

## **Sustainable Economic Ventures for Indigenous People in Papua New Guinea**

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### **Abstract**

The paper presents the country's geographical characteristics, the rich and biologically diverse terrestrial and marine eco systems and the diversity of its people and cultures. It proceeds to relate the dualistic economic conditions in the country and highlights sustainable economic ventures practiced by its indigenous inhabitants. Some challenges are discussed. The paper concludes with a summary and alternatives for future considerations.

### **The land, sea and people**

Papua New Guinea (PNG) lies 141-160 degrees east of Greenwich and 0-14 degrees south of the Equator. The land area is 462,840 square kilometres. Three hundred and twenty thousand (320,000) square kilometres of the land are covered with natural rainforests (Rennells 1990:x). The latter is one of the planet's largest remaining rainforest. Seventy-five percent (75%) of the original forest canopy is still standing and covers over 240,000 square kilometres of biologically rich species of plants and animal life (World Bank 2001:1).

Papua New Guinea's forests provide habitat for approximately 200 species of mammals, 20,000 species of plants, 1,500 species of trees and 750 species of birds. Fifty percent (50%) of which are endemic to the island. It is estimated that five to seven percent of known species in the world exist in PNG. Rare plants and animals like the largest orchid, the largest butterfly, the longest lizard, the largest pigeon and the smallest parrot ever registered dwell in these forests (Ralai 2007). Kalit (2002:76) cites that a rapid ecological survey of a particular valley site in the Sepik basin identified 1,237 flowering plants, representing 112 families and 231 genera. Forty percent of these species are endemic to New Guinea. A quarter of these 'may be undescribed-species.' Some rare species of cassowaries and mammals were identified in the same study.

Papua New Guinea's sea territory covers 1,900,000 square kilometres, punctuated with more than 1400 islands. The mainland and island's coastlines stretch some 5,152 kilometres. Reefs form within 2-25 meters below the sea level of the islands and cover 40,000 square kilometres (2.1%) of the sea area. These coastal and offshore reefs harbor numerous delicate marine eco-systems and significant percentage of the world's marine biodiversity. A rapid biodiversity assessment of coral reefs in Papua New Guinea's Milne Bay Province concluded that Milne Bay's reefs represent one of the largest remaining tracts of near pristine reef and associated habitats in the coral

triangle of Asia- Western Pacific region (Conservation International 1998). Kimbe Bay alone in Papua New Guinea has more fish species than the Great Barrier Reef of Northern Australia. According to Wilkinson et.al (1998) some of Papua New Guineas marine eco systems are globally, important storehouses of marine lives and contain a range of tropical marine eco-systems that are extraordinarily rich in species. Further, they display high levels of endemism and support large population of threatened species (Kula 200:72).

Such pristine natural habitats of rain forests and marine ecosystems hold significant portions of the world's biodiversity and sustain over eight hundred culturally distinct tribal communities, using more than eight hundred languages.

Clan groups hold more than 97 percent of the nation's land and water resources through customary tenure. Their lives are sustained by these land and water resources over centuries to date. Further, clansmen have acquired significant knowledge and wisdom of their flora and fauna through life experiences in nurturing, protecting and harvesting, these rich inheritances.

Geologically, Papua New Guinea lies on the edge of two great continental plates—the north moving Australian Plate and the west north-west moving Pacific plate (Davies (2006). The Plate movements have formed the magnificent mountain ranges extending from Central Range to the West and the Owen Stanley to the East of the mainland. Great ocean trenches of New Guinea Manus, Kilinailau and New Britain are the results of similar movements. Their fold belt, extending from Kikori through Lake Kutubu, Pogera and OK Tedi, is a source significant mineral deposits of gold, copper and petroleum (Davies 2005).

### **Economy**

Papua New Guineans embrace two economic systems. Eighty percent of the population practice a subsistence life style. Twenty percent of the population is dependent on cash economy.

#### **Subsistence economy**

Eighty percent (80%) of the nation's population sustain their lives through subsistence farming, hunting and fishing practices. They grow, gather, hunt and fish for most of the food and protein they eat. Indigenous knowledge and traditional techniques are used to process, grow, gather, hunt and fish for daily sustenance. More than 200 wild plants are gathered as nutritional supplements. Other food supplements are galip and okari nuts coconuts and tropical fruits including pawpaw, mango, pineapple and varieties of breadfruits. These are collected, gathered or harvested from the natural rainforest or grown in agricultural plots in forests and near communal hamlets.

A system of shifting agriculture is practiced in most lowland and islands areas. Taro, yams, cassava and sweet potatoes are primary food crops grown in

garden clearings. Garden lands are cleared and the bush is burnt to return nutrients to the soil before agricultural crops are planted. Agriculture plots are used for three to six months and abandoned for natural regeneration of nutrients to the subsoil.

Sago is the staple food of people living in wetland areas up to 650 meters above sea level. These areas include East Sepik, Madang, Gulf, Western, Sundaun, Manus and New Ireland provinces.

### **Subsistence fishing**

Fish are a significant source of body building protein for river, coastal, and islands people. Subsistence fishing is an important traditional occupation for fishermen in these communities. Barracuda, bream, coral trout, red emperor, goat fish, jew-fish, long tom, mackerel, milk fish, mullet, parrot fish, rainbow fish, sea perch, surgeon fish, sweet lips, trevally, tuna, unicorn fish and wrasse are commonly caught by fisherman and women. Fresh water trout, tilapia and red carp fish are commonly farmed and consumed by subsistence farmers living near inland streams and river valleys.

### **Fishing techniques and implements**

Rural communities use traditional fishing techniques to catch or culture fish. Traditional fishing implements and techniques used include bows and arrows, dip and scoop nets, fences, hooks and lines, long nets, plunge baskets, naturally-toxic vines, spears, spear guns and traps.

Bows and arrows are used to jab fish from high rock-points; hanging branches over water; from canoes; and along river banks. Dams are built across inland streams to catch migratory species travelling to or returning from spawning sites. Dip and scoop nets with bamboo or wooden frames are passed through the water, along shore-lines or from canoes to catch unsuspecting fish. Coral rocks or wooden fences are built on reef areas and river deltas to trap unwary fish at low tides. Hooks and lines are used to bait and catch fish from canoes, on fringing reefs or along river banks.

Nets are used in a variety of ways. They are set as traps along coral reefs while other fishermen herd fish toward the nets. Other nets are sunk by heavy sinkers and stretch to the water's surface with natural floats. These are laid over distances on reefs or channel entrances to trap fish. Modern nylon nets with lead-sinkers are used in semi-urban fishing environments.

Plunge baskets are used in brackish water to catch fresh water cods, mangrove jacks, prawns, eels and mud-crabs. Naturally toxic vines are used in shallow lagoons and fringing reefs. Pronged spears, (constructed from fish bones, turtle shells or messing wires) attached to bamboo or wooden poles are used to jab fish from canoes or vantage points above the water. Spear guns are used by divers to spear fish on shallow fringing reefs and lagoons.

### **Subsistence hunting**

Successful subsistence hunting trips add protein to the diet of many rural dwellers. Men conduct most of the hunting. Larger animals including crocodiles, pigs, wallabies, tree kangaroos, cuscuses and dugongs are hunted by men whilst young men join the elders in catching possums, bandicoots, echidnas, small marsupials, birds and fruit bats.

### **Hunting methods and weapons**

Methods used for catching animals include driving, trapping, stalking and chasing. Hunters encircle grasslands or open lowland areas and use fire or dogs to scare and drive out cassowaries, wallabies, pigs and bandicoots. Traps are set by hunters to catch and hold animals or birds until hunters return to kill them. Sometimes food or baits are laid in the traps to attract game. Stalking is used for pre-planned hunts or when a desired bird or animal is seen by chance. Hunters hide near feeding places, display trees or quietly move on nesting or sleeping animals and birds. Dogs are used by hunters to chase wallabies, cassowaries and cuscuses and corner or usher them at the base of, or up a tree until hunters arrive.

Traditional weapons, complemented by local knowledge of animal behavior, are used effectively by indigenous people in rural communities during hunting expeditions.

### **The cash economy**

Twenty percent (20%) of Papua New Guineans are dependent on cash-trading system. Papua New Guinea's current economic environment is positive and improving. According to Kamit (2007), economic activities improved in early 2007 supported by the export sector with higher production and processing of minerals and non-mineral commodities. Formal private sector employment increased by 3.6 percent in the June quarter compared to an increase of 4.1 in the March quarter. The annual inflation rate decreased from 2.3 percent in June 2006 to 1.0 percent in June 2007 supported by the stability in the exchange rate and fiscal restraint by the government. Positive development in the foreign exchange market continued in 2007 with large receipt inflows from the minerals sector which appreciated the local currency from US\$0.3300 in 2006 to US\$0.3400 in September 2007.

The inflows of export receipts from the mineral sector improved the gross foreign exchange reserves to K4, 725.6 (US\$1,579.6) million as at the end of June 2007. Foreign reserves as at Sept 2007 stood at K5, 474.5 US\$ 1888.7) million. This improved to US\$2 billion at the time of writing (Pruaitch 2007). Disciplined fiscal spending of the government's 2007 budget framework resulted in a budget surplus of K422.6 million in six months to June 2007. Kamit (2007) explained that such improvement was due to higher tax receipts and foreign grants were more than the accumulated expenditure.

Domestic interest rates continue to trend downwards. The 28 days Central bank bill rates remained around 4 percent and the commercial banks indicator lending rates has trended downwards ranging from 8.95 to 9.95.

Lending by commercial banks continue to increase reflecting the high liquidity levels in the banking system, low interest rate environment and improved confidence in the economy.

These favorable macro economic conditions challenge all to sustain and translate them into real tangible benefits. Importers but more importantly indigenous producers are encouraged to use these opportunities to create wealth for themselves from the vast and rich natural resources in their custody.

### **Economic incentives for indigenous groups**

Government and Non Government Organizations mandated and supported loan schemes provided economic incentives for indigenous communities and groups in the country. Indigenous Women groups benefited from small loans mandated by law with subsidized loan repayments. Such schemes enabled rural women to buy seeds, sewing machines, baking ovens and farming tools, to grow food crops, bake and trade in fast food, sew and sell basic garments in villages and local market for cash income.

These incentives are further enhanced by the government's allocation of K10 million into district-rural economies in the October 2007 supplementary budget. Pruaitch (2007) confirmed that 'all districts would have K10 million to spend...on roads and bridges, health, education, law and order, and others so that people can have easy access to markets to live a (sic) better lives' (The National 9/11/07:2).

### **Eco tourism**

Opportunities are available to indigenous communities to venture into eco-tourism businesses. These include: guest houses; nature trails through pristine rainforests; scuba diving; snorkelling and whale-watching in locally protected and managed marine conservation areas.

Traditional resource owners are constructing guest houses and nature trails in pristine forests for international and local tourists. International tourists, burnt-out managers and weary urban dwellers regularly seek refuge in these naturally peaceful, fascinating and wonderful sites to gain much needed solace and peace. Significant amount of income is generated for these clients.

The establishments of small eco-tourism lodges within the Waria valley, and along the Huon coast bear testimony to the eco-tourism concept. The lodges and associated centres engage local stakeholders and other participants (students and tourists) from local, national and international groups. Local guides and others employed in this work gain income (from fees paid) to complement that obtained from their subsistence agricultural activities. Local

staff work as stewards for locally-driven conservation areas, ensuring sustainability of forest resources for inherent biodiversity and livelihood generation. These activities complement the local customary land tenure system as well as preserving an important forest ecosystem.

### **Eco forestry**

Other communities with natural forest resources view conservation and sustainable development as interdependent attributes and have employed sustainable logging practices to harvest their resources. Mobile saw-mills are deployed by forest owners to mill logs from selected sites and to trade them to local and international entrepreneurs.

The Madang Forest Resource Owners Association in partnership with a local non government organization – Foundation for People and Community Development – has developed community based forest management systems using portable sawmills to harvest timber resources and export them to international eco-timber traders. This venture has become a proven alternative to industrial scale logging for communities in Papua New Guinea. Combined with the forest resource assessment and vegetation nursery establishment it provided significant alternative sources of income for indigenous people.

### **Natural wonders and scientific research**

Natural wonders including waterfalls, hot springs, endemic plants, animals, marine or bird species are subjects of serious scientific studies for scientists and naturalists, or ‘natural-pleasures’ to curious eyes and individuals. Guardians of biologically diverse marine conservation areas charge access fees to protected areas for divers and marine researchers. Some indigenous communities are inviting international research organizations, scientists, naturalists and biologist or curious travellers to their localities for study or pleasures. They earn conservation, management, accommodation and income fees from guests. Indigenous communities in the Kimbe Bay area in partnership with a local Non Government Organization (Mahonia Na Dari) and an eco-tourism operator – (Walindi Dive Resort) bear testimony to this venture.

### **Cultural preservation and displays**

Preservation, display and sales of indigenous cultures and artefacts including songs, dances, art, architecture and social rituals are other economic opportunities available to indigenous people to generate income. Urban dwellers and international travellers long to visit, view, experience and learn about unique and exotic cultures, traditions and people.

Diverse people and cultures (over eight hundred cultures and languages) of Papua New Guinea are opportunities for indigenous inhabitants to earn income from culturally rich and multi-lingual environments. Internationally renowned Hiri Moale festival, the Goroka, Hagen and Morobe shows are examples of culturally oriented economic opportunities for indigenous inhabitants, to earn

income from their rich inheritances. Furthermore, valuable and cherished traditions are preserved and passed down to young generations.

### **Partnership with multi-national miners and loggers**

A significant number of indigenous owners of large tracts of natural rainforests and known mineral reserves, view royalties from logging and mining as attractive windfalls, especially when compared with self-help and sustainable initiatives promoted by conservationists. They regard conservation and development as mutually exclusive and often outsource their forest harvesting and mineral extracting rights to short term multi national investors. In return they earn fast monetary income for their forest and mineral resources.

However, mining and clear-fell logging activities in tropical climates with high rainfall and geologically unstable conditions promote serious environmental, ecological and social consequences.

### **Some challenges**

Whilst economic opportunities for local indigenous communities are many, there are inherent challenges that need to be addressed to maximize economic gains. These include: customary land tenure systems; lack of knowledge and skills in governance and management of capital, human and natural resources; high population growth rate; law and order issues, health and education issues.

### **Land tenure systems**

Traditional land and marine tenures are communal and clan-based in PNG. Land and resource use rights are communal and licensed or sanctioned by tribal and clan leaders. Access produce and benefits of such resources are often communally shared through celebrations and enjoyed by feasting, singing and dancing. Leadership authorities, clan structures, relationships, norms, goodwill and socialization of the young, are strengthened through such 'sharing and receiving' ceremonies.

A cash -driven economy however, requires that large areas of communal land or marine areas be set aside for intensive use by a few individuals, (most likely clan leaders in collusion with foreign investors or government) for private profit. If traditional authority is abused, ill-practiced and not questioned, it can lead to erosion of cultural traditions, respect, clan disagreements, disunity, and fragmentation of traditional structures, unsavoury disputes and loss of opportunities. Czuba (2002:1) confirmed: 'Our country is in a crisis over the public, communal and private ownership and use of resources; especially land. ... The inflow of western culture, along with western view of land has been a source of conflicts between traditional beliefs and modern development.' He emphasized the challenge to seek for alternatives. 'A solution needs to be found that takes into consideration the importance of the Melanesian philosophy of land in the PNG culture, while allowing for inescapable

development which is very much based on the western culture and the western view of resources.'

### **Literacy and health**

The levels of literacy and health of a nation are significant indicators of its development. Nations with high level of literacy amongst their citizens have experienced significant social and economic developments through active participation in economic ventures and creation of employment opportunities. Health indicators of a nation reflect economic and other development potentials of the country.

The level of literacy in Papua New Guinea is low. Eighty five percent of the population is illiterate. Literacy programs are under-resourced to address the phenomena. Such conditions impact highly on successful outcomes of rural interventions aimed at improving social and economic conditions of rural indigenous communities. For example, understanding the concept of 'percentage-loan-repayment over a period of time' let alone, the knowledge and understanding calculating income and making regular payments to offset loans, are serious challenges for illiterate borrowers. Similarly, illiterate citizens cannot keep reliable records of income and expenditures of business ventures nor will they be able update their knowledge of commodity prices on international markets. Their abilities to determine and add values to their raw materials will be limited. They can become victims of unscrupulous and inconsiderate partners and agents.

Furthermore, illiterate citizens may be unaware of unhealthy conditions and epidemics that impact on their lives and a nation's economy. They neither have knowledge of nature of diseases nor that of modern successful prevention methods, used in literate and information oriented societies. The prevalence and spread of HIV/Aids in communities is an international phenomenon but is relevant in Papua New Guinea's case. Its impact on indigenous communities in Papua New Guinea is increasing due to limited awareness of prevention methods and appropriate behaviour. Inappropriate behaviours of global and national migrants employed by resource developers are contributing to the alarming spread of the disease. Ultimately, it will erode human energies and capacities to effectively contribute to community's social and economic ventures. Much valuable and productive time will be used by patients for seeking treatments for HIV/Aids. Deaths of a community's or a nation's young workforce will undermine its human capital resource.

### **Lack of knowledge and skills in economic governance and management systems**

Formal knowledge and skills about economic ventures, their governance and management is minimal among many indigenous Papua New Guineans. Knowledge of and about book keeping, financial accounting, international trades, laws of supply and demand, commodity-market pricing, profit and loss of businesses and impact of labour and human capital on business successes are



unknown to many indigenous people. It is compounded by lack of awareness and low level of literacy among community members. Kavanamur (1999:14) affirmed that lack of appropriate book keeping and management records by credit providers and clients, mediocre internal and external monitoring of loan transactions, imperfect information on credit facilities and world's best practices were among challenges to successful implementation of rural businesses Papua New Guinea.

### **High population growth rate**

Papua New Guinea's population is five and a half million. The population growth rate is 3.0 percent per annum. This growth rate is high for an underdeveloped economy and will place undue strain on social and economic resources. Kula (2002:72) warns that pressures on sustainable resources are building as socio economic and demographic fundamentals change. Traditional measures are being discarded in preference to short term techniques including destructive harvesting and fishing practices (clear-fell logging; dynamite blasting of marine life and coral reefs; use of cyanide in harvesting live fish for trading; over-fishing of sedentary resources including giant clams, beche-de-mer, trochus, green nails and pearl shells) are threatening various eco systems.

Kula (2007) explained that traditional measures in conserving special breeding areas are now deemed irrelevant or useless in the face of introduced-cash economy and the need to satisfy one's needs and wants to live with all that 'modernization' has to offer.

This near-perfect state of the marine ecosystem is threatened. Human beings now, are a threat to themselves and their environment. Increased population density throughout the province, destructive fishing technologies and equipment like the dynamite and increased artisanal fishing are causing a considerable amount of damage to the reefs. Other developments like small-scale alluvial mining and forestry also threaten the marine ecosystems.

Globalization is impacting on all human activities. Destructive harvesting and fishing practices of the Asian reefs, in response to the high demand from Asian markets and the commercial extinction of reef fisheries near these markets, has now turned the focus of the Asian fishing industries to Papua New Guinea waters (Kula 2000).

### **Law and order**

The break down in law and order in the country minimizes business and investment confidence, increases operational costs and undermines profit margins. Successful business ventures in rural communities are often targets of young drug addicts. These addicts conduct raids and deprive investors of their hard-earned income. Similar raids are inflicted on merchant vehicles and operators transporting goods between trading centres or successful investors and their employees in urban environments. Loss of investment income and

imprints of fear in the subconscious minds undermines business and social confidence in a society

### **Summary and conclusion**

Papua New Guinea is a relatively small country. It is blessed with significant terrestrial, marine, cultural and human resources.

Its forest is the second largest remaining rainforest on earth. This rainforest is highly valued for its known and desired varieties of timber species. It is home to biologically significant species of mammals, plants, trees and birds. Fifty percent (50%) of which are endemic to the island. Its contributions to the world's biodiversity and reduction of global warming effects are highly significant.

Geologically, the country's location in the 'Pacific ring of fire' and on the edge of two continental plates are blessings to the nation. Various plate movements and volcanic eruptions have created significant mineral deposits that are economically viable for global markets (Davies 2005:82). They are 'windows of opportunities' for traditional resource owners and the government to encourage just and equitable economic partnerships that benefit all.

Culturally, diverse cultures and languages practiced and spoken by five and a half million people are multiple opportunities for indigenous inhabitants to show-case their rich inheritances and share their traditional knowledge and wisdom with the world. Similarly, they are living evidence of knowledge and wisdom about practical social relationships with embedded solutions to organizational, managerial and governance challenges of our times.

Papua New Guinea's sea territory and marine life are economically and biologically significant to the nation and the world. Some of the richest tuna migration routes and spawning grounds in the Pacific are within the country's marine economic zones. The reefs represent some of the largest remaining tracts of marine habitats in the coral triangle of Asia- Western Pacific region. They harbor numerous and delicate eco-systems which hold significant portions of the world's marine biodiversity.

Papua New Guineans embrace two economic systems. Eighty percent of the population lives a subsistence life style. Twenty percent of the population is dependent on cash economy.

The majority of the nation's population sustains their lives through subsistence farming, hunting and fishing practices. They grow, gather, hunt and fish for most of the food and protein they eat. Indigenous knowledge and traditional techniques are used to process, grow, gather, hunt and fish for daily sustenance. A minority (but growing) population participates in the formal economy. The country's current economic indicators are positive and improving but are heavily burdened by the larger rural subsistence sector.

Multiple opportunities exist for indigenous people to invest in the rich natural resources in their custodies. Such opportunities include participating in government approved loan schemes, eco tourism, eco- forestry; natural wonders and scientific research activities, cultural preservations and displays and partnerships with government and multi-national investors—miners, loggers, and fish canners.

Challenges to sustainable economic opportunities exist in the country. They include: land tenure practices, illiteracy and unhealthy practices, lack of knowledge and skills by the people, high population growth rate and illegal and disorder practices. These challenges can negatively impact on business ventures and confidence and undermine growing opportunities for indigenous communities.

### **Conclusion**

Future economic prospects for the country and its indigenous communities are high. Multiple economic opportunities abound based on its natural, cultural and social resources. These opportunities will reach their full potential if traditional land tenure systems are refined to respond to modern development needs; the level of peoples literacy skills are significantly improved; education awareness and health of rural members of the society are raised; mechanisms promoting acquisition of relevant knowledge and skills by indigenous peoples are improved; the nation's population growth rate is vigilantly monitored and controlled whilst law and order guidelines are understood and appreciated by all and are effectively and fairly enforced by responsible agencies.

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