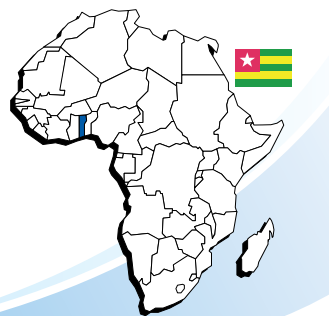


7.18 Togo



Prof. Adoté Blim Blivi, Koko Houédakor, okoè Kouévi-Akue, Pessiézoum Adjoussi, and Dangnisso Bawa*

Centre de Gestion Intégrée du Littoral et de l'Environnement (CGILE) de l'Université de Lomé Centre National de Données Océanographiques du TOGO
B.P. 1515 Lomé TOGO

*Corresponding author E-mail: cgileul@yahoo.fr



Capital city	Lomé
Population (2005 est.)	6,200,000 (2.5% growth)
GDP per capita (USD 2005 est.)	\$1 506
Life expectancy at birth (2005 est.)	57.8 years (male - 56.0, female - 59.6)
Land and water area	72,700 km ² (land 56,600, water 16,100)
Length of coastline	50 km (Blivi, pers. comm. 2008)
Highest point of elevation	Pic d'Agou, 986 m
Coral reef area (2001 est.)	None
Mangrove area (2005 est.)	1 000 ha (Blivi, pers. comm. 2008)
Marine protected areas (2007 est.)	4.50 km ² (0.18% of total territorial waters)
Capture fisheries prod. (2006 est.)	15,000 – 20,000 tones (Blivi, pers. comm. 2008)
Aquaculture fisheries prod. (2006 est.)	Less than 50 tones (Blivi, pers. comm. 2008)

Rivers to the Country's Coast: The Mono River (560 km) flows from the Tchaoudjo, through a system of lagoons to the ocean at Grand Popo in Benin. The Zio (about 176 km long) and the Haho flow into the coastal lagoons, which in turn flow into the ocean between d'Apounoukpa and Aneho.

Coastal Climate: The coastal region of Togo has a tropical climate with two rainy seasons, the first between April and June, and the second between September and October. The average annual rainfall is 850 mm per year, and temperatures vary from a minimum of about 25°C in July – August, to a maximum of 30°C and occur in the dry season of February – March. Harmattan, a warm and dry wind blows from the northeast in December and January, while the monsoon is warm and humid and blows from the southwest bringing rains.

Coastal Geomorphology: Togo's coastal plain is comprised of an internal and external beach ridge, both of an average altitude of 5 m, a lagoon system and an area of clay substrate. The clay area has an average altitude of 20 m and includes the north-eastern part by the Lama Depression. It consists of a series of clay-sandy deposits with

limestone and phosphate resources. To address shoreline change occurring on the coast between Kpémé and Aného, a number of groynes and breakwaters were constructed in 1988. Togo has a relatively narrow continental shelf of approximately 23 km.

Coastal Habitats: Togo is located in the Gulf of Benin, within the larger Gulf of Guinea in the Atlantic coast of West Africa. Its marine and coastal systems are part of the geosystem between the deltas of the Volta and Niger rivers, which is mainly composed of sandy strips and lagoons. Mangroves are found at the estuaries of the Gbaga and Mono river, covering about 1000 ha. The sea-bed is relatively flat, and marked by linear valleys formed through lagoons erosion. In addition to coarse sands, there are areas of mud, gravel, and corals. These habitats are broken by a series of beach-rock on the foreshore.

Coastal Currents and Tides: The Togolese coastal waters experience semi-diurnal tides. The Guinea current flows along the coast from west to east with an average velocity of 1m/s. The derived littoral drift transports an average of 1.2 million m³/year of water. There are regular swells spurred by the winds from the south Atlantic, with average heights of 1.0 - 1.5 m in July, August, and September. The maximum heights vary from 2 - 3 m, with periods of between 10 - 15 seconds. The angle of incidence is about 6° and 7° from a south-south-west direction. The period of strong swell is from August to September, with low swells ranging from 0.4 - 0.5 m height during the periods October to November, and May to June. Coastal waves cause sediment movements along the beach with moderate to high energy. The average height reaches 1.25 m, with average periods of 4 - 6 seconds. Overall, the hydrodynamics of the Togo coast are fairly homogenous and marked by coastal drift (ONUDI/MEPF, 1999).

Coastal Observations: There is an oceanographic station at Kpeme. The data collected includes air and sea surface temperatures, wind and rain. The meteorological station in Lome town facilitates the monitoring of rainfall and atmospheric conditions. The Togoville College station Ventage Pro is located on an area of clay substrate and collects 21 different observation parameters.

Ports and Harbours: The Port Autonome de Lome, is a free port constructed in 1968. It receives large vessels due to the depths of

its berths (up to 14 metres deep). It has a pier for normal cargo, and another specializing in containers and mineral ores. The harbour at Kpeme is for loading minerals and phosphates.

Coastal Economy: The coastal economy is based on agriculture, livestock farming, fisheries and industry. In the coastal zone, agriculture accounts for 18% of the work force, most of them on small scale farms. The contribution of coastal agriculture to the national GDP is 5%. Though the area under cultivation increased slightly between 1982 and 1996, the production did not follow the same trends due to the very basic means of production used. Farming is practised on the ridges and constitutes an out of season activity in the floodplains. The number of local farmers increased by 297% between 1982 and 1996. The coastal region is home to more than 76% of the national farming community (ONUDI/MEPF 1999; CNDO-TOGO, 2003.)

Traditional small scale livestock farming is based on small ruminants and poultry. Sheep are rare in the coastal area. Artisanal and industrial fishing are practised at the coast, with some lagoon fishing as well.

There are two seasons for artisanal fisheries: a high season from July to October, and a low season from November to June. Marine fish accounts for 4% of the GDP of primary sectors. The artisanal fishery represents more than 70% of the annual national fish production. Industries begun in the 1960's, and has been strengthened with the establishment of free zones in 1989. Until 1997 there were 106 industrial and mining enterprises in Togo, 95% located in Lome. The mining, manufacturing and food production sectors are the most important (ONUDI/MEPF, 1999).

Fisheries: There are some twenty fishing camps or sites along the coast. The average production in 2001 was between 15,000 – 20,000 tones. In 2002 the total amount of fish landed at the Lome fishing port was 13,840 tones, representing 87% of the volume of artisanal fish catches at sea. The main species caught were grey whales, sardines, mackerel, and herring (ONUDI/MEPF, 1999).

Mineral Resources: The principal minerals are phosphates, gravel and sand. The phosphates are mined in the quarries of Hahotie and Kpogame, about 35 km from Lome, and then ferried to Kpeme where

they are processed. The production has been declining for several years. The annual production in the period 2003 to 2005 was 1.3 million tones per year. The extraction of sand and gravel of marine origin is allowed in Lome and Aneho. Small scale extraction of gravel is done by the rural populations along the beach.

Agriculture Products: The main agricultural products in the coastal zone are maize, cassava, sweet potatoes, beans and groundnuts. The farming is practised on sandy soils. Livestock is essentially the traditional type practised extensively in the context of mixed farming-main animals kept are cattle, sheep, goats, and pigs.

Other Marine Resources: The fauna includes terrestrial and aquatic mammals, birds, reptiles, molluscs, bivalves, gastropods, crustaceans and marine turtles. The degradation of the natural habitats is endangering these resources.

ADDRESSING KEY COASTAL ISSUES

Togo faces a number of coastal issues including: shoreline change, flooding, pollution, and the potential effects of sea level rise. The beach is eroding at an average rate of about 7 m/year (Blivi, 1993). The coast

Figure 1. Phosphate mining at Hahotoé-Kpogamé in the north of Lake Togo (photo credit: Johnson C. K., 1987).



is protected by breakwaters and groynes for 12 km between Kpeme-Gumukope and Aneho.

The construction of a dam at Nangbéto in 1987 led to dramatic changes in the flow of the Mono river. The mouth of the river which was previously a source of freshwater for the local populations has been affected by saltwater intrusion. The management of water on the coastal plains is also a major issue, demonstrated by the recurrent floods.

The exploitation of phosphates takes place in the open areas of Hahotoé and Kpogamé. The mineral ore is processed at a plant in Kpémé, situated on the coast. This results in the need for treatment of two types of mineral wastes which comprise 40% of the ore: solid waste composed of coarse particles, and liquid slurries rich in fine particles. These total more than 2.5 million tones per year. Phosphates liquid waste is discharged into the coastal waters without any treatment.

Figure 2. Coastal erosion at a beach on the coast of Togo (photographer Prof. A. Blivi, 2005).





*Figure 3. Coastal protection at Aného
(photographer: Prof. G. Rossi, 1988).*

*Figure 4. Flooding of the coastal plains consisting of ridges and lagoons
(photographer: Prof. A. Blivi, October, 2007).*



Figure 5. Aerial photograph of sediment drift along the coast from Togo to Benin and Nigeria (photo credit: Institut Géographique National, France, 1985, TOG BEN 20-100-166).

*Figure 6. Discharges into the sea from the jetty loading phosphate
(photographer: Prof. A. Blivi, August, 2006).*



The Centre de Gestion Intégrée du Littoral et de l'Environnement de l'Université de Lomé is studying the rising sea levels, which is one of the consequences of increases in mean global temperatures and climate change. Fifty five years of data (1933 - 1988) from the Takoradi sea station in Ghana allow the statistical analysis that shows an upward trend in sea level at this location. The expected impacts are exacerbated by the rapid erosion of beaches, and salt water intrusion in groundwater, lagoons and alluvial plains.

DEVELOPMENTS AND ACHIEVEMENTS OF THE NODC:

The objectives of the National Oceanographic Data and Information Centre are:

- respond to the needs of users by developing and making available data and information products
- archiving scientific information

Figure 7. The National Oceanographic Data and Information Centre in Lomé, Togo.



The NODC is open to all people working on similar topics and sharing the same objectives. The principal users are:

- Staff of Centre de Gestion Intégrée du Littoral et de l'Environnement (CGILE) de l'Université de Lomé
- Research institutions and laboratories
- Students and researchers
- Departments or ministries and other public institutions addressing the marine and coastal environment
- Non Governmental Organizations

The NODC collaborates with the Centre for Integrated Coastal and Environment Management at the University of Lomé. The products and services available are:

- Training workshops and internships
- Implementation of public awareness activities and associated media, such as the “Small Window on Ocean” programme which was an awareness exercise focused on students
- Development of brochures, posters and other novel printed and electronic materials such as compilations of photographs from coastal areas and coastal issues such as the “Coastal zone photos collection”
- Raising awareness on the need for collection and management of oceanographic data
- Data collection at Kpeme oceanographic station and surveys of the coastline
- Repositories of publications on the marine and coastal environment, including publications and meeting proceedings available in eight collections covering: morphology, oceanography and climate, socio-economics, fauna and flora, administrative structures and urbanization, history and culture
- Directory of experts and institutes, including details of 42 researchers from different coastal management themes in Togo

MARINE RELATED PROGRAMMES AND ORGANIZATION

- Direction Régionale du Plan et du développement
- Service de l'Hydrologie,
- Direction de l'Économie,
- Direction Générale de la Statistique et de la Comptabilité Nationale,
- Ministère de l'Agriculture, de l'Élevage et des Pêches,
- Ministère du Tourisme, de l'Artisanat et des Loisirs,
- Direction des Affaires Maritimes,
- Ministère de l'Équipement, des Mines, de l'Énergie, des Postes et Télécommunications,
- Direction de la Météorologie Nationale,
- Mairie Centrale de la Ville de Lomé,
- Ministère de l'Industrie, du Commerce et du Développement de la Zone Franche,
- Direction des Pêches,
- Direction de l'Environnement,
- Universités, Centres et Laboratoires de recherche.
- Société Nationale des Phosphates du Togo.
- Port Autonome de Lomé (PAL).
- Non Governmental Organization: AGBOZEGUE-LOME-TOGO.
- Non Governmental Organization: GEPIB - ANEHO-TOGO.
- Non Governmental Organization: AVOTODE - ANEHO-TOGO.
- Chercheurs de l'université (CGILE), auditeurs libres et particuliers, et étudiants.



Figure 8. Students on a pilot boat at the Lomé port during a public awareness course sponsored by ODINAFRICA.

Contacts:

Prof. Adoté Blim Blivi
Centre de Gestion Intégrée du Littoral et de l'Environnement de
l'Université de Lomé
Centre National de Données Océanographiques du TOGO
B.P. 1515 Lomé TOGO
E-mail: cgileul@yahoo.fr / adoblivi@hotmail.com
Tél: +228 905 39 14 / 958 73 35 / 227 08 50 / 221 68 17
www.nodc-togo.org