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Gold Traceability, Illegal Mining, and Ecological Constitutionalism: Regulatory Accountability in Direct Actions of Unconstitutionality Nos. 7273/DF and 7345/DF

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Abstract

This paper aims to analyze the constitutional relevance of the Brazilian Supreme Federal Court's joint decision in Direct Actions of Unconstitutionality Nos. 7273/DF and 7345/DF, which addressed the presumption of legality of acquired gold and the good faith of purchasing legal entities under Article 39, paragraph 4, of Law No. 12,844/2013. The actions are examined together because they challenge the same statutory provision, were adjudicated jointly, and present no material divergence in the constitutional reasoning or operative relief relevant to the analytical purpose of this study. The research problem consists of determining whether a legal rule that facilitates the acquisition of gold based primarily on information provided by the seller is compatible with the constitutional duties of environmental protection, protection of Indigenous peoples, public security, and administrative efficiency. The research hypothesis is that the statutory presumption of legality constituted a deficient regulatory option, since it weakened State oversight, favored the laundering of illegally extracted gold, and compromised the constitutional duty to prevent environmental degradation. The hypothetico-deductive method is adopted, starting from the hypothesis that regulatory omissions and insufficient traceability mechanisms may generate unconstitutional environmental risks. The documentary corpus comprises the full judgments in the two actions, Article 39, paragraph 4, of Law No. 12,844/2013, and the constitutional provisions expressly mobilized in the adjudication; the materials are interpreted according to the challenged object, constitutional grounds, evidentiary premises, operative orders, and institutional duties identified by the Court. The preliminary results indicate that the Supreme Federal Court's decision strengthens ecological constitutionalism by rejecting formal presumptions incapable of ensuring effective control over the gold supply chain. It also confirms the need for coordinated regulatory action, legal traceability, institutional accountability, and preventive mechanisms against illegal mining in protected areas and Indigenous lands.

Keywords

Gold Traceability, Illegal Mining, Ecological Constitutionalism, Mineral Supply Chain Regulation, Indigenous Territorial Protection, Prohibition of Insufficient Protection, Regulatory Accountability

1. Introduction

The constitutional debate examined in this research arises from the joint judgment of Direct Actions of Unconstitutionality Nos. 7273/DF and 7345/DF, in which the Brazilian Supreme Federal Court addressed the validity of Article 39, paragraph 4, of Law No. 12,844/2013. The challenged provision established that the legality of acquired gold and the good faith of the purchasing legal entity would be presumed whenever the information provided by the seller was duly archived by the institution legally authorized to acquire gold. Although the provision was formally justified as an instrument of legal certainty for the circulation of gold as a financial asset, its practical effect was to simplify the first acquisition of gold and to reduce the intensity of verification duties imposed on market actors operating in a sector marked by high environmental, social, and criminal risks.

For the purposes of this study, the two actions constitute a single analytical unit because they challenged the same legal presumption and were resolved through a joint judgment under the same rapporteur. Although each action retained its own procedural identity, the materials examined reveal no material difference, for the issues addressed here, in the constitutional grounds adopted, the characterization of the regulatory deficit, or the operative determination that competent federal bodies adopt coordinated measures to prevent the acquisition of illegally mined gold. The references to each case are nevertheless preserved separately to maintain documentary accuracy.

The relevance of the subject lies in the fact that the commercialization of gold cannot be understood as an entirely private economic transaction. In the Brazilian context, the gold supply chain is directly connected to the expansion of illegal mining, especially in the Amazon rainforest region, in protected areas, and in Indigenous lands. Illegal mining produces cumulative effects that go beyond the extraction of mineral resources without authorization. It is associated with deforestation, river contamination, mercury pollution, public health risks, violence against local and Indigenous communities, territorial invasion, and the financing of organized criminal networks. For this reason, the constitutional analysis of the gold market requires an integrated approach that connects environmental protection, Indigenous peoples' rights, public security, administrative efficiency, economic order, and the State's duty to prevent systemic socio-environmental harm.

The adjudication by the Brazilian Supreme Federal Court is therefore significant because it shifts the debate from a purely formal understanding of documentary regularity to a substantive conception of constitutional legality. The formal archiving of documents supplied by the seller cannot be considered sufficient to guarantee the lawful origin of gold when the economic sector itself presents structural risks of fraud, laundering, and environmental degradation. In this regard, the joint judgment reveals that legality in high-risk markets cannot be reduced to the existence of documents, declarations, or administrative records. It must be accompanied by effective mechanisms of verification, traceability, due diligence, interinstitutional cooperation, and public accountability.

The general objective of this research is to analyze the constitutional meaning of the Supreme Federal Court's joint ruling in Direct Actions of Unconstitutionality Nos. 7273/DF and 7345/DF, with emphasis on the relationship between gold traceability, illegal mining, ecological constitutionalism, and regulatory accountability. The specific objectives are: first, to examine the legal structure of Article 39, paragraph 4, of Law No. 12,844/2013 and its presumption of legality and good faith; second, to identify the constitutional parameters invoked in the judgment, especially those related to the environment, Indigenous peoples, public administration, economic order, health, and public security; third, to evaluate whether the statutory presumption created a deficit of protection in the regulation of the gold supply chain; and fourth, to assess the institutional consequences of the Supreme Federal Court's determination that federal agencies adopt coordinated regulatory and administrative measures to prevent the extraction and acquisition of gold from protected areas and Indigenous lands.

The research problem may be formulated as follows: is a legal rule that presumes the lawfulness of acquired gold and the good faith of the purchaser, based essentially on information supplied by the seller and archived by the purchasing institution, compatible with the constitutional duty to protect the environment, Indigenous territories, public health, public security, and the integrity of the economic order? This problem is not limited to the interpretation of one statutory provision. It concerns the broader constitutional question of whether the State may tolerate a regulatory model that facilitates the circulation of a mineral asset when there is a known and significant risk that such asset may originate from illegal mining, environmental degradation, or territorial violations affecting Indigenous peoples.

The research hypothesis is that Article 39, paragraph 4, of Law No. 12,844/2013 represented an unconstitutional form of deficient protection. By presuming the legality of the gold and the good faith of the purchaser on the basis of information provided by the seller, the provision weakened the preventive capacity of the State and reduced the duty of diligence expected from institutions authorized to acquire gold. The hypothesis is that the constitutional inadequacy of the rule does not derive only from its textual formulation, but mainly from its regulatory effect: it allowed a formal declaration of origin to replace substantive verification, thereby increasing the risk that illegally extracted gold could enter the legal economy with an appearance of regularity.

This hypothesis is connected to the idea that environmental constitutionalism imposes not only negative duties of non-degradation, but also positive duties of protection, prevention, control, and institutional organization. In sectors characterized by relevant socio-environmental risks, constitutional protection cannot depend exclusively on post-factum liability. It requires ex ante mechanisms capable of preventing damage before it becomes irreversible or difficult to repair. Thus, the gold supply chain must be regulated through instruments that ensure traceability, authenticity of information, interinstitutional exchange of data, supervision of purchasing entities, and accountability of both sellers and buyers whenever fraud or illegality is detected.

The hypothetico-deductive method is adopted as the central research method. The study starts from the general theoretical premise that a regulatory framework may be unconstitutional when it fails to offer adequate and effective protection to constitutionally protected goods, especially in contexts involving environmental risks, vulnerable communities, and public security concerns. From this premise, the research tests the specific hypothesis that the statutory presumption of legality and good faith in the first acquisition of gold produced an unconstitutional deficit of protection. The analysis proceeds by confronting the legal design of Article 39, paragraph 4, of Law No. 12,844/2013 with the constitutional duties imposed on the State and on economic actors operating in environmentally sensitive markets.

The methodological procedures are documentary, analytical, and interpretative. The primary corpus consists of the full judgments delivered in Direct Actions of Unconstitutionality Nos. 7273/DF and 7345/DF, the challenged text of Article 39, paragraph 4, of Law No. 12,844/2013, and the constitutional provisions expressly mobilized in the proceedings. These materials were selected because they define the normative object, the constitutional controversy, the judicial reasoning, and the operative orders examined in the research. The judgments were read according to five analytical criteria: the legal object challenged; the constitutional duties invoked; the factual and evidentiary premises accepted by the Supreme Federal Court; the ratio concerning deficient protection; and the institutional obligations established in the operative part. Secondary doctrinal and empirical sources were used only to contextualize the gold market, clarify the practical effects of weak traceability, and assess the coherence of the Supreme Federal Court's constitutional reasoning, without replacing the judgments as the primary source of the legal conclusions.

The preliminary results indicate that the joint ruling rejects a formal and insufficient model of legality in the gold supply chain and requires a transition toward preventive regulation based on traceability, due diligence, data verification, and interinstitutional coordination. Rather than anticipating the conclusions in detail, this section establishes the analytical premise developed in the following sections:

in a high-risk mineral market, constitutional legality cannot depend solely on declarations supplied by the seller, because the State's protective duties require mechanisms capable of verifying origin and preventing illegal gold from entering the formal economy.

2. The Constitutional Deficit of the Presumption of Legality in the Gold Supply Chain

The constitutional deficit of the presumption of legality in the gold supply chain must be understood within the broader historical, economic, and ecological context of extractivism in Latin America. The commercialization of gold in Brazil is not simply a technical issue of mineral regulation, financial circulation, or administrative documentation. It is part of a development model in which sectors linked to extraction promote a utilitarian view of the environment, according to which nature is measured, controlled, and exploited as efficiently as possible (Garcia & Brasil, 2023, p. 98). Garcia and Brasil (2023, pp. 92-94) explain that extractive neocolonialism affects the establishment of environmental policies in countries of the Global South, especially because the extractive economic model of the twenty-first century may decisively influence the possibility of promoting or obstructing agendas aimed at containing the global environmental crisis. This extractive logic also reproduces historical patterns of dependency, since Latin American countries continue to export raw natural resources and commodities while retaining environmental disasters, degradation of soil, water, fauna, and flora, and the socio-environmental impacts of production (Garcia & Brasil, 2023, pp. 106-107).

This theoretical framework is relevant because Article 39, paragraph 4, of Law No. 12,844/2013 did not operate in an abstract or neutral market. It operated in a sector marked by illegal mining, environmental degradation, territorial conflicts, violence, and the vulnerability of Indigenous peoples, elements expressly connected by the Brazilian Supreme Federal Court to the constitutional duty of environmental protection and to the increase of illegal mining activities (Brazil, 2025a, p. 2; Brazil, 2025b, p. 1). Garcia and Brasil (2023, p. 94) observe that, even in the face of significant evidence of environmental emergency, environmental agendas often fail to obtain sufficient adherence in societies that continue to reproduce practices that generate more harm than benefit, both individually and collectively. In the gold supply chain, this contradiction appears in the distance between the constitutional duty to protect the environment and a legal mechanism that presumed the lawfulness of gold based on information supplied by the seller and archived by the purchasing institution (Brazil, 2025a, pp. 5-6; Brazil, 2025b, pp. 3-4).

The constitutional problem is therefore not limited to the formal wording of the statute. It lies in the regulatory rationality that allowed a seller's declaration to replace effective verification of origin. Garcia and Brasil (2023, p. 95) emphasize that different perspectives lead to different ways of conceiving and using natural resources, thereby determining the decision-making process. Thus, the authors state that the traditional Western understanding of Nature, supported by an alleged scientific objectivity, promotes its objectification and appropriation, imposing a neoliberal conception that sees it solely as natural capital (Garcia & Brasil, 2023, p. 94). Applied to the gold market, this means that the presumption of legality expressed a model in which the rapid circulation of a mineral asset prevailed over the verification of its environmental and territorial legality. In a sector exposed to fraud and illegal extraction, formal documentation cannot be treated as equivalent to substantive legality.

The challenged provision established that the legality of acquired gold and the good faith of the purchasing legal entity would be presumed when the information supplied by the seller was duly archived by the institution legally authorized to purchase gold (Brazil, 2025a, pp. 5-6; Brazil, 2025b, pp. 3-4). In the joint judgment of Direct Actions of Unconstitutionality Nos. 7273/DF and 7345/DF, the Brazilian Supreme Federal Court recognized that this model represented a deficient normative option, since it facilitated the acquisition of gold and weakened the State's capacity to control the legal origin of the mineral. The Supreme Federal Court also linked the rule to the constitutional duty to protect the environment, to the increase in illegal mining, to harm suffered by Indigenous populations, and to the growth of violence connected to the illegal gold economy (Brazil, 2025a, p. 2; Brazil, 2025b, p. 1).

A methodological distinction is necessary at this point. The Federal Supreme Court's judgments establish the constitutional conclusions adopted in the study: the deficient character of the statutory presumption, its incompatibility with duties of environmental and Indigenous protection, and the need for coordinated regulatory action. By contrast, Manzolli et al. (2021), Risso et al. (2021), and Rodrigues (2021) provide secondary empirical evidence concerning irregular transactions, weaknesses in licensing and verification, and the circulation of gold without demonstrable lawful origin. These sources do not determine the constitutional ratio decidendi; they corroborate the factual plausibility and practical significance of the risks that informed the Federal Supreme Court's assessment.

This concern is confirmed by the empirical findings of Manzolli et al. (2021, pp. 3-4). The authors explain that, whether gold is treated as a commodity or as a financial asset, the way in which the guarantee of legal origin is established constitutes the weakest link in the entire chain, because it is based on the seller's word and on the presumed good faith of the purchaser, as provided in Article 39, paragraph 4, of Law No. 12,844/2013. This legal framework created a gap through which gold extracted from illegal regions could enter and circulate freely as legal gold. Thus, the presumption did not merely simplify a commercial procedure; it created a legal pathway for the laundering of illegally extracted natural resources.

Manzolli et al. (2021, pp. 3-4) also identify two main mechanisms through which illegal gold may be incorporated into the formal market. In the first, the purchasing institution or commercial establishment may use already legalized mining titles to register the transaction without checking the real origin of the metal. In the second, the miner may declare a fictitious origin during the payment of the Financial Compensation for Mineral Exploration, indicating that the gold came from a valid mining title even though it was actually extracted from an illegal area. In both situations, the presumption of the buyer's good faith reduces the practical duty to verify whether the mining title indicated by the seller is valid and whether it effectively refers to gold.

The quantitative data presented by Manzolli et al. (2021, p. 10) reinforce the structural nature of this regulatory deficit. The authors analyzed 17.5 thousand transactions registered with the National Mining Agency in 2019 and 2020, totaling 174 tons of gold. From the 108.2 tons that could be classified, 48.9 tons showed signs of irregularity, corresponding to 28% of national production in the period. The research also found that it was possible to verify the legality of only 34% of Brazilian gold production. These data show that the presumption of legality operated in a market in which traceability failures were not marginal, but structurally relevant.

The policy brief prepared by Rodrigues (2021, p. 2) reaches a similar conclusion. The author indicates that, in 2020, Brazil exported 110.591 tons of gold, but 17% of this total, corresponding to 19.123 tons, was illegal because the gold had no registered production or was not linked to a title authorizing extraction. The study also identifies 18.638 tons without any production record and 485 kilograms from Mato Grosso and Pará regions without an extraction title. These figures demonstrate that the lack of traceability is not just an internal administrative failure; it affects the international circulation of Brazilian gold and exposes importing countries to the risk of acquiring gold connected to illegal extraction.

Rodrigues (2021, p. 4) further demonstrates that States which exported more gold than they produced contributed to the contamination of the trade chain by gold without known origin or by gold produced in the Amazon rainforest. This finding is constitutionally relevant because the presumption of legality produces effects beyond the first acquisition. Once illegal gold enters the formal market, it may circulate through financial institutions, commercial establishments, and export chains with an appearance of legality. The initial weakness in verification therefore contaminates subsequent stages of commercialization and makes later control more difficult.

Risso et al. (2021, p. 2) also identify the procedural weakness of the Brazilian system. The authors state that a manual, analog, and poorly detailed permission and licensing process facilitates, rather than prevents, the laundering of gold. They explain that mining permit requests do not require estimates of the volumes of gold that a given area could realistically produce, which allows illegal miners to use legal permits to "wash" illegal gold. The report later connects this weakness to Law No. 12,844/2013, noting that Article 39, paragraph 3, assigns to the seller the responsibility for the veracity of information concerning the origin of gold, while the same article refers to the presumption of legality of the acquired gold and the good faith of the acquiring entity. In practice, this means that little due diligence is required by law and that little or no due diligence is performed at the point of sale (Risso et al., 2021, p. 24).

The contribution of Garcia and Brasil (2023, pp. 104-105) allows this problem to be placed in a broader historical continuum of gold exploitation in Brazil. The authors recall that, in the eighteenth century, the province of Minas Gerais experienced rapid economic growth due to the discovery of large quantities of gold, although the wealth generated by mining remained concentrated in the hands of a restricted group (Garcia & Brasil, 2023, p. 104). They also refer to the legacy of "Serra Pelada" and to the invasion of miners on the Madeira River, emphasizing that river mining causes extensive environmental damage to water, soil, plants, workers' health, fish, and the people who consume contaminated fish (Garcia & Brasil, 2023, p. 104). In addition, they mention that at least nineteen tons of gold were illegally exported by Brazil in 2020 because of the absence of production records or the lack of linkage to an exploration title, corresponding to 17% of exported gold (Garcia & Brasil, 2023, p. 104).

This contextualization shows that the legal presumption of good faith was not merely a technical defect of mineral regulation. It also reflected a broader extractivist logic that prioritizes the economic circulation of natural resources while displacing environmental, social, and health costs to vulnerable territories and communities. The constitutional deficit of Article 39, paragraph 4, of Law No. 12,844/2013 is therefore threefold (Brazil, 2013). It is regulatory, because it reduces the purchaser's duty to verify the lawful origin of gold. It is environmental, because it facilitates the entry of gold extracted from illegal mining into the legal economy. It is institutional, because it weakens the capacity of public agencies to prevent fraud, laundering, and the financing of criminal networks.

The strongest counterargument in favor of the challenged presumption is that it promoted legal certainty, transactional efficiency, and good-faith reliance in the first acquisition of gold, while avoiding excessive administrative burdens on authorized purchasing entities. This rationale is not irrelevant: commodity markets require predictable rules and workable procedures. Nevertheless, legal certainty cannot be reduced to the protection of transactional speed when the regulatory design externalizes foreseeable environmental, territorial, public-health, and security risks. In a sector structurally vulnerable to fraud and laundering, the constitutional duties of prevention and sufficient protection require at least proportionate due diligence, cross-checking of origin data, and risk-based verification. These measures preserve legitimate transactions without granting documentary declarations an evidentiary force capable of neutralizing substantive control.

The Brazilian Supreme Federal Court's adjudication in Direct Actions of Unconstitutionality Nos. 7273/DF and 7345/DF represents the rejection of this formalistic model of legality. The Supreme Federal Court recorded that illegally extracted gold is often "warmed" or laundered and incorporated into the formal market, reinforcing criminal networks and creating a cycle of violence and exploitation in mining areas (Brazil, 2025a, p. 37; Brazil, 2025b, p. 35). Therefore, legal certainty in the gold supply chain cannot be based on the sole filing of information provided by the seller. It requires traceability, cross-checking of data, institutional coordination, and effective duties of due diligence imposed on purchasing entities.

For these reasons, the unconstitutionality of Article 39, paragraph 4, of Law No. 12,844/2013 must be understood as an affirmation of preventive constitutional regulation (Brazil, 2013). In markets characterized by environmental risk, territorial violations, public health impacts, and possible criminal involvement, the State cannot create or tolerate legal structures that facilitate the formalization of unlawfully extracted natural resources. The gold supply chain must be governed by effective traceability, regulatory accountability, and institutional control. In this regard, the judgment contributes to ecological constitutionalism by linking environmental protection, Indigenous rights, public security, and economic regulation within a single constitutional framework.

3. Ecological Constitutionalism, Regulatory Accountability, and the Duty to Prevent Illegal Mining

The decision rendered in Direct Actions of Unconstitutionality Nos. 7273/DF and 7345/DF may be understood as an expression of ecological constitutionalism in Brazilian constitutional law. It is reflected not only in the declaration of unconstitutionality of Article 39, paragraph 4, of Law No. 12,844/2013, but also in the affirmation that the gold supply chain must be regulated according to constitutional duties of environmental protection, public security, protection of Indigenous peoples, and institutional accountability. The Brazilian Supreme Federal Court expressly identified the challenged rule as a deficient normative option, since the presumption of legality of acquired gold and of good faith of the purchasing legal entity facilitated the acquisition of gold, contributed to the expansion of illegal mining, harmed Indigenous populations, intensified environmental degradation, and was connected to the growth of violence and organized crime (Brazil, 2025a, p. 2; Brazil, 2025b, p. 1).

This constitutional reasoning is consistent with the idea that the protection of the environment occupies a central position in the Brazilian legal system. Sarlet and Fensterseifer (2019, p. 44) argue that the constitutionalization of ecological protection by the Brazilian Federal Constitution of 1988 placed ecological values at the heart of the legal order and bound all State powers to act according to this normative guideline. In this manner, environmental protection is not a secondary or merely programmatic objective. It constitutes a constitutional parameter that influences legislative, administrative, and judicial action. Therefore, when the State creates or tolerates a legal mechanism that weakens the verification of the lawful origin of gold, the issue becomes constitutional, because such a mechanism may compromise the effectiveness of the fundamental right to an ecologically balanced environment.

The same authors emphasize that Article 225 of the Brazilian Federal Constitution of 1988 gives the right to an ecologically balanced environment the status of a fundamental right and simultaneously establishes environmental protection as an objective and task of the Brazilian State. This legal-constitutional regime binds the Legislative, Executive, and Judiciary branches and requires the adoption of legislative, administrative, and judicial measures capable of ensuring the concrete exercise of that fundamental right (Sarlet & Fensterseifer, 2019, pp. 51-52). Applied to illegal mining, this means that the State cannot remain limited to formal declarations or post-factum liability. It must organize preventive mechanisms capable of controlling the origin, circulation, and commercialization of gold, especially when the activity may affect protected areas and Indigenous lands.

Regulatory accountability emerges precisely from this constitutional duty of protection. Sarlet and Fensterseifer (2019, pp. 53-54) explain that environmental protection duties include the regulation of the use of natural resources, the adoption of control and inspection measures, the exercise of environmental police power, the creation and structuring of public agencies, and other measures aimed at ensuring the effectiveness of environmental law. In the context of the gold supply chain, such duties require more than the passive archiving of documents supplied by sellers. They require active verification, institutional coordination, traceability, and the integration of technical expertise among agencies responsible for mining regulation, financial supervision, environmental protection, and criminal investigation.

The judgment in ADIs Nos. 7273/DF and 7345/DF reflects this understanding. The Supreme Federal Court determined that the Federal Executive Branch, especially the National Mining Agency, the Central Bank of Brazil, the Chico Mendes Institute for Biodiversity Conservation, and the Brazilian Mint, adopt regulatory and administrative measures to prevent the extraction and acquisition of gold mined in protected areas and Indigenous lands. The ruling also required the establishment of normative guidelines for monitoring the gold trade, particularly regarding verification of the legal origin of gold acquired by securities distributors (Brazil, 2025a, p. 2; Brazil, 2025b, p. 2). Thus, the Supreme Federal Court did not limit itself to removing an unconstitutional presumption from the legal order; it also required institutional action to correct the regulatory deficit.

The legal basis of these structural directions lies in the effectiveness of the fundamental right to an ecologically balanced environment and in the prohibition of insufficient protection. Where the unconstitutionality derives from a regulatory design that leaves constitutionally protected goods exposed to systemic risk, a purely negative remedy may be incapable of restoring adequate protection. The orders are therefore best understood as constitutionally oriented duties of regulatory reorganization: the Supreme Federal Court defines the protected ends and identifies the competent institutions, while the agencies retain technical discretion to design traceability, supervision, and verification mechanisms within their statutory competences. This allocation is consistent with the environmental duties described by Sarlet and Fensterseifer (2019, pp. 53-56, 83) and with the prospective logic of systemic ecological governance developed by Morato Leite and Viana

(2023, pp. 3, 9).

The judgments, however, do not exhaust the operational design of compliance. Within the documentary corpus examined, the operative orders identify the competent bodies and the regulatory objective, but they do not fully specify common indicators, implementation deadlines, periodic reporting duties, or a detailed mechanism for monitoring interinstitutional performance (Brazil, 2025a, pp. 21-22; Brazil, 2025b, pp. 21-22). For the remedy to be enforceable, subsequent administrative action should therefore be translated into measurable obligations, such as interoperable databases, auditable origin records, risk-classification protocols, and public reporting on implementation. Persistent omission or manifestly inadequate compliance may remain subject to renewed judicial scrutiny, especially because ecological constitutionalism permits review of insufficient State action while preserving the agencies' responsibility for technical choices (Brasil, Vasconcelos, & Isolani, 2024, p. 16).

This remedial model also addresses concerns about democratic legitimacy. Structural adjudication becomes more defensible when the Supreme Federal Court does not substitute itself for the administrative authorities, but instead establishes constitutional minimums, requires coordination, and leaves the selection of technical means to institutions with legal competence and specialized expertise. The decisive limit is proportionality: judicial intervention should be sufficient to correct the unconstitutional deficit, but it should not convert the Brazilian Supreme Federal Court into the permanent manager of the gold market. Compliance must therefore combine judicially enforceable constitutional duties with administratively designed standards and transparent opportunities for institutional accountability.

This institutional dimension is relevant because environmental protection duties reduce the discretionary space of public authorities. Sarlet and Fensterseifer (2019, pp. 55-56) state that environmental protection duties bind State powers and limit their freedom of choice in the adoption of measures related to ecological protection, requiring permanent adequacy of public action to situations that demand protection. This argument is directly applicable to the regulation of gold. Once the State is aware that the gold supply chain is structurally exposed to illegal mining, laundering, environmental harm, and violations of Indigenous territories, it cannot rely on a weak documentary presumption as a sufficient regulatory response. The constitutional duty of protection requires adequate and effective measures.

The prohibition of insufficient protection also strengthens this conclusion. Sarlet and Fensterseifer (2019, p. 83) explain that environmental protection as a State task limits public discretion and that the principle of proportionality requires the State to act within a legal framework situated between the prohibition of excess and the prohibition of insufficient protection. In environmental matters, State omission or insufficient action may contribute to the occurrence of environmental damage. This framework is useful for interpreting the Supreme Federal Court's decision: the presumption of legality of acquired gold was unconstitutional because it allowed a low-intensity verification model to govern a high-risk economic sector. The result was a form of regulatory insufficiency incompatible with Article 225 of the Brazilian Federal Constitution of 1988.

The ecological dimension of the case also requires a systemic approach. Ecological chaos may be understood as the result of an exploitative rationality toward nature, oriented toward satisfying the unlimited demands of a blind and economistic model of development, combined with a classical, Cartesian, fragmented, and utilitarian legal model that has contributed to catastrophic ecological imbalance (Morato Leite & Viana, 2023, p. 2). From this perspective, the environment must be understood as a living system marked by multiple connections, internal and external influences, difficult determination, and constant mutability, which requires a systemic and multidisciplinary approach combined with the ecological governance of common goods (Morato Leite & Viana, 2023, p. 3).

Illegal gold mining illustrates this complexity. The harm produced by this activity is not restricted to the place of extraction, since it affects rivers, forests, Indigenous communities, financial markets, export chains, public health, and the credibility of public institutions. Consequently, the duty to prevent illegal mining must be understood as a duty of systemic governance, rather than merely as an isolated police action. This interpretation is reinforced by the view that traditional judicial activity is insufficient to address uncertainties, risks, and complex conflicts involving environmental protection (Morato Leite & Viana, 2023, p. 3).

In the case concerning the gold supply chain, the Supreme Federal Court's decision follows this systemic logic. It identifies the unconstitutional regulatory deficit, removes the deficient legal presumption, and imposes coordinated administrative and regulatory duties on agencies with different institutional competencies (Brazil, 2025a, pp. 2, 21-22; Brazil, 2025b, pp. 2, 21-22). For this reason, the decision may be read not only as a negative judgment of unconstitutionality, but also as a constitutional mandate for regulatory reorganization.

The structural dimension of environmental governance further supports this conclusion. Environmental disputes are essentially complex, polycentric, and marked by factual mutability, requiring prospective solutions capable of implementing socio-ecological governance for the management, protection, control, and monitoring of present and future impacts of environmental violations (Morato Leite & Viana, 2023, p. 9). The decision in ADIs Nos. 7273/DF and 7345/DF follows a similar logic because it recognizes that illegal mining cannot be addressed only through the punishment of isolated actors after the damage has occurred. It requires a preventive governance structure capable of reducing the possibility that illegal gold enters the formal market.

The Brazilian Supreme Federal Court expressly recognized that the solution to the problem requires infra-legal action by agencies capable of monitoring and reducing, or even eliminating, illegal gold mining. It therefore ordered federal agencies to adopt regulatory and administrative measures to prevent the acquisition of gold extracted from protected areas and Indigenous lands, with particular attention to the verification of the legal origin of gold acquired by securities distributors (Brazil, 2025a, p. 21; Brazil, 2025b, p. 21). This judicial response reveals that regulatory accountability depends on institutional coordination and on the integration of technical capacities distributed among different public bodies.

The possibility of creating a gold traceability system reinforces the preventive dimension of the judgment. The Supreme Federal Court recorded that coordinated action among institutions such as the Central Bank of Brazil, the National Mining Agency, the Chico Mendes Institute for Biodiversity Conservation, the Federal Police, and the Brazilian Mint has significant potential to limit illegal practices through the control of the legal origin of gold. It also referred to information indicating that the Brazilian Mint had operational capacity to implement a gold traceability system (Brazil, 2025b, p. 22). Thus, traceability appears not as a formal administrative tool, but as a constitutional requirement derived from environmental protection, public security, and the duty to prevent illegal mining.

Traceability technology, however, is not self-executing and cannot be treated as a complete solution. Its effectiveness depends on reliable initial data, secure identification of sellers and purchasing entities, interoperability among mining, financial, environmental, and territorial databases, and procedures capable of detecting the use of valid titles to conceal gold extracted elsewhere. The weaknesses identified by Manzolli et al. (2021, pp. 3-4, 10) and Risso et al. (2021, pp. 2, 24) show that digitalization without data verification may merely reproduce existing documentary vulnerabilities. Accordingly, technological traceability must be accompanied by human oversight, independent auditing, risk-based inspections, and sanctions for false declarations or failures of due diligence.

The argument also dialogues with the contribution of Brasil, Vasconcelos, and Isolani (2024, p. 2), who conclude, in the context of ADPF No. 708, that the Supreme Federal Court's interpretation advances climate constitutionalism by recognizing the fundamental nature of the right to a balanced climate, reinforcing international commitments and the State duty of protection, and strengthening judicial oversight of environmental and climate policies. Although the subject matter is climate policy, the constitutional reasoning is relevant to the gold case: environmental protection requires not only formal recognition of rights, but also judicial supervision when public policies, administrative omissions, or insufficient regulatory structures endanger ecological goods.

Brasil, Vasconcelos, and Isolani (2024, p. 16) further emphasize that the Supreme Federal Court's approach supports the role of the Judiciary in supervising actions and omissions of the Executive Branch in environmental and climate matters, ensuring compliance with international commitments and implementation of environmental protection policies. This supports the interpretation that the decision in ADIs Nos. 7273/DF and 7345/DF is part of a broader movement in Brazilian constitutional jurisprudence: the Supreme Federal Court has increasingly treated environmental protection as a field in which judicial review may correct insufficient protection, institutional inertia, and regulatory failure.

The analysis of the remedial dimension therefore advances beyond a general endorsement of ecological constitutionalism. ADIs Nos. 7273/DF and 7345/DF show that regulatory accountability requires three complementary levels of action: removal of the unconstitutional presumption; administrative construction of due-diligence, data-verification, and traceability standards; and judicial review of persistent omission or manifestly insufficient implementation. The constitutional value of the ruling lies not only in subordinating economic activity to environmental and Indigenous protection, but also in requiring an institutional design capable of making that protection operational in a high-risk supply chain.

4. Closing Observations

The investigation achieved its general objective by examining the constitutional meaning of the Brazilian Supreme Federal Court's joint decision in Direct Actions of Unconstitutionality Nos. 7273/DF and 7345/DF, with emphasis on gold traceability, illegal mining, ecological constitutionalism, and regulatory accountability. The study clarified why the actions form a common analytical unit, identified the constitutional parameters used by the Supreme Federal Court, assessed the deficit created by the presumption of legality and good faith, and analyzed the institutional consequences of the orders directed to competent federal bodies.

The research problem asked whether a legal rule that presumed the lawfulness of acquired gold and the good faith of the purchaser, based essentially on information supplied by the seller and archived by the purchasing institution, could be considered compatible with the constitutional duty to protect the environment, Indigenous territories, public health, public security, and the integrity of the economic order. The analysis carried out throughout the study indicates that such compatibility cannot be recognized. In a market structurally exposed to illegal mining, environmental degradation, documentary fraud, and the laundering of unlawfully extracted gold, a merely formal presumption of legality is insufficient to satisfy the constitutional standard of protection required by the Brazilian Federal Constitution of 1988.

The hypothesis was therefore confirmed. Article 39, paragraph 4, of Law No. 12,844/2013 represented an unconstitutional form of deficient protection because it weakened the preventive capacity of the State and reduced the duty of diligence expected from institutions authorized to acquire gold. The legal rule did not simply organize the first acquisition of gold as a financial asset; it created a regulatory environment in which the seller's declaration could replace substantive verification of origin. As a result, gold extracted from illegal areas could enter the formal economy with an appearance of regularity, thereby compromising environmental protection, Indigenous rights, public security, and institutional accountability.

Methodologically, the hypothetico-deductive method was essential for the development of the research. It started from the general premise that regulatory frameworks may become unconstitutional when they fail to provide adequate and effective protection to constitutionally protected goods, particularly in contexts involving environmental risk, vulnerable communities, and public security concerns. From this premise, the investigation tested the specific hypothesis that the statutory presumption of legality and good faith in the gold supply chain produced an unconstitutional deficit of protection. This method allowed the research to move from a general constitutional proposition to the concrete assessment of the challenged legal provision and its effects on the gold market.

The documentary, analytical, and interpretative procedures also proved adequate to the object of investigation. The corpus included the full judgments in the two actions, Article 39, paragraph 4, of Law No. 12,844/2013, and the constitutional norms expressly mobilized in the adjudication. The judgments were examined according to their challenged object, constitutional grounds, factual premises, ratio concerning deficient protection, and operative institutional duties. Secondary empirical sources were treated as contextual evidence of market vulnerabilities and not as substitutes for the Court's legal reasoning. This distinction made it possible to connect the constitutional argument to the available evidence without confusing judicial findings with external empirical support.

The results achieved indicate that the joint ruling strengthens ecological constitutionalism by rejecting a formalistic model of legality and by recognizing that legal certainty in a high-risk supply chain must be compatible with preventive duties of verification and sufficient protection. The counterargument based on transactional efficiency does not justify a presumption that allows seller declarations to replace substantive control, because proportionate due-diligence and data-verification duties can preserve legitimate transactions while reducing environmental and criminal risks.

The legal decision also confirms the importance of regulatory accountability. Its structural directions require more than isolated enforcement or post-factum liability: they call for coordinated regulation by mining, financial, environmental, territorial, and security institutions. The constitutional legitimacy of this remedial approach depends on a division of institutional roles in which the Brazilian Supreme Federal Court defines minimum protective duties, the agencies formulate technically appropriate standards, and compliance remains open to transparent administrative and judicial scrutiny.

The concrete regulatory implications include the replacement of automatic reliance on seller declarations by risk-based due diligence; cross-checking of mining titles, production capacity, territorial restrictions, and transaction data; standardized and interoperable traceability records; preservation of auditable documentation throughout the supply chain; enhanced duties for securities distributors and other authorized purchasers; and periodic cooperation among the National Mining Agency, the Central Bank of Brazil, environmental bodies, the Federal Police, and the Brazilian Mint. These requirements translate the constitutional holding into operational standards capable of supporting administrative enforcement, accountability of market actors, and judicial review of insufficient regulation.

The research has three principal limitations. First, it is a doctrinal and documentary analysis and does not constitute a primary empirical assessment of gold transactions, mining sites, or the behavior of purchasing institutions. Second, it examines the judgments and the regulatory framework available at the time of the research, but it does not test the subsequent implementation or effectiveness of the measures adopted by the agencies. Third, the research does not evaluate the technical performance of a specific traceability platform. Its conclusions are therefore limited to the constitutional and institutional standards that should guide future regulation, enforcement, and empirical assessment.

In conclusion, the hypothesis was confirmed in qualified and institutionally concrete terms. Article 39, paragraph 4, of Law No. 12,844/2013 constituted an unconstitutional form of deficient protection because it transformed documentary declarations into a substitute for effective verification in a market exposed to serious socio-environmental risks. The joint ruling in ADIs Nos. 7273/DF and 7345/DF is significant not only because it removed that presumption, but because it redefined constitutional legality in the gold supply chain as a combination of traceability, due diligence, interinstitutional coordination, transparency, and effective review. This integrated model provides the central contribution of the decision to ecological constitutionalism and to the regulation of high-risk mineral markets.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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