



Offsetting Global Tourism Carbon Footprint

Sustaining Indigenous Forests



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“A decentralized public blockchain-based offsetting and compensation mechanism for Indigenous Communities in Papua New Guinea to sustain their forested land with REDD+ mitigation instruments”

T4G PNG!???

Introduction

Travel4Green (T4G) is an autonomous nonprofit private project – independent of any NGO or Government, is designed and operated by Howarig Traders, a management consultancy firm, the Operator of the Decentralized Autonomous Organization (DAO).

The Project design is based on public and programmable blockchain set of smart contracts. The project encourages travelers worldwide to calculate their carbon footprints to recognize how much carbon emissions they leave behind in the country they visit.

When traveling to Papua New Guinea (PNG), travelers are encouraged to calculate the carbon footprint they leave behind and offset them with removals by sinks supporting the indigenous communities' efforts against deforestation, logging, and land use clearing and covering the costs of managing and sustaining forests.

At every PNG entry port, travelers are provided with the instrument to perform ethical commitment to offset their carbon footprint via T4G token rigidly backed by sustainable forestry area and REDD+¹ carbon emission offsets under the Project.

The offset acquired is irrevocably retired and double-spending is impossible. Individual travelers on vacation or visiting friends and relatives, business travellers, and/or government officials are all encouraged to acquire T4G token depending on the social responsibility and social commitments they have and feel towards saving the planet Earth.

The T4G distributes the proceeds among the forest landowners in PNG to support their efforts to preserve the forests, to prevent deforestation, logging, land use clearance and to cover the costs of managing and sustaining the forests and the costs of development and maintenance of the Monitoring, Reporting and Verification system (MRV).

The customary landowners (CLOs) in PNG are custodians of the 97% of the land mass in the territory of sovereign nation of PNG, which comes under a customary landownership recognized by the law in the country with a total area of 462,840km² (an area 25% larger than the size of Japan). More than 60% of the landmass is covered by tropical rainforests.

The country contains one of the world's largest remaining areas of tropical forest, home to 8% of the world's biodiversity.

In order to benefit from this initiative, CLOs register their Incorporated Land Groups (ILGs). The T4G system creates a ledger (database) of ILGs in PNG for the purpose of developing a compensation mechanism.

¹ Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries negotiated under the United Nations Framework Convention on Climate Change (UNFCCC)

The T4G project systematically redeems tokens representing verified removals by sinks to each ILG account using a T4G's ILG ledger.

The payments collected from the Global Tourism Carbon Footprints are paid to the ILGs through a percentile share distribution mechanism.

T4G Token Emission, Distribution Mechanism and Carbon Removal Credits

The goal of the Project is not only to offset the travelers' footprint with REDD+ removals by sinks but to sustain forests and to reimburse damages, adaption costs.

Therefore, emission of T4G token is strictly based on the sustainable forestry area under the Project 1 T4G token = 0.01 hectare = 0.0001 km². T4G tokens do not represent any sort of ownership or property rights for the land or forests. T4G tokens represent contributions of the stakeholders to the Project based on the sustainable forestry area managed under the Project.

Verified removals (Removal Credits) are the tokens representing directly verified removals by sinks (stocks).

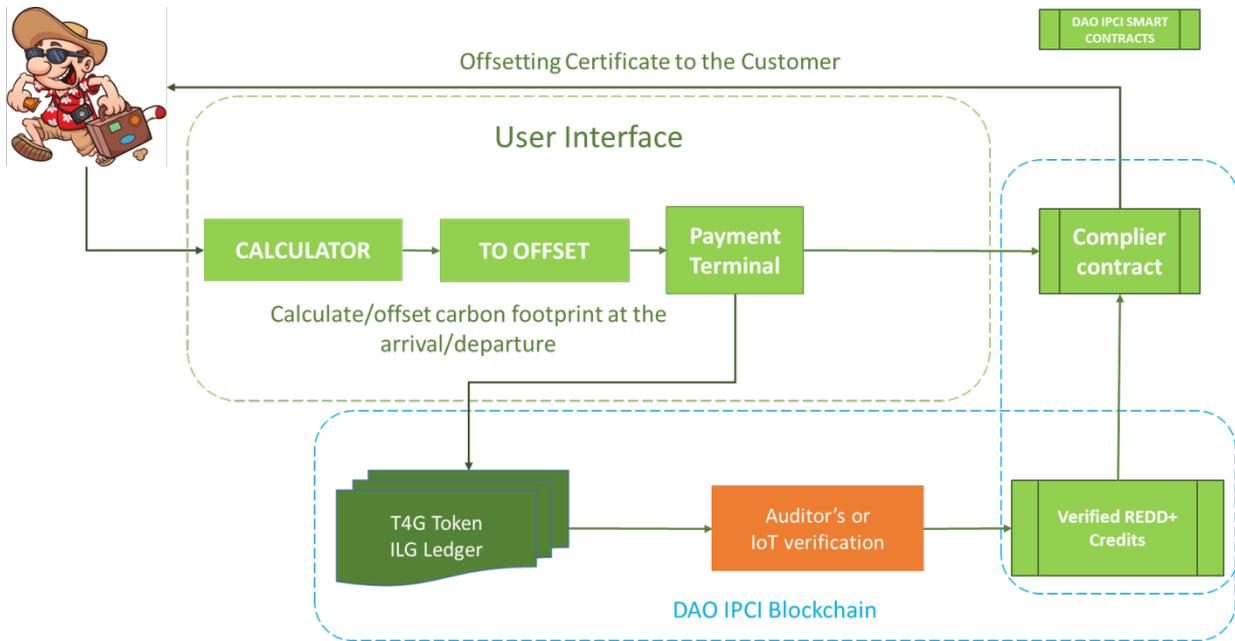
Removal Credits are secured, verified, issued and registered: first, via the Security Deposit contract with the security deposit enough to acquire alternative carbon offsets in case not all the removals are duly verified. Removal Credits are placed to the Complier contract to be burnt for offsetting or compliance purposes.

Complier contract does not allow transfer or trading and provides only for irrevocable cancellation/retirement of offsets thus preventing double-spending and providing for transparency, reliability and momentum accounting.

Thus, direct correlation of the T4G token with the sustainably forestry area and with variable amount of verified carbon offsets is established.

T4G token represents stakes in the Project and works as payment and accounting token, the basis for distribution of proceeds. T4G tokens are not to be burnt unless the forest area managed by T4G diminishes.

The tourists/travelers offset their carbon footprint and collateral costs via T4G tokens at the front-end payment terminal. The corresponding number of offsets is burnt at the Complier contract.



T4G tokens paid for by the travelers are distributed among the stakeholders, including the main beneficiaries (CLOs) as an incentive, in accordance with their stake in the T4G Project (see the following Section “Stakeholders and Distribution of Proceeds”). Transactions are publicly transparent and immune to falsifications or interference.

Travelers use a privately developed tourism carbon footprint calculator at the front-end terminal to calculate their trip’s carbon footprints. They have two options of payment to pay for the carbon sinks; either with fiat currency (VISA/Credit Card) or cryptocurrency (Bitcoin/MITO) at the front-end terminal, which automates the currency conversion to T4G token as an internal currency.

Currency conversion is automated in the T4G ecosystem and transacted into various nominated accounts based on the percentile distribution prescribed.

Front-end pay terminal is linked to the carbon calculator and provides for conversion of crypto or fiat currency and is integrated with the Complier contract.

T4G Operator, once hits the balance, distributes the proceeds on regular basis according to the stakes represented by T4G tokens at the addresses (accounts) of the stakeholders.

Stakeholders and Distribution of Proceeds

40% - ILG Compensation

This payment is allocated for indigenous communities through their ILGs. Legally registered under Investment Promotion Authority (IPA) and Department of Lands and Physical Planning, the duly registered and recognized ILGs will submit credentials to T4G system. T4G, in association with Climate Change and Development Authority (CCDA), establishes a database of the ILGs with their verified REDD+ forest areas maps. CCDA will confirm verification via the Independent Entity Smart Contract on blockchain.

Compensation in monetary terms will be disbursed to ILGs registered in T4G database through a blockchain-enabled payment network system. This is done in close partnership with the CCDA, representing the Government.

Payments are directed into the bank accounts nominated by each ILG. T4G automate this transaction with copy of each transaction to CCDA so that CCDA informs the people of their payment being made for transparency.

Each ILG has the responsibility to preserve the forests that are under REDD+. On a regular basis, CCDA does the MRV to ensure the forest is maintained and preserved. Any variation reported by CCDA via its MRV process, will mean that payment to particular ILG will be put on hold to allow for investigations and to establish the causes and remedies.

The CCDA is setting up a transparent system for measurement, reporting and verification (MRV) of REDD+ activities to prove actual emission reductions to international counterparts under the principle of payment for performance.

If legal implications require the remedy for non-compliance, it is to be settled through the appropriate legal procedures through the set of smart contracts diminishes this risk to the minimum.

Whatever is the cause of non-compliance, the payments to ILG in question are put on hold until issues are rectified. If serious matter that require payment adjustments to the variations, then the payment structured is amended to accommodate the variations.

On the other hand, T4G creates an avenue for customary landowner grievances to be reported and addressed and/or referred for appropriate organizations and persons to address.

5% - Adaptation (Damage Compensation)

This payment is not in cash but in-kind support for the resettlement of people being affected by the rise in sea level. Basically, to help the climate change refugees, PNG reported the World's first climate change refugees at Carteret atolls with 2,500 villagers at risk, of which 1,700 were relocated to Bougainville.

World Health Organization (WHO) estimated that six (6) islands will be disappearing under water and PNG Government started evacuation and resettlement of the islanders, 10 families at a time, in 2007.

Compensation will be in the form of livelihood support and resettlement of families due to rising of sea level caused by climate change. Manus Island, PNG's smallest province comprising of over 200 islands, is facing threats from rising sea levels, coastal erosion and salt water flooding of agricultural lands.

Again, in association with CCDA and other relevant Government agencies, T4G will disburse damage compensation support to those areas identified and reported by CCDA or other relevant Government authorities.

T4G will also put support towards biodiversity under threat by climate change in PNG and the Pacific. PNG being the world's second largest island and third largest tropical rainforest area stems a priceless example of biodiversity.

The country with more than 840 different languages and 8% of the world biodiversity, PNG's cultural heritage and biodiversity is a jewel that the world should treasure.

T4G will support preservation and conservation of biodiversity and cultural heritage, mostly in association with the Government through its relevant agencies.

5% - Forthcoming Generation

This is a compensation for the forthcoming generations, support for forward-looking initiatives such as promoting education and raising awareness on climate change issues and funding climate change publications for children. The funds are to be used also for publication of climate change materials including educational materials for students in PNG and Pacific schools.

More focused on climate education at schools in PNG and awareness of the communities. Funds here will be targeting the future generations in education, information and awareness. No cash distribution is implied, rather disbursement, production, publication and distribution of climate change books, documentary video productions, research and awareness for future generations.

The funds in the Next Generation Fund Account are targeted for Climate Change and Reforestation Research, Development and Scholarships, and Publications.

10% - Humanitarian and Repatriation

The funds shall be available for humanitarian purposes and repatriation of people to the places of cultural and ethnical origin. Ethnical and cultural groups who fall under this category duly apply for repatriation and T4G assists in their repatriation.

This refers to globally recognized repatriation movements. Verification and authorization will be given by the PNG Government for any repatriation move to be assisted globally.

No cash payments will be made but assistance provided in the form of procurement and travel arrangements of families back to their places of origin.

10% - T4G Core Development and Maintenance

This is a payment for the expansion and maintenance of the Travel4Green development team – software engineers, carbon credit experts, business managers, lawyers, blockchain experts, and industry specialists. Also covers the Administrative, Accounting and Legal costs of running the T4G ecosystem.

Training is needed within the T4G team to train and up skill in technical aspects. Engaging of more qualified persons in the team is a priority.

10% - PNG Government

Funds here are made available for the PNG Government for the assistance provided through its agencies. This includes the PNG Climate Change and Development Authority (CCDA), PNG Tourism Promotion Authority (TPA), PNG Immigration and Citizenship Authority (ICA), PNG Border Control & Protection, Department of Lands & Physical Planning (DLPP), Department of Environment and Conservation (DEC), various Provincial Governments, PNG Forestry Authority (PNGFA) and PNG Department of Foreign Affairs and Trade and other government agencies and statutory bodies.

Through a signed MoU, between T4G and the Government of PNG, the PNG Government assists T4G in the implementation process, marketing, and encouraging the travelers comply with ethical responsibility to offset the carbon footprints they leave behind when visiting PNG. This also applies to companies and corporate entities who contribute to the damage caused by climate change.

The funds are transferred in self-executing mode to the assigned Government account under the MoU agreement.

10% - Howarig Traders

Funds are made payable to Howarig Traders for management and consultancy services rendered for the entire initial design, planning and further management of the Project.

Howarig Traders, as the Operator of T4G Project, will inject the funds into its system for management, consultancy services, marketing, skills development and maintaining its operation.

Funds are transacted to Howarig Traders nominated bank account.

10% - DAO IPCI technical backup

Decentralized Autonomous Organization “The Integral Platform for Climate Change Initiatives” (DAO IPCI IPCI) which provides the technical expertise in blockchain technology and carbon trade shall be thus compensated for the time, effort and resources put to implement the Project.

DAO IPCI Team creates the public blockchain ecosystem for T4G Project and provides ongoing consultancy and technical support for the Project.

Apart of transaction fees that may incur, funds will be systematically transferred to DAO IPCI assigned bank account.

The T4G Ecosystem

A traveler offsetting carbon footprint is more than just calculating the carbon footprint and donating, it's about selecting projects that will have genuine mitigation impact.

Many of the most visited destinations in the world, including PNG and the Pacific, are reefs, beaches and rainforests, which are already stressed by climate change.

With a commitment to lowering and offsetting personal trips carbon footprint, each traveler can be part of the climate change solutions. Travelers must join the global efforts to keep this planet livable.

For tourists, carbon offsetting is an important issue as air travels significantly increase their carbon footprint. In fact, one meteorologist from the United States was so taken aback by the impact of his frequent travels that he promised that he and his wife would never again take a flight. He wrote:

“World governments will never agree in time to coordinate reductions in greenhouse gas emissions. If anything is to change, it will have to come from individuals taking ownership of the problem themselves. ... By vowing not to fly, I went from having more than doubled the carbon footprint as the average American to about 30% less than average.” [Quartz]

Many of the travelers are willing to pay via the system that is transparent to ensure that the money is making its way to the high-impact mitigation projects and not getting lost along the way. T4G project is public, traceable and transparent as it is performed on a decentralized public blockchain platform, giving travelers and other concerned individuals and organizations the confidence to pay into the system.

The other major component of the ecosystem is to allow Incorporated Land Groups (ILGs) of forest landowners to legally and formally register with the Investment Promotion Authority (IPA) and Department of Lands and Physical Planning, to produce a forest boundary map in a project design template.

These are requirements to register with the system so that the REDD+ outcomes are measured, monitored and verified for each ILGs by CCDA and UNFCCC on our blockchain-enabled ecosystem.

The system will create a database of ILGs and these ILGs will then receive the payment of the 40% of total proceeds. Each ILGs registered in the system will be automated transaction of the funds within 40% distributed.

ILGs and REDD+ programs

Customary Landownership in PNG is recognized by the PNG Constitution and UN Indigenous Rights, making PNG the only country in the world with forest carbon owned by indigenous communities.

There are about 29 million hectares of forested land in PNG. Vegetation description of these forests includes Rainforest, Woodland, Savannah and Scrub.

The production forest area has been estimated to be 21.3 million hectares and 8.4 million hectares is under forest concession for economic development while 12.9 million hectares is future potential production forests.

Production forests areas are comprised of high-quality tropical hardwoods and other forest products and are major source of export revenue for PNG.

PNG's greenhouse gas (GHG) emissions are mostly from land use, land use change and forestry (LULUCF). PNG's CO₂ emission from LULUCF in 2007 was 146.5 – 268.6 million tCO₂ as reported in PNG 2nd National Communication under UNFCCC, April 2014.

PNG, along with other rainforest nations initiated a mechanism that would address emissions from deforestation and forest degradation (REDD+) and compensating those countries that sustain forest cover.

It was eventually adopted as a mechanism under the UNFCCC framework as REDD+.

The PNG Government established the CCDA to coordinate all climate change-related policies. The Government also created National Climate Change Committee to take full responsibility for all policies and actions concerning climate. The Committee meets monthly to ensure that climate change is addressed by the PNG Government.

Given the fact that the Government has no legal control over customary land, forests and its carbon, it is in the hands of indigenous communities to mobilize much of the 29 million hectares of forested customary owned land for REDD+ programs.

To help the CLOs in the mobilization process, the Government recommended Voluntary Land Registration (VLR).

Through the VLR, the ILG Act 1974 was amended in 2009 to give customary landowners greater participation in climate change activities.

The amended ILG Act 2009 and Customary Land Registration Act 2009 were amended to unlock the land for social and economic developments including climate change adaptation and mitigation initiatives. The carbon in the forest (in the living tree, dead wood, forest litter, organic carbon in the soil) is technically and legally owned by customary landowners.

Indigenous Rights are protected under the UN Declaration on the Rights of Indigenous People and Indigenous Rights is now a part of the negotiating text on REDD+ at the UNFCCC Conferences of the Parties.

Global Tourism Carbon Footprint

The United Nations World Tourism Organization (UNWTO) defines tourism as the “*activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business and other purposes not related to the exercise of an activity remunerated from within the place visited*”.

For the first time, the world's tourism carbon footprint has been quantified across the supply chain—from flights to souvenirs—and revealed as a significant and growing contributor to greenhouse gas (GHG) emissions. (UNWTO, 2009)

Small islands globally attract a disproportionate share of carbon emissions, considering their small population, through international arrivals, while the developed world is responsible for the majority of tourism-generated emissions overall.

A research by the University of Sydney found the global comprehensive tourism footprint of tourism-related greenhouse gas emissions is about four times greater than previous estimates, is growing faster than international trade and is already responsible for almost one tenth of global GHGs.

"Given that tourism is set to grow faster than many other economic sectors, the international community may consider its inclusion in the future in climate commitments, such as the Paris Accord, by tying international flights to specific nations," Dr. Ya-Yen Sun from the University of Queensland said.

"To make my own travel more sustainable—for future generations—I invest in long-term reduction options at prices that integrate at least average reduction costs, like investing in afforestation, rather than assuming only low-hanging fruit, like residential power efficiency," Professor Manfred Lenzen as quoted in University of Sydney news website.

"If I flew from Melbourne to the UK return, I would pay at least an additional \$425 to offset my emissions; for a return trip between Sydney and Brisbane, about \$45 extra," Professor Lenzen.

On a global scale, the US tops the tourism carbon footprint ranking, followed by China, Germany and India. In countries such as the Maldives, Mauritius, Cyprus and the Seychelles, international tourism represents between 30 percent and 80 percent of national emissions. In PNG, it is 69% with 298 international tourist arrivals a day, according 2018 International Survey by PNG Tourism Promotion Authority.

Between 2009 and 2013, tourism's global carbon footprint increased from 3.9 to 4.5 Gt CO₂-e—four times more than previous estimates—accounting for about 8 percent of global greenhouse gas emissions. Transport, shopping and food are significant contributors.

The Impact of tourism on CO2 emissions

Tourism is often cited as an important driver of environmental degradation worldwide. Research indicates that tourists will not travel back to polluted and dirty destinations if they have alternative destinations available at comparable prices. It is thus likely that carbon emissions affect tourism industry as well.

Carbon emissions stemming from burning fossil fuels are perceived as the main source of environmental degradation such as air and/or water pollution, climate change and soil erosion.

Thus, in a country where tourism makes major contributions to economic activity, one might also expect CO2 emissions to affect tourism.

A study reveals that although determinants like price, infrastructure and marketing are still more likely to attract more tourists, are not enough to deny the importance of quality of the environment.

It therefore makes sense that one should expect CO2 emissions to significantly affect tourism sector given the implicit role of income.

Some researchers strongly believe that tourism depends on environment argument that environmental issues like pollution, climate change and waste affect tourism as much as other global indicators like economic crisis or terrorism.

In the case of a popular destination with more than 30 million tourists per year, a study finds an evidence of a long-run equilibrium among tourism, CO2 emissions and energy consumption in Turkey and a 1% change in tourist arrivals to Turkey leads to a 0.10% change in CO2 emissions in the long-run.

Looking into the same issue in a different attractive tourism destination, researches find CO2 emissions, energy consumption and tourism are co-integrated in Cyprus and a 1% increase in tourist arrivals increases CO2 emissions by 0.03%.

These dependencies imply a serious consideration by the tourism sector and the travelers about their carbon footprints their leave behind.

According to UNWTO estimates, 75% of tourism sector CO2 emissions are being caused by transportation (in particular, 40% air transport, 30% car transport, and 3% other transport) while 21% and 4% of those by accommodation and tourist activities, respectively.

Studies revealed that tourism industry has been found to increase CO2 emissions. Thus, tourism planners should pay more attention to the impacts of CO2 emissions in designing tourism development policies in cooperation with energy planners.

Safeguarding the future of REDD+ in PNG

Trees absorb carbon dioxide and retain carbon for as long as they live. Cutting down trees is counted as if the carbon is released back into the atmosphere.

REDD+ is an UN-initiated scheme that aims to reduce the contribution that deforestation is making to climate change, essentially by paying tropical forest-rich countries to sustain and not to cut down trees.

Whilst REDD+ is seen as having enormous potential in PNG, challenges may lie ahead.

The country's forestry sector is also characterized by a lack of transparency and accountability mechanisms, persistent allegations of corrupt practices and significant losses.

Several independent investigations in the forestry sector since the 1980s have resulted in few longstanding reforms to forestry governance. The most recent of these - the Commission of Inquiry (COI) investigation of the Special Agriculture and Business Lease – resulted in allegations that a large percentage of 5.2 million hectares of land was fraudulently obtained on the pretext of being used for agroforestry.

It has however been claimed that many of these leases have resulted in clear-fell logging without the knowledge and consent of customary landowners.

Sharing the proceeds and benefits of REDD+ equitably and transparently will be essential for its long-term success.

When dealing with the allocation of carbon rights, the risks are that carbon rights are hijacked by private interests resulting in an unfair allocation of rights and benefits.

As a result, those who are intended to benefit from REDD+, including forest dwelling communities who live in and protect the forest – will miss out, thereby undermining REDD+.

Transparent and equitable benefit sharing is essential for the effective and long-term success of REDD+.

Summary

T4G Project is setup to address the issues of enormous corruption, mismanagement and misappropriation of funds belonging to the indigenous people. As there are too many middlemen along the way, the funds rightfully belonging to the indigenous people do not reach them – it get dissolved in the process that has seemingly has no trace to bring the culprits to public scrutiny and/or to the judiciary process.

T4G Project also addresses climate change mitigation initiatives, namely, carbon offsetting of global tourism carbon footprint, in a country whereby REDD+ actions are allowed and forested land and carbon ownership remain with the indigenous communities,.

T4G is for the greater benefit of the indigenous people of Papua New Guinea and the Pacific. The people have been marginalized over the years of their resources and ripped off by certain people with self-interests.

With REDD+, under T4G project the indigenous landowners will benefit with over 60% of the proceedings, of which 40% is directly paid into the forested landowners ILG accounts for the conservation of the forests against logging, land use and for sustainable management of the forests.

T4G system on blockchain opted to address corruption issues and payment processes to be transparent, traceable and accountable.

Roadmap

Year	Month/Date	Activities
2018	October	Conceptualization of T4G PNG
	November	Networking and Bouncing of Idea
2019	January	Drafting of White Paper (WP)
	February	WP draft completed and published for Review and Comments
		Liaising with CCDA for possible Partnership
	March	Signing of Contract Agreement (IPCI & T4G) for Development and Integration of T4G DAO ecosystem [Call Option Agreement and Scope of Work]
		Signing of Memorandum of Understanding (MoU) with CCDA for working in Partnership
	April	Launching of T4G DAO ecosystem and Token
		Registration of ILGs, Verified Removal Credits and Front-end terminal
	May	Liaising with relevant Government Agencies, Districts and Provinces, Business Community, NGOs, Foreign Governments, Development Partners, Donor agencies, Individuals, Climate Change Community and the Blockchain community for marketing and expansion
	June	Full Operation of T4G ecosystem (amendments/updates)
	July-August	Indigenous Community Awareness and ILG Formation (PNG)
	Sept-Nov	Liaising and signing of MoU with Tourism Promotion Authority (TPA) for possible partnership
	December	Preparing the First Payout, Announce total Revenue for ILGs
2020	Jan-Feb	First Payment of ILGs and stakeholders of their percentage shares
	March -Dec	Payment, ILG Grievances, System Amendments
2021+		Sustainable Tourism and Forestry area expansion in the Pacific and worldwide

T4G Development Team

Peter S. Kinjap (Mr.) Email: pekinjap@gmail.com	Founder and Operator of T4G PNG Author of White Paper
Anton Galenovich (Dr.) Email: galenovich@ipci.io LinkedIn Medium	T4G Advisor Founder of DAO IPCI Editor of White Paper
Deborah Meana (Ms.) Email: dmeana14@gmail.com	REDD+ Project Officer – PNG Climate Change and Development Authority (CCDA)
Sergey Lonshakov (Mr.) Email: sergeylonshakov@gmail.com LinkedIn	T4G Advisor Blockchain project developer, Robonomics platform architect – Airalab DAO IPCI Co-Founder
Jonathan Patel (Mr.) email, malgajona@gmail.com	Project Logo graphic design

If you are interested in joining our team as a developer, advisor, blogger, partner, carbon investor, DLT specialist, IT support, communications specialist, social media chatter, REDD+ professional and supporter or community member, send us a private message via email below.

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Acronyms

DAO – Decentralized Autonomous Organization

CCDA – Climate Change and Development Authority

CLOs - Customary Landowners

IPCI – Integrated Platform of Climate Initiatives

INA – Institute of National Affairs

LULUCF – Land Use, Land Use Change and Forestry

PNG – Papua New Guinea

REDD+ - Reducing Emissions from Deforestation and Forest Degradation

T4G - Travel4Green

TPA – Tourism Promotion Authority

VLR – Voluntary Land Registration

WHO – World Health Organization

UNWTO – United Nations World Tourism Organization

UNFCCC – United Nations Framework Convention on Climate Change

Contact

For comments or proposals on the White Paper, please contact:

Email - howarig18@gmail.com