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The long overhang of bad decisions in agro-industrial development: Sugar and tomato paste in Ghana

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ABSTRACT

In theory, learning from past mistakes should result in adapted and improved development policy. However policy learning can be difficult to achieve, and the link between learning and policy change is neither direct nor immediate. In this study we look at learning in agro-industrial policy in Ghana, by tracing the interest in sugar production and tomato processing over six decades. Specifically we ask why four failed factories established in the early 1960s have continued to play central roles in both policy and public discourse. Using policy documents, academic material, and the popular press, we show that Ghana's policy focus on sugar production and tomato processing has endured, despite the fact that the factories were misconceived, poorly sited, ill-equipped and poorly managed. Indeed, the political ideas that underpinned the establishment of these factories in the early days of independence can be seen in the current One District, One Factory policy. We suggest that it is their symbolic and political value, not their economic value, which keeps the discussion around these factories alive. Even when shut down, they are a physical manifestation of historic commitments by the state, and as such they guarantee the attention of politicians, and hold out hope of a next re-launch. Unfortunately as long as the factories continue to be incorporated into each new generation of agro-industrial policy, it is difficult for any alternatives to gain traction. This analysis highlights the very long overhang of bad decisions, particularly when they are associated with physical infrastructure. Learning from past mistakes will only happen if the short-term political cost of turning policy learning into policy action can be overcome.

1. Introduction

In introducing a recent special issue on “policy learning and policy action”, Moyson et al. (2017) suggest that three approaches are evident in the literature on policy learning: micro-level (i.e. learning “within and among individuals within social settings”), meso-level (i.e. “organisational learning”) and macro-level (i.e. learning “at system level, often across government units”). Despite their different preoccupations, these approaches share “to various degrees” three characteristics: they pay attention to the relationship between society and the state; they mostly adopt the “behavioural turn” from psychological research; and they consider the policy process over time. Presumably effective policy learning needs to take place both within and across these scales.

While acknowledged to be difficult to achieve, policy learning is presented as fundamentally positive, even if the link between it and policy change is often neither direct nor immediate. While “current research is ambiguous as to the degree and scope of policy change that results from policy learning [...] learning from past mistakes represents

a hope that better policies will develop in the future” (Moyson et al., 2017).

There is an important tension between the “hope” that learning will stimulate change for the better, and the inertia of policy beliefs and programmes. This inertia might be seen as an expression of path dependency, as hinted at by Hall: “one of the principal factors affecting policy at time-1 is policy at time-0” (Hall, 1993). If the policy is delivering on its objectives, then inertia is no bad thing. It is in the face of policy failure, or worse, persistent failure, that the absence of adaptation raises significant questions about the “policy learning – action nexus”. Agricultural and rural development in sub-Saharan Africa provides a number of examples of policy persistence in the face of failure, including the wheeled tool carrier in Senegal (Starkey, 1988), mixed farming (Sumberg, 1998), herbaceous legumes as livestock fodder (Sumberg, 2002), and poultry development in Ghana (Sumberg et al., 2017). What accounts for the apparent lack of policy learning? Do politics and incumbent power (Keeley and Scoones, 2003) dash any hope of better policies in the future?

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In this paper we explore two cases of extreme policy inertia in the face of incontrovertible, long-term failure. Drawing from the agro-industrial sector in Ghana, we trace the 60 year history of policy interest in the establishment of domestic sugar production and tomato processing capacity. Over the course of more than half a century neither the sugar nor tomato factories have managed to establish themselves as going concerns. Despite multiple investments and numerous re-vamps and rehabilitation programmes, they have only operated in fits and starts, mostly far below capacity; and they have stood idle and/or abandoned for long periods of time. Nevertheless, the establishment of sugar production and tomato processing, and specifically the operation of the original plants built in the 1960s, still figures prominently in political and public discourse. These cases seem to represent an extreme variant of the point made by Hall above, where the principal factor affecting policy at time-60 is policy at time-0.

The question we ask is why, after all these years, when none of the intended benefits of investing in sugar and tomato processing have been forthcoming, there are so few signs of policy learning; why has nobody ever stood up and said enough is enough?

We argue that a powerful set of interlinked ideas, interests, imaginaries, narratives, discourses, and “facts” have grown up around the failed sugar and tomato factories. These, combined with the actions of national and international political and commercial actors, development partners, farmer organisations, NGOs, news organisations, pundits and academics, reinforce the idea that the factories are important assets. Even when shut down, they are a physical manifestation of historic commitments by the state to marginal areas, and their continued existence guarantees the (at least periodic) attention of politicians, and holds out hope of a next re-launch. Thus the factories are as much political and symbolic assets (Edelman, 1960) as economic assets, used by politicians of all parties to win votes, and by local interests to keep their constituencies in the queue for government support.

The paper proceeds as follows. The next section briefly outlines the political, economic and policy contexts in which Ghana's entry into sugar production and tomato processing was first conceived. Following this, two sections develop the sugar production and tomato processing cases. These draw on policy documents and academic material, as well as the popular press. A final section discusses the implication of these cases and brings the discussion back to policy learning and policy change.

2. Political and economic context

Ghana's first comprehensive agro-industrial policy was rolled out in 1962 under the Seven Year Plan for National Reconstruction and Development. Prior to this, the development plans of the 1951 Convention People's Party (CPP) government, with Dr Kwame Nkrumah as the Prime Minister, focused mainly on social services and infrastructure, which accounted for about 80 percent of government's annual investment (Dzorgbo, 2001; Government of Ghana, 1964; Greenstreet, 1973). When Ghana became a republic in 1960, with Nkrumah as President, the government decided that decolonizing Ghana's economy will require “a socialist and co-operative programme for industry, and the mechanisation and diversification of our agriculture”, which would be driven by the Volta River (Akosombo) hydroelectric dam (Government of Ghana, 1964; Esseks, 1971; see also Songsore, 1979).

The vision of a socialist economic reconstruction was at the heart of the Seven Year Plan, which sought to use “science and technology to revolutionize our agriculture and industry,” to serve as the “...material basis for a socialist society...” (Government of Ghana, 1964). In launching the plan at the National Assembly on 11th March 1964, President Nkrumah said it was to achieve three main tasks: (1) speed up the economy's rate of growth, (2) engender a socialist economy through developing the State and cooperative sectors, and (3) uproot the colonial structure of the economy (Government of Ghana, 1964; Esseks, 1971; Beckman, 1981). The government proposed to decrease annual investment in social services and infrastructure from 80 percent to about 60 percent of the investment

budget, while doubling investment in agriculture and industry from 20 percent to about 40 percent (Rimmer, 1966, 1992).

Apart from its socialist ideological underpinnings, two signature traits marked the Seven Year Plan. The first was the drive towards import substituting industrialisation, and the second was a desire to ensure spatial equity in agro-industrial development (Steel, 1972; Songsore, 1979; Killick, 2010). The interest in import substitution reflected prevailing economic conditions: from 1952 to 1961, Ghana's imports rose by 115 percent while exports rose by less than 34 percent. In general, while imports were increasing by 8.5 percent per annum, the entire economy grew at an average of only 5–5.5 percent per annum between 1954 and 1961 (see also Fosu and Aryeetey, 2008). The majority of imports comprised food and consumable goods. In fact, between 1951 and 1961, the value of sugar imports increased by about 136 percent (£1.1 million to £2.6 million), while the value of imports of tomato products, other vegetables and fruits increased by 1100 percent (£171,000 to £2 million). Politically, the government feared that rising food prices and increased cost of living could result in social tension and upheaval (Rimmer, 1966; Rado, 1986). It believed these threats were more significant for the Northern Savannah Regions of Ghana, which are less endowed with natural resources, and from a development perspective, generally lagged behind the south (for more on Ghana's north–south disparities see Tabatabai, 1988; Songsore, 2003; Langer, 2009). Thus, pursuing an import-substituting and spatially-equitable agro-industrial policy was both economically and politically expedient (Rimmer, 1992).

The plan identified the need to grow and process food staples including sugar, tomatoes, rice, maize, and other vegetables and fruits that accounted for a significant proportion of food imports. The plan also considered the use of sugarcane fibre (bagasse) for paper production. The strategy was to focus on state-owned farms, large scale plantations, and agro-processing industries in the Northern Savannah and some coastal zones. An estimated 80,000 acres of land was planned for irrigated farming, 30,000 of which would be devoted to sugarcane. Loan schemes were also established, and smallholder farmers were provided with fertiliser, tractor services and seed. Apart from establishing a number of state-owned, agro-processing factories (including sugar and tomatoes), the Capital Investment Board was established in 1963 to provide fiscal concessions and other privileges to private investors in the agro-industrial sector. The National Investment Bank was also established with a mandate to facilitate the modernisation of agro-industries.

Since the launch of the 1964 plan Ghana experienced a number of military coups, periods of extreme economic hardship, structural adjustment, and since 1993, an era of stable democratic government and market-oriented economic policy (Akoto, 1987; Bratton et al., 2004; Fosu and Aryeetey, 2008). Policy programmes and initiatives have come and gone, but at least rhetorically, interest in agriculture (beyond cocoa), agro-industry and self-reliance, as well as the development needs of the north, have remained central.

In what follows, we take a critical look at efforts to introduce and support sugar production and tomato processing under Ghana's agro-industrial policy framework. We use these two cases to analyse the apparent lack of learning from failed policy interventions.

3. Sugar production

Tropical crops, such as sugarcane, have been and remain central to global geo-political and trade networks, and especially those between developed and developing economies. Mintz (1986) summarized the global and centuries-long importance of sugarcane and sugar by citing Bernardin de Saint-Pierre (1773):

“I do not know if coffee and sugar are essential to the happiness of Europe, but I know well that these two products have accounted for the unhappiness of two great regions of the world: America has been depopulated so as to have land on which to plant them; Africa has been depopulated so as to have the people to cultivate them.”

As “a favoured child of capitalism” (Ortiz, 1947), sugar was first processed in India, and introduced to the Americas by Columbus. From the planting of cane to extraction of sucrose and molasses, the crop is notorious for requiring large amounts of both labour and water. The sugar industry, which helped shape capitalism by financing Britain’s industrial revolution, was built around slave labour and plantation agriculture in the Caribbean and the New World (Greenfield, 1979; Curtin, 1969). Sugar helped shape trade and other relations between countries and regions (Smith, 1960), and a country’s dependence on and control over sugar production has and continues to have social, economic, health, and political ramifications at both domestic and global levels (Mintz, 1986).

In Ghana, sugar is central to both dietary habits and government policy. Traditionally, fresh cane was chewed, and small amounts of sugar were added to dishes like millet porridge (Osseo-Asare, 2002; Ababio and Lovatt, 2015). *Apketeshie*, a traditional alcoholic drink, was distilled after fermenting molasses or palm sap, and sugar was used to sweeten hibiscus tea. Today sugar is important in the domestic soft drinks and distilling industries, and is incorporated into a wide variety of prepared foods, including “sugar bread”, and consumed in tea and coffee.

In line with Nkrumah’s economic policy discussed earlier, two sugar factories, Komenda and Asutsuare, were planned to meet increasing domestic demand for sugar. In addition to import substitution, Government’s investment in the sugar industry in the 1960s was also motivated by (1) its desire to both profit from state-owned distilleries and to minimize health risk from locally brewed *apketeshie* by using molasses from the sugar factories to feed the distilleries; and (2) the need to fulfil the CPP’s campaign promise of legalising *apketeshie* distillation (see Akyeampong, 1996). The Komenda factory, located in Komenda town lying about 37 km west of Cape Coast in Ghana’s Central Region, was started by the Dutch as a pilot sugarcane growing scheme. It was later developed by the Czechoslovakian state firm, Technoexport, into a cane production and processing site (Ansong, 1968; Graham, 1993). The Asutsuare factory was located at Asutsuare, about 80 km north-east of Accra in the Greater Accra Region. This factory was initially established by a Polish state firm, CEKOP, which sited the factory at Asutsuare based on a 1948 feasibility study of sugarcane cultivation at Kpong on the Lower Volta River (Ansong, 1968; Graham, 1993). The government signed a US\$1.85 million contract with Technoexport for the Komenda factory in June 1961 and a US\$4.75 million contract with CEKOP for the Asutsuare factory in February 1962 (Grayson, 1973).

Construction of both factories was completed in 1965 and they became fully operational in 1967. The delay was partly because at Asutsuare “somebody forgot to include a water supply system” during construction (Ayittey, 1990), while the irrigation system at Komenda remained idle for nearly 18 months because it was not hooked up to the national electricity grid (Van der Wel, 1969; Grayson, 1973). Since their completion both factories have operated below capacity, and have stood idle for extended periods of time. The highest production recorded was in 1971, when the combined sugar output was 18,700 tonnes (representing 41 percent of capacity), but this was achieved, in part, because the factories refined imported raw sugar (Graham, 1993). The factories were to be fed by sugarcane produced by large estate farms managed by the State Farms Corporation (SFC), and cooperatives of smallholder out-growers organized under the United Ghana Co-operative Council (UGFCC). In 1968 UGCC had 60 and 120 cooperative farmers at Asutsuare and Komenda respectively (Due, 1969; Okyere, 1979, 1981; Graham, 1993).

Below capacity operation reflected a number of challenges, some of which persist till today. These included (1) poor choice of location, machinery and factory design; (2) water and energy shortages and the overall high cost of production; and (3) poor management. While Nkrumah’s import substitution policy was undergirded by the logic of ensuring spatial equity (i.e. avoiding over concentration of industrial assets in certain favoured geographic areas), this proved problematic in the case of the two factories. For instance, there is some suggestion that

the initial survey showed that the Asutsuare site had poorly drained, heavy black soil, which was not suitable for sugarcane production. In this regard, Senchi (Eastern Region) and Tsito (Volta Region), which were also considered, might have been better choices (O’Loughlin et al., 1972; Osei, 1972; Franzel, 1974). In fact, the plant installed at Komenda was initially planned for Tsito, but after sitting in a Czechoslovakian warehouse for two years (at the expense of the Ghana government), it was sent to Komenda where the 400-acre pilot sugarcane scheme established by the Dutch already existed (Rimmer, 1966; Miracle and Seidman, 1968; Graham, 1993). Komenda also fit better into the policy logic of spatial equity in the distribution of industrial assets. The problems with the siting of the factories were compounded by the fact that they were constructed around Polish and Czech sugar beet machinery, while only sugarcane is grown in Ghana (Grayson, 1973). Supplier credits from Eastern European countries were in fashion during the Nkrumah era, which may explain the origin of the machinery (Stevens, 1974).

Management of the factories became embroiled in the country’s contested political landscape, which led to a series of re-organizations. These included overhauling existing management structures, contracting out management responsibilities to private firms, and factory privatisation. For instance, after overthrowing the Nkrumah government in 1966, the National Liberation Council (NLC) dissolved the SFC and the UGFCC which managed the state farms and cooperative farmers that were feeding the sugar and other factories (Due, 1969; Hutchful, 1987). The NLC also turned to the United Nations Development Program (UNDP) for help in reorganizing the State Enterprises Secretariat (SES). SES was established by Nkrumah to manage 19 state corporations, including the Sugar Products Corporation (World Bank, 1972; Graham, 1993). The Ghana Industrial Holding Corporation (GIHOC), was established in 1968 to manage all state corporations, and GIHOC then hired a Pakistani firm, Associated Consulting Engineers, Ltd. (ACE), to manage the two factories. The World Bank criticised GIHOC as ill-conceived, with a management structure constraining already limited technical and management resources, although some scholars noted that GIHOC came out of a suggestion the World Bank made a few months before Nkrumah was overthrown (Grayson, 1973; Graham, 1993). The contract with ACE was terminated in June 1972, and the Ghana Sugar Estates Limited (GHASEL) was formed to manage the two factories; HVA International, N.V. (HVA), a Dutch company experienced in the sugar industry, was to manage GHASEL for a minimum period of five years (World Bank, 1972).

Even the National Redemption Council’s (NRC: 1972-1978) self-reliance policies Operation Feed Yourself and Operation Feed Your Industries could not reverse the decline of the two factories. They collapsed in the early 1980s, even though government, the World Bank, and HVA had invested US\$24.8 million into the Ghana Sugar Rehabilitation Project between 1973 and 1980 (World Bank, 1972). In 1985, the government signed a contract with Cuban officials to rehabilitate the Komenda factory, but the factory itself was liquidated in 1995 (Pérez-López, 1990; Anon., 2002).

Despite the factories sitting idle there was renewed interest in the sugar industry in the 2000s, and since then there have been a number of public, private, and public-private initiatives aimed at growing and processing sugarcane (Table 1). Many of these initiatives sought to combine sugar and ethanol production, and there was also an increasing interest in producing sugar in the northern part of Ghana. A 2012 study found that land around the Daka River, a main tributary of the Volta River in the north-eastern part of the country, could be 75 percent as productive as the Sao Paulo region of Brazil (Black et al., 2012). Since Ghana’s sugar imports from Brazil have remained consistently high over the years, the possibility of generating yields almost comparable to those in Brazil was enticing.

Even with these new initiatives, most of which did not progress, the Komenda and Asutsuare factories have remained central to policy and public discourse. From the 2000s, the factories have been integral to the

Table 1
Selected sugar initiatives independent of Komeda and Asutsuare.

Year	Initiative	Outcome
2007	The Brazilian government plans to offer a US\$260 m loan to Northern Sugar Resources, a private firm in Ghana, to establish a sugarcane plantation and ethanol processing plant in Northern Ghana. It was estimated that ethanol would be Ghana's fourth largest exporter a year after the plant was built (Amanor, 2013).	This project was delayed due to issues including concerns over land grabbing and conflicts, and controversies over importing Brazilian ethanol into the EU (Dyer, 2013).
2010	The Chief Executive Officer of the Ghana Investments Promotion Centre (GIPC) discloses that Cargill International, a Swiss based company, plans to invest US \$100 m in a sugar processing plant, which will be located at Tema within the Free Zone enclave. The plant will have an initial capacity of 450,000 tonnes (will be increased later to 650,000 tonnes). Cargill intends to use imported raw materials to feed the sugar processing plant because its own study revealed that "it was not economically viable to venture into sugar-cane plantations locally". Both Asutsuare and Komenda factories could be later converted into small-scale units to produce ethanol ("Ghana to have new sugar factory," 2010, May 19)	Site inspection and construction was expected in October 2010 ("Ghana to have new sugar factory," 2010, May 19). It was later reported in the media that the plant "may be constructed" in 2012 ("Cargill to spend \$100m in Ghana sugar refinery," 2011, September 19), but it has not been constructed.
2012	A study finds that the Daka River region of Ghana, a main tributary of the Volta River in the north-eastern part of Ghana, can generate 75% of sugarcane yield achieved in the São Paulo region of Brazil, if adequate irrigation is provided (Black et al., 2012).	N/A
2013	President John Dramani Mahama, during a visit to Mauritius, invites Omnicane Flexi Sugar Cane Cluster to replicate their sugarcane technology in Ghana. The technology involves a refinery, a sugar mill, bagasse-cum-coal cogeneration power plant and a bioethanol distillery ("Mauritius: Sugar cane sweetens trade with Ghana," 2014, September 10)	Omnicane Flexi Sugar Cane visited Ghana in 2014 (see year 2014, next row).
2014	Omnicane Flexi Sugar Cane Cluster announces plans to invest US\$250 m over five years in Savelugu, in the northern part of Ghana. The investment will include cultivating sugarcane on 20,000 ha to produce 120,000 tonnes of sugar for export to the EU. It will also include energy and ethanol production ("Mauritius: Sugar cane sweetens trade with Ghana," 2014, September 10) In the Medium-term Development Framework (2014–2017), the government includes sugarcane as one of the targets of its accelerated agriculture transformation agenda, which focuses on food security, import substitution, agro-industrial raw materials and export (Government of Ghana, 2014).	In 2019 Omnicane's website shows that apart from its local plants in Mauritius, the company only operates a modern sugarcane complex in Kenya's Kwale region. There are no publicly available records confirming whether the company and the Government of Ghana are still working on the plantation and ethanol plant since 2014. Neither subsequent annual budgets nor other official documents mention specific outcomes generated as a result of targeting sugarcane.
2015	The Ministry of Trade and Industry, under Dr. Ekow Spio-Garbrah, announces the need for a National Sugar Policy. The Ministry organized an initial stakeholder meeting to discuss how to begin drafting the sugar policy. The policy is justified on the grounds that sugar consumption is projected to increase rapidly in Ghana and the West African subregion, and Ghana's favourable climatic conditions can potentially boost its sugar exports (MOTI, 2015a, 2015b).	This policy is still listed on the Ministry's website but there are no specifics as to (1) whether the draft policy has been adopted, (2) implementation and funding arrangement, or (3) specific outcomes associated with the policy. This policy, developed under the previous NDC government, is not mentioned in the current NPP government's agro-industrial policy, Planting for Food and Jobs.
2017	Mauritius pledges to support Ghana (under President Nana Addo Dankwa Akufo Addo) to become a leading producer and exporter of sugar in the West African sub region. The support includes using sugarcane by-product to generate electricity. Mauritius will set up sugar factories in viable districts identified by both governments ("Mauritius pledges support for sugar production in Ghana," 2017, January 12) A team of researchers from the College of Agriculture and Natural Sciences, University of Cape Coast, Ghana developed a sugarcane variety with high level of sucrose and brix, which is above the minimum for industrial sugar production ("UCC develops right variety of sugarcane for production of sugar," 2017, September 10).	Since the 2017 pledge, there are no documented plans or actions of how and whether this pledged investment is going forward. No further information is available on the use or further development of this variety.
2018	Aliko Dangote, a wealthy Nigerian businessman, unveils plans to invest in Ghana's sugar industry. He wants to help revitalize the country's economy, and also help the country to grow and consume its own sugar (Appiah-Dolphyne, 2018).	Recent government documentation and budgetary statements do not reveal how the government plans to work with Aliko Dangote to invest in the sugar industry.

campaign promises made by political parties (e.g. "Komenda sugar factory to be revived," 2002, January 9; "Komenda sugar factory to be inaugurated today," 2016, May 30), and have been referenced in the annual budgets and policies of successive governments (Ministry of Finance, 2017, 2016, 2015, 2014, 2008, 2001). They are depicted as important and valuable legacies of Nkrumah's industrialization effort; opportunities to develop agro-processing, create jobs and wealth, and revitalize and transform the economy; meet Ghana's growing demand of refined sugar; and produce high-quality sugar for export.

As part of the Positive Change campaign promise of the then NPP government in 2000, the Minister for the Central Region declared in 2002 that, plans to rehabilitate the Komenda factory were advanced ("Komenda sugar factory to be revived," 2002, January 9). Nevertheless, the factory remained closed while promises of investment of various kinds continued to be made. In 2012, the NDC government made a campaign promise to revive the Komenda factory ("Komenda sugar factory to be inaugurated today," 2016, May 30) and in 2014, through a public-private partnership, the Export and Import (EXIM) Bank of India provided US\$35 million matched by a counterpart

investment by the Ghana Government of US\$1.5 million ("Komenda sugar factory to be inaugurated today," 2016, May 30). Around the same time, the Ministry of Trade and Industry began preparing a National Sugar Policy (MOTI, 2015a, 2015b). The Komenda factory was briefly re-opened in 2016 at which point the government was seeking a US\$24.54 million line of credit from EXIM Bank to finance the development of an irrigation scheme (Simons, 2016; Wass, 2016) considered to be a necessary part of the factory rejuvenation strategy. Most recently, in 2019, under its One Village, One Dam policy, government signed a purchase agreement with the Hi Limit Group, with the company promising to invest US\$78 million in the Komenda factory ("Komenda Sugar factory to be revived," 2019, January 28).

In 2004, the then NPP government decided to investigate the alleged looting of the assets of the Asutsuare Sugar Factory, which occurred when the factory was listed for divestiture in 1996 and 2000 ("Gov't To Investigate Looting Of Asutsuare Sugar Factory," 2004, June 14). Today, the factory site is being used as a paper and plastic recycling facility operated by Shinefeel Ghana Limited, a private venture owned by Ghanaian and Chinese partners ("Video: Asutsuare Sugar

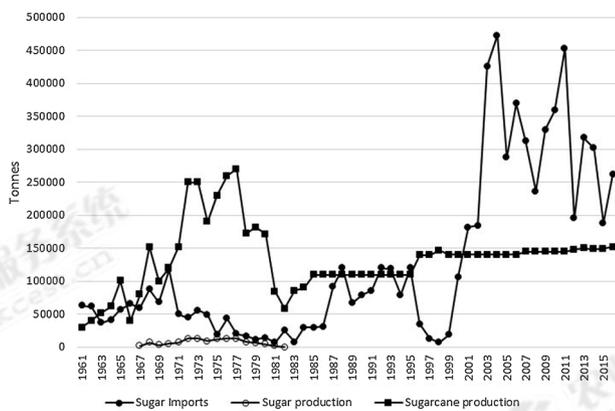


Fig. 1. Sugar production and imports, Ghana, 1961–2016. Source: FAOSTAT (<http://www.fao.org/faostat/en/>).

Factory now recycling plant,” 2019, January 30). It was acquired by the company from government (Shinefeel Ghana Limited, 2019, January 30). According to Shinefeel’s website, the factory “was deserted and became a breeding ground for weeds and waste.”

Official statistics suggest that through the 1970s there was a dramatic increase in the production of sugarcane, and a drop in sugar (refined, raw, and beet) imports (Fig. 1). However, sugar production between 1967 and 1982 barely registers, and then disappears altogether. Since 2000 sugar imports have increased dramatically (but now seem to be declining from their peak) with Brazil being the most important source (Simoes, 2019). Refined sugar is the second largest imported food commodity in terms of volume (after rice), but it is third in terms of value after rice and chicken (Yawson et al., 2018; FAOSTAT, 2019). The extraordinary consistency in the level of sugarcane production since the mid-1980s, and the fact that this cane is apparently not being processed into sugar, suggests that the official statistics are seriously flawed. This problem has been acknowledged for years (also see Stolper, 1966; Mosley, 1992; Jerven, 2013), and it is not unique to sugar, but the lack of reliable data greatly complicates policy and planning processes.

4. Tomato processing

Tomatoes – both fresh and concentrated as paste – are central to Ghanaian cuisine (and to cuisine across West Africa). Ghana both produces fresh tomatoes and imports them from Burkina Faso. It also imports tomato paste from Italy, China and other countries. Some tomato paste is imported in bulk and then re-packaged (canned) in Ghana before sale. Tomato paste is at the heart of huge global industry in which China, with its ability to produce paste very competitively, has come to play an increasingly important role (Malet, 2017b, 2017a).

In the early 1960s, in line with an import substituting industrialisation strategy and desire to ensure spatial equity in agro-industrial development outlined above, the Ghana government decided to construct three factories to process vegetables and fruit. Here we focus on two of these factories, as the third worked primarily with fruit. The decision to site one factory in the village of Pwalugu, 20 km south of Bolgatanga in Upper East Region reflected the government plan to distribute the new industrial assets over the national territory, and also the site’s proximity to the proposed Tono and Veia Irrigation Schemes. The second was located at Wenchi, 30 km north-west of Techiman in Brong Ahafo Region, not far from the Tanoso irrigation project where the tomatoes to feed the factory were to be grown. The factories were constructed by a Yugoslavian company and were completed in 1961. They opened under the supervision of the Ghana Industrial Holdings Company (GIHOC) as the Pwalugu Tomato Factory (PTF) and TOMACAN at Wenchi.

From the beginning, the PTF factory was dogged by a set of problems, most of which persist to the present day. These include: (1) inadequacy of the plant equipment (Weitenberg, 1974); (2) tomatoes not appropriate for processing because of low dry matter (percent total solids), low soluble solids (“Brix) or colour (Apte et al., 1969; Grayson, 1973); (3) the inability of the factory to secure a continuous supply of fruit (Grayson, 1973); (4) expensive running costs in part because there was no hook-up to the national power grid (only completed in 2008, Ministry of Finance, 2008); and (5) generally poor management (Agriculture Operations Division, 1991). These seem to be exactly the same issues faced today by tomato processors in Nigeria (Branthôme, 2019; Laessing, 2017).

The factory’s inability to source a sufficient and consistent supply of tomatoes has been a constant concern. Aside from the issues already mentioned, much of the blame is placed at the feet of the “market queens” who service the demand for fresh tomatoes in Ghana’s metropolitan areas, and are said to undermine the factory by offering much higher prices to tomato producers than are paid by the factory (Issahaku, 2012; Awo, 2010; “Mahama visits tomato factory at Pwalugu,” 2009, March 7). In 2008, this price difference was reported to be a factor of three – i.e. the factory was paying GH¢15.00, while the traders were paying GH¢45.00 for the same quantity of fruit (“Pwalugu factory shut down,” 2008, March 13). It would seem that a contract from the factory, and whatever assistance was provided in terms of inputs and technical advice, were not enough to overcome the price differential or induce loyalty on the part of the producers. Nevertheless, the idea that the factory is needed to help producers deal with their “seasonal tomato glut” has been, and remains, a central element of the discourse around Pwalugu (“Farmers commit suicide,” 2009, March 9; “Minister assures UE tomato farmers of market,” 2009, November 28; “Northern Star Tomatoes Factory in business,” 2010, June 23; “Mamprusis appeal for reaction of tomato factory,” 2003, September 8).

In the nearly 60 years since construction, neither the Pwalugu nor Wenchi factory managed to get established as a going concern. PTF stood idle until 1973 (Grayson, 1973) when it was “reactivated” after being allowed to establish its own farm to supply up to half of the required raw material (Weitenberg, 1974). Even at that point problems with the factory machinery meant it was impossible to produce paste in the most commonly used 2.5 oz (70 g) tin (Weitenberg, 1974). Since 1973, the plant has operated only in fits and starts, and mostly far below capacity (Weitenberg, 1974; Agriculture Operations Division, 1991), and it has stood idle and/or abandoned for long periods of time (i.e. most or all of the years between 1985 and 2005). It has not, however, been out of the spotlight, and was linked to major policy initiatives including Operation Feed Your Industries, the District Industrialisation Programme, the National Industrial Policy, and the current One-District-One-Factory Programme. There have been repeated calls and plans announced for it to be “re-vamped”, “revived” or “rejuvenated” (“Pwalugu Factory to start trial runs by June,” 2006, April 25; “Northern Star Tomato Factory starts production,” 2010, March 5; “Government to revamp Pwalugu tomato factory,” 2013, December 17; “Gino tomato factory starts operations,” 2015, August 12; “Minister seeks support to revamp Pwalugu Tomato Factory,” 2017, August 12; “Government to revive Pwalugu Tomato and Meat Factories,” 2017, October 6; Ministry of Finance, 2008, 2009; Government of Ghana, 2010; “Pwalugu tomato factory will be re-vamped - Upper East Regional Minister-designate,” 2018, November 1).

Some of these efforts have also involved international development partners (GTZ and the US through Overseas Private Investment Corporation [OPIC]), and private firms (from Ghana and Italy). In 1989 it was put on the government divestiture list but was never sold (Goodman AMC Ltd, 2015; “Pwalugu tomato factory to be reactivated,” 2006, February 28); in 2006 it was reportedly a “major target” in the government’s world-wide effort to attract investment (Kwartang and Glover, 2006); and in 2007 and again in 2014 it was reconstituted as a joint venture or public-private partnership (PPP) (Ministry of Finance,

2014; Goodman AMC Ltd, 2015).

In Wenchi, the TOMACAN plant was also “reactivated” in 1972 after standing idle “most of the time” since its construction in the early 1960s (Western Africa Country Programs, 1978). Following the reactivation, capacity utilisation remained low, estimated at five percent, 35 percent and five percent in 1974, 1975 and 1976 respectively (Western Africa Country Programs, 1978). Two nucleus farms were established in the late 1970s covering 6800 ha, with the idea that they would help address the raw material supply problem (Western Africa Country Programs, 1978). In the early 2000s, a PPP was established to operate the then abandoned plant. This arrangement involved Afrique Link Limited, a private shareholder that was to operate the plant, German Technical Co-operation (GTZ), the Brong-Ahafo Regional Directorate MOFA and Unilever Ghana Limited (“Wenchi tomato factory begins trial production,” 2003, November 9). Unilever was to package the paste under the “Tomaroma” brand, and market, distribute and sell it, in addition to assisting Afrique Link to market its tomato pulp (Goodman AMC Ltd, 2015). In 2005 the government provided technical and financial assistance to the Wenchi Tomato Out-growers’ Scheme (Ministry of Finance, 2006). However, Robinson and Kolavalli (2010) reported that the re-opened plant had been unable to source sufficient high quality tomatoes at a competitive price, and so ceased processing after a pilot season. At that point the company was reportedly exploring the possibility of sourcing inputs through its own dedicated high tech farm using expertise from South Africa, to be supplemented, possibly, by contract farmers or tomatoes purchased on the open market. After closing the plant in 2007 the company moved into growing tomatoes for the fresh market using poly tunnels, and it was reported that the factory hoped to begin canning sweetcorn and cowpeas in 2015 (“Defunct Wenchi tomato factory to be revived,” 2013, April 30).

Particularly since the turn of the 21st century, while the Pwalugu and Wenchi plants have struggled, there have been a number of other public, private and joint initiatives around tomato processing (Table 2). Some of the most successful involve re-packaging tomato paste imported in bulk. In addition, on a number of occasions government has announced plans to support small-scale tomato processing, for example, with locally manufactured machinery (Ministry of Finance, 2002) and training in its use, particularly by women (Ministry of Finance, 2003); and procurement of processing machinery for distribution to “farm-based organisations” (“Agric Ministry embarks on tomato processing programme,” 2003, October 16), for sale to communities and individuals (Ministry of Finance, 2004), and for “small-scale processing industries” (Ministry of Finance, 2005). It also supported research on tomato diseases reportedly “as part of measures to eradicate the problems that militate against large-scale tomato production”.

Over the years, and continuing to today, the two original factories, and the tomato paste “problem” more generally, have been regularly referenced in national political discourse and in public discourse more widely. For example, eleven of the government’s Annual Budget Statements since 2001 have made specific reference to one of the factories or to tomato processing more broadly (Ministry of Finance, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2012, 2013, 2014).

The Pwalugu and Wenchi factories have been, and still are, regularly referenced in the national media. Generally they are represented as: (1) important parts of the post-independence legacy of Nkrumah, and valuable, if underutilised, economic assets; (2) viable and profitable businesses; (3) investment opportunities; (4) a way to deal with the seasonal glut of tomatoes; (5) opportunities to export; and (6) opportunities to create a significant number of new jobs for “youth”. In contrast, the importation of tomato paste is commonly represented in policy and public discourse as a needless waste of foreign exchange; a lost opportunity for local industry and producers; lost employment opportunities for “youth”; and public health and safety risks due to the poor quality and contamination of some imported paste (“Tomato paste importation to be banned,” 2007, August 3).

The two factory sites are visited by national and local politicians,

particularly at election time: promises to investigate “the situation” and to “revamp” the facilities are often made during these visits. The Pwalugu factory has been used as a political football, with either the NDC, the NPP or the press casting blame for the plant’s failure or praising their own efforts in supporting it (“NPP collapsed Pwalugu Tomato Factory - NDC,” 2016, June 17; “Pwalugu tomato factory rots,” 2013, June 10).

As part of the discourse, Ghana has been repeatedly cited as the world’s second largest importer of tomato paste (Awo, 2010; Goodman AMC Ltd, 2015; ABK, 2015; “Ghana - 2nd Largest Importer of tin tomato,” 2006, March 20; “Government to revamp Pwalugu tomato factory,” 2013, December 17). Larbi (2015) gives an alternative version, suggesting it is “second largest consumer of tomato paste in per capita terms”, but presents no supporting evidence. With the same caveats as above in relation to the sugar statistics, Fig. 2 shows that Ghana’s tomato paste imports increased dramatically since the late 1990s (and then dropped in recent years). Data available through FAOSTAT indicates Ghana has never been the second largest importer (it ranked seventh or eighth for eight years between 2004 and 2015), and in no single year did it import more than 49 percent of the largest importer. Nevertheless, Ghana’s dependence on imported tomato paste has been something of an international *cause célèbre*. It was studied as part of an interest in “import surges” (Asuming-Brempong et al., 2006; Rakotoarisoa et al., 2011), and was used in international advocacy efforts to illustrate the unfairness of international trading agreements and the need to change Ghana government policy (Ochieng and Sharman, 2004; Kwa and Shah, 2008; Bauwens et al., 2017; Lambrechts et al., 2005). The high level of imports and the failure of the factories to provide a stable market has been linked in the press to farmer suicides (“Farmers commit suicide,” 2009, March 9) and to farmers abandoning tomatoes for onions (“Pwalugu Tomato factory shutdown pushes farmers into onion farming,” 2015, April 13).

5. Discussion

An historical perspective on agro-industrial development policy in Ghana, as illuminated through the sugar and tomato processing cases, is interesting in itself, and because these are among the earliest and most explicit exemplars of import-substituting industrialization policy in Africa. We have demonstrated that Ghana’s policy focus on sugar production and tomato processing has endured; and perhaps more surprisingly, that the Komenda, Asutsuare, Pwalugu and Wenchi factories, despite being misconceived, poorly sited, ill-equipped and poorly managed, remain central to policy and public discourse to this day. It is not an overstatement to suggest that because the establishment of these factories was a direct expression of Nkrumah’s ideology and political ideas, six decades later he continues to play an important role in policy processes around agro-industrial development. The current One District, One Factory policy, for example, is rooted in the very same logic that originally drove the siting of the sugar and tomato factories.

This policy inertia is remarkable for two reasons. First, over the years since these factories were initially conceived, Ghana, and the geopolitical, global trade and development assistance contexts within which the factories were expected to operate, have changed fundamentally. Nevertheless, the factories and their constellation of aims including import substitution, self-reliance and job creation, have been incorporated into each new policy initiative, from the 1964 Seven Year Plan to Operation Feed Yourself and Operation Feed Your Industries, right through to today’s One District, One Factory and Planting for Food and Jobs initiatives. It is true that there has been some significant evolution in the way policy has been operationalised. Reflecting broader global trends, state-owned factories and state farms have given way to PPPs and private sector initiatives. However, the policy framing and objectives have changed little. Second, these policies have persisted despite the fact that the government’s sugar and tomato processing initiatives represent repeated failure at multiple levels. The factories

Table 2
Tomato initiatives independent of Pwalugu and Wenchi.

Year	Initiative	Outcome
2001	Establishment of a demonstration processing factory by the Adventist Relief and Development Agency (ADRA), SUSTAIN (an international NGO) and Natural Resource Institute (UK), at Tuobodom in the Techiman district, with a daily capacity of 15 crates (“80-million cedis tomato factory commissioned,” 2001, April 6)	The plant has been closed as of 2010 (Robinson and Kolavalli, 2010).
2001	Establishment of a “multi million-dollar” processing factory at Akumadan in Ashanti Region financed by New World Investment Group. It was reported that the factory would “guarantee the prices of tomatoes and other vegetables and thereby encourage the youth to undertake agro-based businesses” (“Tomato factory commissioned in Minister’s hometown,” 2001, August 8). The plan was to produce sixty tons of canned tomato and other vegetables per day.	The Minister of Trade and Industry promised that the factory will be completed by June of 2003 but this did not happen (“Akumadan tomato factory starts production next year - Apraku,” 2002, October 25). In 2013, the Chief of Akumadan appealed to the government to establish a tomato processing plant in the district (“Ghana: Akumadan Needs a Tomato Processing Factory - Nana Akuamoah Boateng,” 2013, November 21). As part of his 2016 campaign promises, the then President Dramani Mahama promised to set up a tomato processing factory in Akumadan (“Mahama promises tomato factory in the Ashanti Region,” 2016, November 7).
2002	Plans by “an Israeli technical partner” (Hovey Agricultural Limited) to construct a tomato processing plant in the Akomodan-Techiman catchment area under the name of Splendid Industries Limited. It was reported that 10,000 acres of land had been acquired for tomato production (“Israelis to revamp tomato industry,” 2002, October 19). An appeal to investors by the District Chief Executive to help reactivate an abandoned tomato processing factory at Nsawam (Eastern Region), to facilitate the provision of a ready market for the numerous tomato farmers in the area (“SOS for tomato factory rehabilitation,” 2002, September 10).	This project never took off. Successive governments have promised to build a tomato processing plant in Akumadan but none have yet seen the light of day (see also the previous row, 2001). N/A
2004	Establishment of a US\$900,000 Tomato Processing Promotion Centre at Techiman. The facility, a joint collaboration between the Ghana government, the FAO and the Italian Government, to reduce post-harvest tomato losses (“Techiman to get tomato processing factory,” 2004, June 15). The Centre was commissioned in 2008 (“Tomatoes processing factory to start operation in August,” 2008, March 11) but left dormant until 2012 (“Municipal members unhappy over tomato factory sale,” 2013, August 1). Establishment of a tomato processing factory in Tema, under the name of Trusty Foods Ltd, (TFL) (“Techiman to get tomato processing factory,” 2004, June 15). TFL was owned by the Russo family, the largest tomato producer and processor in Italy. The Senior Minister who opened the plant was reported to have said that he was “optimistic that the conservation and processing of a substantial part of the nation’s tomato output would also help eliminate the heavy losses which reflect the uneconomically short shelf-life and the international unacceptability of our canned tomatoes”. In addition to processing tomatoes, the plant imports and re-packages paste for sale in the West African market including Nigeria (Robinson and Kolavalli, 2010). Trusty Foods was renamed EXPOM, and in 2006 it entered into an arrangement with the Northern Star factory in Pwalugu to buy its paste in bulk.	In 2013 the facility was sold (without the knowledge of the District Assembly) and re-named Techiman Processing Complex (TEPCO) (“Municipal members unhappy over tomato factory sale,” 2013, August 1). Following assurances made in 2014 (Auvillain and Liberti, 2014), a news story in 2016 says that the plant will “soon commence full operation as measures to mitigate its operational setbacks are responding positively” (“Techiman Tomato Factory nears full operation,” 2016, April 20). Around 2012, Olam International purchased the tomato processing facility from TFL (EXPOM) and began promoting its tomatoes paste brand, “Tasty Tom” (DAI, 2014). This factory is still in operation.
2009	A Ghanaian think-tank report argues there are interesting prospects for attracting investments into and fostering enterprise development in the in the canned products sub-sector. To support this claim the report cites the presence and operations of the Pwalugu factory and the involvement of some Italian investors in the plant (Centre for Policy Analysis (CEPA) and Institute for Policy Alternatives (IPA), 2009).	N/A
2015	Establishment of a GH¢50 million tomato processing factory at Tema by Conserveria Africana Ghana Limited, importers of GINO and POMO tomato paste. It was reported that the state-of-the-art factory had the capacity to produce 25,000 metric tonnes of tomato paste annually, and would create about 300 direct jobs (“Gino tomato factory starts operations,” 2015, August 12). Management consultancy Goodman AMC promotes investment in Ghana’s tomato processing industry, declaring “Tomato Paste Industry: Ghana’s Neglected Goldmine” (Goodman AMC Ltd, 2015)	This factory was inaugurated in 2015 and is still in operation. N/A
2018	Construction was started on a US\$3 million food processing factory under the One-district, One-factory (1D1F) initiative in the Ningo Prampram District in the Greater Accra Region. The Leefound Foodstuffs Ghana Limited is a partnership between the Chinese entities, Tianjin Food Group Limin Condiment Company Limited and the Ghana Grand Rice Food Limited. The factory, a medium to large-scale entity that will produce tomato paste and spices, will source its raw materials largely from local producers (“\$3-million food processing factory to be established at Afienya,” 2018, August 12).	The factory is yet to be completed even though it was reported that the contractor had only until the end of 2018 to complete construction (“\$3-million food processing factory to be established at Afienya,” 2018, August 12).

themselves, despite new investment, re-vamps, re-launches, and re-organisations, have never operated successfully or sustainably; Ghana remains highly dependent on imports of these products; few new jobs were created; and there is still much spatial inequity in the country’s agro-industrial base.

It is widely appreciated that policy formulation and implementation are complex, inherently political processes that can be influenced, for example, by powerful interest groups, a lack of technical expertise,

macroeconomic uncertainties, election and party political considerations, and corruption (Keeley and Scoones, 2003). The initial poor decisions concerning siting, and the origin and type of factory equipment supplied, reflecting geo-political considerations and possibly corruption, set the stage for much of what was to follow. However there is no reason that any of these factors should *a priori* tend towards either policy inertia or change. It is inertia in the face of repeated failure that these cases highlight, and we argue that whatever the underlying reason, this can

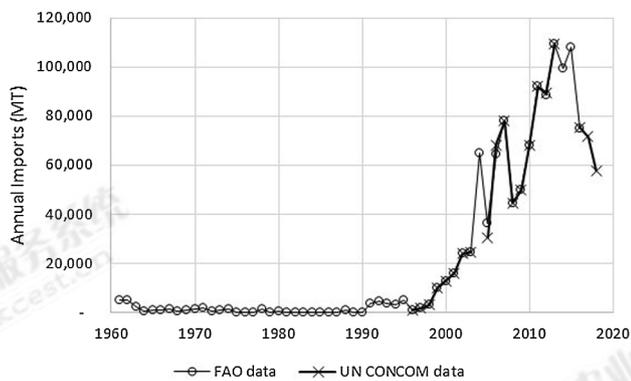


Fig. 2. Tomato paste imports, Ghana, 1961–2017. Source: FAOSTAT (<http://www.fao.org/faostat/en/>) and UN Comtrade database (<https://comtrade.un.org/>).

best be interpreted as a lack of policy learning. Specifically, in terms of framing and objectives these two cases show little evidence of learning at any, much less all of the levels identified by Moyson et al. (2017). If learning is indeed the wellspring of hope for better policy, then at least as regards sugar and tomatoes, the spring is apparently dry. Politicians from every party, development partners, creditors, the press and academics have all played along: no one has been willing to say publicly that the emperor of locally produced sugar and tomato paste has no clothes.

What explains the lack of learning; why have these factories seemingly been allowed to be a debilitating weight around the neck of the policy process? We argue that given their origin in Nkrumah's political project, it is a mistake to see the factories primarily as economic assets, the worth of which can be judged in terms of import substitution, capacity utilisation, profitability, costs and benefits. If this were the case, the prognosis on learning within agro-industrial policy making in Ghana would indeed be dire. Rather, they are better understood as symbolic and political assets, as it is their symbolic and political value, not their economic value, which keeps the discussion around them alive. The factories, even when shut down, are an unmistakable physical manifestation of historic commitments by the state, and their continued existence guarantees the (at least periodic) attention of politicians, and holds out hope of a next re-launch. For politicians, the cost of upsetting this long-standing political settlement with marginal areas is probably just too high. This amply illustrates the underlying political foundations of agro-industrial policy. Unfortunately as long as the factories continue to be incorporated into each new generation of agro-industrial and rural development policy, it is difficult for any alternatives, including whole new framings and objectives, to gain traction. The real and enduring cost of well-motivated but bad decisions made sixty years ago is that they constrain policy space today.

There is some poetic justice in the fact that the Asutsuare factory site is now being used for waste recycling. But it is very positive that its new use has nothing to do with sugar, for it shows that change, adaptation and alternative futures are indeed possible, even around powerful symbolic and political assets. Perhaps this latest re-vamp will provide the policy community and the public with a broader learning opportunity.

Declaration of Competing Interest

None.

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