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Economy

Liberia: Economy

Quentin Outram

Introduction

Historically the Liberian economy has been divided between a largely foreign-owned, export-orientated sector producing plantation crops, minerals and timber, and a traditional, subsistence agricultural sector. Revenues derived from exports supported the state, and allowed its leaders and functionaries to enjoy relatively high standards of living. In contrast, the agricultural sector, which employed a high proportion of the population, was of low productivity and here poverty was endemic. In the late 1970s and 1980s crises in the world economy caused economic decline; the 1989–96 civil war and the renewed conflict during 1999–2003 devastated the economy.

Current estimates suggest that real gross domestic product (GDP), at constant 2000 prices, peaked in 1979 at US \$1,368m. Under Samuel Doe's regime (1980–90) real GDP declined slowly but persistently. During the 1989–96 war real GDP collapsed and in 1995 may have reached a low of less than 10% of the 1979 peak. After the end of that conflict, the economy initially recovered rapidly but then faltered, so that real GDP in 2002 was still only about 60% of that achieved in 1979. The 1999–2003 conflict and the United Nations (UN) sanctions in force against Liberia between 2001 and 2007 (see Recent History) had a significant impact on the economy and real GDP contracted by more than 30% in 2003. Since the end of the conflict and a slow initial recovery, growth was rapid until checked by the Ebola Virus Disease (EVD) epidemic of 2014–15. Real GDP grew at an average annual rate of more than 8% during 2005–13. However, the EVD epidemic was estimated by the International Monetary Fund (IMF) to have reduced real GDP growth to just 0.7% in 2014 and 0.3% in 2015. The IMF expected growth to rise to 3.9% in 2016.

Real GDP per head peaked at US \$728 in 1972, at constant 2005 prices. Rapid population growth has exacerbated the effects of the collapse in aggregate GDP during the civil conflicts, and in 2014 real GDP per head was still well below one-half of the level achieved in 1972. Estimates using purchasing-power parity exchange rates suggest that Liberia's 2011 GDP per head was one of the lowest in the world, amounting to less than half that of Sierra Leone. However, frequently reiterated estimates—derived from a 1991 government report—that 80%–85% of Liberians are unemployed are no longer valid and only ever applied to the small formal sector. The most recent *Labour Force Survey*, which is for 2010, estimated an overall unemployment rate of 3.7% (5.5% urban; 2.3% rural) with youth unemployment (those aged between 15 and 24 years) the highest, running at 6.1% (11.0% urban; 2.7% rural). In February 2008 a survey of 800 children under five years of age living in Monrovia found 17.6% of them to be suffering from acute undernutrition, a figure indicative of a nutritional crisis. According to a major survey conducted in 2014, 54% of the population lived below the poverty line, apparently unable to fulfil their basic needs, while 45% of the population lived in extreme poverty and were unable to afford the cost of the food necessary to feed themselves and their families. Surveys of the impact of the Ebola epidemic indicate a substantial exacerbation of pre-existing poverty.

The Liberian state has often had a baleful impact on the economy. Charles Taylor's regime of 1997–2003 was marked by large-scale economic misappropriation by the President and his associates. State corruption continued under the National Transitional Government of Liberia (NTGL), in power until 2006, and has remained a serious problem during the two administrations of Ellen Johnson Sirleaf.

Land

Land rights underpin major sectors of the Liberian economy. There are three types of land tenure: private, public and collective. 'Private land' is land that is privately owned by citizens or corporations,

as evidenced by written deeds. The Liberian state has largely recognized all remaining land as ‘public land’ over which the state could legally exercise all property rights, including alienation. This practice has ignored both deeded collective property rights acquired typically by the population of a given district, and the undeeded and unregistered collective rights assumed by local residents over land in their use. The result has been a history of conflicts over land rights, typically between agricultural or mineral concession-holders who believe they have acquired unencumbered property rights from the state, and local residents who believe they retain customary rights.

In August 2009 the Land Commission of Liberia was established with a mandate to formulate and propose the reform of land law and policy. In May 2013 the Commission approved a policy document proposing that all land should be held in one of four ways: as public land, as government land, as customary land or as private land. It proposed that rights to customary land should be as securely protected by law as rights to private land. In February 2014 the UN Secretary-General Ban Ki-Moon drew attention to the role of land disputes in triggering riots and violent demonstrations requiring the intervention of the UN Mission in Liberia (UNMIL). A Bill to establish a Land Authority was endorsed by the Senate in April 2016 but the more important Land Rights Bill, based on the Land Commission’s proposals and submitted to the National Legislature in December 2014, had not yet been passed or enacted into law as of mid-2016.

Agriculture

Agriculture employed 46% of the total labour force in 2015 with some 70% of rural households involved in the sector and agriculture and fishing accounted for 23.9% of GDP in 2015. The main cash crop is rubber. The principal food crops are rice and cassava (manioc), and these crops, together with palm oil and some fish or meat, form the basis of the national diet.

Paddy rice production is believed to have increased substantially since 2004, reaching an estimated 298,000 metric tons in 2011 but to have declined since then, falling to 237,000 tons in 2014. Imports of rice, largely to satisfy urban markets, rose to over 100,000 tons in 2002 and reached well over 200,000 tons in 2006, according to estimates by the Food and Agriculture Organization of the United Nations (FAO). Global increases in staple food prices have adversely affected Liberia, with rice prices rising by more than 60% between May 2007 and December 2008. Imports of rice have been substantial but erratic since 2006, varying between 150,000 tons and 300,000 tons a year.

Cassava has become a much more significant component of the national diet than before the civil war, and the area under cultivation has increased rapidly. Production rose from an estimated 282,200 metric tons in 1997 to an estimated 525,000 tons in 2014.

The recovery of the rubber sector after the 1989–96 war was fairly rapid and the sector was little affected by the 1999–2003 conflict. Output reached 120,800 metric tons in 2007, according to FAO estimates, before declining to 59,500 tons in 2009 due to the impact of the global economic downturn. Since then, output has recovered a little, to an estimated 63,000 tons, in 2011 with little change since then, according to FAO estimates. Export revenues from rubber rose rapidly after 2003, buoyed by rising international prices, to an estimated US \$121m. in 2007, but have since varied dramatically from year to year between US \$70m. and US \$270m. The latest estimate, for 2013, is of US \$148m.

There are now six foreign-owned rubber plantations: Firestone, the Liberian Agricultural Co (LAC) plantation, and the Salala, Sime Darby, Cavalla and Cocopa plantations. There is also one major Liberian-owned plantation, the Sinoe Rubber Plantation. By far the largest of the foreign-owned plantations is the Firestone concession, based at Harbel, 56 km east of Monrovia. Although the original concession covered a reputed 405,000 ha, the plantation extends over only 53,000 ha of this area. The US Firestone sold its Liberian interests to the Japanese tyre company Bridgestone in 1988, and the plantation is now owned by Bridgestone Americas through its subsidiary Firestone Natural Rubber, which owns the operating company Firestone Liberia Inc. In 2014 a television documentary jointly produced by ProPublica, a US not-for-profit body and the US Public Broadcasting Service broadcast evidence that Firestone had agreed to pay ‘taxes’ to Taylor’s Government; that Firestone

had paid US \$2.3m. during 1992; and that these payments continued after the launch of Operation Octopus (see Recent History). In February 2005 Firestone signed an agreement with the NTGL, which extended its lease, due to expire in 2025, until 2091. The lease was renegotiated by the Johnson Sirleaf administration in 2007–08 which obtained improved terms for Liberia on taxation and other matters. The term was also shortened to 36 years, expiring in 2041. In 2008 the Firestone Agricultural Workers' Union of Liberia with the assistance of the United Steel Workers' Union of the USA negotiated a new labour agreement with Firestone under which the union gained substantial increases in pay, conditions and benefits. In 2010 a further landmark agreement was reached under which heavy manual labour was replaced by mechanized systems. These agreements also banned child labour at the plantation. Firestone has long been Liberia's largest private sector employer and in 2014 the plantation was reported to employ over 8,000 workers, the vast majority of whom were Liberian citizens. In 2015 reports emerged that the company had made losses during 2012-14 and some reductions in employment were being made. Firestone assured President Johnson-Sirleaf that it would continue operations in Liberia in February 2016.

The LAC plantation comprises 14,000 ha of a 121,000-ha concession 45 km north-west of Buchanan, in Grand Bassa County. Owned by the US rubber company Uniroyal between 1961 and 1980, LAC is now wholly owned by the Compagnie Internationale de Cultures (SOCFINAF), a subsidiary of the Luxembourg-registered but Belgium-based Société Financière des Caoutchoucs Luxembourg (SOCFIN). In 2015 LAC produced 15,000 metric tons of rubber from its own plantation and smallholder plantations under its supervision. Yields from the plantation were low, owing to the increasing age of the trees. It employs some 4,300 workers. SOCFINAF is also the majority shareholder of the Weala Rubber Co, now known as the Salala Rubber Corporation (SRC) after Weala's merger with the company of that name in 2007; the remaining shares in Weala are owned by LAC. Both facilities are located in Margibi County. The SRC concession area is 8,000 ha, of which 4,800 ha are planted with rubber. It employed 1,000 workers in 2015, a substantial reduction from the year before; further reductions in employment were announced in April 2016. In September 2012 it announced the closure of its processing plant, citing high costs, shortages of rubber and competition from other plants. In March 2014 tensions between the SRC and local residents came to a head when part of the plantation was set on fire and the company's tree nursery was briefly seized. Local residents accused SRC of polluting local streams used as sources of drinking water. Both SAC and SRC recorded losses in 2014. In January 2015 an explosion at LAC's processing plant resulted in the death of six employees and injuries to 11 more. A government enquiry attributed the accident to 'negligence'. Meetings between LAC and community representatives concerning the company's plans to expand the plantation by some 27,400 ha were nevertheless reported to have proceeded 'with cordiality' in late 2015.

The Sime Darby concession comprised 120,000 ha located north of Monrovia in Bomi and Cape Mount counties; 8,000 ha were planted with rubber. Once owned by B.F. Goodrich, the US tyre maker, the plantation was acquired by Kumpulan Guthrie in 1980 and became known in Liberia as the Guthrie plantation. In 2007 Kumpulan Guthrie merged with Sime Darby Bhd, a Malaysian conglomerate which is now the world's largest listed plantation company. In May 2009 it was announced that Johnson Sirleaf had signed a new 63-year concession agreement with Sime Darby to rehabilitate, operate and expand the plantation. Sime Darby agreed to invest a reported US \$800m. over a 20-year period. Liberia provided a further 100,000 ha of land. However, Sime Darby's primary interest in Liberia is palm oil rather than rubber and its initial plantings, which began in May 2010, were of oil palm. It has agreed to construct a vegetable oil refinery and provide housing and medical facilities for 22,000 employees; it expects to employ 35,000 workers once the entire concession area has been developed. (In 2015, however, the plantation employed only some 3,000 workers.) The concession area now extends across Grand Cape Mount, Gbarpolu, Bomi and Bong counties. Sime Darby was accused of devastating sacred sites and of causing the destruction of livelihoods and forced displacement through its land clearance operations in 2012. A rapprochement was reached with the residents of the Zodia Clanship in Grand Cape Mount County in July 2013 with the aid of the Land Commission and a complaint to the Roundtable on Sustainable Palm Oil (RSPO) was subsequently withdrawn. Construction of the palm oil mill was postponed in 2014 because of the Ebola crisis.

Part of the original Firestone concession area became the Cavalla Rubber Corporation (CRC) plantation in Maryland County. Control of the plantation was ceded to Samuel Doe's Government in 1981. In 1983 Doe's Government granted 50% ownership to the Société Internationale de Plantations et de Finance (SIPEF), a Belgian company, in exchange for its management of the whole. The plantation ceased operations between 1992 and 1998, owing to the civil conflict, and in 2003 it was occupied by forces of the Movement for Democracy in Liberia (MODEL). In 2006 SIPEF sold its interests to Salala Rubber Investments (SRI). SRI then sold 60% of its stake to the Société Internationale de Plantations d'Hévéas (SIPH) in April 2008; the remaining 40% was acquired by SIPH in January 2012. SIPH is 56%-owned by the Ivorian agribusiness SIFCA Group; Michelin, the French tyre company, owns another 23%. SIFCA is itself 44%-owned by Parme Investissement, owned by Jean-Louis Billon and members of his family. Billon, probably the most prominent business person in Côte d'Ivoire and now that country's Minister of Trade, was the Chairman of SIFCA until November 2012. Jean-Louis' brother, Pierre Billon, who is also Chairman of SIPH, was appointed in his place in February 2013. SIFCA also obtained a concession of 15,200 ha to develop the former Decoris plantation, now known as the Maryland Oil Palm Plantation (MOPP). Construction of a rubber-processing factory began in March 2009. Protests against SIFCA by workers in Pleebo, Maryland County, culminated in the fatal shooting of a demonstrator in May 2011. Relations between the CRC, the MOPP and local residents have remained poor. The House of Representatives launched an investigation into SIFCA's labour practices in February 2015. The CRC plantation covered 5,600 ha in 2014, of which about 4,200 ha were in production, and employed 1,260 permanent workers at the end of that year. It succeeded in producing 5,330 metric tons of rubber in 2014, about 7% of SIPH's total. The company expected the revival of production to be 'lengthy and gradual'.

The Cocopa Rubber Plantation in Nimba County was originally owned by the Liberian Company (LIBCO), the corporation organized in 1947 by former US Secretary of State Edward R. Stettinius, Jr, to promote investment in Liberia, and is still sometimes known as the Liberian Company plantation. After Stettinius's death in 1949, his holdings in LIBCO were transferred to a US company called the Liberian Development Corporation. Stettinius's brother-in-law, Juan T. Trippe, the founder of Pan American Airways, acquired a substantial shareholding in this corporation. In 1996 LIBCO contracted the management of the plantation to a Liberian company owned by Taylor's Minister of Agriculture, Roland Massaquoi. It was taken over by the Johnson Sirleaf Government in January 2007 and was returned to representatives of LIBCO in April. LIBCO is believed to be under the control of Charles W. Trippe, Jr, a US national and Juan Trippe's grandson. Trippe took over the plantation as acting General Manager in 2010. (He relinquished the post in August 2013.) A critical report by a committee of the Liberian legislature in 2011 led to calls for the renegotiation of the concession agreement. It was stated to have about 3,250 ha planted with rubber and other crops and to employ over 1,200 staff and contractors in 2013. In June of that year the Government announced that it had not renewed the lease over the plantation held by LIBCO and was inviting expressions of interest from other companies. In May 2014 the plantation was reported to be in the hands of an 'interim management team' later named as Nimba Rubber Inc.. The company's Chairman and CEO is Harrison Karnwea, formerly of the National Patriotic Front of Liberia, a former Superintendent of Nimba County, the Minister of Internal Affairs from 2010 to 2012 and the head of the Forestry Development Authority since September 2012. In March 2014, however, it was reported that operations at the plantation had come to a halt and that wages had remained unpaid for many months.

The Sinoe Rubber Plantation, originally owned by a German company, was acquired by the family of President William Tolbert in 1973. The concession area, which is located in Sinoe County, is 240,000 ha, of which 20,000 ha are developed. After the Tolberts fled the country in the 1980s, the plantation was controlled by a variety of management companies. It was seized by MODEL forces in March 2003 and then fell under the control of a succession of ex-combatants from the civil war. In May 2009 President Johnson Sirleaf announced that the Government intended to take over the plantation and then lease it out to private investors. In May 2010 the County Superintendent, J. Milton Teahjay, claimed to have eliminated the 'atmosphere of gangsterism' on the plantation. However, progress towards rehabilitating the plantation was reportedly mired in disputes over the ownership of

the plantation between the government and the Tolbert family and no activity at the plantation has been reported for some years.

Palm oil, despite its importance in Guinea, Côte d'Ivoire and Ghana, has been produced on only a small scale in Liberia. FAO estimated the area harvested in Liberia in 2014 to be only 17,000 ha, compared with Guinea's 350,000 ha, and production to be 177,000 metric tons of oil palm fruit which would yield about 43,500 tons of palm oil. An attempt to encourage oil palm production with World Bank support in the late 1970s led to the establishment of the parastatal Decoris Oil Palm Company in 1981, which had developed its own 4,000 ha estate and 1,500 ha of associated smallholder estates in Maryland County before its final collapse in 1987. In 2007 Liberia signed two concession agreements in a renewed attempt to develop the palm oil sector. One was with LIBINCO Oil Palm Inc, which obtained a 34,500-ha concession in Palm Bay, Grand Bassa County, of which 8,500 ha had been previously planted and required rehabilitation, and the remainder clearing and planting. The company also obtained the rights to a further 80,000 ha in River Cess County. The other concession agreement was with Equatorial Bio-fuels (EBF), which obtained the Butaw Oil Plantation concession of 55,000 ha in Sinoe County. LIBINCO was acquired by EBF in February 2008. The latter company was restructured in 2009 as a subsidiary of Equatorial Palm Oil (EPO), under which name the company is now known in Liberia. The concessions are of 13,000 ha at Palm Bay and 8,750 ha at Butaw. The Butaw estate is an oil palm nursery. Despite the company's membership of the RSPO, it came under criticism in 2013 and 2014 for the expropriation of land in customary ownership, destruction of smallholder crops, ancestral land and sacred sites, and the pollution of water courses in Grand Bassa County. In March 2015 the RSPO determined that a complaint in respect of some of these allegations, brought by the Sustainable Development Institute of Liberia, was 'legitimate' and the company should proceed to resolve the issues. In 2014 EPO was acquired by Kuala Lumpur Kepong Bhd of Malaysia (KLK) and the companies are now the joint owners of Liberian Palm Developments Ltd, which holds ownership of the operating companies, including EPO Liberia. KLK has itself come under sustained criticism for its alleged disregard of human rights. EPO has now entered into a dialogue with aggrieved communities in Liberia. This led to a memorandum of understanding signed in May 2016 on potential High Carbon Stock forest areas. Operations were forced to a near stand-still by the Ebola crisis of 2014-15. EPO employed about 1,400 people in 2015, 1,058 at Palm Bay and 353 at Butaw..

Sime Darby began planting at its Matambo estate in Grand Cape Mount in 2010 and had planted 10,000 ha at this and at its Bomi County estate with oil palm by 2015. The company plans to plant a further 10,000 ha annually.

In December 2009 plans were announced to provide 240,000 ha of land for palm oil production in Sinoe, Grand Kru, Maryland, River Cess and River Gee counties to Golden Veroleum (Liberia) (GVL), owned by an entity known as the Verdant Fund LP in which the major investor is Golden Agri-Resources Ltd (GAR) of Singapore, itself a subsidiary of the Sinar Mas Group of Indonesia. The plans raised environmental concerns. Allegations of deforestation and wildlife habitat destruction by Sinar Mas in Indonesia led to the cancellation of supply contracts by Unilever, Nestlé and Carrefour, and a divestment of shares by British banking group HSBC in 2009 and 2010. A US \$1,600m. concession agreement with GVL was signed in August 2010. The company expected eventually to engage 35,000 workers. It employed more than 1,200 staff in September 2014, rising to 2,500 in March 2015, but it remained at the pre-nursery or nursery stage of production. It expected to start production in 2016. GVL became a member of the RSPO in August 2011. It was investigated by the UN Panel of Experts in 2012, after complaints of intimidation and unlawful arrest had been made. The Panel concluded that the company appeared to have failed to fulfil its obligations under the RSPO scheme. In January 2013 GVL threatened to suspend all of its operations for three months but in September, in a change of strategy apparently prompted by increasing financial losses, the company opened a dialogue with local residents. Nevertheless, the dispute between the company and local communities remains unresolved. In May 2015 a riot broke out at GVL's premises in Butaw District, Sinoe, after a visiting senior official refused to meet members of the local community. In July 2015 the UK-based advocacy group Global Witness issued a report alleging acts of violence perpetrated

against activists concerned with GVL expansion and an allegedly corrupt relationship with Milton Teahjay, now a senator for Sinoe County.

Other Liberian agricultural products include sugar cane (with an output of 266,000 metric tons in 2014, according to FAO), bananas (132,000 tons), plantains (48,000 tons), taro or cocoyams (28,000 tons), sweet potatoes (22,000 tons) and yams (21,000 tons). None of these is exported in significant quantities. The output of cocoa is very small by west African standards, estimated at 8,000 tons of beans in 2013. In 2014 a concession agreement covering 6,000 ha in Lofa County around Sazanor Town, some 20 km from Voinjama, was made with the Liberia Cocoa Corporation; this may lead to some increase in output. Small quantities of, coconuts, coffee, oranges and pineapples are also produced.

Little information is available on livestock. FAO estimates indicated that there were some 345,000 goats, 290,000 pigs, 275,000 sheep and 43,000 head of cattle in Liberia in 2014. FAO estimated that the country produced about 33,000 metric tons of meat in 2013, of which approximately one-quarter was game meat ('bush meat'), a significant food source in rural areas and implicated in the transmission of the Ebola virus from its animal reservoirs to humans.

Marine and freshwater fishing provided a livelihood and a source of nutrition in some areas. In 2014, according to FAO estimates, the total catch, most of which was composed of marine species, amounted to about 9,000 metric tons.

Forestry

Liberia possesses substantial forest reserves. According to FAO's 2015 Global Forest Resources Assessment, forest covers 4.2m. ha, or 43.4% of the total land area of Liberia. The forests are almost entirely lowland tropical moist forests, but savannah woodlands occur on the coast and in the north-west. Some 240 different timber species occur in Liberia, of which about 40 are traded commercially. The most valuable species are mahoganies and African walnut. The Sapo National Park, in Sinoe County, designated in 1983, is the one major protected area of rainforest. In October 2003 the Sapo National Park Act extended the park from 130,845 ha to 180,500 ha, and the East Nimba Nature Reserve Act created a 13,565-ha forest nature reserve contiguous to similar reserves in Guinea and Côte d'Ivoire. Groups of illicit miners and hunters, formerly including ex-combatants, have periodically occupied Sapo Park since 2004 and illicit mining and hunting remain serious problems. A Co-management Committee was not established for the East Nimba Reserve until 2010. In 2013 ArcelorMittal began providing technical and financial support and a new management plan was agreed in 2014. In her 2015 Annual Message President Johnson Sirleaf announced her intention to establish the Gola Forest National Park, adjacent to the Gola Rainforest National Park of Sierra Leone and a Bill to establish the Park was passed by the House of Representatives in September 2015.

Historically, smallholder agriculture, where land-clearing by 'slash and burn' is common, has been responsible for 95% of all deforestation, and the use of trees for domestic fuel has dwarfed the activities of commercial timber producers. Before the 1989–96 war commercial logging practices were selective, focusing on the extraction of high-value species, and the rate of deforestation resulting directly from logging was slow. The mass population displacements during the 1989–96 war led to a deceleration in the rate of deforestation arising from agricultural activities and the insecurity of that time inhibited large-scale logging operations. After 1996 commercial logging greatly increased deforestation. Estimates by the FAO which have not been revised since the 1990s, suggest deforestation is occurring at a rate of some 30,000 ha annually or about 0.7% per annum but that this is mitigated by reforestation which may reach the same rate.

During Taylor's regime the industry became dominated by a small number of companies, of which the Oriental Timber Co (OTC) was the largest. In December 2000 a UN report concluded that the Chairman of the OTC, Guus van Kouwenhoven, a Dutch national, was responsible for the logistics of arms transfers through Liberia into Sierra Leone, utilizing the position and resources of the OTC. (For van Kouwenhoven's arrest and prosecution see Recent History.) In view of this and evidence of other

connections between the Liberian timber trade and regional instability, Global Witness urged the UN Security Council to impose a total embargo on Liberian timber exports in January 2001. The UN Security Council placed a 10-month ban on exports of round logs and timber products from Liberia, which took effect in July 2003. Successive renewals kept timber sanctions in place until 2006 (see Recent History). The sanctions caused commercial companies to suspend operations, repatriate staff and withdraw equipment. The UN's Panel of Experts found no evidence of industrial logging or timber exports in investigations during 2004–06 and concluded that industrial logging had come to a halt. Timber sanctions were terminated in 2006 after the introduction of a reformed Forestry Law.

The Law required the Forestry Development Authority (FDA) to formulate a regulatory system for the commercial logging industry before renewed commercial forestry was permitted. Progress towards this was slow, impeded by irregularities in the award of forest resource licences by the FDA among other factors. Commercial logging, apart from the activities of unlicensed pit sawyers, did not resume until 2009. Production of sawlogs and veneer logs amounted to 240,000 cu m in that year, rising to 338,000 cu m in 2014 according to FAO estimates. Other industrial roundwood contributed a further 180,000 cu m. However, roundwood exports remained at negligible levels until 2011, when they rose to 73,000 cu m, valued at US \$23m., increasing further to 190,000 cu m valued at US \$57m. in 2012 and falling back to 118,000 cu m valued at US \$37m. in 2014. Of the estimated 8.6m. cu m of roundwood production in 2014, 8.0m. cu m was used as fuel. Additionally, about 0.3m. metric tons of charcoal was produced. Charcoal dominates the urban household energy market and is a major item in retail trade. Wood is the usual domestic fuel in rural areas and remains an important energy source for small-scale industry.

The regulatory system came under attack during 2011–12 through a loophole created by Private Use Permits (PUPs). These were designed to allow private owners to exploit their own forest resources. The numbers issued rose from two in September 2010 to 66 in September 2012, and an analysis by Global Witness and Liberian non-governmental organizations showed that they then covered an extraordinary 40% of Liberia's forests. A government report published in January 2013 found that the FDA had 'led and sanctioned' a process whereby the applicable laws and regulations had been violated 'to such an extent that the effective governance and management of the forestry sector had been undermined and its viability threatened'. Johnson Sirleaf dismissed the Managing Director of the FDA, Moses Wogbeh, and dissolved the FDA Board. Acting under Executive Order 44, the President introduced a moratorium on the issuance of new PUPs, ordered a suspension of all activity under those already issued, and the suspension of all logging activities under whatever kind of licence or permit they held by anyone holding a PUP. The most prominent of the companies exploiting PUPs to export timber were Atlantic Resources Ltd and Alpha Logging and Wood Processing Inc. Both companies were linked to Samling Global Ltd of Malaysia, which was owned by members of the family of Abdul Taib bin Mahmud, the Chief Minister of the Malaysian state of Sarawak until February 2014 when he acceded to the governorship of the state. Global Witness described Samling's record as 'egregious' in 2012 and noted the decision by the Norwegian Government's Pension Fund to divest itself of holdings in Samling after finding that the company was involved in illegal logging in Sarawak.

In May 2013 the UN Panel of Experts pointed out that the Liberian Government had failed to cancel the flawed PUPs and that other actions by the Government under Executive Order 44 had been blocked by Supreme Court decisions 'supporting commercial interests'. As a result, the forestry sector was in disarray with much uncertainty concerning which activities were legal and which were not. In January 2014 the membership of the reconstituted FDA Board was announced, and in her Annual Message at the end of the month the President stated that 29 of the PUPs had been revoked and that the FDA Board had been reconstituted in an amended form that had required legislation. In February the former Managing Director and other senior officials of the FDA were indicted on conspiracy charges relating to the granting of PUPs. Moses Wogbeh and four of his colleagues were convicted of 'economic sabotage' in September 2015.

< id="lr.ss.14382651241">Minerals and Petroleum

The mining sector formed a major part of the economy before the 1989–96 civil war, accounting for 10.9% of GDP in 1989. Iron ore was the principal product. During the 1989–96 civil war, however, the iron ore industry closed down completely. The most well-known extraction site was Mount Nimba, near the Guinean border. The open-pit mine at this site was formerly worked by the Liberian-American Minerals Company (LAMCO), which constructed the 267-km Buchanan–Yekepa railway line to enable the export of the ore. A contract to reopen the mine and rehabilitate the railway was signed with Mittal Steel, now ArcelorMittal, in September 2005 and renegotiated by the Johnson Sirleaf administration during 2006. Construction work began in October 2007. A first test shipment of iron ore took place in September 2011. Proven and probable reserves are estimated at 494m. t giving an estimated mine life of 22 years. The company shipped 4.1m. metric tons in 2013 and reached its Phase I target of 5m. tons in 2014; production was down to 4.3m. tons in 2015. In July 2014 a demonstration against the company by protestors turned violent after the intervention of the Liberia National Police and required UNMIL intervention. The UN Secretary-General, Ban Ki-Moon, described this as the most serious security incident in Liberia in three years. In August 2014 contractors working on the expansion project known as Phase II, designed to increase annual production to 15m. tons of concentrate, declared *force majeure* because of the Ebola epidemic and evacuated their staff. ArcelorMittal began a major review of its plans for Phase II which was said to be ongoing in 2016.

In January 2015 West Africa Exploration, a subsidiary of Sable Mining, interested in the Nimba iron ore project in Guinea, signed an infrastructure development agreement with Liberia allegedly enabling it to export ore from south-east Guinea via the rail line to Buchanan, on the central coast of Liberia; the agreement did not involve ArcelorMittal, the operator of the railway. In May 2016 Global Witness published an extensive report on Sable Mining alleging bribes and questionable payments by Sable Mining in an attempt to win iron-ore mining concessions in western Liberia during 2010–11. Sable Mining, its lawyer, the senator and chairman of the Unity Party, Varney Sherman; Alex Tyler, the Speaker of the House of Representatives; Ernest Jones, a former Deputy Minister of Lands, Mines and Energy; and Christopher Onanuga, a businessman, were indicted on charges of bribery in Liberia in May 2016.

In June 2005 the Canadian mining company Mano River Resources announced that it had been awarded a three-year mineral exploration agreement for iron ore in the Putu range in Grand Gedeh County; the Russian company Severstal agreed to provide finance for this project in May 2008. Mano River Resources merged with African Aura Resources in October 2009 to form African Aura Mining Inc, which was awarded a 25-year Mineral Development Agreement in 2010. African Aura was divided into Afferro Mining (iron) and Aureus Mining (gold) in April 2011. In January 2012 Afferro's interest in the project was purchased by Lybica Holdings, said to be an indirect subsidiary of Severstal, for a reported US \$122m. and re-organized as the Putu Iron Ore Mining Co., a wholly owned subsidiary of Severstal. It was awarded a 'class A' mining licence by the Government in July 2014, enabling large-scale operations, but was said to be pursuing the project without urgency, due to the fall in global ore prices and in January 2016 it was reported that the project had shut down completely and indefinitely. The Putu project would have required the construction of a new 130-km rail line to the coast and a new deep-water port.

In July 2007 it was reported that 13 companies, including ArcelorMittal and Tata Steel, had expressed an interest in the 'western cluster' of iron ore deposits at the Mano River and Bomi Hills, both previously mined, and at the Bea Mountains, not previously exploited. The successful bidder was Delta Mining Consolidated Ltd of South Africa. In September 2008 it was reported that Delta Mining was insolvent and had generated no revenues since it began operations in 2006. (A stake in its assets was acquired by Sable Mining in 2010). Liberia then reopened the bidding and awarded a 25-year licence to Elenilto Minerals and Mining of Israel, an affiliate of the Engelinvest Group controlled by Jacob Engel, an Israeli businessman primarily known as a real estate developer. The Liberia Anti-Corruption Commission (LACC) agreed to investigate the award of the licence in May 2011. Elenilto formed a subsidiary, Western Cluster Ltd (WCL), to hold its interests. In August 2011, before the

LACC had completed its investigation, Elenilto announced it had sold a 51% stake in WCL to Bloom Fountain Ltd, a wholly-owned subsidiary of Sesa Goa Ltd (itself a majority-owned subsidiary of Vedanta Resources plc), for US \$90m. Vedanta Resources has been the subject of a divestment campaign since February 2010, when the Church of England (UK) sold its shareholding, citing concerns over human rights violations by the company. Nevertheless, in August 2011 President Johnson Sirleaf announced that she had signed a Mining Development Agreement with WCL. In May 2012 Elenilto sold its remaining 49% of WCL to Sesa Goa, receiving a reported US \$123.5m. on the two sales. Elenilto thus gained a large profit on purely paper transactions in Liberian assets and Vedanta gained exploitation rights to Liberian iron ore without participation in a public bidding process. In May 2013 Sesa Goa announced that it had reduced its output target for Liberia from 4m. metric tons per year to 2m. tons per year. In August 2013 Sesa Goa merged with Sterlite Industries to form Sesa Sterlite. Local concerns that the company intended to transport iron ore by truck rather than by the expected rail line were voiced in September. In February 2014 it was announced that the company no longer expected to make its first shipment in that year. In 2016 the company announced plans to progress exploration work in early 2017.

The contract to rehabilitate and operate the iron ore site at Bong Mines was awarded to the China-Union Investment Company in January 2009. At the end of that year China-Union sold 85% of the project to the state-owned China-Africa Development Fund, which in turn sold a 60% stake to the state-owned Wuhan Iron and Steel Group (WISCO), also known as Wugang, in March 2010. The operating company is still known as China Union in Liberia. Ore shipments began in February 2014 and were then expected to amount to about 600,000 metric tons per year all of which were destined for consumption by Wugang in China. In May 2014 the Liberian Sustainable Development Institute issued a critical report on China Union, accusing the company of failing to provide the promised social contributions (a claim denied by the company) and of 'abusive treatment' of Liberian workers. In August, at the peak of the Ebola epidemic, the company shut down its operations, initially instructing 'black' workers to go home, apparently discriminating between Liberian and Chinese workers. In August 2015 China Union's local management stated it was sustaining major losses and planned to cut production to as little as 360,000 tons. In November it announced that 300 of the 350 expatriate Chinese staff had been laid off. In June 2016 the company abandoned responsibility for the Bong Mines Hospital to the Ministry of Health and confirmed that it had ceased production at the site.

In June 2010 Liberia signed a Mineral Development Agreement with BHP Billiton for the exploration and mining of iron ore deposits at areas known as Goe Fantro (in Grand Bassa County), Kitoma (Nimba County), the Toto Range (Bong County) and St John River South, all within reach of the Yekepa-Buchanan railway. In August 2014 BHP Billiton sold its interests in Liberia to Cavalla Resources Ltd, a wholly owned subsidiary of the private company, Jonah Capital. This company has been involved in a project to recover iron ore from the tailings left at the Port of Buchanan by LAMCO since 2008. The Executive Chairman of Jonah Capital is Sir Samuel E. Jonah of Ghana, CEO of Ashanti Goldfields during 1986-2004. An iron ore 'junior', Tawana Resources of Australia, announced the discovery of an iron ore body at Mofe Creek, Grand Cape Mount County, in October 2012. Exploration and assessments were continuing in 2016.

Diamond deposits were first discovered in the lower Lofa River area in 1957, and continue westwards to the border with Sierra Leone at the Mano River. These deposits consist of both alluvial deposits and kimberlite dykes, and yield both industrial and gem diamonds. Alluvial diamond occurrences have also been located in the Cavalla and Ya Creek drainage systems in Nimba County, in Grand Bassa and Montserrado counties, and there have been reports of discoveries near Greenville, Sinoe County. Alluvial deposits are worked by 'artisanal' miners using traditional methods and there is currently no corporate involvement in the sector apart from some exploration work by the US company Sunergy. Reserves are estimated at about 10m. carats. Historical data on production and exports are distorted by illicit production and smuggling. However, according to the US Geological Survey (USGS), 263,000 carats of industrial diamonds and 67,000 carats of gem diamonds were produced in 1988. The warring factions became heavily involved in diamond production during the

1989–96 civil conflict, and may have produced 40,000–60,000 carats of gem diamonds and 60,000–90,000 carats of industrial diamonds annually in the later years of the war.

The export of rough diamonds from Liberia was banned under UN resolutions in May 2001 (see Recent History). Progress towards achieving Kimberley Process compliancy as required by the UN and the removal of UN diamond sanctions accelerated under the Johnson Sirleaf administration. The sanctions were removed in April 2007 by UN Security Council Resolution 1753, and Liberia was formally admitted to the Kimberley Process Certification Scheme in May. Legal exports of rough diamonds resumed in September. A small number of high-value stones, for example a 194.1 carat diamond exported in 2010 with an estimated value of US \$6.7m. (or US \$35,000 per carat), have been found but the average value per carat is much lower. The Kimberley Process reported exports of 49,000 carats valued at US \$17.2m. (US \$348 per carat) in 2013. Official Liberian data for 2014 indicated production of 78,497 carats. These data suggest that if the growth of illegal exports can be contained diamond mining would remain a useful, but not spectacular, contributor to public revenue.

Global Witness, central to the campaign over conflict diamonds (see Recent History), left the Kimberley Process in December 2011, stating that it had failed to become a conflict prevention mechanism and was now only a ‘cynical corporate accreditation scheme’. The Panel of Experts concluded in its December 2012 report that much artisanal production continued to be trafficked across the border into Sierra Leone and Guinea, and that in the face of the porous borders, the lack of governmental capacity and the remote location of much artisanal production it was hard to see how smuggling and illicit mining could be stopped.

Alluvial gold has been exploited since the 1940s in an area near Zwedru in Grand Gedeh County, and exploration for primary (lode) gold in the 1970s rapidly focused on this area. Reserves of alluvial gold are distributed throughout the country, but the most significant occurrences are in western Liberia between the Lofa and Mano rivers, in Bong and Nimba counties along the St John River and Ya Creek, and in the south-east of the country. Liberia’s total reserves of gold are estimated at 3m. troy oz. The prevalence of illicit production renders output estimates highly uncertain, but the industry was undoubtedly on a small scale by world standards before the 1989–96 war. Production continued throughout the war, organized by the various rebel factions. The USGS estimates production of 598 kg in 2014, slightly down on the previous year. In November 2013 the UN Panel of Experts reported that ‘industrial sources’ estimated that actual annual production was about 3,000 kg, suggesting that illicit exports accounted for about 80% of output.

Although a number of companies have been granted gold exploration licences, few have been active in recent years. Exploration by Aureus Mining has advanced furthest at its Bea Mountains concession. Resources at the Weaju and New Liberty properties in the Bea Mountains have been estimated to be capable of yielding 233,000 oz and 751,000 oz of gold, respectively. Construction at the Bea Mountain mine site took place in 2014 and the first gold was poured in 2015. Technical problems delayed the start of commercial production to March 2016. The mine was then reported to be achieving a monthly output of 9,000 oz. Hummingbird Resources plc of the UK, listed on the British Alternative Investment Market (AIM) since the end of 2010, has secured exploration licences in south-eastern Liberia covering 7,000 sq km. It claimed discoveries at several sites, together capable of yielding 3.8m. oz of gold in February 2012. It was awarded a 25-year Mineral Development Agreement in July 2015 for its Dugbe project in Sinoe County.

Offshore deposits of hydrocarbons were first discovered during explorations carried out in 1968–73, but remained unexploited. The Government established the National Oil Co of Liberia (NOCAL) in 1999 to develop Liberia’s petroleum resources. The renewed civil conflict prevented progress until February 2004, when NOCAL announced a bidding round for 17 exploration blocks, covering 55,000 sq km, of which six blocks would be awarded. The blocks extend from the Liberian coast for about 120 km, where the water reaches a depth of about 3,000 m, and are approximately 30 km wide on average. They are numbered in sequence, from LB-01 bordering the territorial waters of Côte d’Ivoire to LB-17 bordering those of Sierra Leone. In addition, 13 ‘ultra-deep’ blocks have been defined on the seaward side of blocks LB-01 to LB-17.

In September 2009 Anadarko Petroleum of the USA announced that oil had been discovered in its Venus well in deep water off shore from Sierra Leone about 60 km from Liberian waters. This, in conjunction with the same company's discovery of the Jubilee field off shore from Ghana, enhanced the prospects for oil discoveries off shore from Liberia.

At mid-2016 the pattern of ownership was as follows: blocks LB-01 to LB-07, LB-16 and LB-17 and all the deep sea blocks were vacant; rights to blocks LB-08 and LB-09 were owned by African Petroleum; LB-10 was 80%-owned by Anadarko, 10%-owned by Mitsubishi of Japan and 10%-owned by Repsol of Spain; blocks LB-11, LB12 and LB-14 were owned by Chevron (45%), Oranto Petroleum (30%) and Eni (25%); LB-13 was in the hands of ExxonMobil and Canadian Overseas Petroleum Ltd (COPL); and LB-15 was owned by Anadarko (47.5%), Repsol (27.5%) and Tullow Oil of the UK (25.0%). In August 2014 NOCAL announced a new bidding round for the vacated blocks of LB-06, LB-07, LB-16 and LB-17. In April 2015 NOCAL submitted a proposal to the National Legislature to offer a production-sharing contract for LB-16 to a consortium composed of three little-known companies: the Liberty Petroleum Corporation of the USA (90%), Pillar Oil Ltd of Nigeria (5%) and the New Millennium Corporation (5%). In July NOCAL sought approval for production sharing contracts with Kosmos Energy of the USA for LB-06 and LB-07 and with the previously unknown A-Z Petroleum of Nigeria and the previously unknown Liberia Oil and Gas Co. of Liberia for LB-17. However, interest in possible Liberian oil reserves was reported to be dwindling in 2016. Ten exploratory wells have been drilled between 2011 and 2016 but no commercially viable oil deposits have been found. The only plans for further drilling known at the time of writing in mid-2016 were those of ExxonMobil which plans to drill in LB-13 late in 2016.

NOCAL ran into financial difficulties in 2015 and reacted by laying off almost its entire staff in September. At the behest of Ellen Johnson-Sirleaf, NOCAL's board of directors planned significant permanent staff cuts. The crisis led to an outbreak of criticism of the company led by the veteran politician and former managing director of the Liberia Petroleum Refining Corporation, Harry Greaves. Greaves' body was found on the Monrovia beach in January 2016 in mysterious though not necessarily suspicious circumstances; he was 89.

Manufacturing

The significance of the manufacturing sector to the Liberian economy has always been limited. New estimates of Liberian GDP, which include greatly increased estimates of activity in the services sector, reduced the share of GDP attributed to manufacturing to an estimated 4% in 2014. The Liberia Labour Force Survey of 2010 estimated manufacturing employment at 70,000 people, or about 7% of the total labour force. The largest sub-sectors by value of output are beverages and beer, followed by cement. The remainder of the sector consists of printing, wood products, paint and domestic chemical manufacturing, food-processing and the production of candles and mattresses. There are few companies of any size. Large-scale industry is limited to a cement factory which commenced operations in 1968 and is now owned by HeidelbergCement of Germany. The factory was modernized and enlarged in 2012–13 to achieve an annual capacity of 500,000 metric tons. The factory employed approximately 60 persons in 2016.

The Tertiary Sector

The new estimates of Liberian GDP indicate that services accounted for an estimated 49% of GDP in 2014. Construction, commerce, road transport and private services are dominated by informal employment, while public administration is the major sector of formal employment in the Liberian economy. There were an estimated 37,000 people in public sector employment in 2010. In January 2016 the President drew attention to the large numbers on the Civil Service roll, then standing at 45,608.

Transport and Telecommunications

Liberia's road network is inadequate and mostly in very poor repair. A main road between Monrovia and Freetown, Sierra Leone, completed in 1988, reduced the distance between the two capitals from 1,014 km to 544 km. Travel by road to Guinea in the north and Côte d'Ivoire in the east remains difficult. Many neighbouring villages remain connected only by footpaths. Of the officially recognized network of primary, secondary and feeder roads of 10,664 km, only 574 km of road were paved in 2011. Reconstruction and rehabilitation work began in 2007 and was marked by the official reopening of the bridge over the River Mano, at the Liberia–Sierra Leone border on the Monrovia–Freetown route. Since then projects to upgrade the roads between Monrovia and Buchanan (141 km), Monrovia and Gbarnga (a 180-km section), Gbarnga and Ganta and the Guinea border (70 km), Ganta and Harper (540 km), Ganta and Zwedru (233 km), Pleebo and Barclayville (75 km), Gbarnga and Mendicorma (in Lofa County at the border with Sierra Leone, 284 km), Kolahun Junction and Vahun (208 km), and Fish Town and Harper (an 80 km section) have been completed or were in progress at mid-2016. Only the Monrovia to Bo Waterside (at the Sierra Leone border), the Monrovia to Bomi Hills, the Monrovia to Kakata, Monrovia to Gbarnga and Ganta, and the Monrovia to Buchanan roads were paved as at September 2015. Other roads passable to all vehicles at that date according to the WFP Logistics Cluster included the Gbarnga to Voinjama, the Ganta to Yekepa, and the Ganta to Tapita, Zwedru, Fishtown and Barclayville roads.

The most popular form of passenger transport, apart from walking, is by motorcycle. It was estimated in 2012 that there were perhaps 250,000 motorcycles on Liberia's roads, or 63 per 1,000 of the population, compared with an estimated 5.7 cars per 1,000 population. Commercial motorcyclists called 'Phen-Phen' or 'pehn-pehn' drivers in Liberia offer motorcycle taxi services charging about US \$0.20 per km and yielding net incomes for the drivers of around US \$8 a day. In 2013 commercial motorcycles were banned from central Monrovia and in December 2015 the government prohibited the import of motorcycles allegedly in an effort to limit the activities of criminal motorcycle gangs. From early 2016 three-wheeled auto-rickshaws imported from India and China and known locally as 'kekehs' became increasingly common in Monrovia.

The railways from Monrovia to Mano River via Bomi Hills (145 route-km), from Monrovia to Bong Mines (78 route-km) and from Buchanan to Yekepa (267 route-km) were constructed for the transport of iron ore. The closure of Liberia's iron ore industry during the 1989–96 conflict resulted in the cessation of all traffic on these lines. ArcelorMittal's investment programme included the restoration of the Buchanan–Yekepa line and work on this project has now been completed. China Union's concession agreement included the rehabilitation and modernization of the Bong Mines to Monrovia line.

At 31 December 2014 Liberia's open-registry fleet comprised 3,800 vessels, with a total displacement of 131.6m. grt. None of this fleet is owned by Liberian nationals. The fleet was the second largest in the world (after Panama) in terms of gross tonnage in that year. The Liberian registry is regarded as one of the more reputable open registries, with below average casualty and detention rates, and the registry has grown significantly since 2006. Although the political responsibility of the Bureau of Maritime Affairs, now the Liberia Maritime Authority (LMA), the management of the Liberian registry was, from its inception in 1949, conducted by the International Trust Co, an associate company of International Registries Incorporated (IRI) of New York, USA. Since the registry was, for all intents and purposes, managed from the USA it was little affected by the 1989–96 civil conflict. The management of the registry was transferred to the newly created Liberia International Ship and Corporate Registry (LISCR), controlled by Taylor associates, from January 2000. Poor and declining contributions to government revenue prompted President Johnson Sirleaf to announce a review of the agreement with LISCR in 2007, and a revised 10-year contract with LISCR to manage the registry was approved by the legislature in August 2009. Despite this, the maritime revenue was only US \$21.4m. (4.2% of total revenue) in 2013/14, a figure still far below initial expectations. LMA's contributions to the consolidated fund of government revenues amounted to only US\$14.0m in 2014/15.

Liberia's principal ports are the Monrovia Freeport, Buchanan, Greenville and Harper. In 2011 all oil imports and nearly all the dry-bulk and container traffic were handled by the Freeport. The Freeport has four piers and one main wharf. China Union's Bong Mines concession and WCL's Western Cluster concession agreements require them to contribute to the reconditioning of the port. In 2010 APM Terminals, part of A. P. Moller-Maersk of Denmark, obtained a 25-year concession for the operation and development of the Freeport. The company was to spend an estimated US \$120m. over the duration of the contract. It officially opened a 600-m quay at the port in May 2013. In May 2016 24-hour operation was introduced, something not seen for thirty years. ArcelorMittal has restored the port at Buchanan and the port has been exporting iron ore again since 2011. Greenville and Harper are shallow-water ports which have been used mainly for the export of logs.

Liberia's principal airports are Roberts (or Robertsfield) International Airport (RIA), at Harbel, 56 km east of Monrovia, and the smaller James Spriggs Payne Airport, at Monrovia. The UN Security Council grounded all Liberian-registered aircraft by Resolution 1343 of 2001. A new aviation registry was subsequently established in conformity with international procedures, and the UN grounding order lapsed in May 2002. The new registry has remained inactive, however. Any airline that might be established under Liberian regulatory oversight was subjected to a pre-emptive ban from European Union (EU) airspace promulgated by the European Commission in March 2006 and since repeatedly reiterated, most recently in December 2015.

Delta Airlines of the USA inaugurated the first direct service from the USA to Liberia for over 20 years in September 2010. In 2014 flights to and from Liberia were suspended by every carrier (except Royal Air Maroc and SN Brussels) because of the EVD epidemic, either as an alleged health measure or in response to the decline in demand. Many, but not all, services had been resumed by mid-2015. At mid-2016 passenger services into RIA were operated by Kenya Airways, with a service from Nairobi, Kenya, via Accra, Ghana; by Royal Air Maroc, with a service from Casablanca, Morocco; and by SN Brussels Airlines, with flights from Brussels, Belgium. A number of regional airlines also operated services from Abidjan (Côte d'Ivoire), Accra (Ghana) and Freetown (Sierra Leone). The Spriggs Payne Airport is used primarily by UNMIL, UN agencies and has also been used by some regional airlines.

Almost all of the installations of the parastatal Liberia Telecommunications Corporation, now Libtelco, were damaged during the 1989–96 war, and the fighting in Monrovia in 2003 resulted in further damage. The company remains the monopoly provider of fixed-line telephone services. Its coverage is limited to Monrovia, Harbel and points in between. Libtelco introduced mobile services based on 3G CDMA technology in 2009. In December 2013 Johnson Sirleaf suspended the Libtelco board for failing to adhere to the Public Procurement Act in its dealings with Ketter Telecom, or K3, usually described as a Swiss company but whose head operating offices are in Slovenia. The memorandum of understanding between Libtelco and Ketter was cancelled, and the Libtelco board was replaced in February 2014. Libtelco faces substantial competition from private sector mobile operators and, despite a subsidy of US\$1.35m., in 2014/15 it recorded a loss of US\$0.8m.

The Africa Coast to Europe (ACE) project to bring a sub-marine telecommunications cable from Europe to the west coastal states of Africa was announced in 2010. The cable arrived in Monrovia in November 2011 and was officially inaugurated in January 2013. The management of traffic onto and off the cable is undertaken by the Cable Consortium of Liberia, 60% owned by the Government of Liberia, 20% by Libtelco, 10% by the Lonestar Communications Corporation and 10% by Cellcom. Both the latter two are Liberian mobile telephone operators. On completion the project will bring secure broadband connectivity to Liberia and end its dependence on satellite connections. Growth in mobile cellular telephone ownership and use has been rapid since 2001, and it was estimated that there were 3.2m. mobile telephone subscribers in Liberia in 2014, or about 73 per 100 people; a figure about average for sub-Saharan Africa. There were four licensed Global System for Mobile Communications (GSM) mobile operators in 2016: Lonestar Cell, operating since 2000 and a subsidiary of MTN Communications of South Africa; LiberCell (Atlantic Wireless) and Cellcom Telecom, both operating since 2004; and Comium-Liberia, known as Novafone since 2013, which acquired a GSM licence in December 2004. Lonestar and Cellcom were by far the largest companies

in 2012 with 1.3m. and just over 1.0m. subscribers, respectively. There were 5.4 internet users per 100 people in 2014, far below the sub-Saharan average of 19.2. Domestic postal services resumed in 2006 after a 14-year absence.

Power and Utilities

Liberia imports all of the petroleum products that it consumes. The parastatal Liberia Petroleum Refining Corporation (LPRC) formerly operated a refinery but now acts only as an importer and distributor. Petrol prices remain state controlled. Consumption of petroleum declined from about 8,000 barrels per day (b/d) in 1988 to an estimated 4,000 b/d in 2013. Harry Greaves, the LPRC Managing Director appointed by Johnson Sirleaf in 2006 and, like her, a minister under Tolbert, was dismissed in September 2009 after the discovery of multi-million dollar procurement irregularities. In May 2011 the General Auditing Commission (GAC) carried out an investigation into LPRC's activities during 2006/07, the first year of Greaves's control, and numerous further irregularities were discovered. Johnson Sirleaf reacted by dissolving the whole board of LPRC in July 2011. Further controversy over the disposal of oil provided as a development grant-in-kind by the Government of Japan surrounded the reconstructed LPRC board in 2011–12. The GAC's report into this matter, submitted in August 2012, documented a failure by the LPRC board to protect the financial interests of the state and gave rise to widespread suspicions of corruption. In October 2014 the head of the Liberian Anti-Corruption Commission recommended that T. Nelson Williams, II, the Managing Director of the LPRC, be charged with procurement irregularities. Williams remained in post until he was succeeded by Sumo Kupee in April 2015. A number of other LPRC officials were arrested in February 2016 and Williams was also sought for arrest at that time. Despite these difficulties the corporation contributed US\$2.4m. to government revenues in 2014/15.

The government-owned Liberia Electricity Corporation (LEC) produced about one-half of the total output of electricity in the mid-1980s, most of the rest being produced by the iron ore mining companies then operating in the country. The LEC operated two systems, the Monrovia Grid and the Rural Electrification Network, which served the remainder of the country through 11 isolated grids supplied by diesel generators. During the 1989–96 conflict all the power generating plant was looted or destroyed, including the 64-MW Mt Coffee hydroelectric plant which was wrecked in December 1990. Since then businesses and other organizations have depended largely on privately-owned diesel generators for electricity. In her inaugural address in January 2006, President Johnson Sirleaf reiterated campaign promises to restore electric light to Monrovia within six months. To this end, in March it was announced that the LEC had leased four generators with a combined power rating of 2,665 kVA. At a keenly awaited event, electric light was restored to parts of Monrovia on 26 July, Independence Day, an event described by the President as symbolizing Liberia's journey from darkness to illumination. Total net electricity production, almost all from privately-owned diesel generators, rose from an estimated 177m. kWh in 2006 to 0.3 billion kWh in 2013.

The World Bank envisages Liberia's eventual connection to the West African Power Pool (WAPP), which would allow it to import electricity from neighbouring countries. Transmission lines are planned from Man (Côte d'Ivoire) to Sanniquellie (140 km), Sanniquellie to Nzérékoré (Guinea) (140 km), Sanniquellie to Buchanan (250 km), Buchanan to Monrovia (110 km), Monrovia to the Bumbuna Dam (Sierra Leone) and Bumbuna to Linsan (Guinea) (190 km). Liberia is currently scheduled for connection to this network in 2018. In February 2016 Côte d'Ivoire, expected to be WAPP's principle exporter, announced that it planned to make 83MW available to Liberia, Sierra Leone and Guinea and expected the costs of electricity in the importing countries to fall from about US\$0.50 per kWh to US\$0.15 or US\$0.20 per kWh. In December 2012 an agreement was reached with the European Investment Bank (EIB) for the rehabilitation of the Mt Coffee plant. Subsequent agreements shared the financing between the Government of Norway (35%, as a grant), the EIB (30%, as a loan), the Government of Liberia (20%) and the KfW Development Bank of Germany (15%, as a grant). The US Millennium Challenge Corporation provided a further US\$257m. of financing for Mt Coffee associated projects in 2015. Construction work commenced in January 2014 with the first commercial output of electricity due in December 2016.

The provision of piped water is limited to urban areas and rural areas are still often dependent on supplies collected from wells, bore holes, ponds and streams. It was estimated that 76% of the population had access to improved drinking water sources in 2015 (89% in urban areas; 63% in rural areas) and 17% of the population had access to improved sanitation facilities (28% urban; 6% rural). In Monrovia, the parastatal Liberia Water and Sewer Corporation (LWSC) provided 273m.–365m. litres of water per day before the war. The central water supply and sewage disposal system in Monrovia was damaged and looted during and after the 1992 offensive on the capital including the White Plains water treatment plant on the St Paul River; the resulting shortage of safe water was alleviated by donor-operated distribution systems and the partial restoration of piped water supplies in July 2006. Output of finished water by the LWSC increased from about 3.4m. litres per day in 2009 to 22.5m. in 2013 and piped water was brought to central Monrovia for the first time since the war in May of that year. The final stages of the rehabilitation of the White Plains plant was reported to be underway in 2016 and due to be completed by the end of the year[. However, outbreaks of disease linked to unsafe water supplies remain a major public health problem.

The Macroeconomy

The rapid expansion of the Liberian economy in the 1950s and 1960s was largely generated by exports of rubber, iron ore and timber, and by infrastructural projects financed by foreign aid. After the first major decline in international prices in 1974 rubber and iron ore exports stagnated. It is from this period that Liberia's later macroeconomic difficulties originated. Public sector deficits increased from negligible levels in 1975 to 13% of GDP in 1979; external debt nearly quadrupled. The Doe regime borrowed massively, almost entirely from abroad and mainly at commercial rates, and used the funds obtained to finance unproductive public investments and maintain domestic consumption. By 1988 external public debt had risen to US \$1,800m., equivalent to 164% of GDP.

Currency, Banking, Exchange Rates and Consumer Prices

Before 1981 the US dollar was the principal currency in Liberia; it remains legal tender alongside the Liberian dollar, and is the main currency for trade and financial transactions and for larger cash payments. At the end of 2015 US dollars accounted for 70% of Liberian 'broad money' (M2), a proportion which has stabilized in recent years, suggesting that previous speculation that the economy would eventually become fully dollarized was premature. In May 2013 the Government issued a tranche of Treasury bills for the first time. Subsequent issues have followed at monthly intervals and achieved an average discount rate of 3.66% in the first quarter of 2016. In July 2013 the Central Bank of Liberia also successfully issued a tranche of 91-day bills at an average discount rate of 2.21% in 2013 rising to 6.51% in 2015. These have been used to reduce excess Liberian dollar liquidity.

The commercial banking system has gained strength since the end of the civil conflicts, but processing fees continue to account for more than one-half of total banking income and the proportion of non-performing loans is high. There were nine licensed and operating commercial banks at the end of 2015, with 87 branches. Branches were concentrated in Monrovia, and Montserrado and Margibi counties; none exist in Gbarpolu, River Cess, River Gee or Grand Kru counties. There were also nine Rural Community Finance Institutions –community owned and managed banks established with the support of the CBL—and these also have a presence in the south-east where banks are rare. There were also 20 registered microfinance institutions, 400 credit unions and 1,450 village savings and loans institutions. Loans to businesses have been focused on commerce and construction and few loans are made to agriculture, mining or manufacturing. Nominal commercial lending rates are high, partly owing to the high level of non-performing loans, standing at 13 to 14% in 2013-15, although inflation reduces the real rate to figures substantially below this.

From 1940 the Liberian dollar was maintained nominally at par with the US dollar. The official 1:1 exchange rate became increasingly unrealistic during the 1989–96 war and the rate was allowed to float from the end of August 1998. The exchange rate has followed a declining trend, from about L \$43 = US \$1 at the end of the 1999–2003 conflict to L \$92.5 = US \$1 at mid-2016. Fluctuations

within this general trend have been caused by changes in the security situation, the rigour of UN sanctions, government financial activity, and the Ebola crisis.

The main threats to price stability in Monrovia are presented by government monetary policy, import prices and currency depreciation. Currency depreciations after 2001 led to rapidly rising domestic prices, with the Consumer Price Index (CPI) increasing by 10%–14% annually during 2001–03. Price stability was restored in early 2004 and inflation stood below 10% per year until 2007, when global increases in fuel and food prices pushed the CPI annual inflation rate to a peak of 26.5% in August 2008. Inflationary pressures have since generally moderated, with monthly annual inflation rates usually less than 10%, except during the worst months of the Ebola crisis when inflation rose above 10% per annum and peaked at 13.5% in September 2014.

International Trade and Debt

International trade has generated Liberia's growth. Merchandise exports increased from negligible levels before the Second World War to US \$400m. in 1974, stimulated by strong demand in the world economy for iron ore and supported by continuing exports of rubber and other primary commodities. In 1974 exports were equivalent in value to 87% of GDP. Exports stagnated, in volume terms, in the late 1970s as a result of international recession. In the 1980s the volume of exports broadly declined, and stagnating (or contracting) export unit values exacerbated the effects on the economy. Nevertheless, the dominance of the export sector continued: exports were equivalent to 58% of GDP in 1980 and 50% in 1989.

The impact of the war with Liberians United for Reconciliation and Development and MODEL was severe in 2003, with total exports declining to US \$108.9m. Timber exports collapsed to a negligible level in 2004 as UN sanctions took effect. Since then, the trade balance has demonstrated continued weakness arising from the narrow commodity composition of exports, the instability of export demand, and Liberia's vulnerability to global increases in the prices of rice and petroleum, two of its main imports. Data for 2014 show that the impact of declining commodity prices for iron ore and rubber and the Ebola epidemic was severe, with exports of goods slumping to an estimated US \$437m. from US \$559m. in 2013, while imports were virtually unchanged at an estimated US \$1,178m. Combined with a net deficit on trade in services of US \$1,003m., these figures produced a deficit on trade in goods and services of US \$741m., financed largely by donor assistance and foreign direct and other investment. In 2013 exports accounted for 28.5% of GDP and 21.7% in 2014, significantly less than before the civil conflicts.

Liberia acceded to the World Trade Organization in December 2015.

Liberia first fell into arrears with the IMF in 1984. In March 1990 the IMF declared Liberia a 'non-co-operating' country and threatened Liberia with expulsion from the Fund. By this time Liberia's total external debt had risen to US \$1,849m. and by 1997 accumulated arrears and penalties had increased Liberia's total external debt to some US \$2,012m. (equivalent to almost US \$700 per head), of which most was in arrears. The Taylor administration offered only minimal co-operation with the IMF, and in March 2003 the IMF finally suspended Liberia's voting rights at the Fund. Progress towards the normalization of relations came to a halt until the election of President Johnson Sirleaf. In May 2006 the IMF pronounced itself 'encouraged' by developments in economic management in Liberia, and in October the IMF lifted the declaration of non-co-operation that had been in force since 1990. In November the IMF announced that it had secured funding pledges of US \$842m. from its members, enabling it to write off Liberia's debt to the Fund. In February 2008 it deemed Liberia eligible for debt relief assistance under the initiative for heavily indebted poor countries (HIPC). In March the Fund restored Liberia's voting and related rights at the Fund, a decision which allowed the Fund to provide US \$952m. of financing to the country. In June 2010 the IMF and the World Bank announced that they had decided to support a US \$4,600m. package of debt relief for Liberia, including US \$2,700m. under the HIPC initiative. This announcement brought to an end an external debt problem which had hung over Liberia for 30 years. As Antoinette Sayeh, the Director of the IMF's African Department and a former Liberian Minister of Finance, stated, this represented 'a tremendous achievement'.

Since then, government borrowing has been undertaken at a modest level and under a set of rules that prohibit any borrowing to finance consumption and require the total debt stock to remain below 60% of annual GDP. Public external debt stood at US \$195m. at the end of the July 2012–June 2013 fiscal year (of which the medium and long-term components were equivalent to 10.5% of GDP), rising to an estimated US \$264m. (medium and long-term equivalents to 13.2% of GDP) in 2013/14 and a projected US \$458m. (22.9%) in 2014/15 and US\$615m. (32.8%) in 2015/16.

Public Finance and Aid

The Liberian tax base is formed by international and domestic trade and by the incomes of individuals and businesses. Taxes on income yielded US \$146.8m., or 28% of total government revenue of US \$525.7m., in the 2014/15 fiscal year; taxes on international trade yielded US \$167.8m. (32%); taxes on sales of goods and services generated US \$50.1m. (9%); non-tax revenues and international grants accounted for most of the remainder.

Johnson Sirleaf's first budget, submitted to the legislature at the end of June 2006, was for US \$120m. The administration subsequently succeeded in increasing the budget totals substantially, reaching US \$582.9m. for 2013/14. The initial budget for 2014/15 was lower, at US\$559.3, but was revised upwards because of the Ebola epidemic, to US\$635.2, a 14% increase on the initial budget and a 9% increase on the budget for the previous year despite a projected fall in taxation revenue arising from the same cause. Of the total revised budget, US \$298.2m. (47%) was allocated to public administration, municipal government and 'transparency and accountability', reflecting the high cost of the state apparatus; US \$83.6m. (13%) was allocated to security and the rule of law; US \$65.3m. (10%) to education; and US \$78.5m. (12.4%) to health. US\$47.5m. were allocated under various headings to counter the Ebola epidemic. The legislature approved a US\$622.7 budget for 2015/16. The draft budget for 2016/17 is for US\$556.0, an 11% cut on 2015/16 blamed on the slump in the global demand for iron ore and rubber, the slow-down in the Liberian economy and a fall in budget support from international donors.

Liberia's alignment with Western countries during the Cold War was undoubtedly encouraged by the willingness of the USA to provide substantial quantities of aid. While developmental and budgetary aid largely ceased in 1990, the USA and others provided emergency assistance to counteract the effects of the civil conflict. Post-conflict reconstruction and development aid was inhibited by concerns over mismanagement and corruption, especially before the departure of Taylor in 2003. In February 2004 an International Reconstruction Conference for Liberia, held under UN auspices, received offers of funds totalling US \$520m. Disbursements of this aid were slow, however, with donors citing continuing concerns about Liberian financial management practices as the cause of the delays. Very little of this aid was channelled through the NTGL and virtually no aid was provided for general support of the government budget. In the first year of the Johnson Sirleaf administration in 2006, net receipts of official development assistance (ODA) remained steady at an estimated US \$260m. but rose substantially to US \$701m. in 2007 and to US \$1,251m. in 2008, before falling to US \$513m. in 2009. A substantial rise followed, to US \$1,419m., in 2010 (much of which was debt-related) before a return to more normal totals of US \$765m. in 2011, US \$571m. in 2012 and US \$535m. in 2013. Aid receipts rose substantially in 2014, to US\$748m., reflecting the impact of the EVD epidemic. Some aid donors, including the World Bank, the International Development Agency, the African Development Bank, USAID and the EU, have donated funds directly to the Johnson Sirleaf Government's budget, but the UN system, Japan, Norway and Sweden have apparently remained reluctant to do so. Of the estimated US \$899m. in aid receipts in 2015/16, 86% was expected to be for programme aid, bypassing the state budget.

Economic Prospects

Reconstruction of the country's economy, especially its infrastructure, was far from complete before the conflict of 1999–2003 wrought further damage. Slow progress under the NTGL was superseded by renewed hope and advances under the Johnson Sirleaf administrations, only to be met with the devastation of the Ebola epidemic in 2014–15. Initial hopes for a rapid recovery have been dashed by

developments in the world economy which have hit Liberia's major export earners, iron ore and rubber. In a longer-term perspective, the removal of timber and diamond sanctions, the restoration of electricity and piped water to parts of Monrovia, the start of road rehabilitation, the connection with the ACE telecommunications cable and the imminent connection to the WAPP have been significant achievements. Relations with international financial institutions have improved dramatically, and the debt relief secured in 2010 was a historic achievement. However, poverty remains widespread and severe, and has been exacerbated by rising fuel and food prices and the Ebola epidemic. Offshore oil exploration has yet to yield substantial results. The recovery of the timber and diamond sectors awaits foreign investment which, in these as in other sectors, continues to be restricted by the weak infrastructure. Corruption remains a major problem and the mismanagement of concessions in agriculture, forestry, mining and oil exploration has the potential to squander resources on a large scale. Even sustained and rapid growth will not return the economy to the position it achieved in the 1970s for many years to come.