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GREEN ACCOUNTING IN COFFEE FARMING: GENERATION AND COMMERCIALIZATION OF CARBON CREDITS BY RURAL PRODUCERS

A CONTABILIDADE VERDE NA CAFEICULTURA: GERAÇÃO E COMERCIALIZAÇÃO DE CRÉDITOS DE CARBONO POR PRODUTORES RURAIS

LA CONTABILIDAD VERDE EN LA CAFICULTURA: GENERACIÓN Y COMERCIALIZACIÓN DE CRÉDITOS DE CARBONO POR PRODUCTORES RURALES

https://doi.org/10.56238/edimpacto2025.070-002

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ABSTRACT

The growing demand for sustainable agricultural practices and the expansion of the carbon market place Brazilian coffee farming in a strategic position on the international stage. This article analyzes how green accounting can measure, record, and add value to carbon credits generated from agroecological practices applied to coffee production. The role of the rural accountant is highlighted as a technical link between producers, cooperatives, and international markets, ensuring transparency and credibility of environmental assets. The study shows that each hectare of coffee plantation managed under low-impact techniques can generate tradable carbon credits, representing a new source of sustainable income. In addition, the commercialization of these credits in the international market, especially in the United States, is explored, demonstrating the potential for mutual economic and environmental gains. It is concluded that green accounting is an essential instrument for transforming sustainability into income and integrating rural producers into the global green market.

Keywords: Green Accounting. Coffee Farming. Carbon Credits. Sustainability. Global Green Economy.

RESUMO

A crescente demanda por práticas agrícolas sustentáveis e a expansão do mercado de carbono colocam a cafeicultura brasileira em posição estratégica no cenário internacional. Este artigo analisa como a contabilidade verde pode mensurar, registrar e valorizar créditos de carbono gerados a partir de práticas agroecológicas aplicadas à produção de café. Destaca-se o papel do contador rural como elo técnico entre produtores, cooperativas e mercados internacionais, garantindo a transparência e a credibilidade dos ativos ambientais. O estudo evidencia que cada hectare de cafezal, manejado sob técnicas de baixo impacto, pode gerar créditos de carbono negociáveis, representando uma nova fonte de receita sustentável. Além disso, explora-se a comercialização desses créditos no mercado

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internacional, especialmente nos Estados Unidos, demonstrando o potencial de ganhos econômicos e ambientais mútuos. Conclui-se que a contabilidade verde é instrumento essencial para transformar sustentabilidade em renda e inserir o produtor rural no mercado verde global.

Palavras-chave: Contabilidade Verde. Cafeicultura. Créditos de Carbono. Sustentabilidade. Economia Verde Global.

RESUMEN

La creciente demanda de prácticas agrícolas sostenibles y la expansión del mercado de carbono colocan a la caficultura brasileña en una posición estratégica en el escenario internacional. Este artículo analiza cómo la contabilidad verde puede medir, registrar y valorizar los créditos de carbono generados a partir de prácticas agroecológicas aplicadas a la producción de café. Se destaca el papel del contador rural como vínculo técnico entre productores, cooperativas y mercados internacionales, garantizando la transparencia y la credibilidad de los activos ambientales. El estudio evidencia que cada hectárea de cafetal manejada bajo técnicas de bajo impacto puede generar créditos de carbono negociables, representando una nueva fuente de ingresos sostenibles. Además, se explora la comercialización de estos créditos en el mercado internacional, especialmente en los Estados Unidos, demostrando el potencial de beneficios económicos y ambientales mutuos. Se concluye que la contabilidad verde es un instrumento esencial para transformar la sostenibilidad en ingresos e insertar al productor rural en el mercado verde global.

Palabras clave: Contabilidad Verde. Caficultura. Créditos de Carbono. Sostenibilidad. Economía Verde Global.

1 INTRODUCTION

The global climate emergency has brought to the center of discussions the need to integrate sustainability into economic practices. The carbon market, structured based on the Kyoto Protocol and strengthened by the Paris Agreement, has become one of the main mechanisms for mitigating greenhouse gas (GHG) emissions. In Brazil, a leading country in coffee production, agriculture plays a key role in the implementation of nature-based solutions, such as agroforestry systems, sustainable soil management, and low-emission technologies (ABC+ Plan).

In this context, Brazilian coffee production has great potential to become an international reference not only for the quality of the product, but also for the ability to generate carbon credits. However, for these credits to have market value, a structured process of measurement, validation and registration is necessary. It is at this point that green accounting takes center stage, acting as the bridge between agricultural practices and the global low-carbon economy.

2 GREEN ACCOUNTING: PRINCIPLES AND MEASUREMENT OF ENVIRONMENTAL ASSETS

Green accounting, also known as environmental accounting or eco accounting, represents an evolution of traditional accounting thinking. While classical financial accounting focuses on measuring equity, income, and monetary expenses, green accounting broadens this scope to include the positive and negative environmental impacts of economic activities, translating them into measurable, auditable, and comparable values.

In the context of coffee growing, this approach makes it possible to quantify the environmental impact of agricultural practices — from the emission of greenhouse gases (GHG) to the capture of carbon by soil and vegetation. In this way, the environment is now considered an economic asset, and not just a natural resource for common use.

The following are the main principles that support green accounting and its practical application in the measurement of carbon credits:

2.1 MEASUREMENT OF AVOIDED AND REMOVED EMISSIONS

One of the pillars of green accounting is the ability to accurately measure greenhouse gas emissions avoided, reduced, or removed from the atmosphere. This measurement is made from carbon inventories that use internationally recognized methodologies, such as the guidelines of the Intergovernmental Panel on Climate Change (IPCC) or voluntary standards such as the Verified Carbon Standard (VCS).

In coffee farming, this means calculating how much carbon is sequestered by soil and shade trees, and how much is avoided by sustainable management practices, such as reducing nitrogen fertilizers and rational use of energy. This quantification is essential to issue reliable carbon credits, which can be traded in the national and international markets.

Thus, the rural accountant works together with agronomists and environmental specialists to convert biophysical data into accounting records, transforming tons of CO_2 equivalent (tCO_2e) into economic values recognized in the balance sheets.

2.2 RECOGNITION OF CARBON CREDITS AS INTANGIBLE ASSETS

Carbon credits are considered intangible assets, as they represent an economic right based on an intangible asset: the certified reduction of emissions. These assets do not have physical substance, but have a defined monetary value in the market and can be traded, transferred, or used for offsetting emissions.

According to international accounting standards (IFRS and CPC 04), carbon credits can be recorded as internally generated assets when there is proof of control, expectation of future economic benefits and reliable measurement of value.

In practice, this means that the rural producer or cooperative can recognize the credits generated in their accounting reports, valuing the equity and increasing financial attractiveness to banks and investors. From this formalization, sustainability ceases to be an abstract concept and starts to have a direct reflection on the economic result of the property.

2.3 TRANSPARENT ACCOUNTABILITY TO INVESTORS AND REGULATORS

Green accounting also requires a commitment to transparency and environmental governance. Information on emissions, removals, environmental costs and credits generated must be clearly disclosed in periodic reports, allowing auditing by certifying bodies and the confidence of investors and business partners.

This transparency is especially relevant for the coffee sector, which is increasingly part of international chains that require proof of sustainable practices. Coffee purchasing companies in the United States and Europe already incorporate environmental and social criteria into their procurement policies, valuing suppliers with auditable ESG reports.

Thus, green accounting works as an instrument of socio-environmental accountability, allowing producers and cooperatives to demonstrate the positive impact of their practices and obtain better negotiation conditions.

2.4 INTEGRATION WITH ESG (ENVIRONMENTAL, SOCIAL AND GOVERNANCE) REPORTING

Finally, green accounting is directly connected to the structure of ESG reports, which evaluate an organization's performance in three dimensions: environmental, social, and governance. Integrating these reports into traditional accounting allows you to present a complete picture of the sustainable performance of the business.

In the case of coffee farming, this means that the accountant not only records financial transactions, but also quantifies the value of carbon retained, the efficient use of natural resources, respect for labor standards, and community strengthening. Such information is essential to attract impact investors and international companies that prioritize sustainable suppliers.

This integration between accounting, sustainability and governance creates a common language between the field and the financial market, bringing small producers closer to the opportunities of the global green market.

3 COFFEE AND SUSTAINABILITY: PRACTICES THAT GENERATE CARBON CREDITS

Coffee growing has great potential for GHG mitigation, as long as it adopts good environmental practices, such as:

- Agroforestry and shading – the intercropping of coffee with native trees increases carbon sequestration in the soil and biomass.
- Sustainable soil and fertilizer management – reducing the use of chemical inputs reduces emissions of nitrous oxide, a potent greenhouse gas.
- Technologies from the ABC+ Plan – recovery of degraded pastures, integrated crop-livestock-forest (ICLFS) and no-till farming contribute to greater carbon retention.
- Production of specialty coffees with environmental certification – adds value to the product and expands the potential for selling linked credits.

These practices make the coffee plantation not only a source of agricultural income, but also an environmental asset, whose value must be measured and communicated to the market.

4 THE ROLE OF THE RURAL ACCOUNTANT

The rural accountant is the professional responsible for transforming sustainability into auditable numbers. Its work involves:

- Inventory carbon emissions and removals at each property;
- Register carbon credits as intangible assets in the balance sheets;

- Ensure compliance with national and international environmental accounting standards;
- Issue financial and socio-environmental reports for cooperatives and producers;
- Support international certifications such as VCS (Verified Carbon Standard) and Gold Standard.

In this way, the accountant is the technical and economic link that connects the rural producer to the global green economy, ensuring that credits are recognized and traded legitimately.

5 INTERNATIONAL MARKETING

Once quantified and certified, carbon credits can be traded in regulated and voluntary markets. In Brazil, cooperatives and brokers play an important role as intermediaries. Abroad, North American and European companies are looking for highly credible carbon credits to offset their emissions, creating a strategic opportunity for Brazilian producers.

The voluntary market in the United States moved more than US$ 2 billion in 2022, with a growing trend (Ecosystem Marketplace, 2023). Brazilian coffee farming can take advantage of this growing demand by offering credits linked to regenerative agricultural practices, while increasing the competitiveness of domestic coffee in the international market.

6 SOCIOECONOMIC IMPACT

The adoption of green accounting in coffee farming generates multiple benefits:

- Increased producer income – each carbon credit can be sold between US$ 5 and US$ 15 on the voluntary market, depending on the certification.
- Strengthening cooperatives – by intermediating commercialization, they expand the scale and ensure more competitive prices.
- Inclusion of small producers – democratization of access to global carbon markets.
- Sustainable regional development – income generation combined with environmental conservation.

This model transforms rural producers into active agents of the global green economy, with a direct impact on the reduction of rural poverty and the valorization of Brazilian environmental capital.

7 CONCLUSION

Green accounting is a strategic instrument to consolidate Brazilian coffee production as a world reference in sustainability. More than recording numbers, it values environmental assets and enables small producers to monetize the carbon stored in their coffee plantations.

The rural accountant emerges as the essential link between the field and the international green market, ensuring credibility, transparency and compliance. By integrating good agricultural practices, accounting measurement and environmental certification, the way is opened for a new paradigm: the transformation of sustainability into income, with economic, social and environmental gains.

Thus, Brazilian coffee farming not only exports coffee, but also exports carbon positive, reinforcing the country's role as a protagonist of the global green economy.

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