

Analysis

And Selection of Communities in Guyana

PROJECT: RURAL ELECTRIFICATION

October 2007



Guyana Energy Agency



**Canadian International
Development Agency**

olade
Organización Latinoamericana de Energía



¹
**UNIVERSITY OF
CALGARY**

The author of this document is Patrick Ketwaru, consultant.

The opinions expressed in this document are the responsibility of the author and do not bind the sponsoring organizations, Latin American Energy Organization” (OLADE), “Canadian International Development Agency” (CIDA), “University of Calgary” or the “Guyana Energy Agency” (GEA).

The use of the information contained in this document is permitted if the source is cited.

The rights to this document are the property of the Rural Electrification Project of OLADE/University of Calgary/CIDA/GEA.

Table of Contents

Table of Contents	3
List of Tables	4
List of Charts.....	4
List of Figures	4
Abbreviations.....	5
1.0 Introduction.....	8
2.0 Poverty Indicators	9
2.1 Overview.....	9
2.2 Poverty Levels	11
3.0 Conditions for the Selection of the Community	23
3.1 Introduction.....	23
3.2 Exclusions.....	23
4.0 The Selection Process	25
4.1 Introduction.....	25
4.2 Selection of Region.....	25
5.0 Region Nine	27
5.1 Introduction.....	27
5.2 Iwokrama	27
5.3 Conservation International (Guyana).....	29
5.4 The North Rupununi District Development Board	29
5.5 Bina Hill Institute.....	31
6.0 Selection of Neighbourhood Democratic Council.....	32
6.1 Selecting the Village.....	32
6.2 Final Selection of a Village.....	34

List of Tables

Table # 1 - Poverty Levels based on LCI and EDM I	11
Table # 2 – EDM I Region 1.....	11
Table # 3 - EDM I Region 2	12
Table # 4 - EDM I Region 3	13
Table # 5 - EDM I Region 4	14
Table # 6 - EDM I Region 5	15
Table # 7 - EDM I Region 6	16
Table # 8 - EDM I Region 7	17
Table # 9 - EDM I Region 8	17
Table # 10 - EDM I Region 9	18
Table # 11 - EDM I Region 10	19
Table # 12 - EDM I of NDCs of the Whole Country (Sorted)	20
Table # 13 - Communities Identified in the Hinterland Electrification Strategy.....	24
Table # 14 – Regions with the Highest EDM I.....	25
Table # 15 - NDC EDM I and Road Access.....	32
Table # 16 – Parameters for Final Selection of Village.....	33

List of Charts

Chart 1- EDM I Region 1.....	12
Chart 2- EDM I Region 2.....	12
Chart 3 - EDM I Region 3.....	13
Chart 4- EDM I Region 4.....	14
Chart 5- EDM I Region 5.....	15
Chart 6 - EDM I Region 6.....	16
Chart 7 - EDM I Region 7.....	17
Chart 8 - EDM I Region 8.....	18
Chart 9 - EDM I Region 9.....	18
Chart 10 - EDM I Region 10.....	19

List of Figures

Figure 1 - The Administrative Regions of Guyana.....	26
Figure 2 - Iwokrama Forest.....	28
Figure 3 - Region 9, Sub- Region 1	30

Abbreviations

CIDA	Canadian International Development Agency
EDMI	Enumeration District Marginality Index
HBS	Household Budget Survey
IDB	Inter American Development Bank
LAC	Latin American and Caribbean
LCI	Living Conditions Index
LCS	Living Conditions Survey
NDC	Neighbourhood Democratic Council
NRDDB	North Rupununi District Development Board
OLADE	Organisation for Latin American Energy
UAEP	Unserved Areas Electrification Programme
UBNI	Unsatisfied Basic Needs Index used by some

Executive Summary

The broad objective of this study is to review poor rural communities and select the communities that are likely to derive the greatest benefit from the implementation of a rural energy initiative. The project is being implemented by OLADE and the University of Calgary with in country support from the national counterpart, the Guyana Energy Agency. The project is biased towards the improvement of the livelihood of women and indigenous populations.

To make this choice a review of the most recent poverty indicators had to be done. However, there has not been any recent poverty survey in Guyana, the last being the Living Conditions Survey (LCS), done in 1999. Currently a Household Budget Survey (HBS) is in the process of being completed. As such reliable indicators of poverty are not readily available. However the recent 2002 national population census database was utilised by the World Bank to compile two poverty indices, the Living Conditions Index (LCI) and the Enumeration District Marginality Index (EDMI). The EDM I was used extensively towards the final selection of a community. The majority of variables used to derive the EDM I are the similar to those used to derive the Unsatisfied Basic Needs Index (UBNI) used by some LAC countries

The main disadvantage of using the EDM I is that the smallest community unit reviewed was at the Neighbourhood Democratic Council unit. In the hinterland regions where the NDCs are rather large with small populations this method may not be very effective in indicating the true level of poverty of an individual village.

Guyana has a fairly developed coastal region where the majority of the population inhabits. In the regions beyond this coastal strip, with the exception of Linden in Region 10, the hinterland regions have relatively poor physical and social infrastructure. These regions are inhabited mainly by Amerindians. These communities with smaller populations tend to have greater levels of poverty.

The objective of this exercise is to select one community which has a great need for energy and would be able to optimise its utilization in a productive manner. This objective was modulated by imposing the condition that the community should not be very difficult to access. However this condition may be removed when other energy projects are being considered and the funding agency has the capacity to absorb the high cost of access.

Communities benefiting from the IDB funded Unserved Areas Electrification Programme (UAEP) and the Government Guyana Hinterland Electricity Electrification Strategy were excluded from consideration. This condition resulted in the exclusion of all the coastal communities without electricity in Regions 2, 3, 4, 5, 6 and the township of Linden.

The selection of the community was done in a stepwise manner. This involved four (4) steps. The first two steps were based on utilizing the EDM I and other data to identify the region then the NDC within the region. After the NDC was identified three villages in the

NDC were identified. The final step was the selection of the village. This was based on a comparison of some key factors. This method was a method of last resort since numerical data were not available.

The regions with the 3 highest EDM I values were selected. This led to Regions 1, 8 and 9 being short listed. To determine which of the three regions would be selected two additional criteria were used.

- i) the percentage of Amerindians inhabiting the region and
- ii) the means of access

Based on the selection criteria Region 9, Upper Takatu - Upper Essequibo was selected. This region is also called the Rupununi Savannahs. This grassland is broken by outcrops of forest; these forests include the forested regions of the Kanuku Mountains, the Iwokrama Forests and ends in the Konashen District in the deep south which is heavily forested. Region 9 is very important due to its high levels of biodiversity. The two key players in sustainable utilization and protection of the forests are the Iwokrama Center for Rainforest Protection which utilises the Iwokrama forest and Conservation International.

An NDC within Region 9 was selected using the EDM I value and ease of access. The access was based on access to all the villages within the NDC. Since most of these NDCs are very extensive it is usual to find a few villages close to the main road with easy access. The ease of access to any group of villages in an NDC was given relative ratings, “Poor, Fair and Good” with “Good” being the situation where most of the villages of the NDC were relatively easy to access and are close to the main road. Generally most of the villages’ population fall with the range of 100 to 400 persons. As a result population size was not considered when selecting the NDC.

For selection of the NDC some amount of empirical data, the EDM I, played a significant role. However due to a scarcity of solid data at the village level a method of selection that was less dependent on empirical data had to be devised

The parameters used to make the final selection were:

- i) Population of the village – the higher the better
- ii) Main of economic activities - the less developed the better (this would give a less developed village a stronger claim to being chosen)
- iii) Potential for economic activity – the more the better
- iv) Type of educational facilities present in the village - the less the better
- v) Ease of access from main road to village- the easier the better

The major difference between the two competing villages, Woweta and Yakarinta is the ease of access to the village. Yakarinta is along a river, so in order to visit the village the visitor has to use two modes of transportation. However to get to Woweta the visitor has to make a short diversion of approximately 2 km from the main road. Based on the above, Woweta was chosen.

1.0 Introduction

This study is funded by OLADE and CIDA; it is part of the process used to determine the communities that would benefit from the installation of sustainable energy projects in Guyana. The project is being implemented by OLADE and the University of Calgary with in country support from the national counterpart, the Guyana Energy Agency. The project is biased towards the improvement of the livelihood of women and indigenous populations.

The broad objective of this study is to review poor rural communities and select the communities that are likely to derive the greatest benefit from the implementation of a rural energy project. This study has its foundation in the wider study of the rural communities in Guyana done earlier done through OLADE¹.

Initially it was intended that the selection of the communities would come from Amerindian Communities, as a result a detailed questionnaire was sent to the Ministry of Amerindian Affairs for the ministry to distribute to communities for completion. However the response to this questionnaire was not very timely. This forced the consultant to look at the wider population. However, since Amerindian Communities tended to be concentrated in the regions where there is a low level of energy availability and high poverty these communities were still captured in the analysis.

The main disadvantage of using this approach is that the smallest community unit reviewed was the at the Neighbourhood Democratic Council level. As such for the hinterland regions where the NDCs are rather large due to small populations it does not give a good indication of the actual level of poverty in an individual community or village.

As a result of this lack of specific data non conventional methods of selection had to be utilised to finally select the most deserving community.

¹ P. Ketwaru, *Analysis of the Energy Sector of Rural Guyana*, Unpublished, July 2007

2.0 Poverty Indicators

2.1 Overview

One of the key factors influencing the choice of community is the level of poverty existing in the community. The objective is that if the community is provided with an appropriate energy supply it would be able to alleviate the extent of poverty within the community. To make this choice a review of the most recent poverty indicators had to be done. However, there has not been any recent poverty survey done in Guyana, the last one being the Living Conditions Survey (LCS), done in 1999². Currently, a Household Budget Survey (HBS) is in the process of being completed. As such reliable indicators of poverty are not readily available. However the recent 2002 national population census database was utilised by the World Bank to compile two poverty indices (Appendix 1), the Living Conditions Index (LCI) and the Enumeration District Marginality Index (EDMI)³.

Since the variables used are related to the living conditions of the population of the households in each Neighbourhood Democratic Council (NDC) these indices can give a fairly accurate picture of the levels of poverty in the various NDCs within Guyana. Both indices are related but the LCI reflects the poverty levels of individual households in the NDC while the EDM I related to the poverty levels of the individual Enumeration District (ED). The EDM I also used a wider range of variables and can be considered to be more representative of the poverty level in the NDCs. Most of the indicators used here are not direct indicators but rather indirect indicators.

The variables used for the Living Conditions Index (LCI) are⁴:

- the access and quality of a household's source of water,
- source of drinking water,
- the type of toilet facility,
- the main method of garbage disposal,
- the extent of crowding in the household (the number of people in the household divided by the number of bedrooms in the dwelling).

The Enumeration District Marginality Index (EDMI) is based on the following variables⁵:

- The proportion of adults (15 yrs of age or older) in the enumeration district (ED) who have either no education at all or did not complete primary schooling

² Guyana Poverty Reduction Strategy Paper, 2002.

³ Skoufias, E. *A Poverty Map for Guyana*, World Bank, 2005-09-26. (Guyana Bureau Of Statistics)

⁴ Skoufias, E. *A Poverty Map for Guyana*, World Bank, 2005-09-26. (Guyana Bureau Of Statistics)

⁵ *ibid*

- The proportion of adults (15 yrs of age or older) in the enumeration district who work in the primary sector
- The proportion of children (6-14 yrs of age or older) in the enumeration district who do not attend school full-time
- The proportion of dwellings in the enumeration district that report not having piped water as their main source of water supply
- The proportion of dwellings in the enumeration district that do not have a W.C. linked to sewer
- The proportion of dwellings in the enumeration district that do not report electricity as their main source of lighting
- The proportion of dwellings in the enumeration district that report their main method of garbage disposal is not garbage collection service, compost, or burying
- The average number of family members per bedroom in the enumeration district

It should be noted that the majority of the variables used to derive the EDM I are similar to those used for the Unsatisfied Basic Needs Index (UBNI) used by some LAC countries.

Guyana as stated in the earlier report has a fairly developed coastal region where the majority of the population can be found. On the other hand the administrative regions beyond this coastal strip, with the exception of the community of Linden in Region 10, are undeveloped with relatively poor physical and social infrastructure. It is also in these regions that the majority of Guyana's Amerindian population can be found.

The methods used to obtain the LCI and EDM I are slightly different where the LCI is a sum of the scores of the various contributions of the variables while the EDM I is more based on means weighted by the number of households in the NDC. As a result the higher the LCI value the lower the poverty level while for the EDM I the higher levels of poverty are indicated by higher values.

2.2 Poverty Levels

A comparison of the LCI and EDM I of the ten administrative regions shows generally the same broad trend in poverty though there is some degree of rearrangement in the relative levels of poverty in the regions⁶.

Table # 1 - Poverty Levels based on LCI and EDM I

Based on LCI		Rank- Poorest On top	Based on EDM I	
Region 8	162	1	Region 1	2.125
Region 9	184	2	Region 9	2.049
Region 1	207	3	Region 8	1.982
Region 7	259	4	Region 7	1.023
Region 2	278	5	Region 2	0.583
Region 3	352	6	Region 5	0.303
Region 5	355	7	Region 3	0.234
Region 10	364	8	Region 6	0.188
Region 6	373	9	Region 4	-0.137
Region 4	375	10	Region 10	-0.299
Georgetown	453	11	Georgetown	-0.1024

Source: Guyana Bureau of Statistics

The following Tables and Charts are based on the calculated EDM I as presented by the Guyana Bureau of Statistics⁷.

Table # 2 – EDM I Region 1

NDC Name	EDM I
Mabaruma / Kumaka / Hosororo	1.419
Matthews Ridge / Arakaka (Matakai) / Port Kaituma	1.706
Barima / Amakura	3.212
Waini	2.533
Rest of Region 1	2.462

Source: Guyana Bureau of Statistics

⁶ Skoufias, E. *A Poverty Map for Guyana*, World Bank, 2005-09-26. (Guyana Bureau Of Statistics)

⁷ Guyana Bureau of Statistics, *Marginality Index*, 2007.

Chart 1- EDM I Region 1

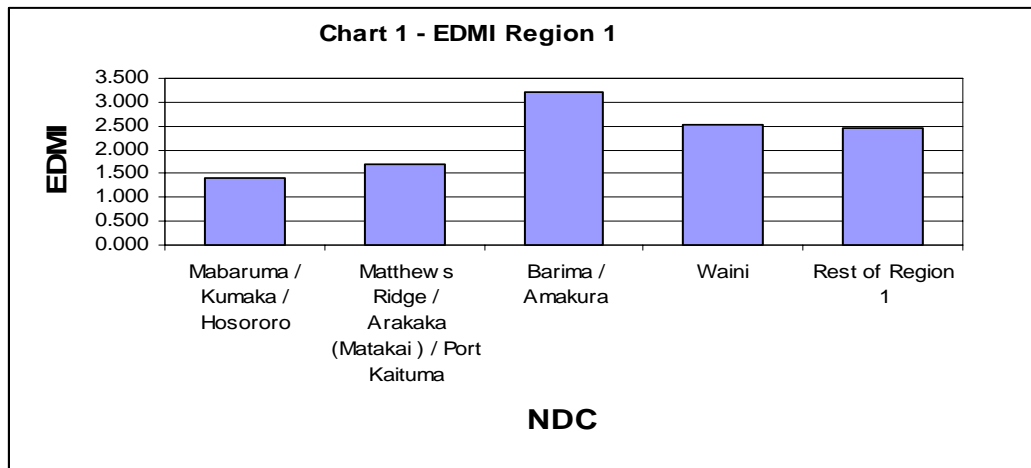


Table # 3 - EDM I Region 2

NDC Name	EDMI
Good Hope / Pomona	0.751
Riverstown / Annandale	0.664
Zorg - En - Vlygt / Aberdeen	0.190
Paradise / Evergreen (including Somerset and Berks)	0.463
Charity / Urasara	0.994
Anna Regina	0.247
Supernaam River, Bethany and Mashabo villages	1.165

Source: Guyana Bureau of Statistics

Chart 2- EDM I Region 2

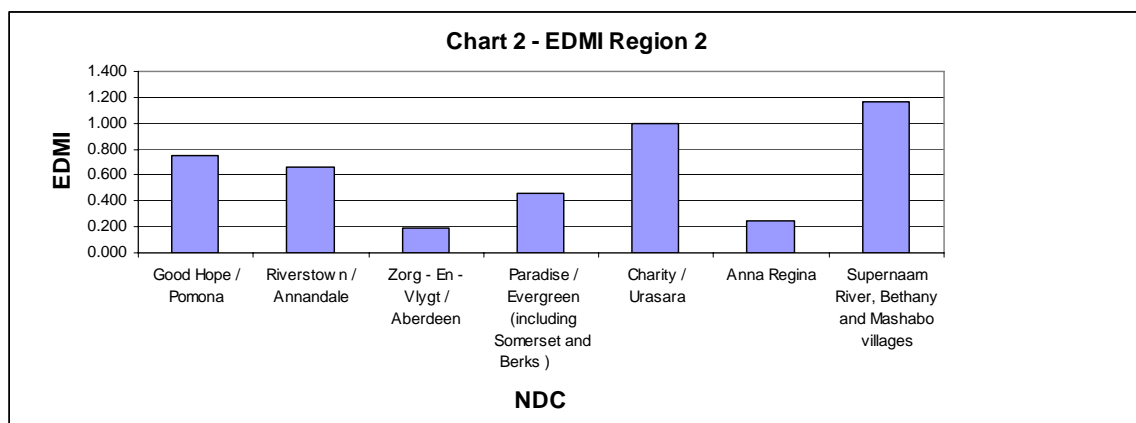


Table # 4 - EDM I Region 3

NDC Name	EDMI
Patentia / Toevlugt	0.112
Canals Polder	0.183
Nismes / La Grange	-0.280
Meer Zorgen / Malgre Tout	0.111
Klein Pouderoyen / Best	-0.189
Nouvelle Flanders / La Jalousie	-0.192
Blankenburg / Hague	-0.365
Cornelia Ida / Stewartville	-0.051
Uitvlugt / Tuschen	0.452
Vergenoegen / Greenwich Park	0.050
Good Hope / Hydronie	0.268
Parika / Mora	0.933
Leguan (Essequibo Islands)	0.263
Wakenaam (Essequibo Islands)	0.422
Amsterdam (Demerara River) / Vriesland	1.302
Canal No. 2 (part) + The Belle + Little Alliance	0.362
Sparta / Bonasika and Rest of Essequibo Islands	2.137

Source: Guyana Bureau of Statistics

Chart 3 - EDM I Region 3

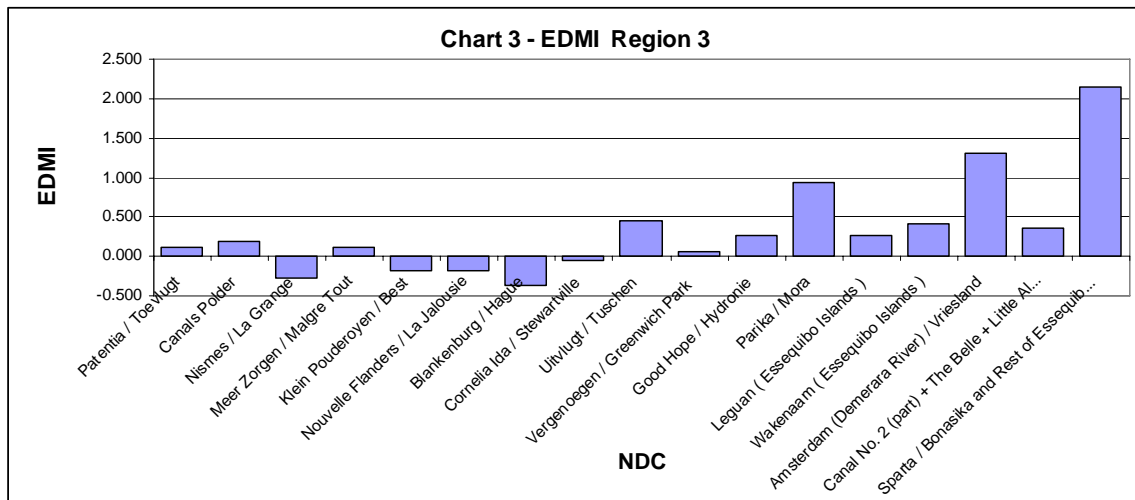


Table # 5 - EDM I Region 4

NDC Name	EDMI
Cane Grove Land Development Scheme	0.380
Vereeniging / Unity	0.328
Grove / Haslington	-0.180
Enmore / Hope	-0.089
Foulis / Buxton	-0.112
La Reconnaissance / Mon Repos	0.084
Triumph / Beterverwagting	-0.360
La Bonne Intention / Better Hope	-0.402
Plaisance / Industry	-0.631
Eccles / Ramsburg	-0.968
Mocha / Arcadia	-0.286
Herstelling / Little Diamond	-0.428
Diamond / Golden Grove	-0.159
Good Success / Caledonia	-0.059
Te Huist Coverden / Soesdyke	0.057
City of Georgetown	-1.208
Suburbs of Georgetown	-0.961
Soesdyke-Linden highway (including Timehri)	0.808
St. Cuthberts / Orange Nassau (Mahaica River)	1.999

Source: Guyana Bureau of Statistics

Chart 4- EDM I Region 4

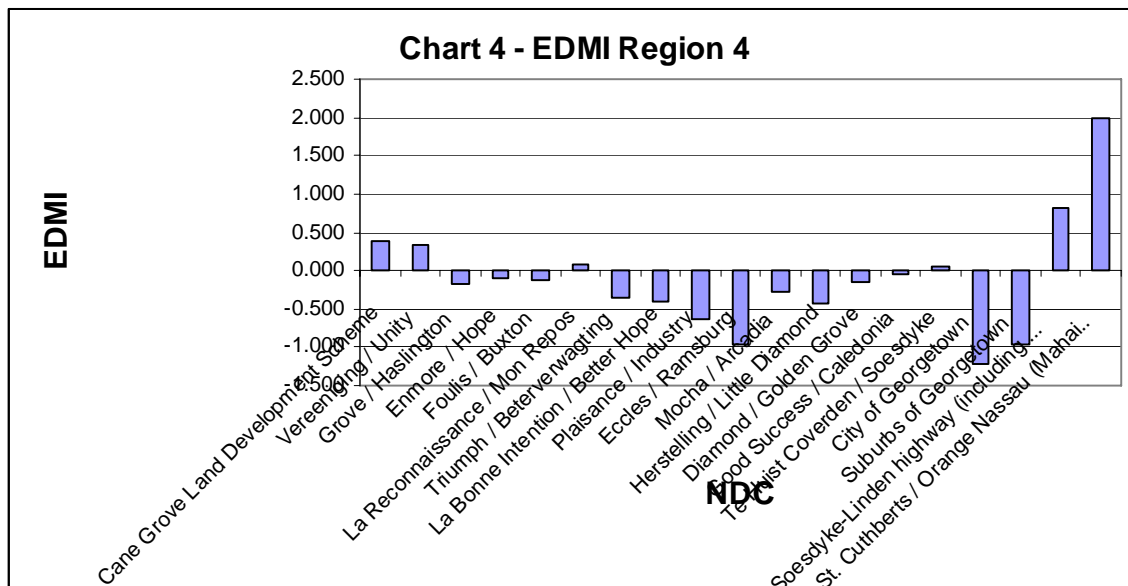


Table # 6 - EDM I Region 5

NDC Name	EDMI
Gelderland / No 3	0.377
Rosignol / Zeelust	0.369
Bel Air / Woodlands	0.175
Woodley Park / Bath	0.526
Naarstigheid / Union	-0.014
Tempe / Seafield	0.097
Rising Sun / Profit	0.038
Abary / Mahaicony	0.193
Chance / Hamlet	0.011
Farm / Woodlands	0.053
West bank Berbice (river)	2.212
St. Francis Mission	1.991
Rest of Region 5	1.872

Source: Guyana Bureau of Statistics

Chart 5- EDM I Region 5

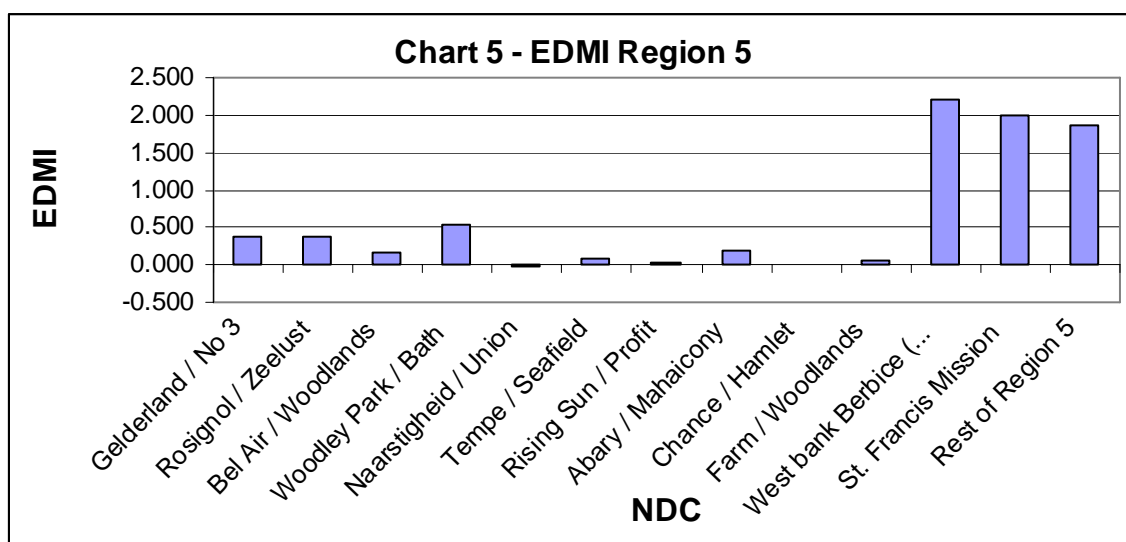


Table # 7 - EDM I Region 6

NDC Name	EDMI
Jackson Creek / Crabwood creek	0.500
No.74 Village / No.52 Village	0.180
No.51 Village / Good hope	0.055
Joppa / Macedonia	0.147
Tarlogie / Maida	0.616
Bush Lot / Adventure	0.449
Hogstye / Lancaster	0.269
Whim / Bloomfield	0.490
John / Port Maurant	0.323
Hampshire / Kilcoy	0.301
Fyrish / Gibraltar	0.105
Borlam (No.37) / Kintyre	0.294
No. 38 / Ordnance Fortlands	0.013
Cane Field / Enterprise	0.189
Black Bush Polder land Development Scheme	1.310
Enfield / New Doe Park	0.375
Corriverton	-0.096
Rose Hall	-0.099
New Amsterdam	-0.589
Corentyne River	2.577
Canje River	0.802
East bank Berbice	1.678
Rest of Region 6	2.600

Source: Guyana Bureau of Statistics

Chart 6 - EDM I Region 6

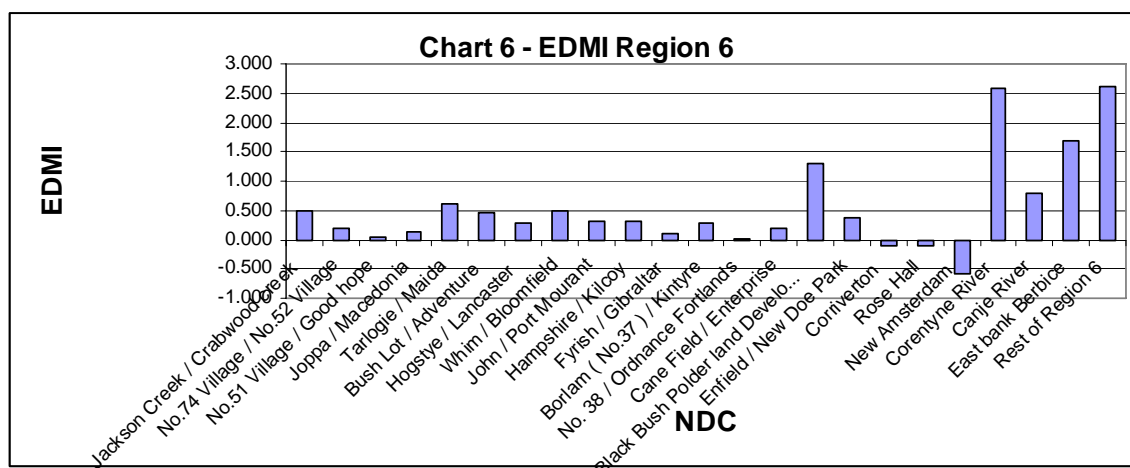
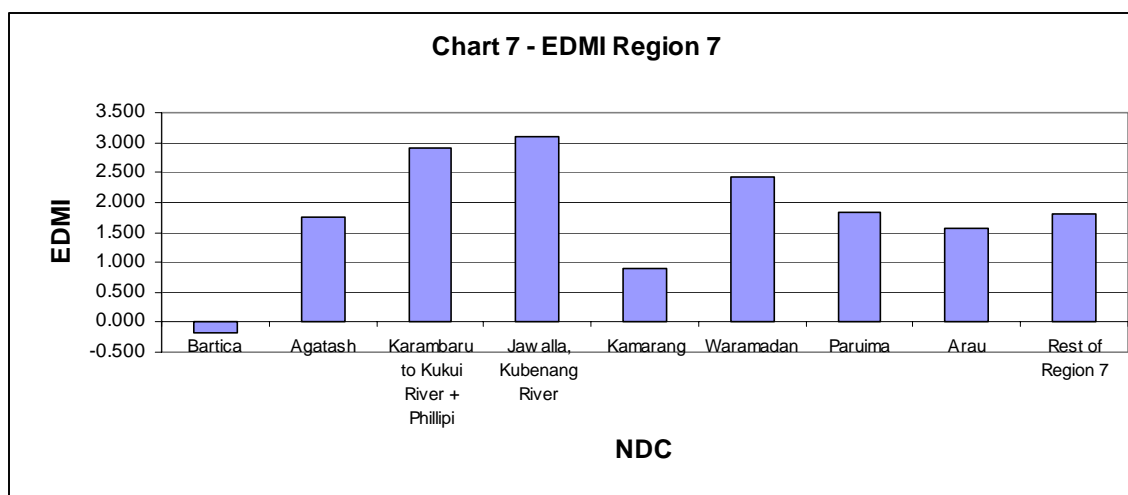


Table # 8 - EDM I Region 7

NDC Name	EDMI
Bartica	-0.187
Agatash	1.756
Karambaru to Kukui River + Phillipi	2.903
Jawalla, Kubenang River	3.098
Kamarang	0.901
Waramadan	2.424
Paruima	1.825
Arau	1.568
Rest of Region 7	1.809

Source: Guyana Bureau of Statistics

Chart 7 - EDM I Region 7**Table # 9 - EDM I Region 8**

NDC Name	EDMI
Madhia + Kurubrong River + Mona Falls	1.167
Monkey Mountain	2.187
Paramakatoi	1.982
Maripari River	1.075
Kurukabaru	2.656
Kopanang, Waipa, Kenepai	2.307
Chenapau River	2.031
Kaibarupai	3.503
Rest of Region 8	2.243

Source: Guyana Bureau of Statistics

Chart 8 - EDM Region 8

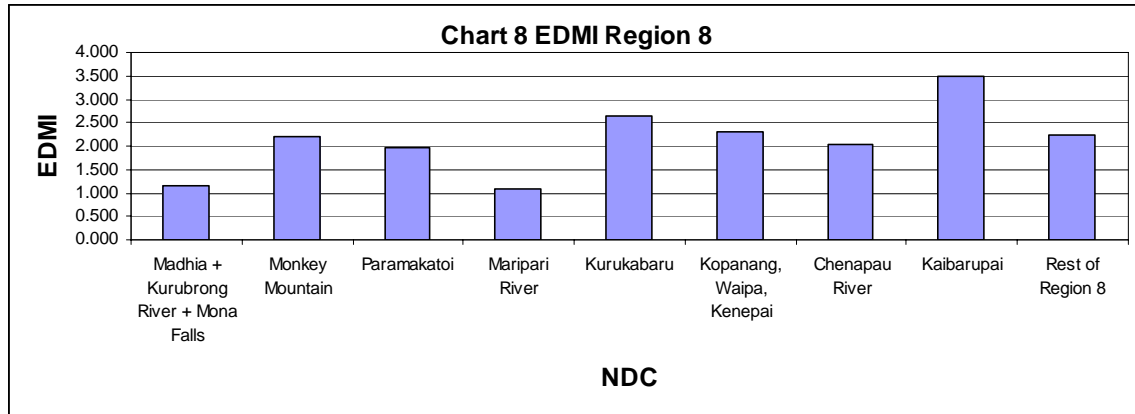


Table # 10 - EDM Region 9

NDC Name	EDMI
Ireng / Sawariwau (Including St. Ignatius)	1.299
Yarong Paru - Good Hope	2.561
Toka - Jakaretinga	2.329
Yakarinta - Wowetta, Surama	2.474
Sand Creek - Dadanawa, Catunarib, Sawariwau	2.238
Marudi	2.556
Aishalton - Karaudanawa, Achiwib	2.476
Rest of Region 9	2.106

Source: Guyana Bureau of Statistics

Chart 9 - EDM Region 9

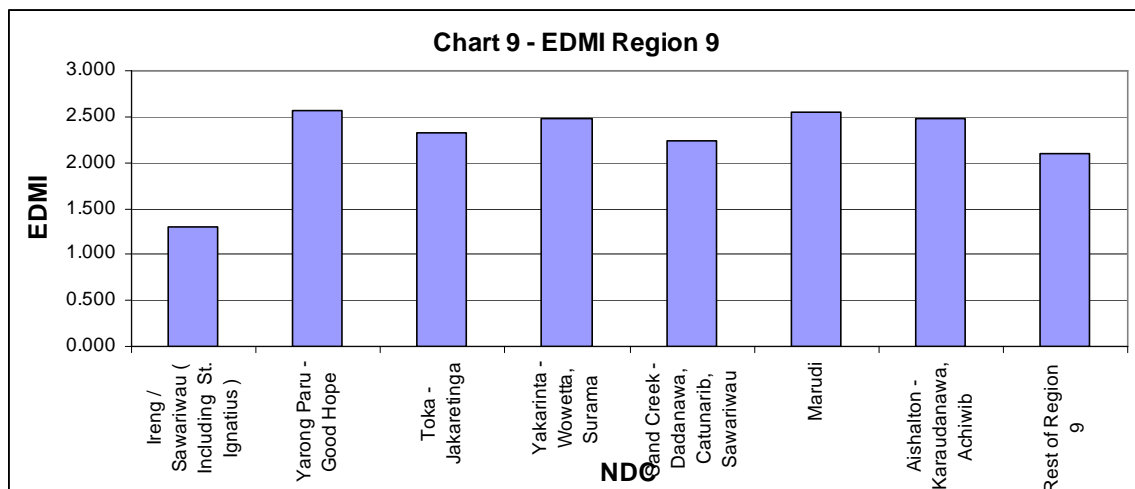


Table # 11 - EDM Region 10

NDC Name	EDMI
Kwakwani	-0.421
Linden	-0.644
Coomaka Lands	0.639
Ituni	0.443
Mabura Hill	0.040
Makouria River	1.321
Berbice River settlements	1.455
Mora creek (Aorima), Hururu	-0.271
Rest of Region 10	1.537

Source: Guyana Bureau of Statistics

Chart 10 - EDM Region 10

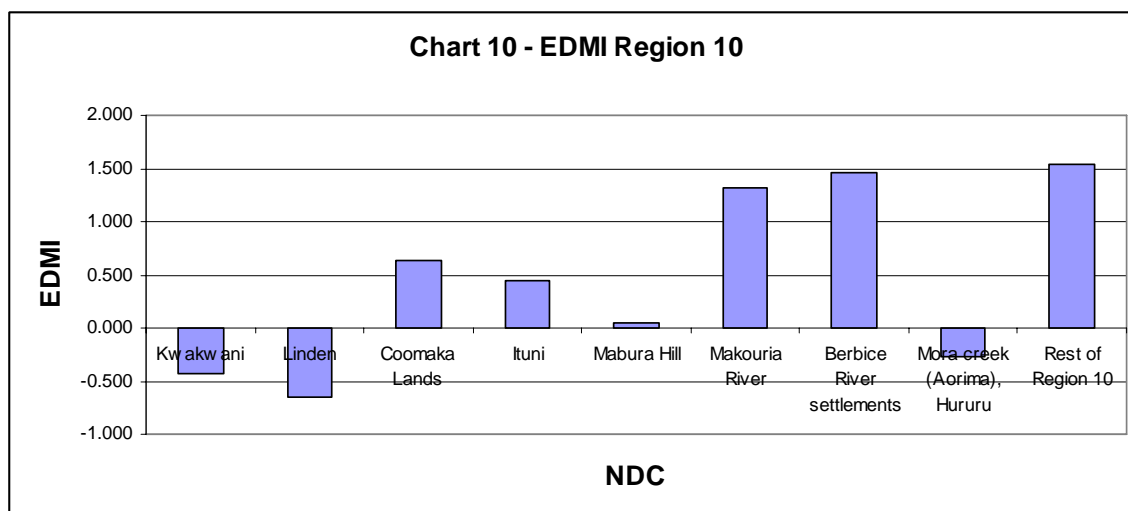


Table # 12 - EDM Index of NDCs of the Whole Country (Sorted)

Region	N.D.C.	NDC Name	EDMI Index
10	Municipality	Linden	-0.644
10	1	Kwakwani	-0.421
10	N.C	Mora creek (Aorima), Hururu	-0.271
10	N.C	Mabura Hill	0.040
10	N.C	Ituni	0.443
10	N.C	Coomaka Lands	0.639
10	N.C	Makouria River	1.321
10	N.C	Berbice River settlements	1.455
10	N.C	Rest of Region 10	1.537
9	1	Ireng / Sawariwau (Including St. Ignatius)	1.299
9	N.C	Rest of Region 9	2.106
9	N.C	Sand Creek - Dadanawa, Catunarib, Sawariwau	2.238
9	N.C	Toka - Jakaretinga	2.329
9	N.C	Yakarinta - Wowetta, Surama	2.474
9	N.C	Aishalton - Karaudanawa, Achiwib	2.476
9	N.C	Marudi	2.556
9	N.C	Yarong Paru - Good Hope	2.561
8	N.C	Maripari River	1.075
8	N.C	Madhia + Kurubrong River + Mona Falls	1.167
8	N.C	Paramakatoi	1.982
8	N.C	Chenapau River	2.031
8	N.C	Monkey Mountain	2.187
8	N.C	Rest of Region 8	2.243
8	N.C	Kopanang, Waipa, Kenepai	2.307
8	N.C	Kurukabaru	2.656
8	N.C	Kaibarupai	3.503
7	1	Bartica	-0.187
7	N.C	Kamarang	0.901
7	N.C	Arau	1.568
7	N.C	Agatash	1.756
7	N.C	Rest of Region 7	1.809
7	N.C	Paruima	1.825
7	N.C	Waramadan	2.424
7	N.C	Karambaru to Kukui River + Phillipi	2.903
7	N.C	Jawalla, Kubenang River	3.098
6	Municipality	New Amsterdam	-0.589
6	Municipality	Rose Hall	-0.099
6	Municipality	Corriverton	-0.096
6	13	No. 38 / Ordnance Fortlands	0.013
6	3	No.51 Village / Good hope	0.055
6	11	Fyrish / Gibraltar	0.105
6	4	Joppa / Macedonia	0.147
6	2	No.74 Village / No.52 Village	0.180
6	14	Cane Field / Enterprise	0.189
6	7	Hogstye / Lancaster	0.269
6	12	Borlam (No.37) / Kintyre	0.294
6	10	Hampshire / Kilcoy	0.301

Region	N.D.C.	NDC Name	EDMI Index
6	9	John / Port Mourant	0.323
6	16	Enfield / New Doe Park	0.375
6	6	Bush Lot / Adventure	0.449
6	8	Whim / Bloomfield	0.490
6	1	Jackson Creek / Crabwood creek	0.500
6	5	Tarlogie / Maida	0.616
6	N.C	Canje River	0.802
6	15	Black Bush Polder land Development Scheme	1.310
6	N.C	East bank Berbice	1.678
6	N.C	Corentyne River	2.577
5	5	Naarstigheid / Union	-0.014
5	9	Chance / Hamlet	0.011
5	7	Rising Sun / Profit	0.038
5	10	Farm / Woodlands	0.053
5	6	Tempe / Seafield	0.097
5	3	Bel Air / Woodlands	0.175
5	8	Abary / Mahaicony	0.193
5	2	Rosignol / Zeelust	0.369
5	1	Gelderland / No 3	0.377
5	4	Woodley Park / Bath	0.526
5	N.C	Rest of Region 5	1.872
5	N.C	St. Francis Mission	1.991
5	N.C	West bank Berbice (river)	2.212
4	Municipality	City of Georgetown	-1.208
4	10	Eccles / Ramsburg	-0.968
4	Municipality	Suburbs of Georgetown	-0.961
4	9	Plaisance / Industry	-0.631
4	12	Herstelling / Little Diamond	-0.428
4	8	La Bonne Intention / Better Hope	-0.402
4	7	Triumph / Beterverwagting	-0.360
4	11	Mocha / Arcadia	-0.286
4	3	Grove / Haslington	-0.180
4	13	Diamond / Golden Grove	-0.159
4	5	Foulis / Buxton	-0.112
4	4	Enmore / Hope	-0.089
4	14	Good Success / Caledonia	-0.059
4	15	Te Huist Coverden / Soesdyke	0.057
4	6	La Reconnaissance / Mon Repos	0.084
4	2	Vereeniging / Unity	0.328
4	1	Cane Grove Land Development Scheme	0.380
4	N.C	Soesdyke-Linden highway (including Timehri)	0.808
4	N.C	St. Cuthberts / Orange Nassau (Mahaica River)	1.999
3	7	Blankenburg / Hague	-0.365
3	3	Nismes / La Grange	-0.280
3	6	Nouvelle Flanders / La Jalousie	-0.192
3	5	Klein Pouderoeyen / Best	-0.189
3	8	Cornelia Ida / Stewartville	-0.051
3	10	Vergenoegen / Greenwich Park	0.050
3	4	Meer Zorgen / Malgre Tout	0.111
3	1	Patentia / Toevlugt	0.112
3	2	Canals Polder	0.183
3	13	Leguan (Essequibo Islands)	0.263

Region	N.D.C.	NDC Name	EDMI Index
3	11	Good Hope / Hydronie	0.268
3	N.C	Canal No. 2 (part) + The Belle + Little Alliance	0.362
3	14	Wakenaam (Essequibo Islands)	0.422
3	9	Uitvlugt / Tuschen	0.452
3	12	Parika / Mora	0.933
3	N.C	Amsterdam (Demerara River) / Vriesland	1.302
3	N.C	Sparta / Bonasika and Rest of Essequibo Islands	2.137
2	3	Zorg - En - Vlygt / Aberdeen	0.190
2	Municipality	Anna Regina	0.247
2	4	Paradise / Evergreen (including Somerset and Berks)	0.463
2	2	Riverstown / Annandale	0.664
2	1	Good Hope / Pomona	0.751
2	5	Charity / Urasara	0.994
2	N.C	Supernaam River, Bethany and Mashabo villages	1.165
1	1	Mabaruma / Kumaka / Hosororo	1.419
1	2	Matthews Ridge / Arakaka (Matakai) / Port Kaituma	1.706
1	N.C	Rest of Region 1	2.462
1	N.C	Waini	2.533
1	N.C	Barima / Amakura	3.212
		N.B. The indices for the rest of Region 6 and International boundaries have been estimated. N.C – NDC Not Constituted	

Source: Guyana Bureau of Statistics

3.0 Conditions for the Selection of the Community

3.1 Introduction

The levels of poverty are relatively lower in the coastal regions of Guyana. On the other hand the levels of poverty become more pronounced as the communities become more isolated from the coast. Also it was found that the communities with smaller populations tend to have greater levels of poverty.

The primary objective of this selection exercise is to select one community which has a great need for energy and would be able to optimise the utilization of this energy in a productive manner. This primary objective however was modulated by imposing another condition. This condition was that the community should not be very difficult to access since access cost and time would have a negative impact on the implementation of the project. This condition was recommended by OLADE based on the difficulties experienced when similar projects were being implemented in other countries. This condition was imposed on this selection since these projects are demonstration projects and are constrained by budget and time. However this condition may be removed when other energy projects are being considered and the funding agency has the capacity to absorb the high cost of access.

3.2 Exclusions

The process of selection was designed in a manner to prevent duplication with current electrification projects, these are mainly the IDB funded Unserved Areas Electrification Programme (UAEP) and the Government Guyana Hinterland Electricity Electrification Strategy. Any community which are identified in these programmes will be excluded from selection at this stage of the project. This condition has resulted in the exclusion of all the coastal communities without electricity in Regions 2, 3, 4, 5, 6 and the township of Linden in Region 10 which are contiguous with existing electrified communities and are targeted for energy via the UAEP. As such, all coastal communities in Regions 2, 3, 4, 5, and 6 and Linden and its immediate environs were not considered.

The communities identified in the Government of Guyana Hinterland Electrification Strategy were also excluded from selection.

Table # 13 - Communities Identified in the Hinterland Electrification Strategy⁸

Region	Community
1	Port Kaituma
1	Santa Rosa
1	Mabaruma
1	Sebai
1	Red Hill
2	Capoey
2	St. Deny's
4	St Cuthbert's Mission
5	Moraikobai
6	Orealla
8	Kurukaburu
8	Monkey Mountain
8	Kopinang
8	Nappi
8	Mahdia
8	Yarakita
9	Lethem
9	Annai
9	Aishalton
9	Sand Creek
9	Shulinab
9	Shea
9	Yupakari
10	Wikki
10	Calcuni
10	Muritaro

Source: Office of the Prime Minister

⁸ Government of Guyana Hinterland Electrification Strategy, Office of the Prime Minister, Jan. 2007.

4.0 The Selection Process

4.1 Introduction

The selection was done in a stepwise manner. This involved four (4) steps. The first two steps were based on utilizing the EDM I and other data to identify the administrative region then the NDC. After the NDC was identified three villages in the NDC were identified.

The final step was the selection of the village. This was based on a comparison of some key factors. This method was a method of last resort since it was not possible to get hard empirical data from the region in a timely manner.

4.2 Selection of Region

Since the EDM I of the region is a good indicator of level of poverty of the region the regions with the 3 highest levels EDM I values were selected. This led to Regions 1, 8 and 9 being short listed.

To determine which of the three regions would be selected two additional criteria were also used. These were:

- i) the percentage of Amerindians inhabiting the region and
- ii) the means of access

Highest weighting was given to the region with the greatest percent of Amerindians. The other criterion was the main means of access. The highest rating was given to road access while the lowest went to air access.

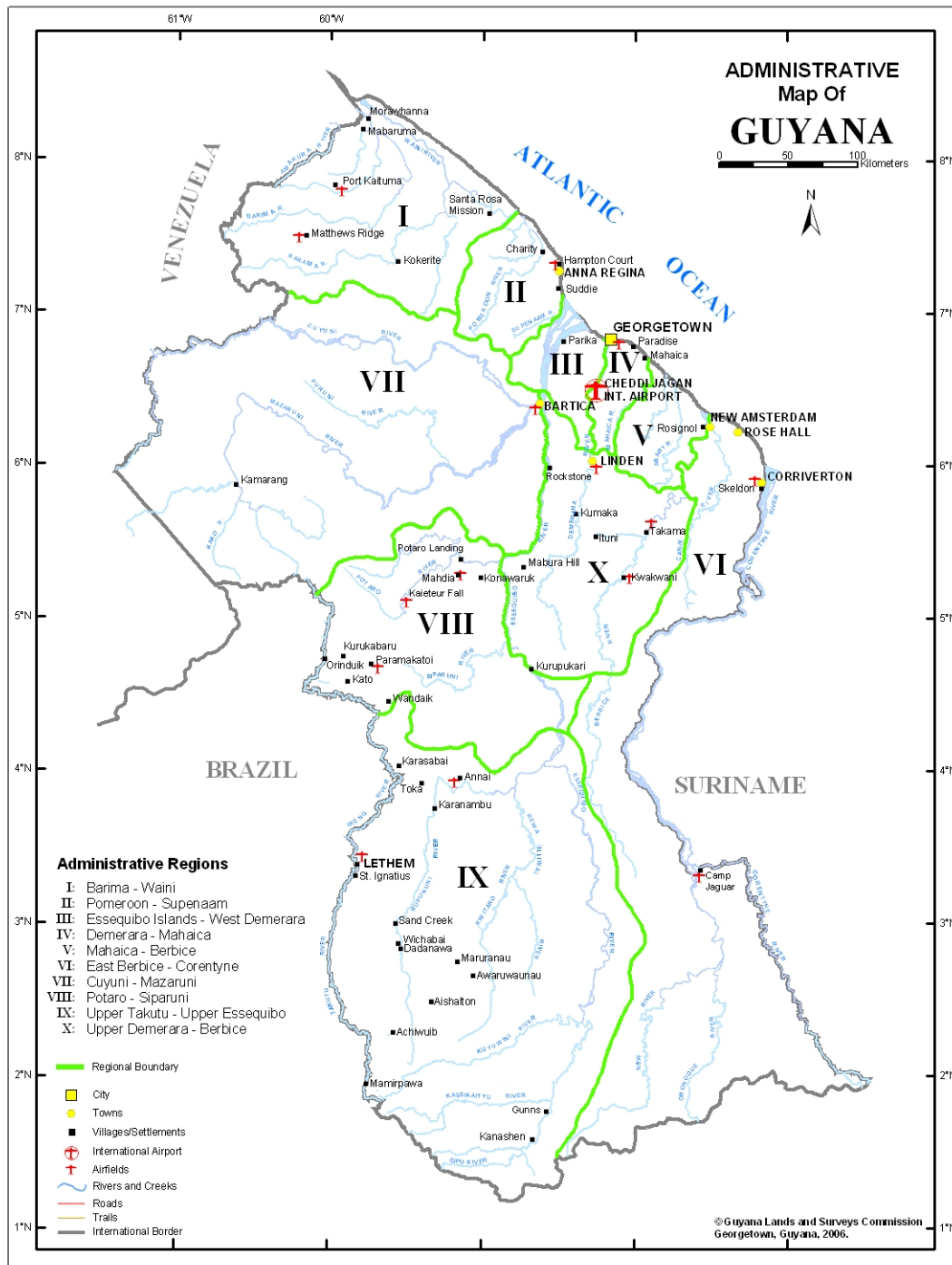
As a result of these indicators Region 9 was selected as the most deserving region. It has relatively easy access. Most of the communities can be accessed by roads or trails. Additionally it has the highest percent of Amerindians and has the second highest level of poverty based on the EDM I.

Table # 14 – Regions with the Highest EDM I

Region	EDMI	% Amerindians	Access by Road from Georgetown
Region 1	2.125	62.2	No Access by Road only by Sea & Air
Region 9	2.049	89.2	Most communities by all weather road and trails. (Air access is also available)
Region 8	1.982	75.9	Few Communities by all weather road and trails. Most by air and water

Source: 2002 Census & Internal

Figure 1 - The Administrative Regions of Guyana



5.0 Region Nine

5.1 Introduction

Region 9, Upper Takatu - Upper Essequibo is in the south-western corner of Guyana and is bounded on the southern and western sides by Brazil. Guyana is well known for its very pristine forests which cover over 70 % of the country. However Region 9 is predominantly grasslands. This region is also called the Rupununi Savannahs after the Rupununi River which is the major river, apart from the Essequibo River in that region. The grasslands commence at the foothills of the Pakarima Mountain range in the north and continue south to the southern ranges that border Guyana. It should be noted that the Rupununi encompasses both Regions 8 and 9.

This grassland is broken by outcrops of forest; these forests include the forested regions of the Kanuku Mountains, the Iwokrama Forests and ends in the Konashen District in the deep south which is heavily forested. Region 9 is very important due to its high levels of biodiversity. As a result large areas are protected and sustainable utilization is practiced and encouraged. The two key players in this sustainable utilization and protection are the Iwokrama Center for Rainforest Protection which utilises the Iwokrama forest and Conservation International which works with the Kanuku Mountains and the southern ranges of the Konashen District of the Wai Wai tribe.

This area is populated predominantly by Amerindians with the main tribes being the Maksushi, Wapishana and Wai Wai. The Makushi and Wapishana are found mainly on the plains and foothills of the mountains while the Wai Wai people are also found in the forest of the deep south.

Apart from Iwokrama and CI there are a number of NGOs that are involved in community development. Some of the key ones are highlighted below.

5.2 Iwokrama⁹

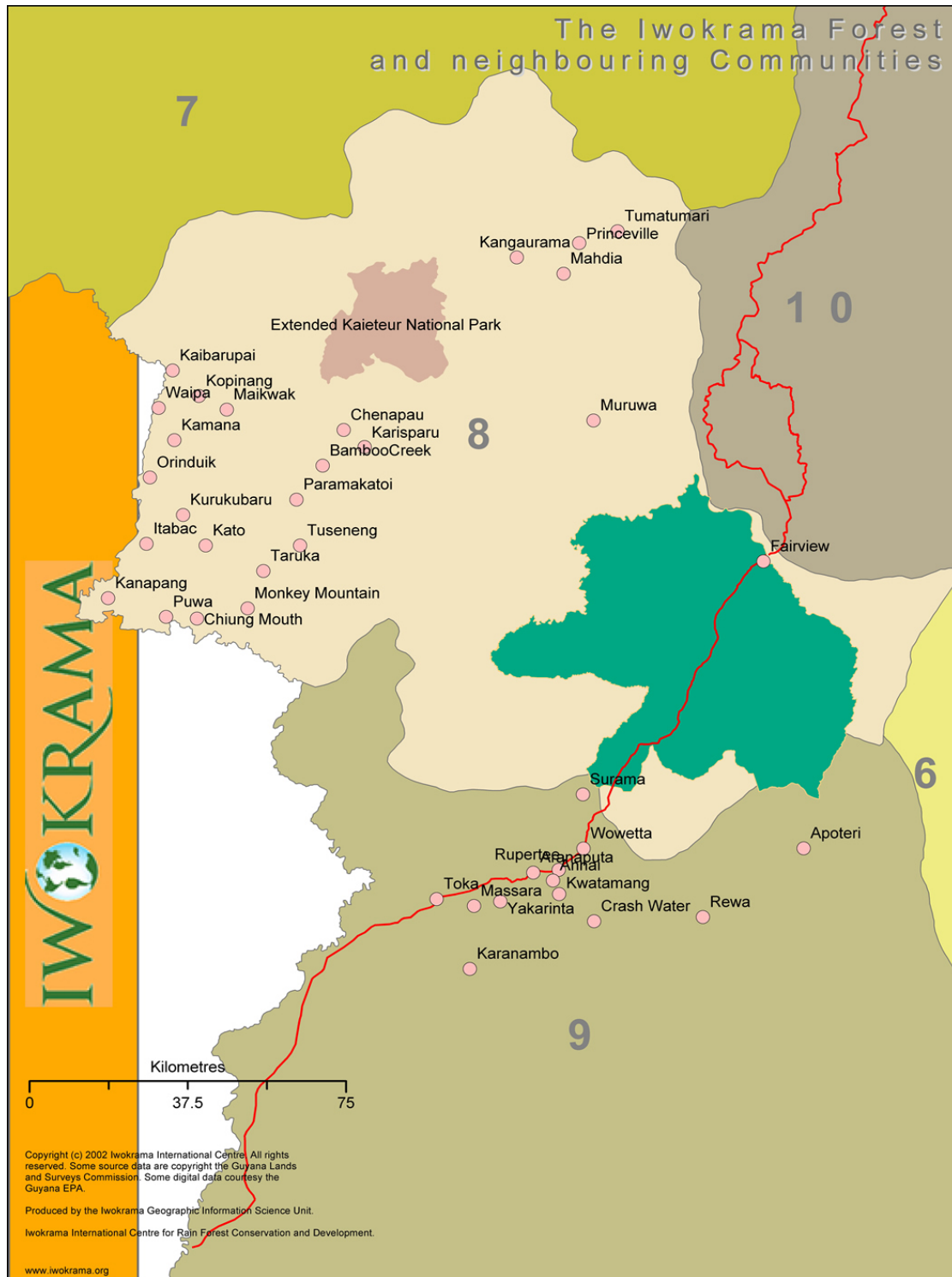
The Iwokrama International Centre for Rainforest Conservation and Development (IIC) was conceptualised in 1989 by the President of Guyana who set aside a section of Guyana's territory for research in sustainable forest management. This was a joint mandate between the Commonwealth and the Government of Guyana to manage Guyana's Iwokrama Forest and was formalized in 1996.

The Iwokrama Forest covers an area of approximately 371,000 hectare adjacent to the

⁹ <http://www.iwokrama.org/people/communitydevelopment.htm>

North Rupununi Wetlands. This land comprises of a very varied ecosystem consisting of a wide a range of habitats which include many lake and rivers, mountains, lowland

Figure 2 - Iwokrama Forest



tropical rain forests, palm forests, and seasonally flooded forests and savannahs. The area contains very rich biodiversity. The Iwokrama Forest is situated in Region 8 but the Centre has significant influence in Region 9

The area is the homeland of the Makushi and Wai Wai Amerindians who continue to live in the area and use the forest and wetland resources from the area, the main communities being the Amerindian Communities of Surama and Annai. Iwokrama's management and the indigenous community have developed a very important partnership. This partnership plays a very important role in the social and economic development of the villagers. The relationship has caused significant development of tourism within the community.

5.3 Conservation International (Guyana)

Conservation International (Guyana) (CI) is another NGO that plays a significant role in Region 9. The Wai Wai indigenous community of the Konashen District is found in the remote rain forest in the deep south of Guyana that is part of the globally important Guyana Shield. The land has deep cultural meaning for the Wai Wai.

To help protect the land, the Wai Wai partnered with CI to assist in their efforts. In 2004, a Memorandum of Understanding was jointly signed by the Wai Wai, CI, and the Government of Guyana creating the Wai Wai Community Owned Conservation Area. Under this agreement, the Wai Wai maintains ownership of the planning process, setting priorities for conserving and managing their lands. CI's input being the provision of technical training, scientific knowledge, and various administrative resources to assist the Wai Wai to attain their objectives.

The Wai Wai Community Owned Conservation Area is considered a model of how an indigenous community ensures that their community is developed in sustainable manner that yields benefits for its people.

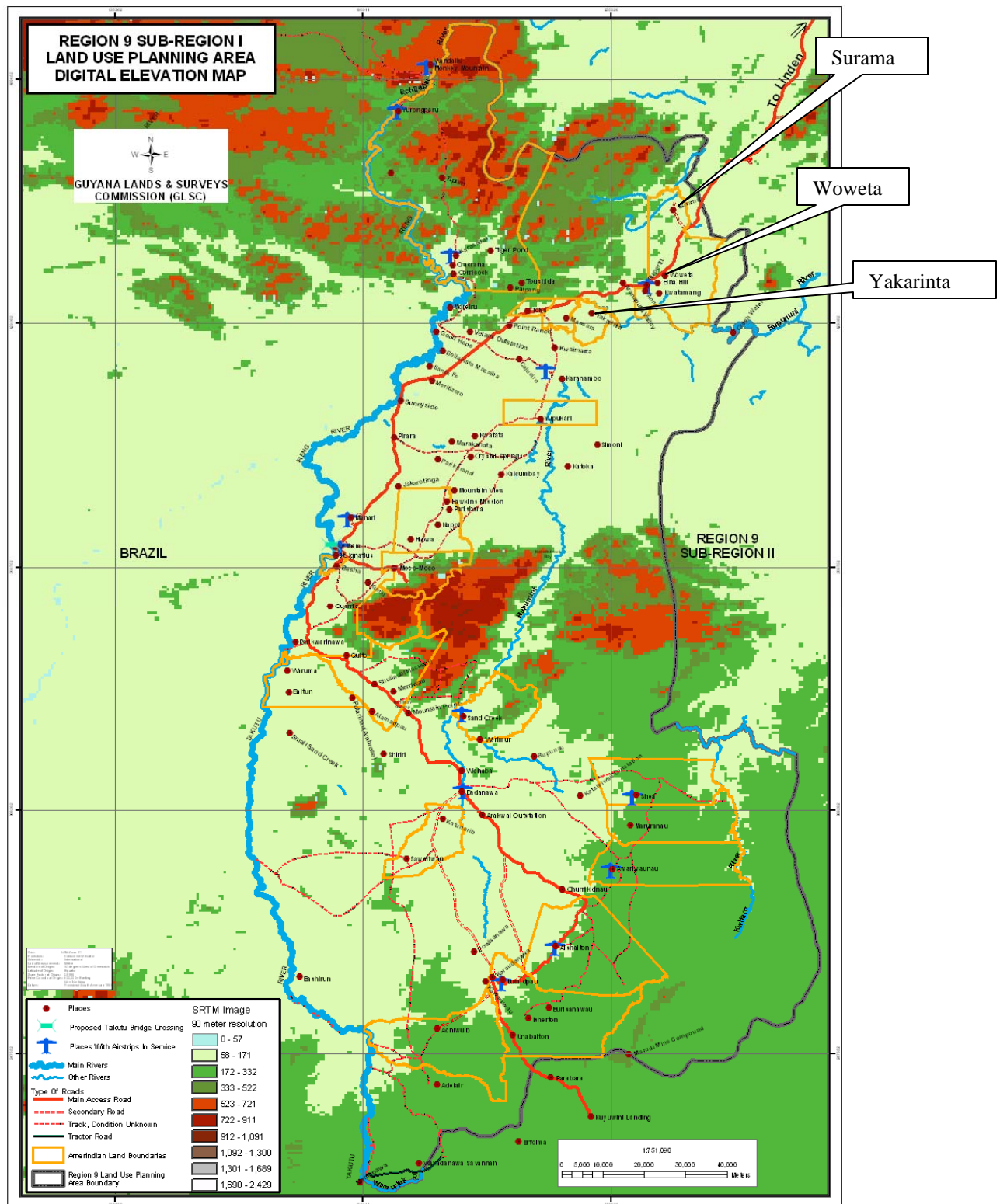
5.4 The North Rupununi District Development Board¹⁰

The NRDDDB is a local Amerindian community-based organisation composed of village leaders and other community representatives. Iwokrama helped create the NRDDDB to establish a formal link between the communities, government agencies and Iwokrama. The NRDDDB plays an important role in community development by planning and coordinating educational, developmental, cultural and research programmes in the North Rupununi. The NRDDDB provides a forum for discussion and decision-making among the local leaders.

The NRDDDB is composed of members from the 14 villages of the North Rupununi District (Annai Central, Apoteri, Aranaputa, Crash Water, Kwatamang, Kwaimatta, Massara, Rewa, Rupertee, **Surama**, Toka, Wowetta, Yakarinta and Fairview.

¹⁰ <http://www.iwokrama.org/people/nrddb.htm> Oct 07, 2007

Figure 3 - Region 9, Sub-Region 1



5.5 Bina Hill Institute¹¹

The Bina Hill Institute was established in 2001, it works with several partners under the umbrella of the NRDDDB, including Pronatura and Iwokrama, to develop training, research and other resources in the North Rupununi. It is expected that Bina Hill Institute will expand its training especially in natural resource management. It will also provide training in the following areas:

- Agricultural training including veterinary science, plant science, horticulture, and pest control
- Understanding laws and resource mapping for the development of sustainable businesses involving timber, tourism, medicinal plants, aquarium fish and honey
- Professional skills development such as in carpentry, masonry, boat and other vehicle operation and mechanics, cooking, sewing, microscopy and computer use, as well as training for guides, rangers, community environmental workers, teachers and nurses
- Organisational skills development such as household and village financial management, governance and leadership

¹¹ <http://www.iwokrama.org/people/binahill.htm>

6.0 Selection of Neighbourhood Democratic Council

The EDM I is based on the 2002 census data. In Region 9 the local government system is not that well developed, as such, many NDC are not formally existing so the villages though they appear to belong to a particular NDC they have differing groupings and village districts operating. For example the Annai Village District does not exist as an NDC but this is the how the villages are grouped for current administrative purposes.

The selection of the NDC was once again based on the EDM I value and access. The access was based on access to all the villages within the NDC. Since most of these NDCs are very extensive it is usual to find a few villages close to the main road, the Linden Lethem road, while the others are far removed from this road. The ease of access to any group of villages in an NDC was given relative ratings, “Poor, Fair and Good” with “Good” being the situation where most of the villages of the NDC were relatively easy to access and are close to the main road. Generally most of the villages’ population fall within the range of 100 to 400 persons. As a result population size was not considered when selecting the NDC.

Table # 15 - NDC EDM I and Road Access

NDC Name	EDMI	Road Access
Ireng / Sawariwau (Including St. Ignatius)	1.299	Poor
Yarong Paru - Good Hope	2.561	Poor
Toka - Jakaretinga	2.329	Fair
Yakarinta - Wowetta, Surama	2.474	Fair to Good
Sand Creek - Dadanawa, Catunarib, Sawariwau	2.238	Poor
Marudi	2.556	Poor
Aishalton - Karaudanawa, Achiwib	2.476	Fair
Rest of Region 9	2.106	Poor

Source: Guyana Bureau of Statistics & Internal

Using Table # 15 it is can be seen that NDC with the best access is the Yakarinta NDC. From the Map Figure 2 it can be seen that most of the villages are close to the main road. This access and it’s rather high EDM I relative to the other NDCs led to this NDC being selected.

6.1 Selecting the Village

Up to the point of the selection of the NDC some amount of empirical data, the EDM I, played a significant role. However due to a scarcity of solid data at the village level a method of selection that was less dependent on empirical data had to be devised. Initially

four locations from the NDC were short listed for final selection. These were; Yakarinta, Bina Hill, Woweta and Surama. These locations were investigated and it was found that Bina Hill was not a village as such; instead it was a training complex with residential facilities for staff and students. This resulted in Bina Hill being removed from the short list. Therefore the villages in contention were Yakarinta, Woweta and Surama.

To adequately compare and contrast the villages a number of factors were reviewed. Since official empirical data was not readily available for these villages it was decided to get additional information via interviews with persons who would give reliable and fairly accurate information about the villages¹².

The parameters used to make the final selection were:

- i) Population of the village – the higher the better
- ii) Main of economic activities - the less developed the better (this would give a less developed village a stronger claim to being chosen)
- iii) Potential for economic activity – the more the better
- iv) Type of educational facilities present in the village - the less the better
- v) Ease of access from main road to village- the easier the better

Table # 16 – Parameters for Final Selection of Village

Parameters	Yakarinta	Woweta	Surama
Population of village	300 (approx)	300 (approx)	300 (approx)
Main of economic activities	Fishing, tourism, logging, mining, collecting cashew nuts	Fishing, logging, mining, craft	Tourism (well developed)
Potential for economic activity	Tourism, agriculture (Cashew Nuts)	Tourism, woodwork, craft (Has existing wood working equipment but no reliable power)	Tourism
Educational Facilities	Nursery, Primary	Nursery, Primary	Nursery, Primary
Ease of access from main road	Poor. Road to river then by boat to village	Good. Well developed road approx. 2 km from main road	Good. Well developed road from main road to village

Source: Internal

¹² Personal Communication, Mr. Frank Singh, Tour Operator, Owner/Manager, Rainforest Tours. 2007-10-09.

Personal Communication, Mr. Camacho Scipio, Headmaster, Annai Primary School. 2007-10-09

6.2 Final Selection of a Village

From the information presented in Table # 16 it can be seen that the villages have areas of similarity. However Surama is much more developed due to its well developed tourism product which has resulted from its close association with Iwokrama.

The villages Yakarinta and Woweta are much more alike with respect to current economic activity. However, since Woweta already has some infrastructure for craft and woodwork it is in a better position to develop if given the opportunity.

The next major difference between Woweta and Yakarinta is the ease of access to the village. Yakarinta is along a river, so in order to visit the village the visitor has to use two modes of transportation. First the visitor has to travel by road to the boarding point on the river then board a small river craft to complete the journey to the village. On the other hand to get to Woweta the visitor just has to make a short diversion of approximately 2 km from the main road.

Based on the above it would be reasonable to conclude that Woweta is better positioned to optimise the use of the installation of an energy project. As such the village chosen is Woweta.