

# Liberia

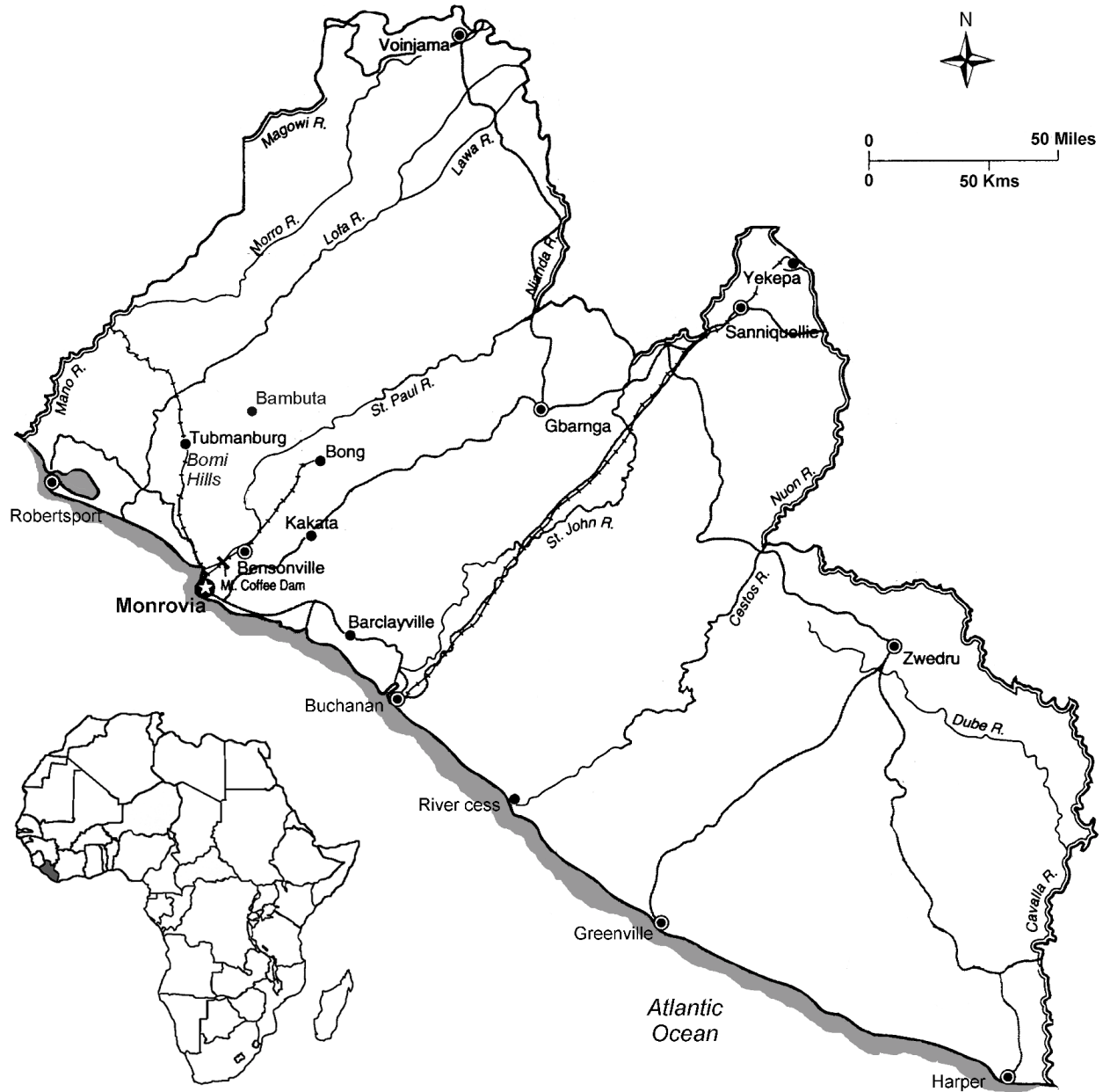
Total population (July 2000 estimate): 3,164,000

Area: 111,370 km<sup>2</sup>

Annual population growth rate (2000): 1.94%

Life expectancy at birth (1999): 51 years

GDP per capita (1999 estimate): US \$1,000



Liberia, located between Côte d'Ivoire, Guinea and Sierra Leone, has a 580 km long, marshy and lagoon-studded Atlantic coastline. The hinterland is made up of ill-defined and dissected plateaux. The climate is humid/tropical with high rainfall, and high temperatures.

The export economy of Liberia was, until recently, dominated by sales of agricultural products (timber, rubber and coffee), iron ore, diamonds and gold. But agricultural production and mining activities have been adversely affected by the civil war that started in 1989. Artisanal miners continued with the extraction of diamonds during the civil unrest.

Agriculture in Liberia is primarily subsistence in nature and, in time of peace, contributed up to 50% of the GDP. Approximately 70% of the labour force was engaged in agricultural activities. The main food crops are rice, cassava, sugarcane and bananas. Historically, the main export crops were rubber, palm oil and cocoa beans.

### **Geological outline**

The geology of Liberia is dominated by Precambrian rock formations of the West African Craton. Metamorphosed rocks of the Liberian Province underlie the western two-thirds of Liberia (Hurley et al. 1971), metamorphites and granites of the Paleoproterozoic Eburnian Province dominate the eastern part of Liberia. The iron ore deposits of the Bong Range occur in the Liberian Province. A narrow belt of supracrustal rocks affected by the Neoproterozoic to lower Cambrian Pan-African event strike parallel to the coastline. Unmetamorphosed Paleozoic to Recent sediments occur along the coast.

## **AGROMINERALS**

### **Phosphates**

There are two small known phosphate deposits in Liberia. The deposit at the Bomi iron ore deposit, 60 km north of Monrovia, is composed of grey to cream coloured phosphatic rocks superficially resembling calcareous tufa. Secondary Fe-phosphate, mainly phosphosiderite and strengite, fill cavities and form cements between iron ore fragments. A sample from the leucophosphite ( $\text{KFe}_2[\text{PO}_4]_2\text{OH}(\text{H}_2\text{O})_2$ ) at Bomi contained 33.46%  $\text{P}_2\text{O}_5$  and 36.85%  $\text{Fe}_2\text{O}_3$ , as well as 7.86%  $\text{K}_2\text{O}$ . Axelrod *et al.* (1952) interpreted this occurrence as a reaction product of bat excreta with iron oxides. There is an abundance of bat guano in the caves. No figures exist on volume and grade of the Bomi phosphate resources.

The Bambuta deposit is located 70 km north-northeast of Monrovia, 25 km east of Bomi Hill iron mine ( $6^\circ 56' \text{ N}$ ;  $10^\circ 33' \text{ W}$ ). Results of a diamond drilling program and mapping have shown a minimum reserve of 1 million tonnes of phosphate rock at 32%  $\text{P}_2\text{O}_5$ , or 1.5 million tonnes of ore grading 28%  $\text{P}_2\text{O}_5$  (Rosenblum and Srivastava 1979). The phosphorus bearing minerals are mainly members of the variscite-strengite series (secondary Al-Fe phosphates). Like at Bomi, the phosphates are associated with an iron ore deposit. The genesis of this deposit remains unclear although Rosenblum and Srivastava (1979) discuss the possibilities of a metasedimentary-metasomatic origin or, alternatively, origin as a result of phosphate precipitation from guano-derived solutions.

### **Other agrominerals**

Major sources of limestone and dolomites are unknown in Liberia (Nair and Dorbor 1990). The geology of the country is generally unfavourable for the formation of limestones and dolomites. Lime products are made from local deposits of marine shells on the beaches of eastern Liberia.

No other agrominerals are reported from Liberia.

### **Agromineral potential**

Apart from the occurrences of phosphates there are no major agrogeological resources reported in the country. In general, the nature of the geology of Liberia is not favourable for the formation of rocks and minerals that can be used for soil fertility improvement.

#### *References:*

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Hurley PM, Leo GW, White RW and HW Fairbairn 1971. Liberian age province (about 2,700 m.y.) and adjacent provinces in Liberia and Sierra Leone. *Geol. Soc. Am. Bull.* 82:3483-3490.

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