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## PROSPECTS OF COFFEE PRODUCTION AND INITIATIVES FOR ADDRESSING CHALLENGES FACED BY COFFEE GROWERS IN PAPUA NEW GUINEA

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### Key Points

- Opportunities for boosting coffee production exist in Papua New Guinea (PNG) such as good environmental and climatic condition and plantations that can be revitalised.
- Key challenges that restrict coffee production in PNG include coffee berry borer infestation, coffee leaf rust infection and poor extension services.
- Challenges in coffee production can be addressed by drawing lessons from successful coffee-producing countries and improving extension service delivery.
- Collaboration of key stakeholders in the coffee industry and “political will” are crucial for addressing challenges in the industry.

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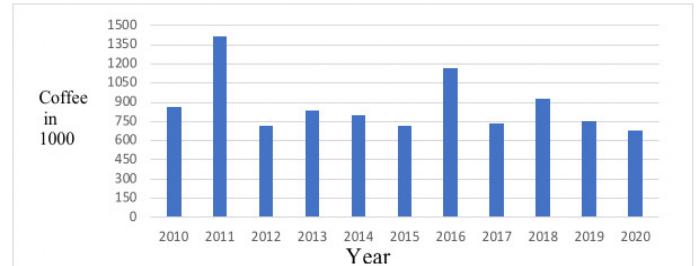
By Eugene E. Ezebilo

Coffee contributes to government revenue and income of households who engage in businesses associated with coffee production, processing and marketing. However, some coffee-producing countries including Papua New Guinea (PNG) have continued to face challenges that restrict them from achieving their full potential in coffee production (Poltronieri and Rossi, 2016). This article focuses on one of the findings of Ezebilo and Afolami (2022) on the determinants, opportunities and challenges associated with coffee production in PNG. It was reported by the authors that the country has several opportunities to improve coffee production; however, several challenges restrict it from achieving its full potential. The quantity of coffee produced is determined by factors associated with the characteristics of coffee field such as location of the field, variety of coffee planted, field size, age of coffee trees on the field and number of times of pruning each year. It is also determined by coffee grower's characteristics such as the grower's educational level, income, years of experience in coffee production and participation in training on coffee production. The study was based on interviews that were conducted with coffee growers in Eastern Highlands Province (EHP), Morobe Province (MP) and Western Highlands Province (WHP) in 2021 and was analysed using mixed method approach. This article highlights the opportunities that PNG has in coffee production and the challenges that restricts the country from being one of the top coffee-producing countries in the world. Coffee production may be associated with various types of challenges; however, in this article we focused only on the key challenges that coffee growers in EHP, MP and WHP reported that they face during the period of conducting the study.

### Coffee production in Papua New Guinea

Coffee is grown in commercial quantity in 15 of the 22 provinces of PNG (CIC, 2016). Arabica coffee, which is suitable to areas located in high altitudes are grown in the Highlands region of the country. Robusta coffee are often cultivated in coastal areas with low elevations. The total volume of coffee produced in PNG from the year 2010 to 2020 ranges from 675 thousand 60kg bags in 2020 to 1,414 thousand 60kg bags in 2011 (Figure 1).

Figure 1. Total coffee production in thousand 60kg bag



Data source: International Coffee Organisation, 2021.

Figure 1 shows that from 2011 to 2020, the quantity of coffee produced decreased by 52 percent. From 2016 to 2020, the decrease was 42.4 percent. If the intention is to be one of the top coffee-producing countries in the world, there is a need to find a strategy that will change the current trend to an increasing trend in the quantity of coffee produced in the country.

Of the three categories of coffee growers (smallholders, block-holders and plantations) in PNG, smallholders account for 85 percent of coffee produced in the country (CIC, 2016). Smallholders often have around two hectares of coffee plots. Plantation owners have around 50 hectares and block-holders have around 20 hectares.

### Opportunities for coffee production in PNG

The opportunities that PNG has that can contribute to boost coffee production include the following:

- Suitable environmental and climatic conditions for growing Arabica and Robusta coffee. PNG has some areas located in high altitudes (Highlands region) where the environmental and climatic conditions are suitable for Arabica. The country also has areas in low altitudes such as coastal areas that supports the growth of Robusta coffee.
- Coffee yield per hectare in PNG is higher than each of the top five coffee-producing countries except Vietnam as reported by Afolami and Ezebilo (2021). This indicates that PNG can be one of top coffee-producing countries in the world.
- PNG has several abandoned coffee plantations that can be revitalised to increase the total coffee production in the country. This can be achieved by conducting more research to find the reasons concerning why the plantations failed and what can be done to restore the plantations with some innovations. It may entail visits to

plantations in some top coffee-producing countries such as Vietnam and Brazil to have first information on how to manage plantations in a sustainable manner.

- PNG has the Coffee Industry Corporation (CIC) that was first established as Coffee Marketing Board in 1963 but became Coffee Industry Board in 1976 and later CIC, with its head office located in Goroka, EHP. CIC is a specialised agency that focuses primarily on coffee including advice on market prices, providing extension services to coffee growers and advice on coffee production issues.
- The implementation of large development projects associated with coffee such as Productive Partnership in Agriculture Project (PPAP), has the potential to boost coffee production if it is implemented in an effective and efficient manner. Further, if a project such as PPAP is to be implemented in future, all coffee growers should be considered and be given opportunity to benefit from the project.
- PNG has two universities (University of Environment and Natural Resources and University of Technology) that have courses in agriculture at undergraduate and postgraduate levels. Thus, skilled labour for coffee production can be provided by the two universities. The universities have the potential to conduct quality research into finding solutions to problems associated with coffee production.
- PNG National Agricultural Research Institute. It was established in 1996 with the mandate to conduct applied and adaptive research into biological, physical and natural sciences related to agriculture. The Institute was also mandated to conduct research in cultural and socio-economic aspects of agriculture sector.
- Government of PNG (GoPNG) created the Coffee Ministry this year (2022) and appointed Hon. Joe Kuli as the Minister for Coffee. This indicates that GoPNG has keen interest in coffee production and to find strategy to boost the commodity through more investment in the coffee industry.

### Key challenges that restrict coffee production in Eastern Highlands, Morobe and Western Highlands provinces

Findings from interviews with 510 coffee growers in EHP, MP and WHP revealed that the most important challenges that the growers face include the following:

- **Coffee leaf rust disease.** The disease affects coffee leaves, which in turn reduce the yield of coffee. The increase in the threat of the disease is linked to the increase in temperatures and rainfall in higher altitudes as a result of climate change as reported in South America and Africa (Poltronieri and Rossi, 2016). Of all the 510 coffee growers that were interviewed, 71 percent reported that their coffee plots were infected by coffee leaf rust.

MP had the highest case of leaf rust (81%) and WHP had the lowest (56%). Though coffee resistant varieties such as Arabica variety that contains Robusta genetic material can be used to resist coffee leaf rust, some of the coffee growers reported that they often use traditional methods such as introducing fire around the coffee tree or by cutting infected leaves and sometimes prune coffee stems. Some comments that were received from the coffee growers during the interviews are:

*“In order to control leaf rust in my coffee plot, I use fire to burn the bush around the diseased coffee to kill the germs in the soil and I remove all the infected leaves”.*

More than 10 percent of the growers reported that they do not have knowledge of how to control coffee leaf rust, so they did nothing to the infected coffee trees:

*“Several coffee trees in my coffee plot were infected but as I do not know how to control the disease, I did nothing”.*

Some of the coffee growers reported that they visited CIC office to sought for advice on what to do about the coffee leaf rust but could not get any help:

*“I went to CIC office to seek help, but I later helped myself when I could not get help from CIC”.*

- **Coffee berry borer.** This is the most dangerous pest for the coffee plant which increases at higher temperatures. According to Jaramillo et al. (2009), an increase in temperature of more than two degree Celsius can make berry borer to migrate to higher altitude. Coffee growers that were interviewed reported that coffee berry borer is the pest affecting their coffee and it reduces the quality of berry. Of the 510 growers that were interviewed, 59 percent reported that their coffee plots and harvested coffee berries were infested by berry borer and it has continued to reduce the quality of their coffee. Morobe Province had the highest cases (79%) and WHP had the lowest cases (51%). In terms of managing the coffee berry borer, the growers have either cut down the infested trees or make fire around the infested coffee tree. Some sell their cherries immediately after drying and others have stopped coffee farming because they cannot cope with the situation. Almost 16 percent of the growers reported that they do not have knowledge on how to manage coffee berry borer, so they did nothing to the infested coffee trees. Comments that were received from the coffee growers are the following:

*“In order to manage the coffee berry borer, I often cut down infested coffee trees and bury the trees outside the coffee plot”.*

*“I reported the problem to the Department of Agriculture and Livestock, I was given medicine but it did not solve the problem”.*

*“I am still waiting for advice from CIC officials, I lack knowledge on how to manage the berry borer”.*

- **Poor access to extension services.** Agricultural extension services are important in assisting farmers such as coffee growers in accessing information on modern

coffee production techniques. Our findings show that most of the coffee growers that were interviewed were rarely visited by extension officers from CIC each year (79%). Forty-five percent of the growers visited by extension officers at least once each year were from Morobe Province and only 14 percent from WHP. The coffee growers reported that for extension services to improve, extension officers must do their work properly. Some comments received from coffee growers are the following:

*“CIC extension officers are not doing their job, they must go out of their offices to visit coffee growers and provide information on how to manage coffee”.*

*“Smallholders must receive training from CIC extension officers, the officers should not go to only coffee plantations”.*

- **Poor access to market.** The challenges that coffee growers face in relation to access to market includes poor transport facilities, especially poor road conditions which restrict them from accessing nearby markets. The poor road conditions result in an increase in transport fee which reduces profit made in coffee business. Some of the coffee growers complained that middlemen made them become price takers and that they have continued to lower the price of coffee, which discourages growers. They would love to sell their coffee directly to coffee exporters instead of middlemen, but it is difficult to find other group of buyers. Of all the growers interviewed, 72 percent reported that they sell their coffee to middlemen. Some of the comments the growers passed include the following:

*“Poor road conditions make it difficult to access market and the low price that middlemen buy coffee from us make coffee business unattractive”.*

*“The corruption that we have been witnessing among some of the cooperatives leaders discourages me from selling my coffee via cooperatives”.*

*“Some middlemen cheat us by telling lies about coffee weight and at the same time buy our coffee at very low prices”.*

- **Coffee processing is important in the quality of coffee.** Sixty-one percent of the growers use wet method, which has a positive impact on coffee quality. The key challenges that growers face include the high cost of labour and shortages of labour for harvesting coffee. Poor access to water for processing coffee and poor road condition, which restrict the transportation of cherries to the processing plant are also the other challenges. Inadequate access to electric power for operating coffee processing machine also add to the challenges they face. Some comments from coffee growers include the following:

*“We now find it difficult to get people who are willing to harvest coffee beans in the field, which has made labour price to go up. Poor access to water for processing coffee is*

*another key challenge we face”.*

*“Poor access to electric power for operating coffee processing machine has continued to be a challenge to us. We also find it difficult moving our coffee to the processing plant because of the poor road conditions in rural areas”.*

### Potential initiatives to address challenges faced by coffee growers

Some initiatives that can be used to address the challenges faced by coffee growers include the following:

- In terms of coffee leaf rust disease and coffee berry borer, it is important to note that the disease and pest are not unique to only PNG, it also affect some coffee-producing countries. Thus, the disease and pest can be managed by drawing lessons from countries that have been successful in managing these enemies of coffee. For instance, the Colombia National Coffee Research Center, Cenicafé created two strands of coffee rust-resistant cultivars such as the Colombia and Castillo (Poltronieri and Rossi, 2016). According to Aristizábal et al. (2016), experiences learned from Latin America on integrated pest management is important for establishing strategies for controlling coffee berry borer. As coffee leaf rust disease and coffee berry borer have been contributing to economic loss in the PNG’s coffee industry, GoPNG should consider funding a scientific mobility initiative that allows scientists whose works are related to the subject to visit countries such as Colombia to gain more experience on how the disease and pest can be managed in effective and efficient manner. Further, there is a need for GoPNG to provide more fund for research on the subject.
- As extension services provided by CIC is important in moving the coffee industry forward to the correct direction, there is a need to conduct an evaluation of extension services provided by CIC. It appears that some extension officers provide their services to primarily plantations as reported by some coffee growers. This calls for effective monitoring and supervision of extension officers so that they can discharge their duties properly. As technology and coffee production approaches continue to change, there is a need for extension officers to always be updated on the new ways of doing things in the coffee industry. Thus, there is a need to provide the officers with the opportunities for frequent training and to participate in refresher courses, seminars, workshops and conferences within PNG and abroad.
- Access to markets and the sale of a commodity at a price that coffee growers does not feel cheated has the potential to encourage the growers to produce more. Considering the concerns raised by coffee growers about exploitation by middlepersons and the mismanagement of fund in the cooperatives, CIC can assist coffee growers to get fair a price for their products by providing

them with the current prices of coffee frequently via text messages and radio. The growers can then use the prices as a reference point for negotiation with middlepersons. Coffee growers should be encouraged to join or establish cooperatives in which all members participate actively. Any mismanagement cases in the cooperatives should be reported to relevant authorities and culprits penalised without fear nor favour.

- In terms of coffee processing, the concerns raised about shortages of labour can be addressed by making rural areas more attractive by the government. It can be achieved through providing basic facilities such as water, electricity and good road networks in small towns and villages to make cities less attractive to the youth. This has the potential to make labour more available in the rural areas. Cooperatives should be encouraged to have coffee processing plant for its members and non-members can use the facility for a price.
- “Political will” and holistic approach are needed to address challenges coffee growers face. In order for any of the challenges highlighted to be addressed, there is a need for a strong “political will” from the government through the Ministry of Coffee and other relevant government agencies. There is a need for “political will” in providing fund for research, training of farmers and extension officers as well as in funding travels to top-coffee producing countries for learning new things. There is also a need for “political will” in conducting the evaluation of CIC extension services program. Without “political will” it will be difficult to address any of the challenges. Further, there is a need for all the challenges that coffee growers face to be addressed in a holistic manner. All key stakeholders in the coffee industry such as Ministry of Coffee, CIC, Department of Agriculture and Livestock, universities and PNG National Agriculture Research Institute, have to collaborate in finding solution to the challenges faced by coffee growers because collaboration often results in a smart solution to a problem.

## Conclusion

PNG has several opportunities to boost coffee production. However, several challenges restrict the country from achieving its full potential. A clear strategy for PNG’s coffee industry is needed to reorient the nation to pursue its comparative advantages. Key challenges faced by coffee growers include coffee berry borer infestation, coffee leaf rust infection, poor extension services, poor access to market and processing facilities. If the intention is to address these challenges, there is a need for strong “political will” in providing fund to researchers for study visits to countries that have been successful in managing leaf rust and berry borer. There is a need for “political will” to provide resources for conducting evaluation of CIC extension

service program, upgrading extension officers’ knowledge on modern coffee production techniques and to recruit more officers. There is a need for a mechanism that can be used to see that coffee growers get fair price for their commodities. Social infrastructure such as piped water supply, electricity and good road networks should be provided especially in small towns and villages to attract labour force there. This article will assist planners and managers in the coffee industry in developing strategy for addressing challenges that restrict the industry from reaching its full potential.

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