

**DUG OUT, DRIED OUT OR FLOODED OUT?
HYDRO POWER AND MINING THREATS TO THE
INDIGENOUS PEOPLES OF THE UPPER MAZARUNI
DISTRICT, GUYANA
FPIC: Free, Prior, Informed Consent?**

Audrey Butt Colson

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FOREWORD

This paper considers two development programmes in Guyana which seriously affect the environment and indigenous inhabitants of the North Pakaraima Mountains (the Upper Mazaruni and Upper Potaro basins). These are mining and hydro projects, ultimately inter-related and together causing very extensive degradation through deforestation and drastic changes in the fluvial systems of these valleys. Deforestation in Guyana is said to have accelerated in the past decade because of mining, in addition to the granting of some huge timber concessions. As access roads are pushed through the lowland forests and are now ascending the Pakaraima escarpment to enter the upper basins of the Potaro and Mazaruni, mining will intensify and timber concessions will, for the first time, become practical in these hitherto isolated areas.

Not only gold and diamond mining will proliferate, but also bauxite mining. There are two notable deposits: the reportedly enormous and high quality bauxite in the Kopinang valley of the Upper Potaro, and another, of unreported extent but recently advertized by the GGMC (Guyana Geology and Mines Commission) as lying between the eastern edge of the Pakaraima Mountains at Maikwak Mountain and Kamarang at its confluence with the Upper Mazaruni River. Open-cast bauxite mining, smelting and refining are highly destructive processes causing deforestation and health problems through the dust generated. Moreover, as aluminium smelting is a high energy, intensive process, with electricity representing about 30% - 40% of production costs, it generates the need for vast amounts of cheap energy – and thus hydro electricity in the case of Guyana.

Hydro power is often perceived as being a significant solution to climate change and is presented as a 'clean', carbon-free energy, in contrast to that derived from burning fossil fuels. This is how it is presented in the Guyanese government's Low Carbon Development Strategy (LCDS). However, unless a hydro power site is carefully located, avoiding a huge area of forest flooding through an accompanying reservoir, it can emit much greenhouse gas and be damaging in the extreme. It is increasingly feared that dams will lead to more deforestation and massive emissions of methane and carbon dioxide gas and will destroy precious eco-systems and wildlife. Its human impact is often discounted, as rights are violated and lands destroyed. Thousands of local people, many indigenous, will be rendered homeless and there will be a loss of their unrivalled knowledge and use of their ancestral lands as well as the destruction of unique social and cultural systems. These effects will extend to relatives and neighbours who provide refuge and an immense grievance will grow with serious implications for future social stability. There is the additional fear that changing patterns of rainfall brought about by vast areas of deforestation, such as that entailed in the Upper Mazaruni (Sand Landing) project, will not only stimulate climate change but will reduce the energy return, rendering the whole investment obsolete.

Guyana is fortunate in having a number of sites suitable for developing benign hydro energy. These are nearer to points of power consumption, so avoiding long, over-extended powerlines and new roads through forest. Having bigger catchment areas they will better withstand the drought conditions which have been assailing the region in recent years. Accompanied by run-of-the-river projects – smaller ones would allow for a gradual expansion of power production as it is needed.

It has been asserted that the impact of access roads often exceeds the impact of the hydro reservoir area, since tracks and roads multiply to penetrate remaining isolated areas, attracting both legal and illegal timber and mineral extraction and their accompanying degradation.

In this paper I itemize a number of reasons as to why the Pakaraima Mountains have ‘high conservation value’ for both Guyana and the world, and why its forests and rivers should be preserved from destruction, in accordance with Guyanese government undertakings on ‘clean energy’ and forest policy – for which they are receiving international money and recognition of green credentials.

In several vital instances, the Upper Mazaruni and Potaro people have not been informed of government plans which have the potential to destroy their environment and society. Free, Prior, Informed Consent (EPIC) has been totally lacking with regard to the existence of bauxite deposits, to access road-making and to revived planning with international partners for hydro projects (the Sand Landing dam and the Chai-chai and Upper Potaro phases of the Amaila Falls project). Mining concessions have only become known when a concession holder arrives with his machinery. Repeated appeals for information on these vital issues have been ignored, side-stepped, and sometimes denied with accompanying abuse and calumny. In despair, in 1998, Akawaio representatives brought a case to the High Court in Georgetown, suing for communal legal title to their ancestral lands in the Upper Mazaruni. Endless delays and protracted proceedings followed and now the case, still not concluded, is entering its fifteenth year!

The information contained in this paper well illustrates what social scientists have long noted: that what someone says they are doing, what they may believe they are doing and what they are actually doing are all different things. The same can be asserted of institutions – such as governments. This needs to be kept very much in mind in any assessments of Guyanese ‘green’ policies together with possible alternatives, which are what this paper discusses.

INTRODUCTION

No one is denying that Guyana should enjoy an adequate supply of hydro-electricity and should have had it many years ago and perhaps now be accompanied by solar, wind or wave power in appropriate areas. However, the achievement of hydro power carries a very heavy responsibility. Apart from the choice of a suitable project and site in strict engineering terms of design and functioning, and also apart from Government's concerns with costs and the economic objectives which the project is meant to address, there are broader issues of a very serious nature. An obsession with the idea of a particular development as a total, unmitigated and necessary "good" may mean that these bigger issues are overlooked. This paper is concerned with the full implications of two proposed hydro power projects in particular in Guyana, both of them capable of destroying vulnerable ecosystems and sensitive climatic regimes and the human populations dependent on these. They comprise the Amaila Falls Hydro Project with its Phase 3, the Chai-chai - Potaro Diversion, and the Upper Mazaruni Hydro Project at Sand Landing. (These sites are shown on *Map 1*.)

The impacts of these two proposed projects have to be judged by their ultimate phases, when full energy production is realized and the maximum effects are in being. Once a first phase has been built and the facility is functioning satisfactorily, it is too late to consider broader concerns and to avoid proceeding to the succeeding phase or phases, which will have already been envisaged and provided for. No government will want to go to the expense and trouble of making new roads, new transmission lines, new power stations and new reservoirs without developing what is already in place. It is therefore, not just appropriate, but vital to consider future impacts and potential and ultimate developments as well as those resulting from the initial, fully programmed ones. Thereby, a meticulous and frank assessment of the consequences of all the phases of the hydro power projects in question and of alternative sites can be publicly considered before a final choice is made and a first phase is commissioned. This is indispensable for those whose lives might be drastically disrupted, if not destroyed by these projects.

The Location

The North Pakaraima escarpment in West Central Guyana along the frontier with Brazil and Venezuela, presents the aspect of a continuous high wall of stone cliffs, extending north-south as far as the eye can see, lapped at its base by lowland tropical forest. This line of rock is broken only by clefts made by the occasional waterfall, the best known, and most dramatic of which is Kaieteur Fall, one of the world's highest falls, dividing the Lower Potaro River from its upper basin. To the north is the smaller but beautiful Kumarow Fall where the Kurupung River, a tributary of the Mazaruni, falls over the Pakaraima escarpment, (*Plate 2a & b*). Above the Pakaraima escarpment is a landscape of dense tropical forest, here and there interspersed with occasional, mostly small, areas of white sand scrubland, the shallow soils covered in bunch

grass-sedge and low bush. These are extensions of the adjacent grasslands of the Venezuelan Gran Sabana and of the Rio Branco in Brazil, to the west. The Pakaraima Mountain area is characterized by black water rivers and streams and awe-inspiring flat-topped mountains with their precipitous cliffs rising some 3,500 - 7,000 feet (1067 - 2134 m) out of the rolling forest at their base. The highest point is Mount Roraima, at 9022 ft (2750 m) in Guyana, with a spectacular line of mountains to its north and south. This iconic mountain, the inspiration for Conan Doyle's novel 'The Lost World', is the cornerstone of the region, being a source of major tributaries of three great river systems, the Amazon (via the Rio Branco), the Essequibo (the Mazaruni) and Orinoco (the Caroní). Politically, it is a tri-partite mountain, the present frontiers of Brazil, Guyana and Venezuela meeting on its summit.

THE AMAILA FALLS HYDRO PROJECT (AFHP) Phase I

In the initial, core Phase 1 of the Amaila Falls Hydro Project (AFHP), it is proposed to construct two dams, situated on top of the Pakaraima escarpment in the Upper Potaro valley, some 15 miles (24 km) north of Kaieteur Fall. The site of these dams is heavily forested. An 8.8 sq. mile (22.8 km²) reservoir with a full supply level of 1,400 ft (426.7 m) is to be constructed where the Amaila River flows into the Kuribrong River. The combined flow drops vertically over the escarpment edge for around 200 ft. (70 m) and continues in a series of rapids and falls for nearly two miles (3.21 km) before reaching the lowlands, where downstream it joins the Lower Potaro River and subsequently the Essequibo. With a total drop of about 1,200 ft (365.76 m) some 30 miles (48 km) of road will need to be crafted up the escarpment wall, from the foot of the falls and the power house to the site of the dams above.

Phase 1 of the project is expected to be a 165 MW facility yielding approximately 140 MW at points of delivery. The energy generated is designated to supply the domestic market in Guyana. However, there are references to subsequent Phases 2 and 3 to increase the output. These involve building other dams and diverting water from the main Potaro River and from the headwaters of the Upper Mazaruni River. A total estimate of energy production for all three phases of Amaila has been given as 1,060 MW. (*Final Environmental Impact Assessment Report: Amaila Falls Hydroelectric Project, Ground Structures, April 2002.*)

However, this EIA was not the final one. The then President of Guyana (Bharrat Jagdeo) stated May 2010, that an EIA had been updated in 2008. A subsequent Report was issued by Synergy Holdings Inc. dated August 20, 2010, version I.I, entitled 'Amaila Access Road Project, Guyana'. Contractor Environmental, Social and Health and Safety Management Plan (ESHSMP), 29 pages. An Appendix A (61 pages) was attached. These two sets of Amaila Hydro Project EIA documents, the dam study of 2002 originally posted on 01 April 2010 and the two Access Road documents posted 14 September 2010, then became available on the Guyana Environmental Protection Agency (EPA) Website: <http://www.epaguyana.org>

It should be noted that there were some serious defects in the timing and presentation of these Amaila Falls Hydro Project documents. They were issued allowing little time for public consultation and comment. The EIA posted on a website in April 2010 then disappeared until reappearing on the EPA (Environmental Protection Agency) website in September 2010. The access road part of the Project was not posted until September, although construction had been scheduled to start in August. This had to be deferred until October due to a series of delays in the importation and assembly of the requisite road-making machinery. Another cause for

complaint was the defective posting. Two Addenda, referred to in the main Project text as containing diagrams and maps, could not be downloaded even by the most professional of computer experts, who considered that both had been corrupted or blocked!

To reach the project site the construction of an access road was begun from the Essequibo River, traversing the Lower Potaro forest. It required the upgrading of some 53 miles (85 km) of existing track and the making of 68 miles (110 km) of new road and several bridges. Accompanying this was to be a broad clearing alongside to accommodate a high voltage powerline, some 173 miles (278 km) long and forming the backbone of a new grid system, relaying the electricity to power stations in the Demerara valley at Linden and Sophia. The construction of this, the access part of the project, has been highly controversial, as indicated by a formidable succession of articles in the Guyanese Press, notably since the last quarter of 2010 to early 2012. Criticism focused on the road design, the constructors and their lack of proven ability, on the financial arrangements and increasing costs, on a failure to allow inspections of the work in progress and on a lack of transparency generally, accompanied by fears of corruption at the highest level.

The licence for developing the AFHP was first held by Synergy Holdings Inc., of the United States, under Makeswar Fip Motilall, a controversial figure. In October 2009 it was transferred to Sithe Global Power who became the project sponsor. Sithe Global is a subsidiary of Blackstone, a very large United States private equity fund of international dimensions. The contract to build the access road to Amaila was then given to Synergy, in March 2010, at a cost of US\$ 15.4 million. However, the lack of competence in road-making and minimal progress (only some 4 km, or 2½ miles, of new road reported to have been seen as completed) caused the new Government (elected in November 2011) to announce on 12th January 2012 that it had terminated the contract with Synergy, headed by Motilall. A controversy between Government and Synergy ensued as to financial costs and a decision was taken that sections of the road construction should be carried out by local firms. These state that road access will be achieved by the end of 2012. Meanwhile, the Inter-American Development Bank (IDB) has been reviewing the Project, carrying out further investigations for an up-dated feasibility study with a view to possible funding.

The Amaila Falls Hydro plant is to be a Build, Own, Operate and Transfer (BOOT) facility with the Guyana Power and Light Company taking possession after two decades. The initial estimated cost was around US\$ 400 million and this has now more than doubled to US\$ 840 million and rising. The major part of the construction cost after the completion of the access road is expected to be met by the China Development Bank and the Inter-American Development Bank (IDB), with Sithe Global and the Guyanese Government contributing equity. An important step towards this took place in Xi'an, China, when, on 11th September 2012 an Engineering Procurement and Construction contract, valued at US\$ 506 million, was signed between Sithe Global (the developer) and China Railway First Group (the construction company). Guyanese, Chinese and IDB representatives were present. Construction of the project is expected to begin by mid 2013. (*Stabroek News* September 12, 2012: 'Amaila hydro-project construction agreement signed in China.' *Kaieteur News* September 12, 2012: 'US\$840M Amaila Falls Hydroelectric Project..') Meanwhile, the IDB will complete its feasibility studies and review the Project, with view to funding and financial closure.

As noted, the energy generated by the Amaila Hydro Project Phase 1 (a 165 MW facility expected to yield approximately 140 MW at point of delivery) is designated to supply the

domestic market in Guyana. However, there are references to subsequent Phases 2 and 3 to increase the output of Phase 1. These involve construction of other dams, diverting water from the main Potaro River and from the headwaters of the Upper Mazaruni River. A total estimate of energy production for all three phases of Amaila has been given as 1,060 MW. (AFHP Final Environmental Impact Assessment Report, April 2002.)

THE AMAILA FALLS HYDRO PROJECT, Phases 1 - 3: the Potaro and Mazaruni Diversions.

The Amaila Falls Hydro Project and its two subsequent phases for generating electricity appear as three separate items in the list of 67 *Potential Hydropower Sites in Guyana, 2003*, a list stemming from a hydro electric power survey in Guyana carried out under the auspices of the United Nations Development Programme (UNDP)] in 1974. In the *AFHP Final Report, Environmental Impact Assessment, 2002, 2, 1.3* is the following list identifying major hydro electric power resources:

Table 1: Major Hydroelectric Resources in Guyana

<i>Project</i>	<i>Energy Capability (in Average MW)</i>	<i>Installation (MW)</i>
<i>Amaila</i>	<i>131</i>	<i>195</i>
<i>Kaieteur</i>	<i>382</i>	<i>540</i>
<i>Turtruba</i>	<i>487</i>	<i>1100</i>
<i>Upper Mazaruni Diversions</i>	<i>600</i>	<i>775</i>

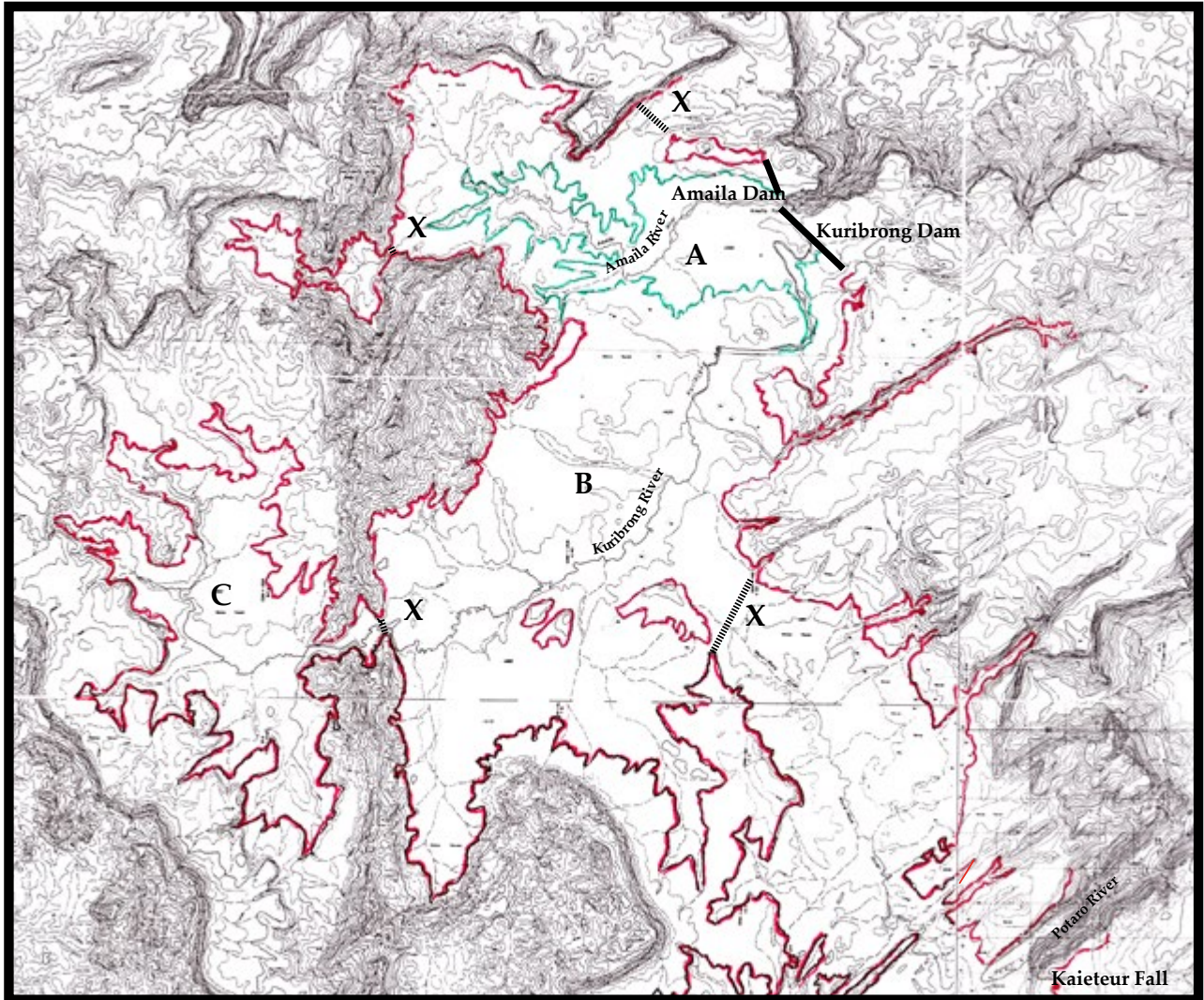
The accompanying statement shows that from a very early stage two diversions were envisaged to upgrade the energy output of Amaila.

A review of the 1975 Prefeasibility Study report and preliminary designs for the Project has convinced the Developer [Synergy Holdings Inc./ Sithe Global] that the site [Amaila Falls] is suitable for a 100-MW hydroelectric project. The location of the site relative to Kaieteur and the Mazaruni River could allow a hydroelectric plant at the Amaila site to be upgraded to produce power using diversions from the Potaro and the Mazaruni Rivers. Of course, any consideration of future expansion would be subject to environmental and economic assessment and approvals. A hydroelectric plant at Amaila Falls can therefore be readily upgraded as demand increases. (Pp. 1-2 under 1. PURPOSE AND NEED. 1.2. Purpose of and Need for Action, and 1.3. Background.)




In this 2002 EIA (p. 2) there is also a reference to the pre-feasibility study conclusion that

The physical relationship of the Kaieteur Project on the Potaro River to the Amaila Project on the Kuribrong River, a tributary of the Potaro is such that water can be diverted from the Kaieteur to Amaila. Diversion of approximately 4,600 cusecs (cubic feet per second) from Kaieteur would provide an additional 400 average MW of energy at Amaila.

Map 2 Potential Amaila Reservoirs is a professional engineer's attempt to plot the positions of the proposed reservoirs of Amaila Phases 1 and 2 on the 1:50000 maps of Guyana. It should be noted that unless or until an accurate ground survey has been carried out these provide the



Potential Amaila Reservoirs

1400 ft / 426.7 m contour		Surface Area A	22.8 Km ²	8.8M ²
1500 ft / 457.2 m contour		Surface Area B	167.3 Km ²	64.6 M ²
Retaining Bunds	X 	Surface Area C	37.2 Km ²	14.4 M ²

Maps: GUYANA 1:50000 Sheets 42NE, 42SE, 43SW, 43NW

MAP 2

only record of ground levels available. The conclusions resulting from this exercise are as follows:

1. *The original Synergy design for Amaila was based on a full supply level (FSL) of 1400 ft (426.7 m) and the reservoir would cover 8.8 mls². I have plotted out the 1400 contour in green on the map and calculated that the area covered is 8.8 mls² (22.8 Km²) as stated by Synergy.*

2. *In the draft EIA, pp. 91-2, Clause 5.5.2 Alternative Project Configurations, it states that the base project now has a FSL of 462 m (1515 ft) and covers an area of 26.7Km² (10.3 mls²). A smaller project (Alternative B) based on a FSL of 458 m (1502 ft) would have a surface area of 17.2Km² (6.6 mls²)*

The 1500 ft contour has been plotted in red [Map 2]. It appears that retaining bunds will have to be constructed to prevent the water from flowing down to the Potaro. I have placed bunds at the narrow points which produces a reservoir area 'B' of 167.3 Km² (64.6 mls²). As the base project has a reservoir area of only 26.7 Km² even though the FSL is now at 1515 ft (115 ft higher than Synergy's original plan) it looks as though it is planned to build a cut off retaining bund somewhere between figures 'A' and 'B' on the attached map. This would be a major work and would have to cross the Kuribrong River, which would affect the design of the whole project. The alternative 'B' scheme has a projected reservoir area of 17.2 Km² (6.6 mls²). This is smaller than the original Synergy reservoir of 22.8 Km² (8.8 mls²) even though the FSL is over 100 ft higher!

In the above analysis of data available on the Amaila Project the figures which emerge do not hang together. The compiler also notes that the failure of the Guyanese Government to make layout drawings of the project available, and the fact that the 1:50000 maps of the area were not obtainable in normal commercial outlets (though the sheets which cover the coastlands were available), gives the impression that the Government is deliberately trying to withhold information – perhaps because of the area of untouched dense rainforest which is likely to be adversely affected.

It is normal practice that an initial EIA should include all amplifications facilitated by the first, core hydro construction. However, it is not clear at the moment, how the enlargements of Amaila through phases 2 and 3 will eventually achieve the 1,060 MW stated. Nor is there any mention to date, of what the environmental and human impacts might be of these additional phases. We should therefore look at these wider implications, also taking into account factors which will gravely affect the sustained functioning of Amaila.

The *Amaila Falls Hydroelectric Project 2002 EIA*, p.2 refers to the 'the physical relationship of the Kaieteur Project on the Potaro River to the Amaila Project on the Kuribrong', being such that 'water can be diverted from the Kaieteur to Amaila'. A diversion of approximately 4,600 cusecs (cubic feet per second) from Kaieteur would, it is claimed add an additional 400 average MW of energy to Amaila. (See above for full quotation.) As a consequence it would appear that Phase 2 of the Amaila Hydro Project would endanger the scenic beauty of the magnificent Kaieteur Fall. This fall, of iconic status in Guyana, is denoted one of the highest free-fall waterfalls in the world (at 721 feet, 219.76 mts) and is set in a strikingly beautiful landscape of mountains and tropical forest. In 1999 the small, 44 sq. mile (114 km²) Kaieteur Park area was expanded to approximately 224 sq. miles (580,16 km²) and provided for the preservation of natural scenery, fauna, flora and minerals within it. It is a prime tourist attraction of very considerable economic potential.

Associated with Phase 2 is the problem of increasing fluctuations and irregularities in the flow of the Potaro River and tributaries. There have been instances of a dramatic shrinking of waters. For example, miner and surveyor Matthew French Young (1998) described Kaieteur Fall in 1926, a year of severe drought and of bush fires comparable to those of more recent years. Down from the Patamona village of Chenapau (first mentioned as 'Enapowou' by Charles Barrington Brown in 1870, during his exploration of the Upper Potaro valley and his discovery of Kaieteur Fall), the Potaro River had dropped alarmingly and where there had been deep water were exposed sand banks and rocks. Approaching the fall, Young noted that there was no customary thunder of falling water. In place of a mighty volume of water there was a bare stream trickling over the edge of the precipice. Young and his Amerindian companions walked across the river, practically at the edge of the fall, stepping from rock to rock and wading the pools. On the path descending the escarpment to the Lower Potaro, a forest fire had shattered some of the rocks. (Young: 29-30) In this context we should note a statement in the *Amaila Falls Hydroelectric Project, EIA, 2002, 1: 1.2. Purpose of and Need for Action*, that:

The use of a hydroelectric plant, formerly in operation at Tumatumari Falls on the Potaro River, [near its confluence with the Essequibo] has been discontinued due to lack of plant maintenance and intermittent water flow.

Tumatumari has now been rehabilitated, but the query inevitably arises as to whether the Amaila Falls Project will be a viable, sustained source of electricity in Phases 1 and 2, given the irregular flows of water reported during the severe droughts that have recently been experienced over the entire region. The answer to this would normally be available through the recorded data over a period of many years. However, this baseline data was lacking at the time of the *Amaila Falls Hydroelectric Project, EIA, 2002: (Executive Summary, p. 4)*:

This study was limited by several factors the most notable of which is the absence of a similar facility in Guyana. Consequently best available practices have been proposed to address the lack and/or absence of standards established for the operation of such a facility. The EPA [Environmental Protection Agency] maintains no data on water quality or air quality for any location in the project vicinity or elsewhere in Guyana. In addition tolerable discharge limits have not been established for the area by the GEPA [Guyana Environmental Protection Agency] since baseline data is lacking. Similarly climatic data and surface water flow volumes reported in this document [the AFHP, EIA] are reflective of inference from data acquired elsewhere since the hydro meteorological department maintains no monitoring equipment in the project area.

There is inadequate and confusing information on Phase 2 of the Amaila Project. There is no information at all on Phase 3 other than vague references to a future expansion of power using a diversion from the Mazaruni River. A final estimated energy production of 1,060 MW for all three phases of Amaila is not substantiated and stands in isolation. It is not clear at the moment, how the enlargements in Phases 2 and 3 of Amaila will eventually achieve 1,060 MW and what environmental and human impacts these developments would have. These are very serious omissions given that the adoption of the Amaila Falls Hydro Project, has been denoted as '*...the biggest infrastructure project in Guyana's history, and the flagship of Guyana's Low Carbon Development Strategy (LCDS)*'. (*Guyana Chronicle* 12 October 2010: 'Amaila hydro access road construction to begin this week.')

Yet it was a decision taken without adequate knowledge of the scientific data necessary to judge its final productive capacity and sustainability, and

seemingly without settled plans as to what Phase 2 linking it to Kaieteur on the Potaro, and Phase 3 linking it to the Mazaruni River, might entail.

With regard to Phase 3 and the bare reference to a Mazaruni River diversion: in the list of *Potential Hydropower sites in Guyana* there are several entries referring to 'Chi-Chi', (Chai-chai, an Akawaio name denoting a grasshopper or locust found in that vicinity. See *Map 1* for the position of these falls). There is entry No 24 referring to 'CHI-CHI' MAZARUNI, with an average continuous energy output of 96 MW. A 'CHI-CHI DIVERSION TO MERUME RIVER', no energy output recorded, is No. 23 on the list, and 'CHI-CHI DIVERSION TO THE POTARO RIVER', no energy output recorded, is No. 43. There is an additional reference, (No. 26), to an 'UPPER MAZARUNI DIVERSION SCHEME', MERUME, with an estimated output of 1320 MW. This latter diversion has a note attached stating that '*Government signed a Memorandum of Understanding with two Japanese organizations, which grants a period of exclusivity until November 15, 2006 for studies on the site*'. Given the stated output of 1320 MW and a location north of Chai-chai, one may wonder whether there is a printing error and that this diversion relates to the Membaru, not the Merume River to the south. If so, then this entry refers to the first phase of the Sand Landing Upper Mazaruni Hydro Project which, according to the feasibility studies already published, has this same output and would incorporate the Membaru River by reversing its flow and diverting the Upper Mazaruni waters down the Pakaraima escarpment to a powerhouse overlooking the Kurupung lowlands. However, it should be noted that SAND LANDING, on the MAZARUNI is listed separately as No. 31 with a 650 MW output. These entries need clarification and it is possible that studies of the various falls and cascades below Sand Landing have been referred to, somewhat inaccurately. A Japanese involvement has not surfaced in this or related contexts.

The 'Chi-Chi [Chai-chai] Diversion to the Potaro River' (listed No. 43) is, by its title, explicitly linked to the Amaila Falls Project in the Potaro basin, whereas the Merume River project (No. 23) has been associated with a possible hydro project at Tiboku, Middle Mazaruni. The Merume River, rising in the Merume Mountains of the Upper Mazaruni basin, flows down the Pakaraima escarpment into the Mazaruni lowlands near Kamakusa, with Tiboku not far below.

The diversions which involve Chai-chai (*Plate 1a*) have a basic factor in common: they entail a withdrawal of water from the source and headwaters of the Mazaruni River. In the case of the 'Chai-chai Diversion to the Potaro River' the proximity of the Potaro basin to the southernmost course of the Upper Mazaruni River should be noted. The source of the Potaro River is Ayanganna Mountain, clearly visible from the southernmost Akawaio village of Chinowieng, which is situated on the grasslands of the Ayanganna plateau on the southern edge of the Upper Mazaruni valley (*Plate 1b*). An approximate two hour walk, on crossing the Haieka River (its confluence with the Upper Mazaruni being above Chai-chai), separates Chinowieng village from this mountain on the Mazaruni-Potaro watershed. The people of Chinowieng have their main farms and family settlements along the Haieka, taking advantage of its fish and the comparatively fertile soils in an area of predominately white sand savanna scrubland. Traditional village lands within the Upper Mazaruni valley extend to the northern slopes of Ayanganna Mountain. (*Maps 6 & 7* show the extent of Akawaio land recognized in the Upper Mazaruni District, 1949, including the area to the watershed with the Potaro valley.) An approximate two and a half hours' walk eastwards across savanna separates Chinowieng from the main Mazaruni River at the foot of Chai-chai Falls, where the villagers maintain their riverside landing and boats.



Plate 1a

Chai-chai Falls seen from the Chinowieng Trail, near the top of the gorge cliff



Plate 1b

Ayanganna Mountain (source of the Potaro River) seen from a hill behind Chinowieng village. The white sand path (on the right) leads to the village, its houses and Alleluia Church built in a line (across the middle of the photograph) creating a long strip of white sand. The Haieka River (on the horizon lined by tropical forest and with good soil for Chinowieng farmers) is a short distance from its confluence with the Upper Mazaruni River above Chai-chai Falls

An access road to the Amaila Falls project site on the Upper Potaro and the Project's three phases, will ultimately affect the entire Potaro valley, including in its second phase the ambiance of Kaieteur Fall if not the Fall itself. In its third phase, linked to the Upper Mazaruni at Chai-chai, it will seriously affect the Mazaruni valley as well. All together this project, seemingly small and inoffensive as it might appear in Phase 1, has the potential to transform and degrade the entire extent of both the northern and southern sections of the North Pakaraima Mountains, its forests and the lives of their indigenous populations.

The Amaila Falls Hydro Project EIA is clear about the major impacts on the physical, biological and social environment of the Potaro valley. It specifies that the Project:

... would also make a part of the north-central part of Guyana accessible to vehicular traffic. This would provide access to both timber and mineral resources that were previously only accessible under considerably difficult conditions. The operation of this facility would also result in the creation of a viable community within relatively close proximity of the Brazil and Venezuela borders and may lead to the siting of manufacturing and other industrial facilities in the area that can easily access markets in those two countries. (AFHP, EIA 2002: 61)

A major impact of the Amaila Falls Hydro Project Phase 1 will be its creation of a **Road of Access into the heart of the Pakaraima Mountains from the East** and all that this will mean in terms of secondary roads and tracks, extraction of natural resources both legally and illegally, and the possibility of industrial development involving also immigration across the frontier from nearby Brazil. The concerns of Patamona communities regarding Amaila Phase 1 are recorded in Appendix D. Details of Phases 2 and 3 have been totally lacking, so that the entire Kapon ethnic group (Patamona and Akawaio) is ignorant of future developments which will have an even greater impact on them. The proposed diversion of waters from the Mazaruni into the Potaro basin will have serious, widespread consequences, but is not the only cause for concern. There are also plans for damming the Upper Mazaruni downstream from Chai-chai which would obliterate a vast extent of upland tropical forest - an ancestral homeland of the Akawaio (Kapon) and Arekuna (Pemon) peoples.

THE UPPER MAZARUNI HYDRO PROJECT (the 'Kurupung Project')

Thanks to some very able commentators, public attention has been enabled to focus on the unfolding saga of the Amaila Falls Hydro Project and access road. Meanwhile, there were outright denials followed by an ominous silence on the part of the Jagdeo Government concerning on-going plans for a second, far larger project and its access road - entailing a dam to be constructed at, or near, Sand Landing, on the Upper Mazaruni River below Kamarang Mouth.

On the 20th of May 2010 *Stabroek News* issued a news item entitled 'RUSAL, Brazil company still talking about massive Kurupung hydro project'. It began by saying that in September 2009, at the opening of the Takutu bridge linking Guyana to Brazil by road, the then Brazilian President Luis Inacio Lula da Silva stated that he was 'ready to have Brazilian companies finance the construction of hydropower plants in Guyana'. The article asserted that

Interest remains in developing a 3000 megawatt hydroelectricity plant in the Middle Mazaruni with talks about two consortiums involving Russian bauxite company, RUSAL, the government of Guyana and Brazilian electricity company, Eletrobras. [The correct spelling is 'Eletrobras'.]

The talks in question had taken place in Miami in March 2010 between the Director of Business Development of the Brazilian company Andrade Gutierrez Construction and the General Manager of RUSAL. A subsequent letter of May 14, sent by the General Manager of RUSAL, seen by the *Stabroek* newspaper, stated that

... the Russian company is ready to further develop the project at Kurupung if certain terms are accepted. This hydro-power project had been floated many times in the past.

The writer expressed the hope that their meeting in Miami had been productive and that at least the parties could exchange their intentions and recognise how they could move the project forward. He noted that one of the crucial points for the Brazilian company was to get Eletrobras to be part of a consortium. He mentioned the building of a smelter. *'After numerous internal reviews and discussions, they would like to continue dialogue on the main principles'*.

The participants in these negotiations are indisputably powerful. Thus, the *Stabroek* article describes Andrade Gutierrez S.A. founded in 1948, as:

... one of the largest privately held groups in Latin America and amongst the top three largest construction companies in Brazil. It is a market leader in construction, government contracts, telecommunications, real estate investments and other sectors of the Brazilian economy.

Eletrobras is the Brazilian State electricity company. RUSAL, Russian, is denoted the world's largest aluminium company.

In his letter, the General Manager of RUSAL envisaged that a Consortium A would be created with three main stakeholders: Eletrobras, the Government of Guyana and RUSAL. *'This consortium would be responsible for developing the Hydropower Plant and distribution of energy'*. He proposed that the consortium would build a 3000 MW hydropower plant which would be done in three phases. The first 1000 MW would be sold to Brazil *'beside what is energy required by Guyana'* and the second 1000 MW *'(probably less)'* would go to the smelter. The third 1000 MW would be sold to Brazil.

Consortium B would be created between the government of Guyana and RUSAL for the construction of the aluminium smelter. RUSAL *'would control the consortium'*. However, if Consortium B did not declare an option for smelting capacity during the six months after the commissioning of phase one, Consortium A would have the right to use the energy of the second phase at its own discretion. The third phase would then be developed by Consortium A when Consortium B decided that a smelter was needed. There would be a written agreement whereby Consortium A would guarantee to supply power up to 1000 MW at cost price basis to Consortium B for the requested amount for smelting. The letter affirmed that RUSAL was ready to develop the project further if these main terms were to be accepted.

Energy purchased by Brazil in Guyana would be consumed in the State of Roraima adjacent, as far south as Manaus on the Amazon. It is a documented fact that business enterprises in the area of Boa Vista, despite receiving a supply of electricity from the Guri hydro complex in Venezuela, are hungry for more energy for future development in the Rio Branco valley, in addition to that already transmitted from the Guri via the Gran Sabana since 2002. Indeed, some Brazilians have been arguing that their energy should be produced locally by the construction of dams on the Cotingo River – which would be within the Raposa Indigenous Territory and is a proposal vehemently opposed by CIR (*Conselho Indigena de Roraima*). One of CIR's arguments is that the Cotingo does not have a sufficient volume of water to generate the necessary energy for the State and is prone to drying up in periods of drought.

On 21st May 2010, the day following the *Stabroek News* article, the *Guyana Chronicle* issued an article entitled 'Government clarifies discussions on large hydro project', which gave an account of the first, preliminary negotiations between Brazil and Guyana with respect to the development of Guyanese hydro power. It recounted that in September 2009, when the Takutu bridge was officially opened by the two Presidents, President Lula announced Brazil's interest in establishing an 800 MW hydro project in Guyana and said that a high level team would be sent to Guyana to discuss hydro power.

On October 1, 2009, President Jagdeo, Prime Minister Samuel Hinds, and a Government team, met Brazilian Minister of Energy and Mines, Edison Lobão to further discuss Guyana's hydro-electricity potential and how the two countries could work together to further the exploitation of that potential. Minister Lobão led a 12-member delegation that included persons from Electrobras [sic].

Brazilian interest had first been focused on the 'Tortuba' [Turtruba] hydro project, situated a very short distance up from the mouth of the Mazaruni River, at rapids near the Marshall Falls. ENMAN Services Ltd., an Engineering company based in Trinidad & Tobago, had been developing this project of 800 MW and had suggested that 60% of the expected energy output would be sent along a high voltage transmission line following the new road from Georgetown to Lethem and on to Boa Vista in Brazil. The remainder would be used for the development of a Guyanese aluminium industry (*Stabroek News* 4 February 2008: 'Turtruba prospector still eyeing big hydropower plans – but project far away.' See also *PR Newswire*, Washington Oct. 16 2009: 'Brazilian Involvement in Guyana Hydropower Project Opens Up New Opportunities'). However, the Guyanese government disclosed that the 'Tortuba' project was held by the ENMAN group and a Memorandum of Understanding (MOU) of 31st July 2001 had granted exclusive rights to carry out feasibility studies there. It was suggested that Brazil should look at alternative hydro sites. The *Guyana Chronicle* news item went on to state:

As part of its examination of alternatives, Brazil identified the Upper Mazaruni hydro project (the Kurupung project). Government disclosed that this site was covered under a Letter of Intent (LOI) entered into in 2007 between the GoG and RUSAL. Under this LOI, RUSAL had started preliminary feasibility studies for the development of an integrated aluminium complex (including a refinery and smelter). Given the existence of this LOI, Government indicated to Andrade Gutierrez (AG), that the two parties (RUSAL and AG) could pursue direct discussions on the possible joint development of this project.

The article concluded by saying that RUSAL and Andrade Gutierrez were now, in 2010, in direct discussions on the possible joint development of this project but had not yet reached an agreement. On doing so their agreement would have to be presented to the Government of Guyana for consideration and approval, which would also require completion of all applicable feasibility studies including an environmental impact assessment (EIA). If agreed on the future development of this hydro project, the power would be earmarked for use by Brazil's northern States and Guyana, including power for an aluminium smelter.

Stabroek News May 21 2010: 'Any RUSAL hydro deal with Brazil firm has to be blessed by Gov't – statement,' repeated the disclosures in the *Guyana Chronicle* and also indicated that 'the Kurupung project' and the Upper Mazaruni hydro project were one and the same – note the statement:

...as part of its examination of alternatives, Brazil identified the Upper Mazaruni hydro project (the Kurupung project).

Brazilian interest in obtaining hydro power from Guyana has played a vital role in discussions dating from at least September 2009 when the Takutu bridge linking the two countries was formally opened. Afterwards, the then Charge d' Affaires of the Brazilian Embassy, Minister Rodrigo Fonseca with two representatives of Andrade Gutierrez Construction, had met President Jagdeo 'to discuss the possibility of establishing an 800 MW hydro-power project in the Middle Mazaruni'. Fonseca was quoted by GINA (the Government Information Agency of Guyana) as saying that:

It was an opportunity for President Jagdeo to meet these gentlemen so that they could explain the feasibility and the technical aspects of this important hydro-power project which Brazil believes is important also in the effort of integration between Brazil and Guyana. (Stabroek News May 20 2010: 'RUSAL, Brazil company still talking about massive Kurupung hydro project')

A further reference to Guyanese hydro power potential was made when, as retiring President, Lula da Silva was in Georgetown for the IV Summit of the Union of South American Nations (UNASUR). Receiving the Guyanese Order of Excellence, Thursday 25th November 2010, President Lula noted in his speech on that occasion, that Brazil had 'a continued interest in deepening its ties with Guyana' and he said that his successor Ms Dilma Rousseff would 'continue to implement the projects agreed upon by the Presidents of both countries'. He then mentioned the Linden to Lethem road [a reference to its asphaltting] and the hydro project. The article went on to say that:

Guyana and Brazil have signed a memorandum of understanding to build a hydroelectric plant on the border of Guyana and a Brazilian company has been identified for the management of the project, but the location of the dam is yet to be agreed. (Guyana Chronicle: 28 November 2010, 'Brazil gives concrete assurances on road, hydro projects.')

A second MOU has now been reported, by which 'Guyana, Brazil establish joint working group to focus on major projects' (*Kaieteur News*, December 7, 2012). Projects mentioned are the paving of the Linden–Lethem road to give Brazil access to an Atlantic port in the north, and there is an opaque reference to studies being conducted on the construction of a second

hydro-electric plant, which could see Guyana supplying energy to Brazil in the future, should the project prove feasible.

Articles in *Stabroek News* for December 2010 indicate that other Brazilian companies had previously been interested in the Upper Mazaruni as a source for hydro electricity.

Responding to a question put by Opposition MP Everall Franklin as to '*whether or not the Government of Guyana had received any proposal from any company or group of companies, other than Synergy, [Synergy Holdings Inc. and the AFHP] to construct hydropower facilities in Guyana during the period 2006 to 2009*', the Prime Minister, Samuel Hinds, told the National Assembly that there had been two companies, the Bauxite & Alumina Mining Venture Ltd (RUSAL) and Dynamic Engineering Inc, that had submitted proposals to the government to develop hydropower facilities in Guyana. In 2007 '*RUSAL was granted three years exclusivity to conduct a study for a hydropower plant on the Upper Mazaruni River*'. In 2010 Dynamic Engineering Inc '*was granted a one year exclusivity to conduct a feasibility study for the development of two .75 MW hydropower station at Tumatumari on the Potaro River*'[sic]. Hinds also said that in 2008 a fifth extension of the 2001 MOU between government and Enman Services Ltd. [of Trinidad & Tobago] had been granted, giving the company the exclusive right to complete feasibility studies relating to the Turtruba Rapids site on the Mazaruni River [near the Marshall Falls]. That MOU expired July 2010. Prior to 2006 there had been MOUs with Dynamic Engineering Inc. in 2002 and Guyana Poverty Alleviation Group Inc. These had all expired. (*Stabroek News* December 4 2010: 'Several hydropower proposals considered over the years – Hinds.')

However, a following letter from Everall Franklin MP to the Editor of *Stabroek News* a few days later stated:

The Prime Minister forgot or omitted to mention the TRIUNFO group out of Brazil, whom he had recommended to the President by way of a letter dated August 11, 2008. This group proposed to develop hydropower sites totalling more than 2000 MW for an aluminium smelter in Guyana and electricity sales to Brazil. This company had Electrobras [sic]—willing to import electricity; Voltarantin—interested in establishing a smelter and possible bauxite and alumina operations; BNDES—Brazilian development bank; and GE-Capital—a financing company with which TRIUNFO had already a working relationship on other projects. The estimated investment was estimated to be in the vicinity of US\$8 billion.

... Please note no money had to be raised by the Government of Guyana. (Stabroek News 8 December 2010: 'Why was the Brazilian hydropower proposal for the period 2006-09 not considered by the government?')

Triunfo probably refers to Triunfo Participações e investimentos and Voltarentin may be a misspelling of Votorantim. Both are very big Brazilian corporations which finance and construct hydro projects.

These details were repeated and placed in a wider context in a news item published by *Kaieteur News* 17 December 2010: 'Brazilian group had expressed hydro, smelter interests in Guyana'. In it we learn that the TRIUNFO group, aware of proposals in Guyana for a large development including hydro power, electricity sales to Brazil, bauxite and alumina operations, was anxious

to meet with RUSAL, BOSAI and ENMAN 'to see what form of development consortium might be put together'. According to the Prime Minister it had been asserted by a Guyanese intermediary (Paul Hardy who had strong Rupununi and Brazilian connections) that the TRIUNFO group

... was open to offering to buy out persons of whatever rights they might have accumulated in their studies so far.

It was stated:

... For large scale hydro development, one would look to the coordinated, staged development of the Mazaruni, Potaro and Essequibo river valleys aiming for some optimal disposition which may be constituted of several approaches. One such project is one at Mazaruni which would be a 1500 MW Chi Chi diversion to the Amaila/Kuribrong; a 2000 MW plant at Upper Mazaruni; a 600 MW plant at Turtruba. In Potaro 400 MW plant between Iatuk, Kaieteur and Tumatumari and the initial 100 MW plant on the Amaila/Kuribrong.

Upper Essequibo a plant was proposed for a 200 MW plant from King George V group; a 300 MW plant from Takwari group and a 200 MW plant from Arisaru.

According to Hinds,

... it may be timely now to arrange for one or more experienced and expert groups to quickly review and update all that is known of the Mazaruni, Potaro, Essequibo and Cuyuni river basins so as to propose coordinated, staged optimized development ... The large number of other smaller hydro-power sites may be developed to meet local area needs as they arise." (Kaieteur News 17 December 2010: 'Brazilian group had expressed hydro, smelter interests in Guyana.')

There is some very interesting information in these accounts concerning talks and proposals for the development of hydro electricity.

The Brazilian Factor

In 2003 references were being made in the Guyanese media to the 'Guyana - State of Roraima integration project', a part of the participation in the process of the *Initiative for the Integration of the Regional Infrastructure of South America* (IIRSA). This is an institute, based in Buenos Aires, which sponsors the physical integration of South American countries by actuating integration projects in the spheres of transport, energy and communications and the development of isolated sub-regions. Amongst the projects to be considered were the construction of a heavy duty road linking Georgetown to Boa Vista, the capital of Roraima State; the construction of a deep water harbour on the Atlantic Coast and a hydro-electricity facility in Guyana and the development of an industrial area in Boa Vista. The Brazilian President reiterated his commitment to the completion of the bridge across the Takutu, which had already been started. Brazil also offered to fund the Guyanese section of the road, between Lethem and Georgetown. (*Stabroek News* July 13 2003: 'Brazil offers to fund Lethem-Georgetown road. Deepwater harbour also on the cards', by Gitanjali Singh.)

Brazil has persisted in these objectives and a number of the most powerful Brazilian institutions have been involved in the proposals put forward, all of them seemingly backed by

the State if not, like the BNDES (Brazilian National Development Bank) and Eletrobras, actually part of the State. A close association between Andrade Gutierrez C.A. and government seems to be borne out by an accusation of corruption practised by Brazilian hydroelectric companies in the Presidential election campaign in 2010. (*Agencia intercultural de Noticias Indígenas*, (AINI), 3 December 2010: 'Brasil: Empresas hidroeléctricas financiaron campaña electoral.'). Amongst the enterprises mentioned as having had a great influence in both the campaign of Dilma Rousseff as well as for her predecessor, is that of Andrade Gutierrez. As the article states:

This situation shows the direct connection and lobbies that exist between enterprises which construct the hydroelectric dams in Brazil and other Amazonian countries with the political world, that ought to take the decisions for the construction of the mega-projects. (Translation by A. Butt Colson)

The main focus of recent Brazilian interests in Guyana has been the road between Georgetown on the Atlantic coast and Lethem in the south, on the frontier with Brazil, which was constructed in the Rupununi sector between Annai and Kurupukari on the Essequibo crossing in the mid 1990s by the Brazilian engineering company Paranapanema. This land connection between the two countries was finally established on the completion of a bridge over the frontier river, the Takutu, a left bank tributary of the Rio Branco, linking the two border towns of Lethem and Bonfim. Its construction had been mooted in the early nineteen nineties. The two Presidents, Jagdeo and Lula da Silva, officially opened it to traffic in September 2009. It was remarked that the bridge brought closer integration between the Guyanese and Brazilian peoples and opened the way for greater development between the two countries. (*Stabroek News* April 27 2009: 'Takutu bridge opens to traffic'.)

The next Brazilian objective has been to get the Guyanese sector asphalted, between Mabura on the Demerara and the Takutu bridge, so as to secure all-weather transportation from Georgetown to the frontier and join it to the trans-American road network, from Boa Vista southwards to Manaus and into Amazonia and northwards into the Orinoco valley in Venezuela. There are also plans to put in a fibre optic cable along the road to connect with Brazil. Neither the asphaltting nor the communications system has as yet materialized, although Brazilian funding for the road was again offered in November 2010. (*Guyana Chronicle* Sunday 28 November 2010: 'Brazil gives concrete assurances on road, hydro projects'.)

However, Brazilian plans do not stop there. There is an expressed proposal for a deep water harbour on the Guyanese Atlantic coast, so that goods from the northern States of Brazil may be shipped to the Caribbean and the United States via the Guyanese Atlantic coast, saving a few days travel in the time entailed by the present route down the Amazon.

Joint research and an exchange of geological information leading to a mining programme along the length of the common border is already in progress (*Stabroek News* 9 October 2011: 'Geo-diversity at Guyana's borders under probe - Data useful for mineral exploration.' By Clifford Stanley.) This involves a team of Brazilian and Guyanese geologists

... whose aim is to correlate the geological makeup of the Guyana side of the border with that of Brazil so as to unify the updated information on a newly-produced map of South America.

Their work will extend from the tripartite border with Suriname (the Corentyne source) in the east to that with Venezuela (at Roraima) in the west, *...in that pristine area...* Another objective, stated by the team leader and consulting geologist of the Guyana Geology and Mines Commission (GGMC), is that of compiling information about areas of the border where there has been gold and diamond mining

...with the aim of determining the mineral potential of those areas...'

so that

...in addition to being useful, this information will prove vital for mineral exploration, and important for environmental studies and health issues.

Meanwhile, there are reports of a proliferation of *garimpeiros* (Brazilian miners) in the Guyanese hinterland, and of numerous small Brazilian businesses being set up in Guyana, notably in Georgetown and in Bartica. A Brazilian Jesuit arrived in Georgetown to serve the religious needs in Portuguese for the Brazilian residents.

Accompanying these events and proposals there have been, as the quotations above demonstrate, talks and plans concerning Brazil's wish to purchase hydro power from Guyana, with offers having been made to help in both the construction and the financing. It is in the wider context of Brazilian - Guyanese relationships that these project proposals should be judged.

As remarked at the time of the UNASUR (Union of South American Nations) summit (*Guyana Chronicle* Sunday 28 November 2010: 'Brazil gives concrete assurances on road, hydro projects'):

GUYANA made further strides towards deepening its integration with its largest neighbour and hemispheric superpower Brazil ...

The two countries are strikingly disparate in a number of significant ways. Brazil is a vast, fast-developing, powerful country of 191,480,630 million inhabitants and a land mass of 8,514,876 km², some 38 times larger than that of Britain. Guyana is small in comparison, its land mass of 214,969 km², around the size of Britain, undeveloped, with a population of 751,000 which has been more or less static over many years on account of the high rate of emigration. (*La Red Amazónica de Información Socioambiental Georeferenciada (RAISG) 2012.*) Brazilian interest in the Essequibo territory of Guyana has a long history, going back to early Dutch times and continuing during the period of British colonial rule during the 19th century, when the rival claims to the Rupununi resulted in a military confrontation there. (Rivière 1995, describes the active hostilities of 1839 - 1843.) A boundary settlement by arbitration was reached in 1904 and since then any claim east of the Takutu has been dormant. However, there are informal reports over the years that Brazilians, especially those in neighbouring Roraima State, consider that Brazil had been defrauded of the Rupununi, the territory lying between the Takutu and Essequibo rivers.

The Venezuelan Factor

The interest which Brazil has maintained in Guyana contrasts dramatically with an open and very public claim to Essequibo, made over the centuries by Spain and today by Venezuela.

Since Guyanese Independence in 1966, relationships between Guyana and Venezuela connected to the dispute over sovereignty over Essequibo have been governed by international treaty, the *Agreement of Geneva* of 1966. The unresolved dispute was referred to the Secretary-General of the United Nations and in August 1989 both countries agreed to the appointment of a UN “good officer” who had the task of identifying a course for settling the controversy. There has been a succession of “good officers” but the dispute remains. Although therefore, relationships between Guyana and her neighbours appear to be purely economic and developmental, these inevitably, as the wider context shows, have strong geo-political implications, both for the countries directly involved but also for the region as a whole. That there is a hidden underlying agenda, and one that implicates hydro projects, is fully confirmed in two documents: these refer to United States confidential diplomatic cables released by Wikileaks.

The first cable (*Demerara Waves* 26 August 2011: ‘Venezuela’s invasion of Guyana a “realistic possibility” - Fmr. Brazilian President, Sarney’, by Denis Scott Chabrol), records comments made by ex-President Sarney at a dinner hosted by the American Ambassador to Brazil Feb. 13 2007, reported in a cable of February 23, 2007 from the American Embassy in Brasilia, titled ‘Venezuela’s growing military prowess and claims against Guyana.’ The cable stated that

Sarney pointed out that a Venezuela invasion was a “realistic possibility” Brazil has long held the view that any adjustment of the Guyana-Venezuela border will impact on the territory of the Portuguese-speaking nation.

Reference to another US Embassy cable, of 15 January 2008, quoted former Minister of Finance, Antonio Delfim Netto, as saying that then Brazilian President Luis Inacio ‘Lula’ da Silva, was worried about Venezuela’s desire to annex one-third of Guyana’s territory. Netto reasoned that this would lead to Brazil getting involved in a border war with Venezuela, ‘... because the Yanomami Indians could form a breakaway territory if Venezuela militarizes the area’. He was referring to the fact that Yanomami settlements and lands straddle the international border, but seems to have been ignorant of the fact that, to the east, the Brazilian ‘Makuxi’ are part of an extended ethnic grouping of Pemon straddling the Guyanese and Venezuelan borderlands with Brazil!

A second Wikileaks document refers to a cable from the Brasilia US Embassy in 2009 (*Stabroek News* 5 July 2011: ‘Hydro project with Brazil seen as helping Guyana consolidate hold on Essequibo - Wikileaks cable’, by Stabroek Staff. See *Appendix A* for the full text.) An October 2009 cable under the name of Charge d’Affaires in Brasilia, Lisa Kubiske, referred to a remark by Ambassador Rubem Barbosa, (International Advisor to Brazil’s Minister for Mines and Energy Edison Lobão), who had said (October 5, 2009) that

...in addition to augmenting the energy capacity for both countries, and bringing Guyana closer politically to its South American neighbours, the project would have the effect of allowing Guyana to establish government infrastructure in Essequibo which is the subject of the controversy with Venezuela.

Kubiske noted that the idea to construct the binational hydro plant in Guyana’s border region, near the Brazilian state of Roraima, stemmed from a meeting between Brazil’s former President Lula and Guyanese President Jagdeo on September 14, 2009 when the two inaugurated the Takutu Bridge which is intended to be “part of the highway linking Brazil to the sea through Guyana.” Analysts believe that Brazil is very keen for access to Guyana’s Atlantic ports as a conduit to its northern states like Roraima.

Kubiske noted that Jagdeo had asked Lula for help in meeting Guyana's energy needs and that two weeks later Lula sent a delegation to meet Jagdeo, led by Energy Minister Lobao, [Lobão] accompanied by Barbosa. There were also representatives of the Brazilian National Development Bank BNDES, likely project financier, and the Brazilian state-owned electricity company Eletrobras. Barbosa cautioned that talks were still in the initial stage, with Eletrobras doing an assessment of the area to determine the potential for such a project.

At that moment in time, the reference was to a hydro power plant which would generate 800 MW, with 200 MW going to Guyana and 600 MW to Brazil. It most likely therefore, implicated the Turtruba hydro project near the mouth of the Mazaruni River which was mooted first, before the discussants were diverted to the Upper Mazaruni/Kurupung project and to talks with RUSAL. (See above.) However, the prime motive in choice of site was clearly stated:

While helping to meet the pressing energy needs of Guyana and electrifying undersupplied areas of Brazil would be the main reason for undertaking such a project, Kubiske said in the cable that "Barbosa confided that the political reasons for doing so were also compelling. Given that the proposed hydroplant would be built in the section of Guyanese territory that is (claimed by) Venezuela, Jagdeo, according to Barbosa, sees this as an important effort to consolidate Guyana's claim to the area. Asked if this wasn't a problematic element of the plan from the Brazilian perspective, Barbosa responded that Jagdeo had observed that Venezuelan President Chavez had not involved himself in the question of the (controversy). This fact, combined with the ruling by a third party arbiter that the area in question was Guyanese land, in Barbosa's estimation provided sufficient comfort for Lula to proceed."

The intention of Jagdeo's Government is clear: it was to establish infrastructure – a massive hydro project, in Essequibo in order to circumvent the Venezuelan claim to that territory regardless of international treaty obligations. It was merely a question of where exactly would be chosen in Essequibo. The subsequent reports by *Stabroek News* and the *Guyana Chronicle* show that the choice had in fact already been made. It was to be the Sand Landing, Upper Mazaruni site.

The Development of an Aluminium Complex

Plans for the creation of a consortium of companies to build an Upper Mazaruni hydro project were never discarded after the failure to obtain financial backing in the 1970s and '80s. The expressed objective has been the production of abundant, cheap electricity - and thus, hydro-electricity for domestic consumption, the development of an aluminium complex in Guyana, and the sale of surplus energy to Roraima State, Brazil.

The involvement of RUSAL in a consortium to generate and distribute hydro electricity emerges clearly in the newspaper articles of May 2010 quoted above, but company objectives had also been revealed in a previous newspaper article of 19 March 2009 (*Demerara Waves*: 'GLOBAL FINANCIAL CRISIS: Job losses coming: RUSAL, BOSAI. gold companies scale back...') In it President Jagdeo warned that bauxite companies had changed their large-scale investment plans because of the global financial crisis and Prime Minister Samuel Hinds told a news conference

... that the Russian aluminium company, RUSAL, has shelved plans to construct a hydro-power plant and an alumina smelter, and the Chinese bauxite company, Bosai, would build a US\$ 1 billion alumina plant in Guyana in two stages rather than in one stage.

A close involvement of BOSAI in the bauxite industry in Guyana dates from 2007, on its purchase of the Linden bauxite mine and installations in Demerara and with a commitment to build an alumina refinery. The headquarters of this powerful company is Chongqing City which is China's third largest centre for motor vehicle production and the largest for motorcycle manufacture. It is also one of three major aluminium producers in China. However, the Chinese interest in hydro electricity in Guyana appears to have been more orientated to the Amaila Falls Hydro Project (AFHP) in the Upper Potaro valley than to the Upper Mazaruni hydro project. This is witnessed by three important developments. The first is the Shanghai Agreement of 15 July 2010 whereby co-operation was formalised between Guyana Power and Light (GPL), Sithe Global Amaila Holdings, the China Development Bank and the China Railway First Group, and a commitment made that China would be supporting construction of the Amaila Falls hydro-electricity project. (*Guyana Chronicle* 16 July 2010: 'Amaila Falls framework agreement signed in Shanghai.') The Shanghai Agreement represents a powerful set of interests, combining Sithe Global (a subsidiary of the Blackstone Group of the USA, one of the world's largest private equity companies) as the project sponsor of the Amaila Falls Project with the China Railway Group, (part of one of the world's largest construction companies, a partner of Northwest Hydro Consulting Engineers (NWH), one of the pre-eminent hydro firms in China). (*Stabroek News* 24 May 2011, Letter from Rafael Herz, Sithe Global: 'Inaccurate information' being published on Sithe Global.)

The amount of a loan from China on the occasion of the signing, was not disclosed. However, a steady build-up of Chinese interests may be noted. During the 2004-9 period the Chinese government had provided funding for the Guyanese government in excess of US\$ 32 million. In December 2009 there had been a grant of G\$ 1.2 billion. After the Shanghai Agreement, 13 December 2010, the Chinese Ambassador handed over approximately US\$ 7.5 million (G\$ 1.5 billion) in grant aid to Guyana and an economic and technical co-operation agreement was signed. At the same time, the Ambassador referred to the expanding co-operation between the two countries in recent years. (*Stabroek News* 14 December 2010: 'Guyana, China sign pact for G\$ 1.5B grant aid'.)

A second development, relating to the construction of the Amaila Project and an increasingly strong Chinese involvement, emerged in May 2011 when Sithe Global admitted to having selected the China Railway First Group Co. as their construction partner. It appeared therefore, that the Amaila Falls Project would be built with finance mostly deriving from the China Development Bank and the Inter-American Development Bank (IDB) with the actual construction work to be done by China Railway First Group. (China Railway First Group Company Ltd., founded 1950, is supported by the China Development Bank. *Kaieteur News*, May 14, 2011: 'Amaila Falls Hydropower Project ... Sithe Global confident about China Railway'. See also *Stabroek News* 24 May 2011: "'Inaccurate information" being published on Sithe Global.')

Finally, as stated above, an Engineering and Construction contract was signed between Sithe Global (the developer of the the Amaila Falls Hydro Project) and the Chinese construction company China Railway First Group in Xi'an, China, 11th September 2012.

As already stated, the Amaila hydro project (Phase 1) is expected to be a 165 MW facility yielding approximately 140 MW at points of delivery and to have a 278 km long, high voltage transmission line. The output is designated to supply the domestic market in Guyana. However, the references to phases 2 and 3 involve other dams and diversions of water, from the main Potaro River and from the headwaters of the Upper Mazaruni River. A total estimate of energy production for all three phases of Amaila has been given as 1,060 MW (*Final Environmental Impact Assessment Report AFHP 2002.*) According to Prime Minister Hinds (*Kaieteur News* 17 December 2010, quoted above) there might be a Chi Chi [Chai-chai] diversion of 1500 MW to the Amaila/Kuribrong. This estimate for a Chai-chai - Potaro Diversion is noteworthy as in the 2003 List of Potential Hydropower Sites in Guyana (No. 43) no power output is stated. A 1500 MW output might be purchased by Brazil or alternatively, used to power Chinese smelters and a refinery.

Secrecy

Accusations of secrecy on the part of the Jagdeo Government have appeared periodically in the Guyanese Press in a variety of contexts. For example, *Kaieteur News* 22 May 2011: 'Gov't guilty of "no truth, half truths and distortions"' – Christopher Ram refers to the "'secrecy' involving the planned Amaila Falls Hydro Electricity project'. The *Stabroek News* article of 20 May 2010, quoted above, noted with regard to the discussions between Andrade Gutierrez C.A. and RUSAL on development of the Kurupung (Upper Mazaruni) project: '*This hydro-power project had been floated many times in the past*'. The information available indicates that the Brazilians and RUSAL, having been directed by the Guyanese government to consider jointly an Upper Mazaruni site, came to favour this instead of the Turtruba project which had first attracted their attention. However, despite this strong on-going interest in the construction of a dam, or dams, in the Upper Mazaruni, by government, public references to this project have ranged from misleading to outright denial. There are the following circumstances:

1. The name changed to become the "Kurupung Project". The Kurupung is a tributary river which rises in the Pakaraima Mountains and flows down to the foot of the escarpment into the Middle Mazaruni River. The power house of the project is to be sited in Maikwak Mountain to the side of Kurupung Fall (Kumarow Fall; see *Plate 2b*). However, the site of the dam remains on the Upper Mazaruni River.

2. Maps issued have shown an approximate position for a power house situated up river from the mining village of Issano and in the Kurupung area, below the escarpment, as, for example, on those posted by IIRSA (Initiative for the Integration of Regional Infrastructure in South America, Buenos Aires). Accompanying references have been to a "Middle Mazaruni" Project. This is misleading in that there has been a proposed past project, that of Tiboku on the Middle Mazaruni, down river from Kamakusa.

3. When Survival International referred to an Upper Mazaruni dam the Minister for Amerindian Affairs, Pauline Sukhai, scornfully accused this NGO of misinformation through a confusion with the Turtruba Project. When confronted in turn with the *Guyana Chronicle* and *Stabroek News* articles of 20th and 21st May 2010, with their firm references to the Kurupung/

Upper Mazaruni project, there was a deafening silence from the Minister and no comment from the newspapers quoted. (See *Appendix B*, the Survival - Sukhai correspondence.)

4. When the *Guyana Chronicle* published on the signing of a Memorandum of Understanding between Guyana and Brazil to build a hydroelectric plant on the border of Guyana it was stated that a Brazilian company had been identified for the management of the project but the location of the dam is yet to be agreed. (*Guyana Chronicle* 28 November 2010: 'Brazil gives concrete assurances on road, hydro projects'.)

5. During a ceremony to mark his "Champion of the Earth" award, the UN's highest environmental honour, President Jagdeo sarcastically remarked that the APA (*Amerindian Peoples Association*) 'was too busy to take part in the multi-stakeholder steering committee for those consultations' [on his Low Carbon Development Strategy (LCDS) – a strategy which is spear-headed by proposals to develop hydro power]. 'The President boasted that the consultations were unlike any other conducted anywhere in the world' and he asserted that: 'We made it clear that indigenous people's rights would be respected and that there would be free, prior and informed consent'. (*Kaieteur News* 15 May 2010: 'Jagdeo honoured for "Champion of the Earth" award.')

This is just one of the many references promising FPIC (Free, Prior and Informed Consent) which peppered the President's speeches after the formation of his LCDS (Low Carbon Development Strategy). However, a Russian delegation had arrived in Guyana in March 2007 'to begin a pre-feasibility study for a hydropower station in the upper Mazaruni', after a Letter of Intent (LOI) for the development of a hydropower plant had been signed during a State visit by Jagdeo to the Russian Federation in January (2007). A LOI was also signed for an aluminium refinery and an aluminium smelter (*Guyana Chronicle Online*, 8 February 2007: 'RUSAL studies aluminium smelter for Guyana – hydro-power plant also likely.' by Mark Ramotar. See also *Stabroek News* 24 March 2007: 'Russian team here to do pre-feasibility study for hydropower plant'). Yet, when visiting the Upper Mazaruni in 2009 and asked whether there were any development plans for the area, the President replied that there were none – and if there were to be any then he would consult them first!

History seemed to be repeating itself. Pre-feasibility studies had been carried out in the Upper Mazaruni in 1972 and the Upper Mazaruni Hydro Project was publicly announced on 1st April 1973. However, in the remote hinterland the Upper Mazaruni people were not informed until nine months later, in December 1973, when the community leaders were summoned to Georgetown – in such haste that some village captains could not attend and none had the opportunity to consult the communities they represented. Moreover, they were told that the hydro-electric project was too far advanced for abandonment or modification, and that it was pointless to protest since the scheme would go ahead in any event. If they did not co-operate they would receive no help in being resettled. (Bennett, Colson, Wavell 1978: section entitled 'The Bombshell'.)

In short, there was no direct mention publicly, even during the three years of RUSAL's pre-feasibility study, of the revival of the plan to build a large dam on the Upper Mazaruni which would entail the creation of a reservoir of vast dimensions and which would flood the entire basin and cause the forced removal of at least 8-10,000 indigenous inhabitants from their ancestral homeland. Nor, it seems, has there been any likelihood of any details on this project being voluntarily publicized. On the contrary, there have been emphatic denials that the government would ever countenance such a project. Thus, the government-supporting *Guyana*

Chronicle published a Letter to the Editor, 14 August 2010, written by Peter Persaud, entitled 'Kaieteur News article mischievous, misleading'. Referring to the *Kaieteur News* report of 10 August, 2010 captioned 'Akawaios and Arekunas will lose livelihoods with hydro project – Int'l report', he made the following statement:

The government of Guyana will never implement a project that will affect the livelihoods of its indigenous peoples and make them refugees.

He asserted that a proposed hydro project in Guyana's hinterland would be subject to a social and environmental impact assessment and the project would never be implemented if it affected the livelihoods of Amerindian communities. Moreover

Projects in hinterland areas will have to receive the free, prior and informed consent by affected communities.

Persaud went on to say that:

The Survival International report which stated the Akawaios and Arekunas of the upper Mazaruni will be severely affected by a hydro project is based on political motivations and released at time when general and regional elections will be held next year 2011. The report is therefore designed to fool the indigenous peoples of the upper Mazaruni...

There is no mention of the hydro plans discussed with Brazil, of the newspaper articles of 20th and 21st May 2010, or of the feasibility studies in the Upper Mazaruni which RUSAL had just carried out.

As her correspondence with *Survival International* unequivocally shows (Appendix B), the Minister for Amerindian Affairs proved either to be unaware of a project which would flood out thousands of Amerindians, or herself to be complicit in hiding the fact of the planning of it by the several companies with the full participation and encouragement of her government.

The RUSAL PRE-FEASIBILITY STUDY in the UPPER MAZARUNI (2007-2010)

Despite government reticence, we are able to give a detailed account of what an Upper Mazaruni/Kurupung Project will entail, being greatly aided by the possession of several very professional reports on the Upper Mazaruni Sand Landing project dating from the 1970s and 80s, in which the nature of its construction and of its consequences for the environment and its inhabitants are described in great detail, with accompanying maps, diagrams and photographs. Added to these is an up-to-date account deriving from the 2007-2010 investigations made by RUSAL surveying at and in the area of the same original, proposed site. This was first encountered embedded in the Guyana Energy Resource website list of hydropower studies, but it then disappeared, to be found again in Google's cache and as it appeared on 3 April 2011 at <http://www.gea.gov.gy>

By comparing the two sources of information, those of Harza and SWECO in the 1970s-80s with that of RUSAL in 2007-2010, we are able to attain a basic, authentic account of what the revived Upper Mazaruni hydro project will entail if it is brought to fruition.

RUSAL's information, lodged with the Guyana Energy Agency, is as follows:

Upper Mazaruni, Region 7

RUSAL, a Russian Company was granted exclusive rights in February 2007 for an initial period of three years to conduct a pre-feasibility study of this site. This site has a potential installed capacity of 1320MW and the Company is proposing to set up an Aluminium Smelter as the primary load centre.

Based on previous studies, the following key parameters of the Upper Mazaruni Hydropower Station were identified in the RUSAL report

Summary Data

Reservoir

<i>Catchment area</i>	<i>10,890 km²</i>
<i>Normal annual runoff</i>	<i>20.2 km³</i>
<i>Normal annual discharge</i>	<i>640 m³/s</i>
<i>Maximum discharge</i>	<i>2,400 m³/s</i>
<i>NMOL</i>	<i>498.5 m</i>
<i>Dead-storage level</i>	<i>483.0 m</i>
<i>Evacuation depth</i>	<i>15.5 m</i>
<i>Total storage capacity</i>	<i>15.0 km³</i>
<i>Active storage capacity</i>	<i>13.8 km³</i>

Dam

<i>Site</i>	<i>Sand Landing</i>
<i>Foundation</i>	<i>sand-rock and apogrit</i>
<i>Height</i>	<i>55.0 m [180 ft]</i>
<i>Crest length</i>	<i>240. m</i>
<i>Quantity of fill</i>	<i>625,000 m³</i>

Weir

<i>Location</i>	<i>on the right bank of reservoir</i>
<i>Foundation</i>	<i>sand-rock and apogrit</i>
<i>Discharge capacity</i>	<i>5,000 m³/s</i>
<i>Number of bays</i>	<i>4</i>

HPS intake chamber

<i>Location</i>	<i>on the left bank of Mazaruni River</i>
<i>Number of bays</i>	<i>2</i>
<i>Foundation</i>	<i>sand-rock and apogrit</i>
<i>Design discharge</i>	<i>600 m³/s</i>

Diversion tunnel

<i>Geological surrounding</i>	<i>sand-rock and glomeration</i>
<i>Length</i>	<i>11.4 km</i>
<i>Diameter</i>	<i>10.0 m</i>

<i>Station sluices</i>	
<i>Geological surrounding</i>	<i>sand-rock</i>
<i>Length</i>	<i>2.3 km</i>
<i>Diameter</i>	<i>3.0 m</i>
<i>HPS Powerhouse</i>	
<i>Type</i>	<i>underground</i>
<i>Geological surrounding</i>	<i>diabase</i>
<i>Design discharge</i>	<i>600 m³/s</i>
<i>Number of units depends on option</i>	<i>(12 X 183.3 MW; 4 X 550 MW; 6 X 367 MW)</i>
<i>Turbine type</i>	<i>radial-axial (Francis turbines)</i>
<i>Maximum head</i>	<i>430 m</i>
 <i>Tailrace conduits</i>	
<i>Type</i>	<i>trough-shaped two-line with re-inforced concrete lining 0.25 m thick</i>
<i>Geological surrounding</i>	<i>diabase and sand-rock</i>
<i>Length</i>	<i>1.6 km</i>
<i>Diameter</i>	<i>10.0 m</i>

The introductory statement of the Guyana Energy Agency, quoted above, notes that the key parameters identified for the Upper Mazaruni Hydropower Station were *based on previous studies*. There is indeed, every indication that the revived Upper Mazaruni (Kurupung) Hydro Project under consideration is basically the same as the first, which failed to mature in the 1970s and 1980s. Specifically, the power station will be underground and sited within the Pakaraima cliffs and overlooking the Kurupung area below. A very large dam will be built at Sand Landing on the Upper Mazaruni River some 12 miles (20 km) below the Kamarang-Upper Mazaruni confluence. It is proposed to build in three phases, each one further enlarging the reservoir (see *Maps 3 & 4*). There will be an ultimate output of 3,000 MW, (the previous project referred to a total output of 3,500 MW, judged comparable to that of the Aswan High Dam in Egypt). Most vital is the fact that, in all phases of the proposed projects, the normal full supply water level elevation is between 1600 - 1700 ft (489 - 518 m). This level of flooding will have enormous consequences for the Upper Mazaruni environment and for the inhabitants in their ancestral lands. A comparison with the relevant published details of the first Upper Mazaruni Hydro project will inform us on the second one, since the two are identical in all basic aspects.

The Upper Mazaruni Hydro Electric Project, 1970s and 1980s

In 1972-3 the Yugoslav firm Energo Projekt was engaged in pre-feasibility studies in the Upper Mazaruni. According to a visiting photographer at the time, the Akawaio thought that the surveying was for the demarcation of their ancestral lands prior to receiving legal title in accordance with the recommendations of the *Amerindian Lands Commission Report* of 1969: 130-144. In December 1975 Harza Engineering Company made a final report entitled '*Environmental Appraisal of the Upper Mazaruni Hydroelectric Project for the upper Mazaruni Development Authority of the Government of Guyana*'. An 'Upper Mazaruni Development Authority' (UMDA) had been set up on the Guyanese government having decided to implement

the project. In the years 1967-1977 work began on the Itaballi - Kurupung approach road and drilling and surveying took place on the Sand Landing dam site in the Upper Mazaruni basin. The Swedish Engineering Consultants, SWECO A.B., were engaged and in May 1983 SWECO produced the *'Upper Mazaruni Additional Field Investigations: Final Report. Resettlement of Amerindians in the Upper Mazaruni Basin.'* However, the necessary finance had meanwhile failed to materialize and the project lapsed for a combination of reasons. These included a lack of a market for the energy potential, the dispute with Venezuela over sovereignty in the Essequibo territory, the destruction of so much land and the enforced resettlement of its indigenous inhabitants, who were championed by Survival International.

The Project Area Description in Harza's 1975 *'Environmental Appraisal'* (Harza Report: I-1-12) affirms that the Project site is located in west-central Guyana, mainly above the Pakaraima escarpment, between 59° 50' and 61° 20' West Longitude and 5° 10' and 6° 30' North Latitude. (See *Map 1.*) It includes the river basins of the Mazaruni and Kurupung upstream of their confluence. The catchment area upstream of the proposed dam, at Sand Landing, comprises about 10,000 km² (3,940 sq. miles). It is noted that: *'The extreme headwaters of the Mazaruni River extend slightly into Brazil and Venezuela'* – a fact which is often not depicted on maps.

The *Appraisal* was based on discussion with SWECO engineers, the staff of the Upper Mazaruni Development Authority and a review of the 1974 feasibility study report for the project prepared by Energoprojekt Engineering and Consulting Company. The proposal, set out in the *Harza Environmental Appraisal Report* (III - 1-6) was that:

1. The Project would be constructed in two or more stages to meet increasing energy demands in the future. (*Maps 3 and 4*)

2. The initial phase would have a generating capacity of 1,000 to 1,300 MW, through passage of a flow of 10,600 - 13,800 cfs (cubic feet per second) through turbines with a power head of 1,300 ft (396 m). The ultimate capacity would be approximately 3,100 MW.

3. The initial development would include a rock-fill dam across the Upper Mazaruni in the vicinity of Sand Landing, 12.5 miles (20 kms) downstream from Kamarang mouth. The streambed elevation there is noted as approximately 1,530 ft (466 m). The dam would be approximately 80 ft (24 m) high, with normal water surface elevation in the reservoir behind the dam at 1,600 ft (488 m). The surface area of the reservoir would be about 150 sq.miles (388 Km²).

4. The water from the reservoir would be diverted into the Membaru River (reversing its flow), and then into a headrace tunnel to a power plant (located underground under the Maikwak Plateau) which would discharge it into the Seroun Creek at its confluence with the Kurupung River, which in turn would discharge into the Middle Mazaruni River. In Stage 2 there would be a low dam on the Kurupung River creating a small reservoir to provide water for separate generating facilities contained within the power station built in Stage 1.

5. Stage 3 would provide additional capacity. The Report refers to three possible developments to achieve this. The Sand Landing dam could be raised to an ultimate reservoir elevation of 1,700 ft (518 m). Or, additional dams and power stations could be constructed between Sand Landing and down the river to the base of the Pakaraima escarpment below Piama Falls. Or, additional dams and power stations could be developed upstream from Sand

Landing, in the canyons of the Kako River and below Chi-Chi [Chai-chai] Falls on the Mazaruni. Only the higher dam alternative at Sand Landing had been studied by Energoprojekt.

At 1,700 ft (518 m) the reservoir (named Chidago Reservoir) would have a surface area of around 1,000 sq. miles (2,590 km²). Yearly reservoir fluctuations would be about 10 ft and total reservoir fluctuations would be 66 ft (20 m). There would then be a complete cessation of the flows of the Mazaruni below Sand Landing and a drying out of 110 miles (177 km) of river (between Sand Landing on the Upper Mazaruni and the Kurupung-Middle Mazaruni confluence below the Pakaraima escarpment). The transmission line would follow the access road from the Essequibo up the Mazaruni valley to Kurupung power station and on to Sand Landing.

The immensity of the proposed reservoir area, not only in its final stage but from the very beginning, was seen as daunting. There was the task of clearing this vast area of tropical forest, which would be so costly that only a minor part of the reservoir would be cleared in the available time. There was the fear that the reservoir site was likely 'to turn into a veritable marshland, with dead forest surfacing above water and over some 85% of the Lake at high water and over practically the whole area during low water'. SWECO proposed a more moderately sized reservoir, particularly in the early stages. However, in their Report, (1983) they admitted defeat. The attached letter, dated 1983-06-21, presenting their Report to Mr B. Crawford at the Guyana National Energy Authority, stated:

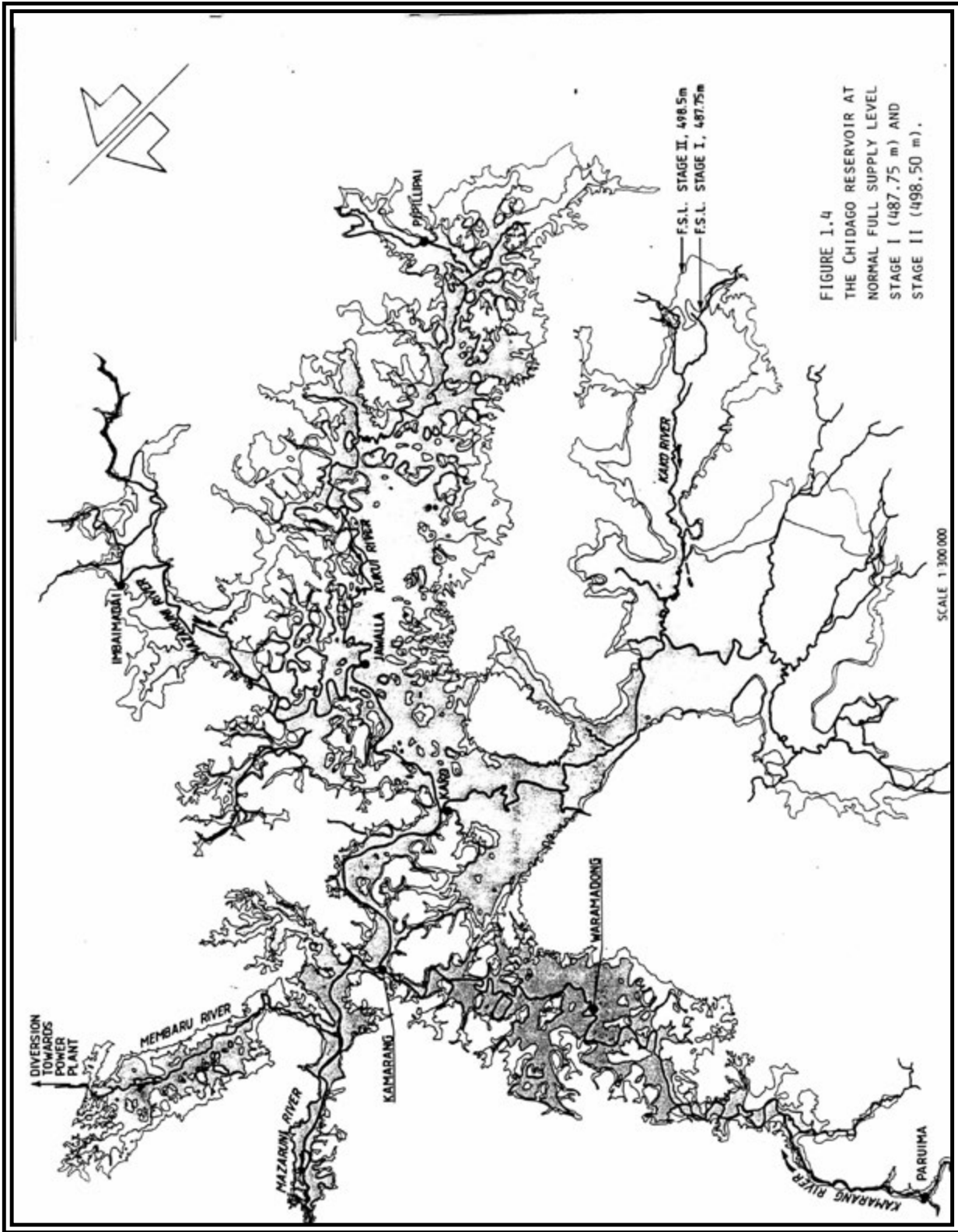
Since the preparations of the Preliminary Report, the area as well as the volume of the Chidago [Sand Landing] reservoir have been recalculated, resulting in an increase in reservoir size.

However, this increase has not appreciably changed the amount of people which will have to move due to the flooding of the land, nor has it to any considerable extent altered the principal ideas of the resettlement plan presented in the draft report.

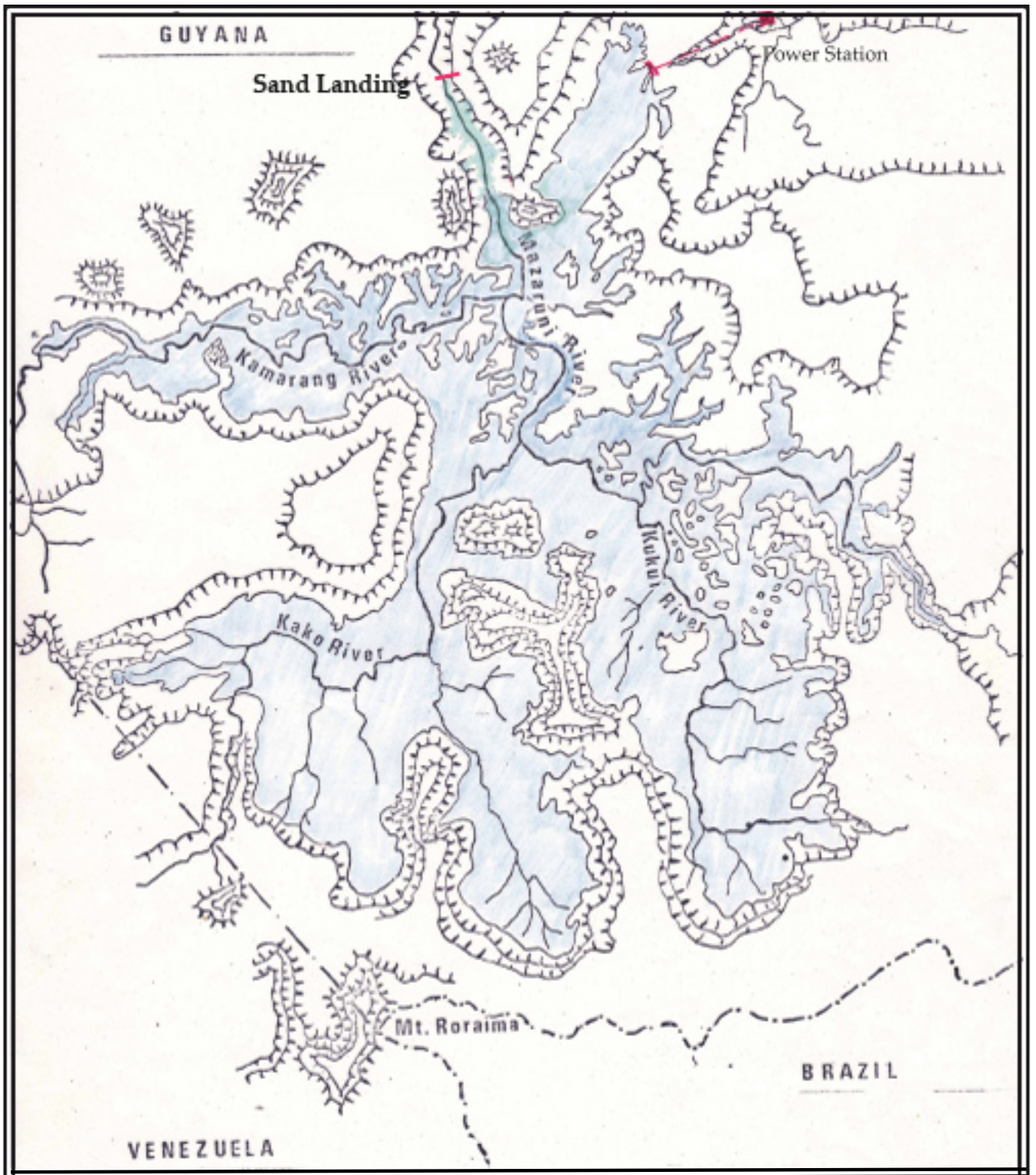
SWECO (Report 1983: 4-9) calculated that in Stage 1 the reservoir would cover an area of around 1,350 km² (521 sq. miles) at normal F.S.L. (full supply level) of 488.m (1600 ft) and of 490 m (1,608 ft) under extreme conditions. At Stage 2 the reservoir area would cover some 2200 km² (849 sq. miles) at F.S.L. 498 m - 500 m (1,634 ft - 1,640 ft). SWECO remarked that Stage 2 would result in an inundation of land some 1.5 times larger than that flooded at Stage 1.

However, the additional number of people affected by this increase in land flooded would be less than that since most of the villages in the Upper Mazaruni Basin are situated within the Stage I reservoir area. (SWECO Report: 59-60)

After flooding in Stage 2, all the main villages and most of their lands would be under water or unsuitable for settlement.



Map 3
 SWECO: Upper Mazaruni Additional Field Investigations: Resettlement of Amerindians in the Upper Mazaruni



MAP 4.

UPPER MAZARUNI HYDRO-ELECTRIC PROJECT

Reservoir formed by impoundment level of 1700 ft. (518.16 mts.) Phase 3.

THE CONSEQUENCES OF AN UPPER MAZARUNI DAM

The Human Population

The SWECO Report presents an investigation into 'the effects of the inundation on the people living in the area to be flooded' (Preface: 1). Its conclusions for Phases 1 and 2 are summarized in a Map, (Fig. 1.4, p. 8:), reproduced here as *Map 3*. The Report pp. 60-64 depicts the extent of inundation and its impact on Pilipai, Imbaimadai and Paruima villages and their surrounding lands at Stages 1 and 2. Referring to Stage 1 SWECO (pp. 39 & 84) names seven villages and several minor settlements within the proposed reservoir area. Waramadong, Kamarang, Kako, Jawalla villages would be entirely inundated. Paruima, Pilipai [Pipilipai, Pipillipai] and Imbaimadai would be partially flooded in Stage 1. In Stage 2 all would be inundated although Paruima and Pilipai would retain a few houses and cultivable land on high ground. Imbaimadai would be entirely inundated. *Map 4* depicts the extent of the inundation at an impounded level of 1700 ft (over 518 m) (Bennett, Colson & Wavell 1978)

These villages not only exist today, but have increased in size and population and possess schools, churches, community centres and health posts. Moreover, since 1983 several new villages and a number of family farm settlements have been established as the population continues to grow. Most of the new villages are on, or near, the main river banks and would also be inundated. Ironically, the Government Administration during the 1950s had pursued a policy of persuading those still living in the forest at a distance from their main river to move to a riverside site for convenience of access. A prime example was Kataima, around 2 - 2½ hours' walk into the forest, away from the Upper Mazaruni River. This village site was abandoned in 1963-4, the population dividing to live at Quebanang its waterside landing, or at a new village, Jawalla, founded up the river at the Kukui confluence. (For details of the several factors behind such moves see Butt 1977.) The extent of flooding (depicted in the SWECO Report, 60-4 including maps) shows that when Phase 2 is implemented all the Upper Mazaruni villages will be inundated and their inhabitants forced to move, with the exception of Chinowieng, on the Ayanganna plateau in the far south. However, this village is threatened by another hydro project, that of Phase 3 of the Amaila Falls Project (discussed above). The SWECO Report does not dwell on the consequences of Phase 3 of the Upper Mazaruni Sand Landing project, but a further raising of the dam would necessarily leave only the high ground around the perimeter of the flooded area and the elevated foothills and individual mountains emerging from the surface of an inland sea covering the remainder of the Upper Mazaruni basin.

The SWECO proposals meant that there might be a slower build-up of the inundated area and a lower dam initially. However, the ultimate aim in both the SWECO and Harza studies was the same and would result in a flooded area of over 1,000 sq. miles (2,590 km²). In the *Harza Environmental Appraisal* of 1975 there is reference to a population of some 4,000 Akawaio and Arekuna who would be affected directly or indirectly by the Upper Mazaruni Hydroelectric Project. In 1976 there is mention of 4,500 Amerindians (Oliver Hunter: 17). Since then a high birth-rate has been noted for the indigenous peoples of the region, including the Akawaio and Arekuna, with a reported increase of 3.2% per annum. This would bring today's total population in the Upper Mazaruni District, including those domiciled outside but who regard it as 'home', to at least 10,000.

Added to this displaced population would be the effects on communities living in adjacent areas which would receive numerous refugee relatives from the flooded region. 'Arekuna'

(Pemon) inhabiting the middle sector of the Kamarang River would retreat up the river to join Pemon relatives resident in Venezuela, in the neighbouring areas of the Gran Sabana (the upper Caroní basin), in the Upper Cuyuni and along the Wenamu, whom they constantly visit, trade with and inter-marry. Those at the head of the Kako and Kukui would most likely take refuge in neighbouring Brazil, with the Kwatin group of Akawaio relatives at the head of the Cotingo River. Should they be displaced, the Chinowieng - Haieka community near Chai-chai, on the Mazaruni - Potaro watershed, would most likely take refuge with the Patamona in the Upper Ireng valley. There are strong trading relations and marriage alliances between them and they are both of the same ethnic affiliation, being 'Kapon' by autodenomination. (Butt Colson 2009 b) This assessment is confirmed by the findings published in the SWECO Report, (71-9), as a result of their investigation as to where the Upper Mazaruni population would choose to take refuge in the event of displacement.

A sudden increase in population in the adjacent highland grasslands to the west would lead to severe strain on already scarce resources of cultivable soils (necessarily in forest), on game, fish and plant materials for technological use. There would be the problems of integration of the refugees into different national entities (Brazil and Venezuela) with different languages and political systems. There would most likely be a souring of relationships between the local non-Ameridian populations of the three Nation States affected and there would be a lasting grievance in the ejected population and its ethnic unity at large, due to dispersal and alienation of kin groups and the deprivation caused by an enforced loss of an ancestral homeland.

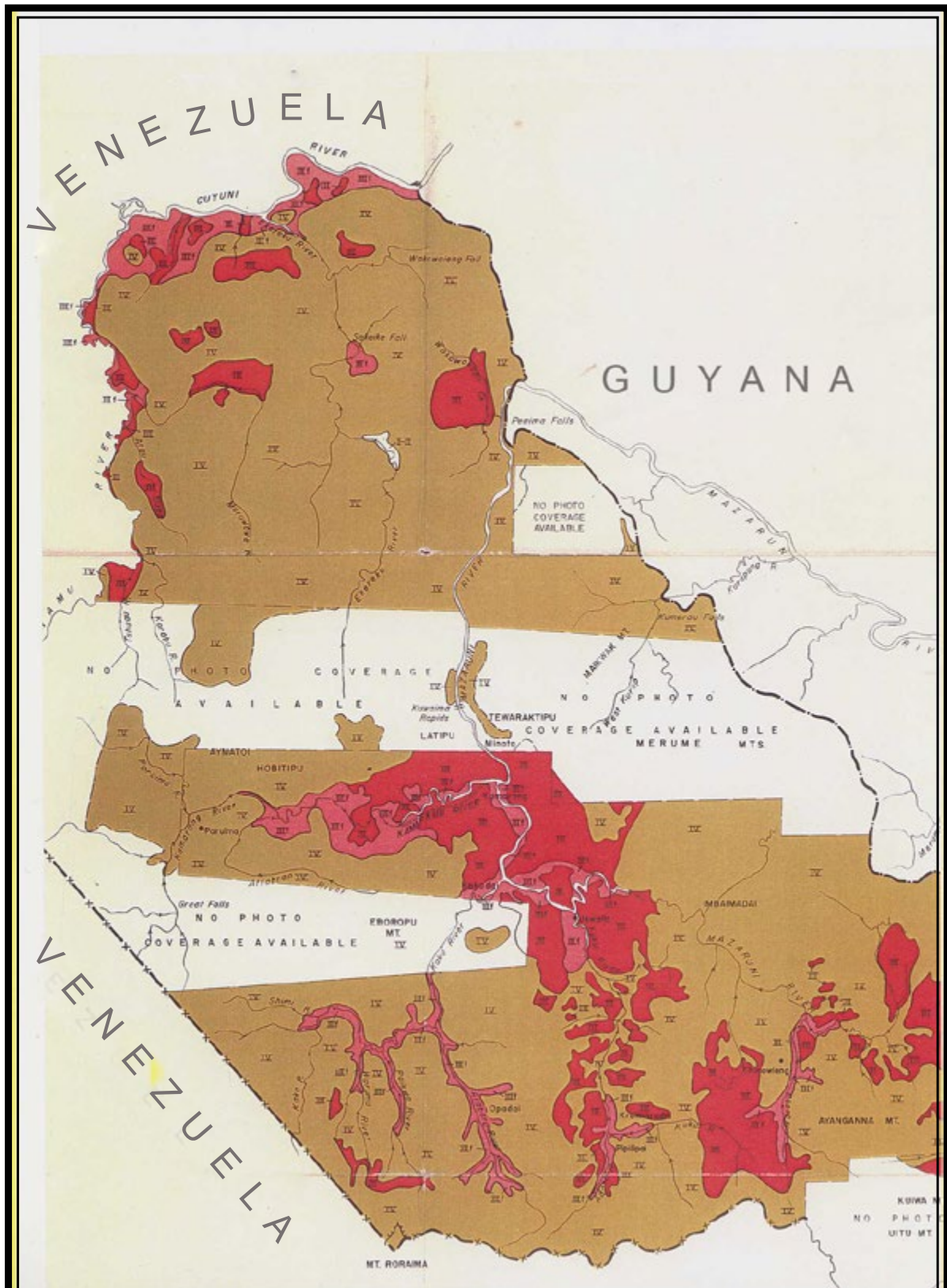
The inundation of the Upper Mazaruni means the destruction of a People through the obliteration of ancestral lands and of the complex of relationships within a social structure which rests on a particular, unique topography and fluvial system. As the Upper Mazaruni people state: *'the way of living in these mountains is a thing we learned from the land'*. Historical sources confirming their occupation of this area, under their nicknames 'Akawaio' and 'Serekong' (Serikong), date back to the mid 17th century. (Butt Colson 2009 a: 22-3, 29-30, 34.) We can therefore assert that their landholding goes back to "time immemorial".

Inundation entails the obliteration of an economy which is based on specialized knowledge and a technology specific to local resources, passed on from generation to generation within each community. Although modified by the introduction of money, of mining, wage labour and shop-traded items, the traditional way of obtaining a living remains. Cultivation is still basic for remote populations and the Upper Mazaruni people skilfully select the best areas for cultivation in a region of very impoverished tropical soils which require the sustainable techniques of slash and burn in a system of shifting or long-term rotation. The 1964 map (Map 5) entitled *Land capability classification of the Pakaraima Mountains, West-Central British Guiana*, executed by the FAO for the UN, shows that the best soils of the area are mostly the narrow strips of land along the course of the main, Upper Mazaruni River and along its major tributaries, the Kamarang, Kako, Kukui and Haieka. These best lands will, the reports on the Upper Mazaruni Hydroelectric Project show, be the first to be inundated. Removal of populations to the peripheries of the flooded land on the inauguration of Phase 1, will mostly be to areas deemed by the FAO to be *'Nonagricultural Land'* having *'very severe limitations to general agricultural use'* or categorized as *'suitable for natural vegetation only'*.

Not only the economy is at stake, but also the alignment of local groups forming a structure of interrelationships which is founded on the fluvial system of the Upper Mazaruni valley. Families are associated in local communities, and as such are distinguishable from each other

in accordance with the river area, or portion of a river area, that each community occupies. Each names itself and is named by others by that river and may be further subdivided by its sub-tributaries and their occupants. The river network is therefore a blueprint, on which the social structure is modelled and its component groups identified relative to each other. Thus, the people of the settlements on the two main rivers, the Upper Mazaruni and its major tributary, the Kamarang, are named as the *Mazalinigok* and the *Kamalanigok*. Both have tributary river groups. For example, the *Mazalinigok*, the Mazaruni people, sub-divide into the Kako River people (*Kako-ri-gok*), 'the people belonging to the Kako River'. Similarly, there are the Kukui River people and the Haieka River people. Possession of a river area and of its resources traditionally passed down the female line, in a bilateral kinship system accompanied by uxori-matrilocal residence. That is, a son-in-law is expected to take up residence with his wife's natal family, to work with them and for them and, in the process of time, take over the ownership and care of the family lands. Villages with their encircling scatter of family settlements and farms, operate within their river territory and an individual or family from a different river area might only move to exploit the resources of another territory by marrying in or negotiating a special agreement with its local inhabitants, normally supported by a kinship link to them.

A vital part of the social structure and economy is the practice of a dual system of residence, whereby a family (usually extended, incorporating several generations) maintains a village residence and cultivations and also a farm residence at a distance. This is the most efficient, ecologically-friendly and sustainable method of utilizing scarce and scattered resources – of good soil, animals and fish and the forest materials for manufacturing boats, houses, tools, pots, baskets etc. Added to this are remoter areas which are kept as nature reserves (*potawa*) for the regeneration of species and therefore rarely visited. These reserves appear to the non-indigenous as areas of forest which are not occupied, are remote from human habitation and are therefore considered to be open to exploitation. In fact, these reserved areas of traditional community land are vital, constituting undisturbed breeding grounds for animals which disperse to other areas where hunting is permitted. In the conceptual system of the Upper Mazaruni people, these reserved areas are where the Masters of the various species live and care for their progeny as they multiply. A Master, or Mistress, is the concept of an embodiment (*esak*) of the life force of a species or resource. It is discrete, named and can be communicated with, traditionally in shaman seances. For example, there is the Master of the Peccary, the Mistress of the Manioc and Gardens. The Master/Mistress oversees the well-being and fertility of the species or resource it embodies and represents and, in appropriate instances, controls the movement of the resource it relates to, leading it and protecting it, as for example, in the case of the fish runs and spawning. A Master/Mistress may manifest in another species which is in an association and symbiotic relationship with the one it represents. Thus, a herd of peccary is often accompanied by a small bird which sings and signals that the herd is present in the forest and it is believed that the Peccary Master is embodied in the bird. It is the duty of the human master of a settlement (the *pata esak*) to ensure that the nature reserves are respected and that exploitation of them is restricted. Although the forces of nature, the movement and fertility of species, are envisaged through semi-anthropomorphic images and beings, the system itself is scientifically sound. These concepts embody and underpin a pragmatic form of land ownership and management that has the objective of safeguarding and maintaining resource areas which will provide a sustainable supply of food and materials for the community. In this management system, the spiritual dimension, the legal ownership and the use of land resources are coherent and mutually supporting (Butt Colson 2009 a: 260-3).



MAP 5
Land capability classification of the Pakaraima Mountains,
West Central British Guiana. Executed by the FAO for the UN, 1964

MAP 5 LEGEND

LAND, CLASS & MAP COLOUR

DESCRIPTION

III_f

PINK

POOR AGRICULTURAL LAND WITH FERTILIZATION POSSIBILITIES (Severe limitations for general agricultural use)

Soils which would otherwise be good to moderate agricultural land except for low fertility and remoteness, cost of transportation makes the use of fertilizers uneconomic. Only shifting cultivation possible.

Soils are deep, well drained, brown, sandy loams to clays developed on siliceous river terraces, pediments and residual areas nearly level to gently sloping relief.

III

RED

POOR AGRICULTURAL LAND (Severe limitations for general agricultural use.)

Soils are mostly deep, well drained, brown or red, gravely clay loams and clays associated basic and laterite rocks, rolling and hilly relief and low to moderate fertility. Occasionally deep very gravely (laterite) soils on gentle relief, also shallow to moderately deep, poorly drained sandy soils of low fertility with nearly level to gently sloping relief.

With proper management, low to moderate yields of locally adapted crops may be obtained from shifting cultivation methods of farming.

IV

BROWN

NONAGRICULTURAL LAND (Very severe limitations to general agricultural use)

Soils may be deep or shallow, excessively drained, sterile white sands, or brown silty and clayey soils, occasionally rocky, on plateaus, or yellow sandy clay loams, frequently eroded in savannahs on steep mountain slopes, occasionally deep, poorly drained, effectively sterile, white sandy soils occur in nearly level pediments and river terraces. This class includes many areas of rock and rocky soils.

Suitable for natural vegetation only.

Although both differentiating themselves and relating to each other as discrete communities within a segmentary system based upon the occupation of river valleys, the Upper Mazaruni people are united by the concept of being *A'murugok*, 'People of the Headwaters', a unique cultural entity (by language, custom and general way of life and thought), located at the sources of the Mazaruni River. Faced in the 1970s with the prospect of ejection they asserted:

This land keeps us together within its mountains — we come to understand that we are not just a few people or separate villages, but one people belonging to a homeland.
(Bennett, Colson & Wavell: 9)

Land ownership, at its maximal level of community ownership, is spiritually sanctioned. Traditional myth recounts that twin culture heroes, Makunaima and Chigi, were the ancestors of the local population. They were the children of Sun who had come on Earth and espoused a woman of water and earth, thus symbolizing a union of light and warmth, moisture and material substance to make new life. Adventuring in their lands and reformulating them, the twin heroes bequeathed them to their grandchildren-descendants who are the present-day owners. Christian beliefs added to assertions of a sacred ownership:

... we are living in these lands that God has given us...
(Bennett, Colson & Wavell: 9)

The Environmental Consequences

a. The Loss of Bio-diversity

Environmentalists note that the summits of the unique mountains of the heights of the Guiana Shield, isolated for millions of years, harbour endemic plants, animals and landscapes that occur nowhere else on Earth. They also note the fact that these are among the most spectacular and least explored mountains of our world and they point to

... the need for the conservation and protection of the Guiana Highlands as one of the remaining natural treasures of Planet Earth. (McPherson 3)

The forest clearance for the Chidago Reservoir will entail the destruction of a vast area of pristine tropical evergreen forest. Harza (Report 1975: IV-12) calculated that:

Creation of the reservoir will reduce habitat of terrestrial wildlife by some 128,000 acres [51.799 hectares].

The destruction of flora and fauna through the implementation of an Upper Mazaruni hydro project will therefore be enormous. Moreover, the creation of an inland sea of such magnitude will, in unforeseen and unplanned ways, inevitably affect the surrounding region, including the Gran Sabana on the west in Venezuela and the Upper Ireng and Upper Cotingo in adjacent areas of Brazil. In Guyana, the whole of the Mazaruni River valley will be altered and the relevant part of the Essequibo River affected.

The process of clearing will now be easier and quicker owing to technological advances since 1975, when Harza referred to the possibility of resorting to chemical defoliation. It was envisaged that some timber would be salvaged and carried out by the construction road and sold, but that much of the forest material would have no commercial value and would have to

be burnt in the dry season. Moreover, there would have to be a programme of clearance over several seasons because of the massive fires and to avoid burning up animal life. (Harza Report 1975: IV-10-12) There does not appear to be any serious, long-term study of the consequences to the natural life in the immediate project area to date.

b. A Region of Vital Fluvial Systems and Watersheds

Amazon, Essequibo and Orinoco waters stem from this same land mass, the heights of the Guyana Shield. Notably, it is where, on the Brazilian side, the Ireng, Cotingo and Surumu Rivers have their sources and headwaters, which run southwards into the Amazon system via the Rio Branco and the Negro. On the Guyanese side, the Cuyuni, Mazaruni, Potaro and Siparuni rise in the North Pakaraima Mountains, notably in the Roraima Range, and flow eastwards into the Essequibo. The Caroní River, the major tributary of the Lower Orinoco, rises in the western sector of the Roraima Range and the Gran Sabana, to run northwards. Overall, this is an area of varied and interdependent ecological systems and interfaces (of highland forests, sandy savanna grasslands, mountains and escarpments).

These three major fluvial systems are closely inter-related. It should be noted that in the north-east of the Gran Sabana six streams (of which the Kamarang River is the major one) flow eastwards into Guyana as part of the Essequibo catchment area, but have their sources in Venezuela and are proximate to the Apanguao and its sub-tributaries in the Kukenan-Caroní valley. These river heads are rarely depicted on maps of Guyana and, often, are incorrectly shown as rising well short of the present frontier line.

These important rivers which have their sources and headwaters in the highlands, are reservoirs of fresh water supply for the populated lowlands of Guyana and the industrialized areas of Estado Bolívar, Venezuela. They also provide an essential flow of water for development in the increasingly populated valley of the Lower Rio Branco in the Brazilian Roraima State and they contribute greatly to the maintenance of water levels in the Amazon basin. They ensure control of erosion and flooding and the retention of nutrients and sediments in their respective valleys.

Thus it is asserted that:

The mountains of the Guayana Shield harbor one of the last uncontaminated freshwater reservoirs in the American tropics. (Conservation International, Washington: 'Conservation Priorities for the Guayana Shield, 2002 Consensus', p. 6.)

Venezuelan scientists have stressed the importance of protecting the tepuis (the table-top mountains of the Roraima region, accorded National Monument status,) because these are related to the volume of rains. (Francisco Olivares, 'Guri Downfall'. *El Universal* 19 March 2010.) However, there is not just the question of effects on the degree and location of rainfall, vital as these are, but on water quality affected by major changes in the physical characteristics of the water resources in and downstream from the Upper Mazaruni Hydro Project area.

Within the Project area, the primary changes will be related to converting a swift-flowing river, confined to a well defined channel except during peak flows, to a reservoir covering vast areas, with a barely perceptible flow. (Harza Report 1975: IV-1)

Harza also refers to the increased flow of water discharged through turbines of the Kurupung power plant and an increase in water levels below the escarpment downstream from Kurupung Landing, which would be inundated, concluding that the flow regime would have a favourable influence on navigation conditions as well as on the potential for hydropower development on the downstream section of the Mazaruni River. There is also a forecast that the augmentation of the flow and flood control in the third phase of the Project would also be evident throughout the length of the Lower Mazaruni and the Essequibo and could affect the Essequibo estuary fishing. (Harza Report 1975: IV-3-7)

c. A Region of Climatic Regulation

It is generally agreed that the Pakaraima Mountains perform an important role in the regulation of the region's micro-climate. In addition, the heights of the Guiana Shield are being increasingly recognised as one of a few particularly sensitive areas safeguarding global climatic stability, affecting an area extending from Argentina in the far south to the southern States of the U.S.A. in the north.

Notable desiccation has been reported over the years in the Rio Branco savannas to the south, in Brazil. Additionally, there has been a series of excessively severe and prolonged droughts in the region. In 1988, 1992, 1998, 2003, 2005 and most recently in 2009-2010, there has been a series of long, dry periods marked by hundreds of fires which have devastated both forest and grasslands. In Estado Roraima it was reported that, by February 2010, the drought had already lasted 70 days. (*UOL Noticias*, São Paulo, 19/02/2010. 'Roraima tem 332 focos de incêndio; todos os municípios foram afetados pela ação do fogo.') Some forested areas, such as that of Yanomami country in Brazil, have suffered unprecedented drought in which rivers have dried up and wells have had to be dug to provide a supply of drinking water. Large rivers such as the Rio Negro have registered the lowest recorded level. Violent changes between excessive floods and droughts have led to enormous destruction and the conclusion that deforestation in the Amazon basin has greatly aggravated the situation (*El País* 29 December 2009: 'Alarma en la Amazonia brasileña.' By Juan Arias - Rio de Janeiro.)

In Guyana, 26th March 1998, the then President Mrs Janet Jagan declared a state of National Emergency:

... following severe and widespread damage, destruction and loss in many sectors of the national economy as a result of the prolonged dry season attributed to the El Nino [sic] phenomenon.

The negative impact of the lack of rainfall includes inadequate supplies of fresh water; forest fires; extremely low levels of water in the rivers causing salt water from the Atlantic Ocean to move upriver into areas of cultivation and human habitation; crops in the agricultural sector and livelihood and viability of the miners have been affected.

The Amerindian community in Guyana has suffered the most with food and potable water shortages leading to threats of starvation and destitution. (Guyana High Commission, London. Press Release. April 2, 1998)

This situation was repeated in 2009-2010. Water shortages have been suffered by coastal populations, the rice plantation crops have died due to lack of fresh water for irrigation and the intrusion of salt sea water has occurred through insufficient river water to repel it. (*Stabroek*

News 13 February 2010: 'Water shortage looms'; *Stabroek News* 20 February 2010: 'El Niño leaves farmers feeling the heat.')

In Venezuela, the results of droughts and of debasement of the Caroní basin through mining and logging combined to have dire effects on the hydro-electricity supply which, through the Guri complex of dams on that river, normally provides some 73% of the country's electricity, both domestic and industrial. The decline in the water level in the Guri reservoir was such as to inhibit the operation of the turbines and there were fears that this, the third largest hydro-power project in the world with a capacity to produce 10,000 MW, would collapse. To counter this, emergency measures began in November 2009 with a programme of reduction of energy consumption by 20% and there was daily recording of a decline in the levels of the reservoir from December 2009 onwards. The curtailment of basic industries was ordered at the beginning of January 2010, notably a reduction of steel production by Siderúrgica del Orinoco (SIDOR) by allowing one furnace only, and similarly limiting the production of aluminium by VENALUM and ALCASA. There was widespread rationing of the hours of electricity, resulting in daily blackouts across Venezuela. Thermo-electric plants and installations were taken out of storage in an enforced return to thermal energy provision. (*Analítica* 06/02/2010: 'Plan de recorte eléctrico sigue sin detener descenso del Guri.')

By the beginning of February 2010 the reservoir was at its lowest levels and in March the Guri was reported to be in a state of emergency. The programme of rationing had not been sufficient and there was even a suggestion that energy should be purchased from Colombia, Brazil or Ecuador. (*El Universal* 07 March 2010: 'Guri tiene que bajar su generación para evitar operar en nivel crítico.')

Estado Roraima, in Brazil, was also badly affected. The export of Guri power to Brazil, via powerlines which had been constructed in 2001 across the Gran Sabana and down the Rio Branco valley, was reduced and led to blackouts in Boa Vista and several other townships. (*Correio Brasiliense*, 31/01/2010: 'Crise energética atinge Roraima'. By Edson Luiz) Then the flow ceased entirely and there was a revival of thermo-electric power in Roraima State to substitute. The Brazilians planned to send a group of their own specialists to Venezuela to help in the implementation of emergency measures and efficiency in electricity production. When, in May-June, the rains finally arrived, seven turbines out of the twenty which Guri has were not only out of service but were considered to be irreparably damaged and rationing was forecast to persist for the rest of 2010 and into 2011. The lack of a sufficient energy output has continued to be a problem up to the present.

The Case of the Guri Hydro Complex

Since the Guri in Venezuela is the nearest hydro power project to Guyana where similar projects are still in the planning stage, it is useful to examine the Guri case more closely.

According to some Venezuelan scientists, the effects of environmental damage in the Caroní basin have been more harmful than El Niño. Although a lack of maintenance is also implicated, it has been claimed that initial plans for the development of the region were seriously flawed. In the 1960s huge investments began in the Guayana area based on the availability of abundant water resources.

The plan included the development of a metallurgical industry, which would be expanded by mining and completed with a city like Ciudad Guayana, under a blueprint similar

to that of *Brasilia*. (*El Universal* 19 March 2010: 'Guri downfall'. By Francisco Olivares.)

In order to safeguard the Caroní River basin and its crucial water supply, the Canaima National Park was established in 1962 with an area of 10,000 km² and in 1975 the Gran Sabana was added, increasing the Park to 30,000 km². The outstanding beauty of its scenery, the importance of its geology, biological diversity, scientific uniqueness and the cultural values of its indigenous inhabitants, the Pemon, were recognized internationally by the grant of *World Heritage* status by UNESCO in 1994. The Park was meant to protect this, the highest northernmost area of the Guiana Shield, and preserve the water resources which the Guri hydro project required for the lowland populations and projected industries.

However, deforestation and gold and diamond mining, in the highlands of the National Park, in the Paragua, the major tributary valley, and in the surrounding lowlands (including the 'Reserva Forestal de Imataca' in the Cuyuni valley), have done tremendous damage to the fluvial system, leading to the near collapse of Guri electricity production for the nation. An example of large-scale deforestation was that carried out by a Canadian Company calling itself 'Yellow Jack', which took place in the Kukenan valley, the headwaters of the Caroní River. Whole mountains and hillsides were clear-felled, leaving bare rock and an occasional pool of stagnant water. Many years of extensive mining using dredges in the river and its tributary streams, the felling of trees and the removal and washing of earth along the banks, have been judged to have irretrievably altered the hydrological system. The use of vast quantities of mercury rendered the waters yellow and toxic, to the degree that it was forbidden to eat any surviving fish. Much of the mining was illegal, but tolerated by the authorities despite the fact that, in Venezuelan law, the exploitation of gold is prohibited in national parks and despite the vital importance to the nation of the Caroní water resources.

Garimpeiros from Brazil and miners from Guyana, Colombia and Dominica, as well as Venezuelans, have been involved. It was reported in 2002, for example, that near the head of the Caroní in the region of Icabarú, some 5,000-6,000 illegal miners, many from neighbouring Brazil, had caused great destruction. On the middle reaches lower down river, near San Salvador de Paúl, more than 300 machines were excavating, and for a number of years there has been mining in the Carrao above its confluence with the Caroní, carried out by a group of Guyanese. It is no wonder therefore, that in the recent 2009-2010 drought it was reported that the Caroní could be forded on foot in that area, owing to the dramatic and unprecedented shrinking of its waters.

Of the 30,000 estimated miners recently working in the Caroní basin, some were a response to a government initiative to encourage the formation of mining cooperatives. When an attempt was made to reverse this policy by a mixture of Army raids and destruction of dredges combined with a promise of payments and offers of alternative employment, riots by unemployed miners resulted. Ultimately, Venezuelan scientists attributed the country's electricity crisis to a lack of alternative projects and environmental damage in the Caroní River (*El Universal*, 19 March 2010: 'Guri Downfall.' By Francisco Olivares. English version.)

In Guyana an attempt was made to curb mining and its destruction of forest in order to meet the needs of the government's 'Low Carbon Development Strategy' (LCDS). However, the mining town of Bartica was brought to a standstill as a consequence, and there were mass protests at what was considered to be a threat to the existence of small and medium scale gold

miners when the Government proposed a six-month notice period before any mining operation could begin after the grant of a concession. It was estimated that in excess of 100,000 people were directly and indirectly supported by the industry. (*Stabroek News* 29 January 2010: 'Bartica plans shutdown over mining notice.' By Gaulbert Sutherland.) Up to the present, any effort to restrict the Guyanese mining industry has been doomed to failure. This is well illustrated by the recent attempt to stop the giving of licences for mining in rivers from the beginning of June 2012. By August, the Guyanese Gold and Diamond Miners Association (GGDMA) had mobilised a campaign with a vote of no-confidence in the Minister of Natural Resources and the Environment and in the Chairman of the Guyana Geology and Mines Commission, causing the latter to resign. Assurances were extracted from President Donald Ramotar that there were to be 'no bans on river mining or on the use of mercury'. (*Stabroek News* 4 August 2012: 'Miners get green light from gov't on river claims, mercury.')

In the Wenamu River (a major tributary of the neighbouring Cuyuni valley, the frontier river between Guyana and Venezuela), 18 dredges, all but two belonging to Brazilians, were reported in 2008 to be working the river and rendering the water unusable for the inhabitants of San Martin, at the confluence downriver. Up the river, on the Guyanese bank, at least six mining operations, legally entitled, were devastating the cultivable lands and fishing grounds customarily used by the Akawaio inhabitants of Arau village, but which had not been included in the village land entitlement grant of 1991 (*Stabroek News*, articles by Gaulbert Sutherland; 'Arau residents say mining has polluted, diverted river', 21 July 2008; 'Of scenic beauty, Birdman and the delivery room', 27 July 2008; 'Adventures in Arau (Part Two)'; 'Scenic beauty and the contrary world of mining', 03 August 2008.) In Court in Georgetown, the Village Captain and Council argued that they had occupied the land from time immemorial and the mining activities were destroying the Arau forests, their fishing and ability to survive off the land. There had been mercury pollution and poisoning. The Chief Justice, distinguishing between titled village land and land over which Arau had communal usufructuary rights, found that the titled land had not been breached and that any communal usufructuary rights of the Arau people to the area of land in question had not been extinguished. He ruled that the applicants were entitled to an environment which was not harmful to their health and well-being and that the usufructuary value of the land to the way of life of the applicants as an indigenous people should not be diminished by the mining activities.

He noted that

... even though the GGMC [Guyana Geology and Mines Commission] has granted mining concessions to the said area of land to a number of miners and there are at least six mining operations being carried out in that area "it is significant to note the Arau villagers and the other Arau settlers have not removed from their respective locations". It is also significant, he said, that it was always open to them to shift their locations to and within the 23.8 square miles of land granted to them. (Stabroek News 16 May 2009: 'GGMC must make reasonable efforts to ensure Arau residents not affected by mining – Justice Chang')

Effectively, the Arau community had lost its case and had been told that they had the option of abandoning their homes and resources to make way for the miners. Yet the Wenamu valley was found to be occupied by Akawaio and Arekuna when they were first contacted, by Robert Schomburgk in 1842, and all subsequent travellers confirmed their occupation and use of the land, river and tributary streams. (Butt Colson 2009 a: 143, 148-150) These mining

activities, which the appeal to a Georgetown Court failed to curtail significantly, were also heavily contaminating the Wenamu via its tributaries, and affecting the nearby settlements on the Venezuelan bank.

Environmental abuses and their ecological consequences were graphically recorded by Carlos Azpurua for the Caroní basin in his 1996 film *'El Bosque Silencioso'* ('The Silent Forest'). This did not inhibit an increase of mining in the National Park of Canaima and in the Paragua valley resulting in a massive destruction of ecosystems. Illegal airstrips allowed the transport of gold to neighbouring countries, Colombia, Brazil and Guyana, where it was sold, so avoiding tax in the country of origin. For example, in one sector of Canaima National Park *garimpeiros* were extracting more than 600 kilos of gold monthly, which were sold in Brazil and Guyana.

Apart from the effects of El Niño (long droughts followed by very heavy, prolonged rains and damaging floods) accompanied by accusations of governmental incompetence and lack of investment, it is also generally understood that the problems of the Guri stem in large measure from extractive activities, both legal and illegal, which have degraded parts of the Caroní basin, silting up the Guri reservoir and clogging up its machinery.

... all the solid debris is thrown into the Caroní River together with the discharge of sediments. 'This situation further worsens the problems that the Guri dam presents since this is not only considerably affecting the river-bed, the contamination of its waters, but is increasing exponentially the excess of sediments which continue being deposited in the reservoir of the hydroelectric plant' ...

The situation contributes to the fact that the solution for the present problem of the generation of electric energy 'far from being solved, is guaranteeing permanence in the time of crisis in the supply of electricity...' (Barinas, 12-01-2009. 'Minería ilegal devasta Parque Nacional Canaima.' 'Illegal mining devastates Canaima National Park'.

Quotation from Alejandro Lanz, President of the Consejo de Investigaciones Ecológicas de Venezuela. Translation by AJBC.)

The problems of the Guri hydro complex and of the Caroní River, and the causes of their dramatic degeneration, present a good example of how climatic factors are exacerbated by human activities in which immediate economic gain gives rise to long-term disaster. Those responsible for development in the adjacent regions of the same land mass clearly need to take account of the lessons which the Guri provides.

THE PAKARAIMA MOUNTAINS AND THE ISOLATION FACTOR

The Guiana Shield is recognized as one of the most ancient and vulnerable ecosystems on Earth. Its heights, the Pakaraima Mountains and adjacent savannas, are one of the world's most beautiful landscapes. Its unique characteristics attract numerous scientific expeditions whilst an ever-increasing number of tourists, many thousands per annum in the case of Mount Roraima and the Gran Sabana generally, indicate that it is one of the most sought-after destinations.

Since time immemorial this area has been the ancestral home of the various regional groups ('tribes') of the Pemon and Kapon peoples, which include the Akawaio and Arekuna of the Mazaruni valley and the Patamona of the Potaro and Upper Ireng valleys. There are firm

archaeological indications that there has been a human presence in the region dating at least as far back as 9,000 years. The social structure, economy, conceptual system and the whole way of life of its present inhabitants are embedded in this landscape, its climate and its biodiversity, flora and fauna. Their understanding of its nature is unrivalled and expressed in oral literature, poetry and song, that have the power both to explain and to captivate.

The Pakaraima Mountains, Gran Sabana and surrounding highlands still today have pristine forests, grasslands and rivers, bearing witness to a successful system of management of natural resource use practised by their indigenous inhabitants down the centuries. However, ravages due to mining and deforestation, and burgeoning tourism in the case of the Gran Sabana, are now beginning to take their toll and there is urgent need for protection. Up to recent times the highland region and its inhabitants were protected by their isolation. Long journeys through lowland tropical forest, up rivers made dangerous by falls and rapids, led to the sheer rock walls of the Pakaraima escarpment of the north and east (*Plate 2*). Colonists departing from their coastal settlements failed to penetrate, let alone exploit, the lands they were seeking. The first European to record Roraima, its neighbouring mountains and the Gran Sabana, was Robert Schomburgk in 1838 and later with his botanist brother Richard, in 1842. They took the southern route, up the Rio Branco valley. Since then, the Roraima Range and Gran Sabana have constituted a mecca for a great variety of scientists and climbers from all over the world. A romantic aura and scientific interest were combined in the famous novel by Conan Doyle, *The Lost World*, inspired by Mt Roraima itself, long thought to be unclimable and speculated to have ancient, unevolved life on its summit. The first ascent by Europeans was by Everard im Thurn and H.I. Perkins in December 1884. The first recorded, non-indigenous traveller into the adjacent Upper Mazaruni basin was the naturalist C.F. Appun in 1863-4. He walked the three day trail from Kurupung (now the proposed route to the Sand Landing dam construction site), emerged on the Upper Mazaruni below the Kamarang confluence and reached the Gran Sabana and Roraima via the Kako River and Upper Kukui valleys. Sporadic explorers, scientists and, later, missionaries followed, but no administrative headquarters were located in the region until nearly the mid twentieth century. This was in 1931 at Santa Elena de Uairén on the Gran Sabana. In the Upper Mazaruni, it occurred when a government station was established at Imbaimadai and a District Officer was located there in 1946. Air transport giving easy access and regular supplies, and radio telephone contact with the outside, were the transforming factors.

Isolation and Road-Making in Guyana

The Amaila Hydro Project Road

A press release by Synergy Holdings Inc., 16 September 1999, referring to the incipient Amaila Falls Hydro Project, stated

This project will open up access to the interior of Guyana by allowing for overland, travel to the top of the escarpment. This itself represents the potential for a host of ancillary benefits to Guyana including Eco-tourism.

The Amaila Falls Hydroelectric Project EIA 2002: Executive Summary p. 3, states that

The opening of a new access road to the site would result in better access to an isolated and undeveloped area.

An additional statement (p. 61 of the Report) specifies that the road would provide access to both timber and mineral resources '*that were previously only accessible under considerably difficult conditions*'.

It is a well-known fact, witnessed from all over the world, that roads of access bring many problems as well as some benefits. Once a road exists there is the means of major extractions of raw materials and resources of all kinds, from gold, precious stones, uranium and rare earths, to exotic wildlife and plants. In forested areas roads allow commercial timber enterprises to develop for the first time. Up to the present, serious deforestation has been impossible in the Pakaraima Mountains since there has been no road of penetration up the eastern escarpment. Extensive, heavy mining operations have similarly been restricted in that machinery has had to be flown in and then reassembled.

In the context of the Upper Potaro, we should note that an enormous deposit of high quality bauxite is reported in the valley of the Kopinang River (a major right bank tributary of the Upper Potaro). Discovered by Goldstone Resources during gold prospecting operations in the Pakaraimas in 2005, their interests led to an option agreement with BHP Billiton. Financed by the latter, sampling and further exploration took place. (Goldstone Resources Ltd. 'Interim Results for the Six Months ended 31 August 2006', Chief Executive's Report, 22 Nov. 2006.) Informal reports revealed that RUSAL, already working bauxite mines in the Berbice and Demerara valleys, was planning how to get access to the Kopinang deposit for the purpose of starting open-cast mining there when the global economic crisis began in 2007 and the price of aluminium plummeted. There appears to have been no public statement referring to this deposit, reputed to be the second largest in the world, after that already being exploited in New Guinea. However, it is listed with other upland commercial deposits of bauxite (Hammond: 434).

Meanwhile, there are indications that a road/track was already being made in the Kopinang village area during 2011. This emerged during the annual conference of the National Toshias Council, reported by *Stabroek* Staff. During an interview the Kopinang Toshias (Village Leader) stated a concern:

'I did not get a response as yet but the road from the mountain top needs to be diverted. It is very steep. We want them to make another one. Two bridges also need to be built. One on the same road and one near to lower Kopinang. Both are bad. I did not get a response.' (*Stabroek News* 1 August 2011: 'What the people say.' Guyana - Press extracts - Low Carbon Development Strategy and 2011 meeting of National Toshias Council - 01 August 2011. 'Their annual conference - issues raised, responses received.')

A road up the Pakaraima escarpment for access to the Amaila Falls dam and reservoir will entail the addition of some 32 miles of new road. It would provide an entrance to the Kopinang deposit and break the isolation which has, up to the present, protected the ecosystems of this area of the Pakaraima Mountains. This would be the main impact of this particular hydro project in that, in addition to the destruction of forest necessary to create the Amaila Falls reservoir and an expanded Phase 2 to divert water from the Potaro in the area of Kaieteur Fall, it will enable logging to occur and extractive industries to multiply, including open-cast bauxite mining – all of which would destroy pristine forest and rivers over a vast area. It would also destroy the lands and the social and cultural integrity of the indigenous inhabitants for it is reported that 28 settlements of Patamona (Kapon) are located on top of this deposit.

With the exploitation of the Kopinang bauxite an accompanying need is likely to develop: that of abundant and cheap hydro power for three smelters and two refineries of RUSAL and BOSAI. Since the Amaila project has a relatively small output and is meant to generate electricity for domestic Guyanese use and present industry, it will not (in its first phase at least) provide for even one smelter for RUSAL, let alone the two smelters which BOSAI, the Chinese bauxite company, requires, and additionally the refineries envisaged by both enterprises. In other words, with the objective of creating an aluminium complex there is the accompanying danger that attention will turn to the water resources of the Upper Mazaruni, either to the Chai-chai - Potaro Diversion to supplement the output of Amaila and/or to the vast project based on a dam at Sand Landing. The Chai-chai Diversion in the south of the basin would cut off the flow of water from the source and headwaters of the Upper Mazaruni River, thereby starving the lower, downstream sector of water in the dry seasons and periods of drought. The Sand Landing dam below the Kamarang confluence would inundate the entire basin as far as the approach to Chai-chai gorge. In the worst scenario therefore, the Upper Mazaruni people would be dried out, or flooded out – even both together by the construction of the Chai-chai Diversion in the south and the Sand Landing Project in the north. The neighbouring Patamona of the Upper Potaro would be dug out.

Upper Mazaruni Access Roads

Public attention has been concentrated on the construction of an all-weather road and powerline corridor traversing the Lower Potaro forests from the Essequibo River to the foot of the Pakaraima escarpment at Amaila. It has so far escaped attention that a parallel process of road-making has already been quietly proceeding in the Mazaruni valley. Recent reports indicate that there have been three road/track-making enterprises, causing the Upper Mazaruni people grave concern.

There is the intention to link the mining village of Kurupung (in the forest lowlands below the Pakaraima escarpment) with Imbaimadai (on the Upper Mazaruni River in the mountains). This would connect two mining areas operated by coastlanders. Kurupung has been a much frequented mining area since the 1920s. Imbaimadai was designated a mining area in 1959, when a third of the Upper Mazaruni District was de-reserved and mining was permitted in the area between Imbaimadai and the river source in the Merume Mountains. It has been asserted, in 2011, that Guyana paid a Brazilian Company \$G 60 million (\$US 300,000) to make the connection, but that later in the year the money ran out and the work left incomplete. The present situation is unclear.

A Brazilian involvement has also been reported in the Aruwai Falls - Sand Landing stretch of the Upper Mazaruni, below Kamarang Mouth. It consists of a two mile track made through the forest, seemingly to enable a Brazilian mining enterprise at Aruwai Falls to avoid a dangerous stretch of river in their gold dredging operations up-river in the Sand Landing area. A satellite image reveals a large airstrip between two bends in the river at Aruwai, so presumably the Brazilians there use this for their supplies and outside contacts in preference to the airstrip at Kamarang Mouth. It is probable that the Aruwai landing ground was made by RUSAL, reported as working in the Sand Landing - Chiriki'eng Falls area when making their 2007-2010 feasibility study of the dam site (see above). Because of its location at Sand Landing this section of road, seemingly isolated at the moment, has caused speculation and alarm amongst Akawaio. The reason for the road building has never been revealed to the Akawaio despite repeated requests for information. Notably, the Toshao (leader) of Warawatta



Plate 2a
The Pakaraima escarpment
edge viewed from the
Kurupung River Aug. 1952



Plate 2b
Kumarow Fall on the
Kurupung trail, Aug. 1952

village community at Kamarang Mouth, on asking the then President Bharrat Jagdeo at a meeting of the National Toshi Council (NTC) about the road, was told that the government knew nothing about it. On pressing for information the President is reported to have publicly referred to the Toshi as “a mad woman”.

A third, different enterprise now in the process of breaking the land isolation of the Upper Mazaruni District is the ‘Dream Hole Mining Company Inc.’ – a small, privately-owned business from North Carolina, USA, composed mostly of small shareholders. The Company holds an 800 acre mining concession reputedly rich in coloured diamonds and gold, located on ‘Kurupung Top’ above Kumarow Fall, on the edge of the Pakaraima escarpment overlooking the Kurupung lowlands near the site of the proposed powerhouse for the Upper Mazaruni (Kurupung) dam project. (See *Plate 2a & b*) Since April 2011, the Company has been slowly transporting heavy machinery up the Lower and Middle Mazaruni valley, from the Essequibo via the Itaballi road. This is a dirt road used by mining and logging companies working in the Lower and Middle Mazaruni valley and Dream Hole Mining spent time restoring it, building culverts and improving bridges. Reaching Aricheng Junction in June 2011 the Company pioneered a new road through the remaining miles of forest and, in January 2012 reached the Seroun River, a Kurupung River tributary running at the foot of the Pakaraima escarpment. There they located a portion of the SWECO road, much overgrown since it was begun in the 1970s as an access road to the Upper Mazaruni dam site. It had taken the Dream Hole Mining Company nearly a year to get there. There is a reported cost of US\$ 1M for the construction of a 35-mile gravel road to get to the top of Kurupung Mountain.

There are strong indications that this supposedly small mining company has not just been working simply to transport its machinery to its mine at the top of the Pakaraima escarpment. An article in *Stabroek News* notes:

In addition to the road, which is expected to lead beyond the Kurupung Mountain, Dream Hole will also be building bridges and culverts along the road’s route. (Stabroek News 1 June 2011: ‘Mining co. building US\$ 1M Kurupung Mountain road.’)

The expectation that the road will be extended into the Upper Mazaruni basin is also suggested in an earlier statement about its going through to Kamarang (ie., to the Upper Mazaruni River). We may note the considerable interest that Prime Minister Sam Hinds has shown in the enterprise and a frequently repeated observation by the company that it does not intend to take anything out of Guyana without giving back. We may therefore surmise that there is an arrangement whereby road restoration and a road extension are an agreed part of the Dream Hole Mining contract. This would parallel the arrangements which Hinds quotes with the restoration of the Puruni road with ETK – a Guyanese subsidiary of Sandsprings, a Canadian company – on noting that ‘...this has given a boost to timber and forestry activities along that section, hence there is a need for strong partnerships in forest-based activities.’ (*Stabroek News* 1 June 2011: ‘Mining co. building US\$ 1M Kurupung Mountain road.’)

The major exit of the age-old, three-day land trail route which links the Lower Mazaruni Akawaio settlements to those of their relatives in the Upper Mazaruni basin, is the Membaru River, a right bank tributary located between Kamarang Mouth and the dam site at Sand Landing. In making a road/track sufficient for heavy machinery to ascend the Pakaraima escarpment the Dream Hole Mining Company will open the way for exploitation by mining and logging in an extensive area of pristine forest. Such a link is ominous, for the environment

and for the Upper Mazaruni inhabitants. For an Upper Mazaruni dam to be constructed at, or in the vicinity of Sand Landing, an all-weather road of access will be needed. Referring to such a road, the 1975 Harza Report has this to say:

This road will be used for transportation of men and material during construction of the Project [the Upper Mazaruni Hydro Project] and will assist in making the northwestern portion of the Guyana interior accessible for development and settlement. The road will be linked with a new port near Bartica, and, through Bartica, with Linden and Georgetown. The transmission line will continue to Linden for connection with the proposed aluminium processing plants and the Guyana system network. (Harza Report 1975: III-4)

That the inundation of the Upper Mazaruni valley, its indigenous settlements and their resource base, would be the consequence of the construction of an Upper Mazaruni dam is made abundantly clear in both the Harza and SWECO Reports. However, Harza additionally spelt out the effects of a road very emphatically indeed:

One aspect of the Project ...will likely have more of an impact on the Amerindians of the region if completed, than will the proposed dam and reservoir. This is the access road that will ultimately connect the area with the Bartica area. Completion of this road will permanently end the isolation of the area and will result in a great increase in the pressures of modern living on a people not yet fully able to cope with such pressures. Completion of the road will also open up the area for other development which, if not carefully planned and controlled, could have major adverse effects on the people of the area and on the natural ecosystems. (Harza Report 1975: II-1-2)

The existence of a major road rapidly leads to a proliferation of planned and unplanned side roads and tracks, settlers and loggers all having the potential to transform the total landscape, forming a network for penetration of remaining areas of isolation and their resources. What is true of road construction in the north of the Upper Mazaruni basin, is also true of the construction of a Chai-chai - Potaro Diversion in the far south, near the river head. This would inevitably require a major road linkage between the Amaila Falls and its Phase 3 dam site at Chai-chai, connecting the Upper Potaro basin with the Upper Mazaruni basin. A road to the Kopinang bauxite deposit would be an inevitable accompaniment.

As regards Harza's argument concerning the pressures of modern life on semi-isolated peoples: a combination of loss of ancestral lands, destruction of homes and forced removal, the consequent rupture of community relationships, homelessness and an overwhelming presence of extractors and developers both legal and illegal, form a lethal scenario that is more than any cohesive group, its natural habitat and resources, would withstand.

MINING IN THE UPPER MAZARUNI DISTRICT

Environmental and socio-cultural effects of mining on rural communities are well documented. For example, there is an up-to-date account of major changes and problems experienced by the Makushi (Pemon of the North Rupununi) and of the hazards of past and future development (Watkins, Oxford and Bish: 165-219. See pp 212-3 depicting horrific mining damage.) Environmental effects include sedimentation in rivers and destruction of streams,

deforestation and widespread degradation of ecosystems due to the use of mercury and cyanide. Mining, ultimately unsustainable, is a destroyer of the resource base that is vital for the continuity of life forms. Thus, wildlife disappears under this attack on its habitats. Social and cultural effects on human communities inevitably follow, with health hazards introduced or exacerbated. For example, there was no malaria in the Upper Mazaruni until the beginning of the 1960s when it was introduced from the mining areas in the neighbouring lowlands at the time when, in 1959, one third (1,500 sq. miles: 3,884.98 km²) of the Upper Mazaruni District were de-reserved and coastland miners flooded in, bringing disease and a different way of life with them. Negative social consequences included diet impoverishment, increasing rates of alcoholism, prostitution, sexual abuse and sexually transmitted diseases, including HIV- AIDS (Eudora Report 1977. Forte 1997: 68-83.)

The Upper Mazaruni people are well aware of the notorious crime and violence in Guyanese mining areas, and of the danger of armed criminal gangs which operate freely across remote international frontiers. They fear the rapid spread of violent attacks, of robberies, of the spread of social diseases and, above all, an increasing theft of indigenous lands. Indeed, they have already begun to experience some of these problems. Robberies began to occur in 2011 - the incipient road tracks having facilitated a rapid escape by the culprits. Two murders carried out by coastland miners were reported in March 2012. One Akawaio was shot and the other, at Imbaimadai, beaten to death.

There has been unexplained sickness. Thus, in November 2011 the inhabitants of Chinowieng village fell ill with diarrhoea and vomiting. The sickness was linked to the discovery of dead fish and dead fishing birds found floating in the nearby Haieka River, where the Chinowieng families maintain their farming settlements and where they fish. However, dead fish and river animals, as well as the creatures feeding on them, such as vultures, were subsequently reported from other major tributaries of the Upper Mazaruni, the Kukui, Kako, Kamarang and Membaru Rivers. Up to the present there has been inadequate investigation and the cause remains unknown, or has not been made public. A basic factor must be a serious degeneration in the water quality and the Akawaio attribute this to the mining in the rivers.

The consequence has been a general fear inhibiting the use of river water for drinking, cooking and even bathing and a resort to the purchase of tanks for rain water harvesting. However, this is not a trouble-free solution for tanks collect no water in the dry season and cholera has been linked to them. Additionally, the destruction of fish over the whole District means the disappearance of the major protein component in the diet, entailing the need to purchase imported salt fish, frozen chicken etc., which impoverishes the local diet and places an economic burden on families. A vicious circle is thereby set up as the indigenous inhabitants turn increasingly to mining for themselves, or taking a percentage from miners allowed to work in entitled community lands, these being, often, the only ways to obtain the cash they now need to subsist. Added to this is the tragedy that several indigenous miners have already died in pit falls.

This implication of Amerindians themselves in mining has dismayed their NGO supporters and been used as an argument by non-Amerindian miners to justify their own mining activities. However, the logic behind Amerindian involvement has been clearly expressed. They say that strangers are coming into their lands and destroying them. So they themselves (the indigenous people) have also to destroy these lands since they will anyway be destroyed and at least the indigenous owners will obtain some benefit if they do the same – otherwise they will get

nothing. This seemingly implacable statement is modified by other arguments, such as those in a *Statement by the Toshaos of Region 7*, August 8, 2012 reproduced in Appendix C (b). In this, we may note the following points:

1. Several communities do not wish their lands to be mined, either by themselves or others. A case in point is the Kako River people who have never allowed mining in their river but now find that a concession has been given to a Brazilian miner without their knowledge or consent. The Kamarang River communities have also resisted mining.

2. The Village Councils can revoke permission to mine if their community miners are found to be harming the environment by unacceptable practices.

3. Local indigenous miners cannot ignore the Village Council and cannot engage in abusive behaviour since they are members of that community and beholden to a close kin network.

Added to the above is an expressed wish to be taught the most friendly methods of mining so as to do the minimum of damage to human health and the environment.

These arguments are underpinned and justified by events relating to recent mining concessions given out in the Upper Mazaruni to Brazilians and Guyanese coastlanders. In 2011 there was the report that a non-indigenous miner at Imbaimadai had bulldozed and destroyed an Akawaio house and cultivations. Another incoming miner, up the Kukui River, was trespassing on the legally-recognised community lands and refused to leave. The Brazilian in the Kako had been given a concession up river in an area where the local people go to hunt, fish and farm, causing the people of this river valley to fear that their travel route might be barred and their food supply impaired. In another instance, a miner who was permitted to mine in community land on payment of a percentage, mistook the legitimate ownership and paid the wrong community on the Upper Mazaruni. The situation was rectified only after a long series of complaints and investigations. There is a long-running dispute over a miner who claims he has a licence for mining in the community lands of Warawatta village (Kamarang Mouth) although the villagers have not given their permission to what they see to be illegal activity.

Many such incidents are time-consuming and difficult to resolve and sometimes lead to court proceedings in Georgetown. Nor is the outcome always satisfactory for the indigenous inhabitants, as the Arau case, described above, illustrates. They see the land as rightfully theirs and, when it is alienated, they suffer from resource deprivation at a time of population growth and when they have need of all their traditional resource base. The literary record confirms that these communities have always occupied and lived off the lands where they are found living today: that they are ancestral lands and have been used and managed "from time immemorial" (from before the arrival of colonists and settlers from the Old World: see Butt Colson 2009 a: Part I, The Historical Record). Added to this is the fact that much of the land being given out as mining concessions in the Upper Mazaruni District is within the areas being claimed by the Akawaio in the High Court in Georgetown, in a case in which they are suing the Guyanese Government for legal title to ancestral lands, which they hold on a communal basis. The entirely unsatisfactory nature of this Court's proceedings is crystal clear: the case began in 1998 and today, in 2013, has not yet been resolved!

A recent statement of future policy relating to mining on indigenous lands does not offer hope of any respite with regard to mining on legally entitled community lands. We may note the following:

The Ministry of Natural Resources and the Environment will be moving to hold consultations to develop a policy for mining on titled Amerindian lands while safeguarding the rights of villages under the Amerindian Act. In a statement, the ministry announced yesterday that it has initiated discussions with the Guyana Geology and Mines Commission (GGMC) and the Amerindian Affairs ministry and it is broadening the discussions to include other stakeholders on the early development and implementation of a policy and plan of action. (Stabroek News 20 January 2012: 'Policy for mining on titled Amerindian lands to be developed'.)

The Protected Areas Act of November 2011 provides the framework for the establishment and management of a national system of protected areas and for the setting up of a National Protected Areas Trust Fund for sustainable, long-term financing of protected areas. However, whilst stressing that Protected Areas will provide important services (maintenance of essential water supplies, climate change mitigation and adaptation, creation of investment opportunities and employment), Minister Robert Persaud also asserted that:

...the Trust Fund must not be restricted to supporting strict conservation activities, but be flexible enough to support sustainable use initiatives, particularly among indigenous communities that have traditional user rights to the areas... The Minister also issued an appeal for other stakeholder not represented to take the opportunity provided to make tangible contributions. He especially referred to international partners and suggested that an outreach could be developed in this regard. He made it clear that Government's undertaking and investment in the National Protected Areas system is not in conflict with plans for the extractive industry. (Demerara Waves 16 November 2012: 'Stakeholders to develop five-year plan for Conservation Trust Fund'.)

It would seem from this statement that the policy will remain "mining as usual".

Meanwhile, mining concessions continue to be given out in the Upper Mazaruni District in ancestral areas claimed by the indigenous owner - descendants. The latest development is the arrival of a number of Chinese miners in Imbaimadai, raising protests amongst coastland miners, Brazilians and others already entrenched there. (*Kaieteur News* 17 July 2012: 'Local miners lament "Chinese take-over" at Imbaimadai.')

This event immediately raises concerns over future intentions apart from those related to mining, but perhaps involving logging and, eventually hydro power resources – all without consultation until, it seems, decisions have already been taken and events unfold without warning or remedy.

THE PRESENT SITUATION: 2010-2012

In a speech marking the bestowal of the UN's highest environmental honour just conferred on him, then President Jagdeo said in relation to his Low Carbon Development Strategy (LCDS):

We made it clear that indigenous people's rights would be respected and that there would be free, prior and informed consent. (Kaieteur News 15 May 2010: 'Jagdeo honoured for "Champion of the Earth award".)

This speech was made less than a week before the *Stabroek News* and the *Guyana Chronicle* published the articles of May 20th and May 21st 2010 which recorded the revived plans for an Upper Mazaruni hydro project involving RUSAL and Brazilian companies, notably Andrade Gutierrez SA (see above). This was also the time when RUSAL had just finished their three year, 2007 - 2010 feasibility study of hydro sites in the Upper Mazaruni basin - a study which was made unbeknown to the inhabitants there.

Even more emphatic is a letter published by Peter Persaud (*Guyana Chronicle* 14th August 2010: 'Kaieteur News article mischievous, misleading'), referring to an article in that newspaper of 10 August 2010, with the title 'Akawaios and Arekunas will lose livelihoods with hydro project – Int's report'. Referring to this '*very mischievous, misleading and wicked article*', Persaud made the following statement:

- 1. The government of Guyana will never implement a project that will affect the livelihoods of its indigenous peoples and make them refugees.*
- 2. A proposed hydro project in Guyana's hinterland would have to undergo a social and environmental impact assessment and once the proposed project would affect the livelihoods of Amerindian communities that proposed project will never be implemented.*
- 3. Projects in hinterland areas will have to receive the free, prior and informed consent [FPIC] by affected communities.*
- 4. The Survival International report which stated the Akawaios and Arekunas of the upper Mazaruni will be severely affected by a hydro project is based on political motivations and releasing at time when general and regional elections will be held next year [2011]. The report is therefore designed to fool the indigenous peoples of the upper Mazaruni and the issuing of this report on the international day of the world's indigenous peoples is an injustice done to the Akawaio and Arekunas of the Upper Mazaruni.*
- 5. Survival International as an international organisation based in the United Kingdom should conduct responsible and professional investigation or research before releasing their reports which no doubt are based on secondary information in the case of Guyana.*

Perhaps Mr Persaud has been in ignorance of discussions, proposals, plans and feasibility studies made with regard to the revival of an Upper Mazaruni hydro project and its consequences, which were what Survival International was challenging. (See the correspondence between Survival and the Minister for Amerindian Affairs, Appendix B) Perhaps too, a renaming of the project as the 'Kurupung Project' may have deceived him. Whichever the case, the most recent statement, by the Prime Minister, should now have enlightened Mr Persaud.

On 27th February 2012 a former Minister of Finance, Carl Greenidge, queried the choice of the Amaila Falls as a suitable hydro-power site and asked why a Brazilian proposal of collaboration with Guyana to build a hydro facility had been passed over for another, Chinese sponsored one. He was referring to Sithe Global's arrangement to employ a Chinese contractor

to build Amaila and the proposed acceptance of a US\$ 413 million loan from China towards its cost. (*Kaieteur News* news item, Monday 27 February 2012: 'Greenidge questions suitability of Amaila Falls for Hydro-power'.) The Brazilian 2009 proposal referred to appears to relate to the Turtruba site on the Lower Mazaruni, which the Brazilians were considering before the Guyanese Government re-directed them to the Upper Mazaruni (Kurupung) site and to talks with RUSAL (see above).

In his answer to Greenidge's queries the Prime Minister, Samuel Hinds, made the following, extremely interesting, statements (*Guyana Chronicle* Letter to the Editor, 27 February 2012: 'Amaila a suitable choice for hydropower to satisfy Guyana's domestic needs'):

... Guyana has not ignored the offers from Brazil but, rather, continues to aggressively work with Brazil as quickly as the procedures and processes of the two governments allow.

Hinds then specified:

... let me firstly assure Mr. Greenidge and the people of Guyana, that following the meeting [Sept. 2009] and Joint Communiqué issued by Presidents Bharrat Jagdeo and Luiz Inacio Lula Da Silva, a Brazilian government mission came to Guyana, and subsequently an MOU was entered into for the Brazilian side to develop a study of potential hydropower sites within the Mazaruni and Potaro river basins, including diversions within and between the two basins.

Previous studies which are in the control of Guyana would be made available as a starting point. Consistent with this MOU, arrangements are presently being made with the Brazilian government for a consortium of two large Brazilian Hydropower Design and Construction companies to pursue the relevant feasibility studies, which are a requirement for such major projects.

Both the Guyanese and Brazilian governments are keeping before them the attractive possibilities for the development of hydropower sites in Guyana, for sale of electric energy to Brazil, specifically into northern Brazil, which itself is still at a relatively early stage of development, and in which various supporting infrastructures are still to be, and are being, developed.

Whilst remaining open to the outcome of the studies, but taking account of the distances involved, rules of thumb would suggest that production and export/import of at least 1000 MW would be desirable, with probably 500 MW being the economic minimum.

Referring to the constraints on timing the Prime Minister remarked:

We are, nevertheless, encouraged by recent discussions with our Brazilian counterparts.

Referring to the history of hydro project studies in Guyana, he noted that in 1976 there had been a report '*...that had identified 60-plus sites and which had recommended 15, including Amaila, for further study*'. A 1982 review by SWECO identified six sites for focus. These were Tiger Hill [Demerara River], Tumatumari [Lower Potaro River], Tiboku [Middle Mazaruni River], Amaila and Kaieteur [Upper Potaro River], and Upper Mazaruni, listed roughly in order of increasing size.

The first four would be aimed at meeting existing local needs — the last three could meet additional needs of a local smelter, or for export. Tiger Hill, Tumatumari and Tiboku are each less than the 125 MW we need today. Amaila falls in both groups — ... Utilising only the Kuribrong and Amaila rivers, Amaila is good for about 150 - 200 MW, but with diversions of water from the Upper Mazaruni and Upper Potaro, it could be increased to about 1100 MW.

The diversions of water from the Upper Mazaruni and Upper Potaro have to refer to Phases 2 and 3 of Amaila, which implicate Kaieteur (Phase 2) and the Chai-chai - Potaro Diversion (Phase 3). (See above.) However, it is clear that Hinds favours an Upper Mazaruni hydro project of some kind because, as quoted above, he considers that *'production and export/import of at least 1000 KM would be desirable'*. In addition, he states:

The adjacent Potaro and Mazaruni river basins, the subject of the current MOU between the governments of Brazil and Guyana, hold the potential for some 4000 MW, or more, out of the total potential of some 7000 MW for Guyana. The SWECO Upper Mazaruni design, which the government was pursuing in the mid-1970s, projected a single power station of up to 3000 MW, with a huge flooded area instead of the cascade of four or more stations envisaged earlier by MONENCO, [Montreal Engineering Co.] with much less flooding, much less storage, much less smoothing of power developed through the year, and likely higher costs.

The Prime Minister then indicates that the prevailing formalised environmental and social impact study procedures are now of a much higher standard than previously and he gives an assurance

... of very public procedures and processes for consideration and mitigation, if at all possible, of negative environmental and social impacts on any, and all, stakeholders of any such developments.

INDIGENOUS LAND RIGHTS

The mostly hidden record shows that it has been the intention of a succession of Guyanese governments to work towards the construction of one or more massive hydro projects in the Pakaraima Mountains, the heartland of the Kapon People, the Akawaio and Patamona regional groups, but also affecting Pemon ("Arekuna"). In association with these projects is a programme of mining which, in the case of the Kopinang bauxite, would extend the damage upriver from the Amaila complex with its two following phases. The effects of these enormous developments on the downriver indigenous settlements of the same ethnic affiliation, have yet to be assessed but will also be great - in both the Middle Mazaruni and the Middle Potaro rivers. There are legal and moral issues relating to this indigenous population which need urgent attention. (See *Appendix B* the Letter from Survival International to the Minister for Amerindian Affairs, for details on Guyana's legal obligations under international law.)

Guyana voted to adopt the 2007 United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) which recognizes indigenous peoples' rights to collective land ownership

and makes extensive reference to the obligations of States to provide free, prior and informed consent (FPIC) to any development on their lands.

Guyana is a signatory to the International Convention on the Elimination of all Forms of Racial Discrimination (CERD). The CERD Committee, in its observation and general recommendations on State obligations and indigenous rights under the Convention, calls upon States to '*ensure that members of indigenous peoples have rights in respect of effective participation in public life and that no decisions directly relating to their rights and interests are taken without their informed consent*' (GR XXIII 51 concerning indigenous peoples adopted at the Committee's 1235th Meeting, 1997.)

In August 1994 Guyana ratified the UN Convention on Biological Diversity, having previously signed up to several related international treaties including the Convention Concerning the Preservation of World Cultural and Natural Heritage.

On 9th November 2009, Guyana and Norway signed a Memorandum of Understanding regarding cooperation on issues relating to climate change, notably those relating to the reduction of emissions from deforestation and forest degradation in developing countries (REDD-plus 1), the protection of biodiversity and the enhancement of sustainable, low carbon development. For a Low Carbon Development Strategy (LCDS) Guyana would receive substantial funding from Norway, namely US\$ 250 million over five years. Then President Jagdeo stated that US\$ 30 million initially flowing from Norway would also be used for '*buying into the equity on hydro projects*' and he stressed that '*the government will use the funds received from its Low Carbon Development Strategy to push development in the country, including investments in hydropower plants, biodiversity research and in the hinterland region*'. (*Kaieteur News* 15 May 2010: 'Jagdeo honoured for "Champion of the Earth" award' & *Stabroek News* 15 May 2010: 'Jagdeo plugs "green economy" to transform economy'.) There are serious contradictions in these pronouncements. How does projected destruction by massive hydro projects under active planning, of the vast, forested area of the Pakaraima Mountains and of the centuries-old sustainable economies and cultures of the inhabitants there, square with the objectives of forest and wildlife preservation and of indigenous cultural and social integrity and human rights? Is it the case that only the sections of the Guyanese forest that will ultimately be preserved will be those with no saleable resources or economic potential? Or alternatively, as was mooted at the time of the Upper Mazaruni hydro project in the 1970s and 80s, the objective is to mine and log the area to destruction and then to flood it?

In the Low Carbon Development Strategy (LCDS) list of projects put forward to the GRIF (the Norwegian-supplied *Guyana REDD+ Investment Fund*) there appears a proposal for inclusive, Amerindian land titling, submitted through UNDP in January 2011. The document was judged to be of such poor quality that it was passed back for re-drafting.

Guyana's various legal undertakings in the international sphere have been accompanied by assertions that the government would be carrying out a process of demarcation and awarding of land titles imminently. For example, at the opening of the October 2010 National Toshaos' Conference (NTC, a body of Amerindian leaders) President Jagdeo said that out of the first tranche of US\$ 30 million that Norway would be paying Guyana, US\$ 4 million would be spent on fast-tracking land demarcation (*Demerara Waves* internet radio, 25 October 2010: 'Some of Norway's forest-payments to buy solar panels, demarcate Amerindian lands. Jagdeo tells World Bank not to dictate, slow-up process'.)

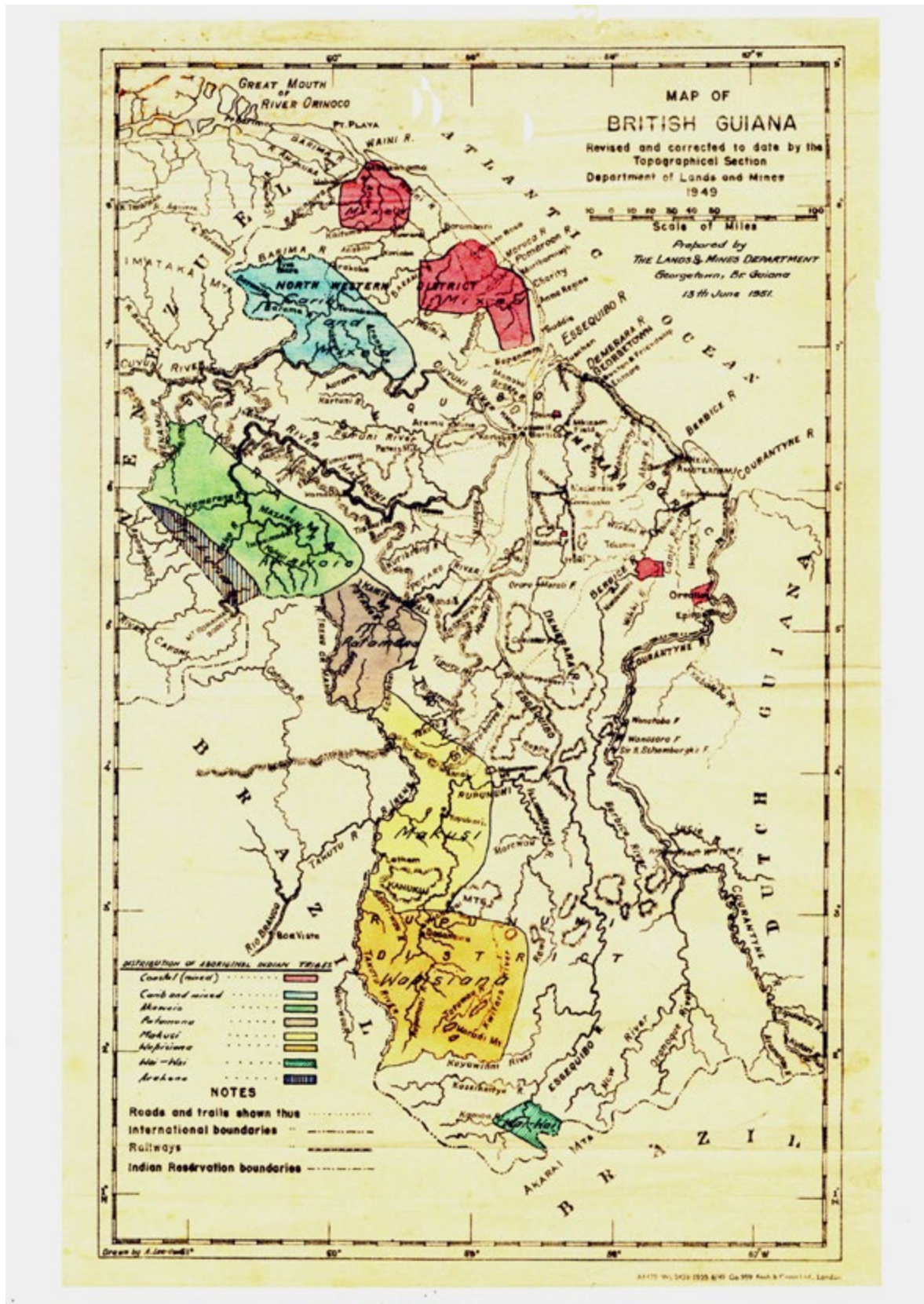
November 2011, at a PPP/C (People's Progressive Party) meeting at Paramakatoi, a Patamona village on the Ireng, President Jagdeo, with the Presidential Candidate Donald Ramotar in attendance, stated that the Party '*...has vowed to work diligently to ensure all Amerindian villages are titled and extensions granted, though acknowledging that the venture is costly*'. He also attacked the Amerindian Peoples Association (APA) for spreading malicious rumours to the effect that the government '*will take away their land*'. He did not mention the existence of the reported vast deposit of bauxite on Patamona land and RUSAL's plans to access it! (*Guyana Chronicle* top story 10 November 2011: 'PPP/C vows to ensure land titles, extension coverage for all Amerindian villages at meeting in Paramakatoi'.)

Then there is the following:

...Foreign Minister Carolyn Rodrigues-Birkitt said that the government was committed to giving the indigenous people ownership of its land. (Stabroek News 27 April 2012: 'Budget 2012 passed, Opposition slashes \$20.88.')

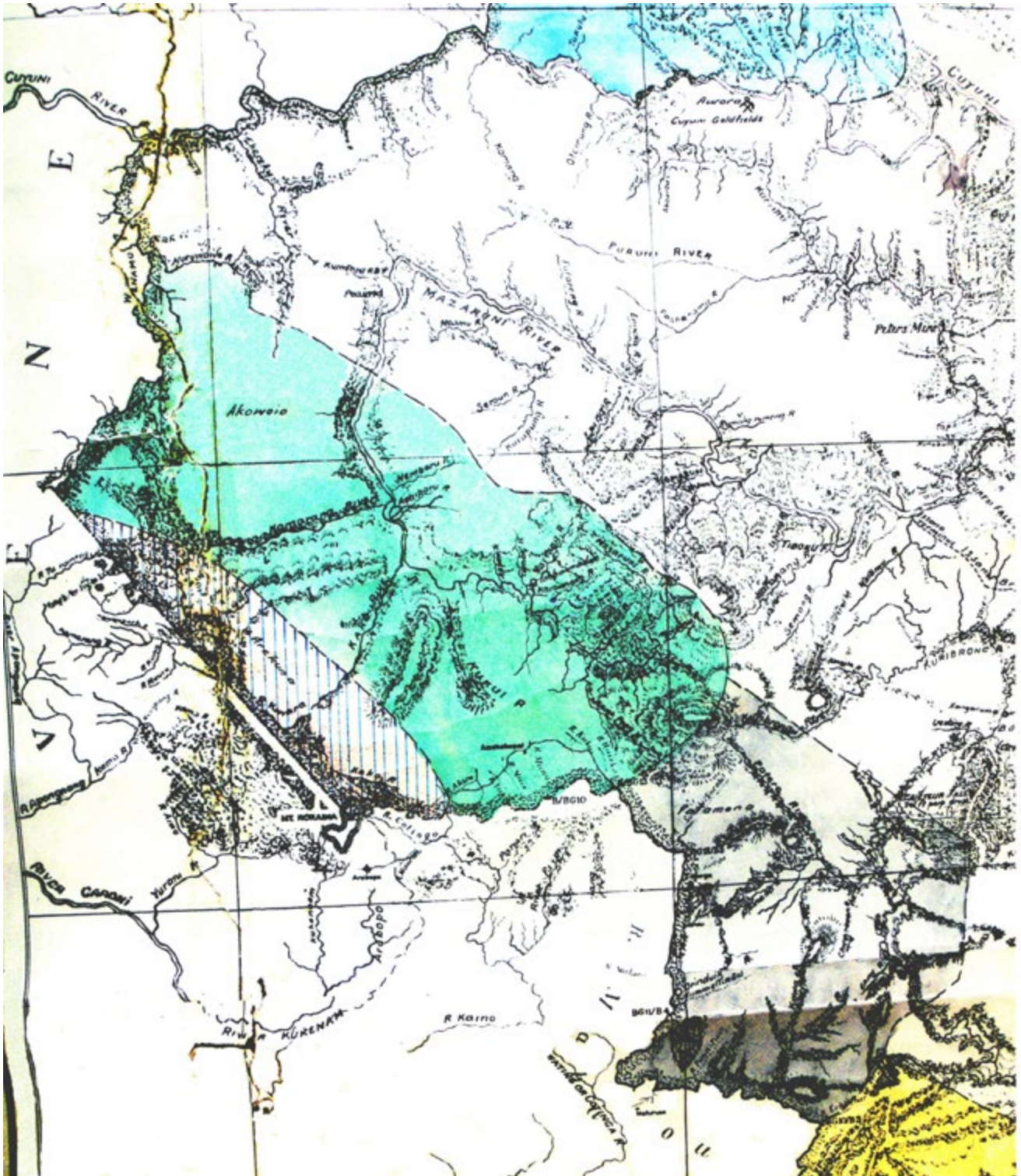
Such assertions, and many similar ones, need to be examined in relation to the repeated efforts of the indigenous inhabitants of the Upper Mazaruni District to obtain legal entitlement to communal ownership of all their ancestral lands and to the resources in them, off which they gain their basic living using their traditional knowledge and expertise. Requests to this end date from the time of the visit to the District by the Amerindian Lands Commission in 1967. In 1991 land titles were accorded to communities based on six villages, Paruima, Waramadong, Warawatta (Kamarang), Kako, Jawalla and Pilipai. Swathes of land, denoted State Land, remained, so dividing and isolating the indigenous owned blocks into three. The rivers remained State owned. There was a growing need for legal title to the original land holdings and their resources due to a rapidly rising population. At the same time the Guyana Gold and Mining Commission (GGMC) began to give out mining concessions to Guyanese coastlanders and to Brazilians in the major tributary rivers. This was perceived by the river valley inhabitants of, for example, the Kako and Kukui rivers, as a breach of their river group rights. They feared that access to up-river farms, hunting and fishing grounds were being blocked and they began to be affected by river pollution from above their villages and settlements, destroying fish stocks and the supply of water for drinking and other domestic use.

By 1998, some twenty petitions for legal entitlement to land extensions, or at least for discussions concerning them, had failed to produce any positive results. The requests were made directly by the elected leaders (Captains/Toshaos) and Village Councils on behalf of their people, as also by representative organizations, such as the APA (Amerindian Peoples Association). A succession of Presidents and governments was involved. For example, in July 1993, the APA wrote to President Cheddi Jagan with respect to Amerindian claims in the Upper Mazaruni District, on behalf of the Village Captains and Councils concerning land entitlement. No positive response was received. In November 1993 the APA again wrote to the President and received a written response from the Minister of Amerindian Affairs, rejecting the request. A petition from Captains, Councillors and villages in the Upper Mazaruni was sent in September 1994, expressing concern at the opening of the area to more mining and protesting at the threat to the local Akawaio and Arekuna people that this posed. There was no positive response. October 1994 a Memorandum from the Captains of the Mazaruni District was sent to the President protesting at the limitations which had been imposed on the presentation of these petitions to the President, preventing them from raising the issue of land titles and



MAP 6

Akawaio and Arekuna lands, upper Mazaruni 1949/51



MAP 7
'Akoweio', Arekuna & Patamona Lands
 Map prepared by THE LANDS & MINES DEPARTMENT, Georgetown
 British Guiana, 13 June 1951
 (Scale 1:1,000,000)

related problems. Again there was no positive response. A written representation to President Samuel Hinds, 15th November 1997, requesting recognition of Akawaio and Arekuna rights in the Upper Mazaruni, also proved fruitless.

Nevertheless, there had been a meeting with President Jagan in 1994 who stated that he needed to be provided with a blue print of how the lands would be used before he could seek to intervene on their behalf. In response, an Arekuna and Akawaio team formed which undertook, with professional assistance and guidance, a resource map project. The map they made demonstrates precisely where the indigenous settlements are and it gives the names of all the topographical features of the District. It details areas of special cultural, religious and archaeological interest, as well as those with resources used by the village communities and their family settlements.

However, not only did representatives of the government do everything they could to stop us making these maps, they have also refused to look at them. We believe that this is a direct contradiction of the many promises made by successive governments. It is also contrary to the National Development Strategy's recommendations concerning Amerindians, not to mention international human rights guarantees applicable to Indigenous peoples, that Guyana is bound to comply with. (amazoncoalition.org Friday, 30 October 1998. 'Guyana: Amerindians Seek Protection For Their Land Rights.')

By 1998 it was obvious to the Upper Mazaruni District communities that their appeals for legal entitlement to all their ancestral lands would not be granted - that they were simply being circumvented or ignored. Meanwhile, they were increasingly suffering from incoming gold miners who were polluting the rivers, destroying the fish and wildlife and rendering the waters unusable. At the end of 1998 a claim for legal entitlement was lodged in the High Court of the Supreme Court Judicature in Georgetown, Van Mendason & AG (AG referring to the Attorney General of Guyana). Continual delays and postponements followed and the Case is now entering its fifteenth year! Meanwhile, destruction of the environment, notably of the waterways, and dislocation of Amerindian daily life and livelihoods has dramatically increased as mining proceeds in the tributaries of the main Upper Mazaruni River, threatening the ecosystems of the entire basin. There has been the murder of individual Akawaio and abusive behaviour on the part of some of the incoming miners in a clash of interests and cultures.

Basically, the Upper Mazaruni communities are asking for legal recognition of their rights to full ownership and management of the lands and waterways within the boundaries of the former Upper Mazaruni Amerindian District (see *Maps 6 and 7*). This request is grounded on the fact that their ancestors, from 'time immemorial' continuously occupied, to the exclusion of all others, the tracts of land in question. By virtue of this they have had, and still have, unextinguished aboriginal title at common law and in equity. Prior to the acquisition of Guyana by Great Britain, as from 1803, the Akawaio and Arekuna people enjoyed under Roman Dutch common law an aboriginal title to the same area which remained vested and is still vested in the membership of their indigenous communities. Historical proof of the unbroken occupation of the Upper Mazaruni basin as reported by the first Old World explorers and settlers, has been assembled and published (Butt Colson 2009 a: Part I: The Historical Record).

Contrary to any argument as to the cost of demarcation, it should be noted that Amerindian lands bounded by natural topographical features (rivers, streams, hills, mountains and watersheds) do not need to be demarcated (section 19 (2) of the State Lands Regulations 1973). This applies in the case of the Upper Mazaruni District, sandwiched between the present international frontier and the edge of the Pakaraima escarpment (west-east), the Potaro watershed in the south and a series of streams to the north. Moreover, there is available the professional map made by the communities at President Jagan's request, covering the Upper Mazaruni District as a whole. Legal title could therefore be granted without very great expense and further delay and if, as government sources repeatedly affirm, all Amerindian communities are to be given entitlement to the ancestral lands they claim, including extensions to existing titled land, the court case should then become redundant forthwith.

The history of the court case encapsulates the problems which mar the relationship between the indigenous and successive governments. Active planning of future massive hydro projects in the Upper Mazaruni, which would flood, and/or dry out, the settlements and lands of the indigenous inhabitants, plainly contradict the numerous assertions of government officials of an intention to award land rights speedily to all Amerindian communities. The present situation as regards the intention to mine out the Pakaraima Mountains to the maximum has similarly been hidden from the Amerindian communities. An open-cast mining of the Kopinang bauxite deposit to the south would eat into and transform Patamona land, resources, society and culture fundamentally. A bauxite deposit in the Upper Mazaruni and the intention to exploit it has similarly been hidden, only coming to light when '*Invitations for proposals for bauxite tenures*' were advertized by Karen Livan, former Guyana Geology and Mines Commissioner:

Secondly, proposals are invited for Prospecting Licence tenures of maximum size 12,800 acres in the Kamarang, Pilwa and Maikwak areas. ('Mining Opportunities in Guyana.' Quarterly Mining Supplement. March 2012.

Proposal details were asked for and a closing date of March 31, 2012 for submission to the GGMC was set.

The mining area advertized is that between the Pakaraima escarpment edge at Maikwak Mountain (inside which the power house of the Sand Landing hydro project is to be located) westwards to the confluence of the Kamarang with the Upper Mazaruni. This would take in portions of Warawatta land, which is already legally entitled (since 1991). Moreover, being on a north-east edge of the Upper Mazaruni, the prevailing north-east Trade Winds would blow the dust and pollution engendered by bauxite mining across the basin's community lands and settlements. The health hazards of this can be foreseen in the perennial complaints of the inhabitants today living in the area of the Linden bauxite mines on the Demerara.

The fear of a future loss of land by the Patamona, was dismissed by President Jagdeo as based on a rumour, maliciously circulated by the Amerindian Peoples Association. The Akawaio learnt only by chance of their bauxite deposit and of intentions to prospect and mine it. Mining, particularly open-cast bauxite mining in the Upper Potaro and Upper Mazaruni basins, would do irrevocable damage to the North Pakaraima Mountain environment and its peoples. Eventual flooding by massive hydro projects would render them homeless and destitute. This might, in a material sense only, be remedied through relocation and financial recompense. However, there is nothing that can substitute or compensate for a total and

definitive disruption of community relationships and for a conceptual system which embraces an intimate understanding of, and a most profound attachment to, the lands of their ancestors. (Butt Colson 2009 a: Part 2)

Apart from the many thousands of people who would be ejected from their homes and lands by the hydro projects and extensive mining operations now being envisaged and planned for, there are many thousands more, closely related and living in the neighbouring territories, who would additionally be affected. There are the hundreds of Akawaio living in the Upper Cuyuni valley in Venezuela and in the Upper Cotingo in Brazil. There are the 23,000 Pemon ('Arekuna') neighbours in Venezuela alone, 15,000 in the Rio Branco valley in Brazil and 9,000 in the North Rupununi in Guyana, where they are Pemon who are better known as 'Makushi' (or Makuxi). Additionally there are some thousands of Patamona (Inkarigo), in the Ireng, Potaro and Siparuni valleys who are ethnically Kapon, as are those nicknamed Akawaio. Anger and bitterness would disfigure political relationships both with some 70,000 people spread across the three countries of the circum-Roraima region today and with their future generations.

These communities are part of an underlying, cohesive system of relationships. What have been denoted as separate 'tribes' are regional groups belonging, in a segmentary system of structure and organization, to an ethnic unity with a self designation. Structural differentiation and allegiances are expressed in a naming system which uses autodenominations, nicknames and environmental designations (Butt Colson 2009 b). In the Roraima area there are two such ethnic unities, the Kapon and Pemon, whose cultures are nearly identical and who have intermarried and traded with each other down the generations. The loss of Akawaio (Kapon) and Arekuna (Pemon) lands in the Upper Mazaruni would therefore have much wider political repercussions internationally than if they were discrete societies within one national unity.

The violent changes which Phase 3 of the Amaila Falls hydro project threatens through a withdrawal of water, and the flooding of the rest of the basin which the implementation of the Sand Landing hydro project would entail, together with their roads of access and processes of development (mining and logging), would destroy a fragile set of inter-related eco-systems and adversely affect a huge region of northern South America and its peoples beyond the intersection of national frontiers on the top of Roraima.

The indigenous peoples of the Pakaraima Mountains thus appear to be in danger of being dug out (by mineral extraction), dried out (if a Mazaruni - Potaro Diversion is implemented), and/or flooded out (if a Sand Landing or similar dam is built). In this modern version of destruction of land and people, the Guyanese government, the respective companies and financial backers would thereby achieve what the first Conquistadors were unable to do, which was to reach this remote corner of the world, commandeer the land, subjugate and remove its inhabitants and sack and destroy their society and culture. This would be done in the name of modernization, national necessity and progress and, secretly, in the assumption by Guyana that it would confirm sovereignty over the disputed region of Essequibo. (see Appendix A).

PROBLEMS AND REMEDIES

Two pertinent articles have been written by Dr Robert Goodland. One is 'Responsible Mining. The Key to Profitable Resource Development', already published (*Sustainability* 2012). The other, 'Ten Rules-of-Thumb to Select Better Hydro Projects', is in preparation. He points

out that mining is damaging communities and ecosystems worldwide, and he puts forward reasons for identifying a non-negotiable ‘No-Go Zone for mining’, on the basic grounds that it is an area which is valuable when intact but its value destroyed by extensive extractive industries. His criteria are relevant to the Pakaraima Mountains and apply to logging and flooding as well as mining. Following his arguments on socially or environmentally sensitive areas needing special consideration, we can identify a number of reasons for regarding the Pakaraima Mountains as a ‘No-Go Zone’ for these developments.

1. Climate and the Siting of Hydro Projects

A series of long, severe droughts followed by prolonged rains and damaging floods suggest extreme events associated with climate change. We cannot, as previously, count on the availability of continuous and abundant water resources at river heads which the generation of hydro power requires. There is the need to conserve the unpolluted sources of water in the highlands of the Guiana Shield for the coastland population to use, together with a necessity to control this flow in lands below sea level, so that the plantation crops of rice and sugar cane are not desiccated in times of drought, or destroyed by salt water entering from the Atlantic Ocean, or are flooded out during excessive rains. There should therefore be a combination of objectives: the maintenance of abundant water supplies, the control of floods and protection of the important food crop exports of the coastlands, as well as a sustained supply of electricity near the points of delivery. All of these factors indicate the selection of a large catchment area with water control mechanisms.

Heavy reliance on hydropower creates significant vulnerability to climate change. High dams and extensive reservoirs are exceptionally capital intensive and are impossible to move if climate change renders the hydro useless or dangerous. Flexibility in the face of climate change by means of fully renewable energy systems, and by choosing hydro with low or no dams and small or no reservoirs is the lowest cost way to confront climate change. (Goodland, ‘Ten Rules-of-Thumb to Select Better Hydro Projects’: Section 8.)

This suggests a number of small dams and of runs of the river located on major rivers, the Essequibo, Demerara or Berbice, or on the lowest reaches of their main tributaries. Otherwise, there is the risk that the huge investments that big hydro projects require will end up as debt, yielding only a sporadic energy and having entailed a lot of unnecessary destruction of forest and of the natural life and communities depending on it.

2. Fragile Watersheds: Biodiversity and Eco-Systems

The Pakaraima Mountains with the adjacent Gran Sabana, form the highest sector of the Guiana Shield, characterized by vertical cliffs, steep slopes and spectacular mesetas. However, in contrast to those mesetas (*tepuis*) rising out of highland savanna, those in the Pakaraima Mountains to the east mostly rise out of dense tropical forest. (For example, see Butt Colson 2009 a, Plate 31, ‘Aerial view of Ayangaik Mountain’.) As already noted, it is a region of vitally important watersheds, where major tributaries of three of South America’s greatest rivers, the Amazon, Essequibo and Orinoco, have major sources. The Pakaraimas, predominantly forested, are part of a set of unique, interlocking eco-systems as the varied regional landscape of mountains, grasslands, bush and trees indicate. These are areas of high biodiversity and endemism (for example, see *El Diario de Guayana* 24 June 2012: ‘La exuberante fauna del Parque Nacional Canaima (y II).’ By Evelyn Guzmán Bigott.) Previously unknown species continue to be reported, notably from the unexplored ‘islands in the clouds’ – as the mesetas have been aptly

described, and Venezuelan scientists have called attention to the importance of protecting them '*...as these are related to the volume of rains*', (Lelys Bravo, Simón Bolívar University, Caracas, quoted in *El Universal* 19 March 2010: 'Guri downfall'. By Francisco Olivares.)

The history of the Guri hydro complex on the Caroní River, Venezuela, shows that although droughts can be attributed in part to the effects of physical forces such as El Niño, developments in the mining and metallurgical areas, with the over-extension of powerlines, have gravely affected water resources. So also has logging in the forested areas along the Rio Branco - Caroní watershed of the Gran Sabana on either side of the Brazilian-Venezuelan border. Scientists have concluded that the effect of these policies on the hydrological cycle of the basin have been more harmful than El Niño and must be regarded as a prime cause of recent Guri degeneration, raising the question as to its future sustainability. Pronouncements in Guyana concerning the building of dams in the Pakaraima highlands and the intensive development of industry conceived to flow from their energy, even the envisagement of a new, industrial urban complex in the hinterland – all threaten to repeat the same mistakes which have dangerously degraded the Guri complex in Venezuela.

At the moment the most widespread destructive activity across the highland area of the circum-Roraima region is mining, about which it has been said that:

...the problems that beset the world's mines are all driven by the same business model: a partnership between an industry that plunders local communities, and a regime that keeps people from fighting back. (Goodland 2012 a: 2113)

In Venezuela mining is illegal in National Parks such as that of Canaima and the Gran Sabana, but it occurs sporadically - as do government attempts to suppress it. Recently, in Guyana, mining concessions in the Upper Mazaruni tributaries have been given out to Brazilians and coastlanders, as in the Kukui and Kako rivers in areas which are used and claimed by Akawaio communities but with no legal title accorded. Now these same miners have recently complained vociferously because mining permissions had been given to Chinese for the Imbaimadai area (*Kaieteur News* 17 July 2012: 'Local miners lament Chinese take-over at Imbaimadai') The number of mining concessions recently issued for the Upper Mazaruni basin, indicates that the Guyana Geology and Mines Commission (GGMC) and related miners' organizations consider it to be a prime Mining District.

It has been asserted that, in Guyana, mining concessions are held by a small elite of wealthy people who contract them out and collect tribute. For a long period this amounted to 10% with Brazilians paying 30%. Frequently the gold is transported to Brazil, so that the tax of 5% levied by the Guyana Gold Board on small and medium scale miners does not get paid. Reports suggest that a minimum of US\$ 240 million is lost per annum in illegal gold exports (*Catholic Standard* 20 July 2012: 'Human Rights body welcomes suspension in mining industry.' The Executive Committee, GHRA.) In this system, and especially during periods of high gold prices as at the moment, the number of active concessions will rise and any inconvenient environmental regulations are likely to be circumvented.

As events have shown in all three countries of the Guiana Highlands whose frontiers meet on Roraima, governments have failed to stop mining and the damage and pollution it has caused. Brazilian miners (*garimpeiros*) have infiltrated all the Guiana countries, Guyana and Venezuela not excepted. In the Caroní basin there are also Guyanese and Colombians, amongst

others. Some operate clandestine airstrips and run supply boats to the nearest townships, accessing food and cheap fuel and, in some instances, trafficking these with drugs across the frontiers. Most recently some illegal miners have formed gangs which have terrorized their locality and fought each other to the death. (*Correo del Caroní* Sunday 15 January 2012: 'Un Pueblo de Tragedías. Reportaje sobre masacre en mina de La Paragua.' By Maisdulin Younis / Natalia García.) However, many illegal mining activities are mostly unreported, due to bribery of officials and, often, a personal stake in the enterprises they are meant to monitor or prevent. Sometimes there is a fear of violence and even assassination instilled in the local population. Selling much of their gold abroad there may be little or no compensatory tax return but a lot of environmental damage is engendered. When an area is cleared of illegal miners (in Venezuela through military action: in Guyana by police raids) it is only a matter of time before mining begins again, or the miners pass freely over remote frontiers and move into fresh river valleys. The problems relating to illegal mining in Guyana are detailed in *Kaieteur News* 17 May 2012: 'Mining crackdown...Undocumented Brazilians ordered to cease work - GGMC head in trouble over questionable permit.' By Leonard Gildarie.

Goodland notes that some nations ban mining in all mountainous areas. Where miners are numerous and dependent on mining activities, whether legal or illegal, there needs to be alternative employment available, with attendant training and the political will on the part of the government to maintain no-go areas – of which the Pakaraima Mountains should be one. International funds, such as those made available by Norway for Guyana's Low Carbon Development Strategy and forest preservation, could underpin a programme to create substitute employment for miners banned from working in highly sensitive areas.

Additionally, there need to be very strong monitoring systems in place and, in the case of the Pakaraima Mountains, cross-border co-operation. Important measures in the conservation of the adjacent areas of this same land mass have already been put in place by Guyana's neighbours. To the north-west of Roraima is the Venezuelan National Park of Canaima and the Gran Sabana, additionally a World Heritage site. To the south is the Raposa Indigenous Territory extending down the Upper Rio Branco valley of Brazil. There is no comparable conserved area on the Guyanese, Pakaraima side of the highlands other, that is, than the small Kaieteur Reserve above this famous fall. As already indicated, the future of even this, an outstanding landscape feature within a pristine forest, will be under threat once a withdrawal of water from the Upper Potaro is required for Phase 2 of the Amaila hydro project.

A north-south road links Puerto Ordaz on the Orinoco to Manaus on the Amazon. Ascending the escarpment of the Sierra de Lema, it traverses the Gran Sabana Park to Santa Elena township and enters the Rio Branco Raposa Indigenous Territory at the La Linea - Ciudad Pacaraima watershed crossing, eventually arriving at Boa Vista, the capital of Estado Roraima, and thence on to the Amazon. The effects of this access are mitigated by some stringent regulations as to the conduct of people whilst in the reserved areas, both as regards the environment and the treatment of the indigenous population of the Park. In Venezuela there are check points manned by the military at intervals along the road. Air surveillance is also carried out. An acknowledgement of the importance of the environmental and ecological systems of the Roraima region, their role in the regulation of climate, especially rainfall, preservation of fresh water resources and their vital service in the production of Guri electricity, plus a recognition of indigenous rights, all underpin the management accorded to this part of the circum-Roraima fragile zone. Some illegal mining has occurred in this protected region and its indigenous inhabitants are still seeking legal titles of their communal lands, but the Park itself

has, for the most part, escaped the degradation which has taken place in the surrounding, less protected areas such as in the Imataca Forest Reserve of the Upper Cuyuni.

Now that plans are being laid for tracks/roads to be made into the Pakaraima Mountains, from the lowlands of the Potaro and Mazaruni into their upper basins, consideration should be given to the establishment of a substantial conserved area on the Guyanese side, together with a transparently organized monitoring system. Although politically tripartite, we are concerned with one specific land mass and its interrelated set of habitats and their high conservation value needs. These call for a tri-national collaboration, perhaps through the formation of a biosphere, for what one country does, or allows, in its domain will obviously affect the adjacent ones. Such a collaboration was first envisaged by P. Storer Peberdy when, as “Amerindian Welfare Officer” commissioned by the British Colonial Office to make *A Survey on Amerindian Affairs in the Remote Interior* of British Guiana, he produced a Report (1948) in which he advocated an ‘International District for Amerindian Development’. This was to be made up of three contributions of land. One was a Brazilian sector south of Mt. Roraima (the area between the Ireng and Surumu Rivers). The second was to the west of Roraima (the Venezuelan Gran Sabana) and, on the east, a third sector was proposed which would be the recently established Upper Mazaruni Reserve with the addition of a Pakaraima extension southwards, including the Upper Potaro basin. (See *Map 8* which is *Map 5* on p. 60 in the Peberdy Report.)

3. Indigenous Peoples and their Lands

Areas in which indigenous peoples live and on which they depend for basic resources for living should be off limits for mining, logging, flooding and any form of environmental destruction. This includes the protection of their cultural heritage sites which, in the case of the Pakaraima communities, are rock paintings, petroglyphs and sacred places, such as those associated with the Alleluia religion and its churches, past and present, ancestral graves and living sites, and the *potawa*, the indigenous nature reserves.

The vital importance of their ancestral lands for the identity, economy, social structures and all aspects of culture, including language and the conceptual system of the Upper Mazaruni people, is described in Butt Colson 2009 a. This work also describes in detail exactly how their lands have been sustainably managed and left pristine, down the generations from pre-colonial times to the present day. There is an enormous amount to be learnt from the indigenous understanding and use of their environment and, if only for this reason, any move to create a protected and conserved area should be preceded by the recognition of collective ownership titles to traditional lands being claimed. That should be followed by a negotiation and agreement on the part that the indigenous landowners should play in conservation measures and how they might obtain salaried work through the necessary monitoring and running of a protected zone.

4. A Conflict Zone

The territory of Essequibo, from the west bank of that river to the present international frontiers with Venezuela and Brazil, has been claimed by Venezuela from early colonial times to the present. Today, this contested area is governed by international treaty, the *Agreement of Geneva*, signed 17 February 1966 by Britain ‘in consultation with the Government of British Guiana, and the Government of Venezuela’. It was agreed that on attaining independence the Government of Guyana should be an additional party to the Agreement.

This Treaty, still governing the dispute over Essequibo, set up a Mixed Commission which was to find a settlement agreeable to both sides. It failed to do so and in the course of time

it was converted into a Good Officer process, under the United Nations, which has the same objective. Meanwhile, Article V (2) of the Agreement of Geneva is especially noteworthy:

(2) No acts or activities taking place while this Agreement is in force shall constitute a basis for asserting, supporting or denying a claim to territorial sovereignty in the territories of Venezuela or British Guiana or create any rights of sovereignty in those territories, except in so far as such acts or activities result from any agreement reached by the Mixed Commission and accepted in writing by the Government of Guyana and the Government of Venezuela. No new claim, or enlargement of an existing claim, to territorial sovereignty in those territories shall be asserted while this Agreement is in force, nor shall any claim whatsoever be asserted otherwise than in the Mixed Commission while that Commission is in being.

These Treaty provisions should be read in conjunction with the Wikileaks document, (*Appendix A*), which records Guyana's hidden motives for the construction of massive hydro projects in the Pakaraima Mountains.

CONCLUSION

It is time for free, prior and informed consent (FPIC) to be truly implemented. There should be no intimidation, but full, transparent, timely information, and consent, regarding Guyanese government intentions and planning with regard to development in the Pakaraima Mountains, both in the Upper Potaro valley and also in the Upper Mazaruni.

On a number of vital counts the hydro projects at present under active consideration constitute a disaster in the making. Their siting is extremely questionable as regards sustainability of energy production. Add to this their distance from the main load centre of the Berbice - Demerara Inter-connected System (BDIS), which in the case of Amaila has been calculated as 278 km. (172.7 ml.). They will entail an enormous destruction of all aspects of the environment and its associated life forms over a vast region of countryside. The human and socio-cultural costs and breaches of human rights will be enormous and totally unacceptable, falling as they do most heavily on the major population of one ethnic group, the Kapon people (Akawaio and Patamona) of the Mazaruni and Potaro valleys. There is the danger that relationships between Guyana and Venezuela and of the latter with Brazil, will be soured beyond repair, since it is Brazil, through absorption of the excess energy production and additional investment activities, that will gain economically and geo-politically.

There are alternative hydro sites which can yield sufficient and more certain energy nearer to the points of use. The international community, and specifically the Inter-American Development Bank, the Chinese Development Bank and Norwegian tax-payers need to ensure that their money does not end up destroying vital areas of the globe, endangering human populations and wildlife, and inducing climatic instability, when such alternatives exist.

The debate now should be about how Guyana can achieve least cost hydro power together with forest preservation and community well-being, without the former destroying the latter objectives and doing irretrievable damage.

APPENDIX A

Hydro project with Brazil seen as helping Guyana consolidate hold on Essequibo – WikiLeaks cable

By STABROEK STAFF | 0 COMMENTS

LOCAL NEWS | TUESDAY, JULY 5, 2011

A WikiLeaks cable from the US embassy in Brasilia in 2009 noted ongoing talks between Guyana and Brazil on a massive hydropower plant and said that President Bharrat Jagdeo's thinking was that it would help to consolidate Georgetown's hold on Essequibo which is the subject of a longstanding controversy with Venezuela.

The last official word from Brasilia on this project came in November last year [2010] when former Brazilian President Luiz Inacio Lula da Silva declared his country and successor's continued commitment to it. He was speaking at a ceremony in Georgetown where he was conferred with the Order of Excellence.

An October 9, 2009 cable under the name of Charge d' Affaires in Brasilia, Lisa Kubiske noted that International Advisor to Brazil's Minister for Mines and Energy Edison Lobao, Ambassador Rubem Barbosa had told Econoff on October 5, 2009 that in addition to augmenting the energy capacity for both countries, and bringing Guyana closer politically to its South American neighbours, the project would have the effect of allowing Guyana to establish government infrastructure in Essequibo which is the subject of the controversy with Venezuela.

Kubiske noted that the idea to construct the binational hydro plant in Guyana's border region, near the Brazilian state of Roraima, stemmed from a meeting between Brazil's former President Lula and Guyanese President Jagdeo on September 14, 2009 when the two inaugurated the Takutu Bridge which is intended to be "part of the highway linking Brazil to the sea through Guyana." Analysts believe that Brazil is very keen for access to Guyana's Atlantic ports as a conduit to its northern states like Roraima.

Kubiske's cable said that Jagdeo, apparently aware of similar Brazilian projects, including the Itaipu Dam with Paraguay and plans for five new dams being constructed with Peru, asked Lula for help in meeting Guyana's energy needs. She noted that two weeks later, Lula sent a delegation to meet with Jagdeo, led by Energy Minister Lobao who was accompanied by Barbosa. The group she noted, included representatives of Brazilian National Development Bank and likely project financier BNDES, and the Brazilian state-owned electricity company, Eletrobras, which has been mandated by Lula to pursue foreign operations with a goal of boosting energy integration throughout the continent. She said that Barbosa cautioned that

talks are still in the initial stages, with Electrobras [sic] doing an assessment of the area to determine the potential for such a project.

Ten-year timeframe

As currently conceptualised, Kubiske said that the hydro power plant would generate 800 megawatts (MWs) of electricity, with 200MWs going to Guyana and the rest returned to Brazil. Brazil would lay additional transmission lines to channel the excess electricity to the Amazonian region of Manaus. Despite some press reports that the project could be completed by 2015, Barbosa felt that such projections were likely inaccurate and premature given the very early stage of discussions. He felt a ten year timeframe was more realistic. While helping to meet the pressing energy needs of Guyana and electrifying undersupplied areas of Brazil would be the main reason for undertaking such a project, Kubiske said in the cable that “Barbosa confided that the political reasons for doing so were also compelling. Given that the proposed hydroplant would be built in the section of Guyanese territory that is (claimed by) Venezuela, Jagdeo, according to Barbosa, sees this as an important effort to consolidate Guyana’s claim to the area. Asked if this wasn’t a problematic element of the plan from the Brazilian perspective, Barbosa responded that Jagdeo had observed that Venezuelan President Chavez had not involved himself in the question of the (controversy). This fact, combined with the ruling by a third party arbiter that the area in question was Guyanese land, in Barbosa’s estimation provided sufficient comfort for Lula to proceed.”

The cable further reported Barbosa as saying that Jagdeo said he is also interested in the project as a means of integrating Guyana more into the South American community, noting that Guyana’s future lies with the region, rather than with European allies that Guyana has traditionally relied on. Barbosa added that Lula shares this interest.

In her comment in the cable, Kubiske said “This type of binational energy project is of growing interest to the GOB, despite recent troubles with the Paraguayan insistence on receiving higher rates from Brazil for energy from the Itaipu dam, to which Brazil ultimately agreed.” She added that not only is Brazil looking to expand its energy generation capacity, “the political efforts are also in keeping with Lula’s philosophy of building bonds with neighbouring countries through interdependence for energy security and building a South American political bloc, through which Brazil can conduct harmonious regional relations while building a base of support for its larger international ambitions.”

In his speech in Georgetown last year at the National Cultural Centre, President Lula had said that his successor Dilma Rousseff is ready to advance and expand the bilateral agenda with an immediate focus on Guyana’s hydro project and the paving of the Linden-Lethem road. Brazilian funding is available to advance both projects, he said, noting that they are “ready to support the move to the next phase” as both governments work towards cleaner and cheaper energy. He identified movement in these areas as critical as Guyana and Brazil strengthen their close partnership.

Jagdeo and Rousseff have not thus far had any detailed meetings on these areas.

APPENDIX B



Survival International
6 Charterhouse Buildings
London EC1M 7ET
United Kingdom
T 020 7687 8700
F 020 7687 8701
info@survivalinternational.org
www.survivalinternational.org

**We help tribal peoples
defend their lives, protect
their lands and determine
their own futures.**

Ms Pauline Sukhai MP
Minister of Amerindian Affairs
251-252 Quamina and Thomas Streets
South Curnmingsburg
Georgetown
Guyana

31 August 2010

Dear Minister Sukhai

We have seen the news report 'Every day is like World Indigenous Day in Guyana - Minister Sukhai in Response to Kaieteur News' published on the Ministry of Amerindian Affairs's web site at <http://moaanews.blogspot.com/2010/08/every-day-is-like-world-indigenous-day.html> where you refer to Survival's recently released report 'Serious damage -- the impact of large dams on tribal peoples'.

You are quoted as saying that 'Survival International should think twice about publishing a report about a country in which the information given to them is unreliable at best'. You say that Survival was referring to the planned hydro-electric power project at Turtruba. Yet there is no mention of Turtruba anywhere in our report. You appear to have assumed this.

Survival's report refers specifically to the possibility that a hydro-electric dam may be built on the Upper Mazaruni river. This potential dam is sometimes referred to as the 'Kurupung Project'.

We do not agree that the information we have on this dam project is unreliable. Our information came from a variety of sources, including the government's own Guyana Energy Agency (GEA) which in the section of its web site entitled 'Sites under current consideration' includes the Upper Mazaruni, Region 7 as a possible dam site.

GEA states that: 'RUSAL., a Russian Company was granted exclusive rights in February 2007 for an initial period of three years to conduct a pre-feasibility study of this site. This site has a potential installed capacity of 132MW and the Company is proposing to set up an Aluminum Smelter as the primary load centre.'

Several Guyanese newspapers have also reported on the proposed Upper Mazaruni (Kurupung project); Stabroek News: '*RUSAL, Brazil company still talking about massive Kurupung hydro project*' on 20 May 2010.

The following day the Guyana Chronicle reported a clarification by the government that it was looking at alternatives to Turtruba: 'Brazil identified the Upper Mazaruni hydro project (the Kurupung project). Government disclosed that this site was covered under a Letter of Intent (LOI) entered into in 2007 between the Government of Guyana and RUSAL. Under this LOI, RUSAL has started preliminary feasibility studies for the development of an integrated aluminium complex (including refinery and smelter).'

Brazil's Ministry of Finance posted an article one year ago on its website which states that Eletrobras, the state electricity company, is studying the construction of the dam on the Mazaruni. The dam has also been discussed by Roraima State deputies in Brazil's Chamber of Deputies.

We should also like to clarify that our report did not say, as you allege, that the current government is in the habit of making decisions for Amerindians. What we said was that, in the 1970s, (therefore under a previous government), Amerindians in the Upper Mazaruni region were told that there would be a dam on their land and that they had no choice but to accept it.

Survival's report stresses that a potential dam on the Upper Mazaruni is being studied at the pre-feasibility stage. The site of the dam is listed on GEA's website as 'Sand Landing' (known as Latipu to the Akawaio). Sand Landing is the same site for the Upper Mazaruni dam project proposed in the 1970s, which was shelved by the Guyanese government in 1984, after the World Bank refused to fund it. The specifications currently listed on GEA's website are basically the same as the 1970s project, as the GEA itself acknowledges on its website: 'Based on previous studies, the following key parameters of the Upper Mazaruni Hydropower Station were identified in the RUSAL report'.

Survival is extremely concerned that the Upper Mazaruni dam project is even up for consideration again because we believe that it will effectively destroy the Akawaio and Arekuna peoples. Previous studies show that all the major Upper Mazaruni villages will be flooded, with drastic consequences, and rendering these self-sufficient peoples (who now number about 13,000) homeless and dependent on external food aid since they would lose all the land they cultivate, the forests where they hunt and gather, and the rivers in which they fish.

As refugees they would naturally seek shelter and homelands with neighbouring kinship

groups in Venezuela and Brazil, which will in turn put severe pressure on these groups both socially and economically in areas where there is already severe strain on the highland savannas. No amount of compensation and mitigation measures can ever replace the land and its resources, and the deep spiritual links indigenous peoples like the Akawaio and Arekuna have with that land which are born of an unrivalled knowledge and understanding of the natural world in which they have lived for generations.

Another major consequence of the dam will be the loss of biodiversity and tropical forest. The Upper Mazaruni Basin including the Pacaraimas mountain range, lies within the Guiana Shield, a region of pristine highland tropical forests, table top sandstone mountains, white sand savannas and uncontaminated fresh water reservoirs, all of which are outstanding and unique in their biological diversity as they harbour plants and animals found nowhere else in the planet. The Pacaraimas also play a crucial role in regulating the climate in the region.

In the worst case scenario, the original projected phase 3 of the dam would inundate the entire Upper Mazaruni Basin, leaving only the mountain tops protruding through the reservoir lake. The impacts on the indigenous peoples and environment in Guyana would be catastrophic, and significant in neighbouring Brazil and Venezuela.

Amerindian Land Rights

Under both the Amerindian Act and international law, the Akawaio and Arekuna tribes have the right to their lands where they have lived since time immemorial. We are aware that the Akawaio and Arekuna have lodged a land claim at the High Court in an effort to have their collective land titles recognized. We are extremely concerned at the enormous delay in hearing this case and urge the government to do all it can to resolve land demarcation and titling in the region as a matter of urgency.

We note that Guyana voted to adopt the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) which recognizes indigenous peoples' collective land ownership rights, and makes extensive reference to states' obligations to obtain their free, informed and prior consent to any development on their lands.

In the interests of transparency and democratic government we urge the government of Guyana to disclose full information on its plans to build a dam in the Upper Mazaruni. Guyana's Environmental Protection Act (articles 11.4.a and b, and 11.9,a) make clear reference to consulting the members of the public and interested bodies and evaluating and disclosing environmental impacts of projects.

Free, Prior and Informed Consent and International Law

'Free, Prior and Informed Consent' (FPIC) is extensively recognized in international law documents particularly in relation to indigenous peoples. FPIC allows indigenous peoples to make their own decisions about activities, matters and determinations that may affect them and is a concept that is designed to affirm the territorial and cultural integrity of indigenous peoples.

Guyana is a signatory to the International Convention on the Elimination of all Forms of Racial

Discrimination (CERD). Article 2.2 obliges state parties to ensure the adequate development and protection of certain racial groups or individuals belonging to them, for the purpose of guaranteeing them the full and equal enjoyment of human rights and fundamental freedoms.

The CERD Committee, in its observation and general recommendations on state obligations and indigenous rights under the convention, calls upon states to 'ensure that members of indigenous peoples have rights in respect of effective participation in public life and that no decisions directly relating to their rights and interests are taken without their informed consent'. (GR XXII 51 concerning indigenous peoples adopted at the Committee's 1235th Meeting, 1997).

The CERD Committee interpreted Article 5 as requiring state parties to '[e]nsure that members of Indigenous peoples have equal rights in respect of effective participation in public life and that no decisions directly relating to their rights and interests are taken without their informed consent.' The Committee further found that, where indigenous peoples have been 'deprived of their lands and territories traditionally owned or otherwise inhabited or used without their free and informed consent,' states must 'take steps to return those lands and territories.' (General Recommendation XXIII).

Article 5(d)(v) of CERD requires state parties to guarantee the right of everyone to equality before the law, notably in the enjoyment of "[t]he right to own property alone as well as in [t]he association with others."

Guyana is also a signatory to the UN Convention on Biological Diversity, which in Article 8 states that 'Each Contracting Party shall, as far as possible and as appropriate: subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices'.

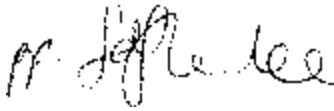
On 9 November, 2009, Guyana and Norway signed a Memorandum of Understanding (MoU) regarding cooperation on issues related to the fight against climate change, in particular those concerning reducing emissions from deforestation and forest degradation in developing countries (REDD-plus 1), the protection of biodiversity, and enhancement of sustainable, low carbon development, for which Guyana is receiving substantial funding from Norway. Should the Upper Mazaruni dam go ahead, the destruction of rainforest will be so great that we believe it will seriously undermine Guyana's commitment to protect its forests for which it receives substantial international funding, and tarnish President Jagdeo who was recently voted a UN 'Champion of the Earth'.

In the 1970s when faced with the threat of the dam, the Upper Mazaruni people said 'This land keeps us together within its mountains – we come to understand that we are not just a few people or separate villages, but one people belonging to a homeland.'

We urge the government of Guyana to take heed, and to consult with the Akawaio and Arekuna about the possibility of a dam on their land, and to uphold their collective land ownership rights. Failure to do so could result in the destruction of these peoples, which

would be a tremendous loss to Guyana and to humanity.

Yours sincerely

A handwritten signature in black ink, appearing to read "Stephen Corry". The signature is fluid and cursive, with the first name "Stephen" and last name "Corry" clearly distinguishable.

Stephen Corry
Director

cc: President Bharrat Jagdeo

Mr Erik Solheim, Minister of the Environment and International Development,
Norway

Dr James Anaya, UN special rapporteur on indigenous peoples
UN Committee for the Elimination of all Forms of Racial Discrimination

Mr Laleshwar K N Singh, High Commissioner of Guyana to the UK

Dr Samuel R Insanally, Guyanese Permanent Mission to the UN
Inter-American Development Bank, Infrastructure and Environment Sector
and Country Department Caribbean

APPENDIX C (a)

26 October 2011

Statement by the Tosaos, Councillors and Community members of the Upper Mazaruni

Warwata, Upper Mazaruni

On this special day, Tosaos, Councillors and Community members from Waramadong, Warawata, Phillipai, Ominaik, Jawalla, Chinaweng and Kako have met to share our concerns in relation to the situation and problems that our peoples are facing in the Upper Mazaruni.

We are deeply concerned about projects and mining concessions being granted in the lands that are currently under the case in the High Court of Guyana, without informing the communities and not consulting to the proper authorities. As Toshao Norma Thomas from Warawata stated "we need to stand firm and let our voices be heard because no consultation was done." We condemn the lack of respect to our land rights in this region. We urge the government and its different agencies to respect our rights to our lands and territories according to the 1959 boundaries.

Our communities are facing the negative impacts of what the government is calling "development" of our lands. Through the mining activities, many of which have been granted to foreigners and coastal persons. As stated by a leader "the women — adult and children - are being kidnapped and even males have been abused sexually by the coastal miners." Also other impacts include the contamination of our rivers where miners are disposing waste into the waters of the rivers where we bathe, fish and even drink our water. "I was born in this land, the same as my ancestors, and coast landers should never take advantage over us and this should not be allowed any more".

In the government's proposed "development", Guyana is asking Village Councils to approve their Low Carbon Development Strategy which hasn't been properly consulted with our communities, in our language and according to our traditions. We are very concerned that the LCDS and it's lack of consultation will result in proposed actions that will undermine our fundamental rights as indigenous peoples, specially with regards to our lands and resources.

It has also come to our attention that roads are being built close to our territory. We have demanded information to the authorities about these roads since we have not been consulted nor informed about their construction, as time goes by, the roads get closer to our communities and we know of cases where bandits use these roads to carry out their crimes, exposing farmers

from satellite villages and even miners present in the region to these crimes.

In information that recently appeared in different national and international media, we have found out about the possible construction of the “Kurupung Hydro-project” formerly known as the Upper Mazaruni Dam. We are aware of its effects and consequences and all our communities strongly oppose to this project as our elders did in the 70s. As stated by one village leader: Our grandparents didn’t accept the hydro-project in the past, the grandchildren including myself, share the position of our grandparents and say NO to the “Kurupung Project”

We have come together as Toshias and Councillors in the district and say NO to government-proposed projects. Our right to self-determination must be respected and it is up to us to determine the development that we want in our territory. Furthermore, we demand that our right to free, prior and informed consent is properly implemented, so that our children and their grandchildren can enjoy the lands that we have inherited from our ancestors.

Finally, we would like to call upon the government of Guyana, local organisations, political parties other governments, multilateral institutions, international organisations that our rights as indigenous peoples must be recognised and respected, as we fear that this situation may reach a point of no return with immeasurable impacts on our peoples, our territory and resources.

APPENDIX C (b)

August 8, 2012
Georgetown

Statement by the Toshias of Region 7

We, the Toshias of Region 7 wish to express our great displeasure over the conduct of proceedings arising out of the National Toshias Council Conference, which has undermined our right to freely express ourselves on issues which affect us and has squandered an opportunity to address the concerns of our communities.

The NTC conference which was held last week had promised an opportunity for us, as leaders to freely express our views on issues which affect us and provided an avenue whereby discussions could be had to arrive at possible solutions which would improve our lives.

However, this is far from what happened. We feel frustrated by a process which seemed to have favoured Toshias raise their concerns while others, including us have been derailed in our attempts to raise legitimate issues. Further, the chairperson of the proceedings appeared to be bent on dictating the proceedings according to his wishes; this should not be the case.

From our observations, Toshias from Region 9 and 1 were given extra time to make their presentations due to support which they heaped on the government. In attempting to tell of our problems, we had our time cut and subsequent attempts to speak up were met with attempts to silence us. We did not try to monopolise the time granted since we know all Toshias have issues. For the past week, we have tried our utmost to have our land and mining issues addressed, this has not happened. Instead, we feel that this was a fruitless exercise in addressing issues and more a campaign for the government to gain the consent of communities to opt in to the Low Carbon Development Strategy (LCDS).

From the onset of the conference, Toshias were provided with copies of two draft Resolutions which were assented to on August 9. One of the resolutions passed dealt with the negative impacts as a result of irresponsible actions which include the budget cuts and the Linden protests. The other one refers to the draft 'Opt in' mechanism under the Low Carbon Development Strategy (LCDS). Why should resolutions be drafted before the commencement of the conference?

The Opt In document was sent to a few communities prior to the conference; however the majority of Toshias received the document on the eve of the conference. The draft stipulates that for a two thirds majority is needed at the Community general meeting before a community

can opt in. In several instances, there was no community meeting therefore how can Toshaos take it upon themselves to agree to the draft without the consent of their villages?

As leaders of villages spanning Upper, Middle and Lower Mazaruni, the common issue of mining close to lands held by Amerindians or those traditionally used by us, is a cause for concern. For far too long, we, as well as our brothers and sisters of other villages have suffered the consequences of mining.

What is particularly alarming is the granting of mining concessions with little regard to community consultation. In practice what happens is a case where applications are processed without Village Councils having knowledge of it. After a decision would have been made on the application, a letter is usually sent to the community telling them of the decision. What has happened to your right to be part of the decision making process?

This can be seen in the case of Kako, who now face a scenario where a mining licence has been granted for mining to commence in the Kako River, an area which was never open to mining. The community did not know of the application, but were sent letters of notice of approval from the GGMC [Guyana Geology & Mining Commission] and the MOAA [Ministry of Amerindian Affairs]. According to the letter, the GGMC was satisfied that there would be no effect on the community, however it is very unclear how this presumption was arrived at or whether there was any Environmental Impact Assessment carried out to determine this.

While it may be said that Amerindians themselves are involved in mining, this approval can be revoked by the Village Council should it be deemed as harmful at any point. Further, the instances of this practice are few since many communities would like to preserve the sanctity of their environment. Unlike the cases where the permit is granted by the GGMC, and leaves the Village Council without much authority to affect changes or are left with a lengthy 'run-around' to try to correct the flaws in the agreement.

There are numerous examples where miners empowered with a permit feel that they have the authority to do as they please. Often, they have little regard for the authority of the Village Councils and the rules of the community and openly say that they have been given permission by the GGMC and that the village cannot do anything about it.

Further, we are also incensed by the continued granting of licences in areas which are part of the Upper Mazaruni lawsuit which is currently before the courts. It is our belief that the areas under contention should not be leased until the resolution of the suit.

Arising out of concerns with mining, are the issues of land titling which continue to affect us. With the increase in granting of concessions on lands close to Amerindian communities, how are we expected to apply for extension to our lands? With the lengthy period between titling and the processing of applications for extension, permits can be granted in the same areas so in effect the community will be relegated to holding the piece of land it has. In most cases the areas granted do not take into account the area traditionally used and occupied by indigenous peoples.

In the governments proposed "development", Guyana is asking Village Councils to approve their Low Carbon Development Strategy which has not been properly consulted with our communities. We are very concerned that the LCDS and its lack of consultation will result

in proposed actions that will undermine our fundamental rights as indigenous peoples, especially with regards to our lands and resources.

It has also come to our attention that roads are being built close to our territory. We have demanded information to the authorities about these roads since we have not been consulted nor informed about their construction, as time goes by, the roads get closer to our communities and will potentially bring with it a host of problems including criminal and social ills.

We as Toshaos of Region 7 demand our right to self-determination be respected and reiterate that it is for us to determine what development we want in our territory. We want to be involved in the entire decision making process not merely informed of a decision. Furthermore, we demand that our right to free, prior and informed consent be properly implemented with regard to mining and other forms of activities intended for area close to our lands or which will affect us. Of paramount importance to us is the resolution of the land issues so that we can safeguard our lands for today and future generations. Our collective position is that our long standing issues must be resolved before we make any decision to opt- in to the LCDS programme.

Signed;

The Toshaos of Paruima, Arau, Kaikan, Kurutuku, Waramadong, Warawatta, Phillipai, Ominaik, Jawalla, Chinoweng, Kako, Isseneru, Tasserine, Kangaruma, Kartabo, Batavia, Karrau, Dogg Point and Kaburi.

APPENDIX D

Statement of the Amerindian Peoples Association (APA) after discussions with the Patamona communities of the North Pakaraimas carried out in November 2011 and April 2012

Amerindian communities surrounding the planned Amaila Falls hydropower dam still facing lack of adequate information and consultation

An Environmental and Social Impact Assessment (ESIA) was released by Amaila Falls Hydro Inc. (AFH) in 2011. (<http://amailahydropower.com/docs/ESIAJan11/00-ESIAJan11-Full.pdf>) It provides a framework for implementing and managing the project in a way that would satisfy the requirements of potential financial lenders. The ESIA emphasises that the land directly impacted by the construction is owned by the state. It does, however, recognise that the area that will be flooded is used by the neighbouring Amerindian communities for fishing and hunting. Even though it states that people's visits to the area are not very frequent it is understood that they have an important symbolic value. To date, it is ambiguous how this understanding is taken into account in the preparation and execution of the project.

The AFH's web site states that "With the release of the ESIA, AFH will begin a second round of consultations to engage potentially affected communities in the region, including: conservation, development, and Amerindian NGOs; government officials; and the general public. These discussions are part of an ongoing process to ensure the natural resources of the country, as well as traditional land use and cultural resources, are protected": (<http://amailahydropower.com>). It is further stated that the project should not interfere with the local culture and practices of Amerindian or other communities.

Violation of indigenous rights

Despite such promises the communities surrounding the planned dam have not been properly consulted, and they fear that their culture and practices *will* be severely affected. The residents of Maikawk, Kamana, Waipa, Kopinang and Chenapao all dispute the ESIA's claim that their use of the Koribrong/Amaila area is infrequent and only of symbolic value. The area is important for their hunting and fishing activities and its importance has increased in recent years. For some of the communities the reason for this is growth in population, for others it is due to nearby fishing and hunting grounds being polluted and destroyed by heavy mining activities. A resident in Chenapao says:

"We have children attending secondary school and they have their needs. We have to support them financially but many of us don't earn salary. We sell our farm produce to earn money or we go out to do hunting and fishing and we sell whatever we get on those trips, and that is how we depend on our traditional lands. We don't want to be restricted by national park or hydro dam."

All the communities stress that the area is part of their traditional lands and express great disappointment that this is not recognised by the government in its land titling programme. Many are also deeply concerned about the government and project developer's failure to include them in the planning of the dam. Maikawk, Kamana and Waipa have never been consulted about the project. Some of the villagers can vaguely recall having heard about the dam, but most people were not aware of the plans until the Amerindian Peoples Association (APA) visited the area in November 2011 and April 2012.

Kopinang and Chenapao, unlike the other communities, received visits regarding the project in 2011. These were headed by Sithe Global and did on one occasion comprise representatives of the Ministry of Amerindian Affairs and the World Wildlife Fund. The villagers say that the information provided focused on the benefits to the community and almost no attention was given to the possible negative impacts. They are not satisfied neither with the information given nor the benefits promised. The villagers were, for example, promised employment opportunities, but experience already puts into doubt whether this represents a gain to the people. About 16 residents from the two villages have already had employment with the project, but no written agreements were signed and many were told that only skilled persons are entitled to some benefits in the case of accidents. Villagers from Chenapao are especially sceptical to the benefits promised, as their experience from the establishment of Kaietur National Park on their territory was that none of the promises made to them were kept. "All what the company is offering now are bare promises just to get our support for the hydro dam project", says one of the residents.

Continuous Controversy

The Amaila falls project has been subject to a lot of critical attention nationally since its inception. Accusations of corruption and the lack of transparency in the process of contracting a constructor of the access road have been widely heard. In addition, speculations have been made about the economic profitability and viability of the project after the estimated cost has been adjusted upwards several times.

The reports from the villages surrounding the planned dam have yet not received public attention. However, the failure by the project developer to keep the promise to be "actively engaging communities during the planning of the project" (<http://www.sitheglobal.com/projects/amaila.cfm>) has the potential of adding to the controversial profile of the project. Up to this point inadequate information and lack of consultation have rendered the people who will be affected unable to raise their concerns. This might be about to change as the villages warn that they will raise with relevant international agencies and funders that their right to give or withhold their free, prior and informed consent (FPIC)- which is both required under international law and in Guyana's agreement with Norway — is being violated.

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