Fiscal incentives for improved forest management and deforestation-free agricultural commodities in Central and West Africa

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HIGHLIGHTS

- Taxation has not commonly been used as a direct incentive instrument for reducing deforestation and forest degradation.
- Inclusion of zero-deforestation criteria in several forestry and agricultural certification schemes creates new opportunities.
- Feebates (bonus-malus) mechanisms can be designed to promote production of certified timber or agricultural commodities not involved in deforestation.
- Such a mechanism is budget neutral and therefore more acceptable to ministries of finance.
- Since the objective of the feebates mechanism is to encourage certified products, levels of malus and bonuses must be revised over the years to maintain the budget neutrality condition.

SUMMARY

Until recently, little or no use was made of fiscal instruments for forest protection in developing countries. The rise of independent third-party certification systems since the 1990s opens new perspectives for using taxation as an incentive. In the forestry sector, certification has developed significantly in Central Africa but reached a plateau in the last ten years, apparently due to the reorientation of timber export flows towards Asian markets that do not demand certified products. Fiscal incentives, through tax cuts for responsible producers, could compensate for the absence of price premiums but would diminish public revenues. The principle of the "bonus-malus" (feebates) seems promising to the extent that it does not reduce government budgetary revenues (budget neutrality). Bonus-malus schemes can also promote certified "zero deforestation" or "grown in agroforestry" agricultural production, especially cocoa, a significant driver of deforestation in Africa. Governments can select one or several certification schemes, private or public ones, and target fiscal incentives related to these certified products. The peculiarity of a bonus-malus system is that the revenues generated by the malus are expected to decrease progressively (with the adoption of certification), requiring a reduction of the bonus rates in order to respect budget neutrality. Adopting such a scheme would create winners and losers, therefore, complementary policy measures targeting small-scale producers are desirable.

Keywords: fiscal incentives, bonus-malus, feebates, tropical forestry, sustainable forest management, zero-deforestation, deforestation-free cocoa, agroforestry

Incitations fiscales pour une meilleure gestion des forêts et une production agricole zéro déforestation en Afrique centrale et de l'Ouest

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Jusqu'à récemment, les instruments fiscaux étaient peu ou pas utilisés pour la protection des forêts dans les pays en développement. L'essor, depuis les années 1990, de systèmes de certification par tierce partie ouvre de nouvelles perspectives pour l'utilisation de la fiscalité dans un sens incitatif. Dans le secteur forestier, la certification s'est développée de manière significative en Afrique centrale, mais a atteint un plateau au cours des dix dernières années, notamment en raison de la réorientation des flux d'exportation de bois vers les marchés asiatiques qui ne demandent pas de produits certifiés. Les incitations fiscales, par le biais de baisses de taxes pour les producteurs responsables, pourraient compenser l'absence de prix majorés, mais diminueraient les recettes fiscales des États. Le principe du «bonus-malus» semble prometteur dans la mesure où il ne réduit pas les recettes fiscales (neutralité budgétaire). Les systèmes de bonus-malus peuvent également promouvoir la production agricole certifiée «zéro déforestation» ou «produite en agroforesterie», en particulier le cacao qui est un important moteur de déforestation en Afrique. Les gouvernements peuvent sélectionner un ou plusieurs systèmes de certification, privés ou publics, et cibler les incitations fiscales sur ces produits certifiés. La particularité d'un système de bonus-malus est que les revenus générés par le malus diminuent progressivement avec l'adoption croissante de la certification, ce qui nécessite une réduction parallèle des taux de bonus afin de respecter la neutralité budgétaire. L'adoption d'un tel système créerait des gagnants et des perdants, et des mesures d'accompagnement ciblant les petits producteurs sont souhaitables.

Incentivos fiscales para una mejor gestión forestal y materias primas agrícolas libres de deforestación en África Central y Occidental

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Hasta hace poco, en los países en desarrollo casi nunca se ha recurrido a los instrumentos fiscales para la protección de los bosques. El auge de los sistemas independientes de certificación por terceros desde la década de 1990 abre nuevas perspectivas para utilizar la fiscalidad como incentivo. En el sector forestal, la certificación se ha desarrollado mucho en África Central, pero en los últimos diez años se ha estancado, al parecer debido a la reorientación de los flujos de exportación de madera hacia los mercados asiáticos que no demandan productos certificados. Los incentivos fiscales, como las reducciones de impuestos para los productores responsables, podrían compensar la ausencia de primas de precios, pero disminuirían los ingresos públicos. El principio del "*bonus-malus*" (reembolsos) parece prometedor en la medida en que no reduce los ingresos presupuestarios del Estado (neutralidad presupuestaria). Los sistemas de *bonus-malus* también pueden fomentar la producción agrícola certificada de "deforestación cero" o "cultivos agroforestales", como el cacao, un importante impulsor de la deforestación en África. Los gobiernos pueden escoger uno o varios sistemas de certificación, privados o públicos, y orientar los incentivos fiscales relacionados con estos productos certificados. La peculiaridad de un sistema de *bonus-malus* es que se espera que los ingresos generados por el *malus* disminuyan progresivamente (con la adopción de la certificación), lo que exige una reducción de los porcentajes de *bonus* para respetar la neutralidad presupuestaria. La adopción de un sistema de este tipo crearía ganadores y perdedores, por lo que es deseable adoptar medidas políticas complementarias dirigidas a los pequeños productores.

INTRODUCTION

Until the early 2000s, little or no use has been made of the fiscal instruments for forest protection in developing countries. Most of the studies at that time discussed the influence of taxation levels on logging modalities, although some of them also considered the balance between upstream (e.g., area or felling tax) and downstream taxation, such as the export tax (Barbone and Zalduendo 2000, Grut *et al.* 1991). Some researchers were even sceptical on the potential of fiscal approaches to foster sustainable forest management (Leruth *et al.* 2001).

Specific forest taxation, generally consisting of three main fees and taxes (area, felled volume, export), has sometimes been modulated to reduce the disadvantages of logging in remote areas, or to encourage further processing of timber with degressive taxation depending on the level of processing (ITTO 2021). Modifying taxation according to the sustainability of production was not envisaged, the regulatory instrument, through the forest management plan and administrative controls, being preferred for this purpose.

The rise of independent third-party certification systems from 1990 onwards has opened new perspectives on the use of fiscal incentives for protecting forest ecosystems. Legislative changes such as the introduction of modulated forestry taxes depending on the type of certification obtained by the concessionaire have recently taken place in the forestry sector in Central Africa. A large part of this article draws on multi-year and multi-country experience of the authors with World Bank in-country studies commissioned by Côte d'Ivoire and Ghana governments, and related implicit carbon pricing of emissions linked to deforestation from cocoa production. It proposes an innovative mechanism of incentives in which public authorities would use private instruments to advance their sustainability agenda.

The studies undertaken in 2019–2020 (Côte d'Ivoire) and in 2021–2022 (Ghana) consisted of an in-depth analysis of the functioning of the cocoa sector in both countries, taxation and remuneration systems of producers or companies, and consultation with key stakeholders to whom the bonus-malus principle was exposed. The study teams, made up of cocoa value chain experts and researchers, met with a large number of cocoa industry stakeholders in these two countries to consider the acceptability and the feasibility of the mechanism. The stakeholders met included representatives of cooperatives, national and multinational companies operating at different stages of the industry, certification organisations, national scientists, public sector management institutions (Conseil Café Cacao in Côte d'Ivoire and Cocoa Board, called COCOBOD, in Ghana), officials from ministries of agriculture, national research organisations, and representatives of the World Cocoa Foundation.

Feedback from these stakeholders was considered, especially relating to the timeframe of the transition period (number of years for reaching the maximum tax rate for the 'malus') and on the issue of small-scale producers that will face difficulties in becoming certified. As a result, specific proposals have been made to address this issue.

This article is divided into four parts. The first part analyses the emerging process of putting the issue of environmental tax incentives on the public policy agenda. The second examines the implications of dynamic management of bonus-malus (or 'feebates', for fees and rebates) mechanisms based on simulations of the gradual adoption of certification by cocoa farmers in Côte d'Ivoire and Ghana, and corresponding adjustment of bonus and malus levels to conform to budget neutrality conditions. Following this, the risks for certain categories of producers (winners versus losers) are discussed. Finally, the perspectives offered by differentiated taxations according to the sustainability of production methods (improved forest management or 'zero-deforestation' production for cash crops, certified by an approved certification scheme) not only in producing countries but also at the level of customs tariffs in importing countries are presented.

A LONG ROAD TO FISCAL INCENTIVES IN AFRICA

In the 2000s, it gradually became apparent that management plans, which are mandatory for forest concessions in most Central African countries, were often poorly applied or even simply ignored by certain economic operators, as problems of governance and corruption combined with a chronic lack of resources on the part of forestry administrations to enforce the application of the laws became common (Cerutti *et al.* 2016, Karsenty and Ferron 2017). At the same time, under the impetus of environmental NGOs and with the agreement of a part of the forestry industry concerned about the deterioration of the image of tropical wood on Western markets, 'independent third-party' certification systems emerged in the 1990s to offer wood buyers a certain number of guarantees as to the 'good management' of the forests, where confidence in the public control systems in the producing countries is low (Romero *et al.* 2017).

In 1993, the *Forest Stewardship Council* was launched with the active support of the World Wildlife Fund (WWF). A few years later, the PEFC, initially the *Pan-European Forest Certification Scheme* which later became the *Programme for the Endorsement of Forest Certifications*, was proposed to forest operators worldwide. These initiatives were initially frowned upon by the public authorities of Central Africa who saw them as a form of infringement of their sovereignty (Karsenty 2019). But this situation has changed, with the governments of Gabon and Congo-Brazzaville highlighting the large FSC-certified areas to respond to criticisms of their environmental governance. In 2018, the Gabonese President even announced that FSC certification would become mandatory for all concessions in 2022 (postponed, possibly, to 2025), a statement that clearly marks an unprecedented willingness to use private instruments in public policies.

In the agricultural sector, environmental concerns were mainly addressed through 'organic agriculture' certifications, until concerns about the impact of the development of certain agricultural activities on forests took on major importance in the fight against climate change (Haupt *et al*. 2018). According to a recent Food and Agriculture Organization (FAO) study[1], almost 90% of global deforestation is related to agricultural activities (including livestock) and deforestation accounts for about 11% of annual anthropogenic CO_2 emissions[2]. The preparation of a European regulation on 'imported deforestation' (i.e., deforestation associated with the import of certain agricultural commodities)[3] from the end of 2010 led to several certification standards for agricultural products to include provisions relating to the absence of deforestation among their labelling criteria. This is notably the case for the Roundtable for Sustainable Palm Oil (RSPO) in 2018, and for Rainforest Alliance certification (cocoa and other agricultural products) in 2020.

The idea of offering financial incentives to economic agents to reward them for good forest management dates back to the early 1990s, with the concept of performance bonds (Blakeney 1993). An upfront financial deposit, conditionally repayable and remunerated, was proposed as a mean to guarantee high quality forest management. One of the difficulties that prevented the implementation of such an instrument was the lack of verifiable criteria and indicators of sustainable management to assess the operators' performances. The advent of forest certification in the 1990s, with a set of principles, criteria and indicators to assess the quality of such management, has changed this. There are debates and controversies about the effectiveness of independent certification schemes for ensuring sustainability, especially for timber operations. Sustainability is a multidimensional concept, not reducible to sustainable yields, and many research outputs highlighted the importance of the maintenance of the main ecosystem functions along with socio-economic benefits for local communities (Edwards *et al*. 2014), even if yields tend to decline over years, as long as the forest remains mostly intact and is not converted to other uses (Romero and Putz 2018). Certification does not guarantee sustainability (Van der Ven and Cashore 2018, Rico-Straffon *et al.* 2022, Gatti *et al.* 2019), but researchers have collected evidence of better practices (Moore *et al*. 2012, Savilaakso *et al.* 2017) and, generally, positive environmental impact. This is true especially for forestry (Di Girolami and Arts 2018), but also for agroforestry and perennial crops plantation through organizational changes increasing productivity (Hidayat *et al.* 2015, Lescuyer and Bassanaga 2021). In developing countries, especially those where the implementation of the law is weak, certified forest concessions are more likely to comply with laws and regulations than non-certified ones (Lewin *et al.* 2019), and to go beyond public requirements, addressing loopholes in official prescriptions (Cerutti *et al.* 2018).

Although imperfect instruments, several certification schemes can be used as proxies, if not for sustainability, at least for enhanced management practices and compliance with the law. Currently, large-scale certification adoption is hindered by limited price premiums and costs related to auditing and traceability (especially for small scale producers). Scaling up certification adoption through incentives seems preferable to make it mandatory, as it would allow for gradual sectoral transitions compared to an abrupt deadline, avoiding corporates' pressure on auditors and allowing them to remain in the business after the deadline.

This article is in line with reflections on the hybridisation of transnational sustainability regimes based on interplay between private and public initiatives (Zeitlin and Overdevest 2021, Eberlein *et al*. 2014, Dieguez and Sotirov 2021) – more specifically in the 'carrots and sticks' scheme proposed by Lambin *et al.* (2020), in which a government uses a private and market-based instrument to advance its sustainability

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[1] https://www.fao.org/3/cb7449en/cb7449en.pdf
[2] https://www.globalcarbonproject.org/carbonbudget/
[3] https://ec.europa.eu/environment/forests/deforestation-proposal.htm

agenda. Since the government has a choice of standards to which it associates fiscal incentives, it would be able to make the continuation of these benefits' conditional on continuous improvement in the performance of the certification processes, while leaving certification bodies (standards and auditors) considerable autonomy regarding the means of such improvement.

TAX CUTS FOR CERTIFIED CONCESSIONS

A first proposal to use forestry taxation as an incentive for the adoption of better management practices in developing countries was formulated a few years later, in 2010, in an article in the *International Forestry Review*. The article states, "*To convince governments to give up such tangible fiscal revenues, the international community could propose to compensate governments for the foregone revenues derived from the amount of area certified"* (Karsenty 2010:127). In 2019–2020, the EU Delegation to Cameroon considered implementing this 'Compensated Tax Reduction'[4] proposal, but failed to do so due to lack of support from the Ministry in charge of forests who argued that certification will be of more benefit to foreign companies compared to national loggers.

In 2018, environmental and development economists met at the World Bank with experts from the International Tropical Timber Organization (ITTO), the International Monetary Fund, the International Fund for Agriculture Development (IFAD), the World Resources Institute (WRI), etc. Participants put forward the principle of modulating taxation according to the 'sustainability of production methods', both in the forestry and agricultural sectors (Heine and Hayde 2021). Among the mechanisms envisaged, the principle of 'bonus-malus' (or feebates, i.e., fees and rebates) seems promising as long as, all other things being equal, it does not reduce tax revenues (budget neutrality) and therefore does not require compensatory international transfers (Heine *et al.* 2021). This means that the mechanism can have a stronger ecological impact than in the case of a simple uncompensated tax cut. Freed from the budget constraint, governments can create a significant gap between the tax rates of certified and non-certified firms, in order to increase the incentive to adopt sustainable practices.

This principle of fiscal incentives was of interest to the Gabonese government, which also plans to make independent certification, a voluntary instrument, mandatory for all forest concessions (at an undetermined date). In mid-2020, a rectifying finance law[5] introduced three different rates for the area tax (one of the main fees that forest concessions must pay) depending on the type of certification obtained (Forest Management certification, legality, no certification).

This inclusion of a private instrument (certification) in a public policy mechanism is a first in the forestry sector in Africa. In fact, in the early 2000s, Gabon had implemented an increased area tax for a few years for concessions that did not have a management plan. However, payment of this surcharge was seen by some operators as an opportunity for not applying one of the most basic legal requirements of forestry – the preparation and implementation of a management plan drawn up according to national standards.

An ITTO country review (ITTO 2005) in Gabon advised the Government to completely dissociate the use of the fiscal instrument from the enforcement of laws and regulations. According to the ITTO team, fiscal incentives should promote improved management practices and patterns that are voluntary and not bound by any legal requirements. 'Forest management' certifications include full compliance with laws and regulations, but go further, both in terms of ecology (renewal of harvested species, wildlife management, biodiversity etc.) and social issues (workers' health, contributions to local community development, etc.). As for the 'legality certifications' that simply verify the proper application of the regulations in

Box 1. Feebates as an instrument of ecological taxation.

Fiscal instruments to mitigate climate impacts are relatively new but emerging across the globe. Feebate schemes are a potentially promising fiscal instrument for reducing net emissions from forestry (Parry 2021) by applying a gradual increase of fees on landowners who reduce their carbon storage relative to a baseline level, with corresponding rebates to landowners who increase carbon storage.

The ecological bonus-malus system is commonly used in the automobile sector (mainly in Western Europe countries) to penalise the purchase of cars with the highest CO_2 emissions and to encourage the acquisition of less polluting models (d'Haultfoeuille *et al.* 2014). It has also been used to reduce the use of pesticides in agriculture (Collinge 1994, Scholtz and Geissler 2014).

To illustrate the dynamic dimension of the bonus-malus system, French bonus-malus system introduced in 2008 in the automotive sector is instructive. As a large fraction of the consumers decided quickly to buy smaller and less CO_2-emitting cars, the system was in deficit in the early years and the authorities reacted by tightening the CO_2 emission reduction criteria necessary to obtain the bonus: the system then became in surplus (fewer bonuses to pay) (d'Haultfoeuille *et al.* 2014). As the composition of new car purchases changes from year to year, the bonus-malus scale is regularly revised. Since the last revision, only electric vehicles and certain hybrids benefit from bonuses, while the malus has been tightened up for the vehicles that emit the most CO_2.

[4] (Uncompensated) reductions on some taxes for FSC-certified companies were introduced in Peru and Brazil in the 2010s (ITTO, 2021), but their scope remains limited.

[5] Loi n°019/2020 du 17 juillet 2020 portant loi de finances rectificatives pour 2020 (https://www.droit-afrique.com/uploads/Gabon-LF-2020-rectificative.pdf)

TABLE 1 *Former and new area taxation regime in Gabon*

Former taxation regime	**FCFA 400/ha/an**
New taxation regime	
No certification	FCFA 800/ha/an
Certification of legality	FCFA 600/ha/an
Forest management certification (FSC or PAFC/PEFC)	FCFA 300/ha/an

force, it nevertheless requires a financial effort on the part of the company to organize an annual verification by independent auditors, an aspect that Gabon's Finance Law 19/2020 has obviously taken into account.

In Cameroon, the Ministry of Finance introduced through the 2021 Finance Law[6], and somewhat symbolically, a 1% reduction in the felling tax for Forest Stewardship Council (FSC) or Pan-African Forest certification (PAFC) certified companies. The declared hostility of the ministry in charge of forests to independent certifications does not allow for a more far-reaching reform. The Economic Commission for Central Africa (CEMAC), in an initiative to anticipate the fiscal consequences of the log export ban due to come into effect in 2023, had planned to incorporate a bonus-malus taxation proposal into a draft of 'Regional Guidelines on Forest Taxation and Certification' to be presented to ministers in the zone in 2022. Opposition from some participants in the preparatory group led to this proposal being withdrawn from the draft guidelines at the last minute.

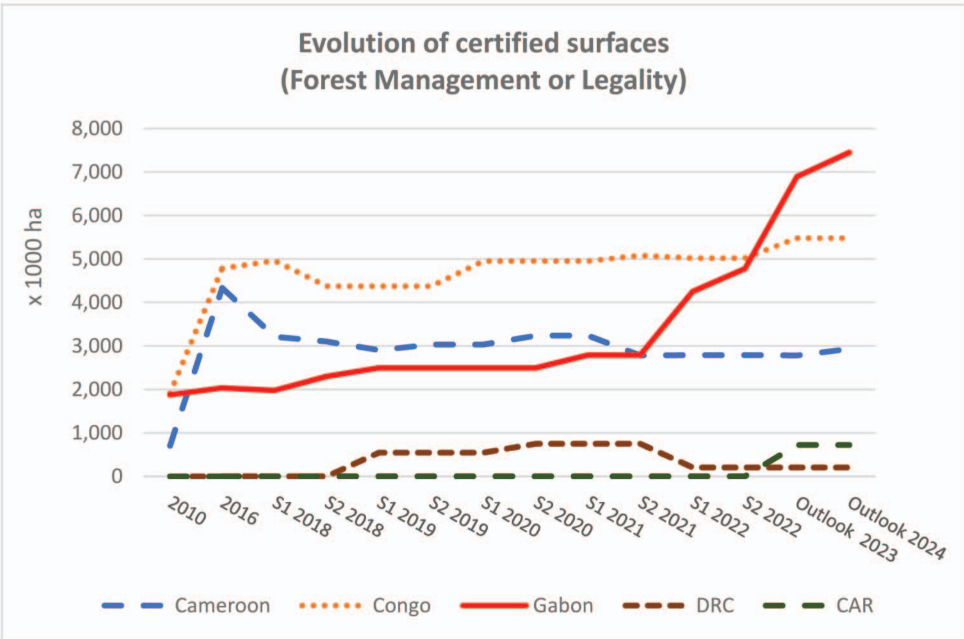
INCENTIVES FOR ZERO DEFORESTATION AGRICULTURAL PRODUCTION

This theme will intersect with the idea of some West African countries on carbon pricing to encourage the reduction of CO_2 emissions, which are largely attributable to the agricultural sector through deforestation. For example, the agriculture-forestry and land use sector were responsible for about 38% of CO_2 emissions in 2012 in Côte d'Ivoire, and 43% in Ghana in 2019 (Environmental Protection Agency 2021).

Box 2. First signs of a positive impact?

Although the area tax is only a fraction of the total fiscal burden on concessionaires, and inasmuch the other taxes have not been modulated in the same way, it seems that this change has contributed to a higher pace of certification adoption in Gabon compared to neighbouring countries, as suggested by the graph below.

FIGURE 1 *Evolution of certified surfaces in the Congo Basin*



Source: PPECF / ATIBT https://www.atibt.org/fr/news/13289/10-millions-d-ha-certifies-gestion-durable-dans-le-bassin-du-congo-a-horizon-2025

However, this trend should be interpreted with caution: it is also possible that economic operators prepare themselves to the obligation to be certified (Forest Management standard, such as the FSC) in the coming years, a measure announced in 2018 by the President of Gabon.

[6] Loi N°2020/018 du 17 décembre 2020 portant Loi de Finances de la République du Cameroun pour l'Exercice 2021 https://www.prc.cm/fr/multimedia/documents/8682-loi-n-2020-018-du-17-12-2020

To achieve such carbon pricing in land use, land-use change and forestry (LULUCF) activities, a study (Konco 2016) in Côte d'Ivoire proposed introducing a carbon tax on wood products from logging and fuelwood collection, in addition to traditional forestry taxes. The shortcoming of such a proposal is that such a tax would hit responsible producers and others indiscriminately, and would not encourage the adoption of new practices. It was therefore not an incentive tax at all. Furthermore, this study left out agriculture entirely, and in particular cocoa farming, the primary driver of deforestation in Côte d'Ivoire (Marques 2021).

In Côte d'Ivoire, a study supported by the World Bank between 2019 and 2020 (Karsenty *et al.* 2020) proposed the use of a bonus-malus system to encourage the production of zero deforestation certified and traceable (to the plot or to a specific low-risk area) cocoa grown within an agroforestry production system. The proposal is to modulate the export tax (at 14.60% of the Free-On-Board (FOB) value for cocoa beans), gradually increasing it over several years for non-certified cocoa, in order to be able to lower the rate for certified cocoa volumes. In the second part of this article, we will come back to the need for a dynamic multi-year management of this bonus-malus system in order to guarantee budget neutrality while maintaining the incentive dimension associated with the tax rate differential.

In Ghana, a similar World Bank study has been launched in 2021–2022. There, the cocoa sector is governed by the Ghana Cocoa Board (COCOBOD), under the supervision of the Ministry of Food and Agriculture (World Bank 2021).

In Côte d'Ivoire, the experts recommended the export tax (*Droit Unique de Sortie* – DUS) as an entry point for the bonus-malus proposal, the absence of an export tax in Ghana led the country team to propose a modulation of the commercial margins of cocoa bean Licensed Buying Companies (LBCs) on behalf of the COCOBOD, as long as the margin rate is set by this public institution. In 2022, the LBCs margin has been set by COCOBOD at 6.90% of the FOB price. The volumes of certified cocoa beans (certification schemes selected by the government) delivered to the COCOBOD would be entitled to an increased margin on these volumes, while a progressively lower margin would sanction the delivery of non-certified volumes. This modulation of margins would play the same role as the modulation of export tax rates proposed in Côte d'Ivoire.

Box 3. Main characteristics of the cocoa marketing system in Côte d'Ivoire.

After a period of price liberalization, producers' incomes have generally declined due to declining world prices, but also due to substantial buying prices reductions imposed by exporters and processors.

The 2012 reform put in place a price stabilization system managed by the Cocoa Coffee Council (CCC). This system is based on forward sales (about 70–80% of the crop sold over at least 12 months) and a guaranteed price to the farmer over one of the two annual seasons (at least 60% of the Cost, Insurance and Freight – CIF – price). The CCC establishes a price schedule to organize domestic and foreign marketing, minimize transaction costs and ensure proper price transfer. Prior to export, each operator pays duties and taxes at the one-stop shop in the port area. The DUS (Droit Unique de Sortie, i.e., the export tax) is paid to customs.

Intra-annual price stabilization is based on a guaranteed CIF selling price. This price is defined on the basis of a differential or scale established at the beginning of each marketing year by the Cocoa Coffee Council, on the basis of the value of forward sales on the one hand, and forecasts of world prices for the coming year on the other. It constitutes the reference price for the CCC, which implies that for the CCC, whatever the level of prices on the international market, the real selling price of cocoa is at least equal to the guaranteed CIF price.

Box 4. Main features of Ghanaian cocoa sector.

In Ghana, as in Côte d'Ivoire, farmers receive a guaranteed stable price for their cocoa throughout a harvesting season. They are protected against any short-term price volatility and know the price at the start of the season on which basis they can decide to adapt their farm management.

COCOBOD set prices because it is, through a subsidiary, the monopolist exporter and sells forward approximately 70% of the expected harvest. COCOBOD can estimate the prevailing export price for the next season. A farm-gate price is derived from the expected export price. In Ghana, the goal is to allow farmers receive approximately 70% of the FOB price. The forward sales and price stabilization funds protect farmers from short-term price volatility. It does not, however, influence nor protect farmers from the more structural international price movements as the farm gate price is set annually based on international market pricing.

In addition to farm-gate prices, the COCOBOD also set margins for each actor in the chain through to the exporter. Margin are set for cooperatives, transporters, and Licensed Buying Companies (LBC), either receiving a nominal amount or a fixed proportion of the export price. Because of the fixed farm-gate prices, intermediaries cannot compete on price for gaining market shares. Instead, they can compete by offering services to farmers, including pre-finance, quick payments or facilitating access to inputs.

While the farm-gate prices are fixed, buyers can offer an additional premium. They are increasingly paid as part of certification and sustainability programs. Companies require high quality and certified cocoa; and their price model is partly driven by ensuring access to this quality as well as by ethical and commercial considerations. Many cooperatives rely on sustainability premiums to support basic services to members. COCOBOD allows certified cocoa to be kept physically segregated from the financial flow of cocoa. This opening-up of the trade has made it possible for buyers to shorten their value chain and interact directly with farmer groups. This has increased competition by LBCs for the better organized farmers.

In both the Cote d'Ivoire and Ghana cases, the hypothesis is that incentives are transmitted from downstream to upstream in the sector – from exporters to companies or cooperatives and then to producers in Côte d'Ivoire; and from cocoa collecting companies to producers in Ghana. This hypothesis seems reasonable because in Côte d'Ivoire exporters will turn to their suppliers to obtain certified beans in order to reduce their export tax. Since certified volumes are limited, exporters will be willing to pay more for certified cocoa (sharing the tax advantage with the upstream) to secure their supply. In the end, producers who are able to provide certified zero deforestation and/or 'agroforestry' cocoa (existing labels including zero deforestation criteria or a public standard on agroforestry cocoa) would benefit from a higher price, thereby encouraging other producers to follow suit.

In Ghana, one can expect two things:

- LBCs will invest, directly or through partners, along with farmers to help them to produce sustainable cocoa and to secure their supply from these supported farmers.
- LBCs will tend to pay farmers higher prices for sustainable cocoa to avoid penalties (lowered margins). Therefore, the financial incentive will be transmitted to producers along the value chain.

DYNAMIC DIMENSION OF THE BONUS-MALUS MECHANISM

The peculiarity of a bonus-malus system (and of any truly incentive-based taxation) is that the revenues generated by the malus must decrease progressively (with the adoption of certification), requiring a parallel reduction in the bonus rates in order to respect budget neutrality. In Gabon, the government has not planned such a dynamic adjustment, but it may have to do so in the coming years.

The simulations carried out on MS Excel considered several scenarios of year-to-year certified volumes of cocoa. For each scenario, since the (increasing) malus rate is also set year-to-year, the corresponding bonus rate is calculated with respect to the certified volume and under the constraint of budget neutrality (bonus and malus amounts are balanced).

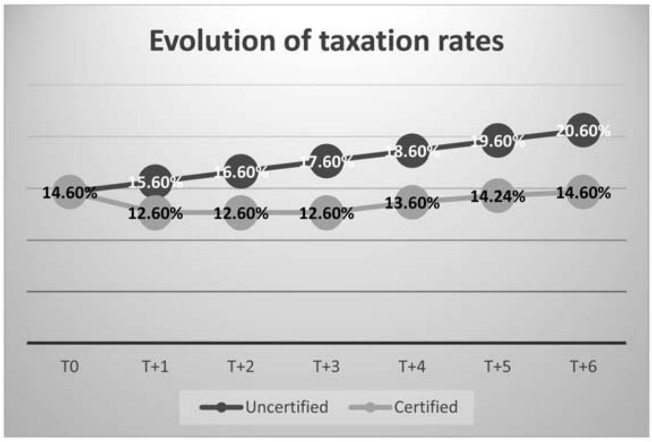
The purpose of the simulations was not to predict the increase in certified volumes from one year to the next as the malus increases but to propose to governments a set of parameters amenable to gradual adjustment over time[7]. As a result, the assumptions for the annual rise in certified volumes were made independently of the evolution of the malus rates.

In the simulations carried out in Côte d'Ivoire, the increase in the export tax rate for non-certified cocoa is gradual (+ 1% each year) and planned (over a period of 6 years in Côte d'Ivoire). For Ghana, the simulation was based on a proposed decrease of 0.5% and then 1% each year in the commercial margin granted by COCOBOD to collecting companies, over a 10-year period. These rates were chosen to allow for a progressive adoption of zero-deforestation or agroforestry practices by farmers. The shortened time period in Côte d'Ivoire (6 years) was, at the time of the study in 2019, in line with the governmental objective "to halt deforestation generated for the production of agricultural commodities by 2025"[8].

The main unknown is the rate of adoption of responsible practices (approximated by certification) from one year to the next. A revisable scenario of the evolution of certified volumes from one year to the next is therefore necessary in order to carry out the simulations that will make it possible to determine, each year, the bonus rate that will allow the principle of budget neutrality to be respected. In an ideal scenario of massive adoption of certification, the bonus rates will tend to return to the initial level (if 100% of production is certified). What is important, in terms of incentives, is not the nominal tax rate but the difference in rates between certified and non-certified production (a difference that increases or stabilizes over time, depending on the assumptions adopted).

One of the scenarios simulated for Côte d'Ivoire is one of a gradual but complete certification of 1.5 million tons of raw cocoa exported in 6 years. Graphically, the dynamic evolution of rates (under the constraint of respecting budget neutrality) can be visualized as follows:

FIGURE 2 *Potential evolution of taxation rates (cocoa, Côte d'Ivoire)*

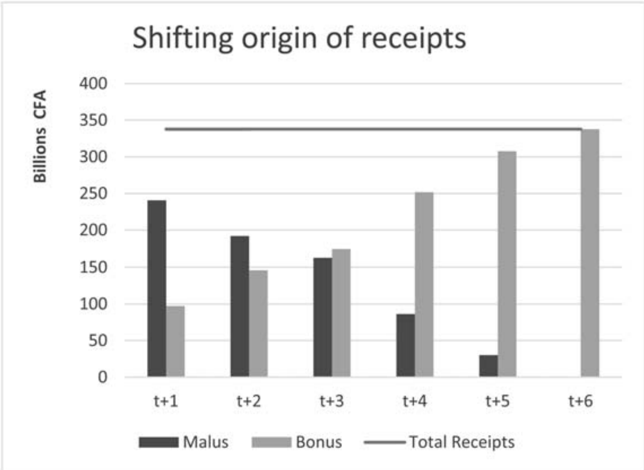


In the graph below, one can see the progressive shift in the origin of fiscal receipts, from uncertified cocoa to certified one, with constant total receipts (all other things being equal).

[7] The current knowledge does not allow robust assumptions to be made and some degree of trial-and-error seems unavoidable, at least at the earliest stage of the implementation.

[8] Agriculture zéro-déforestation en Côte d'Ivoire – Note d'orientations politique. (prepared by the Government of Côte d'Ivoire for UNFCC CoP 22, 2016) http://cop.gouv.ci/cop22/fichiers/agriculture-zero-deforestation.pdf

FIGURE 3 *Shifting origin of fiscal receipts (cocoa; Côte d'Ivoire)*

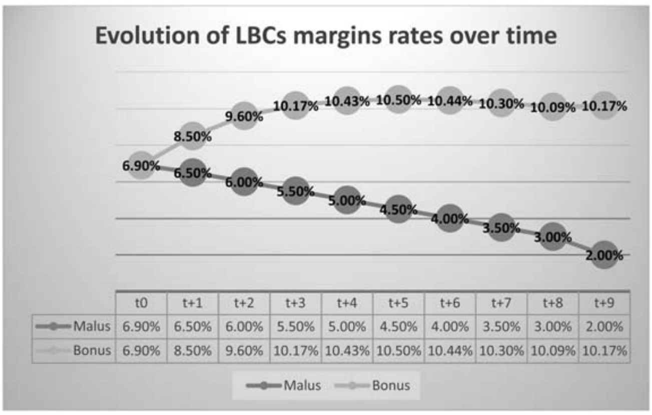


For Ghana, the bonus-malus system could be applied to the commercial margins of cocoa-collecting companies. It is therefore no longer a question of taxation, but of direct intervention on the profits of companies in a sector administered by a public institution. In the case of Ghana, the constraint is to keep the same amount that COCOBOD devotes in 2021 to the payment of the margins of the collecting companies, i.e., 832.69 million cedis (around USD 67.4 million).

In one of the scenarios tested, the commercial margins of the companies (set by COCOBOD) for the volumes of non-certified cocoa are gradually reduced by 0.5% annually over a seven years period and then by 1% in the following two years. This scenario also assumes that 30% of the cocoa delivered to COCOBOD was still not certified in t+10, which leads to the bonus margins for certified cocoa being, in t+10, significantly higher than the initial rate of 6.90% (due to the reduced margins paid for the 30% of uncertified cocoa).

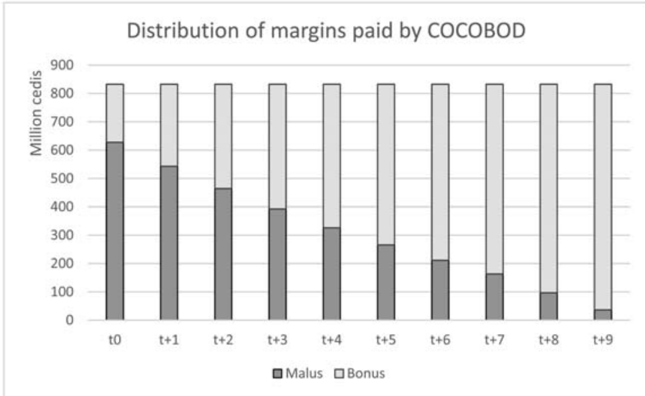
Graphically, the evolution can be visualized as follows:

FIGURE 4 *Potential evolution of collecting companies' margins (cocoa, Ghana)*



The financial envelope devoted to paying collecting companies their trade margins remain constant (all other things being equal).

FIGURE 5 *Distribution of margins paid to collecting companies (cocoa, Ghana)*



Ensuring no net tax loss

The main issue associated with this bonus-malus mechanism is that it is difficult to predict precisely from one year to the next how many tons will be certified. The cocoa certified during the fiscal year must benefit from the bonus (commitment of the authorities). But if more certified cocoa is exported (Côte d'Ivoire) or delivered to COCOBOD (for Ghana) than expected in the simulation used to determine in advance the subsidized rates guaranteed to economic operators presenting certified cocoa, the budget neutrality constraint may no longer be fulfilled. Although a faster-than-expected increase in certified volumes would be a sign of the effectiveness of the incentives, governments may be reluctant to commit to a scheme that could jeopardise year-to-year fluxes of public revenues. During the discussion with ministries of finances, avoiding any fiscal losses has been the first (if not unique) concern of the officials, who feared fiscal incentives would mean less receipts.

To address this possibility, the government and one or more development partners may agree to set up a budgetary compensation mechanism (cash transfers) that could guarantee to cover the shortfall from the baseline budget target. On the other hand, if less cocoa than expected is certified, the government will benefit from a financial surplus.

However, it worth mentioning that budget neutrality condition applies 'all other things being equal'. If governments want fewer cocoa growers to sustain cocoa prices, and since cocoa production vary from one year to the other, it is clear the budget neutrality condition remains theoretical in a changing environment.

POTENTIAL WINNERS AND LOSERS

Financial incentives are needed to foster the transition to sustainable practices. However, there is a likelihood that it might be difficult for some categories of foresters or farmers to adopt new practices and to become certified.

In Congo Basin's forests, small-scale national loggers could be, in this case, the losers. This is why some Cameroonian officials were reluctant to link incentives with forest management certification. Various supporting mechanisms can be foreseen for helping small-scale concessionaires to become certified (see ITTO 2021), but governments can decide to use one fiscal lever or another, depending on the situation and the objectives of public policies. In Gabon, government policy is to favour large-scale certified concessionaires, and focusing incentives on the area tax (upstream taxation) is not an issue. In Cameroon, the government's objective is to push national permits holders to supply the large domestic timber markets. Therefore, using the bonus-malus system for the export tax only could be an appropriate response to these public goals, since small-scale loggers that could be hit by the bonus-malus scheme for exports are requested to focus on the domestic market. The administration of a feebate scheme associated with export tax by custom services might be an issue. However, in central Africa, customs had already managed the quite thorny differential tax treatments associated with the degree of wood processing, and according rebates to certified products does not seem beyond the capacity of customs administrations. However, the risk of forged certificates could be significant and would probably need a national numeric registry system and specific training sessions for customs officers.

In the agricultural sector, legal minimal prices for cocoa producers in Côte d'Ivoire and Ghana represent a strong guarantee against pressure of economic operators from buying cocoa at lower prices. However, a distributive risk might be that at some stage (high malus leading to high taxes and/or small margins for buyers), uncertified cocoa is no longer purchased by companies. If some farmers cannot sell their cocoa because companies were unwilling to buy uncertified cocoa, this might be a concern for governments. Nevertheless, Côte d'Ivoire's goal is to push farmers to diversify their crops for food security and avoid cocoa overproduction which push international prices downwards, given the significance of the country on this commodity (35% of the world production). The bonus-malus system can be a tool for such a diversification. Again, as earlier highlighted, farmers with capacity to supply economic operators with certified cocoa will probably enjoy an enhanced price premium (a small premium is already paid to farmers for their certified cocoa), since operators will struggle to get as much certified volumes as possible.

Generally, a mix of instruments should be considered, some focusing on financial incentives while others are focused on investments and rewards. The latter instrument could be small-scale farmers-oriented Payments for Environmental Services (PES), which often combine investment and conditional rewards based on a contractual arrangement (Hejnowicz *et al.* 2014, Wunder 2008). Other actions are needed, such as support for the formalization of rural land rights or support programs for production and market access for small producers.

PERSPECTIVES

The bonus-malus mechanism is more likely to provide full incentive effects if different tax levers are involved simultaneously. In the forestry sector, the three main taxes (area, felling, export) should be involved – and in particular the export tax, whose yield is generally higher than the other two. However, governments may decide to exclude all or parts of the area tax, the revenue from which is sometimes shared with local governments and communities, as in Cameroon.

In the agricultural export sector, the export tax, when it exists, is obviously the main lever (in Ghana, it would be the collecting companies' commercial margin set by the public authority). For other agricultural products which are not exported or with low export levels, there is probably little room for bonus-malus type mechanisms because taxation is less common.

Combinations between the bonus-malus system and a system of lower taxes financially compensated to the producing countries by international transfers can be envisaged. This would make it possible either to increase the level of the bonus or to limit the rates of the malus in order to spare some of the producers who would have difficulty in obtaining certification. Finally, a government may decide to abandon the goal of budget neutrality and contribute to the financing of the bonus. To date, proposals made by the study teams in Côte d'Ivoire and Ghana are still under consideration by both governments.

Bonus-malus systems can also be used for imports of commodities 'at risk of deforestation'. One possibility is to modulate tariffs according to the information and guarantees that the sector's actors provide to ensure that their production is deforestation-free. These differentiated tariffs could be introduced on the basis of independent certifications that include zero deforestation criteria. These certifications would be accredited by public authorities and subject to a continuous evaluation process. Switzerland led the way in 2021 through an agreement with Indonesia that lowers tariffs by up to 40% for certified palm oil (three approved standards)[9]. Ideally, certification performance should be monitored over time by the authorities with the possibility of confirmation or withdrawal of tax-advantaged certification schemes.

It is clear that the EU is not going down this path with its draft Regulation on imported deforestation[10]. The cornerstone of this regulation is the due diligence obligation imposed on importers; that is, the set of verifications that they must carry out to ensure the origin of the product to be imported, its legality and the conditions of its production, thus reducing the risk of marketing products involved in deforestation. Independent certifications are only mentioned incidentally, with the mention that they could facilitate due diligence. And there is no mention of changing tariffs.

[9] https://www.reuters.com/article/us-swiss-indonesia-idUSKCN2AT1Z4

[10] European Commission (EC) project to counter deforestation associated with certain imported agricultural products agricultural products, unveiled on November 17, 2021

Box 5. 'Governing' private certifications through incentives.

The current lack of zero deforestation certification for some commodities could be an obstacle, but the situation is rapidly changing. Since 2018, certifications such as RSPO (palm oil) or Rainforest Alliance (cocoa and other commodities) have incorporated such criteria. We can assume that other certification standards will follow suit and that business demand will increase if the prospect of differentiated taxation at the borders of major importing countries becomes clear.

Nevertheless, the Achilles heel of many certification systems remains the risk that auditors (private certification bodies accredited by the standards) are 'captured' by companies that select and pay them (this is the case in forestry, but agriculture auditors are also often pre-affected by the certification standards when small producer cooperatives are involved). To some extent, the assessment of sustainability criteria is still subjective, and companies tend to choose auditors who are known to be complacent and avoid the strictest ones. However, public authorities can require certification systems to find ways to ensure greater auditor independence. This can be done through continuous performance evaluation and conditional re-accreditation. For example, an accredited certification body can be assigned randomly instead of being selected by the company.

For governments, continuous evaluation of certification schemes performance would be a way to contribute to the evolution of private certifications, as public authorities could select those that incorporate a zero-deforestation approach that meets European criteria and whose verification mechanisms are deemed credible. Beyond zero-deforestation criteria, certifications also address other important issues related to biodiversity, water quality, wildlife conservation, social dimensions, fair remuneration of small producers, gender, etc. Hence the interest in using these levers.

Modulating tariffs and allocating temporary surpluses to producing countries

One of the reasons for Europe's reluctance to introduce tariffs is that many have been removed by various trade agreements (e.g., on soybeans, natural rubber, cocoa). Introducing a tax differential between zero deforestation products and others would require an increase in some tariffs, and thus a revision of existing and future bilateral trade agreements. Although a unilateral increase in some tariffs could be challenged at the World Trade Organization (WTO), there is room for manoeuvre based on GATT Article XX on general exceptions allowing for measures necessary to pursue a legitimate objective (such as the protection of human or animal life or health, or the conservation of exhaustible natural resources) as long as the measure does not constitute arbitrary or unjustifiable discrimination or a disguised restriction on international trade. The additional tax revenue could also be used to fund programs that help small producers in exporting countries adopt sustainable practices and obtain certification. In addition, individual certification may not be the only instrument. Group certification and zero deforestation labelled territories may be among the instruments used.

Such an allocation of additional tax revenues to producing countries, in proportion to the taxes collected on their imports, would ward off accusations of protectionism and provide a 'good faith' basis for defending this measure before the WTO. And as with all ecological tax mechanisms, the objective would be for the yield of this import tax to decrease, i.e., for the EU to eventually import only certified zero deforestation products with the most favourable tariffs.

CONCLUSION

Tax incentives for the protection of forest ecosystems, which concern both forest concessions and agricultural production, are promising instruments, but they should not be considered as a silver bullet for curbing deforestation or for converting a traditional agricultural sector to agroecology. Problems of clarifying land rights, inequalities in access to natural or economic resources, demographics, poverty of large parts of the rural population, and consumption patterns are powerful factors leading to the degradation and destruction of these ecosystems. Appropriate mixes of policies, regulatory measures and economic instruments must be found and adapted to different national situations.

Nevertheless, a fiscal incentive that respects the principle of budget neutrality must have its place in public policy measures in favour of the environment. The advantage of this instrument is that it allows for a transition spread out over time, favouring early movers but giving others time to adapt or diversify their activities. At the end of the transition, governments will have less difficulty in adopting ambitious laws and more restrictive regulations that will replace the tax incentive once the majority of players have adopted more sustainable practices. Incentive and regulatory constraints must follow each other over time and not be used simultaneously, otherwise actors will no longer enforce regulations without financial incentives to do so, which would remove the force of the legal schemes (Karsenty *et al*. 2017).

While some governments have begun to consider independent certification schemes positively, some environmental NGOs continue to see certifications as nothing more than attempts at 'greenwashing' on the part of economic operators. The prospect of 'governing certifications' through a process of selection of standards, fiscal advantage and continuous evaluation of the performance of the certification system as a whole by national authorities, could change positions and remove obstacles to the use of such a private instrument in public policies.

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