

## Research article

# Factors enhancing and restricting the success of SRA compliance on the FLEGT/VPA initiative in Ghana. Insights from Juaso forest district in Ghana

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## ABSTRACT

This study examines the Voluntary Partnership Agreement (VPA) between Ghana and the European Union (EU) within the Forest Law Enforcement Governance and Trade Initiative (FLEGT). The VPA aims to enhance forest governance, reduce deforestation, combat illegal practices, and improve livelihoods of forest fringe communities. The research focuses on the implementation of social responsibility agreements (SRAs) under the VPA framework and identifies factors contributing to their success or presenting challenges. Data collection involved mixed methods, including literature review and a survey of individuals involved in SRAs. Descriptive and inferential statistical analyses, including exploratory factor analysis, were conducted. Principal component analysis revealed that accountability, monitoring of implementation and progress of SRAs, and documentation of SRA agreements were key factors contributing to the success of negotiated SRAs, explaining about 68.36 % of success variance. Challenges and constraints were categorized into two main factors: weak community capacity to negotiate SRAs and weak community capacity to enforce compliance, explaining about 71.4 % of challenge variance. The study found that the exclusion of the local SRA committee (LSRAC) from certain decision-making processes affected trust and transparency in calculating SRA benefits. Elite capture of benefits was identified as an issue, as the LSRAC did not conduct sufficient consultations with community members before negotiations. The findings emphasize the importance of including local communities in all forest management activities and call for increased awareness of SRAs, particularly for the LSRAC. The study highlights the need for proper representation of community interests during negotiations and their inclusion in forest management plans.

## 1. Introduction

The Voluntary Partnership Agreement (VPA) between Ghana and the European Union was signed and approved in 2009 with the goals of improving forest governance, combating illegal logging, and, most significantly, preserving access to the EU market [1–3]. The

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Ghanaian VPA comprises a set of legality definitions that clarify what constitutes legal timber for purposes of FLEGT licenses. Compliance with relevant Social Responsibility Agreements (SRAs) with local people is required under the legality definitions. Therefore, all logging permit types under the VPA require the conclusion and implementation of an SRA [2,4]. Such compliance is critical for ensuring local communities rights to a fair share of the benefits from timber revenues and their support for tackling illegal logging. Social Responsibility Agreements (SRAs) are established between timber operators (concession and permit holders) and local communities to outline the provision of benefits by operators to the local community in exchange for logging access. SRA benefits do not exceed 5 % of the stumpage fee of timber that is harvested and include construction or maintenance of roads, construction of school buildings, electrical poles, cement and roofing sheets, and cash contributions [5]. The 2016 revised SRA guidelines developed by the Forestry Commission (FC) provide a framework that outlines the stakeholders in the negotiating team. These are representatives of the community, the applicant for the Timber Utilisation Contract (TUC), the District manager of the Forestry Services Division (FSD) and District Chief Executive of the Local Government system (Box 1). The selected stakeholders are tasked with deciding which services will be offered and where in the community they will be offered. Therefore, the guidelines serve as a work plan in ensuring community interest through justifiable and equitable benefit sharing of timber harvested on their lands. Act 547 of the Timber Resource Management Act (TRMA) (1998), requires that any individual who seeks to acquire timber utilisation permit from a naturally grown forest in Ghana must have negotiations with communities who hold interest in the forest area and agree upon definite social responsibilities and abide by the code of conducts such as respect for sacred sites, taboo days and right of consultations to be observed by the Timber Utilization Contract (TUC) holder [6]. Without fulfilling this legal obligation, no TUC shall be awarded to the contractor. However, in practice the views of most forest fringe communities in the tropics such as Ghana and its environs do not comprehend the negotiating process, contents, or execution of SRAs, and as a result, the forestry sector suffers from corruption, lack of transparency, lack of responsibility, and insufficient capacity [5,7,8]. Previous research found that collaborative forest management schemes like the SRA provide communities a lot of duties but don't give them much in return. As a result, community participation in collaborative forest management programs is likely to be discouraged [6,9–11]. Prior to the enactment of the Timber Resource Management Act (TRMA) in 1998, SRA payments were breached as timber companies had no legal obligation to offer financial advantages to communities. Local chiefs took advantage of the circumstance and struck bargains that benefited them rather than the community as a whole [12,13].

VPA implementation is suggested to result in stronger monitoring, transparency and more strict enforcement of SRAs, which suggest an important step towards equitable benefit sharing [3,14–16]. Even though studies allude to how the SRA procedures and enforcement have strengthened due to the implementation of the VPA, empirical studies suggesting policy to practice successes are scarce [5,6,10,17,18]. Studies on the SRA scheme seldomly link findings to the VPA. A Scopus search on article abstracts on the SRA scheme produced 11 documents in November 2022 and only one of those explicitly linked SRA to the VPA in Ghana. For a successful implementation of the Ghanaian VPA there is a need for enhanced capacity to address illegality, more accountable and improved transparency in the forestry sector with local communities empowered with various community rights (such as SRAs), and the assurance that these rights will be implemented [19]. This study adopts a practice-based approach to explore SRA compliance and its

### Box 1

#### Duties of stakeholders engaged in SRA procedures in Ghana

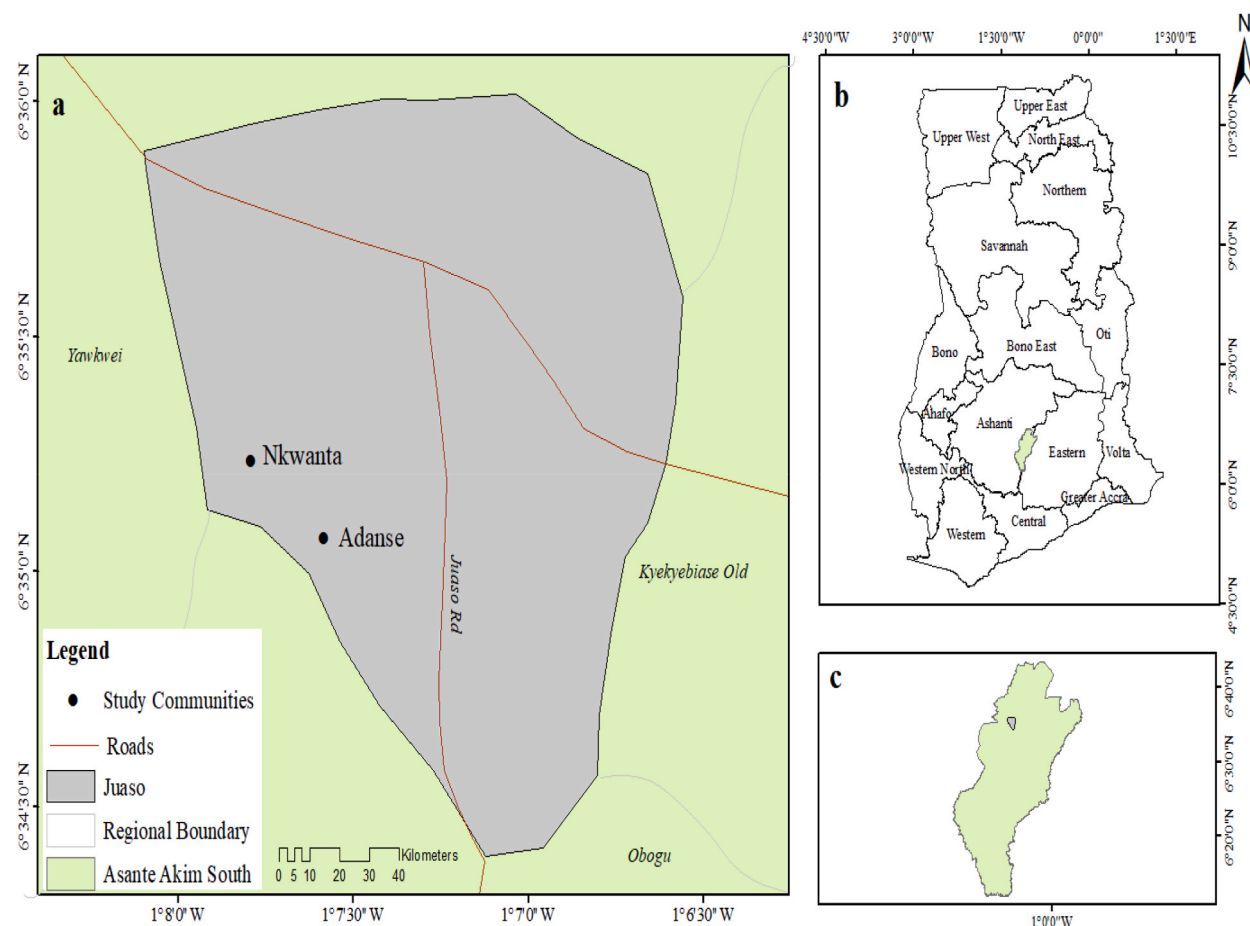
Five essential processes are outlined in the 2016 revisions to the SRA guidelines: pre-negotiation, negotiation, signing, implementation, and monitoring. When a TUC region is identified, the FSD starts the SRA procedure. To guarantee that the areas that the community wants to exclude from logging are identified, the District Manager (DM) interacts with the landholding communities (the stool chief, "Odikro," the CFCs, and the Unit committee). The DM then request that communities specify reasonable social terms for the code of conduct Timber Operational Specifications (TOS). Applicants must approach the communities after the TUC areas are advertised to make sure they are aware of all the TOS. At the negotiation stage, communities will have to negotiate for the 5 % of the value of stumpage of trees to be harvested with the FSD providing technical advice to the computation process. To aid transparency, a Local SRA Committee (LSRAC) represents the community. The focus of negotiations is on matters like the implementation of joint projects between communities that are close to one another, the specification of the goods to be provided based on the financial value of the SRA, the establishment of implementation schedules, and rules and regulations. There is provision for re-negotiation and sanctions for non-compliance. The focus of negotiations is on matters like the implementation of joint projects between communities that are close to one another, the specification of the goods to be provided based on the financial value of the SRA, the establishment of implementation schedules, and rules and regulations. Witnesses to the signing include the representative from the District Assembly, stool/skin owner and the FSD. The document is then signed and dated properly to ensure that signatories can be identified. Copies of the SRA are kept by the signatories as well as the witnesses. At the implementation stage it is expected that an implementation plan accompanies the agreement since the TUC spans over a period not exceeding four decades. The plan provides detailed timelines for carrying out the agreed terms of the signed SRA and should be agreed upon by the key stakeholders (logger, stool land owner, the Odikro of beneficiary communities) in the presence of representatives of the District Assembly and District Forestry Offices. The LSRAC is responsible for opening a bank account for the SRA funds to prevent misappropriation by any individual. Payments are accounted for on an annual basis through communities' notice boards, durbars and community information centre and radio. Monitoring serves as a check to ensure that the SRA and the implementation plan are adhered to. The community, District Assembly Planning officer and the FSD have a task to manage monitoring systems. Monthly reports are submitted to the District FSD office by the LSRAC.

implications on the VPA in the Juaso forest district of Ghana. Using a practice-based approach provides a suitable environment for an in-depth case study analysis that focuses on how policies, people and their environment are interrelated [20,21]. This provides a suitable context to analyse the negotiation, content, success factors and challenges of SRAs in the Juaso forest district.

This paper seeks to explore SRA compliance by focusing on: who is included/excluded in the negotiation process, implementation of SRAs, the success and challenge factors of SRAs. Further, policy implications of success and challenge factors on the FLEGT/VPA are assessed. The next section first provides background to Collaborative Forest Management in Ghana. Then the way in which the practice-based approach was applied is explained. The results section presents empirical findings of negotiations including a factor analysis of implementation, success and challenges of SRA compliance. The article concludes by discussing the findings and its policy implications on the FLEGT/VPA and drawing conclusions.

## 2. Collaborative forest management in Ghana

Since colonial forestry, a number of legislative acts, legislative instruments (LI), policies, and administrative rules have been developed to control Ghana's forests [13,22,23]. Prior to independence, the British colonisers' timber interests were served by the Forest Policies (1908–1948) and its follow-up ordinances with little or no considerations for the rights of forest-dependent people [22, 23]. With the acknowledgement of the forests as a significant ecosystem whose functions needed to be maintained, forest conservation increasingly received more attention, and once the British left, the emphasis moved to improving forest administration in Ghana's best interests. Furthermore, in the late 1980s and early 1990s, community and participatory forestry received a lot of attention, which led to the start of collaborative forest management (CFM) in Ghana [9,24]. The awareness that the state alone cannot sustainably manage the nation's forest resources led to significant rises in deforestation rates and conflicts, which in turn contributed to the transition towards CFM, despite the fact that global forest debates played a part in its development. The previous policies failed to address the needs of people who depended on the forest, thus the 1994 post-independence forest policy set out to do so. Its legislative instruments make community involvement a key component of forestry policy that is carried out using a collaborative forest management (CFM) strategy [24,25]. Through collaborative working partnerships between the state Forestry Department and the local community, the



**Fig. 1.** Map of Juaso forest district of Ghana showing the two study communities.  
Source: Juaso forest district

CFM strategy seeks to achieve the dual goals of sustainable natural resource management and equitable benefit sharing [5]. Such partnerships place a strong emphasis on either involving local communities in decision-making or on carrying out forest activities [26]. A number of initiatives to ensure community participation in forest resources management include plantation development, forestry forums and the SRA. As one of its guiding principles, the 2012 Forest and Wildlife Policy reinforces the CFM strategy to promote collaborative resource management among communities, the government, and other stakeholders. The implementation and coordination of measures like the Voluntary Partnership Agreement with the European Union/Forest Law Enforcement Governance and Trade (VPA/FLEGT) to combat illegal logging are intended to be guided by the specific objectives of the 2012 Forest and Wildlife Policy [23]. Despite these policy initiatives, studies suggest ongoing degradation in Ghana's forest and wildlife reserves due to claims such as illegal chainsaw operations, illegal farming and illegal mining (locally known as *galamsey*) [23,27,28]. As a result, in an era where effective forest governance is universally acknowledged, it is essential to eliminate obstacles to the implementation of SRA to ensure a flow of forest benefits to all segments of society.

### 3. Methodology

#### 3.1. Study area

The study was conducted in two communities (Nkwanta and Adanse/Banso) (Fig. 1, a) in the Juaso forest district in the Ashanti region of Ghana (Fig. 1, b). The Juaso forest district is located in the Asante Akim South Municipal Assembly (Fig. 1, c). The municipal was selected because it contains a considerable number of logging companies such as Messrs. Dutchtch Company Limited, Messrs. Brescia Vastone Company Limited, Messrs. Green Barrow Company Limited, Messrs. Asante Osei Company Limited, Messrs. Y&M Company Limited and Messrs. Apostiga Company Limited. It lies between latitudes 6° 10'N and 6° 40'N and longitudes 0° 50'W and 1° 17' W in the Ashanti Region. It has a total area of 1,275 km<sup>2</sup> (492sqm) with a population of 123,633 [29]. The district records a maximum temperature of about 30 °C in March and April. The minimum temperature of about 26 °C is recorded in August, the coolest month of the year. The mean monthly temperature is about 33 °C. The district experiences a double maxima rainfall with the major rainy season occurring between April and June. The minor season occurs between September through to the end of November. The mean annual rainfall ranges between 1500 mm and 1700 mm. In terms of vegetation, the district falls within the moist semi-deciduous forest region where different species of tropical hard woods with high economic value are located. Some of the dominant economic species include; *Triplochiton scleroxylon*, *Ceiba pentandra*, *Khaya ivorensis*, *Aningeria robusta* and *Piptadeniastrum africanum*. The district manages five forest reserves which cover a total area of about 109.6 sq km: North Formangsu, South Formangsu, Pra-River, Domi River and Mirasa Hills.

### 4. Sampling

A case study design was used to evaluate the SRA scheme and its implication on the VPA. A practice-based approach adopted in the study provided a suitable environment that revealed how the SRA policy was practiced by the various actors; the FSD, local communities and the TUC holders and the interrelations between them. The study employed a mixed methods strategy. This mixed method strategy was chosen to provide multiple sources of evidence and assessment of information from diverse perspectives. Qualitative and quantitative data were obtained through the use of questionnaires. Quantitative data was obtained using Likert-scale type of questions. Close ended questions were given to all respondents who were involved in the SRA process including local community members who were present during negotiations. Respondents who were involved in the SRA process had their names on the attendance sheet and signed to acknowledge that they were present during the process, making it necessary to acquire information from them. The aim of the qualitative approach was to get closer to the key informants who are involved in the negotiations, know the contents of the SRA and to know the underlying reasons for the things they negotiate for and how they go about it and eventually arriving at a consensus. Within each community, the interview focused on the chief/odikro and his council of elders, current and past Assembly members and Unit committee members and community members. The timber contractors who concluded the SRA agreements with the communities and officials from Juaso Forest Services Division were all interviewed. Interviews were conducted using a structured checklist focusing on who is included/excluded in the SRA negotiations, underlying reasons for the items negotiated for and how consensus was reached. The interviews also sought to identify the success and challenge factors of the SRA in study communities. Previous SRA agreements were obtained from the FSD for analysis. Observations during field visits to the communities revealed how the SRA policy was interpreted in field situations during negotiation processes and infrastructure and other materials from the accrued benefits were inspected.

The purposive and snowball sampling techniques were employed in this study. Two communities were purposively selected from the Juaso forest districts based on availability of concluded SRA agreements, accessibility and community authorities' readiness to take part in the study. In the Juaso forest district two communities (Nkwanta and Adanse/Banso) were purposively selected based on availability of concluded SRA agreements, accessibility, willingness of community authorities to participate in the research and their location within the Juaso forest district. The study considered Adansi and Banso as twin communities (Adanse/Banso) because previous SRAs in the Adansi community were negotiated and concluded by the people of Banso as their chief has sovereignty over the land in Adansi. Snow ball sampling method was employed to identify the stakeholders for interview to elicit information on the negotiation, contents, implementation, successes and challenges of the SRA and its implication on FLEGT/VPA initiative.

Despite the effectiveness of the methods the study faced a few limitations. The study considered the perceptions, views, and knowledge of the selected respondents involved in the SRA negotiations and may not reflect the views of every community member.

Although interviews were conducted with all the stakeholders involved in the SRA process including observation of SRA negotiations in the study communities, the analysis did not involve the views of each member of the community due to the sampling methods employed. However, these findings were triangulated with a review of official documents from the Juaso FSD office and articles related to the scope of the research.

#### 4.1. Ethical considerations

The principle of Free, Prior and Informed Consent (FPIC) requires that consent is sought from the participants before the research begins. FPIC requires that an individual must give their explicit consent to participate in the study. In this study, the communities were asked verbally for their permission to publicize the study's findings and how, when, and where they will be published. The goal of the study was presented at community entry meetings in Twi, the local dialect, and permission to carry out the research was requested. Community gatherings involved the chiefs, elders, an FSD official and community members. These gatherings were intended to formally introduce the research and obtain their participation agreement. Permission was obtained verbally from respondents before interviews were conducted to assess the negotiation process and contents of SRA, evaluate the implementation process and identify the successes and challenges of the SRA and its implication on VPA. Respondents had the chance to withdraw from the survey at any moment after giving their consent. But after giving their consent, none of the respondents stopped participating in the data collection process. Participants received assurances regarding confidentiality of identity. This was accomplished by making sure that no publications resulting from the study would include the names of the respondents. The names of the TUC holders have been anonymized with pseudonyms (Table 5). Within each community, the respondents were the chief/odikro and his council of elders, current and past Assembly members, unit committee members and community members who had participated in SRA activities (Table 1). In the local communities interviews were conducted in the Twi language, which is the local dialect of respondents. The timber contractors who concluded the SRA agreements with the communities, and officials from Juaso FSD were interviewed.

#### 4.2. Data analysis

The data analysis technique combined descriptive and inferential statistical methods and content analysis. Data was expressed as mean and standard deviation to aid in ranking the successes and challenges of SRAs. In addition to mean ranking, a principal component analysis (PCA) and factor analysis were performed to extract the factors for successes and challenges in the negotiation and implementation processes of SRAs. The PCA is a dimensionality reduction method that is useful for increasing data interpretability by reducing large data set into a few principal components while minimizing information loss [30,31]. To test the suitability of the data for a factor analysis, the Kaiser-Meyer-Olkin (KMO) test of sampling adequacy and the Bartlett's test of sphericity were conducted. For a satisfactory factor analysis to proceed a strong KMO value should be above 0.5 and the level of significance for Bartlett's test should be  $p < 0.05$ . In Table 2 the test displays a KMO value of 0.70 and a Bartlett's Sphericity value  $p = 0.000$ , which suggest that a factor analysis could be conducted with the data. Content analysis was used to analyse the secondary data obtained from the Juaso FSD administration and the primary data obtained from the interviews that were written and audio recorded.

### 5. Results

This section presents the empirical findings on who is included/excluded in the negotiation and content of SRAs, implementation of SRAs, the success and challenge factors of SRAs.

#### 5.1. Factors enhancing the negotiation process and content of SRAs

Four categories of local people; the chief and elders, representatives from the unit committee, assembly members and municipal assembly formed the local SRA committee (LSRAC) and were included in SRA negotiations in both study communities. Excluded from the negotiating team was a representative from the women's group. Community members were invited on the day of the negotiation process to serve as witnesses. The SRA process was initiated by the Juaso Forest Services Division (FSD) during the identification of the Timber Utilization Contract area. On the day set for the negotiations, the FSD official was present to act as witness and facilitator, to offer technical guidance on calculating the volume of trees, the corresponding stumpage, and ultimately the value of the SRA. Based on the financial value of the SRA, items or services to be provided are specified and quantified. Rules and timelines for implementation are stated.

**Table 1**  
Distribution of interviewees in the communities in Juaso forest district.

Forest district	Study community	Number of interviewees			
		Traditional authority	Unit committee members	Community members	Total
Juaso	Adanse/Banso	6	6	11	23
	Nkwanta	6	7	14	27

Source: Field work (2022).

**Table 2**  
KMO and Bartlett's test on factors underlying SRA negotiations.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.70
Bartlett's Test of Sphericity	Approx. Chi-Square	416.493
	df	105
	Sig.	0.000

## 5.2. Underlying factors of SRA negotiations

A PCA analysis of the 15 variables was expected to explain the underlying factors for successful SRA negotiations (Table 2). The results showed that factors underlying successful negotiation process of SRAs were categorized by three main factors (Table 3). The analysis illustrated that factor 1 explained 27.89 % of the variance was related to inclusiveness of the negotiation process and the second factor explained 50.70 % of the variance was related to payment of SRAs. The third factor, the most important explained 65.42 % of the variance related to transparency of the negotiation process of SRAs (Table 4).

### 5.2.1. Contents of concluded SRAs

Details about the TUC holders, the type of SRA and the beneficiary communities are provided in Table 5. The four SRA documents assessed indicated that the LSRAC, the Municipal Assembly, and the community members participated in each of the SRA agreements reached between the firms and the communities (Nkwanta and Adansi). The SRA documents also included an attendance sheet that persons present signed as proof that they were there to participate in the process. The TUC holder's social commitments included building and renovating schools, providing water and electricity, and offering a community toilet facility. In addition to respecting the rights of access to non-timber forest products (NTFPs) for household use, sacred groves, and cultural sites, the codes of conduct supplied by the communities also stated that no activities should be carried out in the reserves during festivals such as "Akwasidae and Awukudae." According to an LSRAC member, "the TUC applicant is verbally warned to advise his staff to desist from any criminal activity during the duration of logging operations in their area". (Member of LSRAC, Nkwanta, February 22, 2022).

## 6. Factors enhancing the implementation of negotiated SRAs

As a measure of compliance, the study sought to gain an understanding of how the negotiated SRAs were implemented. Respondents in both communities indicated that there were no delays in the payment of SRAs by TUC holders. The TUC holders arrived at the negotiation meeting prepared and ready to pay the SRA charge. A TUC holder stated "we come to the meeting very prepared because we want to start timber operations as soon as possible. We have clients and deadlines to meet, so we do our possible best to provide the communities with the SRA benefits which is due to them as we don't want any form of interruptions during our operations as a result of not paying the SRA" (April 06, 2022). At Nkwanta, SRA projects were managed by the unit committee. The unit committee chairman stated "since 2016, all SRA benefits have been directed toward the construction of a modern computer laboratory and a library for the local community junior high school. The community is required to support the school in acquiring these facilities as modern education is geared towards technology" (February 22, 2022). Field visits to Nkwanta affirmed the construction of the library and computer laboratory. The

**Table 3**  
Rotated Component Matrix of factors underlying SRA negotiations.

Underlying factors in SRA negotiations	Factors		
	1	2	3
The outcome of the preparatory meetings influences the actual negotiations	0.900		
The preparatory meetings are conducted in an orderly manner	0.867		
Preparatory meetings are conducted prior to the actual negotiation of SRA	0.811		
TUC holders are reported to the FSD when they fail to honour the agreed SRA fee	0.802		
The LSRAC agrees on a proposed project as an interest for the community through a consensus	0.603	0.338	
LSRAC setup involves relevant people to negotiate SRA		0.881	
The LSRAC represents the community during SRA negotiations		0.864	
LSRAC represents the interest of the community		0.785	
The SRA was paid in the form of cash, employment, infrastructure, or scholarship		0.770	
Community members are informed about the outcome of the SRA negotiations		0.617	
Education, health, transport, energy, and communication among others are perceived as an interest for the community		0.581	
Agreement with the processes by which the SRA is negotiated			0.810
Adequate information about the SRA is given to the LSRAC to have a clear picture of the SRA benefits			0.792
The SRA (5 %) is calculated and presented before the start of negotiations			0.645
The draft contents of the SRA is known by the entire community			0.559

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.<sup>a</sup>.

<sup>a</sup> . Rotation converged in 4 iterations.



**Table 4**

Total variance explained by the factors underlying SRA negotiations.

Component	Initial Eigen Values		Cumulative %	Extraction Sums of Squared Loadings		Cumulative %	Rotation Sums of Squared Loadings		
	Total	% of Variance		Total	% of Variance		Total	% of Variance	Cumulative %
1	4.184	27.895	27.895	4.184	27.895	27.895	3.864	25.762	25.762
2	3.421	22.807	50.702	3.421	22.807	50.702	3.738	24.918	50.680
3	2.208	14.718	65.420	2.208	14.718	65.420	2.211	14.740	65.420

Extraction Method: Principal Component Analysis.

**Table 5**

Content of concluded SRAs of TUC holders.

Name of TUC holder	Number of SRAs	Nature of benefits	Beneficiary communities
MGBCL	1	Construction of KVIP Repair of community borehole Provisioning of street lights	Adansi/Banso
YRCL	1	Construction and renovation of school	Adansi/Banso
MACL	2	Construction of computer laboratory for the community school Construction of library for the community school Provision of street light bulbs	Nkwanta

Source: Field work (2022)

headteacher from the local District Assembly (D/A) school confirmed that it is the LSRAC who is in charge of constructing the library. The LSRAC and the Juaso FSD administration provided documents of receipts of payments for items purchased for the construction of the projects. Some members of the unit committee objected to the LSRAC depositing SRA payments at the bank. Such members claimed that “we do have a bank account for the SRA, but the benefits are insufficient to be kept at the bank. The community is required to make purchases and send the receipt of the purchase to the FSD in order to make the TUC holders permit valid ” (February 22, 2022).

At Adansi, the LSRAC was in charge of the management of SRA projects. Field observations showed projects that were led by the LSRAC in the community (Photo 2). A community member stated “we are the ones who elected the leaders and hence can hold them accountable for their action. When we see that something is not going on right with the LSRAC in the management of the SRA benefit, we come together and set up a meeting with the authorities for them to render accounts to us” (May 05, 2022). In contrast to Nkwanta, Adansi did not have a communal bank account and SRA payments were given to the Odikro, who then transferred them to his elders and the unit committee.

### 6.1. Factors influencing SRA implementation

Respondents were asked to identify the factors that influence the implementation of SRAs in their communities. As shown in Table 6, factors that explained the implementation of SRAs were categorized into four main factors. Factor 1, the most important explained 30.41 % of the total variance and related to accountability of SRAs and factor 2 which explained 15.80 % of the total variance was related to monitoring implementation of SRAs.

Factor 3 explained 11.29 % of the total variance and related to progress of SRAs and Factor 4 explained 10.86 % of the total

**Table 6**

Rotated Component analysis for SRA implementation.

Rotated Component Matrix <sup>a</sup>				
	Factors			
	1	2	3	4
The SRA benefit is paid promptly		0.811		
Problems were encountered during the provision of the SRA benefit			0.599	
The LSRAC has an implementation plan towards the SRA benefit	0.866			
Prioritization of project involves the consensus of LSRAC and community members	0.629			
There are copies of SRA documents kept by the various stakeholders			0.829	
Agreement with the LSRAC in the management of SRA payments and projects	0.751			
The SRA benefits are used to execute specific projects	0.748			
There was transparency during the negotiation process to guide accountability		0.759		
The negotiation processes are documented				0.881
Reports on implementation progress are sent to the FSD on monthly basis		0.721		

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.<sup>a</sup>.<sup>a</sup> . Rotation converged in 5 iterations.

variance and related to documentation of SRA agreements (Table 7).

## 6.2. Success of SRA compliance

Infrastructure development through SRA benefits was low in both communities. Therefore, respondents were asked intangible benefits from SRAs in their communities. As shown in Table 8, “inclusion in forest management activities” was the highest in the list of success factors with 28.34 % of the total variance explained. Additionally, “improved forest governance”, “sustainable forest management” and “motivation for forest protection” were identified with 19.40 %, 12.94 % and 9.92 % respectively (Table 9). Table 10 indicates that respondents ranked “Motivation to protect forest resources” as first. An elder emphasized that “we put in a lot of effort to ensure that the forest resources are protected because the forests benefit us when trees are harvested” (Adansi, May 05, 2022). With regards to the reduction in illegal logging as a result of payment of SRA benefits, a unit committee member stated that: “Illegal loggers are reported to the FSD especially to the forest range manager and forest guards when we hear of such activities” (Adansi, May 05, 2022).

The descriptive statistics further revealed that the least ranked success factor related to “the community is actively involved in assigning timber trees to loggers”. Respondents indicated that they were not actively involved in assigning timber trees to loggers neither were they part of the enumeration team for salvage felling.

## 6.3. Factors challenging SRA compliance

The challenges in SRA implementation were grouped into two primary factors (Table 11). The first factor, which accounted for 41.18 % of the total variance (Table 12), was associated with weak community capacity to negotiate SRAs. The second factor, explaining 30.22 % of the total variance, was linked to the community’s weak ability to ensure compliance with the agreements.

Descriptive statistics on the challenges (Table 13) revealed that respondents ranked “the SRA delineates the limit of benefits” as the highest challenge to SRA implementation. A unit committee member indicated, “the cost of materials increases daily yet the value (5 %) of the SRA has been constant. At times the money received cannot be used to complete the said SRA project. I suggest value should either be increased to 10–15 % (Nkwanta, May 05, 2022).

Respondents ranked “local communities were not trained to negotiate SRAs” as the second highest challenge. This was confirmed by the chief and the leader of the LSRAC at Nkwanta that they were not given enough information prior to the negotiation process. The only information they were given were the ones concerning the compartment number, total number of trees and species assigned to the contractor, and the amount due the community as the SRA. The leader of the LSRAC stated that, “how are we supposed to know if the contractor exceeded the number of trees he was assigned, or he harvested timber which was not assigned to him from a different compartment, or even a different timber species than the ones they were assigned. We do not even know the location of the compartments from which we are being paid SRAs” (Nkwanta, May 05, 2022). At Adansi, community members involved in the Modified Taungya System (MTS) had a fair understating of the SRA process. The Odikro stated, “most of the timber productions done at Adansi are usually from the MTS or plantations hence, as community members we pay keen attention to the operations that take place. I accompany the FSD and TUC holders to the compartment, aid in the counting of trees to the loggers and when they are done harvesting, I am also involved in the post-harvest checks done by the FSD” (May 05, 2022). However, some community members indicated that they are not involved in assigning timber to loggers. They further shared their views on the community not being part of the enumeration team for salvage felling. One member of the community stated, “for felling of trees that occur on our farms, we are mostly involved as we are the ones who know exactly where the trees are located” (Adansi, May 05, 2022). During our interview with the FSD, officers indicated that local communities were well informed for SRA negotiations. One FSD officer stated, “all information about the SRA was provided to the local communities and LSRAC to be able understand the purpose of the meeting” (May 06, 2022).

## 7. Discussion

This paper explored SRA compliance by focusing on who is included/excluded in the negotiation process, implementation of SRAs, the success and challenge factors of SRAs. The SRA process recognised the ability of both the officials from the local authority and traditional leaders to negotiate and reach agreements on behalf of the communities. Traditional leaders (chiefs) and representatives from the local authority such as assembly members and unit committees formed the local SRA committee (LSRAC) and were included in the negotiation process. Excluded from the negotiation process were representatives from women’s groups in both communities.

**Table 7**

Total variance explained by the factors.

Component	Initial Eigen Values		Cumulative %	Extraction Sums of Squared Loadings		Cumulative %	Rotation Sums of Squared Loadings		
	Total	% of Variance		Total	% of Variance		Total	% of Variance	Cumulative %
1	3.041	30.412	30.412	3.041	30.412	30.412	2.376	23.762	23.762
2	1.580	15.803	46.216	1.580	15.803	46.216	1.858	18.576	42.338
3	1.129	11.293	57.509	1.129	11.293	57.509	1.375	13.745	56.083
4	1.087	10.869	68.378	1.087	10.869	68.378	1.229	12.294	68.378

Extraction Method: Principal Component Analysis.



**Table 8**  
Success factors of SRAs.

Rotated Component Matrix <sup>a</sup>				
Success factors of SRAs	Factors			
	1	2	3	4
The community is actively involved in assigning of timber trees to loggers	0.848			
The community is part of the enumeration team for salvage felling	0.794			
Community reports illegal logging and related activities to the FSD	0.788			
The relationship between the community and contractor has improved	0.746			
The community monitors compliance with SRA by TUC holder		0.882		
Due to the SRA provided to the community, illegal logging activities has reduced in the forest		0.725		
Due to the SRA, the relationship between the FSD and the community has improved		0.632		
The community protects the reserve from fire			0.808	
The community ensures compliance and enforcement of local laws			0.791	
The SRA (5 %) has contributed to the development of the community				0.824
Motivation to protect forest resources				0.679

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.<sup>a</sup>.

<sup>a</sup> . Rotation converged in 5 iterations.

**Table 9**  
Total variance explained by the success factors.

Component	Initial Eigen Values		Cumulative %	Extraction Sums of Squared Loadings		Cumulative %	Rotation Sums of Squared Loadings		
	Total	% of Variance		Total	% of Variance		Total	% of Variance	Cumulative %
1	3.118	28.344	28.344	3.118	28.344	28.344	2.691	24.465	24.465
2	2.135	19.409	47.754	2.135	19.409	47.754	1.975	17.958	42.423
3	1.424	12.944	60.698	1.424	12.944	60.698	1.831	16.642	59.065
4	1.092	9.927	70.624	1.092	9.927	70.624	1.272	11.559	70.624

Extraction Method: Principal Component Analysis.

**Table 10**  
Means and standard deviations for the success factors.

	Mean	Std. Deviation	Rank
The SRA (5 %) has contributed to the development of the community	4.60	0.700	3
The SRA motivates the community to protect forest resources	4.84	0.370	1
Due to the SRA provided to the community, illegal logging activities has reduced in the forest	3.34	1.154	8
Due to the SRA, the relationship between the community and contractor has improved	4.46	0.503	4
Due to the SRA, the relationship between the FSD and the community has improved	4.40	0.495	6
Community reports illegal logging and related activities to the FSD	4.44	0.501	5
The community protects the reserve from fire	4.82	0.388	2
The community is actively involved in assigning of timber trees to loggers	2.74	1.651	10
The community is part of the enumeration team for salvage felling	3.00	1.578	9
Compliance and enforcement of local laws (taboos)	4.82	0.388	2
The community monitors compliance with SRA by TUC holder	4.28	0.497	7

Scale: 1 (Minor) to 5 (Major).

Community members served as witnesses to the process. The results showed that three main factors underly a successful negotiation process: inclusiveness, SRA payments and transparency. The transparency factor was the most important explaining 65.42 % of the total variance. For transparency, the LSRAC represents the community in negotiations. The results corroborate with [32] as the FSD did not offer training neither was any legal assistance provided for the LSRAC in order to have a better understanding of the negotiation process. Building community capacity is essential to participatory and inclusive forest governance. Enhancing the ability of forest fringe communities e.g. through awareness creation and training on SRAs guarantees that their concerns are considered, encouraging sustainable forest management and lowering the possibility of illicit logging. The LSRAC was expected to meet with community members to agree on the list of items to present on the negotiation day. However, broader consultations were not conducted as no community meetings were held prior to the negotiation day. The leaders explained that such meetings were not held because the SRA benefit is not able to solve the list of items presented as community interest. Subsequently, the LSRAC rendered accounts to community members by the use of the community radio centre and a megaphone. Our findings reaffirm that of authors such as [5,32] as the negotiation processes leading to the conclusion of the four SRA documents revealed a top-down approach although majority of community members agreed with what the LSRAC presented as an interest for the communities. With SRA payments similarities exist

**Table 11**  
Challenge factors of SRAs.

Rotated Component Matrix <sup>a</sup>		
Challenge factors of SRAs	Factors	
	1	2
Measures were not put in place to improve capacity of local communities	0.868	
Legal assistance and training were not given to the community to aid in negotiations	0.823	
Local communities were not trained to negotiate SRA	0.768	
The SRA policy specifies the limit of the benefits	−0.676	0.516
SRA is treated with confidentiality hence lacks transparency		0.827
The community was not given enough information regarding the SRA to aid in negotiations		0.801
Local communities cannot monitor compliance and sanction non-compliance	0.437	0.696
Local community lacks capacity to monitor compliance	−0.543	0.682

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.<sup>a</sup>.

<sup>a</sup> . Rotation converged in 3 iterations.

**Table 12**  
Total variance explained by the challenge factors.

Component	Initial Eigen Values		Cumulative %	Extraction Sums of Squared Loadings		Cumulative %	Rotation Sums of Squared Loadings		
	Total	% of Variance		Total	% of Variance		Total	% of Variance	Cumulative %
1	3.294	41.180	41.180	3.294	41.180	41.180	3.030	37.872	37.872
2	2.418	30.222	71.402	2.418	30.222	71.402	2.682	33.530	71.402

Extraction Method: Principal Component Analysis.

**Table 13**  
Means and standard deviations for the challenge factors.

	Mean	Std. Deviation	Rank
The community was not given enough information regarding the SRA to aid in negotiations	2.52	1.092	7
Legal assistance and training were not given to the community to aid in negotiations	3.18	1.625	4
Measures and actions were not put in place to improve capacity of local communities	3.30	1.216	3
Local communities cannot monitor compliance and sanction non-compliance	2.18	1.063	8
Local communities were not well equipped to negotiate SRA	3.62	1.141	2
Local community lacks capacity to monitor compliance	3.12	1.100	5
SRA is treated with much confidentiality hence lacks transparency	2.54	0.973	6
The SRA policy specifies the limit of the benefits	3.80	1.278	1

Scale: 1 (Minor) to 5 (Major).

between the infrastructure provided to the communities. The TUC holder's social commitments included building and renovating schools, providing water and electricity, and offering a community toilet facility. The findings agree with [32] who opined that a model Social Responsibility Agreement has been created by the Forestry Commission to help communities and timber companies negotiate their contract terms. The necessity for fundamental services, such as educational and medical facilities, in the towns in question may be tied to parallels in the social amenities that timber companies offer. It might also be connected to efforts made by local authorities to gain advantages comparable to those attained by other localities.

The study sought to gain an understanding of how the negotiated SRAs were implemented as a measure of compliance. The results showed that there was no default on the part of the TUC holders and the LSRAC in implementing the agreed SRA projects. The TUC holders arrived at the negotiation meeting prepared and ready to pay the SRA charge. No TUC holder failed to honour the promises made during negotiations. This is because the revised SRA guidelines stipulates that advance payments should be made by the logger before harvesting. The Juaso FSD ensured that all payments were made by the TUC holders before harvesting begins [18]. observed a high level of compliance in on reserve areas. Our finding is in contrast to Refs. [5,32] who suggested that it was regular practice not to keep the commitments made in SRAs. Factors that explained the implementation of SRAs were categorized into four main factors. Factor 1, the most important explained 30.41 % of the total variance and related to accountability of SRAs and factor 2 which explained 15.80 % of the total variance was related to monitoring implementation of SRAs. The results showed that the LSRAC had an implementation plan for the SRA benefits. However, one community (Adansi) had no bank account making it difficult for community funds to be accounted for. Monitoring compliance of SRAs was a problem as there was no proof that the FSD regularly checked to make sure that timber companies and communities were properly implementing SRAs. Although reports on implementation are sent to the FSD through the forwarding of receipts of purchase, that alone does not signify that indeed the SRAs are implemented. SRA documents were kept by the FSD making it difficult for groups or individuals to obtain financial information regarding SRAs. The research team

also observed a delay on the part of some stakeholders in signing the SRA documents which hindered the release of the documents for monitoring compliance.

An exploratory factor analysis revealed four main success factors of SRA compliance. The highest success factor related to inclusion in forest management activities. Other success factors include “improved forest governance”, “sustainable forest management” and “motivation for forest protection”. Though infrastructure development through SRA benefits was low inclusion of community members in forest related activities had increased. Through participation in SRA negotiations the relationship between the FSD, TUC holder and the communities had improved as all parties were made aware of what was required of them. Such participation motivates the community to protect the forest resource against illegal logging activities. Efforts were made by the communities to reduce illegal logging by reporting such activities to the FSD especially forest guards and range managers. Enforcement and compliance to local laws and taboos was ensured as the TUC holder and his staff were made aware of the norms and customs of the communities. Further, descriptive analysis revealed “motivation to protect forest resources” as the highest. Participatory programs like the SRA are driven by more than only giving locals socioeconomic advantages; they also encourage their participation in the sustainable management of forest resources [5,8].

On challenge factors of SRA compliance, our results suggest weak community capacity to negotiate SRAs and weak community capacity to enforce compliance. Descriptive statistics on the challenges revealed that respondents ranked “the SRA delineates the limit of benefits” as the highest challenge and “local communities were not trained to negotiate SRAs” as the second highest challenge to SRA compliance. Legal assistance and training were not given to the communities to aid in negotiations. Members of the LSRAC suggested that the FSD should educate them to fully grasp how the SRA works. Further analysis revealed that the LSRAC were excluded from assigning timber to loggers and enumeration of trees for salvage felling. These factors hinder trust and transparency in the calculation of SRA benefits during negotiation processes. This is also supported by Ref. [5], who affirm that it is impossible to determine whether communities were treated fairly in the negotiation process since it is difficult to get essential information about the true worth of the 5 % stumpage charge.

## 8. Implications of success and challenge factors on the FLEGT/VPA

The FLEGT/VPA process aims to advance good forest governance by establishing accountability, transparency, and fair benefit sharing [15,33]. This implies a collaborative strategy including all forest actors particularly forest communities, timber businesses, and civil society organizations in ensuring that illegal timber is prevented from being traded. In line with previous studies [5,8,18,33], we note that inclusion of local communities in the fight against illegal logging is paramount in ensuring that the objectives of the FLEGT/VPA are achieved. But how can these participatory processes ensure local communities rights to a fair share of the benefits from timber revenues and their support for tackling illegal logging? This study revealed some success and challenge factors in this regard. The highest success factor related to inclusion in forest management activities. The FSD included traditional authorities and community leaders involved in forestry activities and local authority (LSRAC) in SRA procedures. It is noteworthy that in the Ghanaian context respect is given to traditional authorities (stool chief, Odikro) and any engagement with local communities, is done through these authorities [27]. However, this study observed two underlying challenges related to inclusion that have critical implications on achieving the objectives of the FLEGT/VPA. First, exclusion of the LSRAC from activities such as assigning timber trees to loggers and enumeration of trees for salvage felling hampered trust and transparency in the calculation of SRA benefits. One way to overcome this challenge is to increase awareness creation on SRAs especially for the LSRAC. There is a need to provide stakeholders, particularly local communities, training and capacity-building programmes about their rights, duties, and the contents of SRAs. This will enhance their negotiating abilities, knowledge of social and environmental issues. More importantly, the FSD must provide funding for capacity building, monitoring, and enforcement activities, and establish partnerships with development agencies and donors to leverage additional resources. Further, to enhance transparency relevant information concerning SRAs must be disclosed to all stakeholders including systems for monitoring and reporting violations of SRA implementation. Inclusion of local communities in forest management plans is also considered a way to enhance active participation [33]. Given how crucial forests are to local livelihoods, it is still important to maintain and restore them. As observed by Ref. [27], in addition to sketch-mapping the location and spatial distribution of the risks to forest conservation in forest reserves, holders of spatial community-embedded knowledge also offered details on the actors they believed to be responsible for such threats. This implies that including local people and their context-embedded spatial knowledge can improve forest governance.

A second challenge is elite capture as broader consultations were not conducted by the LSRAC with community members prior to the negotiation day. Other studies have observed this in community-based forestry [5,10,33–36]. This challenge can be overcome by the FSD instituting measures that ensure broader consultations with community members prior to SRA negotiations. This could broaden the selection process and guarantee that the interests of the community are adequately represented. Further, there is a need to ensure that SRAs are legally binding and enforceable within the FLEGT/VPA framework by developing clear legal provisions and mechanisms for enforcing SRAs and integrating them into national legislation and regulatory frameworks.

## 9. Conclusion

This paper provides valuable insights into SRA compliance and the possible implications of the success and challenge factors on the FLEGT/VPA. The results showed that three main factors underly a successful negotiation process: inclusiveness, SRA payments and transparency. For transparency which is the most important factor, the LSRAC represents the community in negotiations. In terms of SRA compliance there was no default on the part of the TUC holders and the LSRAC in implementing the agreed SRA projects.

However, monitoring compliance of SRAs was a problem as there was no evidence to suggest that the FSD conducted regular monitoring to ensure that SRAs are diligently implemented by timber firms and communities. Four success and two challenge factors were identified: The highest success factor linked to the objectives of the FLEGT/VPA was inclusion in forest management activities. This paper highlights the need for increase in awareness creation on SRAs and inclusion of the knowledge of local communities in forest management activities to enhance active participation. However, there is a need to provide stakeholders, particularly local communities, training and capacity-building programmes about their rights, duties, and the contents of SRAs. This will enhance their negotiating abilities, knowledge of social and environmental issues. More importantly, the FSD must provide funding for capacity building, monitoring, and enforcement activities, and establish partnerships with development agencies and donors to leverage additional resources. Further, to enhance transparency relevant information concerning SRAs must be disclosed to all stakeholders including systems for monitoring and reporting violations of SRA implementation. A way forward to avoid elite capture is to ensure broader consultations with community members such that community interests are well represented. Further, there is a need to ensure that SRAs are legally binding and enforceable within the FLEGT/VPA framework by developing clear legal provisions and mechanisms for enforcing SRAs and integrating them into national legislation and regulatory frameworks.

### Compliance with ethical standards

The authors declare that prior to conducting this research, prior informed consent was verbally sought from the study communities and respondents as elaborated in the ethical considerations section of this article. The undergraduate research committee at the Department of Forest Resources Technology, FRNR, KNUST, Kumasi confirmed that this research (reference: 3786218) complied with ethical standards associated with social research involving human subjects.

### Data availability statement

The authors declare that data on this research will be made available on request.

### CRediT authorship contribution statement

**Dorcas Peggy Somuah:** Writing – review & editing, Writing – original draft, Validation, Supervision, Methodology, Formal analysis, Data curation, Conceptualization. **Dennis Forkuo:** Data curation. **Patrick Opoku:** Writing – review & editing, Formal analysis. **Collins Ayine Nsor:** Writing – review & editing. **Anthony Arko-Adjei:** Writing – review & editing.

### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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