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Methodology for measuring **rural credit** in line with the **agricultural sustainability** journey

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SUMMARY

INTRODUCTION

Rural credit, Brazil's main agricultural policy instrument, has been playing a key role, not only in its ability to increase agricultural productivity, but also in providing the required conditions for coping with climate change. Understanding rural credit as a catalyst for interventions aimed at resilience and productive transition to a sustainable pattern is, therefore, essential.

In addition to resilience, rural credit should be seen as a means of reducing greenhouse gas emissions, since agriculture is the second largest source of these emissions in Brazil, second only to land use change (the main source of which is deforestation and converting native vegetation) (SEEG, 2023). It is essential to encourage ventures that reduce the negative environmental externalities associated with productive activity in the field, leading to a reduction in greenhouse gas (GHG) emissions, as well as soil recovery, harvest intensification and diversification, reduced deforestation, and protecting water resources.

These environmental and climate sustainability components have been incorporated in an important way into rural credit policy, starting with managing socio-environmental and climate risks in granting the credit itself. Barriers for rural properties with environmental embargoes, Rural Environmental Registry (CAR) status (suspended or canceled), rural properties overlapping public forests that have not been designated for that, rural properties overlapping protected areas such as Indigenous and Quilombola lands and/or Conservation Units and others, and the presence of labor analogous to slavery found on a public list are examples of entry barriers and indicate a commitment by the Central Bank of Brazil (BCB), Brazil's Finance Ministry (MF), Agriculture and Livestock Ministry (MAPA), and Agrarian Development and Family Farming Ministry (MDA) to the environmental agenda. Table 1 summarizes the current eligibility criteria/ barriers to accessing credit.

Table 1 | **Eligibility criteria/barriers to accessing credit under *Plano Safra***

BARRIER TYPE	BARRIER	DESCRIPTION OF INABILITY TO ACCESS RURAL CREDIT
Environmental	Compliance with Law 12.651/2012 (Forest Code)	Enterprise located on rural property that is not registered with the Rural Environmental Registry (CAR) or whose registration has been suspended or canceled (MCR 2-9-2)
Environmental	Conservation Units	Enterprise totally or partially located in Conservation Units (MCR 2-9-3).
Social / Environmental	Indigenous lands	Enterprise totally or partially located on Indigenous land (MCR 2-9-5)
Social / Environmental	Quilombola territory	Enterprise totally or partially inserted in Quilombola territory (MCR 2-9-6)
Environmental	Deforestation in all biomes	Rural property on which there is an embargo by the relevant federal or state environmental agency due to illegal deforestation (MCR 2-9-8)
Land	Land legalization of property located in the Amazon biome	Rural property that does not show documents such as: i) proof of ownership issued by a real estate registry office; ii) application for land legalization in the case of occupancy of a Union area; iii) document proving regular occupancy of state areas, issued by a state agency; iv) Term of Authorization of Use (TAU) or Concession of Real Right of Use (CDRU), issued by the Union Property Office, or related document issued by the respective State Government, when dealing with areas under its domain, in the case of regular occupants of floodplain areas; v) a declaration from the body responsible for the Sustainable Development Reserves, Extractive Reserves, and National Forests, which are part of the Sustainable Use Conservation Units, in the case of inhabitants or users in good standing; vi) a list provided by INCRA of the beneficiaries of the settlement project, in the case of beneficiaries of the National Agrarian Reform Program (PNRA) classified under Groups “A” and “A/C” of the National Program for Strengthening Family Farming (PRONAF); vii) a Declaration of Aptitude to PRONAF (DAP) or a document from the National Family Farming Registry of the National Program for Strengthening Family Farming (CAF-Pronaf), in the case of beneficiaries classified under PRONAF. (MCR 2-1-11)

BARRIER TYPE	BARRIER	DESCRIPTION OF INABILITY TO ACCESS RURAL CREDIT
Social	Work analogous to slavery	Individuals/legal entities registered in the register of persons who have kept workers in conditions analogous to slavery (MCR 2-9-9)
Environmental	Undesignated public forest	Rural property totally or partially inserted in Type B (Non-allocated) Public Forest (MCR 2-9-10)
Environmental	Environmental impact	Restrictions relating to Agroecological Zoning and Ecological-Economic Zoning (ZEE) (MCR 2-1-1)
Environmental	Environmental impact	Restrictions relating to Agro-ecological Zoning of Sugarcane, established by Decree No. 6.961, of September 17, 2009, subject to the recommendations of the agricultural climatic risk zoning for this harvest MCR 2-1-16 -"a")

Source: prepared by Agroicone based on the Rural Credit Manual, CMN Resolutions, BCB and others. Note: "Identification of the rural property where the rural credit enterprise is located is performed in accordance with the information registered in the National Rural Environmental Registration System (Sicar)" (MCR 2-9-11). Source: Central Bank of Brazil, Rural Credit Manual (MCR), CMN Resolution N. 4,883/2020, BCB Resolution N. 140/2021, CMN Resolution N. 5,024/2022, CMN Resolution N. 5,078/2023, CMN Resolution N. 5,081/2023; CMN Resolution N. 5,158/2024.

In addition to the aforementioned criteria for assessing rural credit in Brazil, it is possible to see important advances made by the national monetary authority with the *BC# Sustentabilidade* (BC# Sustainability) agenda, launched in 2021. Based on this, CMN Resolution N. 4,945/2021 presented the Social, Environmental, and Climate Responsibility Policy (PRSAC), improving (and revoking) CMN Resolution N. 4,327/2014 (Social and Environmental Responsibility Policy), as well as the barriers to granting rural credit and regulations related to financial institutions' social, environmental, and climate governance.

Complementing the regulatory effort and the set of barriers to access, the rural credit policy also has programs and sub-programs aimed exclusively at financing investments for a productive transition and aligned with sustainability. RenovAgro (formerly the *Programa* ABC and *Programa* ABC+) is currently the main line of financing for projects aligned with the Sectoral Plan for Adapting to Climate Change and Low Carbon Emissions in Agriculture and Livestock, with a View to Sustainable Development (2020-2030) - *ABC+*, the main national plan aimed at mitigating GHG emissions and increasing the resilience of the agriculture and forestry sector. In addition to RenovAgro, there are several other programs and sub-programs aimed at sustainable purposes, which play a fundamental role in reducing the negative environmental externalities arising from rural activity.

From the incentives' point of view, it is worth highlighting the role of regulations such as CMN Resolution N. 4,226/2013, CMN Resolution N. 4,666/2018, CMN Resolution N. 4,883/2020 and CMN Resolutions N. 5,078 and 5,082 of 2023 and CMN Resolution N. 5,152/2024, which bring credit incentive mechanisms linked to environmental compliance, with a reduction in financing rates and an increase in the contracting limit per beneficiary.

In other words, it is clear that there are multiple efforts around the sustainability agenda within the scope of rural credit policy. However, even with all the regulatory framework, incentives and programs, there is a major challenge in quantifying the volume of financial resources earmarked for enterprises or rural properties with sustainable purposes or in the process of achieving sustainable agricultural activity. Knowing the size of the effort made in the productive transition to an intensified, low-emission and resilient pattern is of great interest, as it provides greater transparency to public policy and its potential impacts, as well as improving Brazil's ability to position itself in the domestic and international debate.

Some studies have sought to measure the volume of financial resources earmarked for sustainability. According to Chiavari, et al. (2023)[1], of the R$ 25.1 billion/year on average in the 2015-2020 period earmarked for climate finance, rural credit policy accounts for R$ 12 billion/year. However, these climate resources (which include *Plano ABC+*, Pronaf, Moderagro, Inovagro and other programs) accounted for only 8% of *Plano Safra*'s total financial resources in the period.

Another mapping, this time conducted by the CBI - *Climate Bonds Initiative* (2022)[2] in partnership with MAPA, sought to assess the degree of alignment of investment financing in *Plano Safra* in specific programs regarding the principles and criteria of the CBI itself. Of the purposes financed by the selected programs, a R$ 53.3 billion volume was identified as potentially aligned with the CBI's eligibility criteria in the 2020/2021 harvest. Based on an analysis of the CBI's criteria for the agricultural sector, it can be said that these financial resources are at least partially aligned with the conceptual bases (integrated landscape approach, mitigation, and adapting to climate change) and the Sustainable Production Systems, Practices, Products and Processes (SPSABC) of the *Plano ABC+*[3].

Other initiatives for classifying rural credit funding are also available, with great variability in reSouthts depending on the classification criteria (Oliveira, et al., 2024)[4]. The Central Bank of Brazil itself, in Public ConSouthtation N. 82 of 2021[5], published sustainability criteria to be applied to rural credit operations, to be verified in the Rural Credit and Proagro Operations System (SICOR). The document lists investment programs and sub-programs, production systems (variables included in SICOR such as Type of Agriculture,

[1]Chiavari, Joana, Priscila Souza, Gabriela Coser and Renan Florias. Panorama of Climate Finance for Land Use in Brazil. Rio de Janeiro: Climate Policy Initiative, 2023. | [2]Climate Bonds Initiative. Plano Safra: alignment of sustainability parameters and allocation of credit line funds with the Climate Bonds Initiative Taxonomy, 2022. | [3]The reference document for the CBI's agriculture and forestry sector, "Agriculture Criteria", was published in 2020 and improved in recent years. It is available at: https://www.climatebonds.net/files/files/standards/agriculture/documento-de-referencia-de-agricultura.pdf | [4]Oliveira, Wagner, Gabriela Coser, Carolina M. de Moura and Priscila Souza. Brazilian Sustainable Taxonomy: Inputs for Classifying Land Use Activities. Rio de Janeiro: Climate Policy Initiative, 2024. bit.ly/TaxonomiaBrasileira. | [5]The document can be accessed at: https://www3.bcb.gov.br/audpub/DetalharAudienciaPage?3-2.ILinkListener-form-dadosEntidadeDetalhamentoPanel-linkArquivo&audienciaId=421

Type of Consortium/Integration, etc.), modality (such as Afforestation and Reforestation, Forming Selected Perennial Harvests), selected financed products (such as Fertilization or Intensive Soil Correction, Renewable Energy Technologies, and others), variety selection (such as Environmental Recovery), and other criteria. This initiative is part of the BC# Sustainability agenda (sustainable rural credit bureau), but was not implemented as intended, following the public conSouthtation.

In this sense, this document seeks to present an alternative methodology that can bring light to rural credit funding for enterprises **aligned with the agricultural activity's sustainability journey**. **The term "sustainability journey"** used in this document indicates a financial resource linked to a contract that has the **potential for reducing negative environmental externalities**. As there are limitations with regard to the ability to classify a contract as fully sustainable, we opted for the concept of journey, indicating that a given contract is on a path, in a sustainability process.

It is therefore important to point out that the concept proposed here does not seek to claim that a given amount of financial resources is definitively earmarked for sustainable ventures or for sustainability purposes. There is a whole set of frameworks[6] for classifying financing projects. In general, these guides share four fundamental criteria for classifying an enterprise or project as sustainable: i) compatibility with a **taxonomy**; ii) **minimum eligibility criteria**; iii) the ability to **monitor and assess** investment impacts; iv) **transparency and disclosure** of impact reSouthts.

As rural credit funds only partially meet the four fundamental criteria, it is not possible to state conclusively that a given financial resource has a "sustainable label" and that it will, in fact, mitigate environmental damage. However, it is possible to state with some degree of certainty that certain financial resources have a greater ability to reduce negative environmental externalities compared to other financial resources. Therefore, the methodology presented here is not intended to label a contract or even an enterprise as sustainable, but rather as **potentially reducing negative environmental externalities and aligned with the agricultural activity's sustainability journey**.

Making a hypothetical example of an investment contract that is classified as " No-Till" in the "Type of Agriculture" field of SICOR (strategies levels 4 and 5 of this document, detailed below). It is not possible to make a judgment on the quality of this no-tillage, since there is no well-defined monitoring approach in the public policy. However, it is hypothetically possible to state that this undertaking has a greater ability to reduce negative environmental externalities compared to an undertaking that uses conventional planting.

The sensitivities and potential biases will be presented for each of the analyzed levels. All of this to emphasize the idea that the intention with this effort is to use the available instrument (rural credit microdata made available by SICOR/BCB) to classify rural credit funding in line with the **agricultural activity's sustainability journey**.

[6]For more details on the debate on the relationship between available frameworks and agricultural policy instruments in Brazil, see the Technical Note produced by Agroicone available at: https://www.agroicone.com.br/wp-content/uploads/2013/10/Nota-Tecnica-ABC-Financas-Verdes.pdf

This way, this document aims to meet the need to measure the amount of financial resources earmarked for agriculture with some potential for reducing the activity's negative environmental externalities, contributing to agricultural policy to the extent that this effort helps to design incentives for financed ventures aligned with agriculture's sustainability journey.

Finally, the presented methodology is intended to contribute to the debate on sustainable taxonomy in Brazil, to the extent that the proposed exercise can be applied to any and all taxonomic systems that may be defined, anticipating several challenges related to the public data structure and how to deal with them.

Let us suppose, for example, that the practice of recovering degraded pastures is listed as one of the stewardship strategies that are recommended by the Brazilian taxonomy for agriculture. How can this practice be identified from SICOR's perspective? There are sub-programs labeled for this purpose (RenovAgro Recovery, RenovAgro Conversion, Moderagro Soil Stewardship). However, there are also "products" (read as "financed items" by rural credit) that can be related to this practice but which have been contracted outside of the labeled sub-programs (Intensive Soil Fertilization, Organic/Mineral Fertilization, Organic and Mineral Fertilizers and Fertilization, Intensive Soil Correction, Non-Intensive Correction, and others). In addition, there are a number of other variables, such as Modality (pasture) and Variety (Recovery of degraded pastures; Soil correction) contained in SICOR that could be used for characterizing the production system adopted in the financed enterprise. How to deal with these different layers of variables and their risks? All this is addressed in this document.

METHODOLOGICAL STRATEGY

This document's main objective is to present a methodological strategy that is capable of quantifying, with some degree of certainty, the volume of rural credit resources that have the potential to reduce negative environmental externalities. SICOR[7] microdata was used for this purpose.

Through the available fields and with the help of data dictionaries, conditions were built for classifying contracts as aligned or not with a potential for reducing negative environmental externalities. Given the lack of definition of the Brazilian sustainable taxonomy for the agricultural sector (still under development in 2024), the Sustainable Production Systems, Practices, Products and Processes (SPSABC) were used as a "taxonomic basis", as well as the conceptual bases of *Plano ABC*+[8] itself. In addition, the list of socio-biodiversity products from the Minimum Price Guarantee Program for Socio-Biodiversity Products (PGPM-Bio) was used.

BOX 1 | ***Plano ABC*+ and PGPM-Bio**

Plano ABC+: ABC+ is the main national strategy for the agriculture and forestry sector related to the Nationally Determined Contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC). The set of conceptual bases and the Sustainable Production Systems, Practices, Products, and Processes (SPSABC) were used for classifying contracts with the potential to reduce negative environmental externalities and increase climate resilience.

PGPM-Bio: The Policy for Guaranteeing Minimum Prices for Socio-Biodiversity Products (PGPM-Bio) guarantees a minimum price for 17 extractive products that help conserve Brazilian biomes: açaí, andiroba, babassu, baru, extractive rubber, buriti, extractive cocoa, Brazil nuts, juçara, macaúba, mangaba, murumuru, pequi, piassava, pine nuts, stewardship pirarucu fish, and umbu. To complement the list of socio-biodiversity products, ICMBio's Catalog of these products (2019)[9] was used as a reference.

[7]To access SICOR microdata (section 2): https://www.bcb.gov.br/estabilidadefinanceira/tabelas-credito-rural-proagro | [8]To access Plano ABC+ : https://www.gov.br/agricultura/pt-br/assuntos/sustentabilidade/agricultura-de-baixa-emissao-de-carbono/publicacoes/abc-portugues.pdf | [9]Available at: https://ava.icmbio.gov.br/pluginfile.php/4592/mod_data/content/22499/Publicacao_6456860_2a_Ed_catalago_de_produtos_da_sociobiodiversidade_do_brasil.pdf

PIn order to ensure a correct interpretation of the exercise's reSouthts, as well as to resolve and expose potential risks of this analysis (especially with regard to risk of greenwashing), it is necessary to postulate four basic assumptions in the methodological strategy presented in this document. They are:

- **Assumption 1: There are limitations to labeling rural credit resources as "sustainable"**, since they are not fully exposed to the four criteria commonly seen in frameworks for classifying financed projects/enterprises: i) taxonomy; ii) eligibility criteria; iii) monitoring and evaluation; and iv) reporting reSouthts.
- **Assumption 2:** Despite Assumption 1, there are elements within the rural credit policy and SICOR itself that make it possible to characterize the **agricultural activity's sustainability journey**. This is due to their **greater ability to reduce the negative environmental externalities of these financed ventures**. However, it is not possible to make a quality judgment or distinguish between what is more or less sustainable.
- **Assumption 3:** The greater the degree of disaggregation of the analysis (systematic inclusion of the variables contained in SICOR), the greater the exposure to the risk of Assumption 1. In other words, **the greater the aggregation, the greater the conservatism of the methodology, analysis, and presented reSouthts**.
- **Assumption 4: The principle of associated financial resources** is used. In other words, a financed enterprise can be made up of multiple products, including those that are not directly related to environmental sustainability and climate resilience. In order to set an enterprise on the road to sustainability, it is necessary to combine products that are often not directly related to the taxonomic base used (inputs, machinery, and others).

In order to quantify the volume of rural credit aligned with the agricultural activity's sustainability journey, analysis sections were defined that move from the most aggregated level (Level 1) to the most disaggregated level (Level 5), considering the possibilities in using SICOR data, in addition to the assumptions for classifying a given financial resource. They are:

1) **Level 1** – Labeled Programs and Subprograms: considers investment programs and subprograms (specific credit lines) with a well-defined sustainability and climate resilience purpose and which are aligned with the "taxonomic bases" used here;
2) **Level 2 –** Level 1 + Classified products: sum of Level 1 and products classified as potentially reducing negative environmental externalities according to the adopted "taxonomic basis", taking into account products that are linked to practices and/or production systems that favor reduction of GHG emissions and/or climate resilience, but which are financed in other credit lines that are not considered in Level 1;

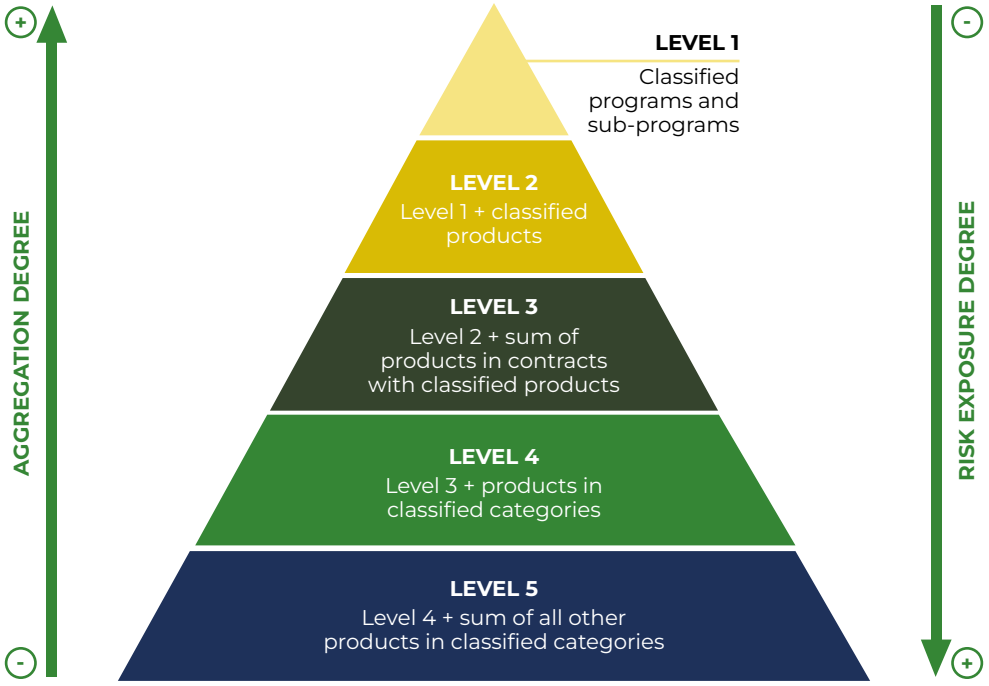
3) **Level 3 –** Level 2 + associated resources: when adding up the products, it considers the figures of the "full" contracts, under the premise of associated resources, in which an enterprise that is aligned with the agricultural activity's sustainability journey is made up of multiple products, including those that are not directly related to the sustainability/resilience objective;

4) **Level 4 –** Level 3 + Products in Labeled categories: Level 3 includes all products that are related to an enterprise with some categorization aligned with the sustainability journey, based on the variables and fields available in SICOR/BCB (Type of Irrigation, Type of Integration/Consortium, Type of Harvest, Type of Farming, Phase/Production Cycle, Modality, and Variety);

5) **Level 5 –** Level 4 + associated resources: assigns all the products in the contract to the appropriate category, adding up all the products, under the principle of associated resources in which the entire contract would adhere to the agricultural sustainability journey.

It is important to note that the analytical strategies at levels 1 and 2 can be quantified by accessing aggregate data[10], while the analytical strategies at levels 3, 4 and 5 are based on the micro-data made available by the BCB. Figure 1 outlines the different analytical strategies (Levels 1 to 5), by level of aggregation and degree of exposure to risks related to Assumption 1.

Figure 1 | **Analytical strategies, by level of aggregation and exposure to Assumption 1 risk**



Source: Prepared by Agroicone

Since not every reader of this report is familiar with SICOR's data structure and how contracts are represented, it is important to show an example of this structure and how the different projects financed by *Plano Safra* are arranged in this database. Table 2 shows an example of a contract, which is identified by the "Reference code" column. Each line that shares the same code represents a product that makes up the contract. The other information categorizes each product contained in the contract[11]. A number of characteristics are shared, such as the names of the "Program" and "Subprogram", the "Year" and the "Harvest", and the "Activity" and the "Purpose". The "Product" column identifies each product that makes up the contract, while the "Amount" shows the total financed amount for that particular product, with the sum being the total amount of the contract.

Table 2 | **Example of a contract extracted from the SICOR database**

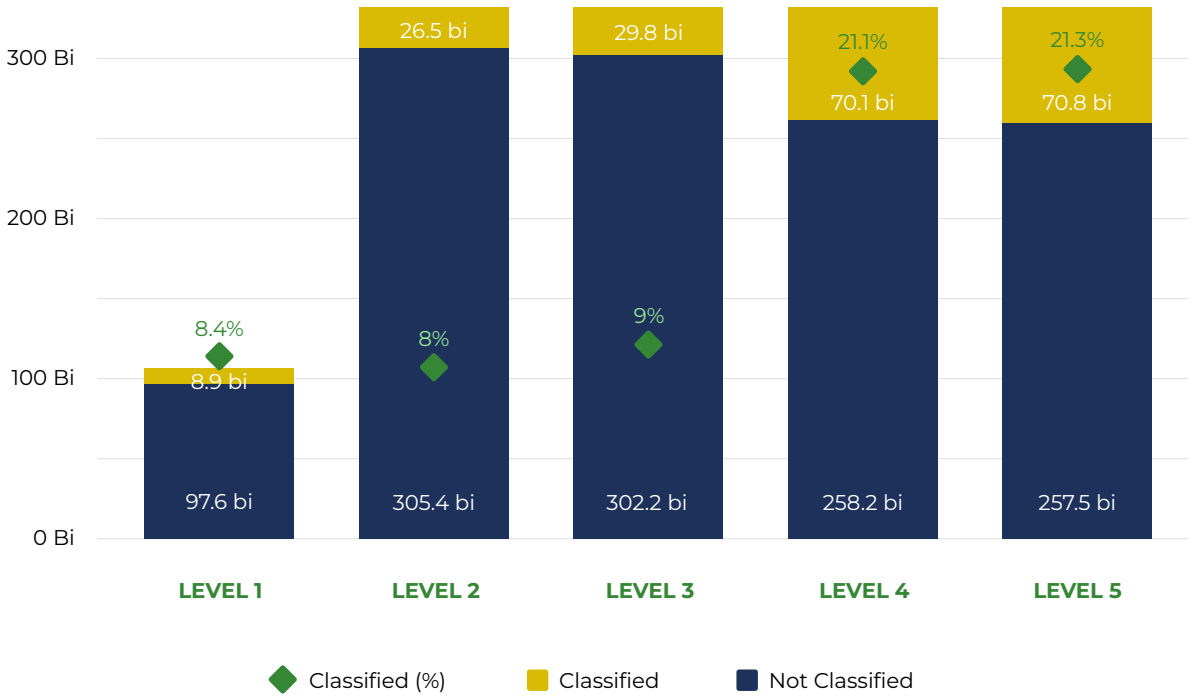
REFERENCE CODE	ACTIVITY	PURPOSE	PRODUCT	PROGRAM	AMOUNT (R$)	SUBPROGRAM	HARVEST
20200062163	Agriculture	Investment	Afforestation and reforestation	*Programa ABC*	9,750	Pasture recovery	2019/2020
20200062163	Agriculture	Investment	Intensive soil correction	*Programa ABC*	381,480	Pasture recovery	2019/2020
20200062163	Agriculture	Investment	Greenhouses/ nurseries	*Programa ABC*	50,725	Pasture recovery	2019/2020
20200062163	Agriculture	Investment	Rural services	*Programa ABC*	39,551	Pasture recovery	2019/2020
20200062163	Agriculture	Investment	Buildings: construction and renovation	*Programa ABC*	31,260	Pasture recovery	2019/2020

Source: Prepared by Agroicone based on SICOR/BCB. Accessed on 14/AUG/2024

By applying the "taxonomic basis" and classifying assumptions and criteria for each presented level, it is possible to identify the dynamics of the financial resources aligned with the sustainability journey in *Plano Safra*. Figure 2 shows the volume of financial resources that are classified and not classified for the 2023/2024 harvest year, by methodology level.

[10]Aggregated data can be accessed at: https://dadosabertos.bcb.gov.br/dataset/matrizdadoscreditorural | [11]There is a broad range of variables that are not shown in the example for the sake of simplicity.

Figure 2 | **Volume of classified and non-classified financial resources, by methodology level, in the 2023/2024 harvest year**



Source: Prepared by Agroicone based on SICOR/BCB. Updated on 14/AUG/2024

Note: since Level 1 only focuses on investment programs and sub-programs, the total analyzed amount is lower than that of the other levels, which include both investment and costing funds.

The following sections detail the methodology's different analytical strategies, as well as presenting the volume of financial resources that fit the criteria for each data aggregation level, as explained in this section.

LEVEL 1
Labeled programs and sub-programs

The first analysis level considered the contracts signed in the labeled programs and sub-programs, i.e., those whose explicit purpose is productive transition and climate resilience. As can be seen from the details in Table 3, these lines include specific destinations related to the SPSABC, which by definition have a sustainable purpose (investment programs for technological transition and resilience).

The purposes are explicit considering the credit objective that, according to the Rural Credit Manual (MCR), is intended to: i) reduce greenhouse gas emissions from agricultural activities; ii) reduce deforestation; iii) increase agricultural production on a sustainable basis; iv) adapt rural properties to environmental legislation; v) expand the cultivated forests area and vi) stimulate degraded land recovery (MCR 11-7-1-"a").

Table 3 | **Labeled programs and sub-programs included in the Level 1 strategy**

PROGRAM	SUB-PROGRAM	LINK WITH SPSABC, ABC+ CONCEPTUAL BASES, AND SOCIO-BIODIVERSITY PRODUCTS
PRONAF - National Program For Strengthening Family Farming	Investment Credit for Agroforestry Systems (Pronaf Forests)	Planted Forests (native)/Agroforestry Systems (SAF)/Forest Stewardship/ Forest Code (Integrated Landscape Approach (ILA))
	Investment Credit for Coexistence with Semi-Arid (Pronaf Semi-Arid)	Irrigated systems
	Investment Credit in Agroecology (Pronaf Agroecology)	Natural Resource Conservation Practices
	Investment Credit - Pronaf Bio economics	All SPSABC
	Pronaf ABC+ Forestry Bio economics - CLOSED	Planted Forests
PROIRRIGA - formerly Moderinfra, changed on 01/ JUL/2021	Sustainable Irrigated Agriculture	Irrigated systems

PROGRAM	SUB-PROGRAM	LINK WITH SPSABC, ABC+ CONCEPTUAL BASES, AND SOCIO-BIODIVERSITY PRODUCTS
MODERAGRO - Program For Modernizing Agriculture And Conserving Natural Resources	Soil Recovery	Degraded Pasture Recovery Practices/ Natural Resource Conservation Practices
Programa ABC+ Program for Adapting to Climate Change and Low Carbon Emissions	*ABC* + Recovery	Recovery Practices for Degraded Pastures
	ABC + Organic	Conservation Practices for Natural Resources
	ABC + No-Till	No-Till System
	ABC + Integration	Integrated Systems (Integration of Harvests, Livestock and Forests (ILPF) and their combinations)
	ABC + Forests	Planted Forests
	ABC + Environment	Planted Forests/ SAF/Forestry Code
	ABC + Residue Stewardship	Animal Production Waste Stewardship
	ABC + Palm Oil	Planted Forests
	Biological Nitrogen Fixation - CLOSED	Bio-inputs
	Constitutional Fund of Financing - CLOSED	-
	Açaí, Cocoa, Olive, Walnut - CLOSED	Planted Forests/SAF
	Financing with Rural Savings Funds - CLOSED	-
	ABC + Soil Stewardship	Recovery Practices for Degraded Pastures / Conservation Practices for Natural Resources
	ABC + Bio-inputs	Bio-inputs

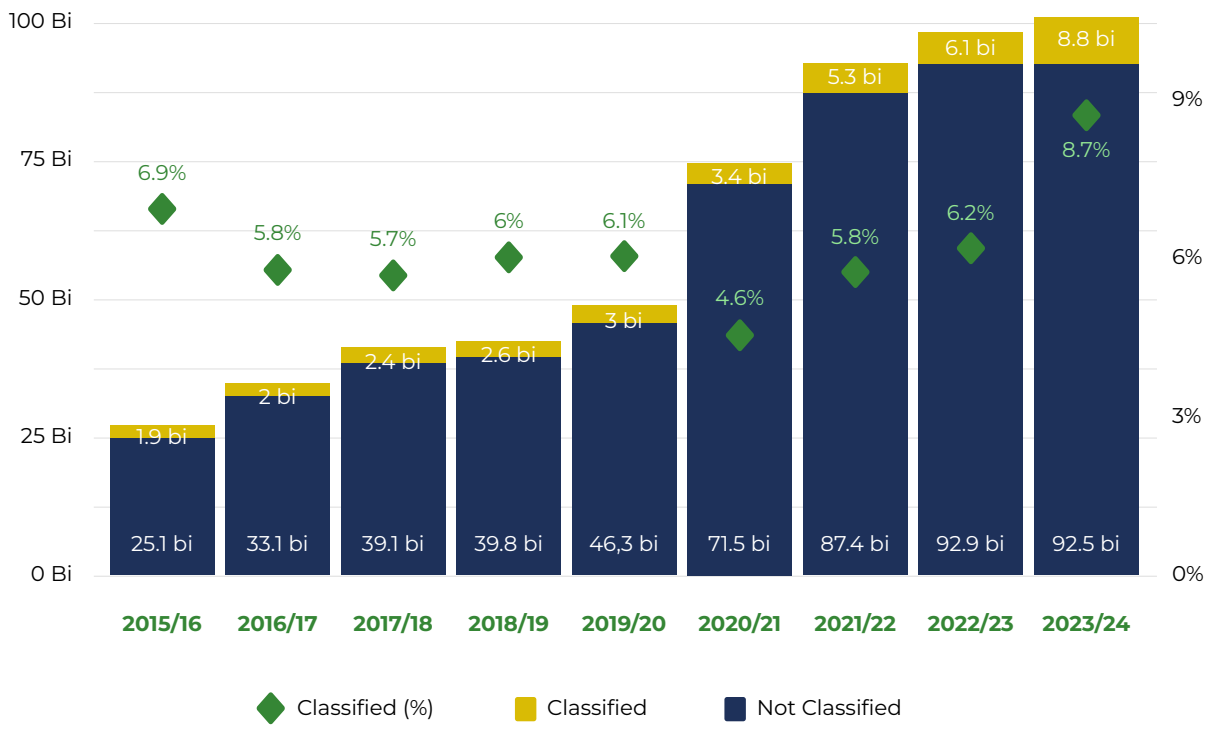
PROGRAM	SUB-PROGRAM	LINK WITH SPSABC, ABC+ CONCEPTUAL BASES, AND SOCIO-BIODIVERSITY PRODUCTS
FNO-ABC (Program For Financing Low-Carbon Agriculture) CLOSED	No-Till - CLOSED	No-Tillage System
	Pasture Recovery - CLOSED	Recovery Practices for Degraded Pastures
	Harvest, Livestock and Forest Integration Agroforestry Systems - CLOSED	Integrated Systems (ILPF and its combinations)
	Forests - CLOSED	Planted Forests
	Manure and Waste Treatment - CLOSED	Animal Production Waste Stewardship
	Biological Nitrogen Fixation - CLOSED	Bio-inputs
RenovAgro - Financing Program for Sustainable Agricultural Production Systems (replaced *Programa ABC+* in the 2023/2024 harvest)	RenovAgro Recovery and Conversion	Degraded Pasture Recovery Practices/ SAF/Natural Resource Conservation Practices
	RenovAgro Organic	Conservation Practices for Natural Resources/SAF
	RenovAgro No-Tillage System	No-Tillage System
	RenovAgro Integration	Integrated Systems
	RenovAgro Forests	Planted Forests
	RenovAgro Environmental	Planted Forests/SAF/Forest Code
	RenovAgro Waste Stewardship	Animal Production Waste Stewardship
	RenovAgro Palm	Planted Forests
	RenovAgro Bio-inputs	Bio-inputs
	RenovAgro Soil Stewardship	Degraded Pasture Recovery Practices/ Natural Resource Conservation Practices

Source: Prepared by Agroicone based on SICOR/BCB. Updated on 14/AUG/2024

The Level 1 analytical strategy is considered the most conservative of all because it considers all investment contracts contained in the aforementioned programs and sub-programs to be undertakings that are aligned with the potential for reducing the negative environmental externalities from agricultural activity. These sub-programs have well-defined purposes and require proof, by means of a technical project, that the projects being financed adhere to these sub-programs' objectives.

Thus, considering the Level 1 analysis, the reSoutht is a total contracted amount of R$ 8.9 billion in terms of rural credit aligned with the potential for reducing negative environmental externalities in agricultural activity for the 2023/2024 harvest, which represents 8.4% of the total amount of credit allocated for investment. Figure 3 shows the trajectory of these Level 1 funds. It is worth noting that, for comparison purposes, it is only possible to consider the purpose of the investment, since the labeled sub-programs are intended only for this purpose.

Figure 3 | **Amount contracted in rural credit (investment) - Level 1**

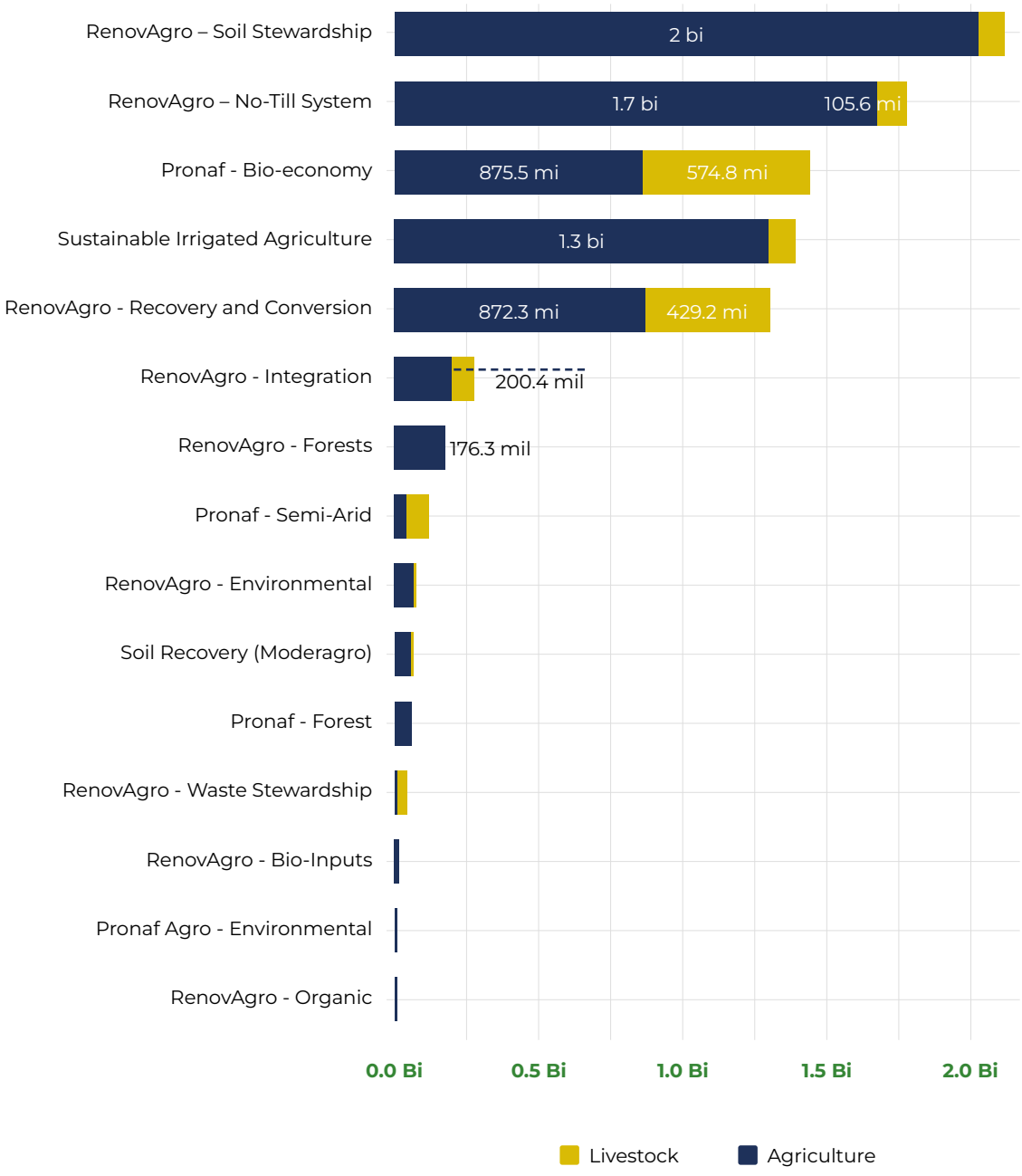


Source: Prepared by Agroicone based on SICOR/BCB. Updated on 14/AUG/2024

Note: The following lines of credit were classified as part of a sustainability journey for agricultural activity: i) Subprograms of *Programa ABC+* , currently RenovAgro; ii) Subprograms with a sustainable purpose for Pronaf (Agroecology, Semiarid, Forest and Bioeconomy); iii) Soil Recovery Subprogram of the Moderagro Program; iv) Sustainable Irrigated Agriculture Subprogram of the Proirriga Program.

The importance of each sub-program in the composition of financial resources classified as Level 1 can be seen in Figure 4 for the 2023/2024 harvest. The funds are also broken down by activity, showing a smaller share of livestock farming in all the financial resources classified at this level.

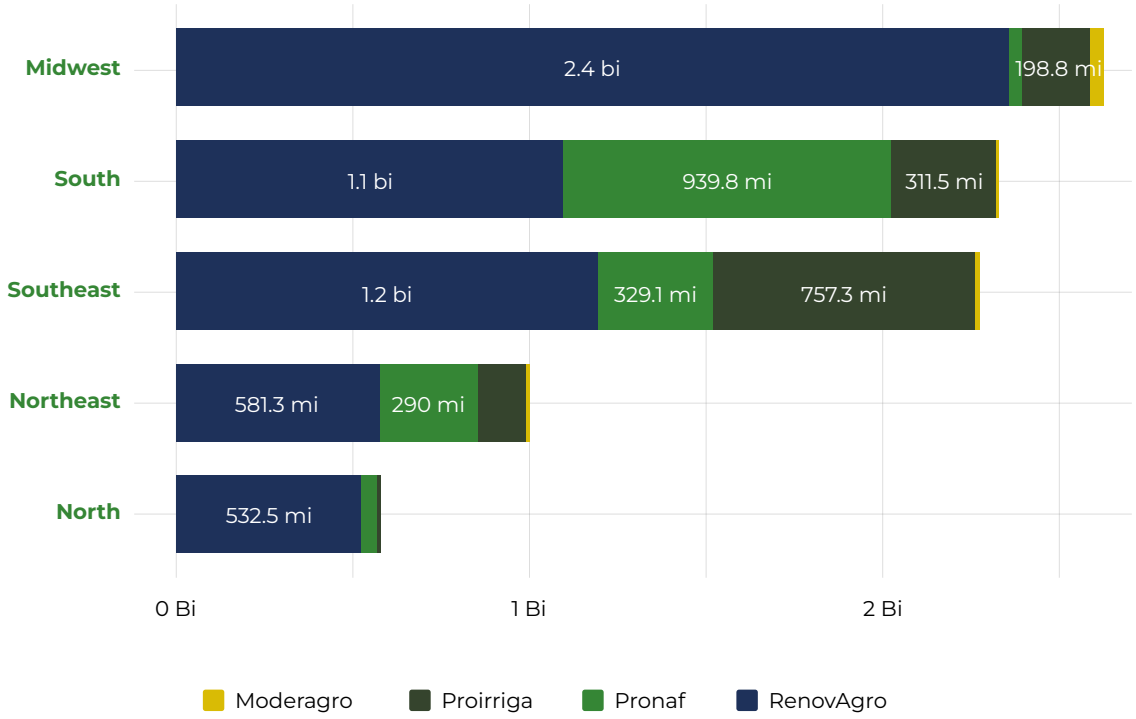
Figure 4 | **Breakdown, by subprogram and activity, of the financial resources classified in Level 1 in the 2023/2024 harvest year**



Source: Prepared by Agroicone based on SICOR/BCB. Updated on 14/AUG/2024

The dynamics can also be noted from the perspective of the programs and the regions of the Federation. It can be seen that the South, followed by the Midwest and the Southeast, contract a very similar credit volume classified as Level 1, with the importance of the funds varying by Program (considering only the amounts related to the labeled sub-programs). The Northeast and the North, on the other hand, have a lower relative weight.

Figure 5 | **Distribution of Level 1 financial resources, classified by region and by program, in the 2023/2024 harvest year**



Prepared by Agroicone based on SICOR/BCB. Updated on 14/AUG/2024

Finally, it is important to highlight the risks of the Level 1 analytical strategy. Despite being more conservative, it is necessary to point out that in **Assumption 1** there is no way to label the funds in the programs and sub-programs defined in the strategy as being effectively sustainable. Despite being exposed to a "taxonomy" (if we consider Plano *ABC+* as such, since it lists sustainable technologies and practices), and well-defined eligibility criteria (criteria preventing access to the credit policy itself, MCR 2-9, and the basic conditions for access to credit, MCR 2-1), there is no monitoring, evaluation and reporting system that enables the results and impacts of these investments to be effectively measured.

LEVEL 2

Including "sustainable" products

The Level 2 analytical strategy is based on the assumption that there is an opportunity to analyze the sustainability journey beyond the financial resources earmarked for programs and sub-programs labeled as potentially reducing negative environmental externalities. There is a mass of contracts signed outside of these sub-programs that also have this potential. Thus, this level takes into account products (financed items) that have some alignment with agriculture's sustainability journey, since their presence in the composition of a contract can represent a potential for reducing negative environmental externalities in the activity.

Using the "Intensive Soil Correction" product as an example: From the 2013/2014 harvest to 2023/2024, R$ 38 billion were financed for this product. Of this total, R$ 25.6 billion (66.2%) refers to contracts not included in the list of programs/sub-programs in the previous analytical strategy (Level 1). However, the "Intensive Soil Correction" product has the potential to reduce negative environmental externalities, such as soil degradation and loss of fertility. Therefore, it should be taken into account when trying to understand a broader dimension of the agricultural activity's sustainability journey financed by *Plano Safra*.

As an example, Table 4 shows a contract extracted from the SICOR database which contains the "Intensive Soil Correction"[12] product, but which was executed under Pronaf's "Microcredit" sub-program. Only the cost of this product was considered in the analysis, without applying the associated resources principle. In other words, the other products that make up the contract are not considered in the Level 2 analytical strategy.

Table 4 | **Example contract extracted from the SICOR database**

CONTRACT #	HARVEST	PROGRAM	SUB-PROGRAM	PRODUCT	AMOUNT (R$)
6113069	2015/16	Pronaf	Micro-credit	CATTLE	2,400
6113069	2015/16	Pronaf	Micro-credit	OTHER IMPROVEMENTS	200
6113069	2015/16	Pronaf	Micro-credit	INTENSIVE SOIL CORRECTION	1,400

Source: Central Bank of Brazil, SICOR. Accessed on 14/AUG/2024

[12]As already argued in the assumptions, it is not possible to make a judgment of soil correction quality. In other words, the results must always be interpreted in the light of this assumption.

Thus, in the Level 2 strategy, the total amount of credit earmarked for contracting these products that are considered to potentially reduce negative environmental externalities is added to the labeled programs/subprograms. The following criteria were used for this definition:

i. Products that address climate resilience and reduce agricultural emissions, considering the conceptual bases of *Plano ABC+* as a reference;

ii. Socio-biodiversity products, considering those indicated in the Guaranteed Minimum Price Policy for Socio-Biodiversity Products (PGPM-Bio)[13], as well as the catalog of socio-biodiversity products from the Chico Mendes Institute for Biodiversity Conservation (ICMBio)[14].

In addition to identifying the products in the SICOR database, they were also categorized by defining sustainability classes, as described in Table 5, aiming to classify their purpose as aligned with the agricultural sustainability journey.

Table 5 | **Products classified as having the potential to reduce negative environmental externalities**

SUSTAINABILITY CLASSES	PRODUCTS	LINKED TO SPS*ABC*, *ABC+* CONCEPTUAL BASES AND SOCIO-BIODIVERSITY PRODUCTS
Productive sustainability actions	Algae; Equipment and tools for precision agriculture; Acquisition of animal semen, ova and embryos; Artificial insemination; Water collection, retention and utilization systems; Free stall cattle confinement; Algaeculture (algae cultivation); Environmental sustainability and renewable energy actions; Implementing renewable energy technologies, environmental and small hydro-energy applications; Bio-digestor, manure plant, biological oxidation tanks and water and sewage treatment; Building/restoring dams/tanks, water collection systems; Acquisition of systems for tracking cattle and buffalo; Environmental recovery	Animal Production Waste Stewardship; Bio-inputs; Intensive Finishing; Other actions in productive sustainability that is transversal to *Plano ABC+*

[13]Access it here: https://www.conab.gov.br/precos-minimos/pgpm-bio | [14]Access it here: https://www.gov.br/icmbio/pt-br/centrais-de-conteudo/catalago-de-produtos-da-sociobiodiversidade-do-brasil-pdf

SUSTAINABILITY CLASSES	PRODUCTS	LINKED TO SPSABC, *ABC+* CONCEPTUAL BASES AND SOCIO-BIODIVERSITY PRODUCTS
Planted forests	Black wattle; Araucaria; Neem; Cedar; Eucalyptus; Afforestation and reforestation; Afforestation - cultural treatments; Forest certification; Pine; Kiri (*paulownia spp*); Harvesting, clearing and cleaning planted forest; Cambará; Cedrinho; Garapeira	Planted Forests; SAF; Integrated Systems; Compliance with the Forest Code
Irrigation	Irrigation/leaching (dripper, sprinkler, nebulizer, exhaust fan, fan, hoses, et channels); Irrigation; Artificial lake, pond, dams, canals, freshwater reservoir; Well drilling, cistern	Irrigated systems
Soil improvement	Intensive soil fertilization; Liming, fertilizers, and organic and mineral fertilization; Grass; Brachiaria; Ground covers (plastic, TNT, fabric, sawdust, grass and grain straw, etc.); Intensive soil correction; Non-intensive soil correction; Crotalaria; Stylosants; Pasture; Tifton; Soil protection; Organic/mineral fertilization, liming, inert substrates (stone, sand, vermiculite, silt, clay, and others)	Recovery Practices for Degraded Pastures; No-Till System; Conservation Practices for Natural Resources
Socio-biodiversity products	Açaí; Andiroba; Babaçu; Baru; Bracatinga; Buriti; Cacau; Cajá; Carnaúba; Brazil nut; Baru nut; Copaíba; Cupuaçu; Dendê (Palm Oil); Forest essence; Fava; Guaraná; Guariroba; Jatobá; Macaúba; Mangaba; Murumuru; Moringa; Murici; Vegetable oil; Palm heart (pupunha, açai); Paricá; Pataúá; Pracaxi; Pequi; Piaçaba (piassava); Aroeira (pink pepper); Pinhão; Seringueira; Taperebá; Tucum; Umbu; Urucum; Cumaru/champaign	SAF; Planted Forests; Compliance with the Forest Code; Conservation Practices for Natural Resources; Socio-biodiversity Products

Fonte: Elaborado por Agroicone com base no SICOR/BCB. Atualizado em 14/08/2024

The “Productive Sustainability Actions” class includes products linked to production practices and systems that preserve natural resources, prevent deforestation, and mitigate GHG emissions in their different dimensions (e.g., bio-digestors for animal production waste stewardship; renewable energies for replacing fossil fuels; water collection systems; traceability, and more).

In the “Planted Forests” class, several species of trees that address the SPSABC Planted Forests have been grouped together. As described in Plano ABC+, this practice is responsible for the greatest potential for mitigating GHG emissions, with a 510 million Mg CO2eq reduction expected by the end of the decade (MAPA, 2021). The “Afforestation and Reforestation” product also appears as a potential product for addressing environmental liabilities, favoring environmental compliance with the Native Vegetation Protection Law (Law N. 12,651/2012), although it is not possible to identify this purpose in SICOR in most of the credit lines that finance this product.

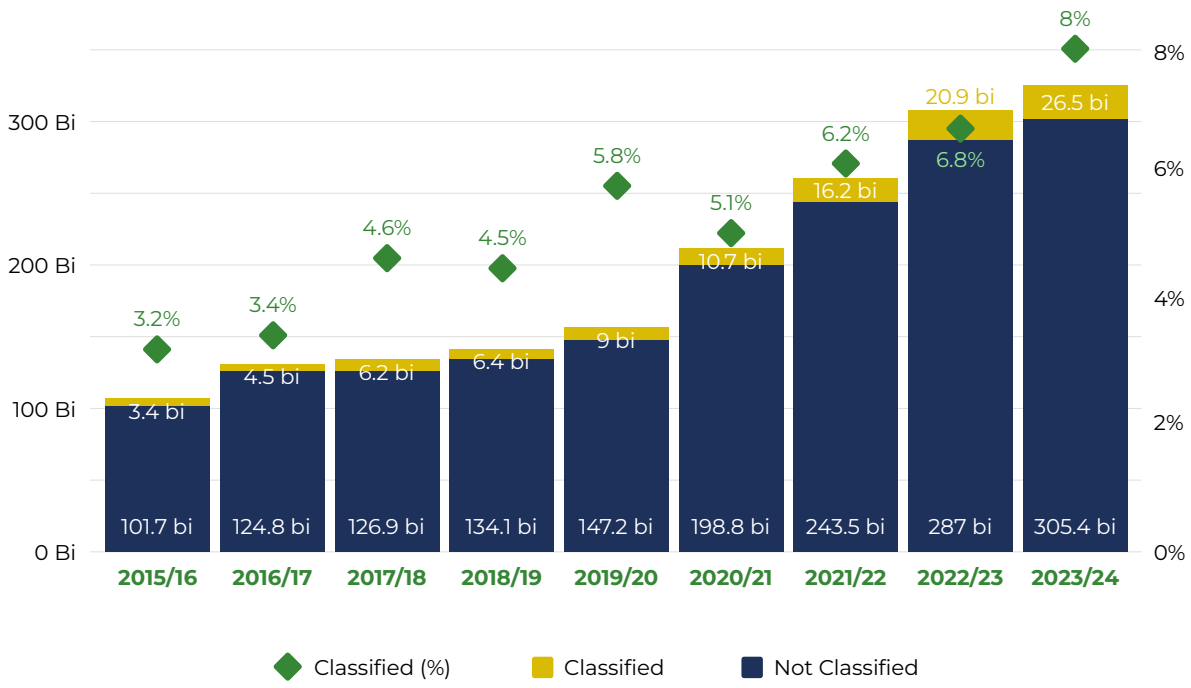
Meanwhile, “Soil improvement” finances products with positive effects on the soil asset, with the potential to improve its profile and fertility, facilitating its infiltration capacity, reducing erosion, increasing organic matter, and helping to control weeds and other organisms that are harmful to crops. This class also includes products linked to the SPSABC Practices for Recovering Degraded Pastures and the No-Tillage System, as well as the ABC+ conceptual basis of conservation practices for natural resources (use, stewardship, and protection, including soil acidity and fertility correction).

Irrigation, another practice linked to ABC+, is also an analyzed sustainability class. This includes several irrigated systems, which play an important role in maintaining soil quality, while also providing the required economic sustainability for production, as a strategy for adapting to climate change in places where rainfall is scarce or irregular, depending on production needs.

Finally, the “Socio-biodiversity Products” class includes harvests from extractivism and sustainable stewardship of native vegetation, as well as their populations’ livelihood. This defines several local products, including those with potential for advancement in agroforestry practices, which represent an important path towards sustainability in agriculture.

Figure 6 shows the distribution of the funds for costing and investment that are "eligible" and "not eligible" as potential reducers of negative environmental externalities, considering the Level 2 analytical strategy. Considering the 2023/2024 harvest, it is possible to see a leap from R$ 8.9 billion in financial resources allocated in line with the sustainability trajectory at Level 1, to a total amount of R$ 26.5 billion, when incorporating the products classified by the presented analysis. However, the relative figures have declined compared to Level 1, with rural credit classified in this strategy accounting for 8% of the total in the last analyzed harvest. It is important to note that, unlike Level 1, the costing item is incorporated, since the list of Level 2 products contains items that can be financed via costing.

Figure 6 | **Contracted amount of rural credit (Costing and Investment) – Level 2**

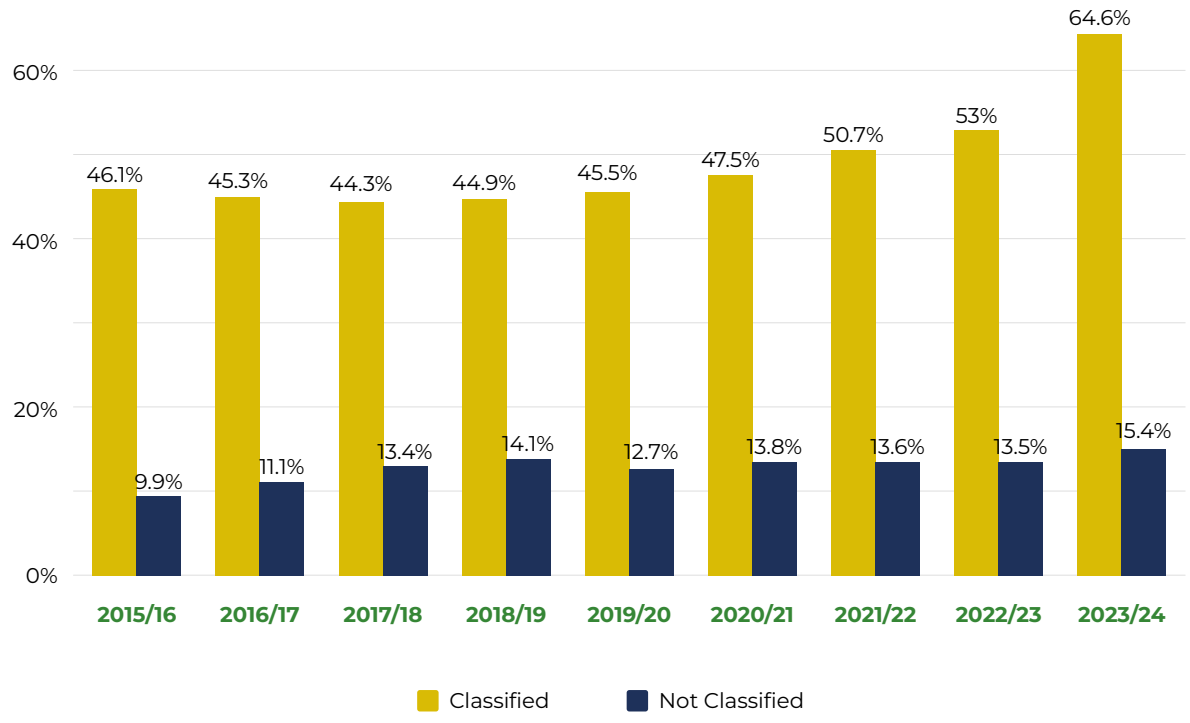


Source: Prepared by Agroicone based on SICOR/BCB. Updated on 14/AUG/2024

Note: The following were considered sustainable: i) Programs and Subprograms classified in Level 1 and ii) the list of products defined in Table 5.

An interesting proof of concept in using products (financed items) as a way of capturing sustainability journeys can be seen in Figure 7. The graph describes the share of products included in Level 2 (Table 5) in the dynamics of Level 1 resources. Since Level 1 refers to programs and sub-programs with the explicit purpose of financing sustainable ventures, it is expected that the products included in Level 2 will have a higher frequency in these sub-programs compared to the other investment sub-programs (resources that are not included in Level 1). The higher percentages in the classified resources show a good correlation between products on the sustainability journey and the labeled programs/ subprograms. In the 2023/2024 harvest, there is a significant increase in this percentage, which reaches 64.6%.

Figure 7 | **Percentage of classified products (Table 5) relatively to the percentage of products classified in each Level 1 group**



Source: Prepared by Agroicone based on SICOR/BCB. Updated on 14/AUG/2024

In addition, it is also important to emphasize the risks of the Level 2 strategy. Arguing about the purpose of a financed project, the intensity and quality of the intervention, as well as the productive characteristics of the project based on a product analysis, can lead to potential biases. For example, products included in the "Irrigation" sustainability class. It is not possible to infer the water availability or efficiency of water use in these projects. However, irrigation is considered an SPSABC because it impacts the water resilience of production systems. In other words, since it is aligned with climate change adaptation and the *ABC+* Plan, these products were included in the Level 2 strategy (excluding flood irrigation systems from this analysis).

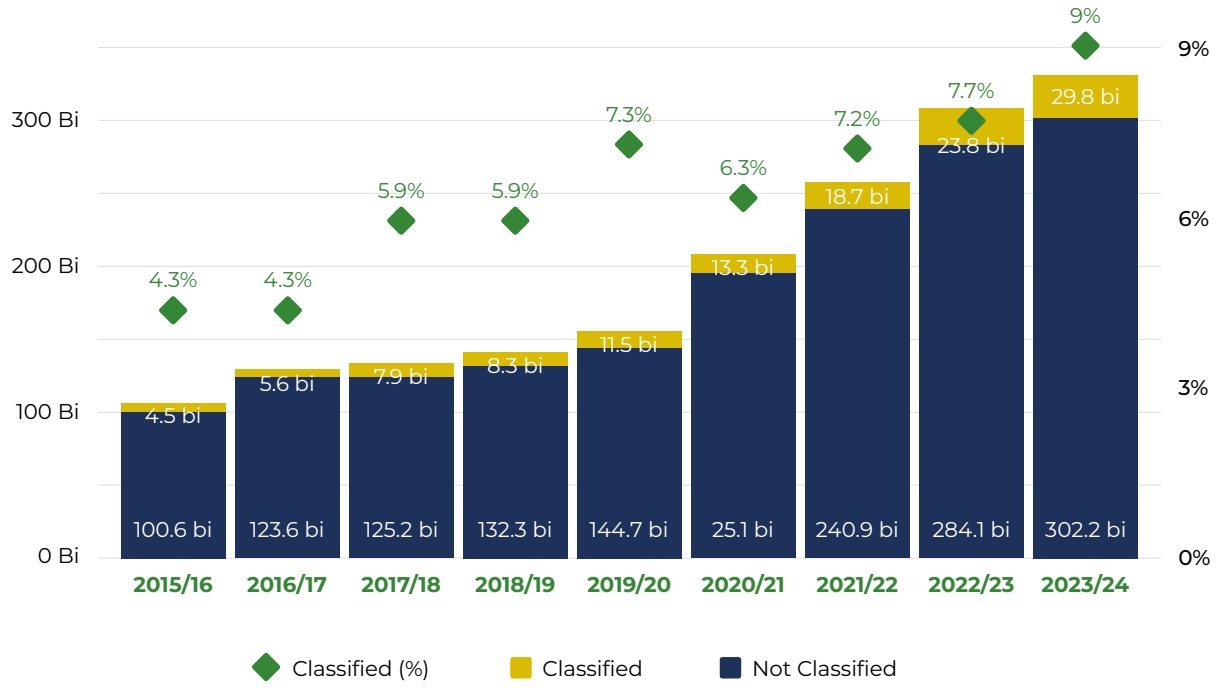
LEVEL 3

Applying the principle of associated funds: including the total amount of contracts with products classified as aligned with the agricultural sustainability journey

The Level 3 strategy, in turn, expands the concept of a product with the potential to reduce negative environmental externalities applied at Level 2. As an example, see the contract contained in Table 4 of the previous section. This is made up of three products, “Intensive Soil Correction”, which is considered in the methodology as a product aligned with agriculture’s sustainability journey, as well as “Cattle” and “Other Improvements”. Considering that the presence of a product aligned with this methodology’s criteria could be used for characterizing the financed enterprise, it would be possible to infer that the contract as a whole contributes to the activity’s sustainability journey. Therefore, in order to reduce this possible underestimation, the entire amount of the contract that contains at least one product classified with the criteria is added. In the example in Table 4, the amounts for “Cattle” and “Other improvements” would also be included in calculating the financial resources with the potential to reduce negative environmental externalities.

The result of this analysis can be seen in Figure 8, which shows a total of R$ 29.8 billion in rural credit contracts for the 2023/2024 harvest, aligned with the agricultural sustainability journey, which is the sum of the labeled products, programs/sub-programs and contracts with products that have the potential to reduce negative environmental externalities. It can be seen that, when applying the principle of associated resources, there are no substantial gains for the volume of credit contracted in the 2023/2024 harvest, with an increase of only R$ 3.2 billion in the contracted amount compared to Level 2, representing 9% of the rural credit for costing and investment allocated in the same harvest.

Figure 8 | **Contracted amount of rural credit (costing and investment) - Level 3**



Source: Prepared by Agroicone based on SICOR/BCB. Updated on 14/AUG/2024

Note: The following were considered as financing aligned with a potential to reduce negative environmental externalities in agriculture: i) Labeled Level 1 Programs and Subprograms and ii) total amount of the credit contract with a product listed in Table 5.

The assumption of the Level 3 strategy is based on the principle of the associated fund, in which a contract with a product classified as potentially reducing negative environmental externalities must, as a consequence, have its total amount classified as such. In other words, there is an inherent risk of classifying the financed enterprise or activity as aligned with the sustainability journey when it actually is not. Even so, the risk increase is very small compared to the Level 2 strategy, since the increase in the amount classified in the methodology is low.

LEVEL 4

Including variables that point to the agricultural sustainability journey

The Level 4 strategy seeks to exploit the vast potential that SICOR has in terms of its ability to characterize enterprises financed by *Plano Safra*. In addition to the characteristics already mentioned in this document, SICOR has fields that make it possible to classify the enterprises financed by type of agriculture, type of integration/consortium, type of cultivation, production phase/cycle, type of irrigation, modality, and variety, which are directly linked to the contracted products and reflect the stewardship strategies adopted in the financed enterprises.

Thus, for Level 4, the volume of contracted financial resources was added to the amounts for Level 3, using the variables that categorize production practices and systems aligned with the agricultural sustainability journey. At the disaggregation level of the SICOR microdata, as shown in Table 6, seven fields can be noted: "Types of Agriculture/ Agriculture", "Type of Integration/Consortium", "Type of Irrigation", "Type of Cultivation", "Phase/Cycle of Production", "Modality", and "Variety". For the purposes of the analysis, the contracted amounts were selected according to the variable and description in Table 6, which are aligned with the *Plano ABC+* logic.

Table 6 | **Variables from rural credit microdata and categories that are classified as sustainable**

SICOR VARIABLE	DESCRIPTION	LINK WITH SPS ABC, *ABC+* CONCEPTUAL BASES, AND SOCIO-BIODIVERSITY PRODUCTS
Type of Agriculture	Native Forest	Planted Forest/ Environmental Compliance (Forest Code)
	No-Till Farming	No-Till System
	Planted Forest	Planted Forest
	Agroecological	No-Till Vegetable Planting System/SAF
	Organic	No-Till Vegetable Planting System/SAF

SICOR VARIABLE	DESCRIPTION	LINK WITH SPSABC, *ABC+* CONCEPTUAL BASES, AND SOCIO-BIODIVERSITY PRODUCTS
Type of Consortium/ Integration	Consortium	No-Till Planting/Practices for Recovering Degraded Pastures/Integrated Systems/SAF
	Crop-Livestock Integration	Integrated Systems
	Agroforestry Systems	SAF
	Crop-Livestock-Forest Integration/Agro-Silvo-Pastoral System	Integrated Systems
	Crop-Forest Integration	Integrated Systems
	Cattle-Forest Integration	Integrated Systems
Type of Irrigation	Drip irrigation	Irrigated Systems
	Micro-sprinklers	
	Sprinklers	
	Xique-Xique	
	Cannon	
	Pivot	
	Self-propelled	
	Furrows	
	Irrigation with drought insurance MCR 12-2-3-c””	
Type of Cultivation	No-Till - CLOSED	No-Till System
	Minimum Cultivation	No-Till System

SICOR VARIABLE	DESCRIPTION	LINK WITH SPSABC, *ABC+* CONCEPTUAL BASES, AND SOCIO-BIODIVERSITY PRODUCTS
Type of Cultivation	Extractivism – CLOSED	-
	Semi-intensive livestock - CLOSED	Intensive Finishing
	Intensive livestock farming – CLOSED	Intensive Finishing
	Livestock Confinement – CLOSED	Intensive Finishing
	Agroecological - CLOSED	SAF
	Protected Cultivation	-
	Sustainable Forest Stewardship	Planted Forests
Phase/Cycle of Production	Finishing in confinement	Intensive finishing (feedlots)
	Raising under animal welfare conditions	
Modality	Extractivism of native species; Afforestation and reforestation; Pasture	Planted Forests/Practices for Recovering Degraded Pastures/SAF/Socio-biodiversity products
Variety	Black acacia; Almonds; Almonds - cultivated; Babassu; Natural rubber; Brachiaria; Meat (cattle finishing in confinement or wintering); Chestnuts; Cisterns, reservoirs or tanks, rainwater collection, frames, underground reservoirs, drip, porous capsules or drip and other systems for storing and using water, except levees, wells, and irrigation canals; Building or renovating levees, opening irrigation canals, buying the equipment required for irrigation services (motors, pumps, gyroscopic sprinklers, sprinkler valves, etc.), parts and accessories; Correcting the soil and combating pests (limestone and fertilizer distributors, sprayers, vaporizers, blowers, foggers, etc.); Soil correction and pest control, harvesters, mowers, rails, threshers, and others.;	Several SPSABC and socio-biodiversity products

SICOR VARIABLE	DESCRIPTION	LINK WITH SPSABC, *ABC+* CONCEPTUAL BASES, AND SOCIO-BIODIVERSITY PRODUCTS
Variety	Cultivation in integrated systems; Bark - extractive; Eucalyptus; Eucalyptus benthamii; Eucalyptus dunnii; Eucalyptus globulus; Eucalyptus grandis; Eucalyptus saligna; Eucalyptus viminalis; Forage; Fruit - extractive; Jacarandá; Macaúba; Mahogany; Pasture; Pinus; Pinus caribaea; Pinus elliottii; Pinus oocarpa; Pinus taeda; Environmental recovery; Degraded pasture recovery; Water reservoirs, drinking fountains and toilets; Teak; Renewable energy technology, small hydro-energy uses, environmental technologies. ; Earthmoving, drainage and planting plant species for soil fixation and shading	Several SPSABC and socio-biodiversity products

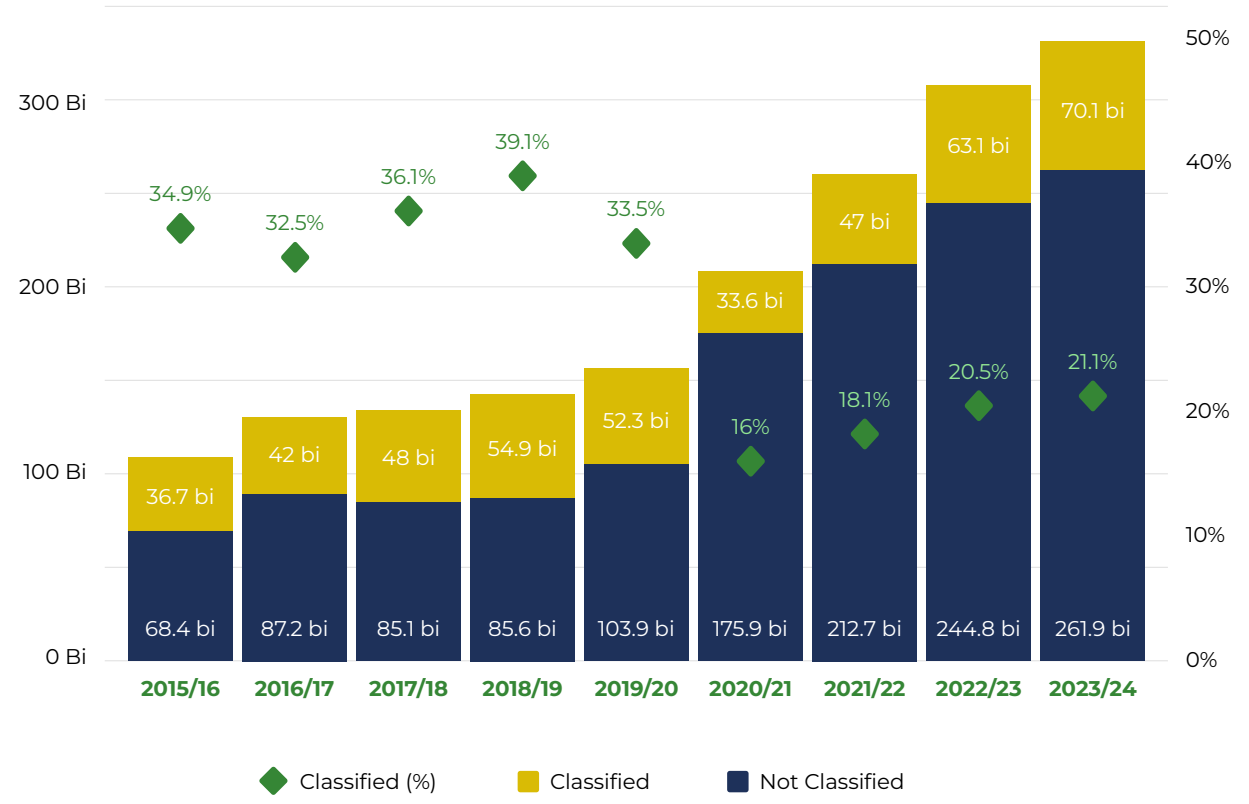
Source: Prepared by Agroicone based on SICOR/BCB. Updated on 14/AUG/2024

As can be seen, the categories of variables mostly address production practices and systems recommended by the SPSABC, such as the No-Till System, which indicate more intensified production systems for livestock, irrigation[15] and forestry, among others. There are also the Modality and Variety variables, which represent product specifications and can also be used as indicators for identifying potential reductions in negative environmental externalities. It should be noted that there is still significant underreporting[16] of these variables in SICOR, considerably reducing the methodology's ability to capture the potential increase in financial resources allocated through this classification (Level 4).

However, even with these variables being underreported, Figure 9 shows a considerable increase in the volume of rural credit funding that is considered to be aligned with the agricultural sustainability journey. Including products with any of the above variables means that in the 2023/2024 harvest, this type of credit will account for R$ 70.1 billion (21.1% of total financial resources). Despite the significant increase, it can be seen that the share has been decreasing, given the 39.1% weight of "sustainable" credit in the 2018/2019 harvest. Several factors may explain this reduction in percentages, such as changes in SICOR's own variables and fields over time.

[15]The "Flood" category was excluded from the Irrigation Type variable, as it did not meet the principle of efficient water use management at SPSABC Sistemas Irrigados. | [16]Considering all the years of the analysis, the percentages of fields filled in as "Not applicable" among the variables are: i) Type of Agriculture (72%); Type of Irrigation (71.6%); Phase/Cycle of Production (70.4%); Type of Cultivation (77.6%); Type of Consortium/Integration (74.4%).

Figure 9 | **Contracted amount of rural credit (Costing and Investment) - Level 4***



Source: Prepared by Agroicone based on SICOR/BCB. Updated on 14/AUG/2024

Note: The following were considered to be covered: i) Programs and Subprograms listed in Level 1 and ii) total amount of credit contracted for all contracts with any product listed in Table 5; iii) total value of products aligned with the categories defined in Table 6 for the variables.

In order to identify the main drivers behind the growth in financial resources classified in Level 3 over to Level 4, it can be seen that this increase was mainly due to No-Till, which, combined with another category or on its own, added R$ 15.4 billion (39.2% of the R$ 39.2 billion added) in the 2022/23 harvest. R$ 9 billion of this amount refers to soybean cultivation. The other variables include: i) R$ 4.2 billion in Pivot, in Type of Irrigation; ii) R$ 2.7 billion in Crop-Livestock-Forest Integration/Agro-Silvo-Pastoral System, in Type of Consortium/Integration; iii) R$ 1.05 billion in Phase/ Cycle of Production; iv) R$ 7.3 billion, in Type of Cultivation; v) R$ 4.4 billion in Soil Correction and Pest Control, in the Variety variable. It should be noted that the mentioned amounts may be combined with other categories, since these variables refer to products, not contracts.

The Level 4 strategy is also exposed to the same risks argued in the previous Levels, in addition to the need for proof for each field filled in with the characteristics of the financed enterprises. Despite this, it incorporates an important layer of information that is often underused and underreported in SICOR. In other words, this strategy still has great potential for evolution, given that the process of collecting this information or the very structure of the options in each of the fields are subject to improvement.

LEVEL 5

Including the total amount of contracts with classified categories

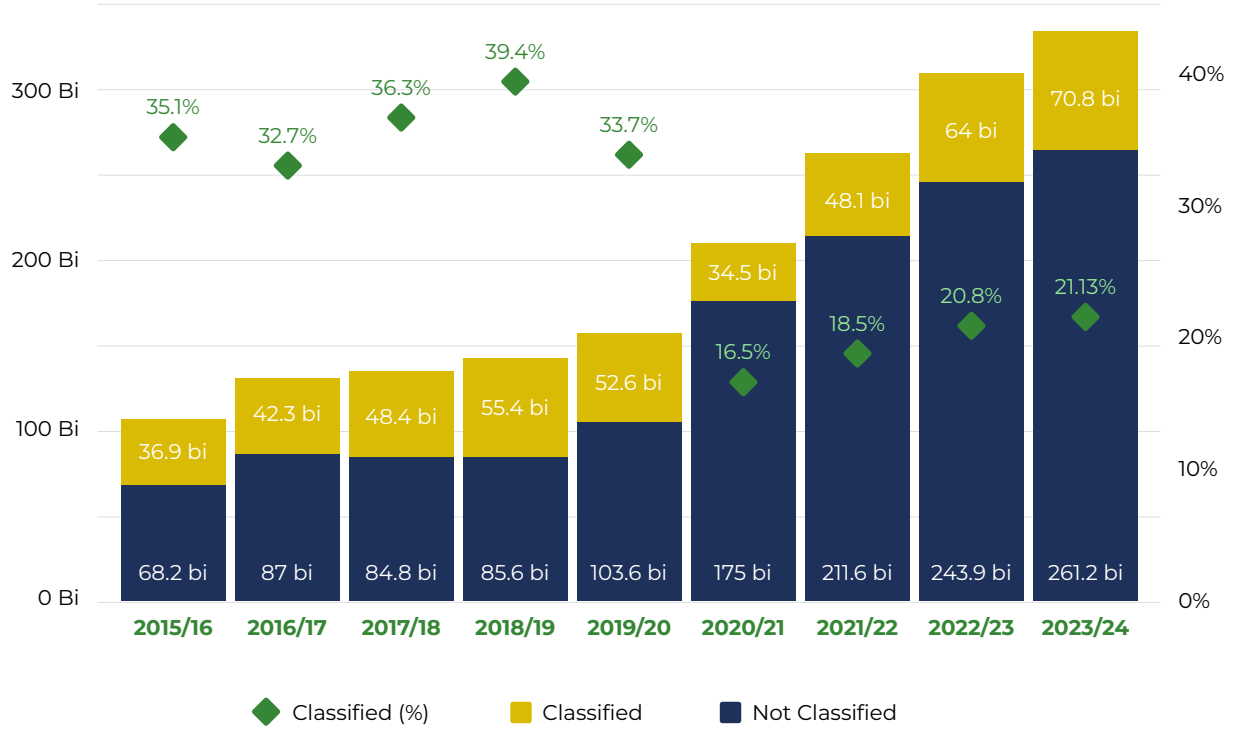
The Level 5 strategy applies the same logic to contracts as the Level 3 strategy applies to contracts, i.e., it accounts for all products linked to a product in the contract that is classified as a category indicating the sustainability journey in the variables mentioned in Table 6, based on the principle of associated resources.

The concept, in this case, is that the products combine to achieve the enterprise, which is carried out under a sustainable planting or stewardship system, or even using techniques that contribute to climate resilience and/or GHG mitigation. These categories therefore inform the characteristics of the financed enterprise and indicate practices aligned with agriculture's sustainability journey. It should be said that this strategy, in addition to proposing a new way for understanding practices that have the potential to reduce negative environmental externalities in credit contracts, gives rise to proposals for changing the criteria for completing data in SICOR[17].

Applying the Level 5 strategy, as can be seen in Figure 10, resulted in a R$ 743 million marginal increase in the 2023/2024 harvest. Despite the low figure, the gain in methodological terms is relevant and an opportunity for the proposed classification.

[17]Proposals for improving Sicor's fields were presented in Technical Note 5 of the set of proposals prepared by Agroicone for the 2024/2025 harvest: https://agroicone.com.br/wp-content/uploads/2024/03/Agroicone_Notas-Tecnicas-com-Propostas-para-o-Plano-Safra-2024-2025-1.pdf

Figure 10 | **Contracted amount of rural credit (Costing and Investment) - Level 5**



Source: Prepared by Agroicone based on SICOR/BCB. Updated on 14/AUG/2024

Note: The following were considered for Level 5 strategy : i) Programs and Subprograms listed in Level 1 and ii) total amount of credit contracted for all contracts with any product listed in Table 5; iii) total value of products aligned with the categories defined in Table 6 for the variables.

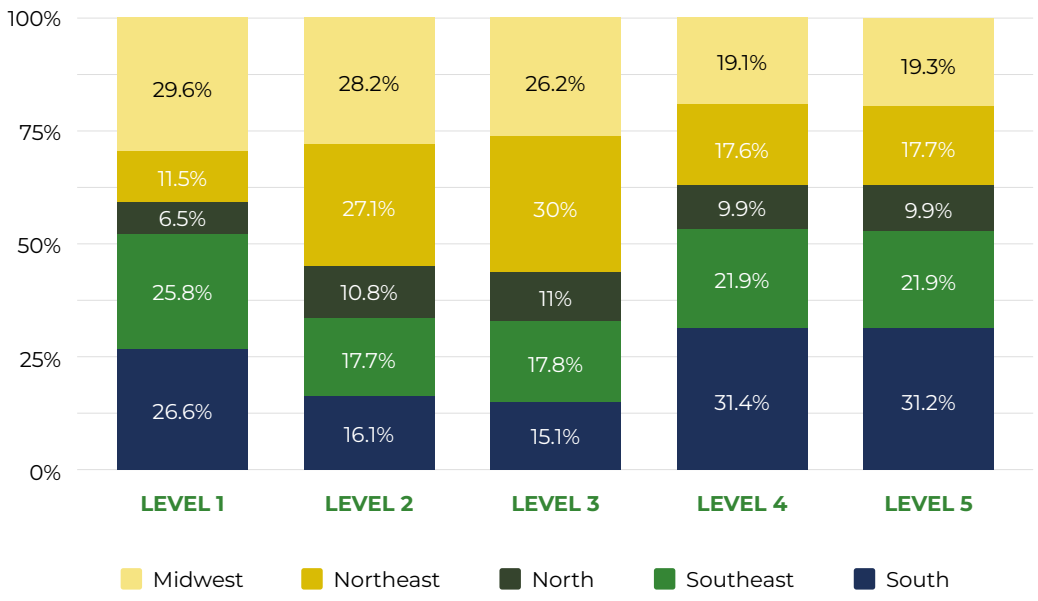
As shown above, from the five evaluated levels, it is possible to note a substantial increase in the volume of rural credit that is considered to potentially reduce negative environmental externalities in agriculture when the SICOR variables listed in Table 6 are included. This situation is an indication of the importance of these fields in minimally capturing production practices and systems aligned with the agricultural activity's sustainability journey, and it is important to encourage financial institutions to complete the SICOR fields in the rural credit contracting process.

EXAMINING THE LEVELS THROUGH OTHER SICOR LAYERS

Based on the presented methodological strategy, it is possible to see the dynamics of the resources adhering to the sustainability journey from the perspective of the different sections and variables available in SICOR. Elements such as the productive activity, the purpose for financing, the source of funding and regional cuts can provide a greater wealth of detail regarding allocation of financial resources to ventures with the potential to reduce negative environmental externalities. The cuts refer to the last harvest year.

Figure 11 shows that the percentage of classified funds increases substantially in Brazil's southern region at levels 4 and 5. This suggests that producers in this region stand out in terms of the sustainability journey and may, on the other hand, indicate a higher standard of completion of the SICOR categories by financial institutions in that region.

Figure 11 | **Classification of rural credit funds according to the methodology by major Brazilian region for the 2022/2023 harvest year**

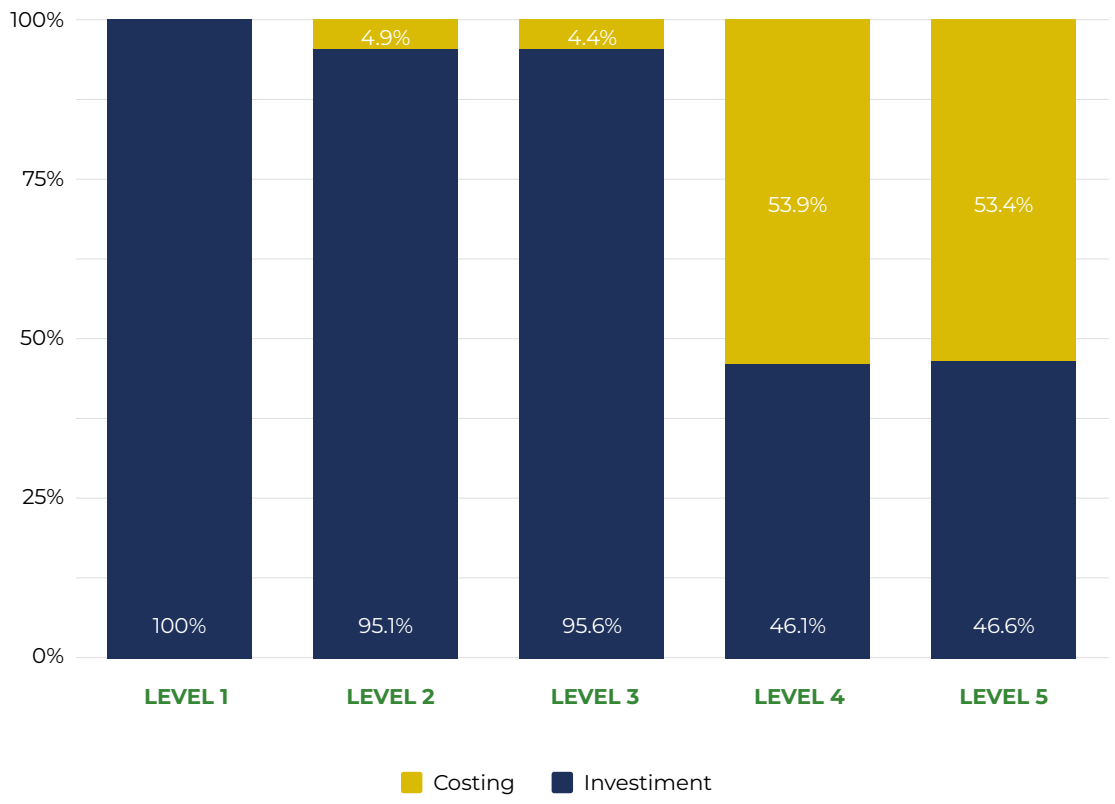


Source: Prepared by Agroicone based on SICOR/BCB. Updated on 14/AUG/2024

Another pattern to follow concerns the purpose of the signed contracts that are classified in the methodology's levels. The importance of investment in the purposes financed at the first three levels is clear. In other words, both the sub-programs selected in Level 1 (which are exclusively for investment) and the products included in Levels 2 and 3 have little adherence to costing.

However, when the exercise is expanded to Levels 4 and 5, taking into account the other variables that attest to the stewardship strategy adopted by producers, there is a significant increase in costing within these levels' framework. This is especially due to costing No-Till planting activities, an SPSABC that is broadly used in temporary harvests such as soybeans and corn.

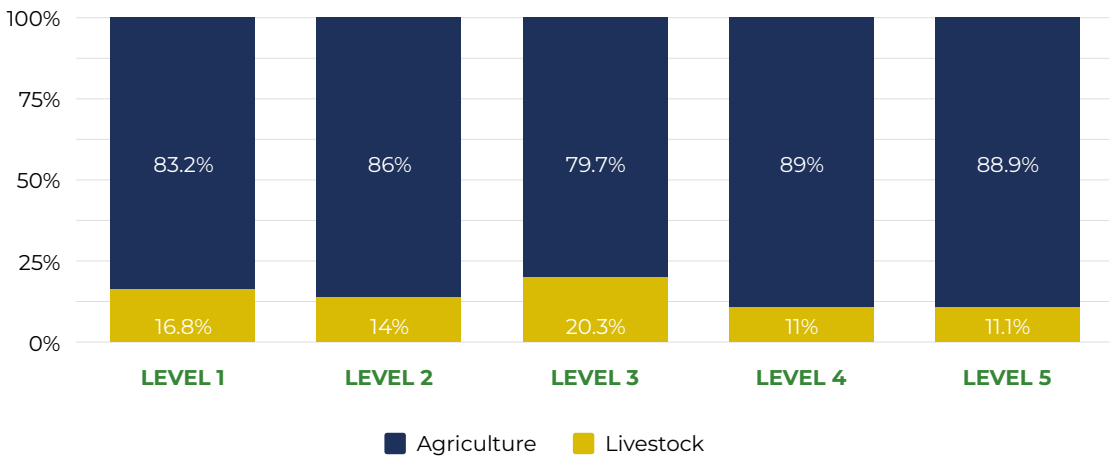
Figure 12 | **Percentage of funds classified by level and purpose in the 2023/2024 harvest**



Source: Prepared by Agroicone based on SICOR/BCB. Updated on 14/AUG/2024

This costing dynamics is also evident in the activity cuts. In the first three Levels, the importance of livestock farming in the composition of the classified financial resources is greater than in the other Levels, reaching 20.3% of the total financial resources classified in Level 3. However, as the costing of agricultural activity gains importance in Levels 4 and 5, the concentration of agriculture in the composition of the funding in the sustainability journey becomes evident, with around 89% of financial resources concentrated in this activity.

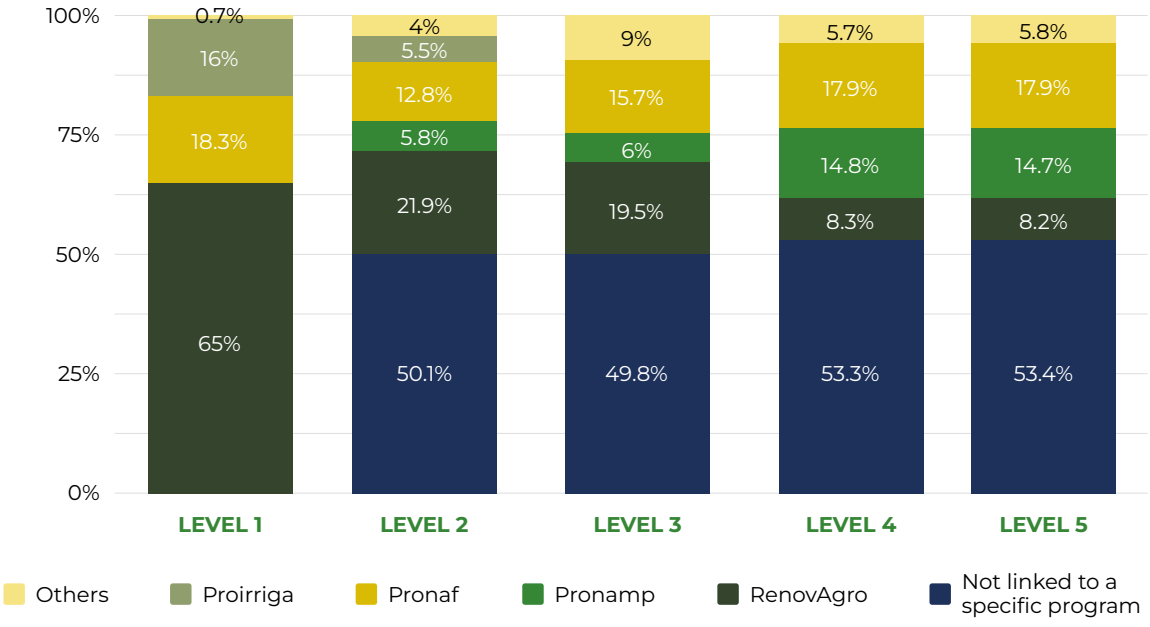
Figure 13 | **Percentage of classified financial resources by level and activity in the 2023/2024 harvest year**



Source: Prepared by Agroicone based on SICOR/BCB. Updated on 14/AUG/2024

The program cut, in turn, reveals a pattern that is already seen in the general allocation of rural credit funds, with a large concentration of contracts not linked to a specific program. This pattern can be explained by two reasons. The first one is the importance of the Constitutional Funds as a source of funding in the North, Northeast, and Midwest regions. The second one lies in the fact that these contracts are contained in investment and costing operations whose source of funds is free, especially under the LCAs (Agribusiness Letters of Credit) and Free Financial Resources headings. It can also be seen that the importance of the labeled programs (RenovAgro and Proirriga) declines along the Levels.

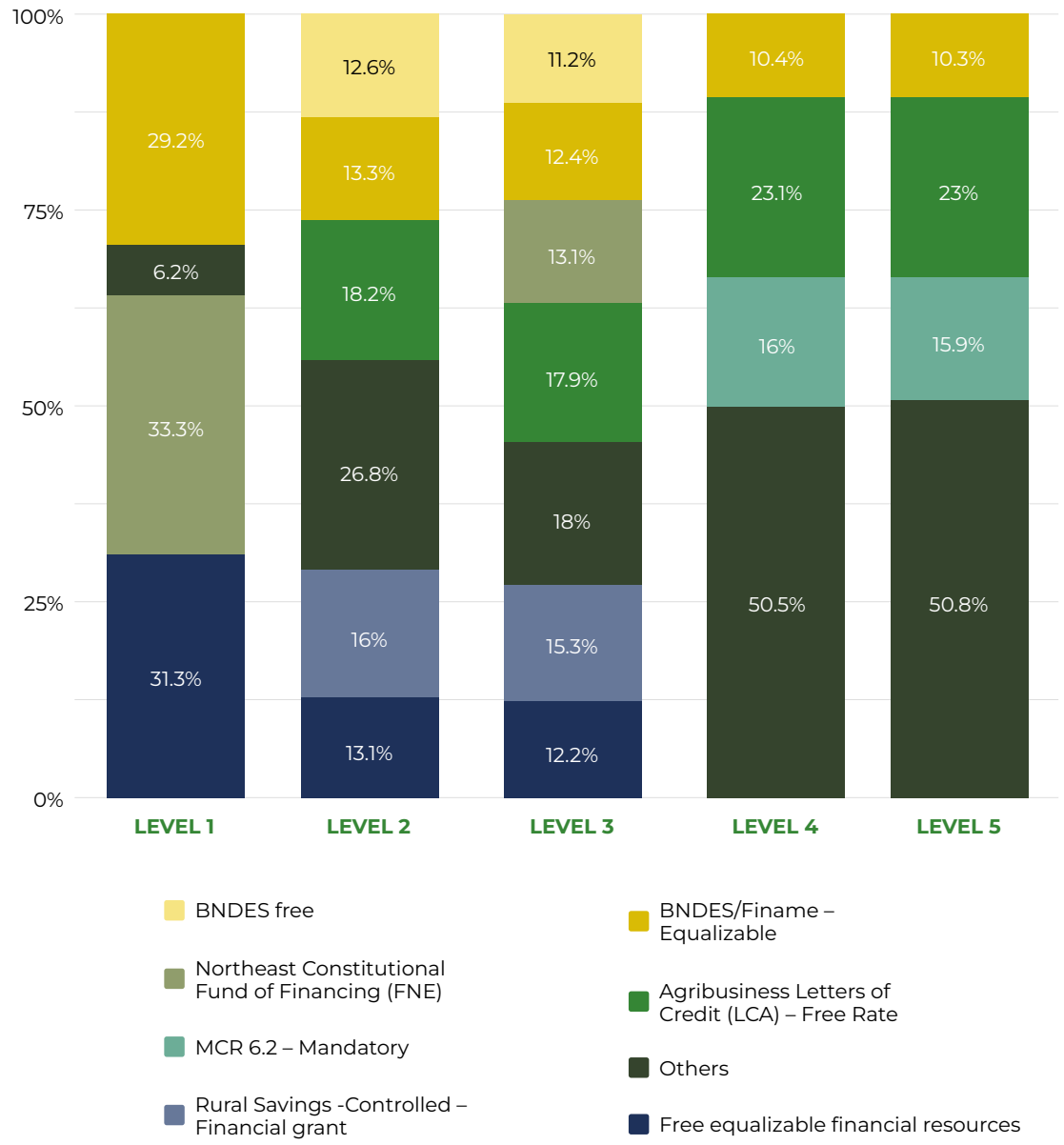
Figure 14 | **Percentage of classified financial resources by level and program in the 2023/2024 harvest year**



Source: Prepared by Agroicone based on SICOR/BCB. Updated on 14/AUG/2024

Finally, Figure 15 shows the methodology by source of funding. Although BNDES/Finame funds lose weight when moving up the levels, they still account for more than 10% of the total at Level 5. Agribusiness Letters of Credit (LCA) become a significant source from Level 2 onwards, while Compulsory funds increase from Level 4 onwards. From Levels 4 and 5 onwards, the growth in the "Other" category also shows a greater diversification of funding sources.

Figure 15 | **Percentage of classified financial resources, by level and source of funds in the 2023/2024 harvest year**



Source: Prepared by Agroicone based on SICOR/BCB. Updated on 14/AUG/2024

Note: for each Level, the graph only contains the sources of funding that individually account for more than 10% of the classified financial resources. The sources that did not reach this percentage were grouped in the Other category.

FINAL CONSIDERATIONS

How much of the rural credit financial resources are earmarked for financing sustainability and resilience in Brazilian agriculture? The complexity in answering this question ranges from lack of structured methodologies to inexistence (until the end of this work) of a taxonomy that is capable of characterizing what is or is not a sustainable practice.

Therefore, this document aimed to shed light on the subject by building a methodology based on SICOR's data structure, considering that, regardless of the taxonomy that will be defined for Brazilian agriculture, applying it to the available data will face similar challenges to those discussed in this document. We therefore offer a structured methodology dedicated exclusively to rural credit data and applicable to any and all taxonomies.

By applying this methodology, it is possible to follow the trajectory of rural credit aligned with the sustainability journey under different risk levels. In addition, the assumptions that were established must be taken into account in the analysis process in order to ensure that the results are properly interpreted.

Furthermore, it can be seen that at Level 5, which is more comprehensive and incorporates several dimensions of the characteristics contained in SICOR, around R$ 70.8 billion (21.3% of the volume of financial resources for financing and investment in 2023/2024) has some potential for reducing negative environmental externalities and increasing resilience, or in the sustainability journey.

These results, in addition to being important in terms of transparency in executing public funds earmarked for *Plano Safra*, can be seen as monitoring and performance indicators for funding operations, as well as an important tool for analyzing this public policy from the perspective of the taxonomy currently under development, and can be used to direct agricultural policy incentives, advancing Brazilian agriculture's sustainability journey.

Finally, it is worth highlighting the need to revisit SICOR's structure in order to characterize the complete narrative of the financial resources used for implementing a financed enterprise. We suggest a data structure that considers the characteristics of the activity conducted in the financed enterprise's area, the characteristics of the contract, the products that make it up, and the enterprise itself, indicating the adopted stewardship strategies. The details of the suggested structural changes are detailed in Policy Note 6 with proposals for the 2024/2025 *Plano Safra*[18] published by Agroicone.

[18]Available at: https://agroicone.com.br/portfolio/propostas-plano-safra-2024-2025/

Methodology for measuring **rural credit** in line with the **agricultural sustainability** journey

This document seeks to present an alternative methodology that can bring light to rural credit funding for enterprises aligned with the agricultural activity's sustainability journey, as well as contribute to the Brazilian sustainable taxonomy for the agriculture and forest sectors.

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