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Failed development in Benin, 1897-1921**

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# “RUBBER WILL NOT KEEP IN THIS COUNTRY”: FAILED DEVELOPMENT IN BENIN, 1897-1921

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ABSTRACT. Although Nigeria's Benin region was a major rubber producer in 1960, the industry developed slowly. The colonial government encouraged rubber production from 1897 until 1921, when it abandoned the industry. I explain why rubber did not take hold in this period. The government was unable to protect Benin's rubber forests from over-exploitation. Expatriate firms were reticent to invest in plantations, and private African plantations remained small to 1921. The colonial government promoted the development of “communal” plantations, but these suffered from labour scarcity, a weak state, limited information, and global competition.

## 1. INTRODUCTION

In this paper, I explain why rubber failed to take hold in Benin before 1921, when the colonial government stopped encouraging production. This instance is similar to other development failures in Africa, and so helps us understand their causes. Further, the slow start for rubber is puzzling when contrasted with the adoption of other cash crops in Africa in the early twentieth century.

Institutions, information, and inequality all figure highly in the uneven success of development efforts in Africa. Bad institutions such as insecure land rights can hinder the adoption of tree crops (Besley, 1995). Information matters. Learning about a new crop takes time (Bandiera and Rasul, 2006; Conley and Udry, 2010). Individuals may free-ride on the costly experimentation of others, which slows diffusion (Foster and Rosenzweig, 2001). Planners are often prejudiced and misinformed. Colonial projects, including the Office du Niger, forestry management in Guinea and Nigeria, the East African Groundnuts Scheme, terracing in Kenya and Tanzania, and the Thaba-Tseka Project in Lesotho, floundered when officials misunderstood the environment (Beusekom, 2002; Bromund, 1997; Fairhead and Leach, 1996; Ferguson, 1990; Maack, 1996; Mackenzie, 1998; von Hellermann, 2007). Inequality too matters. African participation in many colonial industries was compelled through poll taxes,

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punishment, and the continuation of slavery (e.g. Arrighi, 1970; Isaacman, 1996; Brown, 2003). I show that institutions, information, and inequality hindered the development of rubber in Benin to 1921.

In 1961, Nigeria was Africa's largest producer of natural rubber (faostat.fao.org), and the bulk of its 57,167 tons exported in 1960 came from the mid-Western region (Anschel, 1965). In 1921, however, Nigeria exported only 85 tons. Motivated by low producer prices and Britain's global policy of reducing rubber acreage, the Director of Agriculture wrote in that year that his department would cease distributing seeds, since it was "not desirable that we should appear to in any way be advocating the planting of this product" (Anschel, 1965, p. 51). This contrasts with rubber's later success and with Africans' rapid adoption of new crops in other cases. New world crops such as maize were assimilated quickly (McCann, 2005). Under colonial rule, smallholders eagerly planted cocoa in south-western Nigeria and Ghana (Austin, 2005; Berry, 1975), and cash crops had to be suppressed in East Africa where African cultivation threatened settler interests (Brett, 1973; Mackenzie, 1998). Why was Benin different?

Neither prices nor government disinterest are explanations. Nominal prices were 17% higher during the post-war rubber boom (1946-1960) than from 1900 to 1921,<sup>2</sup> but annual physical output was more than 35 times greater.<sup>3</sup> Further, production steadily rose from 1932 to 1939, when prices averaged only £37 per ton. Before 1921, the government encouraged production of both wild and planted rubber.

I divide my explanation by sector. *Wild rubber* failed because, after undermining Benin's pre-colonial political structure, the colonial government could not create institutions to adequately manage Benin's wild rubber resources. A regulated common property resource became open access, and the region's *Funtumia elastica* was over-exploited. *Private plantations* of *Funtumia* and *Para* struggled because planters faced high labour costs and lacked the information needed to have confidence in their future profits.<sup>4</sup> *Communal* plantations suffered due to labour scarcity, limited state resources, difficulties in transmitting skills and information, and low returns. Their benefits were unequally distributed.

This is not a parsimonious list. This is justified, first, because wild rubber, private plantations, and communal plantations faced somewhat independent difficulties. Further, even the minor problems that occurred are interesting in themselves, and are part of history. Finally, as I argue in the appendix, the data do not make it possible to credibly calculate the relative importance of any particular difficulty.

There are three comparisons across space and time that allow me to support my explanation. First, I contrast Benin with other parts of Africa. Countries that experienced destruction of wild rubber and failure of expatriate plantations faced similar difficulties. Second, I contrast Benin with Asia. Many of the problems I identify

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<sup>2</sup> Anschel (1965) gives price figures that average £153 per ton from 1900 to 1921, and £179 per ton from 1945 to 1960.

<sup>3</sup> 25,884 tons versus 701, on average (Anschel, 1965).

<sup>4</sup> By "plantation," simply mean a purposefully planted farm of rubber trees. This follows the convention of the primary sources, and does not require that the farm be large in scale or worked with hired labor.

were surmounted in Malaya and Sumatra. Third, Benin's later success as a rubber producer is partly explained by the removal of these conditions.

In Section 2, I provide background on rubber, Benin, and my sources. In Section 3, I discuss wild rubber. In Section 4, I discuss plantation rubber. In Section 5, I conclude.

## 2. BACKGROUND AND SOURCES

The vulcanization of rubber in 1843 made it useful for hoses, tubing, springs, washers, diaphragms, and other industrial applications, spurring demand that was accelerated by the later spread of bicycles and automobiles (Harms, 1975). By 1921, England imported more than 40,000 tons of rubber annually (Rae, 1938). Before Asian supply lowered world prices, Africans exported wild rubber to meet this demand. The largest African exporters during this period were Angola, the Congo Free State, the French Congo, French Guinea, and the Gold Coast. The humanitarian abuses that occurred in the Congo Free State are infamous (Hochschild, 1998). I focus on rubber production in the area surrounding the Edo-speaking Kingdom of Benin, centred on the Benin District of colonial Nigeria. In 1897, following the massacre of an expeditionary party led by Consul-General Phillips, British sacked Benin.

Though rubber was important to Benin's late colonial economy, the industry has received little historical notice. Anschel (1965) and Blanckenburg (1963) describe the industry as it was in 1965. Egboh (1985) briefly outlines the history of rubber in Nigeria within a history of Nigerian forestry. Afigbo (1970) describes the regulations on rubber tapping as part of Ralph Moor's development policies. Igbafe (1979) gives a few pages to the early industry. Usuanlele (1988, 2003), similarly, gives a few pages to the communal plantations. I add to these accounts, using colonial annual reports, records of the West African Lands Committee (WALC), and correspondence from the National Archives of the United Kingdom (NAUK) in Kew and the National Archives of Nigeria in Ibadan (NAI).

## 3. WILD RUBBER

While Europeans stressed humanitarianism and the Oba's tyranny as motives for conquest, Igbafe (1970) shows economic motives were important. Little can be added here, except to note that traders and British officials noticed Benin's untapped rubber and hinted that regime change would bring them into production. In an 1892 report, the Commissioner of the Niger Coast Protectorate wrote to the Foreign Secretary that "[t]here is plenty of rubber in the country, but the natives have a great disinclination to start working a new commodity."<sup>5</sup> One trader in 1896 reported that the Oba would not allow his own people to collect rubber, and turned back those who sought to open up trade (Ofonagoro, 1979, p. 149). Miller's agent at Ughoton informed the consul in 1896 that, while there was "plenty" of rubber in the country, he was unable to get a "rubber

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<sup>5</sup> NAUK, FO 2/51. Enc. in Jan 12, 1893: Macdonald to Rosebery.

man” from Cape Coast to collect it, since he would not go far from Ughoton, having been twice “maltreated while away in the bush” (Ryder, 1969, p. 277). He added that if “Benin was under proper Government and the resources of the country properly developed ... the exports would be very great.”<sup>6</sup>

In 1896, a Lagos man went to the Oba on the advice of the Commissioner, Moor, “with a view to asking the King to start the ‘rubber’ industry, the country abounding in that product.” Phillips reported that the man offered presents worth more than £30, but had no success. He warned the Under-Secretary of State for the Colonies that his instructions “to deal with this matter by pacific means have been literally obeyed and have failed to produce the results desired.”<sup>7</sup> In November 1897, soon after the fall of Benin, Moor reported the 25% increase in rubber exports to be “satisfactory,” adding “and I anticipate considerable increase in the future as much trouble has been taken to open up rubber production...A rich country has been opened up to the influence of civilization and trade, containing extensive rubber forests.”<sup>8</sup>

In this section, I outline the trade in wild (mostly *Funtumia*) rubber that followed. I argue that the new government could not police over-exploitation of Benin’s rubber resources. First, it lacked the resources to adequately police tapping. Second, it undermined existing systems of property rights, and was unable to replace them.

After the conquest, the chiefs Ologboshi and Abohun launched a guerrilla campaign, while the British worked to impose their authority. Amidst this confusion, the government struggled to police rubber exploitation by Yoruba and Fante tapping gangs and by the Royal Niger Company, who sought to take advantage of the change in regime. The British believed these outsiders were aiding Ologboshi and Abohun. Fosbery reported that “undoubtedly all the rubber cutters in that part of the country were in his favour, and on the day of the first engagement our men were cursed from the bush by Yorubas.”<sup>9</sup> Later on, he met a man called Deji, living at Isua. “This man’s residence,” he noted, “was undoubtedly the head centre of all the Yoruba rubber cutters in that part of the district; both these men were arrested, with several of their followers.”<sup>10</sup>

The Royal Niger Company expanded into Benin territory. RNC agents moved into subject towns, encouraging them to ignore British officers. Moor reported that, during the expedition against Ologboshi, arms and ammunition had “found their way into the disaffected area from the territories of the Royal Niger Company, and were no doubt exchanged for the rubber.”<sup>11</sup> He believed there was a “a general league between the rebels, the local inhabitants, and the Yorubas who were in the territories as traders in rubber.”<sup>12</sup> While some of this had found its way into Benin City, the majority he believed

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<sup>6</sup> NAUK, FO 2/102: 24 Nov, 1896: Phillips to Under-Secretary of State; Enc: 9 Nov, 1896: Brownridge to Phillips.

<sup>7</sup> NAUK, FO 2/102. 16 Nov, 1896: Phillips to Under-Secretary of State.

<sup>8</sup> Niger Coast Protectorate, Annual Report for 1896-7, p. 10.

<sup>9</sup> Benin Territories Expedition Correspondence 1899: Enc 4: Report on Expedition against Ologboshi and Abohun by Fosbery.

<sup>10</sup> Benin Territories Expedition Correspondence 1899: Enc 4: Report on Expedition against Ologboshi and Abohun by Fosbery.

<sup>11</sup> Benin Territories Expedition Correspondence 1899: #1: May 27, 1899: Moor to Chamberlain.

<sup>12</sup> Benin Territories Expedition Correspondence 1899: #1: May 27, 1899: Moor to Chamberlain.

had been pushed into RNC territory, and RNC marking had been found on the guerrillas' kegs of powder. Rubber continued to pass into RNC territory after this; the defendants in *Regina v. Akonweli, Odutala, and Ola*<sup>13</sup> claimed to be employed by a man named Omoli, living in RNC territory, who had sent them to Ipoki to work rubber.

Intensive tapping by these outsiders raised yields but damaged the trees. In a situation that resembled open access, the predictable result was overexploitation. In 1901, the Resident recalled that it was “deplorable to see what destruction was wrought by the foreign element some years ago around Ibewhe. Dead rubber trees can be counted by the hundred.”<sup>14</sup> Fosberry expressed concern that the Yorubas had killed many of the local *Funtumia*, but also described his hope that the recently enacted rubber regulations (described below) would improve matters:

The bush passed through between Iho and Isure, Isua and Ihuekpe has been a very rich rubber country, but I regret to say is now full of dead rubber trees. ... The natives stated they never worked rubber, that it was done entirely by the Yorubas. I expounded the rubber regulations on every available opportunity, and urged the people to protect the riches of their country. ... This rubber has of course been a great source of revenue to Ologboshi.<sup>15</sup>

British efforts began with “makeshift” regulations, imposed in 1897 “to stop foreigners entering the Benin country for the purpose of working the economic products therein.”<sup>16</sup> Afigbo (1970) has outlined these. Non-Edo were required to obtain licenses from the Resident every 6 months for 10s. The regulations prohibited all persons from “tapping rubber trees in such a manner as to permanently damage them or to interfere with their future yield.” The “Chiefs of the districts” were made responsible for supervising adherence, and were to be awarded half penalties after convictions. The colonial office was unsure whether these regulations were legal; one margin note (signed HBL on April 10, 1899) read, “I do not quite see how these regulations have the force of law. They appear to be Queen’s Regulations made without the Queen’s consent.” Another note (signed by RW, on May 6) pointed out that it was unclear if Queen’s Regulations made under the Africa Order in Council 1889 could be enforced against Lagos persons. These worries did not prevent Fosberry from promoting the regulations during his operations against Ologboshi.

According to Igbafe (1979, p. 340-342), rubber inspectors went out to explain these regulations. Forestry Inspectors trained local youth in tapping, who were given licenses and would then pass their knowledge on. Influential men were appointed to assist the chiefs in policing violations. Later, a 20% tax was imposed on rubber worked by

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<sup>13</sup> NAI, Ben. Prof. 8/2/1, Case Book 1898-1899.

<sup>14</sup> NAUK, CO 520/7, 26/2/1901: Resident Benin City to Moor.

<sup>15</sup> Benin Territories Expedition Correspondence 1899: Enc 4: Report on Expedition against Ologboshi and Abohun by Fosberry.

<sup>16</sup> NAUK, CO 444/1, 5 March, 1899: Moor to Under-Secretary of State. “Margin notes” are also cited from here.

foreigners, split between “owners of the land” and the government. License holders were required to plant rubber seeds.

Prosecutions under these regulations tell us about the tappers who moved into Benin, and the difficulty of enforcement.<sup>17</sup> First, enforcement required policing by colonial staff such as forest guards. Second, these officials required cooperation from local communities. Third, tappers operated in gangs; if a few violators were caught, many would escape. Finally, the court was eager to use punitive sanctions.

Active monitoring required colonial staff. The defendant in *Regina v. Olowo* had been trained by the Government rubber inspector. He and four others sent out six months earlier had not been seen since. He was arrested with three others in Owedou, but three of his accomplices escaped. He and his brother worked together, the defendant selling his product “for a piece of cloth,” and his brother for 7/6. He was sentenced to one month of hard labour. Quality too needed policing. Regulations passed over the objections of European traders in 1897 allowed confiscation of adulterated rubber, with fines of up to £50 with six months imprisonment (Igbafe, 1979). In *Regina v. Osufu Jebu, Sumola, and Bakari*, the prosecution witness (a Captain) stated that he found Osufu at Udo, carrying adulterated rubber towards Lagos. This was produced in court and “found to be adulterated and very offensive.” The prisoners claimed they had bought it in Benin City and did not know it was adulterated. They were imprisoned with hard labour for six months.

Community cooperation was necessary. The same Captain told the court in *Regina v. Jegidi and Agbi* that, while in the same area, the residents of Obahon informed him that the defendants were cutting rubber. They claimed to be from Umapa, but “the natives of that village,” told him that they had never seen the men before. The Captain was also the prosecution witness in *Regina v. Ground Nut, Jack, and Josiah*. The defendants in that case had been arrested by the headman of Rejain with “a lot of tools etc. used for working rubber.” The Captain told the court that he had previously instructed the headman to arrest all those cutting rubber without a license. Their sentence was two years imprisonment with hard labour. In addition, the court noted that Ground Nut was a Mendi (likely Mende, from Sierra Leone) who had deserted government service and was charged with raping a small child.

Monitoring was made more difficult by the size of tapping gangs. The defendant in *Regina v. Thomas Ouami* was charged as the headman of a gang of illicit rubber workers. The prosecution witness, T.A. Moses, a rubber inspector, stated that he found the prisoner working rubber with a large gang of men under him. On recognizing Moses, Ouami ordered his men to escape, begged Moses not to report him to the Consul, and offered a bribe. He later sent three men to “beg” Moses not to report him. Ouami’s undoing was his claim that he had asked the men to ask Moses to serve as an interpreter for him; this contradicted their testimony. The acting resident also considered a prior record against the defendant for obtaining money by false pretences as evidence of bad character, and sentenced him to 9 months of hard labour.

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<sup>17</sup> All of the cases cited here are from NAI, Ben. Prof. 8/2/1, Case Book 1898-1899.

In *Regina v. Ipapa, Ehenua, Obasuye, Asaota, and Jegede*, the defendants were described as “a portion of a gang of 150 who were surprised by the Yorubas of the town working rubber near Okiewo.” They were found with rubber just collected in a calabash and rubber gouges, and were sentenced to 1 year hard labour each. The defendant in *Regina v. Jagbohun* was charged with not leaving Benin after being found guilty of “complicity with illicit rubber workers.” Ten days later, he was brought down from Isua, pleading that he was trying to catch illicit rubber workers. The incredulous Acting Resident sentenced him to six months hard labour.

Punishments were harsh. In *Regina v. Gbeson and Aburonke*, *Regina v. Adeanju*, and *Regina v. Lawojo and Omoleye*, the defendants were each sentenced to six months or one year each for “illicit rubber working” or “working rubber without a license.” By contrast, a man who stole a goat from the market to pay a debt of 8s was sentenced to 14 days hard labour, a man who three times abducted the same female slave of a chief was fined £1 and given three dozen lashes, and a man convicted of “resisting the government” was given one year of hard labour.<sup>18</sup> Notably, there is only one rubber case in this book in which the defendant is acquitted.<sup>19</sup>

The regulations were soon deemed inadequate (Afigbo, 1970). In October 1898, Gallwey reported that Benin was “full of rubber,” but that the Acting Resident had “continually been complaining” of the destruction of rubber trees due to “the manner in which the natives tapped them.” The number of trees killed amounted to “no small figure.”<sup>20</sup> In February 1899, Moor stated that it was “utterly impracticable to preserve the rubber forests in the Benin City District unless there be a special European officer detailed for the work.” Officers had tried to deal with this, but their “enormous amount of other work” made it impossible to supervise the Native Inspectors. In his opinion, the matter was “pressing”, and “of great importance for the rubber forests in question are of very considerable extent and of great value.”<sup>21</sup>

In 1899, the regulations were amended. The maximum imprisonment was extended to two years, and violators were required to forfeit illicit produce, and a closed season was imposed from December to June (Afigbo, 1970). Prosecutions made under these also survive. In *Regina v. Akinbo*, the defendant, charged with “illicit rubber working,” pleaded guilty to “working rubber during the close time,” and was sentenced to 6 months of hard labour. The defendant in *Regina v. Aluko* was a “foreigner” caught by the above Captain working rubber unlawfully at Udo, and found with a large quantity of rubber in his house hidden under cinders. He was sentenced to two years imprisonment with hard labour. *Regina v. Ejei et al* saw six men of a larger group arrested. Ejei, their leader, had worked under a Fanti headman who had been expelled from the country. The defendants claimed to be traders who had ceased working rubber, but were sentenced to two years imprisonment with hard labour.

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<sup>18</sup> *Regina v. Peter*, *Regina v. Bujlu* (?) *Abudu Ipede*, and *Regina v. Oriegbe*, respectively.

<sup>19</sup> *Regina v. Osun and Abiomo*; no reason is given for why charges are dismissed.

<sup>20</sup> NAUK, FO 2/185; Oct 26, 1898: Gallwey to Salisbury.

<sup>21</sup> NAUK, FO 2/185; 17 Feb, 1899: Moor to Under-Secretary of State.



The Forestry Department was created in 1900, and its chief concern “was the preservation of the extensive rubber forests in the Benin territories.” Gallwey credited Hitchens, the Forestry Inspector, for the “very energetic manner in which he carried out this work, and for the successful efforts he made to educate the Binis to safeguard the rubber trees.”<sup>22</sup> Hitchens reported that he had inspected and assessed the value of the rubber forests belonging to nearly 100 Bini villages, and created “staffs of ex-officio rubber inspectors” in each of them.<sup>23</sup> He instructed locals in tapping, explained the regulations, and “constitute[ed] every Bini an ex-officio policeman to bring to justice any rubber gatherer infringing on the regulations.” In his view, the Bini “responded with alacrity,” exercising “such restraining influence on prohibited rubber-tapping and adulterated rubber-producing that not a single rubber gatherer is free from close ‘shadowing,’ and not a single ball of rubber and prohibited root rubber could work its undetected way to Lagos or our own trading factories.” 1900, the Forestry Proclamation was issued; this required licenses from the District Commissioner, detailed permitted methods of tapping, and applied to all persons, not only foreigners (Afigbo, 1970, p. 390)

At first, these appeared to work. More than £700 was collected as license fees from Benin in 1900.<sup>24</sup> The Acting High Commissioner noted a fall in rubber exports in 1902, arguing timber had attracted “many who formerly collected rubber, and the legislation which has stopped the destruction of rubber trees is probably a second cause which accounts for the decline.”<sup>25</sup> In 1904, Egerton suggested the Forestry Department was “fully organized and capable of exercising an efficient control over timber cutting and, in a lesser degree, over the proper tapping of rubber-bearing plants.”<sup>26</sup>

Thompson wrote in 1906 in glowing terms about the license system, which had:

worked very satisfactorily in the Benin Districts of the Central Province where the native communities take a lively interest in forestry matters and are fully alive to the importance of preserving the plants – an annual source of revenue to themselves.<sup>27</sup>

He felt the rubber rules were working “very smoothly” in the Central Province, where the chiefs had taken “an active interest in protecting their forests, and the inhabitants are becoming very law-abiding in this respect.” 1114 licenses were issued, resulting in £671 10s paid. 645 of these were given in Benin City. He added a word of caution about the “natives”; “as long as they are encouraged by the trade to ruthlessly destroy the rubber-yielding plants by getting as much as possible out of them in the shortest possible time and then to leave the rest to chance, I am afraid but little attention will be paid by them to more prudent advice.”

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<sup>22</sup> Southern Nigeria Annual Report 1899/00, p. 9.

<sup>23</sup> Southern Nigeria Annual Report 1899/00, p. 9.

<sup>24</sup> Southern Nigeria Annual Report for 1900, p. 14.

<sup>25</sup> Southern Nigeria Annual Report for 1902, p. 21.

<sup>26</sup> Southern Nigeria Annual Report for 1904, p. 4.

<sup>27</sup> Report on the Forest Administration of Southern Nigeria for 1906, p. 31.

The regulations were, however, ultimately unsuccessful. The Annual Report for 1908 was gloomy, stating that “[r]ubber appears to be a rapidly decaying business ... the Southern production in 1908 was 713,000 lbs. only, as compared with 1,656,000 lbs. in 1907. Some portion of the shortage may be attributed to the prohibition of tapping in certain districts, but the reckless destruction of trees by excessive bleeding is largely responsible for the drooping business.” There were only 12 prosecutions and 10 convictions under the rubber rules. The 1913 report for Benin commented on a falling off in rubber exports, blaming this on prices and “the fact that the wild rubber is much scarcer than formerly.”<sup>28</sup> British regulations had not stopped resource exhaustion.

Why did this fail? First, violations were difficult to police. The regulations diverted some of the trade from Benin to Lagos as early as 1901.<sup>29</sup> Similarly, because Northern Nigeria had no similar regulations, rubber was smuggled from the North (Egboh, 1985, p. 57). In 1901, a representative of Miller Brothers wrote to Moor, informing him of the challenges. “Few of those who bring down rubber,” he argued, were “able to give a detailed account of its history from the time of manufacture, as it may have passed through many hands before reaching theirs.” Rubber was sold in many markets on its way to the coast, and “many of the rubber traders here are preparing to leave the district as they profess themselves unable any longer to conduct business here under the vexatious conditions in force.” Though every Edo was eligible for a reward of £2 for any conviction, the people had not looked after their own interests; “they show themselves in that respect unworthy to benefit by the rubber regulations as they have already proved themselves in other respects, through not yet devoting the slightest attention to the manufacture of rubber.”<sup>30</sup>

In 1905, the Governor recognized that prohibitions on root rubber were no longer enforced.<sup>31</sup> Christy (1911) pointed out that, while 221,566 lbs were exported from Southern Nigeria in 1907, only £53/10 was collected in license fees.<sup>32</sup> It was impossible that 107 license holders could be responsible for this quantity, so the bulk must have been illicit. Even if the forestry staff were increased fifty times, he thought it would be impossible to police the area:

So long as the native can sell his ‘lump’ rubber at an enormous profit, so long will he continue his destructive methods of tapping, and his dirty, primitive system of preparation, despite voluminous rules and regulations, which he could not understand, even supposing them ever to reach himself or his chief (Christy, 1911, p. 13).

Second, the British undermined the systems of property rights that existed before 1897, and lacked the trust and resources necessary to replace them. Ostrom (1991)

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<sup>28</sup> NAI, BP 138 1914: Annual Reports Benin Province.

<sup>29</sup> NAUK, CO 520/9. 17 Oct, 1901: Acting High Commissioner to Secretary of State

<sup>30</sup> NAUK, CO 520/9, 13 July, 1901: McLucas and Schaumburg (for Miller Bros and Bey & Zimmer) to Moor

<sup>31</sup> NAUK, CO 520/30, 5 March, 1905: Egerton to Lyttelton.

<sup>32</sup> Though this contradicts the figure in the Annual Report, the figure in that report is larger, making the argument stronger.

argues that effective resource management requires defined boundaries, easy identification of those with user rights, rules appropriate to local conditions, accountable monitors, graduated sanctions, rapid and low-cost conflict resolution, and recognition of users' rights to devise their own institutions. British conquest weakened Benin's borders, rules were imposed by an external authority without local participation, colonial agents lacked accountability, and courts in Benin City were eager to impose maximum penalties.

Before 1897, Edo villages could control access to their forest resources. Outside his own village, an Edo need to obtained permission from the local Enogie or Odionwere to use the forest, until he settled permanently (Bradbury, 1957, p. 45). Hunters, "native and non-native" turned the hand of any animal caught to the Enogie, and the Oba was owed a leg and tusk of any elephant killed (Egharevba, 1949, p. 43-44). Non-Edo were required to settle and assimilate (Bradbury, 1957, p. 45). After 1897, outsiders came in seeking rights to farm, fish, and reap palm fruits, and the colonial government was slow to establish effective regulations to control these demands. Yoruba settlers gained land without holding title through the Oba; these were not regularized under a Native Court Rule until 1914 (Rowling, 1948, p. 11).

An 1896 editorial in the Lagos Weekly Record asserted Oba's power make "short work" of intruders, wishing that "the greedy rubber hunters" in the Lagos hinterland "should one and all be dispatched to the domains of the expeditious King of Benin" (quoted by Ofonagoro (1979, p. 120)). This was not speculative talk. Members of the British punitive expedition in 1897 found a gang of nine outsiders who had gone to Benin to collect rubber. Despite being armed with revolvers, they had been taken prisoner and held in Benin for two months, bound so they would hang themselves were they to lie down (Ling Roth, 1903, p. 68). Similarly, in February 1897, Moor reported that six "Accra men, captured in the Mahin country rubber collecting during the last few months, came in from the bush heavily ironed".<sup>33</sup>

The 1908 trade report reached a similar conclusion; the situation was not adequate to protect rubber trees from destruction:

[N]ot until rubber trees are owned by individuals, who will see that they are duly protected, can this industry be looked upon as a permanent one in Nigeria. Thousands of trees in the forests, which are practically a 'no man's land,' are destroyed each year by overtapping, and although every effort is made by the Forestry Department, with the staff at its command, to regulate the gathering and to prevent indiscriminate bleeding, the task in so large a country and amidst dense forests is, it must be admitted, and extremely difficult one.<sup>34</sup>

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<sup>33</sup> NAUK, FO 881/7002: Feb 24, 1897: Moor to Salisbury. Presumably, "ironed" means "in irons."

<sup>34</sup> Quoted in Southern Nigeria Annual Report for 1908, p. 12

The colonial Forest Guards were inadequate and corrupt. In 1899, the defendant in *Regina v. Amidu*<sup>35</sup> was charged with seizing a government rubber inspector. The inspector came across a “large gang of Lagos rubber cutters.” The prisoner captured the inspector and his two carriers, tied them up, and flogged him. The Resident complained in 1901 that the “ignorance of some of the native rubber Inspectors may also have had something to do with the failure of last year’s sowing... Three of these men have lately brought into Benin City seed in a green and half grown condition, absolutely useless and of course wasted. One would-be Rubber Inspector was a small boy about 14 who would be of about much use as a process server in Ireland of the same age.”<sup>36</sup> In 1907, Egerton noted their frequent abuses of power (not stating what these were), writing that “there are the strongest objections to the multiplication of native Forest guards with semi police powers carrying on their work in places far away from European supervision.”<sup>37</sup>

The future of rubber was in plantations. The 1904 Annual Report stated there was “little doubt that the future supply of rubber largely depends on the cultivation carried on during the year by the natives in the Western and Central Divisions.” Similarly, Egerton wrote in 1907 that he did not “consider it feasible to efficiently supervise the collection of latex from rubber bearing plants in the West African forests.”<sup>38</sup> Rather, he felt that the colonial office should “recognize that the future of rubber is in the cultivated article.” The tone of resignation in this correspondence suggests that the British did not abandon regulation of wild rubber production because they knew plantations were an alternative, but rather realized that their efforts would not succeed.

These problems mirrored those of other wild rubber producers in Africa. The worst destruction occurred where it was impossible to keep out interlopers. In the Congo, concessionary companies were willing to make short-term profits and go bust, giving their agents incentives to over-exploit local vines (Harms, 1975). Around Lagos and Ibadan, slaughter-tapping may have been introduced by Fante workers imported by the governor (Omosini, 1979). In French Guinea, officials worried that “bandit” rubber collectors, who roamed the countryside in search of vines, were responsible for bleeding them to death (Osborn, 2004). Similarly, locals in the Ivory Coast complained that they were unable to prevent itinerant harvesters from extracting as much rubber as possible before moving on (Harms, 1975, p. 76).

Over-tapping also followed the weakening of local states. Dumett (1971) emphasizes that the destruction of rubber was less severe in Asante than around Cape Coast. He argues this was because producers in the Northern forests could learn from the mistakes of earlier tappers. It was also around Kumasi, however, that tappers often obtained forest on arrangement from local chiefs, who demanded fees or shares (Dumett, 1971, p. 98).<sup>39</sup> In Benin, the British exiled the Oba and freed many of slaves on whom the chiefs depended (Igbafe, 1975). Other political functions defined in relation

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<sup>35</sup> NAI, Ben. Prof. 8/2/1, Case Book 1898-1899.

<sup>36</sup> NAUK, CO 520/7, 26/2/1901: Resident Benin City to Moor.

<sup>37</sup> NAUK, CO 520/45: Minute Dated 12 April, 1907 by Egerton.

<sup>38</sup> NAUK, CO 520/45, Enc. 14 April, 1907: Egerton to Elgin.

<sup>39</sup> See also Arhin (1980) and Austin (2005) for rubber in Ashanti.

to the king became meaningless. As Bradbury (1973, p. 86) puts it, “British administrators at Benin had to construct an administrative *bricolage* out of their own meagre resources of personnel and the fragments of a shattered indigenous polity.”

This was compounded by Benin’s scarcity of labour. Slaughter tapping may be interpreted as another of the labour-saving techniques used throughout Africa (Austin, 2008). I do not believe this alone explains its pervasiveness. The accounts above suggest this was employed by non-Edo, and that Benin had successfully prevented similar destruction before 1897, despite high prices. Further, similar environmental degradation has followed even in densely-settled areas when states have undermined existing institutions – the post-colonial dismantling of common property regimes over water and forestry in Tanzania serves as an example (Sheridan, 2004).

#### 4. PLANTATION RUBBER

By 1907, it was obvious that wild rubber had little future. Local *Funtumia* could be planted, and Brazilian *Hevea* had been introduced to Nigeria in 1895 (Anschel, 1965, p. 49). By 1921, however, plantations had not transformed Nigeria into the major producer it would become after 1945. In this section, I outline the difficulties faced by plantations. European *private plantations* were few, because of labour scarcity, government hostility to concessions, and their preference for horizontal over vertical integration. African private plantations are of limited visibility in the archival record, but also appear to have been small and faced similar challenges securing labour. African *communal plantations* established by the government suffered from labour scarcity, limited state resources, difficulty in transferring information, and low returns.

*4.1. Private plantations.* The most notable attempt by a European firm to plant rubber in Benin was that of Miller Brothers. The firm acquired roughly five hundred acres at Sapele in 1905, and another 560 in 1911 on the condition it would be planted by 1916.<sup>40</sup> This *Para* plantation was begun with 10,000 seeds imported from the East; 6,800 germinated successfully.<sup>41</sup> In 1908, the plantation was “doing very well” and showing “good growth”; 8,000 plants were 33 months old, and 22,000 plants were 18 months old.<sup>42</sup> Cowan, the director, testified to the West African Lands Committee (WALC) in 1913 that the plantation was paying rent to 5 or 6 different local communities. At that time, 800 acres were under cultivation and the bulk of the 400 labourers did not come from Benin or Sapele, but rather from the Opobo, Kwa, and Ibibio territories (WALC, 1916, p. 468-475).

In 1915, a return of agricultural plantations in Benin province listed five – J.G.M Cranstoun and Company’s at Sapoba, Messrs. MacIver’s at Sapoba, I.T. Palmer’s at

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<sup>40</sup> NAI, BP 311/1914: Rubber Plantation on the Ologbo Road, 18 March, 1911: Provincial Commissioner Warri to Provincial Commissioner Calabar.

<sup>41</sup> Southern Nigeria Annual Report for 1905, p. 24.

<sup>42</sup> Southern Nigeria Annual Report for 1908, p. 15.

Sapoba and Abraka, and the Nigerian Mahogany and Trading Company's at Unutu.<sup>43</sup> MacIver and Palmer (an African) were both said to have rubber in good condition at this time. Egboh (1985, p. 159) states that Cranstoun had two plantations in 1908, totalling 1,280 acres. MacIver reported in 1917 that they were doing no business in rubber, though their plantation caught the attention of Macmillan (1920, p. 73) and by 1927 their holdings had expanded to 2021 acres.<sup>44</sup> This and Cranstoun's were later taken over by the United Africa Company, becoming the Jamieson Estate Plantation (Pedler, 1974, p. 246). Miller's estate at Sapele later became UAC property as well (Fieldhouse, 1994, p. 204-5).

Others were less successful. A German firm, possibly Bey and Zimmer, planted ten acres that were surrendered during the First World War (Usuanlele, 2003, p. 59). The African Association start an experimental *Para* plantation in 1906 at Warri, but James believed that they "[did] not seem to have pushed the matter further."<sup>45</sup> In 1908, they had an "excellent small *Para* rubber plantation at Eket."<sup>46</sup> The British Cotton Growing Association started a plantation in Benin territory in 1909, but in 1917 it was "neglected," containing only 228 trees.<sup>47</sup>

These plantations had difficulty securing labour. Cowan told the WALC that his company did not use Edo labourers because, though they could make arrangements with headmen, the people were unwilling and would work for at maximum six months. He believed this was because the authority of the Benin chiefs had declined. Labour scarcity in Benin was also a result of low population density, exacerbated by competing demands from the state for road work and porters, and from timber concessions. Similarly, Miller had obtained permission in 1916 to tap 400 *Para* trees on the Sapoba road, at a cost of 1s per tree for a season, but reported to the government that it had been unable to tap these because it was difficult to find a European supervisor, children and livestock interfered, and there were too few trees to justify smoke and drying sheds.<sup>48</sup>

In addition, the British were reticent to grant concessions to Europeans for working produce that Africans could exploit on their own (as opposed to timber). The African Association and Miller were both rejected for concessions in 1898 (Afigbo, 1970, p. 392). Officials such as Moor and Gallwey opposed these, preferring "development by the natives themselves."<sup>49</sup> Evans' application to rent communal plantations was turned down in 1911 (Egboh, 1985, p. 158). By Pedler's (1974, p. 245-6) account, Miller only

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<sup>43</sup> NAI, BP 603 1915 Agricultural Plantations Benin Province. Two lists are given in this file; the first omits Cranstoun, the second MacIver.

<sup>44</sup> NAI, Ben Prof 2/4 BP 262 1917: *Para* Rubber, Benin Division, 16 Nov, 1917: Howe (for MacIver and Co) to Acting District Officer. NAI, CSO 26 09125 Assessment Report on Benin Division.

<sup>45</sup> Southern Nigeria Annual Report for 1906, p. 38.

<sup>46</sup> Southern Nigeria Annual Report for 1908, p. 15.

<sup>47</sup> NAI, BP 175/1917, *Para* Rubber Plantations, 19 June, 1917: D.O. Ubiaja to Resident.

<sup>48</sup> NAI, BP 510 1916 *Para* Trees Benin City Arrangement with Regard to Tapping, 12 Oct 1916: Herald to DO Benin City

<sup>49</sup> NAUK, FO 2/179: 28 July, 1898: Gallwey to Under-Secretary of State. See also his letter from 13 May, 1898

in the same volume.

acquired land after Cowan spoke with Egerton, who had come from Malaya and was disappointed that merchants Nigeria seemed to be showing no comparable initiative in developing rubber. Where other individuals or firms acquired labour, these were also exceptions, that “resulted from land transactions carried out by African chiefs before the policy of the protectorate government had been well established.” Phillips (1989) argues that the British came to favour “peasants” over “plantations” in West Africa generally because of opposition from local chiefs, lawyers and concessionary companies to the 1897 Gold Coast Lands Bill, pressure from “Third Party” reformers, their inability to create a market for labour, resistance from the Aborigines’ Rights Protection Society, spurious concessions in the Gold Coast, “mercantile” manufacturers who seemed capable of healthy profits without engaging in production, and a desire to limit litigation and migration.

Further, European firms throughout West Africa remained horizontally, as opposed to vertically integrated. Usuanlele (1988, p. 248) calls this a preference for “commerce” over “production.” Barred from directly engaging in agriculture and faced with a market in which export crops were produced by thousands of small, dispersed farmers, large trading firms chose to operate in many products and colonies, but to refrain from production (Hopkins, 1976).

The difficulties faced by expatriate rubber planters in Benin echo those of other attempts to create rubber plantations in Africa during this period. Three companies acquired land to plant rubber in the Gold Coast in 1905-6, but could not compete with cocoa farms and gold mines for labour (Munro, 1981, p. 271). Prospective planters in West Africa were aware of their own ignorance, had difficulty maintaining local management, lacked financial resources, and found the colonial office unwilling to grant them monopolies even to collect wild rubber (Munro, 1981). In East Africa, expatriate planters had expected cheap labour, but within months of starting “all were complaining loudly and bitterly about their labour difficulties” (Munro, 1983, p. 374). These were driven under by Asian competition. Firestone’s success in Liberia came later. He was gained concessions from the Liberian government in both land and tariffs that firms in British West Africa could not (Finlay, 2009, p. 77).

Less is knowable about private plantations owned by Africans.<sup>50</sup> The Annual Reports and Igbafe (1979) take an upbeat view. In 1903, some “more intelligent chiefs” had started operations on their own account.<sup>51</sup> In 1906, the Provincial Forest Officer stated that the “feature of the year ... [had] been the number of small private plantations made by individual natives, although it [was] difficult to say exactly how many [had] been made.”<sup>52</sup> Igbafe (1979, p. 343-348) notes that 126 villages had been convinced to start plantations by the end of 1903, there were 369 private plantations by 1906, and that some 3,000 acres were owned by eleven private individuals or companies by 1925. The

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<sup>50</sup> Usuanlele (2003, p. 60) lists Lawani Bokoni, W.A. Sagay, S.D. Garrick, Bello Osagie (a Yoruba, an Itsekiri, a Kalabari, and a Benin trader) as having plantations of “various sizes” during this period, though he does not specify what they planted.

<sup>51</sup> Southern Nigeria Annual Report for 1903, p. 19.

<sup>52</sup> Report on the Forest Administration of Southern Nigeria for 1906, p. 17.

largest of these belonged to Palmer, reported to have 1500 acres at Abraka, employing 900 labourers who were paid the same wages as in the timber industry (WALC, 1916, p. 468-475).<sup>53</sup> I.T. Palmer held an estate at Sapele up to 1929 (Pedler, 1974, p. 246). The Obaseki had two *Para* plantations, of 10,000 and 12,000 trees, 4 to 6 years old in 1919.<sup>54</sup>

Before 1921, however, most of these must have been small. Chief Ugo had a single acre at Benin (Egboh, 1985, p. 159). Thompson described those planted in the Benin City District in 1906 as “small private plantations.”<sup>55</sup> A 1917 return of *Para* plantations in Benin forwarded a list excluding those with less than 20 trees, and “small private plantations of which there is no record”. It listed 270 started in 1914 or 1915, with 57 seedlings planted on average. These faced their own difficulties. Cowan told the WALC that there were six African owned *Para* plantations of 10,000 to 30,000 trees in the Sapele district. They had been paying for labour by allowing workers to plant “catch crops” among the trees, and as a result, the rubber had suffered. In his view, they had “tried to make the thing pay as they went along, and they have been pennywise and pound foolish” (WALC, 1916, p 468-475).

This was, by contrast, a period during which estates and smallholders in Asia successfully expanded production. Dumett (1971, p. 100) argues this was because Malayan rubber was “backed by European capital and scientific management,” while *Para* rubber had a higher coutchouc content and better wound response than *Funtumia*. Barlow (1978, p. 18), similarly, suggests that yields were much higher with *Para* than *Funtumia*, a concern more important for the communal plantations (discussed below). Clarence-Smith (2010), contrasting rubber’s success in Indonesia with its failure in the Congo, emphasizes that Sumatran smallholders solved many of the problems described above. They acquired seeds and knowledge from the larger estates, much like smallholders near Firestone’s plantations later on in Liberia. They also, like successful Benin planters later on, recruited the labour of migrant sharecroppers. Large planters stated that they had left the Congo for Asia because of inadequate transport facilities and labour supply.<sup>56</sup>

The importance of labour supply is borne out other studies. Estates in Ceylon, Malaya and Sumatra were worked by immigrants from India and Java, while estates in Borneo and French Indo-China similarly relied on migrants (Bauer, 1948, p. 217). The government actively supported the immigration of Tamil and Chinese labourers; the former were used in tapping while the latter opened new land (Barlow, 1978, p. 43-45,51). Chinese labourers also became smallholders, developing two to four hectare blocks while working in mines or estates (Barlow, 1978, p. 39).

Other factors also gave Asia an edge. Land was more readily available to expatriates. The government in Malaya granted land to Chinese tapioca and gambier planters on the

<sup>53</sup> Pedler (1974, p. 246) identified him as a Sierra Leonean who had previously been an agent for the RNC.

<sup>54</sup> NAI, Ben Prof 2/6 BP 480 19: Agricultural Department Report.

<sup>55</sup> Report on the Forest Administration of Southern Nigeria for 1906, p. 17.

<sup>56</sup> By contrast, Cogneau (1992) studies the relative profitability of *Para* in the Ivory Coast, Cameroon, Malaysia and Indonesia during the late 1980s. He finds that exchange rates explain much of the difference in margins within his sample. I do not believe this explanation is relevant to the period under study, as the British West African Pound was tied to the British pound.



condition they also plant rubber (Jackson, 1968, p. 228). Malay residents sold their ancestral lands to estate groups and other outside interests (Barlow, 1978, p. 39). The government also invested in extending the road and rail networks (Jackson, 1968, p. 236). Barlow (1978, p. 27) lists political stability as an additional factor in Malaya's favour.

Benin's success later on can also be partly explained by relaxation of the constraints identified above. Usuanlele (1988, p. 249-254) gives the most thorough explanation. He rejects Anshel's (1965) view that rising prices after 1934 explain this, since cash needs were created by colonial tax demands. I add above that prices were not dramatically higher in this period. My concern with Usuanlele's view here is its timing. Direct taxes introduced in 1916 were set at 2s per adult and 1s per youth in 1920, Female taxes were removed in 1927. Planting should have come earlier. More credible is his suggestion that land annexations by chiefs, urban residents, and forest reserves encouraged individuals to plant trees on fallow plots to claim them permanently. This was a general pattern in Southwestern Nigeria; across 112 clans, tribes or groups 1938, the correlation between the number of oil palm planters and the fraction of the area under forest reserves is 0.416 ( $p < 0.000$ ).<sup>57</sup> These pressures combined with influx of Igbo willing to work as share tappers. Overall, the scarcity labour relative to land was disappearing.

*4.3. Communal plantations.* The colonial government established thousands of small plantations of mostly *Funtumia* rubber throughout Benin, owned by local communities. "Communal" is the government's term. At first seen as promising, before the First World War it was clear they were in trouble. They suffered from labour scarcity, a lack of state resources, colonial difficulties in transferring skills and information, and low prices once Asian production took off. These difficulties, as I have shown above, contrast with the conditions that allowed Asian producers later Edo smallholders to succeed.

*4.3.1. Initial promise.* The communal plantations were started early on. In 1899, nurseries were established in a few district centres, so that plantations could be made to close to the villages. These would be used for seed to sow in the bush at the beginning of the rainy season.<sup>58</sup> Of 450 miles of road existing in the Benin territories, the Forestry Inspector planted 250 with rubber seed, four deep on each side.<sup>59</sup> In 1900, twenty large nurseries were established in the Benin territories to supply seedlings.<sup>60</sup> It was presumed the labour required for transplanting and caring for the young rubber would be performed "subject to the supervision of the Forestry Inspectors, by the inhabitants of those villages which [would] ultimately be enriched by the matured rubber."<sup>61</sup> All

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<sup>57</sup> The data used for this correlation are available on request, and are taken from Appendix Table 5 of Bridges, A.F.B. (1938) "Report on the Oil Palm Survey: Western Provinces", in the *A.F.B. Bridges Papers*, stored at the Rhodes' House Library, Oxford, under the call number Mss Afr s. 697.

<sup>58</sup> Southern Nigeria Annual Report for 1899-1900, p. 10.

<sup>59</sup> Southern Nigeria Annual Report for 1899-1900, p. 10.

<sup>60</sup> Southern Nigeria Annual Report for 1900, p. 14.

<sup>61</sup> Southern Nigeria Annual Report for 1900, p. 14.

villages receiving timber royalties were required to establish nurseries from 1901 (Igbafe, 1979).

Undergirding these efforts was paternalistic racism, made clear by Bedwell, the Acting Colonial Secretary, in 1903:

It is not in the nature of the average West African to lay out capital for which there is no immediate return. He can understand the yam growing at his door; he can understand the cask of oil to be filled before his "boys" can return with the required cloth, pipe or frock-coat, but he will not sew for his son to reap; nor will a village work, of its own initiative, for the benefit of the next generation that is to occupy it. It is this difficulty that has rendered so great the task of encouraging the rubber industry.<sup>62</sup>

The government distributed seeds and seedlings and oversaw tapping. The communal plantations were mostly *Funtumia*, but contained some *Para*.<sup>63</sup> By the end of 1903, 145,000 plants had been established in 126 village plantations (Igbafe, 1979, p.343). There were 1,050 communal plantations in the Province in 1906, 1629 in 1907, and 2251 in 1908 (Egboh, 1985, p. 159). Similar efforts were made elsewhere in Southern Nigeria, though Benin was the model case.<sup>64</sup>

These were initially seen as promising, and were encouraged by colonial officials. In 1904, Egerton saw the boom in the rubber market and the development of trade as "gratifying," and hoped improved methods would help prices eventually close on those paid for rubber from the Straits and Ceylon.<sup>65</sup> Experiments were in progress to improve tapping.<sup>66</sup> In 1905, Fosbery reported that rubber continued to show a "considerable increase," predicting that "with systematic cultivation and collection it will become a valuable addition to the exports of the country."<sup>67</sup> In 1906, two pupils had just returned from the French School of Forestry in Mali.<sup>68</sup>

In 1906, 368 plantations with 167,135 plants were made in the Benin Districts<sup>69</sup> and 916 plantations with 678,000 plants existed in the Central Province, in addition to 134 plantations with 80,000 plants in what had earlier been the Central Division.<sup>70</sup> In 1908, there were 2,251 *Funtumia* plantations in the Central Province, containing 1,125,972 trees, many of which were old enough to be tapped.<sup>71</sup> In the Benin City district that year

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<sup>62</sup> Southern Nigeria Annual Report for 1903, p. 19.

<sup>63</sup> Secondary sources offer contradictory evidence. Igbafe (1979, p. 347) refers to *Funtumia*, while Usuanlele (2003, p. 58) states that the first plantations were *Para*, with *Funtumia* and *Ceara* "introduced" only in 1908. In the annual reports it is clear that *Funtumia* was the predominant variety: see the Report on the Forest Administration of Southern Nigeria for 1906, p. 17, or the Southern Nigeria Annual Reports for 1907 (p. 11), 1908 (p. 15) or 1909 (p. 12).

<sup>64</sup> These are discussed in the Southern Nigeria Annual Reports for 1904 through 1911.

<sup>65</sup> Southern Nigeria Annual Report for 1904, p. 19.

<sup>66</sup> Southern Nigeria Annual Report for 1904, p. 24.

<sup>67</sup> Southern Nigeria Annual Report for 1905, p. 21.

<sup>68</sup> Report on the Forest Administration of Southern Nigeria for 1906, p. 38.

<sup>69</sup> Southern Nigeria Annual Report for 1906, p. 37.

<sup>70</sup> Report on the Forest Administration of Southern Nigeria for 1906, p. 17.

<sup>71</sup> Southern Nigeria Annual Report for 1908, p. 15.

154,000 trees were added to the communal plantations.<sup>72</sup> In 1910, the success of the communal plantations in Benin inspired 24 villages in the Ilesha District and some communities in Ijebu-Ode and Epe to start plantations.<sup>73</sup> In 1911, 224 new villages were planted out in 63,753 *Funtumia* seedlings, and 4,133 *Para* plants were put out under the same scheme. In 1912, “numerous communal rubber plantations were examined” in the Central Province, with arrangements made for extending them.<sup>74</sup>

In 1910, several thousand communal *Funtumia* plantations had become large enough to tap.<sup>75</sup> Tapping and rubber preparation were done under the supervision of the Forest Department, and in the presence of the owners. To coagulate the latex, the rubber was boiled, and then rolled into thin biscuits using a wooden roller on a table. The rubber was washed with hot water. These biscuits were then hung for drying and smoked in a long drying shed. The amber-coloured biscuits were reported to be of “the first quality,” produced “by means of simple appliances that can easily be procured by the natives,” and were sold for 6s 6d per lb despite a falling market.<sup>76</sup> This was seen as a “very great improvement on the usual quality of rubber exported from Southern Nigeria.” In 1911, the Chief Conservator of Forests inspected several of the communal plantations, which he thought were “very fine examples of their kind and should eventually form valuable native estates.”<sup>77</sup>

4706 trees from 84 plantations were tapped in the Benin City district in 1910, 20,210 trees from 300 plantations in 1911, and 386 plantations were tapped in 1913.<sup>78</sup> The yield for 1911 was 1,885 lbs and 11 oz of dry rubber.<sup>79</sup> In 1912, 2,988 lbs of “good rubber” were sold locally at 3s 4d per lb, and 43 lbs of “tackey rubber” was sold for 2s 10d. Two thirds of these revenues were paid to the communities and chiefs.<sup>80</sup> In 1913, 5,612 lbs of rubber were exported from the communal plantations.<sup>81</sup> Tapping during 1913 was overseen by “native staff” of the Forest Department, along with Ogas (headmen), who supervised groups of ten to twenty villagers.<sup>82</sup> The staff encompassed the Assistant Conservator of Forests, an interpreter, a forester, ten Forest Guards, five pupils, and five Ogas.<sup>83</sup> In 1914, certificates were issued so that each village had one certified headman, “responsible for the upkeep and cleaning of his plantation.”<sup>84</sup>

*4.3.2. Problems.* Outside observers were impressed with these plantations; Christy (1911) reported that “[t]he system of native communal plantations so successful in

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<sup>72</sup> Southern Nigeria Annual Report for 1909, p. 12.

<sup>73</sup> Southern Nigeria Annual Report for 1910, p. 12.

<sup>74</sup> Southern Nigeria Annual Report for 1912, p. 9.

<sup>75</sup> Southern Nigeria Annual Report for 1910, p. 14.

<sup>76</sup> Southern Nigeria Annual Report for 1910, p. 14.

<sup>77</sup> Southern Nigeria Annual Report for 1911, p. 9.

<sup>78</sup> Southern Nigeria Annual Report for 1911, p. 13. NAI Ben Prof 2/1 BP 364 1914: Report on the Communal Rubber Plantations for 1914 (1913).

<sup>79</sup> Southern Nigeria Annual Report for 1911, p. 13.

<sup>80</sup> Southern Nigeria Annual Report for 1912, p. 14.

<sup>81</sup> NAI, BP 5 1915: Report on the Tapping Operations on the Communal Rubber Plantations for 1914.

<sup>82</sup> NAI, Ben Prof 2/1 BP 364 1914: Report on the Communal Rubber Plantations for 1914 (1913).

<sup>83</sup> NAI, BP 5 1915: Report on the Tapping Operations on the Communal Rubber Plantations for 1914.

<sup>84</sup> NAI, BP 5 1915: Report on the Tapping Operations on the Communal Rubber Plantations for 1914.

Southern Nigeria is admirable, and should be adopted by all the west African colonies.” Several problems were, however, already apparent. One of the most notable difficulties they faced was labour scarcity. Usuanlele (1988, p. 6, 224) has made this argument for Benin in general and the communal plantations in particular. The population density of Benin was estimated at only 25 per sqm in 1927.<sup>85</sup> I begin by adding more evidence in favour of this view.<sup>86</sup>

Labour scarcity was apparent as early as 1901. That year, the Annual Report for Southern Nigeria noted that recent “changes in the social conditions of the natives of these territories, particularly with regard to slavery, render it certain that the capacity of these native carriers for their transport work is not likely to increase, at all events for some years to come, until a good native labour market is established.”<sup>87</sup> The colonial response was to enact the House Rule Ordinance. This was initially intended to maintain reciprocal obligations between House heads and members in the Niger Delta; in its actual application, however, the Ordinance made it easier for the state to rely on Benin chiefs to requisition labour, since the law enabled them to bring those who refused work before the Native Court (Igbafe, 1975). In 1906, similarly, the Provincial Forest Officer reported that the Isoko and Urhobo were too involved in road-making to devote much time to plantations; where rubber had been taken up, palm oil had been abandoned.<sup>88</sup>

As with other colonial projects, the gains were unequally distributed and it was expected the plantations would be worked with unpaid labour. Without pay, it became difficult to recruit workers. The 1913 Report on the Communal Rubber Plantations detailed five major problems that were causing them to fail: first, the weakened authority of the local chiefs; second, competing labour demand from other sectors, such as timber areas, government works, road construction, and portage; third, insufficient incentives for the local communities, even when the government waived its one third claim to the plantations’ revenue in that year; fourth, villagers’ lack of experience with the product, which was made worse by deferred payoff of rubber as a tree crop, and; fifth, sharp labour demands that conflicted with seasonal festivals and funerals.<sup>89</sup> Tapping had to be done during the rainy season, when villagers preferred to do farm work and rebuild their homes.<sup>90</sup> Results on the model plantations, similarly, could only be achieved by “constantly worrying” the Obaseki and Edosomah for labour.<sup>91</sup>

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<sup>85</sup> NAI, CSO 26 09125 Assessment Report on Benin Division.

<sup>86</sup>Usuanlele (2009) updates the arguments from Usuanlele (1988) and Usuanlele (2003) on the communal plantations, though I have yet been unable to obtain a copy of this paper.

<sup>87</sup> Southern Nigeria Annual Report for 1901, p. 8.

<sup>88</sup> Report on the Forest Administration of Southern Nigeria for 1906., p. 17.

<sup>89</sup> NAI, Ben Prof 2/1 BP 364 1914: Report on the Communal Rubber Plantations for 1914 (1913). Compounding this was the uncompromising scheduling of the Forestry Department. The report’s author wrote that villagers objected “to the pressure at which we have to make them work in order to get through the large number of scattered plantations in the season and usually would like use to wait some convenient time between their festivals and funerals for our visit.”

<sup>90</sup> NAI, BP 5 1915: Report on the Tapping Operations on the Communal Rubber Plantations for 1914.

<sup>91</sup> NAI, Ben Prof 2/1 BP 364 1914: Report on the Communal Rubber Plantations for 1914 (1913). Similarly, the state withheld royalties from Chiefs Eso, Oshodi and Obaseki in 1915 for failing to weed their plantations (Usuanlele, 1988, p. 222).

The next year, the report on the communal plantations noted that it was difficult getting upkeep work done:

The village people have shown very plainly that they do not care for the plantations. The Forest guards report that they have the greatest difficulty in getting any cleaning or clearing done. At Uburu Uku the forest Guards had been driven away when they attempted to get the plantations cleaned. ... At Ogwashi Uku and Abah very few men would be persuaded to do the work which was done almost entirely by the Forest Guards.<sup>92</sup>

Similarly, in Ishan, the people were disinclined to do the work requested, and officials felt they had been wasting their time. Especially in Asaba, Ifon and Ishan, officials had difficulty getting men to work. Many chiefs complained that, "as their power had been broken, it was hardly fair to make them responsible for the boys not working."<sup>93</sup> In addition to the work of tapping and upkeep, processing was labour intensive. Latex had to be cooked at central cooking camps and let stand for eighteen hours or more before it was ready to cook. For people from outlying villages, this was not worth the time involved, and they would not stay behind to learn how to properly cook the rubber.<sup>94</sup> Officials recognized that their own labour requisitioning contributed to this scarcity of labour – the same report noted that the question of carriers "has been a difficult one. The Assistant Conservator of Forests is obliged to find his own carriers, except on leaving a station, to take him from village to village. These carriers are not paid and this does not help to make the rubber business any more popular." In 1916, the Resident pointed out that it was not worthwhile for villages to send small quantities of rubber to Benin, and that they did not do so voluntarily.<sup>95</sup>

This was not the only difficulty faced by the plantations. While the proceeds of the plantations were supposedly to be split between the government and the local communities, their benefits went largely to the chiefs. This was true also of the model *Para* plantation on the road between Benin City and Sapele, which was owned by eighteen Benin City chiefs who had "provided the labour for it free."<sup>96</sup> Lugard, similarly, believed that "communal" labour meant "forced" labour, and opposed the plantations on these grounds (Egboh, 1985, p. 160). In 1924, the Resident chastised the Oba, requesting the District Officer to inform him that if his workers were "called upon to work for nothing, it simply means that they will leave their villages, and either seek employment with the timber concessionaires or elsewhere outside the division."<sup>97</sup> Bradbury (1973) notes that chiefs received one third of the wages paid for labourers

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<sup>92</sup> NAI, BP 5 1915: Report on the Tapping Operations on the Communal Rubber Plantations for 1914.

<sup>93</sup> NAI, BP 5 1915: Report on the Tapping Operations on the Communal Rubber Plantations for 1914.

<sup>94</sup> NAI, BP 5 1915: Report on the Tapping Operations on the Communal Rubber Plantations for 1914.

<sup>95</sup> NAI, Ben Prof 2/3 BP 523 1916: Proceeds from Rubber Sales; no date given, letter to Secretary, Southern Provinces.

<sup>96</sup> NAI, Ben Prof 2/1 BP 364 1914: Report on the Communal Rubber Plantations for 1914 (1913).

<sup>97</sup> NAI, Ben Prof 2/4 BP 262 1917: Para Rubber, Benin Division. 18 Feb, 1924: Resident to District Officer.

they requisitioned, and a share of the profits from rubber. Some were still profiting from these as late as 1960, though this hurt their legitimacy.

A plantation established by the Forestry Department near Usonigbe had been turned over to the local villages around 1910, but in 1914 was appropriated by the Oba. His successor was leasing it to Palmer for tapping in 1937.<sup>98</sup> A *Para* plantation on Sapele Road that had been damaged by fire was turned over to the Iyashere in 1916, since he was the only chief who had shown interest in it.<sup>99</sup> One official remarked that “looking at it from a business profit and loss point of view the communal plantations have so far been a failure, except to the chiefs.”<sup>100</sup> Not all revenues failed to produce public benefits, however; the Native Council in Benin used some of its share of rubber revenues to finance the city’s waterworks (WALC, 1916, p. 393).

In addition, the colonial state was short on staff and equipment. The supply of seed was not always reliable; seeds imported from Cameroon failed to germinate, while and poor germination had lowered the number of *Funtumia* planted in Southern Nigeria from 234,878 in 1907 to 133,094 in 1908. Of the 622 plantations formed during that year, most were extensions to existing ones.<sup>101</sup> In 1910, the Agricultural and Forestry departments were separated, and von Hellermann (2005, p. 112) argues that the Forestry Department quickly lost interest in agricultural pursuits. Before 1911, thinning had been neglected, and the trees needed each other’s support to stand.<sup>102</sup> At Agbor and Asaba, while thinning was desperately needed, there was no staff to do the work. The report for 1913 admitted neglect by the government, stating that “it is a breach of good faith and fair dealing to have started these rubber plantations as a native industry and leave them, now when maturing and needing thinning, tapping etc under European supervision.”<sup>103</sup>

The District Officer worried that the villages were “disappointed with the results of their labour.”<sup>104</sup> In Ishan in 1913, the Forestry Department was “unable” to tap the 93 communal plantations.<sup>105</sup> At times, one Forest Guard and one pupil had to supervise twenty men.<sup>106</sup> That year, the senior Conservator of Forests suspended tapping “on the ground that the trees need rest, and the Forestry Department is short of officers.”<sup>107</sup> In 1917, there were no funds to supervise preparation and assist in the sale of rubber at Ubiaja.<sup>108</sup>

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<sup>98</sup> NAI, Ben Dist 1 BD 84 Vol 2: Usonigbe Native Court and District Affairs: 16 March, 1937: Palmer to DO; handwritten note by Jull.

<sup>99</sup> NAI, Ben Prof 2/5 BP 173/1916 Communal Rubber Plantation Management of. 9 Nov, 1916: Conservator of Forests Benin Circle to Resident Benin Province.

<sup>100</sup> NAI, BP 5 1915: Report on the Tapping Operations on the Communal Rubber Plantations for 1914.

<sup>101</sup> Southern Nigeria Annual Report for 1908, p. 15.

<sup>102</sup> NAI, Ben Prof 2/1 BP 364 1914: Report on the Communal Rubber Plantations for 1914 (1913).

<sup>103</sup> NAI, Ben Prof 2/1 BP 364 1914: Report on the Communal Rubber Plantations for 1914 (1913).

<sup>104</sup> NAI, BP 138 1914: Annual Reports Benin Province.

<sup>105</sup> NAI, BP 138 1914: Annual Reports Benin Province.

<sup>106</sup> NAI, BP 5 1915: Report on the Tapping Operations on the Communal Rubber Plantations for 1914.

<sup>107</sup> NAI, BP 5 1915: Report on the Tapping Operations on the Communal Rubber Plantations for 1914.

<sup>108</sup> AI, Ben Prof 2/4: BP 403 17: Village Rubber Plantation, 3 July, 1917: District Officer Ubiaja to Resident, Benin and 9 Aug, 1917: Resident to District Officer Ubiaja.

In 1917, the government had to borrow pans, metal spoons, tapping knives, rollers, cog wheels, fittings, and bottles of acetic acid from Miller Brothers.<sup>109</sup> Local tapping knives were “slow and bad,” though by 1914 a local “native imitation” of *Para* knives had been devised.<sup>110</sup> Smoking facilities were inadequate, and could not prevent the cured rubber from becoming mouldy.<sup>111</sup> The two smoking sheds at Benin City were poorly built, lacked proper heating and drying facilities, and were in constant danger of catching fire.<sup>112</sup>

It was also difficult for the colonial government to transmit new knowledge and skills related to plantation management, tapping methods, and output quality. Much plant distribution had to be done from the Onitsha Gardens. As early as 1906, it was recognized that this was a poor location relative to the Central Province. It was too dry and too far from the centres in which cocoa and *Para* rubber could be successfully cultivated.<sup>113</sup> *Para* yields were estimated to be five times greater than those for *Funtumia* per acre, but there were only 6,000 acres in Southern Nigeria by 1922 (Egboh, 1985, p. 162). One officer reported in 1913 that the “native idea of a clean plantation is often opposed to all Forest ideas of soil protection and the arrival of a Forest Officer often leads to the plantation being swept and scraped bare of all needful and protecting surface soil and humus.”<sup>114</sup> Individual rubber samples mentioned in colonial correspondence were often poor – in 1918 samples of locally grown rubber were reported to be “anything but good, and it is evident if the best results are to be obtained, that the Beni ‘Planter’ requires both advice and supervision.”<sup>115</sup>

The quality of Nigerian rubber, among the worst in the world after the Second World War (Anschel, 1965), was an issue for wild and plantation rubber. In 1906, it was reported that “up to the present practically the whole of the rubber exported is forest produce, rudely prepared by the native with little or no intelligent control of the collection.”<sup>116</sup> At that time, most *Funtumia* was shipped as either “Lagos lump” or “Benin lump,” containing a very large percentage of water and impurities.<sup>117</sup> Efforts were made to replace these lumps with biscuits, which were easier to dry and better resisted rotting. Generally, heat, lime juice, or an infusion of *costus lucanusianus* was used as a coagulant. In addition, inferior latex from a variety of other plants was used to adulterate the latex.<sup>118</sup>

While I have found no direct evidence from Benin, the experience of the Lagos hinterland suggests that improving quality was not worthwhile for producers. While

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<sup>109</sup> NAI, Ben Prof 2/4 BP 262 1917: Para Rubber, Benin Division.

<sup>110</sup> NAI, Ben Prof 2/1 BP 364 1914: Report on the Communal Rubber Plantations for 1914 (1913).

<sup>111</sup> NAI, Ben Prof 2/4 BP 270 1917: Sale of Village Rubber Plantation, 28 March, 1917: District Officer to Resident.

<sup>112</sup> NAI, Ben Prof 2/1 BP 364 1914: Report on the Communal Rubber Plantations for 1914 (1913).

<sup>113</sup> Southern Nigeria Annual Report for 1906, p. 41.

<sup>114</sup> NAI, Ben Prof 2/1 BP 364 1914: Report on the Communal Rubber Plantations for 1914 (1913).

<sup>115</sup> NAI, Ben Prof 2/4 BP 262 1917: Para Rubber, Benin Division. 12 Dec, 1917: Herald to Watt.

<sup>116</sup> Southern Nigeria Annual Report for 1906, p. 31.

<sup>117</sup> Report on the Forest Administration of Southern Nigeria for 1906, p. 35.

<sup>118</sup> Thompson listed *carpodinus hirsuta* and *carpodinius fulvis* (*funtumia africana*, *hoarrhena wulfsbergii*, *alstonia confensis*, *omphalocarpum elatum*, *couonopharyngia pachysiphon*, *omphalogramnum calophyllum*) as adulterants.

rubber produced in French West Africa using chemicals available from local plants fetched 54d per lb in Europe, “Lagos lump” could be only valued at 18d to 24d per lb Egboh (1985, p. 166). In 1907, Thomson reported that “with one exception, the European firms trading in this produce have not encouraged the movement to the extent they might have done by paying substantially better prices for the improved article.”<sup>119</sup> Similarly, in 1909, another official complained that, while all licensees and Ogas were instructed in the “proper method” of making rubber, the Yorubas “simply refuse to do it, as they can sell bad rubber near Illushi even if not at Siluko or Benin City.”<sup>120</sup> Though an ordinance to control the adulteration of produce had been passed the previous year, Miller Brothers complained that the amount of rubber then fell; Unwin’s view was that “the natives, especially Yorubas just tried to see how long the firms would hold out before giving way, after two months the whole thing was reversed and they were told that they could make lump rubber.” A “vacillating policy” from Miller Brothers and indifference from the other European firms made it difficult to convince Africans that quality biscuits, as opposed to lumps, were actually wanted.

In 1908, experiments were conducted to improve the quality of Nigerian rubber.<sup>121</sup> Straining the latex for impurities, washing it once it was freshly coagulated, and cutting it into thin strips that could be more easily dried in wood smoke created a product that could be sold in England for between 4s 6d and 4s 8d a lb, when Brazilian *Para* could fetch a price of 5s 2d.<sup>122</sup> This was achieved using simple articles that it was hoped could be obtained by Africans – demijohns, earthen pots, a sieve, empty bottles, and the like. These were demonstrated to the rangers, forester, forest guards and pupils in the hope that they would pass these methods onto others. F.S. James, the Colonial Secretary, optimistically assumed the price of Nigerian rubber could be doubled by such efforts, so long as these higher prices could be passed onto producers and adulteration policed.<sup>123</sup>

Two African Rangers were sent to French West Africa, and returned in 1907 on a lecture tour that did encourage some quality biscuit production in Benin, but only 35.5 lbs were actually offered for sale (Egboh, 1985, p. 166-7). Biscuits took twice as long to produce and lost weight more rapidly than lump rubber; one official estimated that it would require 4s per lb to induce producers to switch (*ibid.*). The Adulteration of Produce Ordinance of 1897 was used between 1907 to 1909 to prevent producers from producing lump rubber, but this was quickly withdrawn due to protests from European firms who faced declining supplies. In 1908 it was reported that attempts to improve the quality of rubber had been “rendered futile, owing, principally, to the unwillingness of the merchants to pay for the inspection and supervision of the rubber tappers and to the reluctance of the Government to follow the lead of neighbouring Governments and prohibit the sale or export of lump rubber.”<sup>124</sup> In 1909, the government proposed charging local firms a fee of 1 or 2d per lb to mount an instruction campaign, but this

<sup>119</sup> NAUK, CO520/50:30 Nov, 1907: Rubber Collection (Egerton to Elgin).

<sup>120</sup> NAUK, CO 520/83, Enc. 25 Sept, 1909: Unwin to Thompson.

<sup>121</sup> Southern Nigeria Annual Report for 1906, p. 39.

<sup>122</sup> Southern Nigeria Annual Report for 1906, p. 39.

<sup>123</sup> Southern Nigeria Annual Report for 1906, p. 39.

<sup>124</sup> Southern Nigeria Annual Report for 1909, p. 13.



was withdrawn following opposition from the Liverpool Chamber of Commerce (Egboh, 1985, p. 168). In 1913, however, there was a falling off in exports “owing to the very poor prices offered for the low grade of rubber shipped”.<sup>125</sup> That year, prices for Ishan rubber were said to be low due to “its inferior quality and large percentage of impurities; also owing to the large quantities of good plantation rubber now on the market.”<sup>126</sup> The quality of Nigerian rubber did not improve – one 1918 textbook described “Benin ball” as “generally dirty,” having “rotten, woody smell” (Pearson, 1918).

Finally, the return to rubber fell sharply once Asian production began to increase. While initially proposed as a year-to-year arrangement, the waiving of the government’s share of the revenues from the communal plantations soon became permanent.<sup>127</sup> Officials realized that the failure to anticipate the collapse of the world market was a major oversight on their part; the 1914 report on the communal plantations noted that:

The possibility, in fact probability of a fall in the price of rubber was evidently not taken into consideration when these operations were started...A second and very important point is that the natives have not taken up the plantations with much enthusiasm. Every year the returns have been smaller and, most important of all, the natives have been kept waiting many months before receiving payment.<sup>128</sup>

This echoed the similar failure of British planters in East Africa to forecast the magnitude of the impact that Asian production would have on world prices (Munro, 1983, p. 373).

The government admitted failure. The same report recommended turning the plantations over to the local villages, noting that it would not be remunerative to work them with paid labour. In 1916, the Forestry Department ceased to exercise any control over the communal plantations, and the commissioner of the Benin Province requested the District Officer to inform the “native owners” that, since the government “has given them practical instruction in the method of planting, tapping, and preparing the rubber in those plantations, it is now their duty to carry on the work themselves without regular supervision and assistance.”<sup>129</sup> Proceeds were then divided between the Native Authority and the villages.<sup>130</sup> In 1918, the District Officer for Benin asked the Resident about his meeting with the local agent for Miller Brothers, concerning the continued purchase of rubber. “If there is no market for the Native Administration Rubber,” he

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<sup>125</sup> Southern Nigeria Annual Report for 1913, p. 15.

<sup>126</sup> NAI, BP 138 1914: Annual Reports Benin Province.

<sup>127</sup> NAI, BP 76 1914: Communal Plantations Central Province; 16 Dec, 1913: Colonial Secretary to Conservator of Forests.

<sup>128</sup> NAI, BP 5 1915: Report on the Tapping Operations on the Communal Rubber Plantations for 1914.

<sup>129</sup> NAI, Ben Prof 2/5 BP 173/1916 Communal Rubber Plantation Management of, 2 March, 1916: Commissioner Benin Province to District Officer.

<sup>130</sup> See, e.g. NAI, Ben Prof 2/3 BP 523 1916: Proceeds from Rubber Sales.

warned “tapping should cease temporarily and the trees be allowed to rest.”<sup>131</sup> The export market had collapsed. It was then “impossible to import rubber into the United Kingdom.” Miller Brothers were unable to ship rubber from Sapele to Great Britain. He sighed:

It appears that rubber will not keep in this country, and unless a market can be found for the rubber products of the communal rubber plantations and the para plantations, it would appear to be a waste of both time and money to continue tapping and preparing rubber, as is now being done by the Native Administration (*ibid*).

In 1921, the Director of Agriculture wrote his above-quoted memorandum abandoning rubber.

## 5. CONCLUSION

This was not the end for the rubber industry in Benin. After 1935, planting took off and exports began to grow. The British supported both plantation and wild rubber during the war, but were ambivalent to its future prospects. Their concerns notwithstanding, Benin’s rubber exports continued to rise through independence, peaking in the 1970s.

In this paper I have argued that problems of institutions, information, and inequality delay rubber’s development. The British could not replace existing property rights with institutions that encouraged preservation of natural resources. The colonial state lacked the ability to adequately enforce property rights, supervise operations on the communal plantations, or provide the staff and equipment needed.

The British could not forecast the world market and plan accordingly, nor were they effectively able to pass new skills onto Nigerians. Neither expatriate firms nor Nigerians had the information needed to predict prices or profits with reasonable security. Information problems made policing the production of wild rubber nearly impossible.

Officials expected the bulk of the necessary work to come from those who stood to benefit the least. The bulk of the returns on the communal plantations went to the chiefs, and not the villagers who worked them. It should not be surprising, then, that the Nigerian rubber industry was so slow to grow.

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<sup>131</sup> NAI, Ben Prof 2/4 BP 262 1917: Para Rubber, Benin Division; 4 July, 1918: DO to Resident.

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## APPENDIX

In this section I argue that the data do not permit a credible quantitative exercise to tease out the relative importance of the various problems faced by rubber plantations in Benin.

*A back of the envelope calculation.* I begin with a simple calculation that attempts to answer the question “were labour costs enough to explain the difficulties faced by rubber in Benin?” Supposing a producer price of  $p$ , a wage of  $w$ , and a per-pound labour input of  $L$ , rubber is profitable if  $p - wL \geq 0$ . Were wages too high relative to the price?

What, then, are  $p$ ,  $w$ , and  $L$ ? The colonial annual reports give annual prices per lb ranging from 12d to 78d before Asian production came online, with a range of 24d to 36d being most common (see below). It is difficult to know what fraction of this went to producers, but comparable evidence from the Gold Coast and the government’s payment of 2/3 of the proceeds to the communal plantations suggests 1/2 to 2/3 as a reasonable guide. For wages, Frankema and van Waijenburg (2010) estimate nominal unskilled wages of 6-15d in Lagos during the period, which are similar to estimates in the annual reports. Usuanlele (1988, p.241), similarly, claims timber firms paid 9d a day in 1906. It is, of course, unclear what these wages mean in an environment where coerced labour exists. For  $L$ , Usuanlele (1988, p. 257) provides a lower bound, claiming tappers on European plantations during the 1940s produced 2 lbs daily. Since sharecroppers often received one half of the gross output later in the colonial period, a reasonable upper bound on the labour needed for processing is twice this.

Together, these suggest optimistic, pessimistic, and agnostic estimates of rubber’s profitability (in d/lb):

	$p$	$w$	$L$	<i>Profit</i>
Optimistic	26	6	0.5	23
Pessimistic	12	15	1	-3
Agnostic	19	10	0.75	11.5

Even taking a very simple calculation and using plausible values of a small set of parameters, it is possible to derive very different answers.

*A simulation exercise.* Another approach is to use cost-benefit analysis to piece together a reasonable distribution for the internal rate of return (IRR) of a one-acre rubber plantation. I assume constant returns to scale. Suppose the fixed cost of establishing a *Funtumia* plantation in the first year is  $F$ . Suppose further that, from maturity in year  $M$  until the end of its lifespan  $L$ , the plantation yields an operating profit of  $\pi$ . The plantation’s net present value (*NPV*) will be:

$$NPV = -F + \sum_{t=M}^L \left(\frac{1}{1+r}\right)^t \pi .$$

The IRR will be the value of  $r$  such that the  $NPV$  is zero. I break  $F$  and  $\pi$  into their components, and represent these as functions of parameters that can be obtained from primary sources. I assume distributions on these parameters, and simulate 3000 draws of the IRR. I assume that, while land is free, establishment costs come from the labour required to clear and plant it:

$$\begin{aligned} F &= \text{Cost of clearing} + \text{Cost of planting} \\ &= (\text{Days clearing per acre} + \text{Days planting per acre}) \times \text{Wage} \\ &= (c1 + c2) \times w \end{aligned}$$

Operating profits are revenues minus the annual cost of tapping, plantation maintenance or upkeep, and processing:

$$\begin{aligned} \pi &= \text{Revenue} - \text{Cost of tapping} - \text{Cost of upkeep} - \text{Cost of processing} \\ &= \text{Producer price} \times \text{Trees per acre} \times \text{Yield per tree} \\ &\quad - \frac{\text{Trees per acre} \times \text{Days per tapper} \times \text{Wage}}{\text{Trees per tapper}} \\ &\quad - \text{Days upkeep per acre} \times \text{Wage} \\ &\quad - (1 + \text{Capital multiplier}) \\ &\quad \quad \times (\text{Trees per acre} \times \text{yield per tree} \times \text{Days processing per lb} \times \text{Wage}) \\ &= p \times t \times y - \frac{t \times D1 \times w}{T} - D2 \times w - (1 + K) \times (t \times y \times D3 \times w) \end{aligned}$$

Rather than accounting for capital and depreciation, I assume capital (such as smoking facilities) adds a premium above the labour cost of processing. Below, I report the distributions assumed for each of the thirteen parameters needed to produce these estimates. These are based on scattered observations from archival and other sources, detailed below. I assume no general equilibrium effects. Because the IRR evaluates a single project, I do not need to consider the rate of return to alternate projects.

Parameters

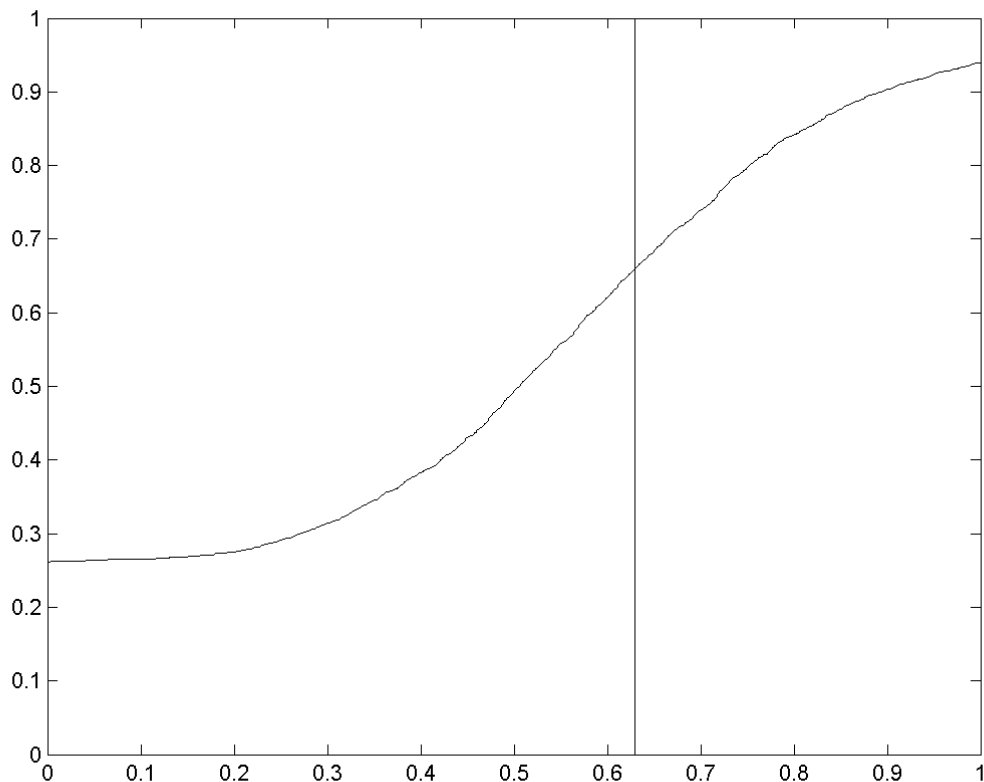
$M$	Years to maturity	U[5,10]
$L$	Lifespan of plantation	U[20,30]
$t$	Trees per acre	U[1000,2000]
$y$	Annual yield per tree in lbs	U[0.5,1.5]
$c1$	Days clearing per acre	U[50,150]
$c2$	Days planting per acre	U[25,75]
$T$	Trees per tapper	U[100,200]
$D1$	Days per tapper	U[100,200]
$D2$	Days annual upkeep	U[10,30]
$D3$	Days processing per lb	U[0.1,0.7]



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$K$	Capital multiplier	U[0.5,1.5]
$p$	Producer price in d per lb	U[10,50]
$w$	Wage in pence per man-day	U[6,15]

The results are given in the figure below. Despite optimistic price assumptions, operating profits are negative in roughly 26% of simulations. The average of the non-zero IRR realizations, however, is fairly high, at roughly 63%. At the median of the parameters, it is just under 48%. While establishment costs were low, year-to-year revenues were very uncertain.



Establishment costs are small on average, running a little under £ 7. The main difficulty is that the mean revenue of slightly more than £185 is eaten up by variable costs. On average, tapping takes up 48% of total revenue. This is close to the one half share paid to itinerant tappers during the 1960s. Annual upkeep accounts for less than 1% of revenue in a typical year. The fatal expense is processing; this eats up an additional 33% of revenue on average. This is, however, the component of production costs about which data is poorest. Again, the calculation is only as precise as the underlying data.

*Sources of parameter estimates.* I abbreviate Southern Nigeria Annual Report as SNAR, Report on the Forest Administration of Southern Nigeria as RFASN, BP 5 1915: Report on the Tapping Operations on the Communal Rubber Plantations for 1914 as BP5/1915,

and BP 364 1914: Report on the Communal Rubber Plantations for 1914 as BP364/1914.

*M* (Years to maturity): That the communal plantations were first tapped in 1910 suggests they took roughly 7 years to mature. Christy (1911, p. 96) states that *Funtumia* will give a fair yield in its sixth year.

*L* (Lifespan of plantation): I have no observations, so I assume 30 as a reasonable guess. For *Para*, Anschel (1965, p. 145) assumes tapping starts in the sixth year and continues for 24 more years.

*t* (Trees per acre): Christy (1911, p. 108); *Funtumia* in Benin City plantations was planted 4 to 6 ft apart, implying roughly 1750 per acre. He also notes (p. 97) that 3 or 4 times as many *Funtumia* can be planted per acre as *Para*. Blanckenburg (1963) reported average *Para* densities of 300 to 500 per acre (trees planted on average 9 to 15 ft apart). Igbafe (1979, p. 346) states that there were 256 plantations containing 142,978 trees and covering 118 acres (1212 trees per acre) in 1907.

*y* (Annual yield per tree in lbs): RFASN 1906; 2 to 3 oz per tree per tapping. SNAR 1910; 1.402 oz per tapping for trees over 18 inches. SNAR 1911; 1.59 oz per tree. Bell (1907); 1 lb of tree per year expected from *Funtumia* in Uganda. Blanckenburg (1963) states that "low yielding local varieties" give 200-400 lbs of dry rubber per acre per year, while "improved varieties" give up to 1200 lbs. He quotes the Ministry of Agriculture's estimate of 200 lbs per acre, and believes in his study villages it is closer to 300. At 400 trees per acre, this is between 0.5 and 3 lbs annually for *Para*, which had better yields than *Funtumia*. Christy (1911, p. 181-187) gives results from tapping on several Kamerun plantations, but does not clearly state whether the results are for a single tapping, or annual; in the one instance where he gives an annual figure (p. 186), he suggests that between 2 and 6 oz per year (.125-.375 lb) is possible per year for excision tapping, incision tapping (p. 189) gave 1 lb of dry rubber over twelve months. His own summary (p. 193) suggests that in years 6 through 10, a *Funtumia* tree will give 4, 5, 9, 12 and 15 oz of dry rubber per year (.25-.94 lb). BP5/1915 gives yields in Benin, Ifon and Ishan that correspond to 0.06, 0.05, and 0.08 lbs per tree, respectively. BP364/1914 gives yield figures per tree tapped of 1 to 1.6 lb. Egboh (1985, p. 162) suggests that *Funtumia* yields were generally 60 lbs per acre (0.04 lbs per tree if 1500 trees), as opposed to more than 300 for *Para*.

*c1* (Days clearing per acre): Forde, Scott and Perham (1946) estimate that clearing in ecologically-similar Yorubaland takes 42 to 98 man-days per acre. For Benin, they do not give man-day estimates; clearing, seed, and weeding together on a 4.35 acre cocoa farm cost £12/7/6 over 3 years. On a 5 acre farm in Benin, the total costs of clearing were £10. These suggest clearing costs of £2 to 3 per acre, which at 9d per day suggests 55 to 80 man-days in clearing.

*c2* (Days planting per acre): Anschel (1965, p. 143) reports 36.4 man-days per acre "for establishment" of *Para*. This seems low if it does not include clearing, so I take it as a measure of planting time.

*T* (Trees per tapper): Usuanlele (1988, p. 257); during the Second World War a tapper could produce 2 pounds of rubber daily. Weinstein (1983, p. 17); Amazon

tappers tapped 100 to 200 trees daily. For *Para*, Ansel (1965, p. 240) reports an average of 271 trees per tapper. Blanckenburg (1963) states that a tapper producing lumps from *Para* can tap 600 trees per day, but only 450 when tapping for sheets.

*D1* (Days per tapper): For *Para*, Ansel (1965, p. 145) reports that one tapper will tap 2 acres a day 150 days per year. BP5/1915 stated expenses to the "native communities" of £ 258 for wood, carriers and plantation labour for 37,375 trees.

*D2* (Days annual upkeep) Ansel (1965, p. 143) reports 10.5 man-days of weeding per acre per year for *Para*. Blanckenburg (1963) states that an FAO team estimates 60 man-days of labour are needed per acre of *Para*; it is not explicitly stated whether this includes tapping as well. If it does, it seems low.

*D3* (Days processing per lb) SNAR 1911; experiments in the Mamu reserve cost 8.25 d per lb of dry rubber, for both tapping and preparation; if half of this is preparation and the wage is about 9d, this suggests half a day of preparation per lb. SNAR 1912; similar experiments cost 3.98 d per lb "apart from cost of supervision, harvesting, and preparation." Blanckenburg (1963) estimated 2d per lb as processing costs to produce better rubber during the 1960s (which exactly offsets the increase in price). BP5/1915 stated expenses to the government and forest department of roughly £435 for staff, carriers, "rubber shed boys," tapping implements, and shed depreciation for 37,375 trees, or 2.8 d per tree (or per lb if the yield is 1 lb). See also the discussion for *K*.

*K* (Capital multiplier): For *Para*, Ansel (1965, p. 243) reports that a mature plantation bringing in £277 in gross revenue will face costs of "tapping, collecting and processing" equal to £36.3 along with depreciation equal to £37.9 if rubber is inter-planted and £61.3 if it is planted alone. The costs of "tapping, collecting, and processing" are exclusive of the one half share paid to tappers, so this suggests the cost of depreciation was 102% to 168% the cost of "collecting and processing." He reports an average wage per day of 4.75s (p. 81), suggesting 158 man-days per acre. Since he also assumes (p.104) 404 lbs per acre of rubber, this suggests 0.38 man-days are needed for processing one lb of *Para*.

*p* (Producer price in d per lb): SNAR 1908; 1s 6d per lb (18d per lb) for Benin lump, when comparable *Para* was selling for 41.5d per lb. Other Benin City samples were valued from 32d to 44d per lb when comparable *Para* was selling for 54d per lb and Benin lump was selling for 24d per lb. SNAR 1910; 6s 6d per lb (78d per lb), for rubber much better than what was normally exported. SNAR 1911; 3s 8.75d per lb (44.75d per lb) when the price of the best *Para* was 4s 6d (54d). The report also suggests a price of 1s 6d per lb (18d per lb). Ansel (1965) reports export prices that average £153 per ton from 1900 to 1921, or 16.39d per lb. SNAR 1912, 3s 4d per lb (40d per lb) of which 2/3 went to the producers and 1/3 to the government. Dumett (1971, p. 89) states that during the Gold Coast rubber boom, rubber sold for £4-5 per 60 lbs, of which producers received £2, or 8d per lb. Blanckenburg (1963) reports that in April 1962 farmers received 1s per lb of dry un-smoked rubber (generally grade B2), and 1s 2d for rubber processed and smoked in the cooperative station. Bata paid 13.75d per lb of B2 to its suppliers at that time; it paid 17d for RSS1, when the London price was 23.75d; this suggests farmers received about 62% of the London price. He thus estimates that 300

lbs per acre yields £15, half of which goes to the tapper. BP5/1915 states that, netting out freight and other charges, rubber was sold for 16d per lb, and that Miller offered 21d per lb in Benin City. Egboh (1985, p. 167) gives a price of 12d to 15d per lb of Benin lump in 1907. He (p. 176) states that the “purchase price” of rubber rose from 12d per lb in 1909 to 42d in 1910. CSO 26 09125 Assessment Report on Benin Division; most rubber from plantations around Benin City during the late 1920s was bought by James Thomas of Sapele for 1s per lb. BP 209 1914 - Forestry Report for 1913; 1s per lb for “Benin lump” in 1913.

w (Wage in pence per day): SNAR 1899/1900; 9d to 1s (12d) per day. SNAR 1907; the cost of a “native labourer” never exceeds 3d a day, while unskilled labour varies from 6d to 1s per day. Frankema and van Waijenburg (2010) use colonial Blue Books to show that praedial wages in Lagos and the surrounding rural areas ranged from 6d to 15d in the period 1900 to 1915; they have confirmed these figures with me in personal communication. CSO 26 09125 Assessment Report on Benin Division; in 1927 casual labour was paid £1 per month (roughly 9d per day with 6 day weeks), and labourers made extra money in their spare time. Ben Prof 8/1/2 Civil Judgment Book 1909-1911; a 1911 contract from Bey and Zimmer stipulated 15s per month plus 4s subsistence per week for labourers (about 15d per day).