

## **BELIZE FACTS AND FIGURES**

**By: Frantz Smith**

### **SECTION: PART IV: BUSINESS AND THE ECONOMY OF BELIZE/WASTE TO WEALTH INVESTMENTS**

#### **Waste to wealth investments**

The main export industries of sugarcane, citrus, bananas, shrimp, lobsters, conch, cacao and grains all produce significant waste streams that can be transformed into viable byproducts.

##### **Sugarcane waste**

The main byproducts of the sugar industry are bagasse and ash. Bagasse is now burnt by BELCOGEN to produce electricity. However, companies in the USA and China are using bagasse to produce Styrofoam alternatives.

##### **Citrus waste**

The Belize citrus industry has all but closed its production cycle and there are few waste streams from the processing plants in the Stann Creek District. However, there is the potential to produce high value citrus vinegar from citrus molasses.

##### **Banana and papaya waste**

A large amount of banana plant parts are left after banana hands are removed from the bunches and packed in boxes. This biomass is used in Costa Rica to support a vibrant paper manufacturing industry. Bananas with cosmetic defects could also be used in baby food and dried fruits. The papaya industry also creates a large volume of fruit that cannot be exported because of minor defects but which can be candied or dried.

##### **Biomass fertilizers**

Belize can also produce considerable amounts of organic fertilizers in the form of composts or *Bockashi*<sup>1</sup> from citrus and banana waste to be used in terrestrial agriculture or as pond starters for aquaculture.

##### **Shrimp and tilapia waste**

The country produces millions of pounds of nitrogen rich waste shrimp heads which can be used to create fish flavoring or chitosan for the food industry. Alternatively, shrimp heads can be used to produce liquid hydrolysate fertilizers or compost along with a carbon source such as sawdust, grass clippings or rice husks to produce organic fertilizers.

Waste from industrial scale culturing and processing of tilapia can also be rendered to produce protein meal for the chicken or beef industries or composted to produce nitrogenous fertilizers.

##### **Silicate production**

A viable high-end investment could be the production of soluble silica fertilizer for the aquaculture sector using rice husks as a raw material. Belize waters are silica deficient and Belize shrimp farmers import thousands of dollars of silica based fertilizer to create high quality

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<sup>1</sup> *Bockashi* is a traditional Japanese fermented fertilizer which contains high level of beneficial microorganisms.

algal blooms to culture shrimp. A local supply of silicates can be readily supported by innovators in the shrimp or tilapia industries.

#### Shrimp, tilapia and chicken feeds

The country also imports millions of dollars in high protein shrimp and tilapia feed annually. A lower cost aquaculture feed could be a viable business for technically skilled innovators. These feeds for shrimp and tilapia could be researched and formulated using byproducts such as rice bran and protein byproducts from Belize's large and efficient poultry industry. Tilapia and shrimp protein byproducts can be exchanged between the two industries and with the poultry industry.