Applying Situational Crime Prevention to Illegal Logging:

Comparative Policy Analysis between Romania and Brazil

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Abstract

This study explored the application of Situational Crime Prevention techniques to illegal logging, a form or organised crime. It carried out a comparative policy analysis to assess potential lessons Romania could learn from Brazil's successful efforts to reduce illegal logging and deforestation between 2004 and 2012. Moreover, it conducted interviews with Romanian NGO experts for a better understanding of the Romanian illegal logging phenomenon. The research revealed a series of parallels in illegal logging policies between the two case studies, noting Brazil's more advanced policy implementation. It thus suggested that Romania could adopt Brazil's strategies, such as improved monitoring, establishing independent authorities, specialisation of prosecutors and law enforcement agencies, and seeking international support. With significant implications for addressing environmental crime and enriching the international security dialogue, this study emphasised the necessity for future research on the influence of corruption during political transition periods and the impact of deforestation on indigenous and local communities.

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List of Abbreviations and Acronyms

Action Plan for Prevention and Control of Deforestation in the Legal Amazon	PPCDAm
Brazilian Forestry Service	SFB
Convention on International Trade in Endangered Species of Wild Fauna or Flora	CITES
Crime Script Analysis	CSA
Document of Forest Origin	DOF
Electronic Forest Management System	SisDOF
Environmental Investigation Agency	EIA
European Union	EU
European Union's Forest Law Enforcement, Governance and Trade	EU FLEGT
The European Union Timber Regulation	EUTR
Food and Agriculture Organization of the United Nations	FAO
Gross Domestic Product	GDP
Institute of the Environment and Renewable Natural Resources (Brazil)	IBAMA
International Tropical Timber Organisation	ITTO
Ministry of the Environment (Brazil)	MMA
National Forest Inventory (Brazil)	IFN
National Forestry Regia (Romania)	Romsilva

National Institute for Space Research (Brazil)	INPE
National Road Infrastructure Management Company	CNAIR
Non-Governmental Organisation	NGO
Organisation for Economic Co-operation and Development	OECD
Organised crime	OC
Organised crime group	OCG
Rational Choice Theory	RCT
Reducing Emissions from Deforestation and Forest Degradation in Developing Countries	REDD+
Situational crime prevention	SCP
Situational Crime Prevention Theory	SCPT
Sustainable Forest Management Plan	SFMP
The Timber Tracking System (Sistemul de Urmarire A Materialului Lemnos) (Romania)	SUMAL
Transnational organised crime	TOC
United Nations	UN
United Nations Convention Against Transnational Organized Crime	UNCATOC
World Wide Fund For Nature	WWF

1. <u>Introduction</u>

The growing shortage of natural resources worldwide is progressively drawing the attention of organised crime groups (OCGs) (van Uhm & Nijman, 2022). Despite not being as widely recognized or researched as other forms of organised crime (OC) like drug trafficking or human trafficking, illegal logging remains one of the most profitable illicit industries worldwide (Anh, 2020). Although there are no statistics conducted on a global level on the amount of illegally harvested wood, this type of criminal activity "is estimated to cost USD\$30–100 billion annually" (Thompson & Magrath, 2021, p. 1), with annual losses of USD\$558–639 million in "the Bolivian, Brazilian and Peruvian Amazon" (Gutierrez-Velez & MacDicken, 2008, p. 248) alone.

Globalisation facilitated the development of cross-border organised criminal activity, especially after the Cold War, by creating new criminal opportunities emerging from socio-economic, political and technological change. From a socio-economic and political perspective, these changes include substantial shifts in political landscape, increased global human migration and commerce, expansion of the worldwide economy, as well as liberalization of trade (Bouloukos, et al., 2003). Additionally, rapid advancements in communication, transportation and interconnectedness technologies have completely revolutionized the world and have further contributed to the growth of organised crime (Bouloukos, et al., 2003).

The recognition that criminal opportunities drive organised crime implies that curtailing these opportunities can serve as means to thwart it. This approach is rooted in the idea that the dual aspects of opportunity, that is, its creation and its reduction, are intrinsically linked (Bouloukos, et al., 2003; Leclerc, 2014). As such, as further discussed, crime policy should focus on reducing the emergence of new criminal opportunities while eradicating existing ones, which is what Situational Crime Prevention (SCP) and Crime Script Analysis (CSA) promote (Bichler & Malm, 2015). Moreover, despite ongoing investigations by INTERPOL and Europol and the existence of a "National Plan Against Illegal Logging" (Balacescu, 2021, p. 156), illegal logging continues to prevail (Ciurcanu, 2022). In order to effectively reduce, if not entirely eliminate, such illegal activities,

problem-oriented policing becomes imperative. Since the techniques of SCP and CSA significantly enhance this type of policing, this study uses their theoretical lens to analyse prevention measures applied in Brazil, a country recognized for its success in reducing deforestation rates according to Coelho-Junior, et al. (2022), and explore their potential application to Romania's case.

1.1   Aims and objectives of the dissertation

The primary aim of this dissertation is to explore the application of SCP techniques to transnational and serious organised crime, specifically environmental crime such as illegal logging and the included illicit timber trade. A secondary objective is to compare the wood-related regulations and policies in Brazil with the ones in Romania, while also identifying the successful preventive strategies Brazil employed to reduce its illegal deforestation rate by 84% in 2012 as stated by INPE 2021 cited in Coelho-Junior, et al. (2022, p. 2). Finally, the study explores both the feasibility of adapting Brazil's effective preventive measures to Romania's unique context and the possibility of introducing other potential preventive techniques to combat illegal logging in Romania. As previously mentioned, to achieve these objectives, the research employs the theoretical framework of SCPT and analytical framework of CSA.

1.2   Research question

Resulting from the aforementioned research objectives, the current dissertation aims to answer the following research question: "*What lessons can be applied to Romania from Brazil's success in reducing illegal logging as a result of using situational crime prevention?"* This research question sets a clear framework for analysing and comparing the effectiveness of situational crime prevention techniques and it allows for a comparative policy analysis. Moreover, it offers the opportunity for this dissertation to integrate the views and suggestions of the interviewed Romanian NGO experts and provide valuable insights for policy recommendations and implementation strategies in Romania to combat this type of organised crime.

1.3   Significance of study

This study is of critical importance in the context of climate change, which is currently the most pressing issue on the global agenda, according to the United Nations (UN) (n.d.).

More specifically, it sheds light on illegal logging causing "serious environmental problems such as reductions in carbon stocks, degradation of biodiversity, lowering water quality and discouraging sustainable logging practices and forest management" (Moieseyev et al., 2010, cited in Reboredo, 2013, pp. 295-6). Depending on the scale and context of illegal logging, the cutting of the trees affects the forest ecosystem and thus biodiversity "by loss of habitat and causes desertification, soil erosion, fewer crops, and flooding" (Cozma, et al., 2021, p. 1). Subsequently, as the aim of this study revolves around preventing environmental crime which tackles environmental degradation, it renders the significance of this research, as this should be a primary focus of today's research (Nellemann, et al., 2016). Moreover, wood represents the only sector that can reverse the effect of the greenhouse gas emissions causing climate change as "trees remove CO2 from the atmosphere and store it inside" (Nellemann, et al., 2016, p. 1). This is another grounded reason to tackle illegal logging, and as a result, this dissertation becomes an integral part of a broader environmental conservation discourse that is a defining issue for current times and of global concern.

The economic and social dimensions of illegal logging as discussed within this dissertation add layers of significance as well. The economic ramifications of illegal logging, such as tax evasion, the undermining of legitimate timber industries, and the broader economic detriments suffered by forest-dependent communities, are explored in the following chapters. Furthermore, this dissertation addresses critical social justice issues, particularly the exploitation and marginalization of local communities within the context of illegal logging. Falling in line with these issues, it is important to take into consideration "the illegal logging's negative impact on the resources that forests provide" (Reboredo, 2013, p. 296) on which the local communities are generally dependent on. This is another aspect mentioned in this dissertation and thus adding significance to it.

Additionally, by focusing on SCP techniques and exploring their applicability to illegal logging in different contexts (Brazil and Romania), this study also has a policy-oriented layer of significance. Since it offers valuable insights into potential effective strategies to prevent illegal logging, it can guide law enforcement authorities in adopting evidence-based policing practices and assist policymakers in formulating more informed policies.

This is also significant because the SCP theoretical framework has not been applied to the cases of Brazil's and Romania's illegal logging. As such, its application in this sense provides an innovative way of analysing and enhancing existing wood-related policies in these countries.

Lastly, this dissertation has a real added value for the field of international security for two main reasons. Firstly, it draws on insights from NGO experts in Romania to devise strategies tailored to local challenges. However, even if these strategies are specific to Romania, they offer valuable lessons and solutions that can be adapted to other countries facing similar issues, especially ex-communist countries like Poland or Slovakia (Ciobotaru, et al., 2019). This is an important matter especially in the context in which "the joining of the language and practice of 'security' with various forms of transnational environmental crime (…) has become a prominent feature of public policy debate, regulatory outcomes, and dispute within the research and non-governmental organization (NGO) communities" (Elliott, 2016, p. 68). Secondly, it aims to fill a research gap by exploring the issue of preventing illegal logging in Romania, which is a crime that "does not fit the Western stereotype of OC and was largely neglected" (Neag, 2021, p. ii). In summary, this dissertation has the potential to influence policy-led policing by providing evidence-based recommendations, promoting best practices, and offering a nuanced understanding of how SCP can be effectively applied to environmental crimes like illegal logging.

2. <u>Literature Review</u>

2.1   Introduction

Increasingly harsh punishments for forms of organized crime, such as illegal logging in this instance, and the criminalisation of taking part in 'criminal groups' are important to pressure the criminal actors, yet they rather treat the symptoms instead of addressing the underlying causes of the problem (von Lampe, 2010). For this reason, a new line of research has emerged that shifted towards exploring preventative and proactive strategies that decrease the changes of OC to occur (von Lampe, 2010). Following the same chain of thought, research studies started to analyse at the end of the 19th century the adaptation of the framework of SCP to the field of OC (Van der Shoot, 2006, cited in

von Lampe, 2010, p. 337). One of the biggest remaining discussions that has still never been elucidated is with regard to the definition of OC and illegal logging, as their definitions have an enormous impact on how these phenomena are researched and regulated (Cozma, et al., 2023). Moreover, illegal logging was chosen as the central phenomenon for this research particularly because it is a form of OC. SCP has been initially designed for and applied to individual crimes, such as petty theft, home burglaries, etc., yet its application to OC is still being discussed (Bullock, et al., 2010). For this reason, a thorough review of the literature surrounding the phenomena of OC and illegal logging is needed.

2.2   Terminology, definitions, and context

2.2.1   Organised crime

Since this dissertation aims to offer recommendations for applying SCP to a form of organised crime, it is imperative to highlight what is defined as OC in the current context. Similar to the majority of the terms from the international security realm, OC has no universal definition, especially since there is no universal law that harmonizes the concept across jurisdictions (Hagan, 2006). This lack of standardised legal definition challenges international cooperation and legal enforcement, which in turn is taken advantage of by organised crime groups (OCGs) (Albanese, 2007). Moreover, the variability and innate adaptability of organised crime as a response to changes in society, economics, technology and global dynamics, renders it difficult to be defined universally.

As previously mentioned in the introduction, socio-political changes have a considerable impact on the nature of organised crime. For instance, as it will be further mentioned in the following chapters, the fall of communism in Romania in 1989 and the beginning of the democratisation in the following years led to laws of forestland restitution (Sarvasova, et al., 2014). These laws intended to return nationalized lands to their original owners or their heirs, yet according to Dragoi & Toza (2019, p. 2), they have created "an unstable institutional framework" instead. They were not accompanied by robust institutional support and clear regulatory guidelines, and this legislative ambiguity has been exploited by illegal loggers (Sarvasova, et al., 2014). This transformed the phenomenon of illegal logging in Romania, the latter becoming increasingly recognized for this type of crime on

an international scale (Dragoi & Toza, 2019). Organised crime also adapts to economic changes, for example by capitalizing on market demands when illicit goods are cheaper than the ones on the legal market (Naim, 2005). One case exemplifying this phenomenon is that of the EU efforts to reduce the quantity of fluorinated gases (F-gases) as part of the Green Deal goals, which led to the increase of F-gases prices and as a result, to the increase of the profits of the OCGs smuggling F-gases inside the EU (Europol, 2021). Last but not least, organised crime successfully incorporated and adapted to all technological changes brought by modernity, which gave rise to new forms of criminal activity like cybercrime (Brewer, et al., 2019). As such, taking into consideration its adaptability and flexibility, organised crime needs to be defined on a case-by-case basis.

Firstly, in the case of this study, since both Romania and Brazil are signatories to the Palermo Convention, formally known as United Nations Convention Against Transnational Organized Crime (UNCATOC), there exists a foundational understanding that establishes a baseline for defining organised crime for both case studies. This baseline, despite potential variations and expansions in its interpretation by the two countries, provides a consistent starting point for the current literature review. As such, it is relevant to take note of a more general definition provided by Kirby & Penna (2010, p. 209), which falls in line with UNCATOC's depiction of OC: "Organised crime is a chain of criminogenic events, committed by a diverse range of offenders, which may stretch across many countries and jurisdictions". More specifically, OC's important elements as highlighted by Article 2(a) of UNCATOC are the following: the presence of a structure group of minimum three individuals, persisting over a period of time and collaborating with the intention of perpetrating serious crimes for "financial and other material benefits" (United Nations, 2000, Art. 2(a)). The subsequent part of Article 2 defines 'serious crime' as any criminal conduct punishable by at least four years of imprisonment (United Nations, 2000, Art. 2(b)). As such, this definition emphasizes the organized, deliberate, continuous, and profit-driven nature of OC.

As mentioned in the latter part of the definition provided by Kirby & Penna (2010), OC can extend across national borders, case in which it is regarded as transnational organised crime (TOC). TOC is "a law violation that involved more than one country in its planning,

execution, or impact" (Albanese, 2012, p. 1). However, for the purposes of this study, it is less important to determine whether illegal logging extends across borders or not, as it is treated as a serious crime in any case according to both Romanian (Albulescu, et al., 2022) and Brazilian (Nepstad, et al., 2014) laws and it is assumed to be a form of organised crime, as per the definition offered below.

Secondly, since Romania is a Member State of the European Union (EU), it is also relevant to mention the list of eleven characteristics offered by the EU to depict OC:

> *"at least six must be present, three of which must be those numbered 1, 5, and 11, for any crime or criminal group to be classified as organized: 1. Collaboration of more than 2 people; 2. Each with own appointed tasks; 3. For a prolonged or indefinite period of time; 4. Using some form of discipline and control; 5. Suspected of the commission of serious criminal offenses; 6. Operating on an international level; 7. Using violence or other means suitable for intimidation; 8. Using commercial or business-like structure; 9. Engaged in money laundering; 10. Exerting influence on politics, the media, public administration, judicial authorities, or the economy; 11. Determined by the pursuit of profit and/or power."*
> *(Bouloukos, et al., 2003, p. 180)*

Resulting from the abovementioned guidelines, both the EU and UNCATOC suggest a general understanding of OC as a criminal activity possessing a range of characteristics that define its organized nature, which can be summarised as follows. Firstly, it is "rational, planned, and continuous criminal conduct in a business-like manner" (von Lampe, 2011, p. 340).

Secondly, it is crucial to note that unlike terrorist groups, which are driven by ideology and political agendas, OCGs typically do not base their actions on ideological beliefs or political objectives (Finckenauer, 2005). There is an agreement among scholars that the motivation of OC is the significant profit, typically financial in nature or under the form of power (Albanese, 2007; 2012; Bouloukos, et al., 2003; Bullock, et al., 2010; Finckenauer, 2005; Laycock, 2010; von Lampe, 2010; 2011). This idea is also related to the previously

mentioned rational and planned characteristics of OC. As will be explored in the theoretical framework of this dissertation, OCGs engage in criminal activities based on a cost-benefit analysis (Paoli & Beken, 2014).

Thirdly, falling in line with the first point, OC is structured around an organized form of hierarchy (Finckenauer, 2005). Initially, the literature on organised crime stated that OCGs have a well-established structure (Cressey, 1969, cited in Kleemans, 2014), however, Finckenauer (2005) argues that in contemporary times, this is more an exceptional case rather than the norm. He argues that the prevalent scenario nowadays involves criminal groups that are loosely connected and forming around specific opportunities for crime. Moreover, "the structure of these groups is much amorphous, free floating, and flatter, and thus lacking in a rigid hierarchy" (Finckenauer, 2005, p. 66). This observation is particularly relevant to the context of illegal logging since it also tends to involve more loosely affiliated networks of criminals, rather than rigidly structured groups (Kleinschmit, et al., 2016; Tacconi, 2007). As such, this characteristic forms a fundamental assumption underpinning this dissertation, where the nature of criminal networks in illegal logging is seen as more amorphous and adaptable, lacking a stringent hierarchy. The primary concern of this dissertation is thus not the level of organisation, but establishing the presence of organisational elements that distinguish organised crime in illegal logging from isolated, individual and traditional criminal acts. This distinction is essential as it highlights the coordinated nature of such offences, even if they do not conform to a rigid hierarchical model.

Fourthly, in terms of its structure, OC is "associated with the collective commitment of crime" (von Lampe, 2010, p. 340). Von Lampe (2010) therefore highlighted the collaborative nature of OC that is essential for conducting criminal activities that are beyond the capacity of a single individual. This collaboration towards common criminal objectives facilitates the gathering of skills, resources and information towards the aforementioned goal of financial or power gain (Wyatt, et al., 2020).

Fifthly, OC is characterised by "the existence of consistent structures linking numerous offenders" (von Lampe, 2010, p. 340). As such, not only that in its most fundamental form,

OC requires minimum 2-3 individuals as per EU's and UNCATOC's guidelines, but it also implies consistency. The consistency or continuity of OC refers to its ability to exist independently from the participation of individual members. This study argues that understanding the concept of continuity is important for law enforcement and policymakers because it suggests that targeting individual members, even high-ranking ones, might not be sufficient to dismantle or significantly weaken an OCG. Instead, as it will be highlighted in the forthcoming chapters, SCP techniques might need to focus on disrupting the structural and cultural foundations that enable this continuity.

Moreover, OC's continuity is also ensured and maintained by a sixth and a seventh characteristic: "violence and the threat of violence" (Finckenauer, 2005, p. 66) and/or corruption, such as "official misconduct by government officials, obstruction of justice, and commercial bribery" (Albanese, 2001, p. 11). OCGs may use violence or the threat of it as means to enforce discipline, loyalty, obedience or secrecy within their circle, as well as deterring members "to defect and cooperate with the competent authorities to uncover their activity and provide information about other crime group members" (Hysi, 2004, p. 966). Additionally, OCGs resort to violence as means to coerce or intimidate whistle-blowers, witnesses, public officials, including the forest rangers and other gate keepers (Cozma, et al., 2021; Pokorna, 2022). This intimidation is directed towards individuals, no matter whether inside or outside the group, who attempt to intervene and disrupt the criminal activity, for instance by gathering evidence (like taking pictures or filming) or reporting it to law enforcement agencies or other organisations (EuroNatur, 2021).

As previously mentioned, corruption is one key characteristic of OC, as the latter "seeks to neutralize or nullify government by avoiding investigation, arrest, prosecution and conviction through payoffs to the police, prosecutors, and judges" (Finckenauer, 2005, p. 67). As such, OCGs gain immunity through bribes, especially as they generate substantial profits which tempt public servants whose incomes are not that high (Finckenauer, 2005, p. 67). Subsequently, on the one hand, some authors like de Doelder (2014), Finckenauer (2005), Ikbal and Mirza (2019), and Maltz (1994, cited in Finckenauer, 2005) argue that the corruption of the public sector as well as the use of violence and its threat are key aspects of OC. On the other hand, scholars like Passas (1995, cited in Wyatt, et al., 2020)

and Stoica (2016) highlight that neither corruption nor violence are always employed by OCGs and therefore their extent should not be exaggerated.

The last two characteristics are related to OC's primary aim of financial profit which can be generated solely through illegal enterprises or by infiltrating legitimate businesses as well (Albanese, 2001; Finckenauer, 2005; Beken & Daele, 2008). On the one hand, OCGs use illegal enterprises in order to maximize their profit by not paying the required taxes, as well as not respecting any laws (van Uhm & Nijman, 2022). One relevant example is not respecting the laws related to the work environment, involving individuals working without legal protection, benefits or rights (Naim, 2005). As a consequence, these illegal enterprises are forming and maintaining a shadow economy, which can be defined as "economic activity that falls outside the purview of government accounting" (Fleming, et al., 2000, p. 387). As a result of tax evasion, not only that OCGs harm "the ability of governments to raise tax revenues" (Albanese, 2001, p. 21), but they also harm the legitimate market. More specifically, OCGs can sell their illicit commodities (for example, wood) at a lower price than the legal market, which in turn allows them to dictate market conditions, inflate prices and generate substantial profits as a result (Albanese, 2001).

On the other hand, OC may infiltrate legitimate businesses in order to legitimise profits through money laundering, have a cover-up for the OCGs' illegal activities, and create new revenue streams or reinvest in the same ventures so that it creates a cycle of profit generation and expansion (Finckenauer, 2005). Some OCGs choose to diversify their streams of illicit profit, with some scholars like van Uhm & Nijman (2022) arguing that there is an increasing number of OCGs engaged in environmental crime "alongside their traditional activities" (van Uhm & Nijman, 2022, p. 542). One of the main reasons for this phenomenon is that the cost of exploiting the environment (such as illegal logging or the wildlife illicit trade) is relatively low for how lucrative the illegal business actually is, especially due to the high demand for these commodities. Moreover, some OCGSs "may use their legitimate infrastructure to 'camouflage' contraband with legitimate goods; the illegal activities are hidden in plain sight - for instance, cocaine concealed in timber" (Block and Chambliss, 1981, cited in van Uhm & Nijman, 2022, p. 543). Concerning this matter, Kishor & Lescuyer (2012) noted that companies engaged in timber processing and

furniture manufacturing, despite being lawful businesses, sometimes play a part in laundering timber into legitimate markets where there is a high demand for timber, in a pursuit of profit. An example of this phenomenon is the case of Holzindustries in Romania (Ciurcanu, 2022), which will be further mentioned in the Comparative Policy Analysis chapter of this dissertation. The company was involved in controversial practices with regard to how it acquired and distributed the timber, showcasing how legal entities can be entangled in the illicit timber trade to capitalize on market demands (Environmental Investigation Agency, 2015). Williams (1994, cited in Bouloukos, et al., 2003, p. 178) argued that "there are many parallels between TOC and the operations of legitimate industry and suggests that they form strategic alliances". However, it is worth mentioning that not all OCGs infiltrate legitimate businesses in order to achieve or maintain their financial gain (Maltz, 1994, cited in Finckenauer, 2005).

To summarise the aforementioned characteristics, OC does not exist as a perfect archetype, but as a "degree of criminal activity or as a point on the spectrum of legitimacy" (Albanese, 2000, p. 411). Additionally, this study agrees with Albanese (2000, p. 411) who concluded that there is an agreement among researchers on four key aspects of OC: "a continuing organization, an organization that operates rationally for profit, the use of force or threats, and the need for corruption to maintain immunity from law enforcement". As a result, the present study falls under the umbrella of organized crime research, since illegal logging is a type of environmental crime that is perpetrated by OCGs underpinned by the aforementioned characteristics.

2.2.2 Environmental crime

Environmental crime is the third largest form of organized crime globally and it is one of the most profitable sectors of illegal international trade (Elliott & Schaedla, 2016; Norway's International Climate and Forest Initiative, 2022; van Uhm & Nijman, 2022). It "involves offenses or transgressions that harm, damage or destroy our natural environments and thereby affect humans, nonhuman species, specific environments, and the Earth as a whole" (Brisman & South, 2017, p. 131). More specifically, the International Criminal Court states that environmental crime refers to crimes that "are committed by means of, or that result in, inter alia, the destruction of the environment, the illegal exploitation of

natural resources or the illegal dispossession of land" (International Criminal Court, 2016, p. 14). Although implied in this definition, it is important to add Europol's highlight about the impact this type of crime may have also on human health. As such, according to Europol, environmental crime is represented by a series of activities "that breach environmental legislation and cause significant harm or risk to the environment, human health, or both" (Europol, 2022, para. 1).

Environmental crime encompasses a multitude of criminal acts that can be divided in two categories. The first category encompasses the illicit exploitation and trade of natural resources, such as illegal logging, illegal mining, poaching, "the illegal trade in endangered, threatened or protected species" (Elliott & Schaedla, 2016, p. 3) of fauna and flora, illegal, unreported and unregulated fishing, etc. (Elliott & Schaedla, 2016). The second category involves activities that directly harm the environment, mainly represented by waste and pollution crimes, such as contaminating the air, water or soil through pollution, illegal waste disposal, unauthorized "dumping of toxic and hazardous waste, including electronic waste (e-waste)" (Elliott & Schaedla, 2016, pp. 3-4) and "the black market in ozone depleting substances (ODS) or other prohibited or regulated chemicals" (Elliott & Schaedla, 2016, p. 4).

2.2.3 Illegal logging
In transitioning from the broader context of environmental crime to one of its subsets, namely illegal logging, it is important to acknowledge how illegal logging is defined and conceptualised in the literature. Similar with other concepts from the field of international security, illegal logging does not have a universal definition. Even if the term is widely employed in academia and different legislations to describe a range of illicit activities related to forestry crime, its use depends on the context, and more importantly, on national legislative and justice systems (Winkel, et al., 2017).

The main differences related to defining and conceptualizing illegal logging are twofold, depending on the range of activities that are encompassed by the term. On the one hand, there are scholars like Bouriaud & Niskanen (2003), Goncalves, et al. (2012), Richards, et al. (2003) and Rosander (2008) who argue that the term refers only to the harvesting of the timber, informally known as the concrete cutting of the wood. More specifically, they

define illegal logging as a "set of activities connected only to the explicit harvesting of illegally felled wood, which comprises solely the illicit activity of the loggers in the forest" (Goncalves, et al., 2012, p. 9). Richards, et al. (2003) went a step futher and divided illegal logging into "three (albeit overlapping) categories: legal, legalised and clandestine" (Richards, et al., 2003, p. 283). As such, within the scope of this narrower definition, illegality refers to the timber harvesting taking place without the necessary governmental permissions or in breach of the conditions stipulated by such permits (Goncalves, et al., 2012). Interpol and the World Bank extend the definition of illegal logging beyond just the infringement of national laws and include "violations against both national laws in the origin country and ratified international treaties and conventions" (Anh, 2016, p. 20). The International Tropical Timber Organisation (ITTO) goes one step further in making the distinction between illegal logging and the illegal timber trade (Flejzor, 2005). According to ITTO, the former refers to the extraction of timber in violation of applicable legal provisions, while the latter can be "domestic or international, or both, and involves not only national forest laws but also laws on corporations, trading, banking, auditing, customs, tazes, etc." (ITTO, n.d., cited in Flejzor, 2005, p. 7). On the other hand, there are scholars like Brack & Hayman (2001), Schloenhardt (2008) and Tacconi (2007) who expanded the definition of illegal logging to encompass activities beyond the actual cutting of the wood, or as formally described, timber harvesting. This broader perspective also includes the transportation, selling, buying, processing and smuggling activities. Moreover, despite its wider scope, this approach avoids ambiguity by clearly stating the included illicit activities encompassed by the term (Anh, 2016).

Given the multitude of terminologies present in the literature, this dissertation requires selecting a definition and associated characteristics that fall in line with the aim of this research. As such, for the purposes of this study, the adopted definition of illegal logging aligns with the latter approach, presented in the works of Brack & Hayman (2001), Schloenhardt (2008) and Tacconi (2007). More specifically, as articulated by Anh (2020, p. 22), illegal logging is "*a form of environmental or green crime that involves the acts of harvesting, manufacturing, buying, selling, and smuggling timber and its products, which breach the relevant legal provisions enacted by local, national or international authorities*". To further highlight the expansiveness of the process aligned with this core definition,

WWF also defined illegal logging as a "*criminal activity (carried out in contravention of national or international law) in the forestry sector, covering the entire supply chain, from harvesting and transportation to processing, buying, selling, trading, importing and exporting*" (World Wide Fund For Nature, 2020, p. 7). According to Pokorna (2022, p. 19), this definition falls in line with "probably the most universal definition, which was presented by the European Union's Forest Law Enforcement, Governance and Trade (EU FLEGT)".

After establishing the definition of the central phenomenon discussed in this study, a few clarifications are required. Firstly, this broader yet clearly defined approach is consistent with the dissertation's premise that illegal logging constitutes a series of activities referred to as crime scripts that categorise it as a type of OC in line with its previous description. Considering these interconnected steps forming illegal logging, traceability emerges as a crucial factor in devising prevention strategies (Arts, et al., 2021; Dykstra, et al., 2002), as further elaborated in the subsequent chapters. In line with this reasoning, this allows for the present dissertation to explore intervention strategies rooted in SCPT that could prevent this type of OC. Secondly, while the aforementioned premise recognizes illegal logging as a series of activities that renders it as a form of OC, this study aligns with Finckenauer & Chin (2010) in asserting that the level of organisation is not central to the discussion. This stance is rooted in the understanding that illegal logging, as defined above, involves multiple tasks that require "more than one person, some structural form, planning and direction" (Finckenauer & Chin, 2010, p. 60). Therefore, this dissertation assumes that regardless of the perpetrator or the specific organisational structure used (except for the minimum requirements necessary for committing such a crime which were previously mentioned), "the commission of the crime can be made more difficult and riskier, and the cost/benefit ratio of that crime can be altered" (Finckenauer & Chin, 2010, p. 60) through the application of SCP. Thirdly, even if the chosen approach of defining illegal logging also covers the illicit evasion of taxes and fees on the logs and processed woodcuts generated" (Goncalves, et al., 2012, p. 9) as observed towards the end of this chapter, the policies discussed in the following comparative policy analysis between Romania and Brazil are only related to the environment in the logging and forestry sector. As such, no accent was placed on other types of policies that may be tangent with illegal logging, such as the ones covering tax, customs, etc. Lastly, it is important to note that

the legal provisions mentioned both in the definition and throughout this dissertation do not exclusively pertain to criminal laws; they may also include administrative laws and regulations.

2.2.4 Timber

Another important term linked to the characterisation of illegal logging is 'timber'. Timber refers to the processed wood, typically the one that has been processed into beams and planks used in construction or furniture-making (Collins Dictionary, n.d.). As a construction material, timber takes many forms, including "round wood (logs, bolts or other round sections cut from trees (…)), lumber (partly prepared timber, usually sawn into rough planks) and plywood (boards consisting of two or more layers of timber glued, pressed or otherwise bonded together" (Graycar & Felson, 2010, p. 82). However, for the purposes of this dissertation, the term 'timber' also includes the pieces of wood of living trees or the recently felled before undergoing processing (Neag, 2021), in the way used also by scholars like Giurca, et al. (2013), Maryudi (2016) or Tuharno, et al. (2019). As a result, the term 'timber' is used to refer to "logs, wood planks and wood products" (Anh, 2016, p. 22). It is relevant to note here two additional related terminologies that are used in the relevant academic literature. Within the context of this study, these terminologies represent one possible step or activity of illegal logging and hence fall under the scope of illegal logging as previously defined. One such term is "timber trafficking" which refers to the illegal transportation and commercialization of illegally harvested timber (Anh, 2016). The second term is "timber laundering" which is defined as "converting illegally-cut logs to legally-certified timber by exploiting legal loopholes – such as those relating to transport of timber, or certification of origin – and relying on smuggling channels to bring the goods to market" (Transparency International, 2010, p. 1).

2.2.5 Illegal deforestation

Another term that is often mentioned in relation to illegal logging is "illegal deforestation" and it is important to differentiate between the two especially due to the latter being oftenly used in the literature regarding illegal logging in Romania and Brazil. Tacconi (2007, p. 277) defined illegal deforestation as "the clearing of forest in areas that are supposed to be maintained under forest cover (…) normally carried out to change the land use from

forest to other uses, especially agriculture". Food and Agriculture Organization of the United Nations (n.d.) (FAO) also viewed illegal deforestation as the unauthorised removal of a forest or stand of trees for land conversion. Moreover, FAO (n.d.) argues that "the term excludes areas where the trees have been removed as a result of harvesting or logging, and where the forest is expected to regenerate" (FAO, n.d., para. 10). However, unlike Tacconi (2007) and FAO (n.d.), Ciobotaru, et al. (2019, p. 2) argued that deforestation "may also be the result of logging and harvesting practices", thus including the focus of illegal logging in the context of illegal deforestation. Therefore, illegal logging is a subset of illegal deforestation, as it may be one of the activities that result in the conversion of forested land to other uses, along with illegal mining, forest fires, etc. (de Andrade, et al., 2022). Illegal logging focuses more narrowly on unlawful timber extraction and subsequent timber handling rather than the use of the land (Thompson & Magrath, 2021). Meanwhile, illegal deforestation has a wider scope which also encompasses the clearance of forest areas and the following usages of the land (Culas, 2014). Considering the aforementioned points, this dissertation concentrates on illegal logging and regards it as ranging from selective illegal logging to more extensive deforestation practices. As a result, for the purposes of this study, illegal deforestation is seen as the upper limit of illegal logging or as a more extreme form of illegal logging, regardless of the permanency of the forest loss, in accordance with (Sundstrom, 2016).

2.2.6 Corruption in Forestry Sector

As previously mentioned, corruption is a key characteristic of OC and its influence also manifests upon the phenomenon of illegal logging as one of the main factors of this type of crime. There is an increasing agreement among scholars such as Burgess, et al. (2012), Koyuncu & Yilmaz (2009) and Wright, et al. (2007) that "corruption increases deforestation rates" (Sundstrom, 2016, p. 779), that "corruption and illegal logging activities are unarguably intertwined" (Amacher, 2006, p. 86), and that "corruption has the potential to destroy a nation's forests" (Maina, 2018, cited in Cozma & Achim, 2023, p. 57). For these reasons, it is important to define and understand what is implied by corruption in the forestry sector in order to prepare the discussion on applying SCP measures to illegal logging. Corruption is broadly defined as "the abuse of public power

for private profit" (Tupman, 2005, p. 254) and typically involves "bribery, nepotism, embezzlement, fraud and extortion" (Andwig, et al., 2000, cited in Tupman, 2005, p. 254).

Vasile (2009) argued that corruption in the field of natural resources management (which includes the forestry sector) should be regarded as a process. This implies that "it is not an isolated or isolable action" (Blundo, 2007, p. 33, cited in Vasile, 2009, p. 107), but rather a part of a sequence of events that come before or after it. Moreover, scholars like Anders & Nujiten (2007) and Blundo (2007, cited in Vasile, 2009) argued that corruption is fundamentally an ethical issue that involves violating a set of norms. Given that norms differ in various contexts, perceptions and judgements of corruption are culturally rooted in what can be described as "situational morality" (Vasile, 2009, p. 3) and thus should be taken into consideration when defining corruption.

When defining corruption in the context of forest management, Sundstrom (2016) argued that it can take the form of petty, grand, collusive or non-collusive corruption. The first two forms are differentiated in accordance with the level and magnitude of corruption, in the sense that the first involves attempts to influence policy on a local level by for example, bribing law enforcement authorities in order to evade sanctions for rule violations, such as cutting trees in protected areas or cutting more trees than stated in the license (Sundstrom, 2016). Meanwhile, the second type involves larger-scale efforts to influence public decisions or forest policies, an example of which would be "when an industrial actor offers, or is asked, to bribe decision-makers to abstain from imposing legislative restrictions on logging in a certain area" (Callister, 1999, cited in Sundstrom, 2016, p. 781). Moreover, collusive corruption suggests the cooperation between those involved in illegal logging and the authorities responsible for overseeing the illegal behaviour (Sundstrom, 2016). In contrast, non-collusive corruption implies that "harvesting actors have to pay bribes to access services or documents they are legally entitled to without payments or delay" (Sundstrom, 2016, p. 781). According to Smith & Walpole (2005) and Tacconi (2007), both petty and collusive corruption hinder the enforcement of forest laws and policies, which results in a leniency that allows illegal loggers go unpunished, thus incentivising resource overexploitation. Meanwhile, grand and non-collusive corruption, since they involve high-level officials and significant sums of money for bribery and

lobbying, can lead to decisions that favor the interests of the few rather than the public good, affecting the stringency of environmental and forest policies, and effective forest management and conservation efforts (Fredriksson, et al., 2004; Welsch, 2004). As a result, bribery, lobbying and other forms of corruption forming "forest corruption" (Kishor & Damania, 2007, p. 3) generate a shadow economy that combined with poor democratic governance, leads to poor forest management and "high levels of deforestation" (Cozma, et al., 2021, p. 16).

2.3   Theoretical Framework

Transitioning from the literature on key terminologies, definitions and context-setting of organised crime, environmental crime, illegal logging, timber, illegal deforestation, and corruption in the forestry sector, this sub-chapter delves into the foundational theories that underpin this study's analytical approach: Situational Crime Prevention Theory (SCPT) and the theory of Crime Scripts Analysis (CSA). Before delving into these two theories, it is important to understand the basis of SCPT which is underpinned by routine activity theory, crime pattern theory and rational choice theory (Eck & Clarke, 2019). According to Felson & Clarke (1998), they have a complementary relationship. More specifically, "routine activity theory is a " macro" theory which deals with broad societal changes that lead to the increase or decrease of specific kinds of crime opportunities; crime pattern theory is a " meso" theory, operating at a city or neighborhood level, that deals with the ways offenders discover crime opportunities in the course of their daily lives; and the rational choice perspective is a " micro" theory that deals with the decisions that offenders must make in committing crimes" (Felson & Clarke, 1998, cited in Eck & Clarke, 2019, p. 358).

2.3.1   Routine Activity Theory

The main proponents of the routine activity theory are Cohen & Felson (1979) who first proposed the theory for explaining crime rate changes in the United States between 1947 and 1974 (Eck & Clarke, 2019). The theory focuses on the circumstances that make crime possible rather than on the characteristics of the offenders, emphasising the situational context of crime (Felson & Eckert, 2019). It argues that crime is a predictable part of everyday life that can be controlled by managing the immediate environment to disrupt

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the convergence of three particular elements. More specifically, the routine activity theory states that three essential elements must converge in space and time for a crime to occur: motivated offenders, suitable targets, and the absence of capable guardians" (Cohen & Felson, 1979, p. 604).

According to Cohen & Felson (1979), the first element refers to the individual who is willing to commit a crime when he sees the opportunity in a specific environment. The theory assumes that the motivated offenders are always present and that their number is thus influenced by societal factors such as unemployment or lack of social and economic opportunities (Ekblom, 2003). For example, the illegal loggers may be motivated by unemployment, poverty or the increased profit generated on the illicit market for wood products due to tax evasion. Secondly, the suitable target can by any object, person or property that an offender considers worthy to target in accordance with what Felson & Clarke (1998, p. 5) called "VIVA – value, inertia (weight of the item), visibility and access". For example, a suitable target would be remote forest areas with valuable timber that are poorly surveilled by public authorities but not too difficult to access. The last element revolves around the absence of any person, group or mechanism "whose presence or proximity would discourage a crime from happening" (Felson & Clarke, 1998, p. 4). This can include law enforcement, local watch groups, security systems, or even the mere presence of bystanders. Cohen & Felson (1979) highlighted that the convergence of these three elements in time and space may be disproportionately large compared to the individual changes in each of these elements. In simpler terms, even small shifts in social or environmental factors can lead to unexpected and significantly larger increases in crime rates.

As such, the routine acitvity theory suggests that crime is a predictable part of everyday life that can be controlled by managing the immediate environment to disrupt the convergence of the aforementioned elements and alter their supply, distribution and movement (Bichler & Malm, 2015; von Lampe, 2010). Simply stated, it argues that crime can be deterred by reducing opportunities through measures such as improving surveillance, making targets less attractive or accesible, or increasing the risks associated with committing the crime (Felson & Eckert, 2019). The theory has been extended by

Ekblom (2003) into the 'conjuction of criminal opportunity', which comprises 11 kinds of "immediate casual precursor" (Ekblom, 2003, p. 248). Six of them are on the offender side, as follows: "their criminality; lack of skills to avoid crime; shorter-term influcens on their readiness to offend; offenders' resources for committing crime; their perception and anticipation of risk, effort, reward and attacks of conscience in the immediate circumstances of the criminal event; and their presence in the crime situation" (Ekblom, 2003, p. 248). The other five precursors are on the situational side, as follows: "the target (person or property), the target enclosure, a wider environment logistically/tactically favourable for offenders and unfavourable for preventers; the absence of crime preventers; the presence of crime promoters" (Ekblom, 2003, p. 248). All these precursors form the conjunction of crime opportunity, "which is normally seen as a feature of the environment to be exploited" by offenders" (Ekblom, 2003, p. 249).

Nonetheless, according to Wikstrom & Treiber (2016), the routine activity theory has a series of limitations that challenge the theory's capacity to comprehensively explain the causes of crime and the role of the environment in its occurrence. More specifically, they argue that the core concepts of the theory are only broadly and ambigously defined, which create challenges for precise analytical and theoretical testing (Wikstrom & Treiber, 2016). Moreveor, the concept of guardianship has evolved over time which lead to some confusion among scholars (von Lampe, 2010; Wikstrom & Treiber, 2016). Earlier definitions indicated that guardianship primarily involved personal responsibility for one's security and property, while later works expanded this element to also include the presence of others who could deter crime (Bichler & Malm, 2015). Lastly, Wikstrom & Treiber (2016) argue that the routine activity theory neglected individual differences that impact criminal behaviour, operating under the assumption that criminal inclination is a given, as well as assuming that environmental cues affect individuals uniformly. However, Schaefer (2021) argued that the broader definitions of the three elements mentioned by Cohen & Felson (1979) provide the routine activity theory with the necessary flexibility and adaptability across various crime types, which for example, renders its application in environmental crime possible. Moreover, the evolving understanding of guardianship reflects its adaptability and responsiveness to new research and practical insights (Cohen & Felson, 1979), which is important especially for problem-led policing. Last but not least,

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since this theory was designed to offer a general model for understanding the convergence of factors leading to crime opportunities (Cohen & Felson, 1979), Eck & Clarke (2019) hypothesised that individual differences were overseen in order to offer a macro-level perspective over crime trends and patterns. Nonetheless, Wikstrom & Treiber (2016, p. 440) argued that "as a predictive model, Brantigham & Brantigham's (1993) Crime Pattern Theory is conceptually much clearer and analytically stronger when it comes to explicating the reasons for where and when crime will occur".

2.3.2 Crime Pattern Theory

The second theory supporting SCPT is crime pattern theory which highlights the relationship between local crime patterns and interactions with the physical environment (Felson & Clarke, 1998) and whose main proponents are Paul Brantingham and Patricia Brantingham (1984, cited in Rossmo & Summers, 2015). According to the crime pattern view, "the spatial distribution of crime is a function of the everyday patterns of work, play and residence that bring potential offenders into contact with crime targets where the risks of being caught and recognised are relatively low" (Bullock, et al., 2010, p. 2). This theory contributes to the geographical mapping of crime, offering insights into the relationship between local crime patterns and interactions with the physical environment, thus contributing to problem-oriented policing. The latter is "concerned with detailed analysis recurring crime problems, the identification of features of that problem at which preventative action may be targeted and a commitment to evaluation of any interventions" (Bullock, et al., 2010, p. 2). The crime pattern theory is thus aligned with the routine activity theory as "the awareness spaces of offenders are shaped by their routine activities" (Rossmo & Summers, 2015, p. 20).

More specifically, this theory is underpinned by three main concepts: nodes, paths, and edges (Brantingham, et al., 2017). Nodes refer to key points where a person frequently goes to and from and where they spend most of their time, such as "home, school, shopping, entertainment or friends' homes or favourite places" (Brantingham, et al., 2017, p. 100). For example, in the context of illegal logging, nodes can be considered as key areas where logging activities are concentrated known by locals who are living in the vecinity, or by corrupt forest rangers who are working in that area. Moreover, paths are

represented by the routes a person takes to move from one activity node to another (Brantingham, et al., 2017), and may be exemplified by the routes used by illegal loggers to access and transport timber from forests to the saw mill, markets, etc. The theory argues that "offenders commit crime at those places where their individual awareness spaces overlap with the spatial distribution of attractive targets" (van Sleeuwen, et al., 2021, p. 8). Lastly, Bratingham & Bratingham (1993a cited in Rengert, et al., 2015) defined edges as "places where there is enough distinctiveness from one part to another that the change is noticeable" (Rengert, et al., 2015, p. 218). Simply stated, "edges refer to the boundaries of areas where people live, work, shop or seek entertainment" (Felson & Clarke, 1998, p. 6). In the context of illegal logging, edges can be exemplified by the boundaries between protected and non-protected forest areas, or between different jurisdictions of the local districts of the government forest management organizations. Brantingham, et al. (2017) argued that crime oftenly occurs at these edges partly due to the interaction of individuals from various areas who are typically unfamiliar with each other. This concept emphasized the role of 'insiders' who commit crimes within their area of awareness, in contrast to 'outsiders', who tend to commit crime at these peripheral areas before retreating back to their own area (Brantingham, et al., 2017).

However, one of the critiques towards the crime pattern theory is that it focuses solely on the physical environment without taking into consideration the criminal motivation (Baumer & Arnio, 2016). Another critique is that it does not take into consideration the importance of timing when it comes to routine activities and commission of crime and its impact on the offender's spatial knowledge and target selection (van Sleeuwen, et al., 2021). Last but not least, Higgins & Swartz (2017) argued that the crime pattern theory does not consider the diversity and complexity of criminal behaviour and decision-making, assuming that offenders are homogenous and rational. These critiques suggest that this theory needs to be integrated with others that can explain the social, psychological and temporal aspects of crime for contributing to crime prevention efforts.

2.3.3 Rational Choice Theory

It is important to note that SCPT, CSA and the concept of OC lie on the assumptions of the rational choice theory. The proponents of the rational choice theory are Cornish and

Clarke who published "The Reasoning Criminal" in 1986 in order to contribute to support the development of SCPT (Matthews, 2014). Rational choice theory argues that the perpetrators weigh both the benefits and risks of a criminal act and decide on what maximizes their chance to get the greatest benefit (Bullock et al., 2010; Wikstrom & Treiber, 2016). Alternatively stated, rational choice theory posits that the offenders' decision-making is rational, "purposive, is orientated to obtaining utilities of some sort, and that real and perceived changes in risk, effort and reward can affect decisions" (Bullock, et al., 2010, pp. 1-2; Wikstrom & Treiber, 2016). This evaluation is carried out while "operating under the constraints of time pressure, skills, experience, and access to the resources necessary for actions to be completed" (Chainey & Berbotto, 2021, p. 275). These constraints imply that the aforementioned decision-making is restricted by the offender's circumstances and environments, which leads to the following theory, SCPT.

2.3.4 Situational Crime Prevention Theory (SCPT)

Underpinned by the aforementioned theories (Weirich, 2018), SCP was developed by Clarke in 1983 with the aim of analysing how to "reduce opportunities for crime. It focuses on highly specific forms of crime, and considers the immediate environment in which the crime takes place with a view to increasing the effort and risks and reducing the rewards from crime" (Clarke, 1993, cited in von Lampe, 2010, p. 36). As such, SCP assumes that offenders make rational choices based on the perceived costs and benefits of their actions (Clarke, 1995). The theory further suggests that altering the environment in which the offender is located is likely to increase the perceived risks and efforts associated with committing the crime and simultaneously reduce the potential rewards and remove excuses, which deters them from taking action as a result (Clarke, 1995). As such, the SCP main principles are the following: "increase the effort of crime, increase the risks of being apprehended, reduce the rewards, reduce provocations, and remove excuses" (Clarke & Eck, 2005, p. 75).

The main critique of SCPT was offered by Richard Wortley who stated that SCP was too general to be effective and proposed instead another theoretical model underpinned by "regulating factors and precipitator factors which are both necessary for crime to occur" (Wortley, 1998, cited in Weirich, 2018, p. 54). Another important critique of SCP that

emerged in criminological discussions was represented by the Crime Displacement Theory. This theory suggests that SCP measures applied in one area can lead to the unintended consequence of the crime moving to a different area or manifesting in other forms (Shariati & Guerette, 2017). More specifically, "following situational interventions, crime may displace or move to other places, times, victims, and offenders" (Shariati & Guerette, 2017, p. 264).

Andreatta & Favarin (2020) suggested that SCP needs a series of adjustments if applied to organised crime. More specifically, they argued that "social, economic and political factors" (Andreatta & Favarin, 2020, p. 135) should be integrated in the creation of preventive strategies. Moreover, they suggest that the concept of 'space' within SCPT should encompass more than just the physical setting, namely "patterns of activity that represent particular vulnerabilities" (Andreatta & Favarin, 2020, p. 135). Aligned with this idea, they also argued for the inclusion of "interventions in the socio-economic, policy-related, and regulatory environments" (Andreatta & Favarin, 2020, p. 135) as obstacles that deter forms of organised crime.

2.4   Gaps in Existing Literature

The literature on the Romanian phenomenon of organised crime, particularly regarding activities like illegal logging, is notably sparse (Neag, 2021). This gap is highlighted by the limited application of SCP and CSA theories to regions like Eastern Europe, especially in the context of environmental crime (Vasile, 2009). Moreover, in analysing what lessons can be learned from Brazil's reduction of illegal logging for the case of Romania, this study is underpinned by two interconnected theoretical approaches: SCPT and CSA. Although they have been previously used in researching the prevention of illegal logging as presented below, they have never been applied to the cases of Brazil and Romania before. As such, these gaps suggest an opportunity for new insights, particularly in exploring the application of SCPT and CSA frameworks to the unique socio-economic dynamics of Romania and Brazil.

3   <u>Research Methodology</u>

3.1   Introduction

Qualitative research was conducted for the purposes of this dissertation, guided by the aforementioned research question: *What lessons can be applied to Romania from Brazil's success in illegal logging as a result of using situational crime prevention, and what additional situational crime prevention techniques could be applied to illegal logging in Romania?*. This approach was chosen to facilitate a detailed exploration of the topic, as qualitative researching allows for "richness, depth, nuance, context (…) and an unrivalled capacity to constitute compelling arguments about how things work in particular contexts" (Mason, 2002, p. 1). As such, the aforementioned capacity was deemed to be the most appropriate for this study's aim to explore SCP techniques applied to illegal logging in the contexts of Romania and Brazil. Moreover, this research is underpinned by both primary and secondary data and was conducted deductively, aligning itself with the SCP's theoretical lens.

3.2   Research Strategy: Deductive Qualitative Research

Although qualitative research adopts an inductive approach in the majority of the cases (Clark, et al., 2021), the research strategy of this dissertation follows a deductive approach, as it was theory-driven by using the theoretical lense of SCP. One critique related to the application of this approach in qualititative research is that the chosen "theoretical framework may be too restrictive in relation to the issues revealed in the data and fail to allow the meanings expressed by research participants to be explored adequately" (Saunders, et al., 2016, p. 570). However, this dissertation argues that this critique does not apply to its case since SCP served as a guiding framework rather than a constraining one. The comprehensive nature of this theory allowed for the consideration of a wide range of factors influencing illegal logging, from the physical environment to the social dynamics. Moreover, as presented in the literature review, SCP is context-dependent, in the sense that the effectiveness of SCP techniques depends on a series of situational variables that were previously mentioned. As such, SCP allowed for its adaptation to the specificities of the two chosen case studies and thus provided a structured yet adaptable lens through which to explore the complexities of illegal logging.

Additionally, given the focus on understanding and applying lessons from one country's experience to another, this study adopted an interpretivist epistemology. According to Bryman (2012), interpretivism is underpinned by the principle acknowledging the distinct nature of humans as compared to the physical objects studied in the natural sciences "and therefore requires the social scientist to grasp the subjective meaning of social action" (Bryman, 2012, p. 30). As such, this epistemological approach emphasizes the importance of specific social, cultural and political contexts of Romania and Brazil and how these contexts influence the effectiveness and applicability of SCP techniques.

Aligning with the interpretivist epistemology, this study's ontological approach is represented by constructionism, as the research is underpinned by the assumption that illegal logging and its situational prevention are not just objective phenomena, but are understood and experience differently in different societies. More specifically, constructionism posits that "the realities which we study are social achievements produced by actors, interactions and in situations" (Flick, 2015, p. 24). As such, in line with this approach, this dissertation is underpinned by the assumption that the success of situational crime prevention strategies relies on social processes, beliefs, or interactions within specific societies. Another underlying assumption aligned with this approach is that the interpretation and reaction of different stakeholders in Romania and Brazil of and to SCP techniques shape their effectiveness.

3.3 Research Design: Comparative Case Study

Aligning with the research strategy mentioned above, the research design employed for this study was comparative case study. According to Bartlett & Vavrus (2017, p. 6), this research design allows for an in-depth exploration "that aids in the process of discovery or problem-solving", which is what this study aims for. Bryman (2012, p. 72) defined the comparative case study as "entailing studying two constrasting cases using more or less identical methods". As such, since this dissertation involved the comparison of wood-related policies in Romania and Brazil for gaining insight on the application of SCP to illegal logging, it can be regarded as a cross-national research. This approach implied a series of benefits for the purposes of this study.

Firstly, as stated by Bryman (2012, p. 72), comparing the two case studies allowed for a better understanding of "social phenomena when they are compared in relation to two or more meaningfully constrasting studies". As such, the comparison of wood-related policies and measures in two different social, political, economic and legal systems enabled a more comprehensive understanding of SCP applied to illegal logging that goes beyond the specificities of national legislative frameworks. Simply stated, the insights gained from comparing different wood-related policy approaches can guide the adaptation and implementation of successful strategies in other contexts (Bryman, 2012). Moreover, this comprehensiveness avoids the limitation of a single case study (Flick, 2015), allowing for a better understanding of illegal logging and indirectly, of the complex topic of environmental crime. Last but not least, comparing different policy approaches can contribute to more innovative techniques to prevent illegal logging since they combine elements from multiple policies.

One clarification is needed in relation to the terminology of case study, which was clearly stated by (Merriam & Tisdell, 2016, p. 37): "a case study is an in-depth description and analysis of a bounded system". When it comes to this type of research design, Merriam & Tisdell (2016, p. 37) argued that there generally is a confusion generated by the "process of conducting a case study being conflated with both the unit of study (the case) and the product of this type of investigation". For this reason, Stake (2005, p. 443) highlighted the case as being "a choice of what is to be studied", which led Merriam & Tisdell (2016, p. 38) to argue that "the single most defining characteristic of case study research lies in delimitating the object of the study (…) which could be a specific policy". Aligned with this position, for the aims of this study, the object of the study is represented by wood-related policies (regarding logging, timber and forest). These policies are of course dependent on the national context in which they were created and employed, which is why this dissertation includes a short description of the two chosen case studies. However, these national contexts do not lay at the center of this analysis, as the central rests upon the aforementioned policies which impact the application of SCP techniques to illegal logging. Aligned with this clarification, this study chose the term "comparative *policy* analysis", which is also mentioned in its title. As a result, the research design aligned with comparative policy analysis which, as described by Engeli & Allison (2014,

p. 2), "addresses processes of policy-making, of problem emergence and definition, of policy formulation, of policy implementation and also evaluation".

This dissertation acknowledges that a "comparative study involving two countries so different in size, climate, and historical development as Brazil and Romania requires some defence" (Love, 1996, pp. 7-8). As such, in terms of the justification for case selection, Romania and Brazil represented compelling case studies for examining SCP techniques applied to illegal logging for seven main reasons. Firstly, both of them are very well known to environmental crime experts for their experience with deforestation as a result of illegal logging and related corruption (Cozma, et al., 2023). Secondly, both countries are housing most of the forested area for the region they are part of. More specifically, Romania has the largest area of primary forests within the European Union (Giurca, et al., 2022). Additionally, Brazil has jurisdiction over 69% of the Amazonian forest, the world's largest tropical rainforest (de Andrade, et al., 2022). Thirdly, "both were societies with Latin-derived languages and cultures, and both shared values and assumptions derived from Roman law" (Love, 1996, p. 8). Fourthly, both countries experienced democratic transitions from authoritarian regimes in the late 1980s and early 1990s, adopting new constitutions that established presidential and multiparty systems, following the principle of separation of powers (executive, legislative, and judicial) (Tonelli, et al., 2019). Fifthly, both countries face economic and social challenges, such as inflation, poverty, inequality, corruption and violence, especially when it comes to logging, timber and forest management, although they implemented various reforms and policies to address them (Cozma, et al., 2023). Sixthly, both countries have some foreign policy achievements and challenges, such as regional integration, global cooperation, human rights, and environmental issues, and sought to balance their national interests and values with their international commitments and responsibilities, as presented in the comparative policy analysis (Cashore, et al., 2016). Last but not least, this study acknowledges that Romania's "integration in the European Union and the form of organization as a unitary state framed the political context in a different way as compared to Brazil" (Tonelli, et al., 2019, p. 150). Moreover, falling in line with this differentiation, this study also acknowledges that the difference in governmental structures between a federative republic like Brazil and a more centralized system like Romania's impacts how

forestry policies are formulated and implemented. However, these differences are relevant for this study's purposes as it allows for analysing how different jurisdictions and legislative systems impact the application of wood-related policies, leading to a more in-depth exploration of the aforementioned research objectives.

Last but not least, since this dissertation compared the main wood-related policies in the cases of Romania and Brazil between 1990 and 2023, it qualifies as a longitudinal study. This approach allowed for the examinations of changes, trends and the impact of policies over time, which are key characteristics of a longitudinal research design (Mason, 2002). As such, this type of study offered "a measure of control over some of the variables being studied" (Saunders, et al., 2016, p. 200). The aforementioned timeframe was chosen as a result of considering a series of factors, including the significant legislative changes in Romania and Brazil especially in regard to forestry and environmental protection, the latest international agreements on the topic, significant policy shifts like the one resulted from Romania entering the European Union in 2007, and data availability.

3.4 Data Collection: Interviews and Document Analysis

The data collection methods were informed by the theoretical insights from SCP and used a data triangulation approach as it combined data from multiple sources, both primary and secondary.

First, this study conducted a secondary data collection with the aim of conducting the aforementioned comparative policy analysis between Brazil and Romania, as according to Adams, et al. (2007, p. 118), using secondary data is "good for examining longitudinal data and looking for trends". For this purpose, a series of documents were sampled and collected by using a combination of keyword searches (such as "illegal logging", "logging/timber/forest related policies in Romania/Brazil", "modus operandi of illegal logging in Romania/Brazil", "logging in Romania and Brazil", "situational prevention of illegal logging", etc.) in the databases of Google Scholar and University of Glasgow's library. The secondary data collection aimed two main types of documents: wood-related policies and legislative documents, including parliamentary reports, proposals by the European Commission, etc., and NGOs reports showcasing the SCP measures implemented in Brazil in Romania. However, news articles and academic sources were

of course also collected. This study thus looked at both national and international policies and reports written by national public institutions such as Romania's Forest Guard, intergovernmental public institutions like Europol, Interpol (and its Forestry Crime Working Group) and the UN (and its Environment Program), and by private organizations, such as NGOs like WWF, Greenpeace, etc. For documents written in Portuguese, Google Translate was used to translate them in English. Aligned with a similar study on the topic carried out by Rege & Lavorgna (2017), the sampling strategy was purposive in the sense that documents were chosen in accordance with reliability and their relevance to this study's aims. Document sampling continued until the repetition of data and new insights were no longer provided by new documents.

Second, this study complemented the previously mentioned secondary data collection with conducting primary data collection through semi-structured interviews, which "form the backbone of primary data collection in qualitative research design" (Adhabi & Anozie, 2017, p. 2). These interviews offered more depth to the research, and their semi-structured nature offered this study the possibilty to phrase a set of questions in accordance with SCP's theoretical framework (which can be observed in Appendix A - Interview Questionnaire) which only guided the discussion. More specifically, this approach had the advantage of also allowing for unexpected "insights into how research participants view the world" (Bryman, 2012, p. 471) to emerge and for the interviewer to ask follow-up questions accordingly (Johnson, et al., 2016). As such, the interview was not limited by the prepared interview guide and allowed for the emergence of new themes that were raised by the participants.

This was essential for the purposes of this dissertation, because the five interviews that were conducted involved Romanian NGO experts in the forestry sector who knew the state of the art of illegal logging and had the capacity to provide hands-on experience from the field. Their experience lays at the heart of this dissertation and contribute to its validity and reliability, as they offer a different perspective than the one of governmental and legislative records. These official records, especially during some periods within the studied timeframe, were notably influenced by political corruption. While acknowledging the potential biases of NGOs, as outlined in the limitations section, the incorporation and

analysis of both perspectives enhances this study's reliability. As such, after receiving the required ethical approval from the University of Glasgow, the five interviews were conducted virtually through the University of Glasgow's Zoom platform and lasted approximately one hour each. Moreover, they were recorded, transcribed and then analysed accordingly. Last but not least, as indicated in Appendix A - Interview Questionnaire, the interview questions were designed in accordance with four main themes, as follows:

Theme	Questions and Their Focus
Understanding Illegal Logging	Question 1: Types of illegal logging and forestry crime
	Question 2: Known actors in forestry crime
	Question 4: Reasons for committing illegal logging
Legal and Policy Framework	Question 3: Impact of legal frameworks on illegal logging
Prevention and Intervention Strategies	Question 5: Stages of timber transactions vulnerable to corruption
	Question 6: Awareness and implementation of SCP techniques
	Question 7: Role of technology and Innovation
	Question 8: Role of community engagement and education

	Question 9: Community involvement in designing and implementing SCP techniques
Challenges and Future Directions	Question 10: Potential unintended consequences of prevention techniques
	Question 11: Future of SCP techniques
	Question 12: Further research needs
	Question 13: Recommendations for policymakers and law enforcement

Table 1 Table with the 4 main themes of the interview guide, the related questions and their focus

In terms of the sample, this study employed convenience sampling which "involved choosing the nearest individuals to serve as respondents and continuing that process until the required sample size has been obtained" (Cohen, et al., 2005, p. 103). More specifically, the biggest NGOs in terms of their activity against illegal logging were contacted (such as WWF Romania, Greenpeace, EuroNatur, Agent Green, Client Earth, etc.). After receiving the required ethical approval, the researcher contacted these environmental NGOs via their organizational email, after which each organization nominated an expert in logging. As such, five interviews were conducted with five experts from five different organisations. However, to honor the request of participants for anonymity, this study refrained from disclosing the names of the NGOs that agreed to contribute to this research. It is worth mentioning that even if all the participants were experts in illegal logging, they had diverse specialisations, in the sense that some had a more policy-oriented focus, other brought more technical knowledge, while others had a rather academic inclination. This variety in expertise contributed to a more comprehensive and well-rounded interpretation of the themes.

The reasons for this study conducting interviews with Romanian NGO experts are threefold. Firstly, the work of NGOs has been recognized world-wide for their fight against

illegal logging and protecting the environment (Cozma & Achim, 2023). As stated by (Tacconi, 2007, pp. 1-2), "awareness and concern about illegal logging was raised particularly by non-government organizations (NGOs) such as the Environmental Investigation Agency (…) which contributed to propelling illegal logging centre stage in the global forest policy arena". Moreover, NGOs often have and gain access to information unknown to state institutions, making them essential actors for the environmental crime scene where they "provide reliable monitoring and supplement the enforcement powers of the government" (Ravenel & Granoff, 2004, pp. 359-360). Secondly, since the Amazonian forest is the biggest tropical rainforest in the world and more than half of it is located within the borders of Brazil (Boucher, et al., 2013), it is natural that there is significantly more research on illegal logging in Brazil than in Romania (Neag, 2021). As such, since there is significantly less literature on the topic in Romania and the focus of the research is on the lessons that Romania can learn from Brazil and other potential SCP applied to its case of illegal logging, this dissertation chose to focus on Romanian experts. Last but not least, it is worth nothing that the researcher's Romanian nationality played a significant role in facilitating the interview process.

3.5   Data Analysis

When analysing the data, this study conducted thematic analysis on both primary and secondary data sources. The analytical framework of CSA was used to develop specific themes that were then used in coding the data, which is detailed in subsequent paragraphs. As previously mentioned when characterising this study's research strategy, these predetermined themes mainly served to structure the data rather than limit it, as this study also allowed for the emerging of additional codes. This approach was followed in order to enhance the quality of the research, as suggested by Creswell & Creswell (2023).

As such, firstly, the analysis of secondary data was represented by document analysis. More specifically, the priorly selected state documents, organizations' reports and mass-media articles were organized in separate folders in accordance with their main topic (for example, 'logging policy in Romania', 'illegal logging in Brazil' or 'situational crime prevention of organized crime'), which was "an iterative and data-dependent process"

(Rege & Lavorgna, 2017, p. 163). Subsequently, this study followed Rege & Lavorgna's (2017) approach and read and reviewed the selected documents, after which it identified, selected and organized "meaningful and relevant passages of text as they pertained to the aforementioned broad categories" (Bowen, 2009, cited in Rege & Lavorgna, 2017, p. 164). As such, these broad categories which are known as codes, guided the examination of policy documents, reports and other relevant materials, allowing for a structured assessment of how SCP principles and crime script stages are addressed or reflected in official strategies and records.

Secondly, the same coding process was used for the analysis of primary data as well. More specifically, it started with the word-for-word transcription of the interviews, after which NVivo was used to code the transcripts by "organizing material into chunks or segments of text and assigning a word or phrase to the segment to develop a general sense of it" (Creswell & Creswell, 2023, p. 282). As such, in accordance with the CSA analytical framework mentioned in the following paragraph, pre-determined codes were used to help identifying and categorising respondents' statements about their knowledge of (illegal) logging activities, prevention measures, and their effectiveness. This ensured that the analysis was systematically aligned with the theoretical framework of SCP guiding this research. However, as previously mentioned, relevant unexpected codes were also allowed to emerge and taken into consideration in the analysis, discussion and conclusions.

3.5.1 Analytical Framework – Crime Script Analysis (CSA)

For the purposes of this research, CSA was employed as analytical framework. This choise was made due to CSA's ability to not only support, but also complement and enhance the SCP theoretical framwrok. Consequently, using this analytical framework allowed for a comprehensive approach to studying and offering policy recommendations regarding illegal logging in Romania and Brazil. This combination allows for both a broad understanding of the situational factors that contribute to illegal logging and a detailed examination of how these crimes are actually carried out. On the one hand, the SCP theoretical framework provided an overall approach to understanding, explaining and making predictions about illegal logging. Moreover, as discussed in the literature review

chapter, this theoretical lens focuses on crime prevention by altering environmental factors to reduce opportunities for crime (Clarke, 1995). It thus represented an established theory that offered a lens through which this research is viewed. On the other hand, in contrast, the CSA analytical framework provided a set of categories used to systematically break down and analyze data within the scope of this research, as mentioned below. As such, it is an important reminder that the SCP theoretical framework guided the conceptual aspect of this study, while the CSA analytical framework focused on the research methodology for data examination and interpretation. This differentiation was also expressed by Andreatta & Favarin (2020, p. 135) who stated that "CSA enables scholars to distinguish between the different moments of a crime, (…) while SCP helps to design appropriate counterstrategies that are specific to each step of criminal conduct".

More specifically, CSA was developed by Cornish (1994) to support SCPT by breaking down crime into its constituent steps to understand each stage and "draw attention to a fuller range of possible intervention points" (Cornish, 1994, p. 151). As stated by its main proponent, CSA "provides a way of generalizing, organizing and systematizing knowledge about the procedural aspects and procedural requirements of crime commission" (Cornish, 1994, p. 151). As such, the capability of CSA to break down criminal behaviour into distinct segments for individual examination renders it especially useful for analyzing complex criminal activities like illegal logging and devising "specific SCP remedies" (Savona, 2010, p. 133). Tompson & Chainey (2011) concluded that "hence, scripts are essentially a distillation and systematisation of practical wisdom about the modi operandi" (Tompson & Chainey, 2011, p. 186).

For the purposes of this study, the use of CSA as analytical framework followed the manner in which the same analytical framework was employed by previous studies like Chainey & Berbotto (2021) for studying organized crime activity through OSINT, by Sosnowski, et al. (2020) to examine the illegal harvesting of live corals or by Andreatta & Favarin (2020) and Tompson & Chainey (2011) to examine illegal waste activity, but adapted to illegal logging.

More specifically, this study was guided by Magrath, et al. (2007) who identified four stages which guided the analysis of the case studies: "during pre-harvest; during harvesting and transport; at the time of delivery, scaling or inventory; at point of sale" (Magrath et al., 2007 cited in Graycar and Felson, 2010, p. 88). According to Magrath, et al. (2007), the first stage generally includes laying the groundwork for the actual cutting of the wood, such as corruption affecting the "contracting process, including bidding and negotiations" (Graycar & Felson, 2010, p. 88). For example, this stage involves bribing the forest ranger to illegally mark healthy or protected wood whose cutting is against the law as legally harvestable, or the actual marking of the wood as such. The second stage involves the actual harvesting of the wood and the potential divertion of timber (Magrath, et al., 2007). An example relevant for this stage would be a truck using the same license to conduct several transports of timber instead of just the one it was permitted for. The third stage involves receiving the timber and its subsequent processing (Magrath, et al., 2007), which can be exemplified by the manipulation of inventory records, such as underreporting the quantity of timber in stock to cover up the inclusion of illegally harvested wood. The fourth and last stage involves the buyers, who "may or may not be aware that the source is illicit" (Graycar & Felson, 2010, p. 88).

3.6   Limitations and Mitigation Strategies

In terms of the limitations of the research methodology, one first important mention is related to the challenges of researching OC. More specifically, OC is successful when it is unindetified by law enforcement agencies (LEAs) (Chainey & Berbotto, 2021). For this reason, it is difficult to estimate the percentage of illegal logging that is unreported due to it not being detected or recorded (Hosford, et al., 2021).

Secondly, with regard to the limitations of comparative case study, Deflem & Silva (2021) mentioned that one of them is represented by the differences in how crime is defined and prosecuted by law in two different countries. For this reason, this study included international policy frameworks that apply to both case studies in order to offer a certain level of commonality that allows for the aforementioned research design. Moreover, Burnham, et al. (2008, p. 83) mentioned the "too many variables, not enough cases" problem, yet this study aimed to mitigate this limitation by using the aforementioned

theoretical and analytical frameworks to guide the selection of relevant vairables and the interpretation of data.

Thirdly, regarding the interviews conducted, one limitation was represented by the gender disparity of the participants, in the sense that 4 out of the 5 experts included in this study were men. However, as mentioned by the participants in the interviews as well, this disparity also reflects into the field of logging and timber (Pokorna, 2022). Additionally, among the most impactful limitations of the interviews as a research method, Denzin & Lincoln (2018) mentioned that the interview is underpinned by unequal power relation between the interviewer who asks the questions, knows the topic and has a personal agenda influencing the direction of the conversation.

Lastly, Ravenel & Granoff (2004) presented a series of limitations with regard to relying on NGO-generated data that also apply to this research, as follows. Firstly, NGOs often operate with less public oversight compared to governments, potentially affecting the objectivity of their services. Additionally, reliance on governmental resources can make NGOs hesitant to critique government actions. In developing countries, the appeal of NGOs as employers might lead to a talent drain from public services. Moreover, international NGOs may prioritize activities aligning with their funders' interests over local needs (Ravenel & Granoff, 2004). Last but not least, since the concerned phenomenon is illegal, the dark or hidden figure of crime generally skews the quantitative data underpinning reports and "the existing estimates are produced by NGOs that do not always assure methodological rigor in their analyses" (Rege & Lavorgna, 2017, p. 167). However, to mitigate these limitations and increase its validity and reliability, this study involved cross-referencing information from multiple NGOs and the triangulation of data from these sources with other types of evidence, such as governmental reports and academic literature, following the recommendations of Adams, et al. (2007).

3.7   Ethical considerations

This dissertation followed the ethical guidelines laid out by the University of Glasgow and initiated its research process only after receiving the approval from the Research Ethics Committee of the College of Social Sciences and from the research supervisor. The most important consideration that was paramount for conducting the interviews was ensuring

the security and well-being of the participants, given Romania's history of violence against those advocating for forest conservation (Pokorna, 2022). Recognizing the potential risks associated with engaging in discussions about illegal logging, extensive measures were implemented to safeguard the participants.

Firstly, as recommended by Bryman (2012) and Cohen, et al. (2005) as well, informed consent was obtained from the participants prior to conducting the interviews. Given the sensitive nature of the subject matter, ensuring that the participants undersood the implications of their involvement was essential. The process of obtaining informed consent entailed providing participants with transparent, accurate and detailed information about the research's purpose, objectives and potential risks under the fom of a 'Plain Language Statement'. Moreover, this Statement emphasized their absolute eright to voluntary participation, with no coercion or pressure exerted to join the study and with no implication or consequence related to their private and professional life. The possibility of withdrawing from this study at any time was also communicated to the participants in order to follow ethical principles of research conduct, along with the possibility of refusing to answer to any of the questions.

Secondly, anonymity and confidentiality were ensured by not keeping record of any personal information other than the Consent Forms which are kept strictly confidential and safely stored on the researcher's password-protected OneDrive for Business student account on the University of Glasgow's OneDrive until the ned of the research project. Participants were also sent prior to the interview a Privacy Notice containing additional information on the matter. Additionaly, pseudonyms like "Expert 1", "Expert 2", etc. were used to replace the name of the participants and no personal identifiers such as age, marital status, workplace, etc. were asked or recorded for this research. Last but not least, even if the interviews were audio recorded with the prior consent of the participants, once the transcripts were developed the recordings were safely erased, and any potentially identifying information within the transcripts was carefully redacted or altered.

Thirdly, it was considered both by the researcher and all of the participants for the interviews to be conducted online on the University of Glasgow's Zoom platform, for their

convenience and security. It is important to note that the study did not involve any vulnerable populations, such as minors or individuals with disabilities, and that there were no conflicts of interests that could have influenced the research or its outcomes, which simplified ethical considerations.

3.8   Conclusion of Research Methodology

In summary, the research design of this study is a comparative case study focusing on comparing wood-related policies and SCP techniques applied to illegal logging in Romania and Brazil. The choice of these cases was justified by their shared experiences, such as deforestation and corruption, as well as their contrasting characteristics. The research adopted a longitudinal approach, spanning from 1990s to 2023, to examine changes and trends in the aforementioned policies. Data collection methods encompassed secondary data analysis and semi-structured interviews, which ensured a comprehensive exploration of the subject. The CSA analytical framework guided data analysis, breaking down illegal logging into crime scripts, that is, subsequent stages, for a systematic and in-depth examination. Ethical considerations prioritized participant safety, informed consent, anonymity and confidentiality. Despite acknowledged limitations, this research strived to maintain impartiality, integrity and ethical rigor throughout, aiming to enhance understanding of illegal logging processes and inform policy recommendations.

4 **Comparative Policy Analysis**

Prior to examining the wood-related policies in Brazil and Romania, it is important to provide a background overview to establish a comprehensive context for the subsequent analysis. Although there are many variables impacting the development and implementation of logging, timber and forest policies, this study chose to include four of them, adapted from Bosch (2021, p. 1049) which were deemed as "important for whether illegal logging is likely to be a problem": 1. Geographic characteristics, including forest area; 2. Socio-political considerations, including violence and corruption levels; 3. Economic growth, including GDP per capita; and 4. Rule of law. As such, an overview of these three factors will be provided prior to the presentation of the logging policies in each case study, as follows.

4.1 Contextual Background – Brazil

In terms of its geographic characteristics, Brazil is a country located in South America that "occupies half the continent's landmass and it is the fifth largest country in the world" (Britannica, 2023). More specifically, Brazil's land area is approximately 8.4 million square kilometres (Britannica, 2023). Regarding its human geography, according to Worldometer (2023), Brazil has a population that is estimated at 216 million in 2023 and a population density of approximately 25 people per square meter. Regarding its forested area of approximately 4,953,913 square meters (approx. 59,3% of its land area) (World Bank, 2023a), Brazil has jurisdiction over 69% of the Amazon rainforest. Bosch (2012) stated that the forest area is an important indicator because illegal logging is more prevalent in countries with extensive forest areas, as there are "more opportunities to log illegally" (Shandra, et al., 2012, cited in Bosch, 2012, p 1054). Moreover, he argued that the expansive and seemingly limitless nature of forests can lead to public indifference towards the forest environment and a perception of forests as a common good freely available to everyone, downplaying the severity of illegal logging (Bosch, 2012; Tacconi, 2007). Moreover, Bosch (2021) argues that law enforcement agencies face greater challenges in effectively monitoring logging activities in countries with vast forests, especially when these forests are also located too remotely for public oversight. With that being said, the Amazonian forest is the biggest rainforest in the world, "represents more than half of the remaining tropical forest on Earth" (de Andrade, et al., 2022, p. 1) and is larger than Europe's land (as observed in Figure 1 "Amazonia legal and Europe comparison" (INPE, 2016, cited in Perazzoni, 2018, p. 22)Figure 1).
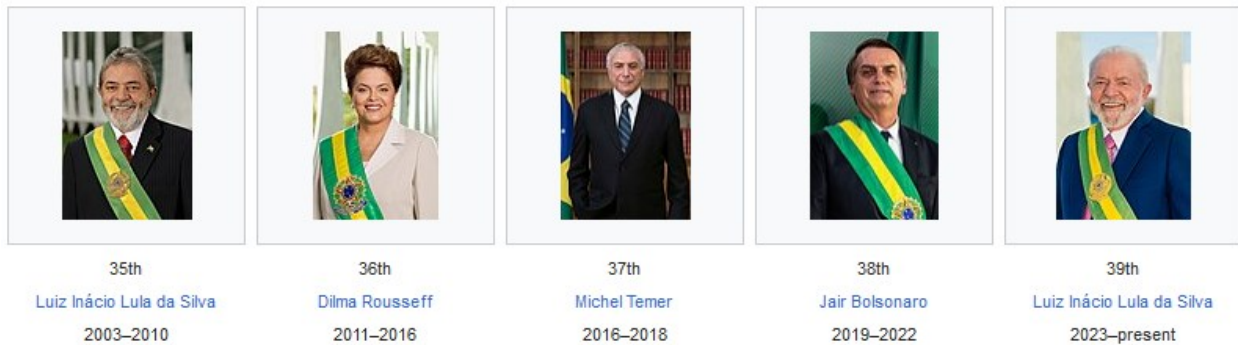

Figure 1 "Amazonia legal and Europe comparison" (INPE, 2016, cited in Perazzoni, 2018, p. 22)

In terms of socio-political considerations, Brazil's transition from a military dictatorship to a democracy culminated in 1980s, when the military regime faced increasing opposition that led to a gradual political liberalisation (Love, 1996). As such, "in 1985 Brazil returned to a civilian and constitutional regime" (Love, 1996, p. 157) with its first Constitution being adopted in 1988. The Constitution established the division of powers in the form of Brazil as a federal state, in the sense that Brazil's governance is divided between the national (federal) government and the governments of the 26 states (Bezerra, 2015). This federal structure significantly influences the development, implementation, and enforcement of Brazil's forestry policies, in the sense that forestry policies are formulated at a federal level, yet they are implemented by individual states (Perazzoni, 2018).

The political ideologies and actions of Brazil's leaders have significantly influenced the country's policies related to logging, making their roles and decisions critical aspects of the environmental policy narrative in Brazil (Fearnside, 2017). Under presidents Lula da Silva (2003-2010, as observed in Figure 2) and Dilma Rousseff (2011-2016), Brazil experienced the introduction of social welfare programs that significantly reduced poverty and inequality (de Almeida, 2009). More importantly, da Silva initiated various initiatives aimed at reducing deforestation and encouraging sustainable development (Boucher, et al., 2014). Key measures included the establishment of the Action Plan for Prevention and Control of Deforestation in the Legal Amazon (PPCDAm) and the Amazon Fund, both of which will be described in the following sub-chapters (Boucher, et al., 2014). Da Silva also expanded the resources allocated for environmental agencies and encouraged the involvement of public community, including indigenous communities, in forest management (Boucher, et al., 2014). From 2011, when Rousseff assumed power, she maintained some of the policies established and implemented during da Silva's administration, yet she also made some controversial decisions, such as excusing prior deforestation cases, diminishing the extend and classification of some conservation areas, and backing a series of large hydroelectric projects in the Amazon (Albuquerque, 2021). Her presidency came to an end in 2016 when she was impeached on allegations related to corruption and she was followed by Michel Temer (2016-2019) (Abofarha & Nasreldein, 2022). According to Fearnside (2017, p. 16), "the uncertainty in 2016 offered an opportunity for the rapid advancement of legislative initiatives to remove environmental

restrictions, and this continued following the formal transfer of presidential powers". As such, especially during the second half of Rousseff's presidency term (more specifically, after 2013), deforestation rates started increasing, experiencing a surge in 2016 (Albuquerque, 2021). Michel Temer has reduced the number of resources allocated to environmental agencies even more, worsening the country's situation of deforestation (Albuquerque, 2021). Temer was followed by Jair Bolsonaro (2019-2022) who intensified the anti-environmental measures of his predecessor (Albuquerque, 2021). Jair Bolsonaro's presidency ended in 2022 when he lost the presidential election to his rival, Luis da Silva. Since Luis da Silva regained office in 2023, it is too early to be able to predict his future impact on deforestation policy. However, given his past actions and vows, it is likely to be a positive one in comparison with his predecessors (Schroder, 2023).

35th	36th	37th	38th	39th
Luiz Inácio Lula da Silva	Dilma Rousseff	Michel Temer	Jair Bolsonaro	Luiz Inácio Lula da Silva
2003–2010	2011–2016	2016–2018	2019–2022	2023–present

Figure 2 Brazil's Presidents Between 2003 and 2023 – source: (Wikipedia, 2023)

In terms of economic developments, within the chosen timeframe of analysis between 1990s and 2023, Brazil's economy experienced phases of growth, but also of crisis, in accordance with the changes within the political and institutional systems (World Bank, 2023c). Overall, Brazil's gross domestic product (GDP) per capita increased from $3,387 in 1990 to $8,717 in 2019, but declined to $7,559 in 2020 due to the COVID-19 pandemic (OECD, 2023). However, even during this period, Brazil has faced a series of economic hardships related to high inflation levels, external debt, unemployment, poverty, etc., with a hyperinflation crasis during the 1990s for example (OECD, 2023). This is an important factor to take into consideration because (Bosch, 2021, pp. 1053-1054) found in his study that "lower national incomes and poverty are associated with higher levels of illegal logging (…) since in low-income countries people are more likely to focus on extractive

(i.e. consumptive) values of ofrests than on non-extractive and preservation values". In 2021, economic growth in Brazil recovered to 5.0 percent and further to 2.9 percent in 2022, as a result of "a strong fiscal stimulus, successful vaccination campaign, a favorable commodity market, and demand for services" (World Bank, 2023c, para. 1). For 2023, the growth is projected to be at 2.6 percent, primarily supported by agriculture and "households and government consumption" (World Bank, 2023c, para. 2).

In terms of the rule of law, Bosch (2021, p. 1053) stated that this factor accounts for "perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police and the courts, as well as the likelihood of crime and violence". Since 1990s represented a transition period for Brazil from military dictatorship to democracy, the period between 1990s and 2023 has thus been characterised by the strenghtening of democratic institutions and legal reforms, althgough with challenges posed by corruption and political instability (Abofarha & Nasreldein, 2022; Albuquerque, 2021). These challenges greatly affected the rule of law in Brazil, which is why it is considered to be weak at the moment, with the "country's property rights and fovernment integrity score below the world average" (The Heritage Foundation, 2023, para. 6). This is important because "countries where the rule of law is weak or inoperable are assumed to provide fertile ground for illegal logging, as investigations may be delayed and many crimes go unpunished" (Bosch, 2021, p. 1053), detering investments in sustainable forest management. Moreover, the connection between the weak rule of law and corruption is evident, in the sense that the former enables the latter, allowing it to grow and affect the forestry sector, "ranging from relatively low-level activities such as bribing officials to allow illegal timber through checkpoints, to more serious offences involving large sums of money, for example, paying bribes to politicians for the allocation of logging concessions" (Bosch, 2021, p. 1053).

4.2   Logging Policies and Legislation in Brazil
4.2.1   National
The first law to regulate forestry activities was the 1965 Forest Code (Law 4771/1965) whose Article 15 prohibited "the predatory exploration of the primitive forests of the

Amazon basin" (Perazzoni, 2018, p. 28). However, this Code stated that it needed to be implemented by all public authorities in accordance with the regulations which were to be issued after its entry into force, which took 44 years (Perazzoni, 2018). More specifically, it was only in 2009 when the National Environmental Council "actually issued the first regulation (resolution n. 406-2009 CONAMA)" (Perazzoni, 2018, p. 28). The Forest Code was revised and replaced in 2012 by a new Forest Code (Law 12,651/2012), which tightened the penalties for illegal logging, but at the same time reduced the legal reserve requirements for specific areas and landowners and granted amnesty to those who illegally logged before 2008 (Fearnside, 2017).

Additional to the 2012 Forest Code, the Action Plan for the Prevention and Control of Deforestation in the Legal Amazon (PPCDAm) was introduced in 2004 as a multi-year plan for tackling deforestation through a series of integrated actions ranging from land regularization to environmental monitoring and control (Banerjee & Macpherson, 2009). This plan restructured "Brazil's environmental enforcement agency (IBAMA) and began using INPE's DETER to target its enforcement efforts in the field" (Arima, et al., 2014, p. 466), which will be further mentioned under the 'policy instruments' section below. Moreover, in 2006, the Public Forest Management Law (Law 11284/2006) came into force to regulate the management and exploitation of public forests, aiming to control the expansive issue of the illegal cutting of the wood on public lands (Kleinschmit, et al., 2016). This legislation was important as it involved a series of regulations related to "timber tracking and control systems at the national and state levels, requiring timber transportation to be accompanied by documents of origin and corresponding cargo invoices" (Kleinschmit, et al., 2016, p. 30). Moreover, it introduced the possibility of timber concessions, also known as forest concessions, thus regulating the "industrial timber harvest in public forests" (Azevedo-Ramos, et al., 2015, p. 1). These legislations are underpinned by an important policy instrument called Sustainable Forest Management Plans (SFMP) which will be described in the 'policy instruments' section below.
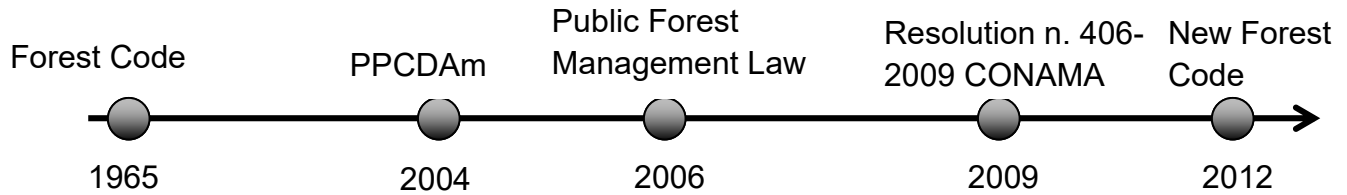
Figure 3 Main policy and legislation regarding logging, timber and deforestation used in Brazil (Arima, et al., 2014; Azevedo-Ramos, et al., 2015; Fearnside, 2017; Kleinschmit, et al., 2016; Perazzoni, 2018)

4.2.2 International

Additional to the aforementioned national policies and legislation relating to logging, there are five main international policy frameworks that also have an impact on the phenomenon of illegal logging in Brazil, as follows. Firstly, the Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD+) is an international policy impacting Brazil's forest management strategies by providing financial incentives to developing countries like Brazil to monitor and reduce "carbon emissions from deforestation and forest degradation" (Lima, et al., 2019, p. 2). Secondly, the Escazu Agreement is another important international treaty with implications for Brazil's forest management, as it aims to ensure access to environmental information (Etemire, 2023).

Thirdly, Brazil is also a member of international agreements like the Convention on International Trade in Endangered Species of Wild Fauna or Flora (CITES), the Convention on Biodiversity, and the International Tropical Timber Organisation (ITTO) (Hoare, 2020). Together, these accords regulate the international trade in endangered species, support biodiversity conservation and promote sustainable commerce in tropical timber, all of which encourage and contribute to Brazil's sustainable forest management (Hoare, 2020). Fourthly, Brazil is part of the emerging EU-MERCOSUR Trade Agreement which emphasises the importance of sustainable development and trade of ethically and legally- sourced timber (Klom, 2003). Last but not least, under the Paris Agreement, Brazil has committed to specific Nationally Determined Contributions to combat climate change, including initiatives to reduce illegal logging (Fearnside, 2017).

4.2.3 Policy Instruments

Technological policy instruments are pivotal for Brazil's strategy for monitoring and managing forest resources, serving as an integral part of the implementation and

enforcement of the aforementioned policies. As observed in Figure 4, the monitoring has been carried out by Brazil's Amazon Deforestation Satellite Monitoring Program (PRODES) which was launched in 1988 and offered annual analysis of deforestation rates in the Amazonian forest to the Brazilian government (Wagner, et al., 2023). In 2004, the Real-Time Deforestation Detection system (DETER) was added, using real-time satellite imagery to provide frequent alerts on fires and forest loss to the relevant enforcement authorities (Wagner, et al., 2023). This program produces data that has been essential for "the formation and prioritization of both preventive and policing actions against illegal deforestation, such as with financial penalties, administrative fines, and criminal investigations" (Perazzoni, 2018, p. 34). Additionally, another prototype program has been added for forest degradation mapping "in 2007, called Forest Degradation Mapping in the Brazilian Amazon (DEGRAD), which (…) has been used to map areas in process of deforestation, where the forest canopy cover has not yet been completely removed" (Lima, et al., 2019, p. 2). These satellite programs positioned Brazil as a leader in forest monitoring techniques, distinguishing itself from many other countries as a result of employing these policy instruments. This advanced satellite monitoring has significantly contributed to Brazil's effort of reducing illegal logging, resulting in the 84% reduction in deforestation between 2004 and 2012 and thus demonstrating the efficacy of these policy tools (Coelho-Junior, et al., 2022).
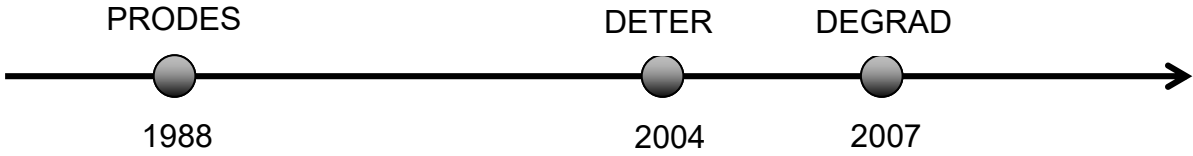

Figure 4 Main technological policy instruments used in Brazil for monitoring and preventing illegal deforestation (Perazzoni, 2018)

Additional to the aforementioned technological policy instruments, the national logging policies and legislation are underpinned by a credits system called Sustainable Forest Management Plans (SFMP). This system is key for the sustainable use of native forests and was described by Perazzoni (2018) as follows. A SFMP regulates specific removal, replacement, and management methods that align with the ecosystem of the area. Once a SFMP is approved, forest credits are created, which represent the approved species

and quantities of timber that are allowed to be extracted. These credits are located in the holder's account on the Electronic Forest Management System (SisDOF) and once the timber is extracted and sold, they are transferred to the buyer's account (for example, the lumber or saw mill). The transaction is monitored through the issuance of a Document of Forest Origin (DOF) which traces the timber from the point of sale to the buyer. The SisDOF database is managed by IBAMA. As such, one of the benefits of this system is the centralisation of business data in state databases, which allows for effective oversight of "every native-origin forestry and sub-forestry product" (Perazzoni, 2018, p. 31), ensuring that environmental regulations are respected.

In turn, SFMP is underpinned by the National Forest Inventory. This inventory is essential for identifying, locating and quantifying all commercial trees "in the regulated zone, as well as for the establishment of the quantity of wood that can be extracted sustainably" (Perazzoni, 2018, p. 28). As such, it represents an essential data and information source which helps policy-makers make informed decisions about harvesting levels, conservation areas, and reforestation efforts (Perazzoni, 2018).

4.2.4 Oversight Agencies

At a federal state, there are five main agencies overseeing the logging and deforestation processes in Brazil. Firstly, the Ministry of the Environment (MMA) is responsible for the creation of the logging, timber and forestry policies, and for the allocation of forest concessions and of authority for sustainable forest production (Albuquerque, 2021). Secondly, the Brazilian Forestry Service (SFB) was created in 2006 after the issuance of the Public Forest Management Law and has an administrative role. More specifically, this institution established the system of logging concessions with the aim to "provide a legal framework for sustainable timber production in Amazonian forests while reducing illegal logging" (Sist, et al., 2021, p. 1). Moreover, it is responsible with the sustainable management of federal public forests and the coordination of the National Forest Inventory (IFN) (Sist, et al., 2021). Thirdly, the implementation of the aforementioned policies and legislation is the responsibility of the Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA) (Tacconi, 2007). More specifically, IBAMA "is the institution responsible for environmental control and inspection, and is also

responsible for licensing and environmental control of the Brazilian forests" (Timber Portal Trade, 2023, para. 4) within its jurisdiction. As such, IBAMA is essential for enforcing forestry laws and regulations, its actions in licensing, inspection and oversight being critical for the creation of a regulatory environment where illegal logging is less viable and more risky for illegal loggers (Fearnside, 2017). Fourthly, the Federal Police plays a significant role in combating and deterring illegal logging and deforestation, since it is the actor enforcing the aforementioned policies and legislation (Azevedo-Ramos, et al., 2015). They are responsible for investigating and arresting the offenders who are not respecting the previously mentioned policies and legislation (Perazzoni, 2018, p. 23). Lastly, one of the most important oversight agencies is the National Institute of Space Research (INPE: *Instituto Nacional de Pesquisas Espaciais*) which has been founded in 1971 and has been monitoring deforestation since 1988 (Perazzoni, 2018) by using satellite data through the US Landsat Program, a "medium resolution satellite" (Lima, et al., 2019, p. 1). As such, having explored the key policies, policy instruments and oversight agencies that form the backbone of Brazil's approach to combating illegal logging, it is important to understand what are the same elements in the case of Romania for the purposes of this policy comparison.

4.3   Contextual Background – Romania

In terms of its geographic characteristics, Romania is a country located in Eastern Europe that has a land area of approximately 230,170 square kilometres (WorldData, n.d.). Regarding its human geography, according to Worldometer (2023b), Romania has a population that is estimated at 20 million in 2023 and a population density of approximately 25 people per square meter. Regarding its forested area, Romania has approximately 69,290 square meters (representing approximately 30% of its land area) (World Bank, 2023b). Moreover, Romania harbours "two-thirds of Europe's last virgin woods, which are home to the biggest wolf, bear, and lynx populations on the continent" (Cozma, et al., 2023, p. 54).

In Romania's case, there are three major socio-politic considerations. The first consideration relates to the policy of collectivization implemented by the communist

government prior to 1989 (Giurca, et al., 2022). This approach involved the confiscation of land from individual owners and its consolidation into collective and state farms (Giurca, et al., 2022). The second one is represented by the 1989 Revolution, which led to the fall of the communist regime, marking a significant political transition in Romania (Giurca, et al., 2022). This period of change involved a shift in the country's governing and economic systems and the transition from a centralized, state-controlled system to a market-oriented economy affected how forest resources were managed and regulated (Balacescu, 2021). The third one is represented by Romania's accession to the EU in 2007, which required the alignments of its forestry and environmental policies with EU standards (Balacescu, 2021).

In terms of economic developments, the transition to a market economy in the early 1990s was characterised by high inflation, industrial restructuring and land restitution processes (Vasile, 2009). Romania faced a period of economic instability until its accession to the EU, the latter facilitating access to European funds which also supported the development of environmental projects, including sustainable forestry practices (Pokorna, 2022). After 2007, Romania experienced periods of economic growth, which was exemplified by the GDP increase from 177 billion US dollars in 2015 to 301 billion US dollars in 2022 (World Bank, 2023d).

In terms of the rule of law, according to the 2022 Rule of Law Report by the European Commission (2023), the level was regarded as "satisfactory'. However, Romania has been known for its corruption cases, especially as being the only country in the EU which recently had cases of forest rangers and activists getting assaulted or killed (Pokorna, 2022). This demonstrates the need for the re-evaluation of the rule of law level in Romania.

4.4   Logging Policies and Legislation in Romania
4.4.1   National
The first relevant piece of legislation after the 1989 Revolution was the Land Law (Law 18/1991) which started the land redistribution processes, including forest areas, back to the original owners or their heirs (Dragoi & Toza, 2019). The second important piece of legislation is the Forest Code which was enacted in 1996 and it has been revised in 2008

in order to align with the European Union's standards (Paoli & Beken, 2014). The 2008 revision included various amendments that addressed contemporary challenges in forest management, including illegal logging, biodiversity conservation, and the rights and responsibilities of forest owners and managers (Paoli & Beken, 2014). The Forest Code will be revised again in 2023.

4.4.2 International

This study contends that the most important international policies that impact the phenomenon of illegal logging in Romania are represented by those issued by the European Union, since its accession to the EU in 2007. More specifically, the Forest Law Enforcement, Governance and Trade (EU FLEGT) Action Plan was established in 2003 and it regulates and promotes the legal timber trade through the EU Timber Regulation (EUTR) (Vasile & Iordachescu, 2022). Since 2014, "as part of the national implementation of EUTR, Romania developed technologies for improving forestry accountability and transparency" (Vasile & Iordachescu, 2022, p. 9). EUTR will be abrogated by the Regulation on deforestation-free products (Regulation (EU) No 2023/1115) starting with 30 December 2024 (European Commission, 2023).

4.4.3 Policy Instruments

One of the main policy instruments related to logging activities in Romania is the National Forestry Inventory (NFI) which was established in 2008 (Vasile & Iordachescu, 2022). NFI represents a national database containing data on the status, composition and health of Romania's forests (Marin, et al., 2020). Additionally, the main policy instrument used for tracing the logging phenomenon in Romania is the Integrated System for Timber Monitoring (SUMAL). It was first released in 2014 in order to align with EUTR requests and it "was envisioned as a database showing what kind of timber is harvested where, who transports it, where is it stored and who sells it further down the commodity chain" (Vasile & Iordachescu, 2022, p. 9). In the same year, the Forest Inspector app was also released, allowing any user to access information about timber transports and logging activities and to verify their legality (Vasile & Iordachescu, 2022).

4.4.4 Oversight Agencies

At a national level, the main oversight agency is represented by the Ministry of Environment, Waters and Forests, whose responsibility is to formulate and oversee the implementation of environmental activities, including sustainable forest practices (Vasile, 2019). The main institutions subordinated to this Ministry are the National Environmental Protection Agency, whose responsibility is related to the implementation of policy and legislation, and the National Environmental Guard, whose main responsibility is related to the enforcement of policy and legislation (Pokorna, 2022). Moreover, the National Forests Administration (Romsilva) is also coordinated by the aforementioned Ministry, its main mission being the management of state-owned forests in Romania (Pokorna, 2022). Last but not least, the Forestry Guards are responsible for implementing and enforcing regulations at a local level (Pokorna, 2022).

4.5   Policy Comparison

In terms of policy differences, the socio-political dynamics of Brazil's indigenous communities significantly influence the formulation and implementation of wood-related policies, which is an aspect that is not encountered in Romania (Love, 1996). This aspect has implications on a larger scale of human rights and rights of indigenous peoples, as "indigenous groups such as the Yanomamo and Kayapo have been living in the Amazon for thousands of year, slowly accumulating a detailed knowledge of the rainforest and methods to subsist from it" (WWF, 2020, p. 1). As such, they "have sought the formal recognition of their rights based on ancestral or other land claims" (Larson & Petkova, 2011, p. 96). However, issues like "environmental militias", the militarisation of state-owned forests, and corruption related to favouring larger competitors in land tenure often undermine these rights in practice (de Souza, et al., 2022). For example, the success of policies like REDD+ are directly linked with land tenure rights and the state has "the right to grant concessions with or without the consent of people living in or near those forests" (Larson & Petkova, 2011, p. 96). More specifically, there is evidence of projects that endorsed state-protected areas and "imposed restrictions on access and use by indigenous and local peoples" (Barragan, 2007, cited in Larson & Petkova, 2011, p. 96). Additionally, Romania's status as an EU Member States also shapes its logging policies, necessitating compliance with broader EU environmental directives, a factor not aplicable

to Brazil. Last but not least, Brazil is a federal state and Romania is not, which leads to distinct approaches in policy formulation and enforcement.

In terms of policy commonalities, one that transcends the aforementioned differences between Brazil and Romania is represented by international policy mechanisms that are essential when accompanying national policies related to illegal logging, as international cooperation and pressure can play an important role in combating and preventing illegal logging (Tacconi, 2007). This includes offering developing countries financial and technical support for better forest governance, establishing agreements like the EU's Voluntary Partnership Agreements for responsible timber trade, and implementing trade restrictions on illegal timber, as done by the EU Timber Regulation and the US Lacey Act (Kleinschmit, et al., 2016). Additionally, promoting policies that prioritize legal and sustainable timber in support of harmonising this approach at a global level, and increasing consumer and media awareness about forest sector transparency are key strategies (Breukink, et al., 2015). As such, there are a series of international policy frameworks that Brazil and Romania have in common in relation to logging. For example, their shared commitment to CITES places both countries under similar international obligations to regulate and monitor the trade of endangered species, including those found in their forests, thereby influencing their approaches to forestry management and conservation.

5 Findings

5.1 Introduction

In the current chapter, the findings from the interviews are presented in order to prepare the following chapter on discussing the results in the broader context of the aforementioned research area. The results to be presented are the ones which resulted from the interviews conducted with the five Romanian experts. These interviews offer a deep understanding of the local context, challenges, and perspective surrounding the phenomenon of illegal logging in Romania. Moreover, they offer an important perspective on what SCP techniques were applied and could be applied to illegal logging for the effective prevention of this phenomenon. As such, the presentation of these findings set

the stage for the discussion on the application of SCP techniques to illegal logging and potential policy implications.

5.2   Overall Results

As previously mentioned in the methodology chapter, the present study used a deductive approach in both collecting and analysing the data. As a result, the analysis was theory-driven and involved two preconceived themes. The first one was Modus Operandi (CSA), which was underpinned by the aforementioned four codes originating from the CSA analytical framework: 'during pre-harvest'; 'during harvesting and transport'; 'at the time of delivery, scaling or inventory'; 'at point of sale'. Moreover, in order to set the stage for the discussion of these findings, a second theme was used to interpret the interviews, namely SCP. More specifically, the five characteristics of SCPT were used as codes, as follows: 'increase the effort', 'increase the risks', 'reduce the rewards', 'reduce provocations' and 'remove excuses'. Additionally, from the analysis of the interviews, a series of themes emerged, as follows: actors, policy, corruption violence, tax fraud, money/timber laundering, policy instruments (National Forest Inventory, national strategy, and technology and innovation as child codes), and social preventative factors. For organisational and clarity purposes, only the first two were kept as separate themes, while the rest were introduced as child codes under Modus Operandi (CSA) and SCP. More specifically, corruption, money/timber laundering, tax fraud and violence were categorised under the theme of Modus Operandi (CSA), while policy instruments and social preventative factors were categorised under SCP. The list of codes, along with the number of participants who mentioned them and the total number of references, is presented in Figure 5 below.

Codes		
⊕ Name	▴ Files	References
◯ Actors	5	15
⊟ ◯ Modus Operandi (CSA)	3	4
◯ At point of sale	3	4
◯ At the time of delivery, scaling or inventory	1	1
◯ Corruption	5	17
◯ During harvesting and transport	4	8
◯ During pre-harvest	4	9
◯ Money or Timber Laundering	2	2
◯ Tax Fraud	3	4
◯ Violence	2	4
⊟ ◯ Policy	5	9
◯ Terminology	2	2
⊟ ◯ SCP	1	1
◯ Increase the effort	3	5
◯ Increase the risks	4	14
⊟ ◯ Policy Instruments	1	1
◯ National Forest Inventory	2	5
◯ National Strategy	3	4
◯ Technology and Innovation	5	13
◯ Reduce provocations	1	4
◯ Reduce the rewards	0	0
◯ Remove excuses	3	6
◯ Social preventative factors (community)	4	6

Figure 5 Codes List in NVivo (4 main codes, together with their child codes)

As such, before delving into each one of the main themes, it is worth noting the comparison of all the four themes by the amount of coding to them in all of the five transcripts, as shown in Figure 6. The main themes form the centre of the chart, while the colouring of the sections show the hierarchy of the codes, in the sense that the highest level has the darkest colour, and each lower level has a lighter shade of the same colour. It is natural that the most present themes were Modus Operandi (CSA) and SCP since they had most of the child codes.
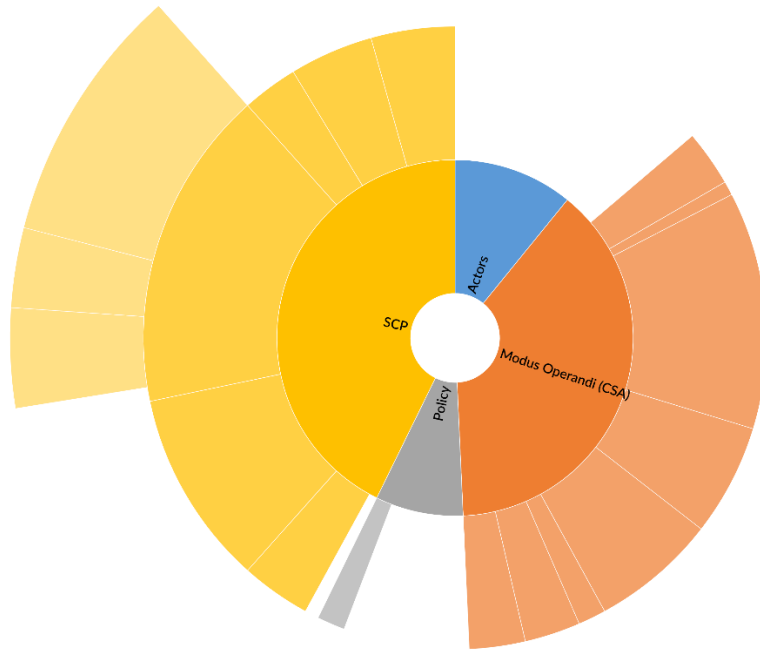
Figure 6 NVivo-generated Chart Comparing All the Codes by the Amount of Coding to Them in All of the Transcripts

5.3   Modus Operandi (CSA)

Overall, all the interview participants mentioned the modus operandi used by illegal loggers in Romania, referring to particular ways or methods in which illegal logging takes place. Overall, Participant 1 categorised the phenomenon into 2:

> *"There are two categories of illegal logging, illegal "illegal logging" and legal "illegal logging". The former involves the cutting of the wood from the forest without any certification and any right, which means simply stealing wood from the forest. The latter is represented by the deliberate and systematic under-evaluation of wood mass induced by the mathematical methods used in the calculation." (Participant 1)*

Participant 2 argued that the ways in which illegal logging occurred in Romania shifted in accordance with historical events, especially since the 1989 Revolution:

"In our history there have been several types of illegal logging. In the beginning, things happened in the absence of the authorities, as the authority in Romania was quite weakened after 1989 and then everyone did what they wanted." (Participant 2)

Participant 5 agreed with Participant 2, also arguing that the phenomenon has evolved significantly from the clear-cutting on a vast scale in the 2000s, to today's selective logging that still takes place despite more stringent legislation, attention from the civil society and monitoring tools.

With regard to the four stages of CSA, the first one was the one most referenced. The 'during pre-harvesting' stage of illegal logging was acknowledged by all participants who agreed on the difficulties in effectively enforcing forestry laws and regulations due to factors like vast forest areas, insufficient personnel, and limitations in monitoring and control systems. As such, this stage included references to the marking of the trees that are authorized to be cut, Participant 2 mentioning that "the stamp made by an iron hammer put on a tree can be easily imitated and is no longer visible after a relatively short period of time, especially in softwoods". Moreover, Participant 5 added that "it is quite possible that the forester may be tempted to mark more trees than he has in the allowance and get some money from the deal made with the loggers". There is one more act included in this first stage, as expressed by Participant 3, which involves the struggle of smaller local logging firms to compete with larger companies like Holzindustries in timber auctions.

The second stage, namely 'during harvesting and transportation', mainly included the idea of cutting more wood than allowed by the legal permit. More specifically, Participant 5 mentioned that "where we have legal permission to cut one tree, another one is most likely being cut", thus suggesting that approximately 50% of the logging is illegal. Moreover, Participant 3 supported this idea stating that "you could get 1000 cubic meters of a plot at auction and cut 1500 cubic meters without any fear or concern, with the complicity of the forestry body that was supposed to supervise". Last but not least, Participant 5 mentioned the economic pressure put by economic agents (such as logging companies) on the forest rangers or loggers to under evaluate the quantity of wood being

harvested. In terms of transportation, the most commonly expressed point was related to the first version of SUMAL. "It was too lenient and many abused this, in the sense that with the same permit they made 2 or 3 timber shipments in the time allocated in SUMAL, because the time frame allowed time until the next day to make the shipment" (Participant 3).

The third stage was "at the time of delivery, scaling or inventory", mainly involving the facilities where timber is stored and processed which are called sawmills or lumber mills. This aspect has been mentioned only by one Participant as follows:

> *"In the production area, we have to keep in mind that the authorities have access to the stocks, so if the processor receives more than they have in their paperwork, more than it is declared in the transport permit and so on, they automatically have to hide that volume. There are all kinds of engineering ways to do so, because the surplus wood needs to be gotten rid of so that the processor is OK in the event of an inspection. For example, there are methods ranging from fictitious engineering, calculation of production yields, all sorts of things like that, to transports between fictitious warehouses, so that you can have a fictitious stock."* *(Participant 5)*

In terms of the last stage, "at point of sale", it was mentioned by three participants, all of whom agreed about the responsibility of the wood buyer. Participant 2 underlined this idea by mentioning that the locals also have the responsibility of not buying wood without documents certifying its legality, even if the participant is aware that locals do not do so mostly because it is cheaper than the wood on the legal market. Moreover, Participant 2 stated that "there are companies that have a predisposition to purchase illegal timber as well, since there is no concern to steal if there is no concern to purchase what you have stolen".

All of these stages are enabled by corruption, which was an emerging theme that represented the most used and referenced code out of all of them, as observed in Figure 7.
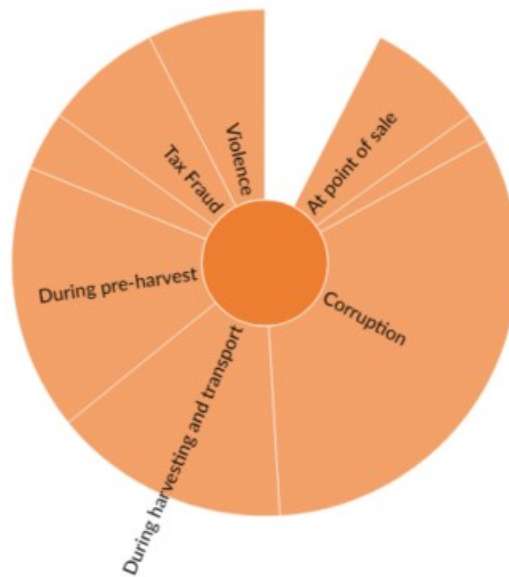
Figure 7 Aggregation of the child codes categorised under Modus Operandi (CSA) in NVivo

Corruption represents a factor that has been repeatedly mentioned by all the participants while describing all of the crime scripts underpinning the phenomenon of illegal logging in Romania. Overall, the corruption of the public officials was described by Participant 1, as follows:

> *"I can't not consider corruption, as long as some vacancies in some of Romsilva's Directorates are filled through a competition and through large bribes of tens of thousands of Euros, because whoever gives this money has to get it back from somewhere." (Participant 2)*

In relation to the second CSA stage, for example, Participants 1, 3 and 4 argued that more wood is cut than the one permitted because of the corruption and complicity of local authorities, including forest rangers and other local authorities. Moreover, Participant 4 also mentioned the transportation stage of the timber as being corrupted:

> "The problem is also linked to the fact that illegal logging happens with the complicity of local authorities. It is unimaginable how thousands of lorries of stolen, illegal felled, timber could pass through the roads without

even being visible to the control authorities, let alone the local authorities." (Participant 4)

Another relevant example is the case of Holzindustries in Suceava, as described by Participant 3:

"When Holzindustries wanted to set up its headquarters in Suceava, the mayor's people lobbied for them, and after Holzindustries set up, people found that the mayors of various communes in Suceava received cars as gifts with consecutive series of engines. That was the gift for lobbying for Holzindustries. (…) Moreover, it should not be forgotten how many cubic meters at a preferential price Holzindustries had when it first established its headquarters in Romania, sold before auctions, by the Romanian Government." (Participant 3)

Last but not least, under this theme, there was also the category of violence that was mentioned by Participants 3 and 5, mentioning the local communities being trapped by the mafia system, creating "a very toxic fabric for social relations in the community, in the sense that when the local informal power belongs to the gate owner or logging company, it is very difficult for the members of community to challenge the phenomenon" (Participant 3). Participant 5 argued that "the case of Romania is comparable to that of Brazil. It is the only EU Member State where we have environmental activists and forest rangers assaulted or killed, and that is to say, the phenomenon is quite fierce here too".

5.4   SCP

Under the theme of SCP, there has been one code that was not present in any of the interviews, namely "reduce the rewards", as observed in Figure 8. Other than this SCP principle, all of the other four have been relevant and mentioned by the participants as follows.

Figure 8 Aggregation of the child codes categorised under SCP in NVivo

In terms of the "increase the effort" code, three out of the five participants mentioned ways of doing so, also including SUMAL, the aforementioned traceability system for timber used in Romania. This is linked to another code under this theme, namely, "technology and innovation". More specifically, the three participants agreed that SUMAL increases the effort required to successfully conduct illegal logging and integrate illicit timber into the supply chain. Moreover, they also agreed that SUMAL requires more accurate documentation at the various stages of the timber's journey from the forest to the market, since it replaced the hand written logging permits. They argued that this intensified the effort needed to fabricate or manipulate the records to match the system's tracking data, which may also deter offenders from doing this in the future.

The next principle, namely, "increase the risks", was the most referenced one, as it can be observed in Figure 8. More specifically, the four participants who mentioned it agreed that SUMAL also increases the risks associated with illegal logging since the enhanced

tracking and monitoring capabilities increase the likelihood of the illegal activities being detected. Participant 2 highlighted that there is a need for "a paradigm shift from the forest area to the transport area, in order to narrow the control area". Moreover, both Participants 3 and 5 mentioned using the already-existing surveillance infrastructure of National Road Infrastructure Management Company (CNAIR) to cross-check the database of SUMAL, as follows:

> *"transport to be practically monitored automatically on the one hand by using the already existing network of CNAIR, the institution that practically checks whether cars paid the road tax in an automatic way, by actually scanning the registration number and identifying it in the road tax database. Similarly, this existing infrastructure could be used to check the SUMAL data, because we often have to deal with fictitious transport, with transport that is, well, multiple, i.e. on the same transport notice we have lorries that are practically moving twice with different loads. These things could be very easily cut out in an automated way by technology."*
> *(Participant 5)*

Moreover, other potential measures mentioned under this code are also linked to the 'technology and innovation' code, but before describing those, another important measure was expressed by Participant 4 regarding the specialisation of prosecutors:

> *"a specialized structure of specialized prosecutors under the General Prosecutor's Office, which will basically be specialized only on environmental crimes and a large part of the crimes that will be prosecuted will indeed be those of illegal logging and forestry crimes."*
> *(Participant 4)*

The fourth SCP principle, "reduce provocations", was only mentioned by Participant 2 who argued for compensation payments and fair transitioning, which would reduce provocations by reducing the economic hardship of the local communities, minimizing resentment and opposition and also promoting cooperation between the citizen and the

state for the purpose of sustainable forest management. More specifically, they argued that:

> *"An aspect is related to compensation payments and fair transitioning. Any community that you impose restrictions on needs to transition economically in order to survive. If there is no transition, then you just turn a legal person into an illegal one." (Participant 2)*

The last SCP principle was "remove excuses" and it was mentioned by three participants to include two different ideas. The first one was mentioned by Participant 4 and argued for the creation of the aforementioned specialised prosecutors on environmental crime, and intrinsically on illegal logging, as a higher-level authority "that comes above the local level and has no link to the local authorities, because the phenomenon of illegal logging has been supported by local corruption until now" (Participant 4). The second one included the "increasing of the funds dedicated to biodiversity which should be managed by the specialised public authority managing the forests and not other Ministries" (Participant 2).

Additionally, there were two child codes included under the SCP theme, namely 'policy instruments' and 'social preventative actions'. The first one included child codes about the importance of the National Forest Inventory and a National Strategy regarding forest management, as well as 'technology and innovation'. The reference included in the latter were related to the aforementioned SUMAL and CNAIR, but also to the benefits of implementing a CCTV system on the forest roads, especially at the entrance or exit of the forest (Participant 4). Moreover, Participants 2 and 5 mentioned the potential benefits brought by the use of artificial intelligence and the digital fingerprint of a truck of wood:

> *"when you take a photo of the back of a truck before it leaves, you have an image of the exact positioning of all the wood which represents a unique fingerprint. This fingerprint recognises the placement of wood in the truck. As such, you will never be able to come back with the same permit to make another transport and thus eliminates the problem of the multiple shipments carried out with the same document." (Participant 2)*

The second additional code, "social preventative measures" was mentioned by four participants, indicating the importance of the general public in preventing and deterring illegal logging. More specifically, Participants 2 and 4 argued that the citizens can contribute to the prevention of illegal logging by using SUMAL and the Forestry Inspector mobile application to check the trucks carrying wood on public roads and report any inconsistencies. Moreover, Participant 4 added that their vote in the general elections also counts as environmental policies and actions are influenced by the political class. Lastly, Participant 5 added that the citizens should not buy firewood from the black market anymore, because "a good source of income for the illegal logging phenomenon is also the selling of wood without any papers or authorization." (Participant 5)

5.5 Actors & Policy

Additional to the predesigned themes and codes for the analysis of the interviews, two other important themes emerged as they were mentioned by all five participants, namely 'actors' and 'policy'. Regarding the former, the following list of actors emerged from the analysis of all the interviews:

- Forest Guard, which acts as "the control body" (Participant 1), supervising the forestry regime at a national level;
- Other state and control bodies such as Romsilva (the National Forestry Regia), the Forestry Directorate, or the Ministry of Environment, which are involved in the management, regulation, and oversight of forestry activities, including combating illegal logging;
- Municipalities and Territorial Administrative Units (UATs) which are local administrative entities involved in managing parts of the forest fund;
- Local policemen, chainsaw owners, foresters, and forest rangers who are the local controllers of logging activities, but also part of the local network mentioned in the context of corruption, violence and illegal logging;
- Prosecutors and judges;
- Timber and wood processing companies (both local and multinational);
- Forest owners (individuals);
- Communities dependent on forests;

- General public;
- Investigative journalists and whistle-blowers.

Moving further to the 'policy' theme, additional to the mentioning of the Natura 2000 forests and natural national parks, two pieces of legislation have been mentioned across all the interviews. Firstly, the 1996 Forestry Code (Law no. 26/1996), with Participant 1 mentioning that "between the Revolution and the 1996 Forestry Code we did not have any legislation regulating private forests, which is when most of the illegal logging was done". Secondly, EUTR has been mentioned, but there were differences in opinion with regard to it. For example, on the one hand, Participant 5 mentioned the following:

> *"This traceability tool, SUMAL, is the result of the implementation of the EUTR legislation, which is a European legislation that practically required the Member States to come up with systems for the traceability of wood material precisely in order to clarify and bring transparency in the field. So yes, this is a positive example." (Participant 5)*

On the other hand, Participant 3 argued that the change needs to come from within national borders rather than from outside of them:

> *"My opinion is that the good intentions of the European Commission are very good to implement as long as the designated area by the Forestry Office is not the one being exploited. Instead, logging takes place in other, more profitable areas that are not intended for such use. As such, if the heads of the Forestry Department and Directorate, as well as the local foresters, do not actively intervene, these irregularities will continue unchecked no matter the positive intentions of the EU" (Participant 3)*

5.6   Conclusion

The study used a deductive approach, using two main predetermined themes, Modus Operandi (CSA) and SCP. Additional themes like Actors and Policy were incorporated in this study as main themes, as they were mentioned across all of the five interviews. Overall, the participants agreed one with each other and complemented their ideas, except for the role of the European Commission's influence on the phenomenon of illegal

logging in Romania. The most referenced code across the interviews was the one of Corruption, while there was one predesigned code as part of the deductive approach f this study that did not emerge at all: Reduce the Rewards. To build upon the key themes and child codes that were presented above, the following discussion chapter explores the lessons that Romania can learn from Brazil's experience and examine additional SCP techniques that could be effectively applied to address the phenomenon of illegal logging in Romania.

6 **Discussion**

6.1   Introduction

The findings presented in the previous chapter provide compelling evidence that illegal logging in Romania can be characterised as a form of OC. This conclusion is drawn from the prevalence of themes such as corruption, violence, and the existence of structured networks that were often referred to as "timber mafia". This mafia "is well infiltrated in the political field and pays bribes to allow timber trafficking" (Cozma, et al., 2021, p. 3). Moreover, these networks exhibited hierarchical structures where orders are systematically executed and pressure from higher levels is applied on the local communities and actors within forestry agencies, such as local police officers, forest rangers, etc., indicating another characteristic of OCGs. Moreover, the involvement of multinational companies in these activities further highlighted the organized nature of the crime, with potential transnational implications. These entities, such as the aforementioned Holzindustries, have the necessary resources to facilitate large-scale illegal logging operations, therefore contributing to the systemic nature of the problem. The convergence of these factors – corruption, violence, structure – designate illegal logging as a form of organized crime. Keeping this in mind, the research question guides the discussion within this chapter, which examines what lessons from Brazil's success in reducing illegal logging as a result of SCP can be applied in Romania. Within the following discussion, the SCP measures serve as policy recommendations for any practitioner interested in problem-oriented policing.

6.2 Lessons from Brazil

Figure 9 clearly indicates the levels of deforestation that were steadily reduced from 2004 to 2012 in Brazil, designating the latter as the country that was most successful in reducing illegal logging (Coelho-Junior, et al., 2022). Resulting from the above comparative policy analysis, it is clear that "in the Brazilian case, logging practices are highly regulated" (Tacconi, 2007, p. 2019).
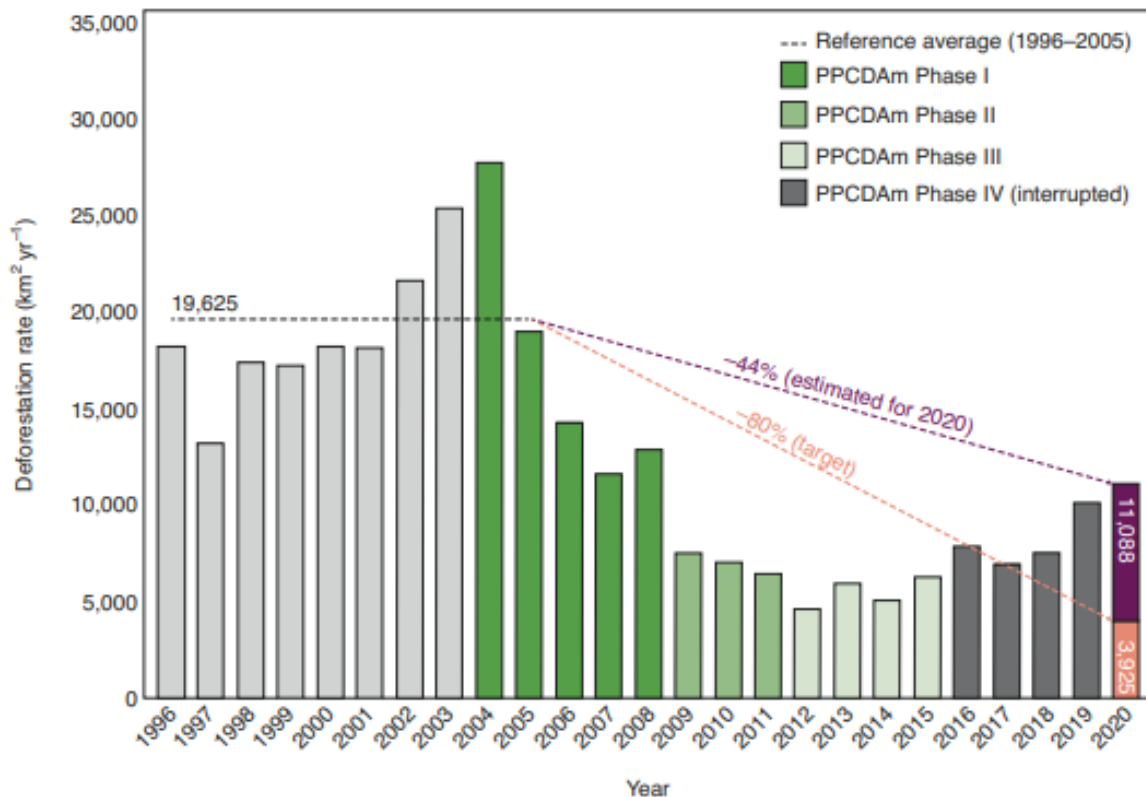

Figure 9 Deforestation rates in the Brazilian Amazon between 1996 and 2020,
according to PRODES data – Source: (Silva-Junior, et al., 2021, p. 144)

At the same time, the interviews conducted for this study showed that even if Romania has a series of measures in place to prevent and control illegal logging, they still need improvement (Balacescu, 2021). Primarily, the interviews indicated that the control of forestry activities is inadequate, compliance with forestry policies and laws is lacking, forest management authorities are underfunded and lack resources, and corruption, violence and the threat of violence hinders the effective prevention of illegal logging activities. As such, despite the existence of these measures and the ongoing

investigations by both national and international law enforcement agencies, the problem of illegal logging continues to be a significant issue (Ciurcanu, 2022). As a result, taking into consideration the comparative analysis and findings chapters, this study argues that there are a series of lessons that Romania can take from Brazil's success in reducing the deforestation rates. All of these lessons are aligned with Andreatta & Favarin's (2020) argument for the integration of socio-economic, policy-related and regulatory measures as SCP techniques, moving beyond just the physical obstacles mentioned initially by (Clarke, 1995).

Firstly, the policy comparison shows that one of the key measures taken by Brazil to reduce deforestation rates was enhancing monitoring and surveillance through the use of satellite imagery and remote sensing technology for real-time monitoring of forest areas through (Wagner, et al., 2023). Romania could similarly invest in advanced monitoring technologies and use satellite data to detect changes in forest cover. The potential of such technologies has also been identified by the NGO Romanian experts who argued for the implementation of real-time data collection by using the surveillance infrastructure of the CNAIR. As such, the implementation of such monitoring technologies is already facilitated by the existing infrastructure, which is why it represents a viable lesson for Romania. By enhancing the capabilities for surveillance and monitoring, this would increase the risk of apprehension, thus deterring potential illegal loggers.

Secondly, "a distinctive and very important role has been played in Brazil by the federal Public Prosecutor's Office (an independent arm of government separate from the executive and legislative branches" (Boucher, et al., 2014, p. 12). As such, the creation of an independent authority above local levels in Brazil helped to reduce local corruption and increase efficiency in forestry law enforcement. Since one of the most common themes of the interviews was the corruption at the local level, the creation of a similar independent body at a national level would centralize efforts to combat illegal logging. This measure would not only increase the risk of detection and punishment, but it would also remove excuses. More specifically, a body independent from local corruption and chains of political pressure would create a more uniform and impartial application of the

law, removing the opportunity for individuals to excuse their illegal activities due to local complicity or corruption (Neag, 2021).

Thirdly, Brazil's success of reducing the level of deforestation also resulted from the increasing specialisation of public prosecutors and law enforcement agencies in environmental crime (Fearnside, 2017). This is an important SCP measure for Romania to implement, especially because the interviews highlighted how many illegal logging cases escape prosecution due to the statute of limitations expiring. Since at the moment there are no specialised prosecutors, this measure would have a big impact on the prevention of illegal logging. Moreover, the specialisation of prosecutors and law enforcement agencies and the creation of an environmental crime unit in Romania would increase the risks of apprehension, since these institutions would be better prepared at detecting, investigating and prosecuting environmental crimes like illegal logging. This is aligned with the latest Proposal of the European Commission for a new Environmental Crime Directive, which adds value to this measure for Romania as an EU Member State.

Lastly, international support has been essential for Brazil's reduction of deforestation. More specifically, "the Brazil-Norway agreement is the largest REDD+ program anywhere in the world" (Boucher, et al., 2014, p. 12) and it had a considerable impact on illegal deforestation levels in Brazil. As previously mentioned in the comparative policy analysis chapter, Brazil received through the REDD+ program a series of financial incentives to reduce emissions from deforestation (Larson & Petkova, 2011). However, the program also required enhanced monitoring and reporting of deforestation rates, which incentivised Brazil to increase it proactivity towards more sustainable forest management. This type of international support providing financial incentives for forest conservation would be beneficial for Romania, especially as the need for such incentives has been communicated in the interviews. This strategy would align with the SCP principle of reducing rewards, as the provision of financial incentives for legal, sustainable forest management would diminish the rewards associated with illegal activities (Boucher, et al., 2014).

These recommendations follow Clarke's (1995) proposed SCP techniques of "increasing the effort, increasing the risks, reducing the anticipated rewards, reducing provocations and removing excuses" (Andreatta and Favarin, 2020, p. 136), which laid at the heart of this dissertation.

6.3   Limitations of the study

While the scope of the study was comprehensive, it was still challenged by certain limitations that are important to acknowledge. Firstly, due to the word count constraints, the critical issue of human rights implications arising from illegal logging could not have been explored in as much depth as being directly proportional with the importance of the problem. Additionally, the study could not conduct interviews with any Brazilian experts due to the limitation of resources. While this limitation was partially mitigated, as detailed in the methodology chapter, it still represents a gap in the comprehensiveness of the results. Furthermore, it is important to recognize that the researcher's Romanian background may have introduced a degree of subjectivity into the study, despite efforts to maintain objectivity.

7   **Conclusion**

The overall aim of the present research was to explore the application of SCP techniques to a form of organised crime, namely illegal logging, and the lessons Romania could learn from Brazil's successful reduction of illegal logging between 2004 and 2012. Despite the distinct historical backgrounds, economic growth trajectories, and differences in governmental structure between the two countries, it was found that their policies on illegal logging are not as significantly different as initially assumed. However, Brazil exhibits a more advanced stage in the development and implementation of policies and instruments targeting illegal logging compared to Romania. Before delving into the potential lessons from Brazil's approach, this study conducted five interviews with experts from Romanian NGOs to gain a deeper understanding of the illegal logging situation in Romania and how Brazil's implementation of SCP techniques could be compatible with the Romanian context. The interview findings were shaped by this study's deductive approach, which analysed the data using two predefined themes from the SCP theoretical framework and the CSA analytical framework. Additionally, two emergent themes, 'actors'

and 'policy' were also considered. While there was a consensus among participants on most topics, opinions differed regarding the European Commission's influence on illegal logging in Romania. The theme of 'corruption' was mentioned across all the interviews and most frequently, in contrast to the 'reduce the rewards' theme, which was absent.

Consequently, this study found that Romania can learn several key lessons from Brazil's approach to curbing illegal logging. First, enhancing monitoring and surveillance using satellite imagery and remote sensing technology have proven effective in Brazil and could be similarly beneficial for Romania. Second, establishing an independent authority above the local level can help reduce or even remove the efforts from local corruption and political pressure. Third, specialising public prosecutors and law enforcement agencies in environmental crimes can strengthen legal responses to illegal logging. Lastly, international support and cooperation, including financial incentives, could provide significant aid to Romania in its fight against illegal logging, addressing a need highlighted in the interviews.

This study is significant for the broader field especially in the context of climate change, as it addresses the severe environmental impacts of illegal logging. Additionally, by applying Situational Crime Prevention techniques to illegal logging in Brazil and Romania, the study offers insights for policy formulation and law enforcement, contributing to international security discussions and addressing a notable research gap in understanding organized crime beyond the typical Western context.

When considering future research, this study contends that a more in-depth study of how corruption intensifies the vulnerabilities to illegal logging, particularly during periods of political and economic transition or in times of state failure. This exploration could provide valuable insights into the vulnerabilities of forest governance systems and develop a framework for more effective policies to protect forest resources even during critical phases of a country's development. Moreover, this study also believes that future research should also examine the impact of illegal logging and deforestation, and of related, policies on local and indigenous communities. This exploration is important as

these communities are often dependent on forests for their livelihoods, cultural practices, and ecosystem services.

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Appendix

Appendix A - Interview Questionnaire

1.   What are the types of illegal logging and forestry crime that you are aware of?

2.   Who are known actors involved in forestry crime in Romania? (For example, poor citizens, corrupt officials, and businesses, organized crime, small medium enterprises, multinational companies, etc.)?

3.   What is the impact of the national and international legal frameworks that are currently in place on the phenomenon of illegal logging in Romania?
   - Are there any issues with them or with their implementation?

4.   Why do key actors commit illegal logging?
   - What are the costs and benefits related to those choices?

5.   What are the main stages/phases in which timber transactions can be corrupted or defrauded?
   - What are the parties involved at each step?

6.   Are you aware of any situational crime prevention techniques applicable to illegal logging?
   - Are any of them or could any of them be implemented in Romania?

7.   What role do technology and innovation play in developing and implementing situational crime prevention techniques for illegal logging?

8.   What role do you believe community engagement and education play in preventing illegal logging?

9.   How can local communities be involved in designing and implementing situational crime prevention techniques to address illegal logging?
   - Are there any dangers or risks to local communities when applying situational crime prevention techniques in order to prevent illegal logging?

10.	What are the potential unintended consequences or limitations of situational crime prevention techniques for addressing illegal logging, and how can these be mitigated?

11.	How do you see the future of situational crime prevention techniques in preventing illegal logging?
- Are there any emerging strategies or technologies that you believe will be effective?

12.	What further research is needed to advance understanding of the effectiveness of situational crime prevention techniques for addressing illegal logging?

13.	Do you have any final thoughts or recommendations for policymakers and law enforcement agencies working in the field of illegal logging?