

MINING OPPORTUNITIES JAMAICA

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OUTLINE

- Jamaica: An ideal investment location
- Recent large-scale investment projects
- Mining/Minerals Investments



OVERVIEW OF JAMAICA

QUICK FACTS

Population: 2.88 million

Largest English speaking island in the
Caribbean

Democratically elected Government,
every 5 years

GDP per Capita: US\$9,200

Literacy Rate: 87.9%

OVERVIEW OF JAMAICA

LIBERAL AND WELCOMING BUSINESS CLIMATE

Open and transparent investment regime

Range of market access agreements

No restrictions on repatriation of profit

Zero restrictions on foreign ownership

Pro-investment parliamentary democracy

No foreign exchange controls

OVERVIEW OF JAMAICA

GROWING RECOGNITION

- Ranked 70th in Doing Business Report
– *World Bank 2017*
- 3rd in Latin America for Doing Business
– *Forbes – Dec '15*
- Finance & Accounting (F&A) process expertise
– *Gartner Conference – Sept '14*
- Highest performing stock market in the world 2015
– *Bloomberg*



OVERVIEW OF JAMAICA

DIVERSE MIX OF MNCs



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OVERVIEW OF JAMAICA

CONFIDENCE OF LOCAL INVESTORS



Everyday Family Values



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READYING THE LOGISTICS INFRASTRUCTURE

Ranked **70TH**
of 190 Countries - World Bank 2017

ASYCUDA Implementation

Port Computer System Implemented

Transformed Business Environment

Implementation of SEZ Authority

Dredging the Port of Kingston

Completion of Feasibility Studies

IN-PLACE CONNECTIVITY & CAPABILITY

12

major shipping lines serving Jamaica

400

international flights weekly from over 40 airlines

100

weekly port connections for Cargo movement

2.8M

TEU capacity at Kingston Terminal

12K

TEU's Ship handling capability expanding to handle Post Panamax

Investments Have Begun



KINGSTON WHARVES LIMITED

**US\$20M
ON-PORT LOGSITICS ZONE**



South-Eastern Aerial View



LCL Customer Delivery Dock



Container Stripping & Stuffing Dock



Aerial View



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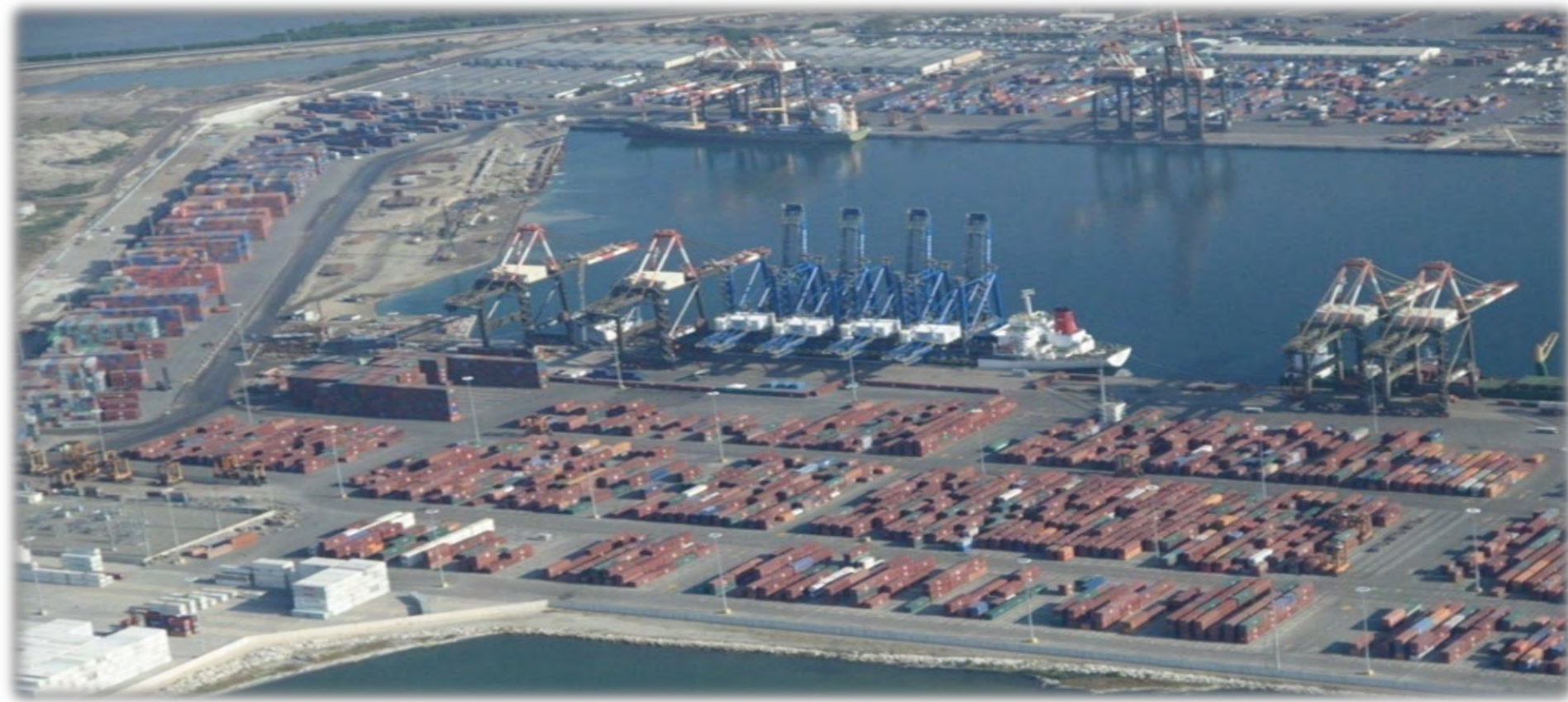
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Investments Have Begun



US\$450M
DREDGING AND QUAY EXPANSION



Investments Have Begun

US\$200M

OIL BUNKERING FACILITY



Investments Have Begun

ALUMINA REFINERY

PLANNED INVESTMENTS TOTAL US\$ 3 BILLION



Mining

History and Experience in Mining



Bauxite Mining from 1950



Active Limestone and Aggregates Sector

Mining

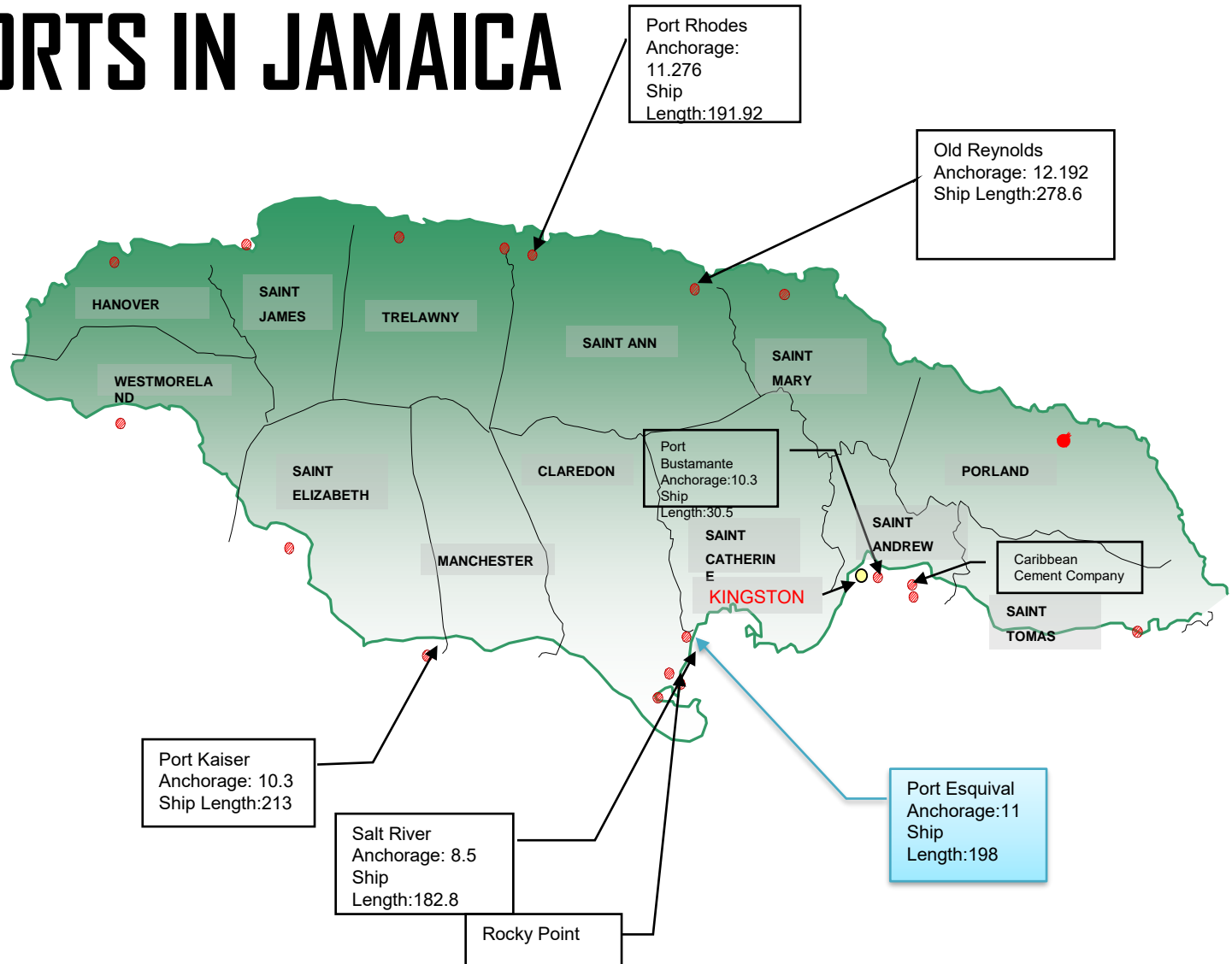
Strategically Located and Well Connected



Multiple....

- Shipping Options
- Air Freight options
- Courier Options

MAJOR PORTS IN JAMAICA



Source: PowerGen Ltd.

Mining Opportunities:

The main **metallic mineral resources** in Jamaica are bauxite, cobalt, copper, gold, iron, lead, manganese, silver, titanium and zinc.



Jamaica's most abundant mineral is Limestone. 98% CaCO_3 high purity grade



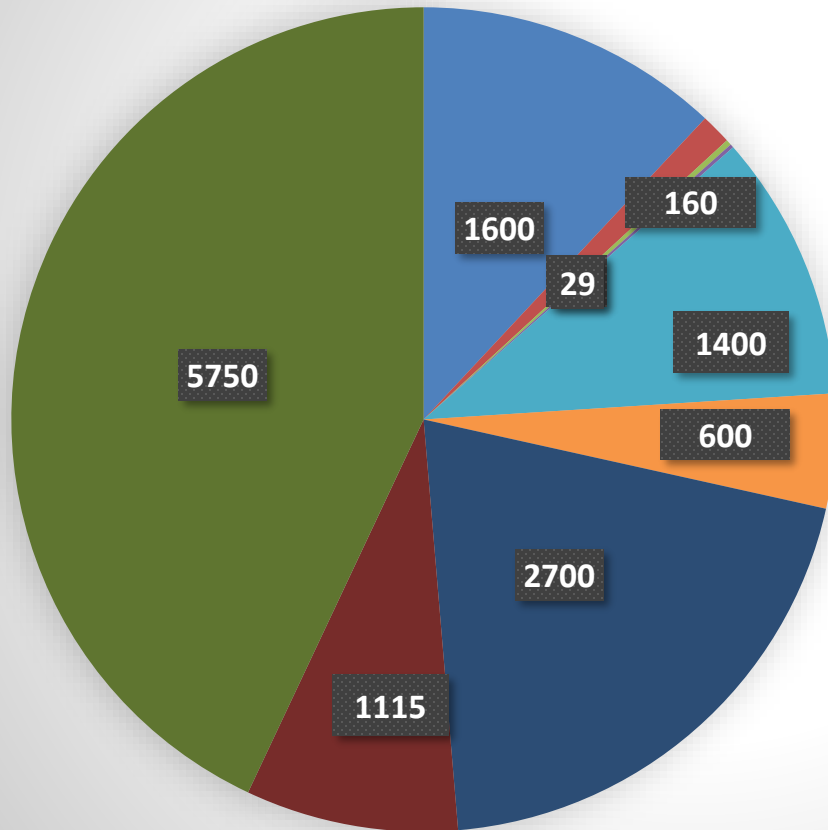
One of the largest deposits of Bauxite in the World. Commercially mined.



Non- Metallic minerals sub-sector in the early stages of Economic Development

Background - Mineral Resource Data

Proven Mineral Resources/Reserves
Million Metric tons (Mt)



- Bauxite
- Clay
- Gypsum
- Black Sand
- Aggregate
- Alluvial Sand and Gravel
- Dolomitic Limestone
- Limestone (Whiting Grade)
- Limestone (Chemical, Industrial, Metallurgic grade)

Domestic Production

	2012	2013	2014	2015	2016
Marl & Fill	1,197.3	1,197.6	10,311.8	4,303.6	3,012.5
Limestone	2,232.6	1,949.4	2,138	1,960.9	2,748.1
Sand & Gravel	2,599	1,902.4	2,118	2,208.1	1,766.5
Shale	250.5	205.3	308.1	240.5	180.8
Pozzolan	107.2	112.3	129.2	107.8	128.6
Gypsum	64.8	48.3	45.2	42.9	49.7
Silica Sand	13.9	15.8	15.8	15.6	19.8
Clay	300.6	12	0.2	0.4	0.4
Marble	0.1	0.1	0.1	0.1	0.1

Bauxite & Alumina Industry – World Demand

Main End-Use Drivers of Aluminium

CAGR:2016-2021

- Transport – 4.9% p.a.
- Construction – 2.1% p.a.
- Machinery and Equipment – 4.2%
- Electrical – 4.2%

Jamaica's Bauxite & Alumina Industry

- Contribution to GDP – 3.8% (Pre-recession 2008)
- Bauxite Reserves – 1.6 billion metric tonnes
- Mining Life – 50 to 100 years at an extraction rate of 11 million tonnes per year



Jamaica's Bauxite & Alumina Industry

- Currently experiencing gradual improvement after several years of steep decline.
- Alumina production capacity - 4.3 million tonnes per year.
- Noranda Capacity - 4.5 million dry tons of bauxite per year.



Jamaica's Bauxite & Alumina Industry

Ewarton, St. Catherine



Kirkvine, Mandeville



Jamaica's Bauxite & Alumina Industry

JAMALCO

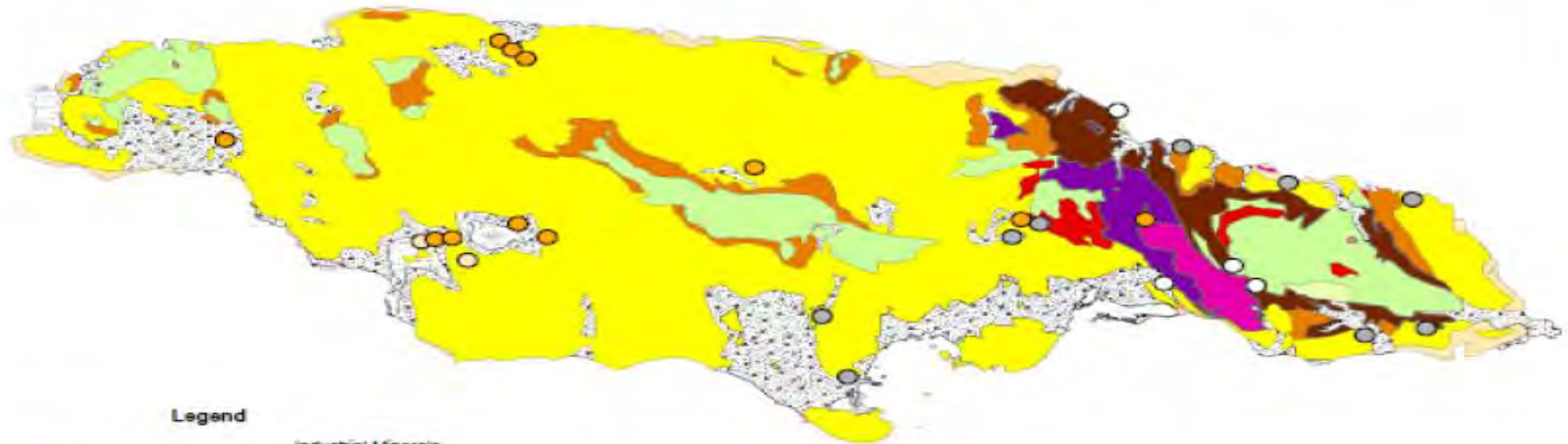


ALPART



Jamaica's Bauxite & Alumina Industry

OTHER MAJOR INDUSTRIAL MINERALS DEPOSIT



Legend

- | | |
|--|---|
| <ul style="list-style-type: none"> Coral Reef Salt Pond Swamp/Marsh Alluvium | <p>Industrial Minerals</p> <ul style="list-style-type: none"> Alluvial Sand and Gravel Clay Gypsum Silica Sand |
| <p>Volcanics and Plutonic Rocks</p> <ul style="list-style-type: none"> Heberstedt and Nutfield Volcanic Low Layton Pillar Lavas Newcastle volcanics Granodiorite Andesite | <p>Limestones</p> <ul style="list-style-type: none"> August Town Formation Coastal Limestone Harbour View Formation White Limestone Yellow Limestone |
| <p>Cretaceous Rocks</p> <ul style="list-style-type: none"> Cretaceous Volcanics/Limestone | <p>Sandstones, Mudstone & Conglomerate</p> <ul style="list-style-type: none"> Richmond Formation Wagwater Formation <p>Metamorphic Rocks</p> <ul style="list-style-type: none"> Schist Serpentine |



0 20 40 80 Kilometers

Prepared by the Economic Minerals Unit
Mines and Geology Division 29/1/2010

Limestone

Quality of Deposits



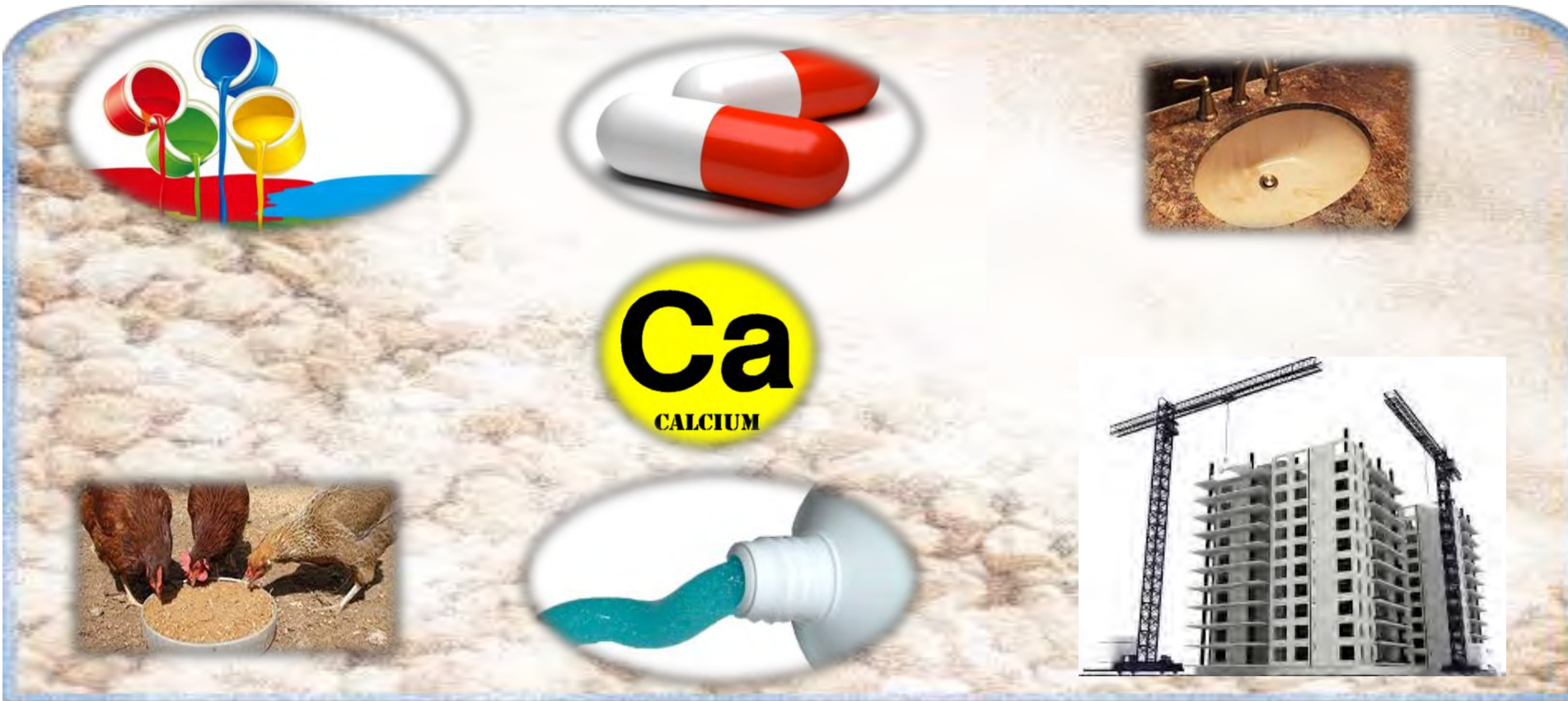
98% CaCO₃

High Purity Grade LIMESTONE

Mining

Value Added Opportunities

LIMESTONE VALUE-ADDED PRODUCTION



Mining

Value Added Opportunities

Skid Resistant Aggregates

270 million tonnes reserves



Mining

Value Added Opportunities

MARBLE

interior decoration, statuaries, table tops, and novelties, sculpture, exterior walls, veneers, flooring, stairways and walkways.



Mining

Significant Untapped Deposits

Semi-Precious Stones

Agate

Chert

Jasper

Quartz



MARBLE 21 deposits identified



LIMESTONE

60-80 billion mineable tonnes

Cultured Marble

What is Cultured Marble?

Cultured marble is a blend of crushed Limestone, resins, and pigments. The mixture is then poured onto a gel coated mold for a designed pattern.

Cultured marble which is used most often in Kitchen and bathroom fixtures would attract clients and potential stakeholders for its low maintenance, durability and economic viability.



Cultured Marble

- Domestic Imports (5 year avg): \$6.8 million, 5462 tons
- Source Markets: USA, Spain, Mexico, China, India
- Primary Uses: countertops and other solid surfaces
- Key Raw Material: limestone, resin

Beach Sand – The Opportunity

- Jamaica imported over US\$1 million worth of Silica and natural sand in 2016.
- Qatar Imported US\$6.4 Billion worth of sand and gravel in 2012
- The United Arab Emirates imported US\$456 million worth of sand and gravel in 2014



MINERAL INVESTMENT OPPORTUNITIES IN JAMAICA

Opportunity	Location	Market Application	MINERAL INVESTMENT OPPORTUNITIES IN JAMAICA Comment
Limestone	Cambridge- Sherwood Forrest	CaCO ₃ : 98% Uses: GCC/PCC; paints, animal feed, PCV intrusions etc	Outside of protected area. Chalky limestone
	Santa Cruz Mountain	CaO: 55.38% Uses: GCC/PCC; paints, animal feed, PCV intrusions etc	Nearby port
	Negril Hill	CaCO ₃ : 97.5% Uses: GCC/PCC; paints, animal feed, PCV intrusions etc	Deposit is in close proximity to the coast
	Colbeck	CaO: 38.3-54.7% MgO: 14-18.7 Uses: construction aggregate, lime, dolime, dimension stone	Nearby port. Deposit also has potential for use as dimension stone
	Grange Hill	CaO: 55.3% Uses: Lime, hydrated lime, white cement, GCC/PCC	Nearby port
	Hellshire Hills	CaO: 55.6% Uses: Aggregates, dimension stone	Potential for aggregate or dimension stone. Colour varieties range from cream to pink with fossil ornamentation

MINERAL INVESTMENT OPPORTUNITIES IN JAMAICA

Skid Resistant Aggregate

Skid Resistant Aggregate	Bito Ramble	PSV: 58 Uses: wearing course for runways, highways and other high speed roads	Nearby port. Good access to deposit
	Devils Race Course	PSV: 54-59 Uses: wearing course for runways, highways and other high speed roads	Large volume of resource

MINERAL INVESTMENT OPPORTUNITIES IN JAMAICA

Dimension Stone

Dimension Stone	Red Ground	Density: 2.7g/cm ³ Mean compressive strength: 89.9 psi Uses: Floor tiles, wall cladding, craft items	Colours range from red, pink, and yellow. Calcite vein ornamentation
	Rodon Stone	Density: 2.7 g/cm ³ Mean compressive strength: 89.9 psi Uses: Floor tiles, wall cladding, craft items	Partially dolomitized. Colour varieties include brown, pink, cream and calcite and manganese ornamentation.
	Point Hill	Density: 2.73 g/cm ³ Mean compressive strength: 89.9 psi Uses: Floor tiles, wall cladding, craft items	Partially dolomitized. Colour is typically brown with blends of beige and cream.

Investments - Rehabilitate Plants



Many Plants are well Over 50 years old and in need of rehabilitation to improve their efficiencies.

Rehabilitation will require significant capital injection by the companies.

Investments - Upstream



New Mines will be opened
Faraway from the processing
facilities increasing demand for
More railways



Investments - Downstream



The construction industry will be one of the major drivers of global aluminium demand over the next five years.

Machinery and Equipment will also play a significant role in demand generation.

With its Special Economic Zone Regulations – Jamaica is well poised to manufacture these products.



Investments - Downstream

Sodium Hydroxide/Caustic Soda

- Domestic Imports (5 year avg.): US\$69 million, 211,589 tons
- Source Markets: USA
- Domestic Production: Nil
- Primary Use: aluminium refining, soap and paper manufacturing
- Key raw material: rock salts/salt water

Investments - Downstream



LIME Kiln



LNG Holding Tank



Red Mud Lake



Port Kaiser – Discovery Bay, St. Ann

Bauxite Investments

Uses of Bauxite Mined Out Lands

Cattle Farming



Pimento Orchard



Yam Farming

