STRATEGIC ALERT NOTE

Cameroonian Cocoa Facing the Rise of Lab Grown Cocoa and Industrial Substitutes

A risk analysis, three scenarios for the next five years, and recommended actions for stakeholders in Cameroon's cocoa and coffee sector

Addressed to

The National Cocoa and Coffee Board (ONCC), cocoa sector exporters and cooperatives, the Chamber of Agriculture, Fisheries, Livestock and Forestry (CAPEF), the cocoa and coffee interprofessional body, and agricultural financing institutions.

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1. Douala Tech Park and Its Technology Watch Mission

Douala Tech Park (DTP) is Cameroon's technology hub, dedicated to supporting the digital and technological transformation of Francophone Africa. Among the pillars of its strategy is a permanent technology watch, carried out continuously across a range of economic sectors, including agriculture, energy, health, finance, and telecommunications, so as to anticipate the impact of emerging technologies before it becomes visible to most stakeholders.

This watch relies on data, on intelligence gathered from a wide range of specialized sources, and on DTP's privileged access to cutting edge technologies and to visionary leaders across the global technology sector. It allows DTP to sketch out probable futures for each sector it monitors, to track the evolution of technology trends over time, and to formulate concrete recommendations aimed at steering economic and institutional stakeholders toward the futures most favorable for Cameroon and for the African continent.

This note, devoted to the cocoa and coffee sector, is part of that effort.

2. What Our Technology Watch Is Surfacing on the Cocoa and Coffee Sector

Our technology watch currently points to a rapidly accelerating phenomenon, namely the emergence of international startups capable of reproducing cocoa and chocolate without cultivating a cacao tree, whether through the production of cellular cocoa grown in bioreactors or through fermentation based substitutes that imitate cocoa. The analysis that follows draws on specialized, dated, and verifiable sources.

This watch leads to a clear conclusion. The risk is real, documented, and already being taken seriously by industry bodies in West Africa. This is not a rumor but an industrial movement that has been accelerating since 2024 and 2025, with the recent entry of major players such as Mondelēz and Barry Callebaut as investors in or commercial partners of these startups.

3. What Independent Sources Confirm

3.1 The Technologies Involved

- Cellular, or cell based, cocoa. Cacao tree cells are extracted and then multiplied in bioreactors, with no tree and no land. Among the companies behind this approach is Celleste Bio in Israel, a partner of

Mondelēz International, which announced its first milk chocolate bars made with cultured cocoa butter in April 2026. California Cultured, in the United States, works with UC Davis using 1,600 liter bioreactors and is aiming for commercial cocoa powder production as early as 2027. Food Brewer, in Switzerland, plans a market launch by late 2026 and aims to produce tens of thousands of tonnes a year by 2035. Kokomodo, in Israel, is pursuing the same approach.

- Cocoa free chocolate made through fermentation. Sunflower, grape, or fava bean seeds are fermented and roasted to mimic the taste of cocoa. Planet A Foods, in Germany, had its ChoViva product added to Barry Callebaut's commercial portfolio in May 2026. Barry Callebaut is the world's largest chocolate maker, and this points toward large scale industrial distribution. Nukoko, in the United Kingdom, developed a patented fava bean based technology and partnered with Germany's Döhler to industrialize it.
- A documented economic example illustrates the stakes. A French chocolate maker, Abtey, was selling a ChoViva based product in 2024 at around €28 per kilo, compared with nearly €48 per kilo for traditional milk chocolate, a price gap of roughly 40%.

3.2 The Market Conditions Driving Interest in These Technologies

- World cocoa prices peaked at $12,906 a tonne in New York in December 2024, before falling back to around $3,000 a tonne in early 2026. This extreme volatility is pushing manufacturers to look for more stable alternative sources.
- According to analyst Edward George, interviewed by Agence Ecofin in March 2026, cocoa grinding and use are declining noticeably in Europe, North America, and Asia. Chocolate makers are using less cocoa and developing alternative formulations, while reduced household purchasing power is slowing confectionery consumption.
- On August 12, 2026, the Côte d'Ivoire Ghana Cocoa Initiative, which represents the world's two largest producers, publicly expressed concern about substitutes and industrial reformulations that reduce the share of real cocoa in products marketed as chocolate.
- The Codex Alimentarius requires that a product can only be sold under the chocolate label if it contains a minimum proportion of cocoa. This regulatory protection currently limits full substitution, but it does not prevent partial substitution in industrial uses such as biscuits, ice cream, cereals, or coated confectionery.

4. Why Cameroon Is Particularly Exposed Right Now

This technological threat is arriving while Cameroon's cocoa sector is already going through its most severe crisis in at least five years, according to figures published by the ONCC for the 2025 and 2026 season.

- Marketed production came to 247,914 tonnes, down 19.9% from 2024 and 2025, when it reached 309,518 tonnes.
- Exports fell to 125,469 tonnes, a decline of 34.65% from the 192,012 tonnes of the previous season.
- Export revenue dropped to 400.9 billion FCFA, a decline of 63% in value.
- The price paid to producers collapsed to as low as 700 FCFA per kilo, its lowest level in five years.
- Several local factors are making the situation worse. A black pod disease outbreak is affecting the Southwest region. The orchard is aging. And the sector depends on the European market alone for 84.6% of its exports, led by the Netherlands, a market itself subject to the European Union's Deforestation Regulation.

A structural, even partial, demand shock caused by industrial substitution would therefore hit a sector that is already weakened from within, with no room left to absorb it.

5. Three Possible Futures Over the Next Five Years

The working assumption requested is the following. The startups mentioned reach a significant commercial scale within the next five years. Three plausible, non exclusive trajectories then emerge for Cameroon's cocoa sector.

Scenario	Mechanism	5 Year Likelihood	Impact on the CM Sector
A. Targeted substitution at the margins. This is the most likely scenario.	Synthetic cocoa and fermentation based substitutes mainly take over mass market industrial uses, such as biscuits, ice cream, coated bars, and entry level products, where Codex Alimentarius rules allow labeling outside the chocolate category. Real cocoa remains the reference for premium chocolate and traditional uses.	High	A moderate to medium term impact. The pressure falls on prices for standard cocoa, which makes up the bulk of Cameroon's exports, with limited effect on fine or certified cocoa.
B. A severe compression of commodity demand.	Barry Callebaut, Mondelēz, and other major groups broadly incorporate partial substitutes across a wide range of products to reduce their exposure to cocoa price volatility. Global demand for raw beans stagnates or declines durably, regardless of price cycles.	Medium	A high impact. Cameroon, a near exclusive exporter of raw, unprocessed beans, with local processing already down more than 15% in 2025 and 2026, would be on the front line of a lasting decline in both volumes and prices.
C. A market split between standard cocoa and premium cocoa.	The market divides between a commodity segment where synthetic cocoa becomes price competitive, and a premium segment built on origin, traceability, sustainability, and terroir, where real cocoa keeps a premium that the technology cannot yet replicate.	High in combination with A or B	A mixed impact. This is a real opportunity for producers able to move upmarket and improve traceability, but a high risk of exclusion for uncertified supply chains, which today make up most of Cameroon's volume.

These three scenarios are not mutually exclusive. The most likely path over five years combines A and C, with a gradual erosion of the mass market partly offset by a growing premium on certified, traceable cocoa. A shift toward B would mainly occur if manufacturers manage to clear the remaining cost and labeling regulation hurdles faster than expected.

6. Recommended Immediate Mitigation Actions

6.1 At the Institutional Level: ONCC, Government, Interprofessional Body

- Join or coordinate with the Côte d'Ivoire Ghana Cocoa Initiative to present a joint West and Central African position on substitute labeling and on defending the cocoa and chocolate designation within the Codex Alimentarius and European Union forums.
- Accelerate certification and traceability, covering sustainability, origin, and compliance with the European Union's regulation, so as to shift as much volume as possible toward the premium segment that technology cannot yet reproduce economically.
- Support local processing, particularly grinding and semi finished products, to capture more value before raw beans become an increasingly contested part of the chain.
- Set up a permanent technology watch on alternative cocoa startups, tracking their funding, their scale up milestones, and the entry of major groups into their capital, so as to have an early warning system rather than discovering disruptions after the fact.

6.2 At the Level of Exporters and Cooperatives

- Diversify outlets beyond Europe, which currently accounts for 84.6% of exports, particularly toward Asia, where relative demand for real cocoa remains on a growth path.
- Negotiate multi year contracts with chocolate makers who strategically choose to keep real cocoa in their premium lines, leaning on the quality and origin argument rather than price alone.
- Invest in fighting black pod disease and in varietal renewal, to restore a production cost advantage that will make the sector more resilient against any external price pressure.

6.3 A Recommendation Worth Serious Consideration: Investing Directly in Alternative Cocoa Startups

> **Taking an equity stake rather than absorbing the shock**
>
> Several of these startups, including Celleste Bio, California Cultured, Food Brewer, Kokomodo, Planet A Foods, and Nukoko, are still in fundraising or industrial partnership stages. For Cameroonian sector players, whether exporters, structured cooperatives, sector funds, or even the state through a dedicated vehicle, taking a minority equity stake in one or more of these companies would turn part of the disruption risk into a source of income. If synthetic cocoa captures a significant share of the mass market over the next five to ten years, dividends or capital gains from that stake would partly offset lost revenue on exported volumes. This is a hedging strategy, not a bet, and it deserves a dedicated feasibility study, particularly on access to these funding rounds and on a realistic entry ticket for a Cameroonian player.

7. Is Coffee Exposed to a Comparable Risk?

Yes, a parallel technological movement exists for coffee, but it is at a different stage, and the risk appears structurally less pressing for Cameroon in the short term, for three reasons.

7.1 What the Sources Show

- Beanless coffee obtained through molecular reconstruction. Atomo Coffee, in the United States, recreates coffee's flavor profile from upcycled ingredients such as date pits, grape seeds, and chicory. This is not coffee grown in a lab but a molecular imitation. Atomo bought the Israeli startup Bio T in January 2025 to strengthen its research on cell lines.
- Cell based coffee, which is technically closer to the cocoa case. Compound Foods, in the United States, and Stem, in France, which also works on cocoa, are developing bioreactor cell cultures. Finland's VTT research institute had already produced the first academic proof of concept as early as 2021. Mighty Coffee, in Israel, is aiming for a market launch in the coming years.
- The consensus among the specialized analyses reviewed is that lab grown coffee could capture part of the commodity segment, particularly low grade robusta, within ten to fifteen years, but remains far behind on reproducing the complex flavor profile of specialty arabica coffee. This differs sharply from cocoa, where a cost gap of €28 against €48 per kilo is already documented commercially.

7.2 What This Means for Cameroon

Cameroon's coffee production, mostly robusta, remains much smaller in volume than its cocoa production, and synthetic coffee today mainly targets the commodity segment, such as industrial robusta or soluble coffee, rather than the specialty segment. The risk is therefore real, but on a longer horizon, ten to fifteen years rather than five to ten years for cocoa, and with a wider window to adapt. It remains advisable to include coffee in the same technology watch program, without triggering the same level of urgency required for cocoa.

8. Summary and Next Step

The risk documented by independent sources is real, dated, and already being taken seriously by regional industry bodies, starting with the ICCIG. It affects a Cameroonian sector already in a severe cyclical crisis during the 2025 and 2026 season, which reduces its ability to absorb an additional demand shock. The recommended response combines three areas of action. The first is regulatory defense and collective positioning through the Codex and the ICCIG. The second is moving upmarket and improving traceability to secure the premium segment. The third, on an exploratory basis, is taking a direct equity stake in the technology startups concerned as a financial hedging tool.

Douala Tech Park remains available to the ONCC and the interprofessional body to deepen this analysis, in particular through a more precise estimate of Cameroon's exposure by market segment, comparing bulk volume and premium volume, and through a feasibility study on realistic entry tickets into the startups mentioned.

Verifiable Sources Cited

[1] Agence Ecofin. The rise of fake chocolate, a threat to the cocoa sector. June 4, 2026. https://www.agenceecofin.com/actualites/0406-138981-la-montee-en-puissance-du-faux-chocolat-une-menace-pour-la-filiere-cacao

[2] Financial Afrik. Cocoa, Côte d'Ivoire and Ghana take on the threat of substitutes. August 14, 2026. https://www.financialafrik.com/2026/08/14/cacao-la-cote-divoire-et-le-ghana-en-guerre-contre-la-menace-des-substituts/

[3] Bakery and Snacks. The race to reinvent cocoa, lab grown chocolate and cocoa alternatives. March 2026. https://www.bakeryandsnacks.com/Article/2026/03/10/the-race-to-reinvent-cocoa-lab-grown-chocolate-and-cocoa-alternatives/

[4] Chemistry World. Lab grown chocolate, cell cultured cocoa tackles climate crisis and supply issues. May 2026. https://www.chemistryworld.com/news/could-lab-grown-cocoa-be-the-solution-to-the-climate-and-supply-chain-woes-plaguing-chocolate/4023550.article

[5] Food Dive. Mondelēz backed startup reaches breakthrough for lab grown chocolate, about Celleste Bio. October 2025. https://www.fooddive.com/news/celleste-bio-cocoa-butter-lab-grown-chocolate-startup/803034/

[6] GreyB. Ten cocoa alternative startups disrupting the $20 billion chocolate market. May 2026. https://food.greyb.com/blog/cocoa-alternatives-startups/

[7] National Cocoa and Coffee Board, ONCC. Data for the 2025 and 2026 season, reported by Investir au Cameroun, August 26, 2026. https://www.investiraucameroun.com/agriculture/2608-23707-cacao-les-exportations-du-cameroun-chutent-de-66-543-tonnes-34-65-au-cours-de-la-saison-2025-2026

[8] Ecomatin. Cameroon, cocoa revenue falls 59% at the close of the 2025 and 2026 season. August 5, 2026. https://ecomatin.net/cameroun-les-recettes-du-cacao-chutent-de-59-au-terme-de-la-campagne-2025-2026

[9] Green Queen. Coffee sans beans, seven startups exploring cell based and molecular alternatives. 2024. https://www.greenqueen.com.hk/beanless-coffee-startups-lab-grown-molecular-cell-based/

[10] HTF Market Intelligence. Lab grown coffee market, about the acquisition of Bio T by Atomo Coffee. January 2025. https://www.htfmarketintelligence.com/report/global-lab-grown-coffee-market