes are inputs in various food supply chains (Tripoli, 2018). The global food chain is intricate and consists of gathering producers, warehouses, logistics, distribution and consumers.

Many existing global food systems are inefficient and also inaccurate. Buying a good from a market might have a branded seal on it, however the suppliers may have no idea which farm the produce originated from. Blockchain technology solves two large real issues, support of small scale producers and food-safety reliability.

### **3. AGRICULTURE RESOURCE PLANNING (ARP)**

Providing support to small scale producers and emerging cooperatives is a great way to increase competence in developing countries. Undeniably, much more goes into managing and whole procedure that just focusing on the produce. There exists a dense, continuously changing image of various inputs required during a typical seasonal course. A large number of producers and now utilizing ARP software to trace all their resources in real time. Systems like this can most certainly contribute powerfully to enhancing agronomics. Thus creating market value for companies to be differentiated (Toshendra, 2018) makes it a good fit to manage inventory management.

As one centralized system all data entries become part of the ledger and all participant devices update simultaneously. The sync network of the offline blockchain works immediately as soon as the devices get back online.

The capability of blockchain technology spans into the recording of machine maintenance data and well as in-field sensor transmissions (Deloitte, 2017) . In practice, any producer can keep a track on the real time availability for machinery in stock, maintenance schedules and well as repair needs. Blockchains can be regarded as a game changer for producers with a number of farms and equipment in various locations.

#### **4. IS BLOCKCHAIN THE FUTURE OF AGRICULTURE**

A large number of organizations have incorporated the technology of blockchain in order to protect food safety and its integrity (Agarwal, 2018). Examples of blockchain users are Coca-Cola for traceability in sugarcane production and forced labour cases, partnership between IBM and Walmart for efficient blockchain integration with their existing supply chains and Carrefour to validate the standard and origin of food products.

Blockchain is on its way to the industry of agriculture, however its presence may go unnoticed as it is the implementation of blockchain will have the same look and feel as the present software solutions and applications being used (Ray, 2017). The differentiation in the usage of blockchain technology is that it supports automation of agricultural management and provides a wide array of options to collect and verify data.

#### **5. CHALLENGES OF BLOCKCHAIN IN AGRICULTURE**

The greatest benefit that is offered by blockchain technology is the security to carry out transactions among untrusted parties. A decentralized ledger is connected from inputs and producers to suppliers and buyers to get better traceability in agricultural value chains. It is an apt support for small scale producers especially in the developing countries to be able to provide them with facilitating transactions, completing insurance procedures and financial assistance. This is revolutionary since 80% of the produce supplied in a developing country comes from a small scale producer who rarely has any access to the

basic financial support services (Khanna, 2005).

There exists numerous hurdles and challenges for the widespread implementation of blockchain technology. SMEs are too small or scarce in the know-how on investing in blockchain technology on their own. In the field of blockchain education, there is a need for awareness about the blockchain technology elements and tutoring programs on its usage and benefits.

Moreover, a significant blockade is regulation. The present-day understanding of crypto currencies shows that they are susceptible to investors and substantial price fluxes (EY, 2015). Therefore, due to the lack of proper control, cryptocurrency cannot be a trusted means to use in agricultural supply chains as an inclusive solution. There is an evident lack of consensus among legislators and technical specialists on the usage blockchain technology and pass transactions aligned with cryptocurrency (Partanen, 2018).

#### **6. CONCLUSION**

While it is observed that blockchain technology is being tested by a number of ventures and initiatives, the aim is to create a verified and reliable environment to develop a transparent system, incorporating crucial shareholders into the agricultural supply chain (Crosby, 2015). Of course, as with every new technology, various concerns and challenges need to be addressed.

Firstly, blockchain technology has to become effortless to be understandable and implemented by the agricultural industry on a large scale to have any notable transformations. Secondly, governments

ought to participate in research, development and innovation to create a clear indication on the added value of blockchain technology implementation in the industry. Lastly, creation of a transparent regulatory framework for the implementation of this technology at the basic levels needs to be designed along with the partnership of all involved public and private parties (Hammerich, 2018). Only then will the blockchain technology be a safe and secure solution that is reliable plus preferred upgrade for the agricultural industry and all its interlinked industries.



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## Considering the Non-Renewable Nuclear Power

*By Thun Thong*

Our planet's carbon budget currently sits at 2° Celsius for 2050. With the continuous depletion of resources — natural and man-made, occurring faster than the rate of replenishment to meet the demands of the ever-expanding world, there is a fixation on how the sustainability of the planet and its inhabitants can be maximised. The onset of globalisation also suggests that the path of an industry-oriented world will continue to be unaltered for the foreseeable future. The variables that can be altered to have an impact on the communal focus of sustainability, however, are the different resources and methods we utilise to meet the energy demand. In other words, the direction in which we steer the world's future is correlated to the resource(s) we choose to proliferate — whether it is nuclear, fossil fuels, or renewable energy. Presently, the demand for power is met by significant amounts of fossil fuel which has led to substantial carbon dioxide (CO<sub>2</sub>) and greenhouse gas (GHG) emissions (Knapp et al., 2018). Correspondingly, scientific evidence has further proven the reality of climate change. The international community has responded to this imminent effect by limiting the rise in surface temperature to 2° Celsius, thereby emphasising that emissions mitigation efforts are imperative (Duscha et al., 2014). Of the strategies within the mitigation discourse, nuclear as a non-renewable and of course, renewable energy technologies are the prominent ones. In this piece, I will examine why the low-carbon nature of nuclear power

trumps its downsides. I will also analyse the position of renewable energies in relation to nuclear power to establish that nuclear power is a qualified candidate in furthering green innovation to achieve optimal mitigation of climate change.

First and foremost, I do recognise that labelling nuclear power as a “green” energy is a relatively controversial move, but with regard to its production process and byproducts, it is much greener than that of fossil fuels — I will elaborate on this below. Nuclear technology was developed predominantly towards the middle of the 20th century when scientists had discovered that nuclear fission of the uranium atom released an exponential amount of energy and triggered a domino-like effect that would maximise this release (World Nuclear Association, 2018). Its subsequent application was to the arms industry (e.g. the atomic bomb), before the technology was commercialised to the meet electricity demands (Ibid., 2018). The stigma surrounding nuclear today precisely stems from the fact that it can be used to wreak havoc if it ends up in the wrong hands. However, it is evident that the low-carbon nature of nuclear trumps its downsides and its benefits outweigh those of other non-renewable energy alternatives, especially in the carbon-constrained world which we are facing. Today, nuclear energy provides 33% of emissions-free electricity worldwide (The Role and Responsibility of Nuclear Power in a Carbon Constrained World, 2015). As a low-carbon energy technology, or even as a carbon-neutral (TED, 2016) source of power, nuclear can be evaluated in the same calibre as renewable energies. This versatility allows for the elements of nuclear power to be assessed on a more explicit level, especially

when exploring its efficiency in reducing carbon emissions and adhering to the carbon budget. For example, the emissions of nuclear since 1976 have saved 64 GigaTons of GHG emissions (World Nuclear Association, 2018). Additionally, the low-carbon nature of nuclear power can be attributed to the nuclear fuel cycle (World Nuclear Association, 2017). The entire process inclusive of the mining and enrichment phases of uranium, and its power generation phase, generally require less input energy, compared to that of leading fossil fuels like coal and gas. It's worth noting that the minimal carbon emission is restricted to the uranium mining and enrichment phases (World Energy Outlook, 2011). The GHG emissions of nuclear when it comes to electricity generation are marked at less than 15 CO<sub>2</sub>/kWh (TED, 2010). The Nuclear Energy Institute (NEI) has found that nuclear-generated electricity saves our atmosphere from more than 555 million metric tons (Mt) of CO<sub>2</sub> emission, which is the equivalent of putting 117 million passenger vehicles out of commission (NEI, 2018). The innovation regarding nuclear waste storage is another benefit that has saved the Earth's atmosphere from a significant amount of carbon. 1 GW of electricity produced by nuclear each year amounts to 20 tons of CO<sub>2</sub> in comparison to 1 GW produced by coal which produces 8 million tons of CO<sub>2</sub> (TED, 2010). In essence, nuclear waste storage is controlled, monitored, and localised. Conversely, waste created by fossil fuels are uncontrolled and end up far and wide (Ibid., 2010). Not to mention, nuclear causes the least amount of deaths in relation to other energy technologies (Markandya and Wilkinson, 2007). For example, coal and gas' high mortality rate is due to the generation of not

only CO<sub>2</sub>, but also other harmful byproducts such as nitrogen oxide, sulphur dioxide, and mercury. Without nuclear to neutralise them, these harmful byproducts would rise to 29% in the atmosphere (NEI, 2018).

Furthermore, nuclear's numerous advantages over renewable energies are often underrated. In the United States, 56% of the electricity generated comes from a nuclear which is three times more than that of hydropower, three and-a-half times more than wind, and a whopping 18.5 times the amount of electricity that solar power generates (NEI, 2018). For example, the International Energy Agency (IEA) predicts that electricity generation from nuclear would rise to 24% in 2020 at 250 Gigawatt (GW) (World Energy Outlook, 2011). Similarly, other studies conducted by the IEA suggest that nuclear continues to be a sizeable source of power generation (Ibid., 2011). A single nuclear power plant can provide electricity 92% of the time, each year (TED, 2016). Moreover, due to its extant and extensive role in the energy industry, nuclear is considered to be a mature power, with the technology behind the formation of 449 reactors in 30 countries, with 60 more reactors under construction currently (Heubaum, 2018). Thus, it is reasonable that the Intergovernmental Panel of Climate Change (IPCC) has recommended nuclear as a key mitigation tool (Pearce, 2012). Today, nuclear power shares the stage with fossil fuels such as coal, gas, and oil, and renewable energy technologies which are inclusive of geothermal, hydropower, wind, and solar. The acceleration of fossil fuels has also invalidated emissions reductions on the part of renewable energy (TED, 2018). The efforts to (re-)proliferate nuclear power should not

suggest an intention to make nuclear power the sole technology in combatting climate change, rather to make it a leading one. Nuclear power is to be implemented alongside renewables as no technology can be used in mitigation efforts singlehandedly, especially with renewables putting out only 3.8% of the global energy supply (TED, 2016). The European Commission (EC) has proposed that Annex 1 states reduce their carbon emissions by 30% in 2020 (Duscha et al., 2014). As (Ibid., 2014) articulates, “simulations take into account that a phase-out of nuclear may alter countries’ baseline emissions and restrict their options to mitigate GHG emissions.” Similarly, statistics demonstrate that the use of only fossil fuels and renewables is not adequate in achieving the common goal of keeping the Earth to 2°Celsius (Ibid., 2014). In fact, a nuclear power phase out would lead to 15% higher CO<sub>2</sub> emissions in 2050 (Rafaj et al., 2008). For instance, the replacement of two-thirds of nuclear power by natural gas in Japan as a result of the phase-out will have increased GHG emissions by 7% in 2020 (Duscha et

al., 2014). Lastly, certain renewable energies such as wind can be unreliable at times, although the strategic location of wind farms along coastal areas are intended to maximise its wind-harnessing capacity. However, one case in the United Kingdom has clearly linked a lack of wind to a lack of power generation, resulting in outages. A similar case in the Australian state of South Australia has discovered that certain technical settings in wind farm operations was the catalyst for a blackout.

In conclusion, it is important to clarify that the advantages of renewable energy are substantial and in this reality of climate change, they are key to emissions reductions. However, the energy output from renewable energies is simply not enough. Therefore, the carbon-neutral renewable technologies must be utilised simultaneously with low-carbon nuclear energy to maximise climate change mitigation. In essence, this is a form of “Green Innovation” in and of itself — to not proliferate one and eradicate the other but to implement them together for optimal results in the face of a swiftly-changing climate landscape.



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## Author Biographies

Alena Dique is an Operations Specialist and HR Innovation professional from The Sultanate of Oman. Currently working in the Information and Communications Technology field of UX development. She is also the,



*Alena Dique*

- First student from Oman to win the scholastic award in London for her Master's degree research in SME development at University of Wales in the UK.
- Finalist of the Women in Tech awards Middle East 2019 as Young leader of the year.
- Member of UNCTAD Youth, first youth delegate from Oman.
- Brand Ambassador and Spokesperson of The Pink Project Oman, an Omani International Volunteers initiative focused on Women's empowerment in Africa and Asia
- Head of AFI Oman, providing a platform to youth to bridge the gap between education and working sectors, youth entrepreneurship and inclusiveness.

Alena is also part of a Culture Change committee and executive leadership development program for Strategic projects and Stakeholder Management in Oman. For collaborations please contact [dique.alena@gmail.com](mailto:dique.alena@gmail.com)

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Aashish Poudyal is currently in his gap year after graduating from high School. He is working as Outreach coordinator of Debate Network Nepal (DNN). He also served as youth volunteer for Ministry of Youth and Sports of Nepal for reconstruction projects of Nepal, after 2015 earthquake. He had also worked alongside of Federal Member of Parliament. He is greater enthusiastic about wildlife across the world along with global politics. He believes to restore the globe through multilateralism, education and humanity.

*Aashish Poudyal*





***Thun (Jayson) Thong***

Thun (Jayson) Thong is currently pursuing a postgraduate degree at the School of Oriental and African Studies, University of London where he is an MA International Studies and Diplomacy 2019 candidate. Previously, Jayson has worked with the Ministry of Tourism of the Kingdom of Cambodia and the National Olympic Committee of Cambodia, as an official in the Department of International Cooperation and ASEAN, and the Department of International Relations, respectively. He has been a Changemaker with Ariel Foundation International since 2015. Additionally, he is been involved with youth leadership organisations and environmental conservation projects spanning from Tanzania to New Zealand. His areas of interests are climate change (mitigation) and social equity. He intends to work with international organisations and diplomatic missions to achieve a societal structure where all individuals are equal, and treated fair and just.





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