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Virtuous Legislation: The Royal Decree for the Sustainable Management of the Woods of Serra San Bruno, Stilo, Mongiana, and Ferdinandea

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Abstract

The Saving Forests Decree of 1773, issued by Ferdinand IV of Bourbon, marked a fundamental step in the sustainable management of the forests of the Serre Calabresi. Metal mining and processing in the region dates back to ancient times, with Greek colonies exploiting local resources for tools and coins. With the arrival of the Normans, the mines became strategic and were granted to the Carthusian monks, and the Norman smelting furnace improved military production. Under Ferdinand II, the Ferdinandea foundry reached its peak, producing high-quality weapons. The Salvaboschi decree demonstrated a growing awareness of the need to balance industrial needs with environmental protection. This study analyzes the decree, examining how its provisions are in line with modern environmental protection laws. The analysis of this study focuses on the provisions of the Salvaboschi decree and their compliance with current environmental protection laws. The main objective of the decree was to implement sustainable forestry practices through regulated logging cycles to prevent deforestation and promote natural regeneration. Analysis of the law reveals its progressive nature and its conformity with modern principles of environmental conservation. This historic legislation testifies to the early recognition of the importance of sustainable resource management and the foresight of the Bourbon

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administration in implementing practices that would benefit both the environment and industrial development. Through the study and analysis of the rules present in the document, it was possible to make significant comparisons with the laws in force. The decree demonstrates considerable foresight in the protection of natural and forest heritage. This document represents an important step towards environmental protection, highlighting a concrete and proactive commitment to the protection of natural resources. The ability to compare existing regulations with new provisions offers a clear and in-depth perspective on legislative evolution in environmental matters, confirming the importance of regulatory updates to address contemporary ecological challenges.

Keywords: Economic History, Environmental History, History of the Kingdom of the Two Sicilies, Economy of Southern Italy in the Nineteenth Century

Introduction

1. From mining extraction activity to the foundation of the New Arms Factory of Mongiana

The extraction and processing of metals in the territories of the Calabrian Serre constituted an activity undertaken since ancient times. Already from the second half of the 6th century BC, the colonies of Magna Graecia exploited the mines present in Calabria to produce tools and weapons (Fiorenza, 2019). Considering the significant presence of silver (Franco, 2003; Cunsolo, 1965), these colonies also used local mining resources to mint their own coins, providing a considerable boost to the economy and prosperity of the Greek communities settled in the region (Franco, 2019). With the Norman dominion succeeding the Byzantines in Calabria, there was a marked evolution in the approach to the management of mining resources. The mines, smelting furnaces, and watercourses, vital for powering the ironworks, acquired significant strategic importance and economic potential. These elements became subject to donations and concessions by the Norman crown, as evidenced by the concession acts drawn up in 1094 by Roger II of Normandy in favor of the Carthusian monks of San Bruno. Historical documentation reveals that the Normans, aware of the decisive relevance of mining resources, decided to introduce the smelting furnace into the forges of the Calabrian Serre. This mechanism, already in use in Nordic countries, was particularly renowned to produce Osmund iron, also known as Norman iron. This type of iron was widely used to produce arrowheads and cutting weapons characterized by superior strength and durability, thus representing a significant contribution to the development of metallurgy and the military capability of the Norman era. The attention given to mining activity in

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Calabria remained unchanged throughout the various dominations that succeeded each other in the territories between Aspromonte and the Calabrian Serre, each of which, at its time, took control of the different ironworks or their products. This historical continuum ultimately led to the period of the Kingdom of the Two Sicilies, during which the architect Gioffredo was entrusted with the task of conceiving a project to modernize the facilities. The goal was to transform the ironworks into stable industrial structures and optimize production cycles to enhance production, improving both quality and quantity. The previous administrations, up to that point, had operated on temporary processing sites, mainly due to the intensive exploitation of forests for obtaining firewood charcoal. This practice quickly led to the depletion of available timber resources. Furthermore, when charcoal had to be transported over considerable distances, the entire production process became economically disadvantageous. The mandate to architect Gioffredo (Franco, 2019) therefore reflected the need to adopt innovative and sustainable solutions to ensure the continuity and profitability of the mining industry in the area. The new complex was designed as a permanent industrial settlement, located in an area characterized by the simultaneous presence of all essential production factors: mineral deposits, forest resources for timber, and continuously flowing watercourses managed sustainably.

However, despite the good intentions and exceptional efforts, the steel complex showed significant inefficiency from the outset, often requiring further modernization interventions due to outdated processing methods, inadequate road infrastructure, and significant damage inflicted by the earthquakes of 1783. The process of improving the facilities culminated during the period of French rule, with Joseph Bonaparte (from 1806 to 1809) and Joachim Murat (until 1815), who mainly directed the activity towards military production. The military needs and the continental blockade imposed around the Kingdom of Murat established the specialization of the plant in the production of main components for rifles, pistols, and flints intended for the army. Alongside the exponential expansion of production, there was a growth in urban settlement around the factory, transitioning from temporary barracks to masonry buildings for workers, accountants, engineers, and their respective families. This transformation reflects the socio-economic and infrastructural changes resulting from the evolution of the steel industry within the context of French rule. With Ferdinand II's ascension to the throne of Naples in 1825, the economic context of the Kingdom experienced a favorable upturn, characterized by an increase in government orders (Ciccolella, 2012). The State, engaged in various public works, significantly boosted civil engineering, railways, and shipyards. Indeed, by around 1840, the Ferdinandea foundry recorded an annual production of pig iron ranging between 36,000 and 45,000 quintals (Fiorenza, 2023). This raw material was subsequently

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transformed on-site into finished products of excellent quality, a result attributed to the use of beechwood charcoal. This economic prosperity reflects not only the positive effect of state policies on industrial demand but also the Ferdinandea's ability to adapt to new needs and efficiently exploit local resources. In 1852, the "New Arms Factory" was inaugurated, representing a significant advancement compared to the management during the Bonaparte period. While during that time only the main parts of weapons were produced to be assembled elsewhere, the new factory stood out for the complete and ready-to-deliver production of firearms and edged weapons (Fiorenza, 2023). In the same year, King Ferdinand II visited the production complex, which was emerging as the most modern and efficient in the Kingdom, as attested by the official report:

> «*Mongiana, October 19, 1852, no. 855. On the evening of the 16th, this Establishment received the honor of an almost unexpected visit from Our August Monarch, accompanied by Their Royal Highnesses, the Royal Princes, His Royal Highness the Duke of Calabria, and the Count of Trapani*». (De Cesare, 2003).

The establishment of the "New Arms Factory" and the royal visit mark a significant advancement in the plant's production and technological capabilities. The on-site production of firearms and edged weapons indicates greater autonomy and sophistication in the arms industry. The sovereign's visit underscores the socio-economic and political importance of the manufacturing complex within the Kingdom of Naples. Following this inspection, the king designated the settlement cluster as a military colony with administrative autonomy, placing its management under an officer of the royal armed forces. This officer, in addition to performing military duties, assumes the civilian role of mayor, assisted by subordinate officers.

The continuous renewal and expansion initiatives elevated the Royal Ironworks and the Bourbon Workshops of Mongiana to a leading position in the steel industry, making them a technologically advanced hub. This industrial complex attracted and quickly transformed the local workforce into a highly specialized labor force. Additionally, their production aimed to provide widespread supply across Europe. As highlighted, the exceptional working conditions within the steel center in the Kingdom of the Two Sicilies emerge through a cutting-edge legislative framework, aimed at safeguarding the forest heritage and favoring the perpetuation of coal supply. Additionally, employees engaged in mining activities served for a maximum duration of eight hours per day, while those employed in foundries were subject to a daily working limit of ten hours (Fiorenza, 2023).

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2. On laws to ensure the safeguarding and sustainable management of the environment and forest resources.

To address the indiscriminate management of forest resources, legislation was introduced to safeguard these resources, which were being depleted due to numerous small ironworks in Mongiana. This legislation, endorsed by Giovan Francesco Conty, aimed for a sustainable flow of charcoal. The "Salvaboschi Decree" of 1773 by King Ferdinand IV established a forty-year cutting cycle, allowing the annual felling of the most mature tree among forty, marked officially, to promote forest regeneration. These measures reflect a growing awareness of sustainable forest management, balancing the industrial need for fuel with the protection of forest ecosystems. This decree served as a regulatory tool to ensure both environmental preservation and a continuous supply of fuel for industries. However, over the course of thirty years (De Stefano Manno, B., Matacena, G., 1979), when the artillery took control of the establishment, the military found a lack of adherence to the previously issued safeguard decree and observed a total disregard for the fundamental principles of the existing legislation. The artillerymen found themselves in a situation where the forests, originally adjacent to the ironworks during its initial settlement phase, were now about twelve miles away from the facilities. This discrepancy led to the ineffectiveness of the initial reasons that had justified the transfer from Stilo, which had been conceived to balance the increasing transportation costs of the ore with the reduction of the price of coal produced near the ironworks. In this context, the lack of regulatory measures and deteriorating environmental conditions directly impacted the economic sustainability of the ironworks. The 1773 law aimed at mitigating the fuel supply issue faced resistance, leading to significant consequences. The military's concern, detailed in the captain's report on forest conditions, reveals a troubling situation.

> «[...] *the negligence in enforcing the laws of the past Government has resulted in the loss of the Bosco del Marchese di Arena, which, after being destroyed for charcoal production, has been cultivated and turned into farmland, thus finding itself entirely devoid of trees, in violation of the law of 1773 which ordered the owners of adjacent forests to prevent clear-cutting and cultivation in their forests under penalty of paying 500 ducats and having their properties confiscated* [...]». (BNN, 63/1).

The captain reports non-compliance with previous laws, notably highlighting the deforestation of the Marquis of Arena's forest. This area was cleared for charcoal production and then cultivated, leaving it treeless, violating the 1773 law. This law prohibited clear-cutting and cultivation of forest properties, with penalties of 500 ducats and asset confiscation for violations. This scenario underscores the importance of rigorously enforcing environmental and forestry laws to ensure sustainable management of natural

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resources. Non-compliance with these regulations can result not only in the direct loss of forest resources but also in negative impacts on soil fertility and biodiversity. Furthermore, it should be emphasized that the report highlights the need for careful surveillance and appropriate sanctions to ensure the effectiveness of environmental laws in preserving and protecting forest heritage. The presence of a strong legal framework, with significant monetary penalties for offenders, could have provided a solid basis for enforcing the law. The military could have used this to impose compliance across all social classes, including nobles. The military's presence would serve as a deterrent. Demonstrating their commitment to enforcing regulations, the artillerymen established systematic forest surveillance by assigning guardians with armed detachments. Their tasks included prohibiting grazing, preventing the unjustified destruction of plants and saplings, and enforcing the ban on cultivating deforested land. It is undeniable that the law of 1773 failed to eliminate harmful pre-existing clauses, which granted landowners, beneficiaries of state contributions for afforestation, considerable discretion and maneuverability:

> «[...] *the forests that have belonged to this establishment for a century and a half are those called the Demanio di Stilo, which are to the east of Mongiana, beginning three miles from the present establishment, covering an area of two leagues of beech trees. These forests were purchased by the University of Stilo from the Marquis of Arena, given to the King for charcoal production, with the understanding that they retained the sole right to take some poles for their own use and the right to keep animals out of pasture* [...]». (BNN, 63/1).

Starting from the limited land extensions measured in poles, with the right to confiscate animals found grazing illegally or introduced illegally into the lands (an inherently harmful practice), it evolves towards the agricultural reconversion of previously deforested soils, considering them, in this sense, as no man's land. This process serves to highlight the determination of the new administrators of the complex:

> «[...] *it is necessary, in order to put a limit to this terrible inconvenience, to set an example by obliging the Marquis of Arena to comply with the decree, and furthermore, to compel him to sow acorns and remove the animals to regenerate his large estate of trees that have been destroyed* [...]» (BNN, 63/1).

For noble owners, non-compliance with the order would have led to stricter sanctions, extending beyond the Marquis of Arena to other landowners such as the Prince of Roccella, the Duchess of Girifalco, and the Carthusians. These owners often viewed laws from Naples as symbolic of distant power. Protecting forest heritage required more than policing; sustainable ironworking also needed botanical solutions. Captain Ritucci proposed

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planting "pines picea," which produce high-quality charcoal, and "white birch" in degraded areas for its rapid growth and high calorific charcoal. The captain, with a military approach, issued orders to the charcoal burners accordingly.

> «[...] *to obtain excellent charcoal, it must be made in the summer, not in winter, the wood must be cut at the third hour of the moon, or in January, and it should not be very young because otherwise, with the presence of moisture, it is necessary to make many holes, called vents, in the charcoal pile, to allow air to enter, which fuels the fire, causing the charcoal to become burnt, known as Corvino, which is entirely useless* [...]» (BNN, 63/1).

The attention given to carbonization and reforestation is not merely discretionary initiatives of the ironworks administrators, driven by the concern to comply with the operational planning established in Mongiana to meet the needs of the armed forces. In this context, it is Murat himself who issues specific directives. In Decree no. 846, article 5, he instructs the Ritucci-Melograni-Paolotti Commission:

> «[...] (said Commission) *will then designate and identify the same forests and the regulations and annual cuts to be made, taking into account the vegetation and life of the trees in that climate, in order to obtain their perpetuation* [...]». The absence of generality in this provision is evident from the presence in the commission of Giuseppe Melograni, Inspector of Waters and Forests, called upon to serve as an expert in the forestry sector. (BSNSP).

The problems are numerous, including enduring harsh winter weather that interrupts the carbonization process. Fuel stocks in the warehouse were often only sufficient for two to three days due to delays in government supplies, preventing summer carbonization for winter use. Additionally, it was impossible to accumulate the full annual requirement during the favorable season. The military focused on preventing coal shortages in the "Carbonile," the largest hall in the ironworks complex, and ensuring adequate supplies to avoid such shortages. (BNN, Ms. 63/1). Not all optimizations during this period resulted from authority or oppression, nor did workers solely bear the production burden. The military authorities rejected unreasonable demands from the Neapolitan Ministry with strong arguments. When asked about supplying 60,000 cantaja of bullets, they noted that such a quantity would overwork both men and facilities. Producing one melted mass would require around 40,000 loads of charcoal, devastating surrounding forests and ceasing activities in Mongiana. The Minister's proposal to requisition mules for increasing fuel supply was kindly but firmly refused.

> «[...] *requisition is nothing but an act of the moment's necessity, it is violence, not applicable to a system of long, regular, and well-ordered work; it would drive up the*

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> *price of charcoal by half as much again as it costs with mules and the Mongiana tariff, and make the price of raw iron material and its manufactured products much higher* [...]» (National Library of Naples, Manuscripts Section, Ms 63/7).

If the military avoids using excessive force or putting pressure on the workers, they still do not tolerate smuggling or theft of materials from the facility. They carefully monitor all stages of operations, such as cutting, carbonization, and transportation:

> «[...] *and for the charcoal burners, who although working on a piece-rate basis, it was still likely that they would sell the charcoal for a higher profit to outsiders, operations were conducted to verify the amount of wood obtained from a bushel of forested land, the amount that one man can cut per day, and the carbonization process was simultaneously monitored, along with the quantity that can be derived from a given amount of wood. Meanwhile, the charcoal burners were divided into three groups, each with its own leader, whose obligation was to report any shortages and notify if there were any smuggling activities. Additionally, it was ordered that two Forest Guards be sent daily to the carbonization site to stand guard, and they remained there overnight as well. At the end of each week, the Captain of Detail calculates the quantity that each charcoal burner leader should have delivered based on the number of men they had; this quantity is then compared to what was received, and if it is less, the leader is punished unless they disclose who is responsible for the shortfall. As for the mule drivers, they also work on a piece-rate basis, but since they could potentially miss a day's work and take advantage of a transport offered at a higher price if not supervised, it was ordered that one of them act as the leader of the others. Their obligations include reporting each evening on any absent mule drivers and any sick mules. Just as the Captain of Detail receives reports every evening on the various items received in minerals, coal, and timber during the day, he compares whether the service of the mule drivers has been proportional, given the number of existing transports and the quantity of items received* [...]». (Ms 63/12, BNN).

The nightly reports from charcoal burners are relayed through the personnel sergeant to the Detail captain, who updates operations progress from the forest guard corporal. Using this data, the officer compiles it into a load register and attends daily briefings with the director to strategize. Despite its effectiveness in preventing major shortages, the control network can't fully stop small diversions of materials to more profitable channels. The necessity of approving brigand band requests or selling coal meant for ironworks to nearby villagers is acknowledged by the administration and surveillance personnel. To combat supply diversions to bands, the administration itself engages in purchasing contraband materials unofficially, benefiting from lower prices compared to official rates. A significant improvement in conditions is expected with a proposed 40% increase in logging and carbonization costs, updating tariffs dating back to 1804. Under the new tariffs, timber will cost 11 ducats per ton, with carbonization and transportation expenses varying based on proximity to forests. The

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introduction of differentiated tariffs for summer and winter aims to provide fair compensation during harsh conditions, with a surcharge planned for winter operations from November to late April. These changes reflect efforts to support lumberjacks and improve overall conditions, acknowledging recent improvements in healthcare and pension benefits without resorting to harsh measures of exploitation.

> «[…] *The price increase is not intended to be applied universally and in young forests, where cutting is particularly easier, but it will always be ensured that the price of labor is compensated so that an ordinary worker can earn at least 30 grains per day, both on long and short days*». (BNN, Ms 63/10)

It is not difficult to notice that salary increases are not only the result of humanitarian considerations but rather reflect more precise and tangible reasons. The primary objective is to preserve the unity and loyalty of workers in the sector, attempting to bind them as much as possible to a facility that, day by day, sees carbon workers leaving in search of more profitable employment opportunities elsewhere. Around one hundred specialized workers in the ironworks prefer their jobs due to the "filiazione" privilege, which exempts them from military service. This allows for a more stable life, but their income is insufficient to support their families. Once this period ends, many migrate to the free forests, where they can produce charcoal independently for higher profits. In nearby Serra, charcoal sells for more than double the rate in Mongiana due to no transportation costs. The recent tariff changes incentivize workers to stay, offering stable income over the volatility of the free market. Military authorities impose strict penalties for unauthorized tree felling or improper practices, such as a ten carlini fine for cutting down unmarked trees or lighting fires in prohibited areas. Charcoal burners and forest guards must ensure compliance with these regulations to protect the forest's ecosystem, prohibiting the cutting of pine groves and encouraging careful monitoring of forest health.The debate over freely gathering firewood or accumulating bundles is not applied indiscriminately. The basic needs, customs, and customary rights of the Mongiana community and neighboring villages are preserved. The facility ensures to annually provide quantities of charcoal for heating and household use, considering the population's needs. An analysis of the data stimulates reflections on daily life in the village and the fairness of distribution. The amounts of fuel provided by the administration (600 during the Napoleonic era) are distributed proportionally among officers, non-commissioned officers, employees, troops, and workers, with a decreasing distribution. Officers receive a lower per capita quantity since their residences are characterized by greater comfort and better protection from winter harshness compared to those of all other categories. Non-commissioned officers and employees are allotted a higher individual quantity, considering

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that they reside in lower-quality housing. Workers, who are skilled artisans or simple laborers, enjoy a higher quota, as they reside in homes built in a rudimentary manner, sometimes constructed by themselves or, in previous epochs, in simple wooden shacks. Officers receive a lower per capita amount because their residences are characterized by greater comfort and better protection from winter hardships compared to those of all other categories. Non-commissioned officers and clerks are allocated a higher individual amount, considering that they reside in lower-quality housing. Workers, who are skilled craftsmen or simple apprentices, enjoy a higher rate, as they reside in dwellings built in a more rudimentary manner, sometimes constructed by themselves or, in earlier times, in simple wooden shacks. In addressing the needs of Mongiana's inhabitants, the ironworks also consider neighboring communities. In 1819, former director Ritucci, while preparing an estimate for purchasing Carthusian woods, alerted the Ministry to the residents of Serra's longstanding right to gather timber and firewood. He stressed that extending Mongiana's restrictions to Serra could jeopardize the local economy, particularly the water-powered sawmills and wrought iron craftsmanship vital for the ironworks. Captain Vincenzo Ritucci, who directed the complex from 1808 to 1811, aimed to balance Mongiana's economic interests with respect for local traditions, advocating for a holistic approach that promotes sustainability and community integration in forest resource management. (Ritucci, 1819). A key strategic goal for the ironworks administrations is the continuous expansion of forest properties. Mongiana's significant coal and timber consumption supports local sawmills and various construction needs, including roofs, floors, and water wheel structures. The demand for timber is especially high in mining, often requiring recycled props for caps, while the Arms Factory must supply both rifle castings and packaging crates. Effective and sustainable forest resource management is crucial for ensuring a steady supply to meet increasing industrial demands. Expanding forest areas is essential for maintaining production continuity. Additionally, the Neapolitan Royal Navy sources spruce trees from Serra and Mongiana for ship masts, particularly from the Fillò forest, known for its robust spruce growth.

> «[...] *from which it provides for its most beautiful and majestic masts, which mainly come from the said Fillò forest that contains no other species of timber and where trees of the same species grow with greater vigor and prosperity*» (ASMN, 1811).

As soon as opportunities arise, the governmental authority proceeds with the acquisition of available forests in the market of Mongiana. A tangible example of this practice is found in the purchase contract signed in 1825 for an oak forest in the municipality of Placanica (ASMN, 27). As early as September 1813, a government decree allocated a considerable portion of the

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surrounding forests to the ironworks, thus consolidating its control over the forest resource. In the same year, regulatory provisions are enacted for the restoration of forests, and the most favorable periods for conducting such operations are outlined. The regulation introduces the criterion, perpetuated subsequently, of dividing the breadth of forests into forty equivalent units, intended for sequential use, one each year. This innovative approach allows for the felling of trees at the peak of their vitality, and the implementation of periodic cycles enables production planning and mitigates fuel shortages. However, drawbacks arise as the process of felling trees of considerable size leads to leaving numerous wood splinters on the ground; furthermore, charcoal derived from nearly forty-year-old plants does not achieve optimal calorific yield. This method replaces the previous practice, proposed by Melograni and briefly used, of periodically cutting the "suckers" that regrow around the stumps. The latter method involved less cutting effort, reduced waste of splinters, and a higher calorific yield of charcoal obtained from wood of appropriate age. Despite the "low forest" cutting resulting in higher charcoal production, unfortunately, it could only be used for species with rapid regrowth of "shoots".

3. The Regulation on Analytical Aspects and Environmental Protection

In Mongiana, throughout the entire operational period of the ironworks, the phases of the carbonization process have retained their unchanged structure, and this remains largely unchanged today. Charcoal burners still carry out the construction of the kilns; it is enough to travel the road from the Ionian coast to Mount Pecoraro, or to traverse the forest roads, to observe the smoke from the charcoal kilns rising above the vegetation. Saverio Strati's book "A mani vuote" offers an account of the difficult life of contemporary Calabrian charcoal burners, who still supply charcoal to the inhabitants of mountain villages, where kitchens continue to use charcoal and where the only remaining heating system is represented by the brazier (Strati, 1960). In the carbonization system employed in Mongiana in the 19th century, some disparities are evident compared to the methods used in Alpine or French regions. The entire operation is managed by the head charcoal burner, who, in addition to his daily wage, receives a percentage of the profits from each kiln worked and delivered. The head charcoal burner supervises the charcoal makers, who are paid based on piecework, advances their wages, and oversees all phases of the process. He bears the responsibility for the success of the entire operation, including the transportation of the material. The portion of forest to be felled is delimited annually by the forest guards, subject to the approval of the Detail captain or the management. The guards, under the command of the corporal guard, promptly go to the site in military uniforms

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(of blue cloth, with scarlet cuffs and collar, buttons of white metal bearing the bourbon lily surmounted by a crown). The forest guards proceed with the marking of the trees destined for annual charcoal production by applying a stamp. This stamp is impressed into the still-living wood using a hammer-punch, generating the letter "M" (symbolizing Mongiana). A second stamp, containing the letters "SC" (referring to Sicilia Citeriore), is hammered onto the trees that delineate the section and on the trunks of the fifteen trees per moggio, in accordance with Article 35 of Forest Law No. 967 of 21/8/1826. These latter trees are preserved intact for the purpose of providing "seeds of hope." (Art. 44). The government-owned hammers are carefully kept in cases equipped with two keys, the first of which is entrusted to the custody of the director and the second to the corporal guard. The application of the stamp follows an official procedure: for each tree, all information is carefully recorded in the report, which is initiated during the punch retrieval phase. This document, signed by both the guard and the designated agent to whom the hammer was assigned, details the specific uses to which the tool has been allocated. The stamping procedure is followed by cutting, conducted from early September to the end of March, primarily using axes. Lumberjacks are assigned specific areas and must not encroach on each other's sectors. After felling, trunks are stripped of branches and cut into 80-centimeter sections called "tropelli," which are rolled to the kilns. Carbonization occurs from spring to the first snowfall, although some work during winter. Felling and carbonization periods do not overlap, so trunks often remain on-site. The carbonization process involves selecting a suitable location and building a dome structure, crucial for production success. Kilns are ignited through a channel smaller than in other methods, and the process requires continuous monitoring of smoke color to ensure proper combustion. Carbonization typically lasts six to eight days, after which air intake holes are sealed to stop the reaction. After an additional period of two days dedicated to cooling, the surface layer of soil is removed, and the pile is dismantled, usually in nighttime operations that facilitate the removal of any remaining fires. The resulting charcoal is carefully packaged in hemp sacks and transported by mules to the foundries. Here, the carriers unload the material in designated areas in front of the carbonization structures and wait twenty-four hours before proceeding with the actual delivery. The suspension of carbonization activities during the months of July and August is aimed at preventing potential fires, which could arise due to a faulty extinguishing process. Indicative projections suggest that accidental incidents of this nature could become more frequent in the second half of the century. (Archivio di Stato Catanzaro). This precautionary measure translates into an operational pause to avoid the risk of self-combustion phenomena. At the end of the quarantine period, the carbonized product is entrusted to the warehouse managers, who carry out meticulous inspection and

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counting under the supervision of a technician. However, there were drawbacks. In particular, the class of charcoal burners and transporters lived in extreme poverty.

> « [...] *even the processing and transportation could be greatly improved*». (Giordano, 1864).

The cost of coal to the establishments was calculated approximately as follows:

Thank you for the charcoal workers.	*L. 1,01*
Profit for the head charcoal burner and different wages.	*L. 0,13*
Transportation to the foundries of Mongiana.	*L. 1,63*
	L. 2,77
You still need to add the price of timber, calculated for state-owned forests.	*L. 0.13*
Total cost.	*L. 2,90*

In the Giordano report, some economic and logistical considerations are highlighted in the evaluation of the price of vegetal fuel, as well as an attempt to compensate for an insufficient decrease of 4.010 in the use of coals through excess measurement, while discussing the financial and environmental impacts related to ecclesiastical fees and the use of forests for charcoal production.

> «[...] *for Ferdinandea, the transportation being lesser, the price of coal was calculated at L. 2.12. In the use of coals for blast furnaces, a decrease or deficiency of 4.010 is considered, a figure that is insufficient but is compensated by the excessive measurement of the coal received from the charcoal burners, at the expense of their wages. The prices of the coals mentioned do not consider the general expenses of the establishment nor the burdens that may weigh on the forests. The price of L. 0.13 attributed to timber is very low and on the total annual coal production (29,200 quintals), it barely represents the salary of the 7 guards. Now, wanting to attribute to coal its real value and especially what it can have in the future, one must calculate all the influencing conditions. The four forests Santa Maria and San Miceli, Archiforo and Chiudilli, Fallo and Chiuselli, and Boscarello came to the Domain from the ecclesiastical patrimony by instrument of June 19, 1826, in which an annual gross canon of 7500 ducats and a net tax of 6000 ducats, equivalent to L. 25,500, were stipulated in favor of said patrimony: which canon is now paid annually to the ecclesiastical treasury. However, since the forests provide little wood and timber to the establishments but rather to the sawmills, so only a minimal part of the heavy canon of L. 25,500, as well as any others that may still exist, can be attributed to the coals destined for the ironworks. For the forests of Stilo, Lacina, and Dinami, of which the first is the most essential for the ironworks, the existing burdens, as it appears from the obtained information, are very light. On the other hand, these same forests, while they can easily supply 20 to 30,000 quintals of beech coal to the establishments, are still capable of yielding a large annual income from fir and other tree species cutting, as well as from pastures*». (Giordano, 1864).

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From a series of analyses reported by Giordano emerges the possibility, in terms of sustainable management, of assigning to the government the burdens that weigh on the Calabrian state-owned forests mainly in relation to timber and other products, thus freeing up the coal destined for the ironworks. However, it is crucial to carefully consider the ecological and economic aspects in the planning of forest policies, ensuring sustainable management that balances industrial needs with the conservation of forest ecosystems.

> «[...] *The general guard of Catanzaro d'Elia, delegated to the estimation, carefully calculated the potential income of the 7 state-owned forests, both in beech coals and in the other items just indicated, and found that by attributing a value of L. 85 per hectare to the coal cutting, which is the price of timber, that is, L. 0.28 per quintal of coal (double the current price), there would be a total income of about L. 11,500, of which only L. 10,000 from the 3 forests of Stilo, Lacina, and Dinami. Instead, the other proceeds from fir cuttings, other species, and pastures, assuming some improvement in forest cultivation and communication routes, would amount to an annual total of L. 36,000, of which L. 25,000 from Santa Maria and San Miceli, 6800 from Stilo, 1,400 from Archiforo, 1,300 from Fillo, and 900 from Dinami. From the previous considerations, it can be deduced that strictly speaking, the burdens weighing on the Calabrian state-owned forests could be attributed in whole or in most part to timber and other items they are susceptible to, leaving the coal free to supply the ironworks*». (Giordano, 1864).

The commission therefore suggests that the Calabrian forests, crucial for the iron and steel industry and the wealth of mountainous regions, require improvement in their cultivation. It proposes the appointment of an experienced technician in forest administration to oversee forest management operations, cultivation, and improvement, including coal production. This proposal highlights the need for more careful management of forest resources, considering their economic and environmental importance.

> «[...] *However, the value of L. 0.13 currently attributed to timber is and would be excessively low in the future. A similar value for timber is, as we have seen, between L. 1.50 and L. 2 and more in the Lombard and Aosta valleys, not counting the tax, and it is L. 0.80 in the state-owned forests of Tuscany that supply the Maremma establishments. In these areas, considering the few existing communications, a value of L. 0.60 or at least L. 0.50 could be established, which would represent an income of L. 15,000 on the annual production of 30,000 quintals, and therefore, for the cutting of beech forests on fortieth rotations, the price would be L. 150 per hectare at the rate of 39.*

Therefore, the probable price of coals, also assuming some improvement in wages, would be:

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Timber (assumed)	L. 0,50
Total processing	L. 1,30
General expenses and calculated at 10,010	L. 0,20
Transportation to Ferdinandea	L. 0,80
	L. 2,80

In Mongiana, the coal from Stilo and Dinami, still transported by mule, might cost around 0.50 more, making the price 3.30 Lire. The Calabrian forests we are concerned with are not only the essential resource for the steel industry but almost the sole wealth of those mountainous regions. It is not inappropriate to mention the possible and not difficult improvement of their cultivation. Firstly, if these forests are to be kept under the administration of forest authorities, it would be advisable to assign a skilled technical employee to oversee their management. This individual would be responsible for general supervision and various operations related to cultivation, improvement, and charcoal production». (Giordano, 1864).

Finally, the commission proposes several measures for the improvement of the depleted forest land, emphasizing the need to repopulate empty areas or clearings through prompt intervention in soil regeneration. Currently, the soil, being overgrown and compacted, hinders the germination of plant seeds. The practice of ordinary cereal cultivation for several years in these empty spaces could be granted free of charge to surrounding private individuals to facilitate repopulation without any expense, resulting in mutual benefit. Further improvement proposals include the opening of horizontal ditches on steep slopes to retain water and soil, selective cutting of trees at an angle and close to the ground, removal of stumps that do not produce new shoots, and other similar considerations deemed necessary to significantly increase forest production. The importance of strategically laying out roads in the forests is emphasized to reduce costs and facilitate the transportation of coal and timber to the facilities. The proposed approach demonstrates a comprehensive and well-considered plan for the restoration and sustainable management of forest resources, considering ecological, economic, and logistical factors.

«*Among the measures to recommend for the improvement of the depleted forest land, it is worth mentioning the prompt repopulation of the frequent empty spaces or clearings that currently exist, where the overgrown and compacted soil now refuses the regrowth of plant seeds. Recognizing that in such cases it greatly benefits soil restoration to practice ordinary cereal cultivation for several years, the cultivation of these spaces could be granted free of charge to local private individuals for 2 or 3 years, who, according to the information received, would willingly participate. In this way, without expense and with mutual benefit, the beneficial purpose would be achieved. Various other measures can also be recommended, such as the opening of horizontal ditches on steeper slopes to retain water and soil, the cutting of trees at an angle and closer to the ground, the removal of stumps that clutter the land without producing shoots, and various similar precautions recognized as necessary in those*

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> *forests, through which it would not be difficult or expensive to significantly increase production. It is worth noting how the opening of some trunk roads properly laid out in those woods would help reduce the transportation of coal and timber to the facilities*». (Giordano, 1864).

The forests surrounding the locality of Mongiana boast a significant diversity of tree and fruit species, a characteristic that contributes to their heterogeneity. Despite the presence of a varied range of species, beech and fir stand out as predominant elements, exhibiting, as is common in nature, a relationship of mutual complementarity in their vegetative development. This characteristic was promptly observed by the members of the study mission sent to Mongiana by the Ministry of the Navy immediately after the Unification of Italy. The 'Commission for the Ironworks' arrived in the town with the objective of subjecting the ironworking activity to thorough scrutiny. The importance of this examination is crucial for the community of Mongiana, as the survival of the iron industry in Calabria depends on it. Engineer Felice Giordano, at the forefront along with his colleagues, furthermore, conducted a detailed analysis through X-ray examination of the mines, ironworks equipment, and personnel involved. In 1864, Giordano will publish a detailed report on the efficiency of the ironworks in the Lombard, Aosta, Tuscan, and Calabrian regions. This document will be fundamental for assessing and improving the performance of the iron industry in these locations, thereby contributing to the progress and competitiveness of the sector on a national scale.
To better outline the impact on the forests, it is essential to emphasize:

> «[…] *These forests shading the steep slopes and peaks of the Calabrian Apennines represent a significant wealth and adornment of those mountains that border two seas at their feet. Along the banks of these mountains and on the gentle slopes, there are mild climates, gardens filled with the finest citrus fruits, and extensive and fertile olive groves. On the middle slopes, there are chestnut woods, meticulously cultivated in rows and parcels. On the higher grounds and peaks, there are ancient forests of tall trees, where the predominant beech thrives alongside spruces, wild pines, and in smaller numbers, oaks, maples, ashes, yews, elms, and various fruit trees. The nature of the woodland species, the granitic soil, the freshness of the sites and waters, imbue this elevated region with a striking resemblance to certain sites in our Alps and even to the wooded regions of Germany, particularly those of the Hercynian Forest*» (Giordano, 1864).

The observer, initially captivated by the Serre mountains' diverse landscape and unique flora and fauna, soon becomes critical due to the lack of infrastructure, particularly communication routes in the dense forests. This absence of accessible pathways hinders a full appreciation of the region's natural riches. From this perspective, the traveler emphasizes that the lack of infrastructure limits exploration and nature experiences, presenting a missed

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opportunity for sustainable tourism and ecosystem preservation in the Calabrian Serre.

> «[...] *all the potential profit from the enormous masses of trees of various ages accumulated there, much of which could be utilized for various purposes along the adjacent Tyrrhenian and Ionian seas. Therefore, their cultivation is neglected and can be said to be abandoned to nature itself, and devastations are not infrequent, although less so than in other locations*» (Giordano, 1864).

Gratitude is expressed towards the descendants of Mongiana for their ancestors' exceptional management of forest resources, noted as superior to other Italian locations. The engineer is puzzled by the reasons behind this situation. He is particularly surprised by the significant disparity in local timber prices, prompting the need for further investigation into the economic and environmental factors influencing these differences. An in-depth exploration of the socioeconomic dynamics affecting the timber market in Mongiana is proposed to better understand this complex reality.

> «[…] *The value of timber on the site is very low. A century-old fir is hardly estimated at more than L. 13; an ordinary Scots pine at L. 2.50; even a large beech capable of providing twenty cubic meters of timber for carbonization (equivalent to nine quintals of charcoal) is estimated at from L. 1.30 to L. 1.50*». (Giordano, 1864).

The engineer, with his profit-oriented perspective, shows a clear resistance to believing that the voluminous quantity of available timber is not being maximally exploited. The apparent state of "neglect" of the forest resource stimulates the appetite of economic operators who see the opportunity to activate operational sawmills, ready to process the raw material and subsequently send it through maritime networks to reach strategic markets. The engineer's mercantile mentality seems to focus primarily on the exploitative aspect of the resource. Giordano's perplexity deepens when he compares the relatively low value of local timber-described as "exaggeratedly mild and tenuous"—to higher rates in the Lombard and Aosta valleys and significantly more in Tuscany. This discrepancy raises questions about the local population's lack of interest in the market value of timber. Giordano notes that this indifference persists despite preventive actions taken by authorities to protect the forests from degradation. Additionally, he occasionally distorts the observed data, leading to questions about whether this is due to bad faith or impatience during a visit marked by preconceived notions and diagnoses. Furthermore, the documentation states that Giordano notes:

> «[…] *for minor provisions, L. 0.145 per quintal (3 grains per cantajo) of charcoal delivered to the warehouse was paid. It happened here that sometimes the charcoal burners and mule drivers tasked with making and transporting the charcoal would*

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> *steal much of it, to the clear loss of the owners. These charcoal burners and mule drivers demanded that the price be paid not based on the quantity placed in the warehouse but on the presumed quantity: in that case, the frauds fell to the detriment of the Government*». (Giordano, 1864).

The assumption that the Bourbon government was negligent in making payments based solely on word of mouth, and that warehouse officials endorsed transporter-declared quantities without checks, is difficult to understand. Since the Napoleonic era, muleteers faced restrictions and penalties for presumed shortages rather than compensation for estimated quantities. The engineer's perception of such carelessness from the Bourbon government remains ambiguous. His complacent attitude towards the "Bourbon" administration, combined with the haste of his visit, may lead to misunderstandings. Furthermore, his judgments about the new "Piedmontese" management lack clarity, revealing a gap in his critical analysis of their administrative practices and leaving questions about his true evaluations unresolved.

> «[…] *Now we proceed with some modifications to this system, but the accounting with the different charcoal burners proves to be very complicated and requires a lot of work from employees*». (Giordano, 1864).

The incident in question recalls the period of mass immigration of officials to Southern Italy after Unification. In a context where new job opportunities were guaranteed to those already in position, careful attention to detail was necessary to instill operational standards, often at the expense of significant human resources. The presence of Piedmontese officials, motivated by detailed insights into Southern dynamics, raises questions about the actual benefits they provided. The endemic issue of smuggling is highlighted during the commission's visit, with the conclusion that such illicit activities had ceased. A specific incident from the 1855 flood illustrates attempts to appropriate materials, emphasizing how natural disasters influenced subsequent management and the enforcement of strict penalties to maintain order and legality. To shed light on the angle adopted by the commission during the visit and to emphasize the enthusiasm aroused by the unexpected forest heritage, below is a portion of the conclusions elaborated by Giordano:

> «[...] *The ancient administration, not devoid of defects, like in general that of the fallen government, antiquated practices and almost total lack of communication contributed to make the industry in Mongiana rather unprofitable for the government. Moreover, aside from the abuses and defects inherent in it, it would be very difficult nowadays to know the precise financial result of the ancient managements, while the system then used for accounting based on tariffs and conventional prices of a country where the principle of isolation and protectionism*

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reigned, could only present fictitious positions unrelated to true industrial benefit. Now it is a matter of energetically working to derive a better outcome from those government-owned establishments, leading them towards a future more suited to their habits. Simplifying administration, closing sources of abuse and waste, choosing, distributing, and conducting operations more conveniently, improving roads, are the most essential and urgent tasks. And first of all, it is advisable to decide whether such industry should continue under government administration or be entrusted to private industry. As for the general principle, there is no doubt that the principle of private industry prevails: only in the special case does the opinion of some hesitate, fearing that the private sector, too concerned with its immediate profit, might harshly sacrifice the customs and interests of those mountain populations who have been living for so many years on a meager but regularly paid work. It is useless to discuss this difficulty now [...] because if the enterprise offers elements of good success, these will necessarily benefit, albeit reduced in number but improved in conditions, the employees and workers. Certainly, it is necessary for the government, in its concession, to proceed with caution, nor to neglect the precautions that are allowable with the free exercise of industry. Meanwhile, the Commission admitted by a large majority the principle of the swiftest transition from government to private administration, advising the government at the same time, considering the local difficulties, to use every possible facilitation towards the lessees. Indeed, on the one hand, it is indispensable for the government to leave to private industry the opportunity to provide itself with the necessary wood and coal at a moderate price, but on the other hand, it could not abandon them entirely at the disposal of the same without some danger. As we saw, those forests possess, in addition to the species useful for the enterprise in question, many others that can be a profitable source of income for the owner: therefore, there is no reason why, by granting to industry the exclusive use and even ownership of the mine and the establishments, the government should also transfer to it in equal measure the benefit of its own forests. They could remain as before under forest administration, and this could annually provide the concessionaire with the necessary goods at agreed prices [...]». (Giordano, 1864).

The statement presents a situation of ambiguity and questionable direction. The judgment on Mongiana, described as "burdensome rather than profitable," lacks a comprehensive, objective analysis. Simplifying administration is suggested but complicated by a growing administrative structure influenced by Piedmontese policies. Contradictions arise between upholding wage earners' interests and proposing drastic worker dismissals, impacting employment. The commission, favoring free-market principles, proposes privatizing plants and mines, with an exception for managing trees. Entrepreneurs acquiring ironworks would need to prepay for coal, raising concerns about industrial management feasibility. The commission overlooks the legal context of Mongiana's forests, governed by 186 articles of a dated forest law emphasizing isolationism and protectionism. A deeper understanding of this legislation could have highlighted its role in safeguarding national heritage, leading to a fairer evaluation of Mongiana's forest resources by integrating legal, environmental, and historical perspectives.

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«*Protection was:*
Art. 12. No wooded land may be cleared or cultivated.
Art. 13. To prevent damage from misguided cultivation, even solid non-wooded lands, provided their solidity does not result from regular cultivation, may not be cultivated without permission.
Art. 16 For sloping lands, whether wooded or not, commonly called hanging lands, easily traversed by water, and causing damage to lower lands, no permissions for clearing or cultivation shall ever be granted.
Art. 17. For all other lands not covered by the previous articles, clearances and cultivations may be permitted according to the provisions of this law, following a careful examination of local needs; an examination that, in the case of wooded lands, must also consider circumstances that may, depending on the case, affect public utility due to lack of fuel and other factors.
Art. 35. Regular cutting shall be done by cutting down all trees at ground level, reserving only 15 per moggio, which shall be marked for seed or hope; and protecting the felled part, by forbidding access to animals until permitted by the General Directorate.
Art. 38. The Directorate may permit clear cutting when young forests destined for tall growth need to be thinned out. It may permit it when it concerns isolated trees at the edges and paths of the forests, seed, or mature trees, and standing dead or diseased trees.
Art. 76. Since animals are harmful to forests and woods, administrators shall ensure that grazing is prohibited, except in rocky places and useless shrubs, where they do not cause damage.
Art. 79. Stubble burning shall never be allowed within 400 palmi of woodland adjacent lands». (De Stefano Manno, Matacena, 1979).

Omitting reference to the severe penalties imposed for acts such as violation, destruction, and burning of forests, the significant sanction provided by Article 108 of the forest law under examination is highlighted. This provision stipulates a first-degree imprisonment penalty, in accordance with Article 428 of the second part of the Code, for those who commit usurpation in forests. In cases where usurpation is associated with deforestation and land clearing, an additional fine is imposed as established in Section II of the same title. This forest legislation, characterized by an extremely modern profile, assumes a national scope, and is not limited solely to the three Calabrias. The observation of limited damage to forests by Giordano testifies to the respect reserved for these resources during that period. The first unified forest laws, inspired by the Sardinian law, differed radically from the principles of the Neapolitan law "967". (De Stefano Manno, Matacena, 1979). The enactment of the Sardinian Forest law in the South after unification contrasts with the omission of mining legislation, potentially indicating an exploitative policy.

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While mining legislation favorable to underground activity was not extended to southern regions, the forest law was quickly adopted, promoting deforestation. This legislation, beneficial in Sardinia for reclaiming low scrubland, proved detrimental on the mainland, accelerating exploitation and sacrificing forests for quick profits. This policy led to speculation, increasing the value of wooded lands and providing immediate benefits to landowners. Giordano's report highlights this sudden interest in forest resources, focusing mainly on the critical aspects of the metallurgical plant while providing a detailed analysis of the surrounding forests. He conducted an in-depth exploration, starting from Bosco di S. Maria, proceeding along the Serra-Mongiana Road, and examining the woods adjacent to the plant. His route continued through the vast Bosco di Stilo and explored other woods like Lacina, Boscarello, Fillò, and Dinami. Giordano, 1864). In the exploration account, the engineer paid particular attention to the accurate evaluation of each wooded area, highlighting an unexpected specific interest in the forest heritage and emphasizing the selective nature of his analysis, focusing more on natural resources than on the industrial aspects of the area. The surface area of the demesne areas, excluding municipal and private ones, could be approximately quantified at 8,000 hectares. The dominant tree species included beech, silver fir, red fir, white fir, holly, chestnut, and heather. In addition to extensive stands of Scots pine, there were also holm oaks, oaks, yews, hornbeams, maples, alders, and, in the locality of Chiuselli, rare larch pines imported and planted by the forest inspector Thomas. From demesne lands, it was possible to obtain approximately 32,000 quintals of beech charcoal annually, in addition to 3,000 quintals from various tree species. Giordano was unable to assess privately owned forests and relied on local experts for an approximate estimate. Based on their assessments, it is estimated that they could provide 51,000 quintals of charcoal annually, suggesting they were considerably more productive than demesne forests. Considering that a forty-year-old forest, adequately populated and subject to complete harvesting, with the preservation of protection trees, could produce 500 some metric tons of forest mass (equivalent to 300 quintals per hectare), the average yield of the fortieth part would be 750 kilograms per hectare. This estimate elicited wonder and disbelief from Giordano, who commented:

> «[…] *Such charcoal production is quite remarkable, and if it were indeed admissible, it would indicate significant vegetative strength in those areas." In drawing conclusions, he adds: "[...] overall, it could be obtained from non-demesne forests a quantity of 50,000 quintals of charcoal, which, combined with the 30,000 from demesne forests, would constitute a total yield of 80,000 quintals*». (Giordano, 1864).

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The calculation was: (Giordano, 1864).

Serra	Quintali 600	Q. 4,000
Stilo	Quintali 600	
Bivongi	Quintali 600	
Arena	Quintali 1800	
Spadola e Brognaturo	Quintali 400	
Duca di Bruzzano	Quintali 1800	Q. 47,000
Marchese d'Arena	Quintali 24,600	
Pellicane	Quintali 20,600	
Total	51,000	

Together with the other members of the commission, they began their departure, met with a natural apprehension, as the fate of the ironworks was now sealed; Giordano's "verdict" was made public in 1864. Fortunately, the Government did not prove so blinded as to passively follow the advice of its own experts. It became clear that the survival of the ironworks was closely linked to the forest resources, even though vegetable fuel had already peaked and had been outdated for several decades when Fazzari took on the improvised role of industrialist. (Mazza, 2021). However, in 1873, with the drafting of the auction specifications for the transfer of the entire plant, the Government also included the forests. The significant indication of reluctance to alienate them is fully evident in the fact that, of the 524,000 lire requested for the overall purchase, a substantial 416,000 were earmarked to exclusively ensure the forest heritage of the plant. The remaining amount had a relatively insignificant value, as it had already been decided to leave Mongiana to its fate. This decision underscores the crucial importance that the Government attributed to the management and conservation of forest resources within the entire industrial complex. The sale of the forests to a buyer who understood their strategic value could be considered essential to preserve the environmental heritage and ensure a responsible transition in the destiny of Mongiana. Currently, a fraction of the work activity in the forests persists, involving some inhabitants of Mongiana who have been spared from the phenomenon of emigration. (Regione Calabria U.O.A.). Until the 1990s, these individuals offered their labor as guards at the watch-fire towers. Today, the practice of wood carbonization is still carried out by some. Others, more fortunate, manage to obtain seasonal job opportunities from the State Forestry Corps, taking on roles such as lumberjacks, planters, and guards in the mountain animal repopulation park managed jointly by the corps and the municipality. The constant presence of the Forestry Corps in Serra and Mongiana has favored the reforestation process for several years, constituting a crucial element in defense against the depletion and environmental degradation that has affected the region since it was abandoned and handed over to speculators. What was once a "complementary" occupation to the

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activities of the forges now plays a vital role for those few brave individuals who have chosen to resist emigration. The sustainable management of forest resources, supported by the active presence of the Forestry Corps, is critically important in protecting the local environment and creating job opportunities for those who have chosen to remain in the area.

Conclusions

The "Royal Decree" issued by Ferdinand II in 1859 represents an early example of regulated forest management with the aim of guaranteeing the sustainability of forest resources intended for the metallurgical industry of the Kingdom of the Two Sicilies. This decree establishes a series of detailed rules for the conservation, use and protection of state forests, highlighting a concern about the balance between felling and reproduction of trees, a theme that resonates with modern environmental protection laws.

The decree defines a clear and centralized administrative structure, entrusting the supervision of the forests to a state forest agent resident in Mongiana. This agent has the task of drawing up annual management plans, submitted to the Minister of Finance for approval, to ensure that periodic forest cuts are balanced and sustainable. The legislation also provides for the compilation of statistical reports and the verification of the conditions of the forests through regular inspections. This attention to documentation and oversight reflects a scientific approach to forest management, similar to that adopted in modern conservation policies, where data collection and analysis are fundamental to the management of natural resources. Another relevant aspect of the decree is the regulation of tree cutting, both in terms of the felling method, which must take place close to the ground, and the season in which the cuts can be carried out. This is in line with the principles of sustainable forestry, which aim to minimize the environmental impact of logging activities. Furthermore, the decree imposes protection measures against forest fires, regulating the charring of wood and establishing restrictions for the summer months, demonstrating an early awareness of the risks related to fires, a central concern also in current environmental laws. The guardianship of the forests is entrusted to brigades of royal foresters, with collective responsibility for the damage caused. This system of accountability and oversight is similar to that of modern environmental enforcement forces, which monitor and enforce environmental laws. The uniforms and military organization of the foresters highlight a rigorous approach to the protection of natural resources, partly mirroring modern environmental enforcement agencie. The assessment of damages and the application of penalties for violations are precisely regulated, establishing specific fines and judicial procedures. This legislative detail ensures that contraventions of forestry regulations are dealt with seriously, a principle that remains fundamental in current environmental

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regulations, where sanctions for violations are essential for deterrence and protection of the environment. In conclusion, the 1859 decree shows an advanced vision for the time on the sustainable management of forest resources. Although the methods and technologies have evolved, the principles of sustainability, protection, and regulated management of natural resources present in the decree parallel those of modern environmental protection laws. This landmark document highlights how concerns for natural resource conservation and sustainability are time-honored and continue to be relevant in the current environmental management context.

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References:

1. Fiorenza, E. (2019). Miniere e ferriere nel territorio dello Stilaro. Humanities, 8(15), 89-99.
2. Franco, D. (2003). Il ferro in Calabria. Reggio Calabria: Kaleidon. (p. 117)
3. Cunsolo, L. (1965). La storia di Stilo e del suo regio demanio. Roma: Gangemi Editore. (note on p. 354)
4. Franco, D. (2019). Le Reali Fabbriche del Ferro in Calabria: Tra storia e archeologia industriale. Rubbettino Editore. (p. 19)
5. Tromby, P.D.B. (MDCCLXXV). Storia Critico-Cronologica Diplomatica del Patriarca San Bruno e del suo Ordine Cartusiano, Napoli, tomo II, appendice p. LXXIII. "Diploma Donationis Monsterii, ac praediorum S. Mariae de Arfafia pro Dotatione S. Mariae de Turri a Comite Rogerio, tempore Dedicationis ejusdem Ecclesiae facta in Calabritana Eremo S. Brunonis. Ad. ann. 1094. hujus Tom.II, num. CLX."

 ISSN: 1857-7881 (Print) e - ISSN 1857-7431

6. Franco, D. (2019). Le Reali Fabbriche del Ferro in Calabria: Tra storia e archeologia industriale. Rubbettino Editore. (p. 22).
7. Franco, D. (2019). Le Reali Fabbriche del Ferro in Calabria: Tra storia e archeologia industriale. Rubbettino editore. (p. 76, note on p. 2).
8. Ciccolella, D. (2012). Hommes de guerre, hommes d'affaires. Filangieri, Nunziante e la politica doganale nel Regno delle Due Sicilie dopo il 1824. Storia Economica, XV (2), 411. Edizioni Scientifiche Italiane.
9. Fiorenza, E. (2023). Dalle vecchie ferriere di Stilo alla Ferdinandea: Storia, economia e produzione nelle serre calabre. Il Risparmio, 3, 51-79.
10. The Arms Factory, erected in 1852 as an integral part of the steel complex in Mongiana, played a significant role in the landscape of the arms industry in the Kingdom of the Two Sicilies. Originally conceived by the architect Domenico F. Savino, it replaced a previous structure built during the French rule in Calabria, dedicated to the production of rifle barrels. At the time of its commencement of production, the Arms Factory annually supplied the bourbon army with a considerable quantity of weapons, ranging from 2000-3000 units during regular periods and reaching peaks of 7000-8000 during periods of maximum activity. See Franco, D. (2019). Le Reali Fabbriche del Ferro in Calabria: Tra storia e archeologia industriale. Rubbettino Editore. (pp. 85-91).
11. Fiorenza, E. (2023). La creazione del villaggio siderurgico di Mongiana: I segni del lavoro. Humanities, 12(23), 68-69.
12. De Cesare, R. (2003). La fine di un Regno. Franco Di Mauro Editore, Sorrento. (p. 54).
13. Fiorenza, E. (2023). A virtuous form of work organization: the regulation of Pazzano of 1845. International Journal of Entrepreneurship, 27(Special Issue 4), 1-12.
14. Of Spanish origin, Giovan Francesco Conty served as director from 1771 to 1790 and designed the first ironworks complex in Mongiana, which became operational in 1768.
15. The Salvaboschi Decree, issued in 1773 by Ferdinand IV of Bourbon, also known as Ferdinand III of Sicily, represented a significant early initiative for the conservation of the territory and the protection of forests in the Kingdom of Naples and Sicily (followed later by Ferdinand II's Royal Decree of December 20, 1858).
16. Today's laws regarding environmental and forest protection reflect a more sophisticated and integrated approach compared to the past. While in the 18th century the Salvaboschi Decree mainly aimed to regulate tree cutting to ensure sustainable management, current laws

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cover a broader range of environmental issues. Nowadays, regulations emphasize the protection of forest ecosystems not only for timber resources but also for the crucial role forests play in mitigating climate change, preserving biodiversity, and ensuring air and water quality.

17. De Stefano Manno, B., & Matacena, G. (1979). Le Reali Ferriere ed Officine di Mongiana, una scoperta di Archeologia industriale: storia, condizione operaia, tecnologie di produzione, trasformazione del territorio, architettura delle più antiche ed importanti fonderie del Regno delle Due Sicilie. Storia di Napoli e della Sicilia, Società Editrice, Napoli, p. 98.
18. BNN, 63/1 - Memory on the Mongiana Establishment made by Captain Settimo by order of Mr. Major Sappel, Artillery Commander in Calabria. (n.d.). National Library of Naples (BNN), Manuscripts Section, Ms. 63/1.
19. (BSNSP) - In the decree issued in Persano on January 16, 1811, Murat, following the proposal of the Ministry of War, appointed members of the commission with specific duties: the Director of the Ironworks and Mines of Calabria Ulterior Seconda, Battalion Chief of Artillery V. Ritucci, designated as President, V. Raimondini (Mineralogist - absent for health reasons), G. Melograni (Inspector of Waters and Forests), and T. Paolotti (Engineer of Bridges and Roads). Murat's particular attention to the problem of afforestation emerges on more than one occasion: he exerted pressure on the Minister of Finance for the enactment of a comprehensive forestry law valid throughout the national territory. Reference is made to a letter dated March 18, 1809, sent by the Minister to Poerio and preserved in Ms. XXX A 8 of the Biblioteca Società Napoletana di Storia Patria (BSNSP): "The woods and forests are of particular concern to the King, who has ordered me to present him with a project for forestry organization." As a result of discussions held at the Council of State regarding this draft law, the Administration of Waters and Forests was established, and the Forest Rangers Corps was created. For further details, see: A. Valente: G. Murat and Southern Italy, Turin 1976.
20. BNN, Ms. 63/1. The Carbonile, around 1810, measured 180x60 palmi and was divided into six compartments. National Library of Naples (hereafter: BNN), manuscripts section Ms. 63/1.
21. National Library of Naples, Manuscripts Section, Ms 63/7. According to the summary table of the current condition of Mongiana in relation to the requests made by His Excellency the Ministry of War and the Navy «[...] with which an attempt is made to ascertain how long this establishment will be able to supply 60 thousand cantara of projectiles to meet the pressing needs of the service [...]».

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22. (Ms 63/12, BNN) - Administrative Memorandum Budjet for 1814. National Library of Naples manuscripts section Ms 63/12."
23. (BNN, Ms 63/10) - The comparison is made between the price set for beech charcoal production and for wood splitting in the century-old forests independent of tall trees intended for the service of the Mongiana ironworks. See BNN Manuscripts Section Ms 63/10.
24. The introduction of severe and specific penalties underscores the firm determination of the military authorities to preserve the environmental integrity and sustainability of the forest resource.
25. Ritucci, V. (1819). [Letter to Mr. Mar.llo di Campo Macry, General Director of Artillery]. Archivio di Stato sezione militare Napoli (ASMN), Pizzofalcone Ms 25/31819 prot. 486.
26. ASMN, 1811. Ten. Colonnello di Art. (1811, January 4). [Letter to Mar/llo di Campo Macry, General Director of Train Corps]. ASMN Pizzofalcone, Comando Artiglieria fascio 28. From Mongiana.
27. ASMN, 27 - Ritucci, V. (Senza data). [Letter to the Mongiana Administration]. ASMN Pizzofalcone, Comando Artiglieria fascio 27.
28. Strati, S. (1960). A mani vuote. Mondadori.
29. The measurement of forests was expressed in terms of "moggio," where the moggio comprised nine hundred square steps, equivalent to seven palms and one-third each.
30. Art. 44 of Law No. 967 decreed: "The Government hammers shall be kept in a case with two keys, one to be held by the senior official of the civil administration residing in the Municipality, and the other by the Forest Inspector, or by the General Guard in the absence of the Inspector. The hammer cannot be removed without first drawing up a report, which shall be signed by the officials and the agent to whom it will be assigned. The report shall mention the purpose for which it is to be used and the instructions received on the matter from the General Directorate." For the forest regulations of 1859, see: Regulation... in the Appendix.
31. Archivio di Stato Catanzaro (ASCZ). (n.d.). Mongiana fascio 37. Regarding fires, Law No. 967 warned: "If a fire breaks out in a forest, the guards responsible for guarding the forest and the rural guards shall be required to notify the Mayors of the neighboring Municipalities, under penalty of dismissal, in addition to any penalties incurred by law. The Mayors shall convene the inhabitants at the sound of the bells, so that, provided with hoes, axes, and shovels, they may come to the aid as needed."
32. Giordano, F. (1864). Industria del ferro in Italia. Relazione dell'ingegnere Felice Giordano, per la Commissione delle Ferriere

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istituita dal Ministero di Marina. Torino: Tipografia Gotta e Cappellino.
33. Giordano, F. (1864). Industria del ferro in Italia. Relazione dell'ingegnere Felice Giordano, per la Commissione delle Ferriere istituita dal Ministero di Marina. Torino: Tipografia Gotta e Cappellino. (p. 306).
34. Giordano, F. (1864). Industria del ferro in Italia. Relazione dell'ingegnere Felice Giordano, per la Commissione delle Ferriere istituita dal Ministero di Marina. Torino: Tipografia Gotta e Cappellino. (pp. 306-307).
35. Giordano, F. (1864) Industria del ferro in Italia. Relazione dell'ingegnere Felice Giordano, per la Commissione delle Ferriere istituita dal Ministero di Marina. Torino: Tipografia Gotta e Cappellino. (p. 303).
36. De Stefano Manno, B., & Matacena, G. (1979). Le Reali Ferriere ed Officine di Mongiana, una scoperta di Archeologia industriale: storia, condizione operaia, tecnologie di produzione, trasformazione del territorio, architettura delle più antiche ed importanti fonderie del Regno delle Due Sicilie. Storia di Napoli e della Sicilia, Società Editrice, Napoli, 109.
37. De Stefano Manno, B., & Matacena, G. (1979). Le Reali Ferriere ed Officine di Mongiana, una scoperta di Archeologia industriale: storia, condizione operaia, tecnologie di produzione, trasformazione del territorio, architettura delle più antiche ed importanti fonderie del Regno delle Due Sicilie. Storia di Napoli e della Sicilia, Società Editrice, Napoli, 110.
38. Giordano, F. (1864) Industria del ferro in Italia. Relazione dell'ingegnere Felice Giordano, per la Commissione delle Ferriere istituita dal Ministero di Marina. Torino: Tipografia Gotta e Cappellino. (p. 303).
39. Mazza, P.F. (2021). L'ecomuseo delle ferriere e fonderie di Calabria, in Quaderni 17: Il Paesaggio nel rapporto città-campagna, Gattatico, Istituto Alcide Cervi, p. 327.
40. Regione Calabria U.O.A. "Politiche della Montagna, Foreste e Forestazione, Difesa del suolo". (n.d.). Albo imprese forestali regolamento n. 8/2015 aggiornato al 29/06/2023, categoria A. Mongiana, Italy: Author.
41. In Mongiana, there is the headquarters of the Carabinieri Biodiversity Department (Biodiversity Protection Unit of Mongiana).

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APPENDIX

ROYAL DECREE AND REGULATION
FOR THE ADMINISTRATION AND CUSTODY OF THE FORESTS
OF SERRA, SAN BRUNO, AND STILO
INTENDED FOR THE SERVICE OF THE ESTABLISHMENTS
OF MONGIANA AND FERDINANDEA
NAPLES
FROM THE ROYAL PRESS
Caserta, December 20, 1858
FERDINAND II
BY THE GRACE OF GOD
KING OF THE KINGDOM OF THE TWO SICILIES
OF JERUSALEM, ETC.
DUKE OF PARMA, PIACENZA, CASTRO, ETC., ETC.,
GRAND HEREDITARY PRINCE OF TUSCANY, ETC., ETC., ETC.

Having seen our sovereign resolution of this same day;
Wishing that the reproduction of the forests destined for the use of the royal ironworks of Mongiana and Ferdinandea be increased in quantity proportionate to the consumption of fuel and other timber required by said royal establishments; On the proposal of our Minister Secretary of State for Finance; Heard our Ordinary Council of State;
We have resolved to decree, and decree as follows.
Art. 1. The regulation annexed to this decree for the administration and custody of the forests of the Amortization Fund, located in the territories of Serra, San Bruno, and Stilo, and intended for the service of the metallurgical establishments of Mongiana and Ferdinandea, is approved by Us.
Our Minister Secretary of State for Finance, and the Director of our Ministry of State for War are entrusted with the execution of this decree, each for the part that concerns him.

The Minister Secretary of State
of Finance Signed, FERDINAND
Signed, S. MURENA
The Minister Secretary of State
President of the Council of Ministers
Signed, FERDINAND TROJA

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REGULATION

For the administration and custody of the forests of the Amortization Fund located in the territories of Serra, San Bruno, and Stilo, and intended for the service of the metallurgical establishments of Mongiana and Ferdinandea.

Art. 1. The forests and state lands, both in the territory of the municipality of Serra and its environs, and in that of Stilo, destined for the needs of the royal metallurgical establishments of Mongiana and Ferdinandea, shall be administered and guarded under the supervision of a demesne forest agent, who shall reside in Mongiana, and whose duties shall be determined by the Minister Secretary of State for Finance. The General Inspection at the royal Amortization Fund and public demesne shall provide for the methods of implementing the regulation of September 2, 1813, concerning the preparation of a general map of the areas assigned to the service of the Mongiana ironworks, and the same shall be done for the demesne forests in the territory of Stilo. The compilation of statistical reports for each forest area shall then be carried out in the manner prescribed by the royal decree of December 23, 1857. The aforementioned General Inspection shall annually propose to the approval of the Minister of Finance the projects for periodic cuts in the respective forests, taking into account the species and condition of the trees populating them, the nature and extent of the needs of the said metallurgical works, which shall be consulted, and reaching agreement with the director of the same; so that in the regular and occasional cuts of those forests, a possible balance shall always be maintained between the felling and use of trees, and their reproduction.

For each section or clear-cutting in those forests, the director of said ironworks shall make a special request, at least three months before the time it is to take place, to the aforementioned General Inspection, so that the latter can proceed with the examination of the forestry suitability, especially to determine the most suitable areas for the requested cuts, and to timely provoke the corresponding approval from the Ministry of Finance. In cases of extraordinary and urgent nature, the aforementioned provision shall not apply, and the acts shall be more promptly drawn up for the respective measures by the same Minister.

It is forbidden to fell trees in clear-cuts in said areas without Our sovereign approval, and without the prior examination of forestry suitability. In extraordinary cases, for reasons of urgency, the aforementioned Minister shall have the authority to provide, taking into account the more or less urgent need, and the choice of means to remedy it. Periodic section cuts shall be authorized by the same following motivated proposals from the aforementioned General Inspection based on the verification reports of demesne forest agents or other superior employees of the same branch. The marking and hammering shall be carried out by the same officials, with the intervention of an officer designated by the director of said ironworks for cuts for their use, the head forest keeper and head charcoal burner attached to the respective establishments, in order to make them more responsible than anyone else for the manner of executing the articles indicated in the records of the hammerings; and a special report shall be drawn up in triplicate, according to the respective interests. The cutting of trees in the clear-cuts shall be done at ground level, except for four for

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each legal load, which shall be marked for seed or hope, and reserved standing, with the cut part then being defended. The royal forest keepers shall ensure, under their strictest responsibility, that the felling of the sections is carried out in the manner indicated; and in case of abuse, they shall draw up a report against the head forest keeper or head charcoal burner in cuts for those establishments, and the main perpetrators of such contravention, if they manage to discover or catch them in the act. The season for regular section cuts in those forests, being in cold regions, shall be from October 15 to April 19. Carbonization and processing of timber shall be permitted in every season, except for the months of July and August for the sole production of charcoal, so as not to cause fires in said forests. The spruces and pines found there may be felled at any time of the year. The construction of charcoal kilns shall be carried out, according to forestry rules, under the care and responsibility of the head charcoal burner and the royal forest keepers, to prevent loss of fuel.The allocation of special sites for the corresponding furnaces shall be made by the demesne forest agent in the clearings of the sections or the same forest closest to them; and in the absence of nearby surfaces devoid of plants, said kilns may be built.