Mining Sector
Strategic Environmental and Social Assessment (SESA)

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Overview

This note provides guidance to policy makers, World Bank task managers and mining, environmental, and social specialists for undertaking strategic environmental and social assessment (SESA) to support mining sector reform. If well-implemented, SESA can be the catalyst of the following outcomes:

1. Increased attention to environmental and social priorities associated with mining development
2. Strengthened environmental constituencies
3. Improved social accountability by making the mining policy process more transparent
4. Enhanced sector capacity for managing environmental and sociopolitical risks associated with mining sector development.

Ultimately, these outcomes will lead to a more sustainable development process driven by mining sector growth. SESA is thus a process of sector institutional and governance strengthening that materializes along with the implementation of mining reform.

SESA engages multiple stakeholders in a dialogue to inform and influence policy making. The process takes place in three steps (see Figure, next page). Step 1 is the identification of environmental and social priorities, fa-
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cilitated by situational and stakeholder analyses. Step 2 calls for an assessment of the institutional and capacity gaps, as well as political economy constraints, to address the priorities effectively. Finally, Step 3 consists of recommendations for policy, institutional, legal, and regulatory adjustments required for mining sector reform to promote environmentally and socially sustainable mining growth.

**Introduction**

While mineral wealth can contribute to economic, social, and technological development, environmental and social impacts associated with mining activities have raised numerous concerns about growth driven by mineral sector development. Further, poor regulatory enforcement and weak sector governance, coupled with inadequate macroeconomic policies, are widely acknowledged as underlying causes of poor development outcomes in mineral-rich countries. SESA is a tool to enhance the environmental and social sustainability of mining sector reform.

SESA is a type of strategic environmental assessment (SEA) at the policy level (Box 1) where social assessment is given an equal footing with environmental assessment. It acknowledges that sound environmental and social management is critical for the success of mining sector reform, and that markets fail to allocate environmental and natural resources efficiently. During preparation of mining sector reform, SESA focuses attention on a variety of key issues, including (a) institutional issues, such as

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**Box 1. Strategic Environmental Assessment (SEA) at the Policy Level**

A global synthesis of SEA experience in development cooperation—entitled Applying Strategic Environmental Assessment: Good Practice Guidance for Development Cooperation—was produced by the SEA task team of the OECD Development Assistance Committee. The guidance points out that SEA constitutes a “range of analytical and participatory approaches that aim to integrate environmental considerations into policies, plans, and programs (PPPs) and evaluate their inter-linkages with economic and social considerations.” SEAs are flexible tools that are adapted to the particular decision-making context. At the policy level, SEAs “require a particular focus on the political, institutional, and governance context underlying decision-making processes” to assess the complex interactions between social, environmental, and political factors involved in policy reform.

*Source: OECD DAC 2006.*

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**Figure. SESA’s components and processes**

<table>
<thead>
<tr>
<th><strong>Analytical work</strong></th>
<th><strong>Step 2</strong></th>
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<tr>
<td>Situation analysis</td>
<td>Institutional, capacity and political economy assessment</td>
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**Step 1**

Environmental and social priorities

**Step 3**

Recommended adjustments and risk assessment

<table>
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<th><strong>Outcomes</strong></th>
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<tr>
<td>✓ Raised attention to environmental and social priorities</td>
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<td>✓ Strengthened environmental constituencies</td>
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<td>✓ Improved social accountability</td>
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<td>✓ Expanded ability to social learning</td>
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*Source: Authors’ data.*
as weak capacity to enforce environmental regulations; (b) governance issues, such as inadequate compensation frameworks for environmental and social damage; and (c) political economy issues, such as unbalanced national and local frameworks for benefits sharing.

Over the last four years, considerable effort has been invested by the World Bank Environment Department to develop and refine SEA approaches at the policy level, including SESA. A pilot program was set up. It supported three SESA pilots in the mining sector: a rapid SESA in Malawi as part of the Malawi Mineral Sector Review (World Bank 2009); a SESA of the mineral sector in Sierra Leone linked to the Sierra Leone Mining Technical Assistance Project (World Bank 2008); and the West Africa Mineral Sector Strategic Assessment, or WAMSSA (World Bank 2010), which is informing the preparation of the West Africa Mineral Governance Project. The note draws on existing practice and the lessons learned from these pilots.

**SESA of the Mining Sector**

SESA combines analytical work with public participatory processes to engage multiple stakeholders in a policy dialogue on environmental and social priority issues associated with mining sector reform. Participation of vulnerable segments of society—such as local communities, women, and youth—whose voices may otherwise not be heard during the design of mining sector reform, should be actively encouraged. The Figure shows how SESA articulates analytical work and multi-stakeholder dialogue to (Step 1) identify environmental and social priorities; (Step 2) assess institutional and capacity gaps, and political economy constraints in managing these priorities; and (Step 3) recommend adjustments to address these gaps, including a risk assessment of proposed changes.

SESA informs the preparation of mining sector reform following these three steps. This preparatory process con-
includes with the completion of the SESA report, which includes specific recommendations for implementation as an integral part of the mining reform. In the following sections, guidance is provided to undertake these SESA steps.

**Step 1: Identification of Environmental and Social Priorities**

**Objective:** To set a process for stakeholders to select environmental and social priorities linked to mining sector reform.

**Process:** Identifying environmental and social priorities is a cooperative process. It builds on expert judgment and the preferences of multiple stakeholders, including disenfranchised segments of society. First, key environmental and social issues in the mining sector, preferably linked to economic development and poverty alleviation, are identified. This step is based on a situational analysis that can use in a variety of methods (for example, spatial analysis, case studies, or cost of degradation studies) and, mainly, secondary sources of information (for example, EIA reports or sector reports). Box 2 illustrates different approaches used in the situational analysis of the Sierra Leone SESA, which was based on case studies and EIA reports, and the regional SESA in West Africa (WAMSSA), which applied spatial analysis, a review of infrastructure plans, and a fairly extensive identification of existing and proposed mineral developments in the Mano River Union.

**Box 2. Tools used for the situational analysis of the mining sector**

**The Sierra Leone Minerals Sector**

Mining in Sierra Leone consists of large-scale, small-scale, and artisanal mining. The SESA situational analysis included an overview of the socioeconomic and environmental situation of the country, which provided the general context of the mining sector. Then, the analysis focused on mining subsectors through case studies of large, small-scale, and artisanal operations that helped in identifying the key environmental and social issues. The list of key environmental and social issues informed the presentations and discussions held at regional workshops in the four regions of the country. The case-study approach used in the situational analysis showed that a distinct set of issues is linked to each subsector.

**The West Africa Mineral Sector Strategic Assessment**

The West Africa Mineral Governance Project (WAMGP) would assist countries in the Mano River Union (Guinea, Liberia, Sierra Leone, and Cote D’Ivoire) to use their large untapped mineral wealth for promoting sustainable development. To inform this initiative, a regional SESA, WAMSSA, was carried out between 2008 and 2010. A “mining-infrastructure cluster” approach was used by WAMSSA to assess “the common, overlapping environmental, social, economic, and sector governance issues.” The methodology used to identify the clusters followed these steps:

1. Construction of a base map (first layer), using information on geological provinces, operating mines, major mineral occurrences, and potential new mining projects.
2. Mapping of geopolitical, infrastructure, environmental, and community features (layer 2).
3. Identification of proposed road, rail, and electrical projects under investigation or implementation by the African Union and other multilateral agencies (layer 3).
4. Cross-examination of layers 1–3 helped identify potential clusters where new projects would create sustainable opportunities in the region.
5. Economic analysis focused on the differential costs of developing regional facilities versus taking a project-by-project-based infrastructure development approach. The scope and depth of this analysis was constrained by insufficient information available on planned projects.

Second, stakeholder analysis identifies the key social actors in the sector who should be engaged in SESA and in the selection of SESA’s priorities. The analysis should include individuals, organizations, and vulnerable segments of society affected by mining activities. The historical, social, political, economic, and cultural factors that influence the web of relationships among stakeholders need to be carefully examined. Stakeholder analysis will deepen the understanding of power relations, networks, and interests associated with the proposed mining reform. For example, stakeholder analysis in WAMSSA integrated a set of criteria—impact, interest, power, and legitimacy—to characterize stakeholders.

Environmental and social key issues, identified in the situational analysis, are then presented to the stakeholders for the selection of SESA’s priorities as a critical outcome of the policy dialogue. As shown in Box 3, in Sierra Leone the SESA team employed a ranking method to define which environmental and social issues were most important. Larger-scope SESAs, such as WAMSSA, involved a combination of methodologies for the selection of environmental and social priorities:

- Focus group meetings for government, industry, and civil society took place in the capital cities of Guinea, Liberia, and Sierra Leone.
- Mining community surveys were performed in 10 communities representing the range of features that characterize communities affected by mining and infrastructure development. Between 22 and 25 respondents, representing a broad range of stakeholders, were selected in each community.

Afterward, WAMSSA’s environmental and social priorities were chosen in national workshops.

Various well-known methods—such as workshops, focus groups, interviews, and polls—exist to engage stakeholders in policy dialogue. The most important aspect to consider is that dialogue is dependent on effective communication skills and a sound understanding of the cultural environment in which it takes place. In selecting methods of public participation, attention should be

**Box 3. Selection of Environmental and Social Priorities: Sierra Leone’s SESA Ranking Methodology**

A ranking methodology for selecting environmental and social priorities in the Sierra Leone mining sector SESA involved horizontal and vertical classification of the issues. Nominal scales and preferred responses were used to establish a cross-comparison of issues. This method aimed at removing some of the potential survey biases and ensured that equal weight was given to vulnerable groups in the ranking procedure. Horizontal ranking used five dimensions for each of the issues that were considered. These included (1) health, ecological and socioeconomic/cultural risk; (2) number of affected persons; (3) political will; (4) remediation cost; and (5) technological difficulties. Initially, stakeholders were asked to rank these dimensions in a low-medium-high scale. “Low” scored 3 points, “medium” 2, and “high” received 1 point. The lowest scores corresponded to the potential priorities. Alternatively, vertical ranking involved the selection of five issues from a list of between 22 and 25 (depending on the region) that stakeholders thought were the most significant. Each time an issue was included in a person’s top-five list, it received one point. Potential priority issues, then, were those that received the highest scores.

A cross-analysis of horizontal and vertical ranking was done in order to identify the SESA priorities. Five cross-regional priorities were established: (1) land and crop compensation and village relocation; (2) sanitation and water pollution; (3) deforestation and soil degradation; (4) child labor; and (5) post-closure reclamation. Nonetheless, there were issues that pertained, specifically, to each region. These regional priorities included (a) mine employment and the provision of infrastructure (especially paved roads and electricity) (southern region); (b) community development and participation (southern and western regions); and (c) mitigation of blasting impacts (eastern region).

paid to power relationships that could suppress the voice of weak and vulnerable segments of society. Consultation with local indigenous groups, for example, may require the use of the local language and local traditional systems for building community consensus. The Las Bambas case, discussed in Box 4, illustrates good practice for culturally sensitive approaches relevant to SESAs.

**Expected Outcome:** The expected outcomes are selected environmental and social priorities associated with mining policy and sector reform. These outcomes are a result of involving stakeholders in selecting SESA’s priorities, giving them an opportunity to influence mining reform, and opening the process to all stakeholders, but particularly to those whose voices are not usually heard in policymaking. This is critical to strengthen constituencies with environmental and social stakes in mining sector reform.

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**Step 2: Institutional, Capacity, and Political Economy Assessment**

**Objective:** To assess the institutional and capacity gaps, and political economy constraints to address environmental and social priorities.

**Process:** This step consists of the analysis of the formal aspects of institutions, comprising the legal and regulatory components, as well as the non-formal institutional features, such as unwritten codes of behavior that derive from tradition, customary law, and cultural-historical patterns. In this step, the assessment focuses on the transmission mechanisms from policies to environmental and social results on the ground. Transmission mechanisms are the manner in which the confluence of institutional, governance, and political economy characteristics of a country conditions the interpretation and implementation of a policy and its associated laws and regulations.

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**Box 4. Transforming Relationships for Intercultural Dialogue and Sustainable Development: Las Bambas Mining Project in Peru**

Mining in the Andean region has a legacy of socio-environmental conflict. The Apurímac Department, where the Las Bambas project operates, is one of the poorest regions in Peru. The region was also one of the five most affected areas during the armed conflict generated by Sendero Luminoso (a Maoist guerrilla organization) between 1980 and 1992. Nine indigenous, Quechua-speaking communities are located within the direct area of influence of the Las Bambas copper-mining project. With the goal of improving its relationship with local communities and other stakeholders, the project developers (Xstrata) developed a regional dialogue around the project.

The construction of dialogue was divided into three phases: (1) awareness raising and diagnosis; (2) strengthening of capacities; and (3) follow-up of dialogue processes and spaces. The first phase consisted of a series of workshops and interviews with the local communities, performed in Spanish and Quechua (the local language) to gather information about the cultural characteristics of the indigenous actors, as well as their perceptions of power relationships with other stakeholders. Similar workshops and interviews, yet adapted to the respective cultural context, were carried out with other stakeholder groups. The analysis showed that local communities employ internal customary mechanisms to install dialogue, mediated by local authorities, fictive kin, or high-status elders. Following these practices for building dialogue and consensus, a culturally sensitive approach to negotiating issues, including the identification of potential environmental and social impacts of the project, was implemented. Similar forums were established to discuss local development programs and a dispute resolution mechanism that allows individuals and communities to set formal complaints against the mining company. The second phase aimed at strengthening the capacity of negotiation, community organization, environmental issues, human rights, leadership, and social development opportunities. The expected outcome includes stronger local constituencies, able to demand, implement, and oversee sustainable development interventions.

**Source:** ProDiálogo 2006, Rees and Vermijs 2008, and Albarracin-Jordan 2009.
regulations. As an example, Box 5 summarizes the key transmission mechanisms identified in the Sierra Leone SESA.

A first step in the analysis of transmission mechanisms is a thorough review of the legal and regulatory framework associated with the management of environmental and social priorities. The next step is to assess why the relevant policies, laws, and regulations have failed to address or have only partially addressed the priorities. Mechanisms considered in the assessment, among others, include (a) institutional and organizational capacity and coordination; (b) the influence of stakeholders on policy implementation; and (c) coordination among stakeholders. Based on the findings from this assessment, the next step is to assess the potential of the proposed mining reform to fill the gaps or remove the constraints that were identified in the previous analysis. Finally, an assessment of the potential reaction of stakeholders to the proposed reform and the difficulties inherent in its implementation completes the analysis.

Box 5. Transmission mechanisms in the SESA of the Mining Sector in Sierra Leone

The failure of existing policies to effectively address environmental and social priorities in Sierra Leone’s mining sector was thought to have arisen from:

- Legislation and regulations lacking specificity for mining activities that left interpretation to be determined on a case-by-case basis
- Poorly defined responsibilities for various ministries and among central, provincial, and local authorities
- Lack of monitoring of company and miners’ performance, and
- Consistently weak implementation of laws and regulations, so that enforcement must rely on voluntary initiatives and pressure from civil society.

The SESA concluded that some of these shortcomings would be addressed by the proposed mining reform. However, it also identified other critical institutional and governance adjustments that were needed, mostly in areas such as land tenure issues and weaknesses in monitoring and enforcement that went beyond mining sector reform. These included:

- Asymmetries in power among stakeholders—for example, chiefs—that were magnified due to lack of transparency and accountability
- Customary relationships that have evolved out of the needs of an agrarian society and are ill-equipped to address temporary and high-risk environmental activities like mining, and
- The existence of powerful individuals—such as middlemen and traders—who could easily take advantage of wide open, nonexistent, or inconsistent negotiation frameworks.

Source: Loayza 2010.
Non-formal institutional analysis addresses issues related to behaviors that stem from traditional values, which can play an important role in how stakeholders organize their economic, social, and political systems. Although no lengthy or in-depth anthropological study is required to assess the non-formal features of institutions, a first step is a review of available ethnographic information on the cultural attributes of the target population or indigenous group. A second step consists of workshops and focus groups that are carried out in a sample of representative communities of these groups that may be affected by the development of mining activities. The purpose of these exercises is collecting information on the local perception of power relationships and the traditional ways of establishing dialogue. This is important, since a culturally sensitive approach to dialogue will reinforce local “ownership” of the reform process. Important political (such as ranking of authorities, their scope of influence, and local dispute resolution mechanisms), social (such as gender roles), economic (such as land tenure systems, natural resource management, and redistribution of benefits), and religious features (such as religious systems and sacred places) of these groups or communities can also be gathered at these focus group meetings and workshops. Using this information, a similar approach of the transmission mechanisms analysis, discussed above, can be applied to assess the influence of non-formal institutions in the management of priority issues and in the potential impact on priorities of the proposed mining reform.

**Expected outcome:** The expected outcome is to validate key institutional (formal and non-formal) and capacity gaps, and political economy constraints to address environmental and social priorities. While identification and assessment of gaps and constraints is mainly made by the SESA team, validation by the stakeholders aims at broadening their understanding of complex policy and institutional issues associated with the mining reform. Accordingly, another expected outcome of this step is to enhance stakeholders’ capacity for policy formulation and increase their awareness of the challenges involved in making the reform environmentally and socially sustainable.

### Step 3: Recommendations and Risk Assessment

**Objective:** To recommend feasible courses of action to address the institutional and capacity gaps, and political economy constraints assessed in the transmission mechanisms analysis (Box 6).
Box 6. WAMSSA’s Recommendations and Impact

WAMSSA included four sets of recommendations to address the institutional and capacity gaps and political economy constraints as follows: (1) adopt a strategic, cluster-focused, permanent multi-stakeholder framework for addressing mineral sector policy and development decisions; (2) strengthen environmental governance; (3) increase local-level benefits in mining areas; and (4) improve social accountability and mineral sector governance.

Recommendations were arranged in an action matrix that integrate courses of action in the short term, medium term, and long term. Monitoring Indicators were included for each term, in order to assess the progress of reform.

Recommendation 1 is considered to be a prerequisite for the recommendations that follow. If implemented, it would have a major impact on mining policy reform in West Africa. Stakeholders perceived that WAMSSA created significant impetus for regional harmonization of mining policy in the Mano River Union, and that this effort should transcend the completion of WAMSSA. They also identified the need for continuous policy dialogue that goes beyond cyclical political changes. Accordingly, stakeholders promoted and endorsed the proposal of a “multi-stakeholder framework” that would include a series of multi-stakeholder bodies formed at the regional, national, and local level to ensure transparent stakeholder participation and social accountability for mining development decisions. In a consultation meeting held in Ouagadougou in December 2010 by the West Africa Mineral Governance Program (WAMGP), the World Bank project that WAMSSA has been informing, it was agreed to adjust WAMSSA’s “multi-stakeholder framework” to WAMGP’s “accountability framework.”

WAMSSA is also influencing other Bank initiatives. Along with the recommendations made by the SESA of the mining sector of Sierra Leone, WAMSSA will be used in the upcoming country assistance strategy (CAS) of Sierra Leone. WAMSSA has been also used as a model for a SESA that will be carried out in the Shire River Basin in Malawi. Finally, stakeholders in Guinea were convinced that WAMSSA’s methodological approach could also be used to create frameworks for policy dialogue in other sectors besides mining.


Process: Recommendations are, generally, framed in an action plan matrix that includes short-term (1-2 years), medium-term (3-5 years), and long-term (more than 5 years) actions, as well as monitoring indicators. In this manner, expected outcomes in each period can be monitored to assess the progress of reform. The SESA concludes with an assessment of the risks associated with the recommended actions. Risk analysis includes the potential deliberate actions that certain interest groups may take in order to bend or halt reform. Thus, possible mechanisms to safeguard the proposed institutional and governance changes should be contemplated in the analysis. The recommendations should be shared with stakeholders by holding a multi-stakeholder workshop. Dialogue, at this stage, builds consensus as to what solutions are achievable, as well as effective and sustainable.

Expected outcomes: The expected outcomes are validated recommendations and an action matrix that includes monitoring indicators to assess the progress of reform in the short, medium, and long terms. Validation of recommendations and the action matrix by the stakeholders further strengthens constituencies, not only because it enhances ownership but also because it encourages participation of stakeholders in follow-up and monitoring. Ultimately, this increases accountability of policy makers.

Rapid SESA

When a mining reform is under consideration, a full-scale SESA, which usually takes six to twelve months to complete, may not be possible or necessary. In such a case, a rapid SESA, which may take only a few weeks’ work of an SEA specialist with good knowledge of the mining sector, can be undertaken as part of the preparation of the mining sector review. Afterwards, during preparation...
of mining reform (the so-called project preparation), a full-fledged SESA is likely to be required.

**Objective of Rapid SESA:** The objective of a rapid SESA is to include environmental and social issues in the reform agenda and engage key stakeholders in the earliest stages of policy dialogue.

**Process:** Analytically, the focus of a rapid SESA is on assessing existing laws, regulations, codes of practice, and institutions for environmental and social management of the mining sector. The stakeholder analysis and consultations are tailored to engage key constituencies in the policy dialogue about the need for sector reform (Box 7).

**Expected outcome:** There are two expected outcomes. First is the broadening of policy dialogue on mining reform by raising awareness of key environmental and social issues affecting the sector, and engaging in a policy dialogue with key stakeholders. Second is the development of a road map of environmental and social actions during preparation of sector reform.

**SESA’s Team and Cost**

Full-fledged SESAs require the participation of a multidisciplinary team. In general, the core team will be composed of (a) a SESA specialist, who will manage the process and coordinate with key stakeholders, including the government; (b) a mining policy specialist; (c) an environmental assessment specialist with experience in social, environmental, and policy issues related to mining; and (d) a public participation expert. If international consultants are hired, local consultants with knowledge of and experience in the country-specific social and cultural context must be involved in organizing and implementing the policy dialogue. The cost of a standard SESA would be in the range of US$150,000 to $250,000, although complex SESAs like WAMSSA would cost in the range of US$400,000 to $500,000. For rapid SESAs, the work of a SESA specialist (with experience in the mining sector) for 4-5 weeks will, in most cases, be sufficient to undertake the required tasks.

**Linkage with the World Bank’s safeguard policies**

SESA is not a tool for environmentally and socially safeguarding mining sector reform. Its purpose is to support policy making by enhancing the potential of mining growth to be a driver of sustainable development. Usually, a World Bank project to support mining sector reform would have to carry out an environmental impact assessment (EIA) and undertake other actions needed for compliance with the World Bank’s safeguard policies. SESA neither fulfills this role nor replaces an EIA and other studies required for safeguards compliance. But, information collected and developed through SESA can be used in these studies.

**Concluding Remarks**

An effective SESA will lead to a more robust mining reform and lower the risk that the reform could be
questioned on environmental and social grounds. This is consistent with the aim of making the mining sector a driver of sustainable development. The beneficial impact of SESA will not last for long, however, unless a sustained effort to strengthen capacities, institutions and governance is at the core of the reform implementation. It is short-sighted to assume that a sound SESA process is completed with the preparation of the SESA report and the incorporation of the SESA’s recommendations in the design of the sector reform. Undoubtedly, this is important. However, the greatest challenge of the SESA, like that of the reform, lies in the implementation phase. Ensuring that both live up to their promises requires sustained commitment to keep the dialogue alive and the reform responsive to the needs and concerns of stakeholders.

**Endnotes**

1. Mining sector reform refers to the process of adoption of market-oriented institutions and policies to establish an enabling environment for investment in mining exploration and production in order to foster growth and sustainable development of reforming countries.

**References**


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