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Strategies for sustainable upgrading in global value chains: the Ivorian and Ghanaian mango sectors

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This policy note presents policy recommendations for a sustainable development strategy targeting the Ivorian and Ghanaian mango sectors. Based on a GVC and SWOT analysis, we conclude that the mango sectors in both countries yield significant potential for promoting socially inclusive and environmentally sustainable production and employment. To this end, in both countries, a stronger focus on industrial policies targeting the key challenges in the respective mango sector is however needed.[1]

Overview of the Ivorian and Ghanaian mango sectors

Côte d'Ivoire and Ghana both developed mango production in the context of export diversification strategies with varying success. In Côte d'Ivoire, production started in the 1980s in the face of falling prices for key agricultural export products, particularly cocoa. Despite setbacks during the political instability of the 2000s, Côte d'Ivoire was able to position itself as an exporter of fresh produce to the EU, mostly by sea-freight. Today, the mango sector contributes 1.7% to agricultural GDP and Côte d'Ivoire is the third largest mango supplier to the EU after Brazil and Peru. The average Ivorian production is estimated at 120,000-150,000 tons per year with 32,628 tons being exported in 2016 (Table 1).

The key factors for the Ivorian success are price-competitiveness, a well-developed infrastructure (pack houses, railway and seaport) as well as well-managed orchards in the context of growing demand for tropical fruits in the EU. Most fresh exports come from 6,000 individual farms in the northern region, of which 1,043 have been GlobalG.A.P. certified in 2017 (GlobalG.A.P. 2017). A key challenge for the Ivorian mango sector is fruit fly pressure, a quarantine pest in Europe and contributing to extremely high post-harvest losses, estimated at 40% of total production. Functional upgrading to mango processing has only developed recently and is still insignificant in volume.

The Ghanaian mango sector has developed a decade later in the context of a food security programme financed by USAID and, in addition, value chain as well as trade and investment projects supported by USAID and GIZ. Since 2012, the Export Development and Agricultural Investment Fund (EDAIF) of the Ghanaian government has been supporting the sector more actively. After a recent decline of the pineapple industry, mango has become the fastest growing horticulture crop under large-scale production in Ghana. Unlike Côte d'Ivoire, Ghana struggles to increase exports of fresh produce and is specialized in the processing of mangoes (esp. fresh cuts and dried fruits). Today, mango production stands at around 110,000 tons (Table 1) and contributes 0.3% of agricultural GDP. Output is expected to increase significantly in the next years due to a government supported planting program. With post-harvest losses of around 30% (MOAP 2016), the volumes available for processing are roughly 30,000 tons, while usually 40,000 tons are consumed locally as fresh products. With 800-1,000 tons of dried mango exports, Ghana is second in West Africa to Burkina Faso, which exports about 2,000 tons per year. Fresh exports move within the boundaries of only 800 to 2,000 tons per year.

Organizational issues (esp. the lack of functioning pack houses), limited GlobalG.A.P.[2] certification, pests and diseases and the high price of mangoes are the main reasons for the low volume of fresh exports. The only noteworthy well-established fresh export trade is for airfreighted fruits to the Middle East, mostly in the minor season (January, February), managed by a few very experienced companies with excellent quality management systems not only for their own production, but also for their supplying farmers. The fruit-processing sector is linked to other fruit industries (e.g. pineapple, papaya, coconut) and has grown in the context of shifting fruit GVC dynamics (Humphrey 2005) as well as tax-incentives. The processing sector is foreign direct investment-led (FDI), uses high-class equipment and is the largest off-taker of mangoes in Ghana apart from the local market, but struggles with high electricity costs and the high price and limited supply of mangoes fit for processing. Processors thus heavily rely on imported mangoes and in a normal year, Ghana imports more fresh mangoes than it does export.

Based on the SWOT analysis presented in Grumiller et al. (2018b), we conclude that the mango sectors in both countries yield significant potentials to create both income and employment for the rural poor and, in addition, provide an ecological barrier[3] against the effects of climate change thereby contributing to soil and water conservation. In both countries, a stronger focus on industrial policies targeting the key challenges in the respective mango sectors is needed.

Table 1: Comparison of the mango sector of Côte 'Ivoire and Ghana

	Côte d'Ivoire	Ghana
Plantation area 2016 (ha) (Expert estimation, FAOSTAT, Zakari 2012)	88,000	20,000
Total production 2016 (tons) (Expert estimation and Nugawela 2017)	120,000-150,000	110,000
Fresh exports 2016 (tons) (WATIH 2017)	32,628	845
Share of fresh exports to total production	27%	1%
Farms with valid GlobalG.A.P. certificate 11/2017 (GlobalG.A.P.)	1,043	105
Intercepted mango consignments 2016 (EUROPHYT)	10	1
Intercepted mango consignments 2017 (until October) (EUROPHYT)	32	0
Dry mango export 2016 (tons)* (Expert estimation and WATIH 2017)	75	900
Fresh cut exports 2016 (tons) (Expert estimation and Nugawela 2017)	0	1,700
Mangoes used for processing 2016 (tons) (Expert estimation)	1,000	30,000
Specialisation	Fresh export	Processing for export

Note: *For Côte d'Ivoire 2017; The estimation of total marketable production by experts working in the mango sectors in both countries is highly reliable whereas the estimation of plantation area only has limited comparability due to the fact that mango production in the two countries differs: plantations in Ghana are younger and have been set up generally as sole stands with hardly any intercropping. Apart from a few vast plantations, most mango trees in Côte d'Ivoire, however, are part of the "parkland agroforestry system" in which farmers have a number of mango trees (in addition to shea butter or locust bean trees) in midst of their fields used for annual cropping. The table therefore does not allow for a conclusion that fruit yields per tree are higher in Ghana than in Côte d'Ivoire. Nevertheless, the marketable yield per hectare is generally higher in Ghana as quality requirements in processing (focus of the Ghanaian mango industry) are lower than those for the fresh export market (focus of the Ivorian mango industry).

Policy recommendations

In this section, we outline essential elements for a sustainable development strategy for the Ivorian and Ghanaian mango sectors.

1. Strengthen industrial policies for the mango sector

In general, the industrial policy setups in both countries need to be extended and adapted in order to widen the scope and improve the effectiveness of policies. Ghana has not emphasized mango or another crop in its agricultural policy, while Côte d'Ivoire has identified the mango value chain as one of the focal support targets of the Interprofessional Fund for Agricultural Development (FIRCA). The mango sector in both countries should grow by expanding production area and processing capacities to be able to absorb more grades of the crop, e.g. through pulping. A sectoral focus on the mango sector might very well be justified in both countries due to the economic as well as social and ecological benefits of the sector. For a sound industrial policy, government needs to work on all the '5 Is': Inputs (raw material, land, labour, capital), Infrastructure (physical, technology, quality), Institutions (associations, training and extension institutes, government agencies), Incentives (taxes and duties) as well as Investments (local investment and FDI promotion). In an industrial policy for the mango sector, factor markets need to be improved, but at the same time also the domestic market for mango juice and other mango-related products as well as the export of fresh and processed mangoes further developed. Selective interventions should specifically focus on those segments of the value chain for which the potential is not fully developed, thus restricting the development of other segments. In their policy documents to support the mango value chain, Ghana and Côte d'Ivoire should define targets to be achieved in terms of export revenue, tax yield, jobs created and social and environmental sustainability. These benefits need to be benchmarked with other value chains such as cotton, bananas, pineapples, cashew and sheanuts, and data has to be recorded annually to determine whether the intended benefits have been realised.

2. Foster policy coherence

The policy framework currently in place in Côte d'Ivoire and Ghana for supporting industrial development in the mango sector is characterised by a lack of coherence between the different policies for competitiveness, physical infrastructure, education, agriculture, research, fiscal incentives and export promotion. Decisions affecting industrial development and competitiveness are scattered over an array of ministries and institutions, such as for trade and industry, agriculture, labour, education, science and technology as well as finance. These often have different objectives and communicate poorly with each other. However, a strategy for an industrial policy needs to cut across competing interests and use the resources of each ministry to further national aims. In order to tackle this issue, mango specific decision-making competences should be centralized and entail an inclusive stakeholder process. The strategy must therefore be steered by a high-level political official, preferably by the head of government.

3. Support country specific strengths and tackle bottlenecks

Côte d'Ivoire and Ghana need to expand the activities where they enjoy a competitive advantage as well as tackle key bottlenecks of the mango sectors in order to promote exports of fresh produce and processing activities. Ghana's prime strengths lie in high quality processing for premium markets. Thus, a further strengthening of the processing sector and diversifying of the product range for export in terms of drying, freeze-drying, fresh cuts, preserved fruits, achar, jam and fruit bars is recommended. Côte d'Ivoire's foremost strengths lie in the expansion of sea freighted fresh exports to satisfy growing markets in Europe and the Middle East. The further expansion of processing activities should nonetheless be continued to increase value addition in Côte d'Ivoire, while Ghana should also continue to tackle bottlenecks in the export of fresh mangoes.

4. Improve export promotion activities

Export promotion agencies (APEX-CI in Côte d'Ivoire and GEPA in Ghana) need to revise and reformulate their respective export strategies to increase exports in general and to specify the strategic diversification of non-traditional exports in particular. Instead of implementing export promotion activities themselves, they should rather support the private sector to do so. Well performing export promotion agencies would help to secure a common stand at international trade fairs and facilitate access to information on foreign markets for domestic companies. Lessons should be drawn from best practice examples of export promotion agencies such as the Hong Kong Trade Development Council, which is highly regarded for its matchmaking between foreign buyers and exporters.

5. Support end market diversification

Côte d'Ivoire and Ghana should go beyond the development of traditional export opportunities and strengthen new overseas markets as well as regional and the domestic markets. Export promotion would have an important role in this regard. New overseas markets include for example the US, Russia and Israel. A great potential, for example, lies in capturing the US market with organic dried or freeze-dried fruits.

To increase domestic and regional demand, mango juice is considered to be the most suited mango product, as other fruits such as bananas, water melon and oranges are often preferred in West Africa for fresh consumption. Industrial policies could support domestic firms with investment loans as well as sensitisation campaigns to promote locally made juice to consumers. Production of more mango juice or mixed juice with pineapples and passion fruits offered in safe packaging would also help to develop pulping and would enhance interregional trade of mango pulp providing local juice makers in the region with raw material. Further, backward linkage potential to the bottling sector should be exploited.

For international markets, by-products, which are made from waste or second grade fruits (e.g. fruit leathers, fruit bars, vinegar, kernel oil) should be promoted. This would at the same time improve the competitiveness of the main product (fresh or dries mangoes), which can be offered at a lower price if waste or second grade fruits are monetised.

6. Improve the provision of inputs for mango production and processing

Various key inputs for mango production and processing, including pesticides, are imported in Côte d'Ivoire and Ghana. All major inputs into farming and processing to date are duty free (except for sugar and, in Ghana, fresh mango imports for processors). However, governments could further lower the costs of certain inputs through subsidies or government procurement (e.g. fruit fly control chemicals or fungicides to control BBS). Côte d'Ivoire did this with fruit fly control chemicals. This has helped to obtain GF 120, which is the preferred, fully biological bait spray well-known among producers. Input subsidies, however, need to be time-bound and conditions well communicated. They should facilitate the development of import trading businesses offering the required inputs at competitive prices even after the subsidy programme has ended. Governments should work with vouchers and let the actual trade be carried out on a competitive basis by existing input providers in order to avoid time-delays. In the medium term, domestic production of certain inputs should be encouraged, which would not only increase competitiveness but also local value addition and backward linkages.

Furthermore, governments need to facilitate genetic adaptation to market trends by awarding import permits and funding variety testing. However, experience from Côte d'Ivoire and Ghana suggests that private companies best manage nurseries and variety plots: Processors may like to see new varieties established to improve their competitiveness and private nurseries may want to be the first ones in the market offering seedlings of a promising new variety.

7. Improve access to finance

Government also has a role to play to counteract the present failure of financial markets for providing affordable financing for agricultural production and processing. In part, this can be done by introducing refinancing mechanisms for bank lending, especially with regard to investment loans. The government will have to collaborate with international development banks in this regard. Smallholders' access to finance should also be improved by supporting farmer-based organizations as well as expanding extension services and contract farming arrangements. The support of smallholders is particularly important, since mango orchards require continuing investments while revenues are only expected five years after plantation – a reliable form of bridge financing thus needs to be made available. The current government programmes so far have lacked effectiveness, since they limited support only to the year of plantation and tended to support comparatively well-off farmers residing in urban centres, instead of those who live close by their orchards in rural communities.

8. Foster skill development

At low levels of industrial development, such as in Côte d'Ivoire and Ghana, already the quantity and quality of primary schooling and basic vocational education has great impact on the performance of the mango sector. In addition, in-house training for company staff as well as interns from vocational schools and universities needs to be encouraged. The cost of training trainers in private firms should be partly borne by governments. Alternatively, such costs need to become tax deductible.

Agricultural extension services are necessary for the support of small and medium sized farms. In Côte d'Ivoire, extension services have already been privatised. In Ghana, state-run public extension should be privatized or re-organized, since the current system suffers from pronounced mismanagement. Extension services should not receive public support if working in isolation. Instead, they should collaborate closely with off-takers (exporters and processors) in order to deliver services in a demand-oriented way. Besides technical extension, advisory services should engage in farmer group formation, facilitation of savings groups and the development of internal control systems for smallholder farmers. Universities could be commissioned to regularly train extension staff in methodology (e.g. competency based training) and technology.

9. Support quality control systems and R&D of firms

Technology and quality infrastructure consists of R&D, metrology, calibration, testing, certification and standards. Research bodies in Côte d'Ivoire and Ghana are often delinked from the sector they are supposed to serve, doing basic research of poor quality and little practical use. Many are out of touch with international trends, have outdated equipment and libraries and are not well staffed. A possible solution could be the outsourcing of activities to private companies, which may be licenced and contracted by the state. R&D expenditures of private firms should become tax-deductible. Smaller companies in the value chain, which by their nature do not compete for markets to the extent larger companies do, should be supported to establish innovation networks that test new technologies and share experiences.

Standards authorities in Côte d'Ivoire and Ghana have an important role to play in preventing low quality imports (e.g. substandard fertilizers and agrochemicals) disadvantaging local producers.

10. Support physical infrastructure development

The development of land for industrial parks, roads from these parks or major processors to the port (or train station in the case of Côte d'Ivoire) as well as storage areas for reefer containers at port and consolidation points are the most important examples of necessary public physical infrastructure, which governments need to continuously improve and sustain for the mango industry. In addition, sufficient power generation and the extension of the grid to areas of commercial farming and processing are important. Processing infrastructure even if established with public development funds must be built for, and managed by, an experienced strong private sector company (strategic national firm) to be run effectively and delivering quality services. Where it is still under government control (example: Vakpo packhouse in Ghana) it needs to be leased out to a company having a certain track record in processing, but not without precautionary measures to revoke lease agreements in case the private company is not meeting its obligations.

11. Promote investments and technological spillovers

Investment promotion by Côte d'Ivoire and Ghana has for the most part been attracting FDI for the fresh produce sector as in a young industry foreign investors tend to face fewer failures. FDI into farming usually generates less impact to the development of the sector than FDI into processing and manufacturing. Incentives provided by the government must therefore depend on the extent of value adding technologies proposed by the investor. The conditions for FDI (full foreign ownership possible, repatriation of profits, no minimum investment, low corruption) are currently better met in Côte d'Ivoire than in Ghana. In a highly competitive market for foreign investment, Ghana may lose out if the above conditions are not improved.

The attraction of FDI is closely linked to fiscal incentives, which have been of crucial importance in both countries. The incentive structure should be linked to conditions (e.g. additional investments, employment creation, R&D, etc.) and specifically seek to support more locally embedded firms as well as incentivise and leverage linkages and technological spillovers to locally owned firms. Strengthening the local firm-base by stimulating local investment and upgrading of local firms, for example in the context of industrialisation programmes such as the One-District-One-Factory (1D1F) programme in Ghana, therefore is of crucial importance in addition to strategic FDI attraction. Well-managed Shared Use Facilities are for example a good instrument for start-up companies which want to develop their own new products and start commercial production. Further, to support the growth of local firms in mango processing, subsidized investment capital facilities are needed.

12. Support the development of backward linkages

The development of backward linkages should have high priority in the industrial policy design. The potential for backward linkages exists particularly with regard to the bottling and sugar industries for mango processing as well as the cardboard industry for fresh exports. Copper fungicides also have potential for local production. Local investments in these sectors could be supported through the establishment of a subsidized investment capital facility. For technologically more advanced sectors, strategic FDI attraction could be important in order to increase the local provision of inputs and hence strengthen backward linkages and local value addition.

13. Ensure social and environmental sustainability

Mango production and processing have significant potential to create both income and employment for the rural poor and an ecological barrier against the effects of climate change and thereby contributing to soil and water conservation. Mangoes grow well in the sub-humid and semiarid zones of Côte d'Ivoire and Ghana – areas that are prone to soil degradation especially with climate change leading to more severe drought spells and heavier rainfall with increasing incidences of flooding. Tree crops have properties that contribute to ecological sustainability in these circumstances.

It would be in the interest of producers to communicate the social and environmental benefits they create to both their national governments as well as overseas consumers. Certification is able to boost sales in Europe and the US; however, they involve high costs and are demanding in terms of the skills required for maintaining a quality management system. Farmers would prefer channels of direct communication with consumers, e.g. with the help of messages and codes on product packaging.[4] Development cooperation could take a lobbying role for smallholder farmers here. When designing a communication strategy, three key concerns of consumers need to be addressed: Application of chemicals, food security and land grabbing.

14. Improve efforts and effectiveness of development cooperation projects

Development Cooperation (DC) needs to above all support defined elements of the partner countries' industrial development policies. This in turn will also improve control over, and ownership of, donor projects by government partners so

that activities initiated by development partners are better sustained and the knowledge generated is not lost. The most important industrial policy recommendations for the mango value chain have been described above. Development partners could play a specifically important role in (i) supporting the establishment of new mango orchards and easing market entry of the local production of crucial agricultural inputs; (ii) ensuring social and environmental sustainability by promoting farmer based organizations, good agricultural practices and improving the access to finance for marginalised social groups; (iii) advising government institutions in tailoring conditional fiscal incentives for agricultural processors; (iv) providing refinancing mechanisms for bank lending to mango production and processing activities; (v) offering investment loans for physical infrastructure; (vi) providing R&D funds for private sector-led research and enabling private companies to provide services licenced by the state (for more details see chapter 3.4 in Grumiller et al. 2018b).

Conclusion

The growth of the non-traditional mango sectors in Côte d'Ivoire and Ghana are successful examples of improving the livelihoods of farmers in the context of agriculture-based export diversification and upgrading strategies. Côte d'Ivoire's key strength is exporting fresh mangoes to the EU and increasingly the Middle East, while investments in processing capacities particularly in fruit drying have recently set in. Ghana has struggled to compete in exporting fresh produce, but has a well-developed processing sector and strengths in exporting dried and fresh cut mangoes to the EU. The economic, social and ecological benefits of the mango sector justify strategic industrial policies to support the expansion, productivity growth and quality improvement of mango production as well as the development of further processing activities for export and the domestic market. For this, a stronger focus on industrial policies targeting the key challenges in the mango sector is needed in both countries.

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1 The policy note builds on the findings of two comprehensive studies conducted by the ÖFSE on the potential impact of the EPAs on African economies. Grumiller et al. (2018a) provide a comprehensive analysis of the EPA with regard to the potential macroeconomic effects as well as its implications on the Ghanaian cocoa as well as mango sectors. Grumiller et al. (2018b) present more comprehensive policy recommendations for a sustainable development strategy for the two respective sectors both in Ghana and Cote d'Ivoire, based on a Strengths-Weaknesses-Opportunities-Threats (SWOT) analysis.

2 In November 2017, 105 out of about 8,000 producers in Ghana had a valid GlobalG.A.P. certificate (GlobalG.A.P. 2017).

3 Mango trees grow well in dryer areas, i.e. the sub-humid and semiarid zones of Ghana and Côte d'Ivoire – areas that are prone to soil degradation especially with climate change leading to more severe drought spells and heavier rainfall with increasing incidences of flooding. Tree crops have properties that contribute to social and ecological sustainability in these circumstances.

4 www.natureandmore.com and www.xtrapay.info are just two examples of how 'good practice' communication between producers and consumers could look like – despite integration into global value chains.

Disclaimer:
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