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GUIANA SHIELD HUB GROUPS
Contents

- Business Vision: demographics, infrastructure, resource base, industrial base, strategic considerations
- Groups of projects: adequacy of infrastructure, Map of groups, Area of influence
- Groups in detail: strategic function, maps, area of influence, dominant activities
Business Vision: Demographics

- Total population: 14,869,100
- Main Cities: Manaus (1,600,000), Caracas (5,000,000), Macapá (282,000), Georgetown (350,000), Paramaribo (218,000), Boa Vista (230,000), Ciudad Guayana (800,000), Cayenne (150,000), Ciudad Bolivar (400,000)
- Total area is 2,699,500 square Kilometers
- Average density is low, 5.32 inhabitants per sq. Km., with a high of 3696 (Caracas) and low of 1.81 (Roraima)
- On average, social indicators reflect low middle income countries, although substantial disparities exist among sub-regions
Business Vision: Infrastructure

- The road infrastructure is more developed in a north-south direction whereas road communication is weak or inexistent in the east-west direction.
- The two largest cities, Caracas and Manaus, are well connected through a paved road (Group 1).
- There is power connection between Boa Vista and the Venezuelan System, but the rest of the countries’ electric systems are isolated.
- Suriname lacks sea ports. Guyana’s ports are subject to tidal cycles.
- Part of the region lacks fiber optic telecommunication.
- Trinidad acts as a de facto hub for air transportation.
Business Vision: Resources

- The area is rich in natural resources: large reserves of bauxite, iron ore, gold, diamonds and timber exist within its boundaries.

- There are huge proven reserves of oil and natural gas (Venezuela and Brazil) and potential for developing additional offshore fields (Guyana, Suriname).

- Hydroelectricity is abundant, and the region has potential for developing additional power from this source.

- There are large natural forests with potential for the production of precious woods.
Business Vision: Industrial base

- There are three industrial poles within the boundaries of the hub: Manaus (technology and light manufacturing), Ciudad Guayana (heavy industries and metal processing) and Puerto La Cruz (petrochemicals and fertilizers).
- In the rest of the hub most industrial facilities are oriented towards domestic consumption.
- The region includes many sites that are suitable for developing tourism, including ecotourism and Caribbean.
- There are facilities for wood processing in Guyana and large planted forests in Monagas (Venezuela).
Business Vision: Strategic Considerations

- Despite neighborhood intraregional trade is minimal, with the exception of the axis Manaus-Caracas
- The region possesses significant potential for industrial development based on their natural resources:
  - The Bauxite-Alumina-Aluminum chain
  - The Oil/gas-Petrochemicals-fertilizers chain
- Improved infrastructure could allow the area to exploit their economic complementarities so as to serve the largest consumption poles and to integrate productive chains across international borders in order to attain global economies of scale
CARACAS

CIUDAD BOLÍVAR

GUANTÁ

PUERTO LA CRUZ / BARCELONA

CIudad Guayana

Tumeremo

SANTA ELENA DE UAIREN

BOA VISTA

LETHEM

MANAUS

TRINIDAD Y TOBAGO

GUIANA SHIELD HUB

GUANTA

PARAMARIBO

LINDEN

GEORGETOWN

CAYENE

MACAPÁ/ BELÉM

Inexistent

Inadequate

Adequate

Air / Sea links
Eje del Escudo Guayanés
Agrupamientos de Proyectos

Grupo 1: Interconexión Venezuela - Brasil

Grupo 2: Interconexión Guyana - Brasil

Grupo 3: Interconexión
Venezuela (Ciudad Guyana) – Guayana (Georgetown) – Surinam (Paramaribo)

Grupo 4: Interconexión
Guyana – Surinam – Guyana Francesa - Brasil
Area of influence

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GROUP 1: Interconnection Brazil - Venezuela
Strategic Function of the Group

- To develop potential economic sectors like the heavy and durable goods industries, mining and jewellery, agribusiness and tourism (ecotourism and Caribbean beach tourism), taking into account the existing paved road Manaus - Caracas and transmission line between Guri and Boa Vista.

- Type of Group: Consolidated
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Group 1: Interconnection Venezuela - Brazil

- Bimodal Bridge over The Orinoco River
- System for navigational support in the Orinoco River
- Fiber optics or another appropriate technology interconnecting Caracas with the north of Brazil
- Waterway between the Negro and Branco Rivers connecting Manaus and Boa Vista
- Improvements to the Port of Guanta
- Railroad connecting the Port of Guanta (or a new one) to Ciudad Guayana
- Anchor project: Caracas-Manaus Paved road (Existant)
- Capacity expansion of Guri – Boa Vista’s power line
Dominant activities

Capital District and Miranda State:
- Light manufacturing
- Financial and professional services
- Agriculture (horticulture, fruits)
- Agribusiness

Anzoátegui State:
- Oil and gas production
- Tourism
- Professional services

Monagas State:
- Fishing
- Automotive
- Tourism
- Agriculture (coffee, sugarcane)
- Forestry

Bolivar State:
- Mining (gold, diamonds, iron ore, bauxite)
- Steel, aluminium
- Metalmechanic industries
- Hydropower

Nueva Esparta State:
- Tourism
- Fishing

Sucre State:
- Fishing
- Automotive
- Tourism
- Agriculture (coffee, cocoa, sugarcane)

Roraima State:
- Agribusiness
- Agriculture (soybeans, rice)
- Ranching (cattle)

Amazonas State:
- Forest products
- Tourism
- Manufacturing (light, electronics)
- Agriculture (sugarcane)
<table>
<thead>
<tr>
<th>Total investment</th>
<th>Caracas – Manaos Existing Road</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Negro – Branco rivers waterway interconnecting Manaos to Boa Vista</td>
</tr>
<tr>
<td></td>
<td>Deep water port in the northeastern Venezuela Caribbean Coast or improvement of the existing Port of Guanta</td>
</tr>
<tr>
<td></td>
<td>Railroad interconnecting the above mentioned port and Puerto Ordaz (Orinoco River)</td>
</tr>
<tr>
<td></td>
<td>Bimodal second bridge over the Orinoco river (under construction)</td>
</tr>
<tr>
<td></td>
<td>Orinoco waterway navigation support system</td>
</tr>
<tr>
<td></td>
<td>Expansion of the capacity of the existing transmission line Guri – Boa Vista</td>
</tr>
<tr>
<td></td>
<td>Fiber optics lines or another appropriate technology interconnecting Caracas to the North of Brazil</td>
</tr>
<tr>
<td></td>
<td>US $ Millions</td>
</tr>
</tbody>
</table>

GROUP 2: Interconnection Brazil – Guyana
Guiana Shield Hub
Group 2: Interconnection Guyana - Brazil

- Tortuba Hydroelectric Plant (1000 MW) and transmission line to Boa Vista y Manaus (pending feasibility studies)
- Amaila Hydroelectric Plant (150 MW) and transmission line to Georgetown
- Deep water port in northern Guyana
- Improvement of Georgetown’s Access
- Demerara River crossing
- Anchor Project: Boa Vista – Bonfin – Lethem – Liden – Georgetown road
- Bridge over the Itakutu River (Brazil - Guyana border)
- Industrial investments in Boa Vista: Cellulose, Soybeans, instant coffee an meat processing plants
- Fiber optics line or another technology to interconnect Boa Vista and Manaus to existing international underwater cable system
- Demerara River crossing
Strategic Function of the Group

- To support sustainable development and integration between the Brazilian states of Amazonas and Roraima, and Guyana, through the consolidation of the infrastructure linking both countries.

- Type of group: Emergent
Area of influence

Hub’s Area of Influence

Group 2 Area of influence

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Dominant activities

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**Roraima State:**
- Agribusiness
- Agriculture (soybeans, rice)
- Ranching (cattle)

**Amazonas State:**
- Forest products
- Tourism
- Manufacturing (light, electronics)

**Cuyuni-Mazaruni**
- Mining (gold, diamonds and bauxite)
- Forestry and wood products
- Tourism

**Potaro-Siparuni**
- Mining (gold and diamonds)
- Forestry

**Demerara-Mahaica:**
- Sugarcane
- Services

**Mahaica-Berbice**
- Agriculture (rice and sugarcane)
- Fishing

**Upper Demerara-Berbice and Upper Takutu-Upper Essequibo:**
- Ranching and meat packing
- Mining (gold)

**Upper Demerara-Berbice and Upper Takutu-Upper Essequibo:**
- Fishing

**Upper Demerara-Berbice and Upper Takutu-Upper Essequibo:**
- Ranching
- Meat packing

**Upper Demerara-Berbice and Upper Takutu-Upper Essequibo:**
- Mining (gold)
## Total investment

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Million US $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boa Vista-Bonfim-Lethem-Linden-Georgetown</td>
<td>12</td>
</tr>
<tr>
<td>Arraia river bridge (State of Roraima)</td>
<td></td>
</tr>
<tr>
<td>Itakutu river bridge (Brazil - Guyana border)</td>
<td></td>
</tr>
<tr>
<td>Deep water port in Guyana (pending further study)</td>
<td></td>
</tr>
<tr>
<td>Amaila 150 MW hydroelectric power plant and transmission line to Georgetown to replace existing diesel power generation</td>
<td>300</td>
</tr>
<tr>
<td>Tortruba 1000 MW hydroelectric power plant and transmission line to Boa Vista and Manaus (pending upon private investment towards an aluminum smelting plant in Guyana and/or the Brazilian interest to bring energy to the North region from Guyana)</td>
<td>1850</td>
</tr>
<tr>
<td>Fiber optics lines or another appropriate technology interconnecting existing international submarine cable system to the cities of Boa Vista and Manaus</td>
<td></td>
</tr>
<tr>
<td>Demerara River crossing</td>
<td></td>
</tr>
<tr>
<td>Improvements to Georgetown's access</td>
<td></td>
</tr>
<tr>
<td>Industrial investments in Boa Vista: Cellulose plant (underway), soy processing, instant coffee, and meat packing plants (pending upon private investment interests)</td>
<td></td>
</tr>
</tbody>
</table>
GROUP 3: Interconnection
Venezuela – Guyana
Strategic Function of the Group

- To implement a development and integration link along the Caribbean coast, in the extreme north path of South America.

- Type of group: Emergent
Guiana Shield Hub

Group 3: Interconnection between Venezuela (Ciudad Guyana) – Guayana (Georgetown) – Surinam (Paramaribo)

Proyecto Ancla: Road connection between Venezuela (Ciudad Guyana), Guyana (Georgetown) and Surinam (Paramaribo)

Bridge or improved crossing over the Cuyuni River
Bridge or improved crossing over the Puruni River
Bridge or improved crossing over the Essequibo River
Bridge or improved crossing over the Demerara River
Bridge or improved crossing over the Berbice River
Bridge or improved crossing over the Corentyne River
Bridge or improved crossing over the Coppename River
Dominant activities

**Anzoátegui State:**
- Oil and gas production
- Tourism
- Professional services

**Monagas State:**
- Oil and gas production
- Agriculture (coffee, sugarcane)
- Forestry

**Sucre State:**
- Fishing
- Automotive
- Tourism
- Agriculture (coffee, cocoa, sugarcane)

**Bolivar State:**
- Mining (gold, diamonds, iron ore, bauxite)
- Steel, aluminium
- Metalmechanic industries
- Hydropower

**Delta Amacuro State**
- Agriculture
- Oil and Gas

**Regions of Barima-Waini and Pomerron-Supenaam**
- Agriculture (rice, sugarcane)

**Regions of Cuyuni-Mazaruni and Potaro-Siparruni**
- Mining (gold, diamonds, bauxite)
- Tourism
- Lodging

**Regions of Demerara-Mahaica and Essequibo Islands-West Demerara**
- Agriculture (sugarcane and rice)
- Tourism
- Sawmills, wood products
- Bauxite processing

**Suriname:**
- Agriculture (rice, banana)
- Fishing (srimp, Sea and river fish)
- Mining (gold, bauxite)
- Forestry
# Total investment

<table>
<thead>
<tr>
<th>Road connection between Venezuela (Ciudad Guayana) - Guyana (Georgetown) - Suriname (Paramaribo)</th>
<th>million US$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridge or improved crossing of Cuyuní River</td>
<td></td>
</tr>
<tr>
<td>Bridge or improved crossing of the Mazaruni River</td>
<td></td>
</tr>
<tr>
<td>Bridge or improved crossing of the Essequibo River</td>
<td></td>
</tr>
<tr>
<td>Bridge or improved crossing of the Demerara River</td>
<td></td>
</tr>
<tr>
<td>Bridge or improved crossing of the Berbice River</td>
<td></td>
</tr>
<tr>
<td>Bridge or improved crossing of the Corentine River</td>
<td></td>
</tr>
<tr>
<td>Bridge or improved crossing of the Coppename River</td>
<td></td>
</tr>
</tbody>
</table>
GROUP 4: Interconnection
Guyana – Suriname – French Guiana – Brazil
Strategic Function of the Group   IIRSA

- To consolidate an international physical connection to promote the sustainable development and integration of Guyana, Suriname, and the Brazilian states of Amapá and Pará through French Guiana (pending further consultations)

- Type of group: Emergent
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Group 4: Interconnection Guyana – Suriname – French Guiana - Brazil

- Berbice river
  - Improved crossing

- Corentine river
  - Improved crossing

- Improved crossings to the Apura connection to Nieuw Nickerie

- Hydroelectric plant up to 500 MW

- High voltage transmission line
  - Paramaribo – Nieuw Nickerie – Guyana (Corriverton)

- Power line between Surinam and French Guiana

- Anchor Project: Improvements to the Georgetown – Albina road

- Marrowynen river
  - Improved crossing between Albina y St. Laurent

- Bridge over the Oiapoque river
  - (French Guiana – Brazil border)

- Hydroelectric Scheme
  - Up to 300 Mw (Tapanahony Diversion)

- Improvements to the Oiapoque – Macapá road

- Improvements to the Port of Santana in the Amazon river
Area of influence

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Hub’s area of influence
Group 4 area of influence
Dominant activities

Guyana:
Upper Takutu-Upper Essequibo
Ranching (cattle)

Guyana:
East Berbice-Corentyne
Agriculture
Ranching

Guyana:
Pomeroon-Supenaam
Agriculture (rice, sugarcane)
Fishing

Suriname:
Agriculture (rice, banana)
Fishing (shrimp, Sea and river fish)
Mining (gold, bauxite)
Forestry
<table>
<thead>
<tr>
<th>Project Description</th>
<th>US $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nieuw Nickerie – Paramaribo – Albina Road improvements</td>
<td>101,412.50</td>
</tr>
<tr>
<td>Bridge Marowijne River international crossing</td>
<td>48,265.00</td>
</tr>
<tr>
<td>500 MW Hydroelectric Power Plant</td>
<td></td>
</tr>
<tr>
<td>Connection between Apura and New Nickerie</td>
<td>114,757.50</td>
</tr>
<tr>
<td>Electrical power interconnection Suriname - French Guyana</td>
<td>60,000.00</td>
</tr>
<tr>
<td>High voltage transmission line from Paramaribo - Nickerie (South Drain) - Guyana (Corriverton)</td>
<td></td>
</tr>
<tr>
<td>300 MW Hydroelectric Power Scheme (Tapanahoni Diversion)</td>
<td>880,000.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1,204,435.00</strong></td>
</tr>
</tbody>
</table>
Themes for further exploration

- Inclusion of French Guiana as an observing partner of IIRSA
- Definition of the most reasonable energy source to replace diesel power generation in Manaus
- Brazilian interest to interconnect the northern tip of the country to international telecommunication submarine cable infrastructure available along the coast of Venezuela and Guyana
- Productive projects in the Boa Vista area
- Alumina / Aluminum projects
- SIVAM / SIPAM
- Social and environmental aspects including national reserves consolidation