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The effect of transparency and accountability interventions in the extractive sectors

An evidence gap map

October 2019

Evidence Gap Map Report 14

Governance

3ie International Initiative for Impact Evaluation

About 3ie

The International Initiative for Impact Evaluation (3ie) promotes evidence-informed equitable, inclusive and sustainable development. We support the generation and effective use of high-quality evidence to inform decision-making and improve the lives of people living in poverty in low- and middle-income countries. We provide guidance and support to produce, synthesise and quality assure evidence of what works, for whom, how, why and at what cost.

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The evidence gap map reports provide all the supporting documentation for the maps, including the background information for the theme of the map, the methods and results, protocols, and the analysis of results.

About this evidence gap map report

This report provides the supporting documentation for the 3ie evidence gap map on the effect of transparency and accountability interventions in the extractive sector, developed as a part of a project funded by the William and Flora Hewlett Foundation. All of the content of this report is the sole responsibility of the authors and does not represent the opinions of 3ie, its donors or its Board of Commissioners. Any errors and omissions are also the sole responsibility of the authors. Please direct any comments or queries to the corresponding author, Francis Rathinam, at frathinam@3ieimpact.org.

Suggested citation: Rathinam, F, Finetti, J, Snilstveit, B, Siddiqui, Z, Chirgwin, H, Appell, R, Dickens, E and Gaarder, M, 2019. *The effect of transparency and accountability interventions in the extractive sectors: an evidence gap map*, 3ie Evidence Gap Map Report 14. New Delhi: International Initiative for Impact Evaluation (3ie). Available at: https://doi.org/10.23846/EGM014

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Summary

The extractive sector in many low- and middle-income countries accounts for as much as 90 per cent of total exports and budget outlays. Due to exclusive access to information, public and private actors of extractive industries are not held accountable to their citizens, who are thus less likely to benefit from natural resources. Although considerable efforts are being put into supporting improved governance of natural resources in the extractive sectors, the overall evidence on the effectiveness of transparency and accountability interventions (TAIs) is sparse.

This evidence gap map aims to fill the need to identify critical knowledge gaps in this sector. The map systematically identifies, appraises and describes existing evidence from impact evaluations and systematic reviews of TAIs in the extractive sector. In doing so, the map provides an overview of the evidence that exists and highlights evidence gaps.

We followed standard methods to create the evidence gap map and documented these methods in a study protocol. To develop the intervention outcome framework, we consulted relevant literature and our advisory group of academic and policy experts. We include studies from low-and middle-income countries that:

- focus on interventions that aimed to improve transparency and accountability in the extractive sectors to deliver better citizen and/or community engagement, performance of public and private actors in the industry, welfare outcomes or environmental outcomes; and
- use either experimental or quasi-experimental designs, or are systematic reviews of such studies.

We developed a systematic search strategy, in consultation with an information specialist, and searched academic databases, grey literature and specialist databases, with no language restrictions. Two reviewers then independently screened all records against our inclusion criteria, first at title and abstract level, and then at full-text level. We followed 3ie's standard impact evaluation and systematic review coding protocols to extract data from the included studies. We systematically collected data on interventions and outcomes studied in impact evaluations and systematic reviews, and on types of studies, geographic location, population, sex disaggregation, and gender and equity dimensions.

We found 20 studies that met the inclusion criteria for our map – 18 impact evaluations and two systematic reviews. The evidence base is relatively new, as all studies in the map were published after 2013. Eight impact evaluations used experimental designs and 10 used quasi-experimental designs. We critically appraised the two systematic reviews, rating both as low confidence due to major limitations in their methods.

Key findings

The majority of studies assessed the effects of the Extractive Industries Transparency Initiative (EITI) on a variety of outcomes relating to government and private sector performance. Citizen monitoring and feedback mechanisms and information provision on public and private actors' performance are the two other interventions most studied in

this sector. Most of the studies focused on measuring intermediate outcomes, such as citizen and community engagement and the public and private actors' response to this engagement. Very few studies measured long-term socioeconomic development outcomes, conflict and violence, or environmental outcomes.

There are absolute gaps on interventions introducing third-party financial and environmental audits, as well as studies evaluating international transparency-focused initiatives other than the EITI.

There are a few clusters of evidence for some intervention and outcome combinations of citizen and community engagement, where new synthesis work will be valuable. Further, more rigorous systematic reviews on EITI will be useful to summarise findings from the nine impact evaluations done on this intervention and to distil learning for other similar global interventions.

There are considerable gaps in reporting subgroup analysis by gender or other factors of inequality, and in reporting ethical approval for the evaluations. Another gap exists in cost measurement and cost-effectiveness analysis.

The countries included in the map have relatively large extractives industries, but are not necessarily amongst the most resource-dependent countries. The most resource-dependent country in the map is Mozambique, but there are 22 countries in the world that are more resource-dependent and have no rigorous evidence on what works in promoting TAI in the extractives sector.

Lessons for future TAI programmes and evaluations

Lack of rigorous study design was the most frequent exclusion criteria. There is a need to fund more rigorous studies that take a counterfactual approach to examining the effectiveness of TAIs in this field.

Given that synthesis evidence is limited, using systematic reviews of evidence on transparency and accountability mechanisms implemented in other sectors could be useful to identify promising interventions.

There is a need for evaluations using mixed methods and for considering process and implementation to inform future programme design. Further, future studies should provide more information on subgroups and equity using gender- and equity-sensitive methodologies.

The extensive use of the available data in the nine EITI impact evaluations highlights that there are opportunities to expand the evidence base at low costs, by conducting more quasi-experimental studies on other international initiatives such as the Kimberley Process Certification Scheme and the Publish What You Pay campaign, or even the impact of the EITI in specific countries.

Lack of rigorous evaluation of TAI in the extractives sector may be partly due to methodological challenges, but future studies should also explore the political impediments to effective TAIs, especially in the large, donor-funded, multi-stakeholder initiatives.

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Abbreviations and acronyms

EGM	Evidence gap map
EITI	Extractive Industries Transparency Initiative
GNI	Gross national income
L&MICs	Low- and middle-income countries
TAI	Transparency and accountability initiative

1. Introduction

1.1 Transparency and accountability issues in the extractive industries

About 3.5 billion people live in countries rich in oil, gas or minerals (EITI 2018). Extractive sectors in several of these low- and middle-income countries (L&MICs) account for as much as 90 per cent of total exports and budget outlays (IMF 2012). Companies and government agencies in the extractive industries almost always have exclusive access to information on revenue sharing arrangements, project activities and negative effects, which are either kept secret or inaccessible. As a result, public and private actors in these industries are not held accountable to citizens, who are less likely to benefit from natural resources or to receive adequate compensation.

Researchers, activists and policymakers have been promoting transparency as a solution to the accountability deficit and corruption associated with natural resource abundance (Rathinam et al. 2019). To respond to the growing need for transparency and accountability, several multi-stakeholder initiatives have been created to bolster public information disclosure. These initiatives mandate that member countries and companies share relevant information, aim to create platforms for debate and empower civil society organisations to use the information and engage with the government for better environmental and development outcomes.

International initiatives such as Extractive Industries Transparency Initiative (EITI)[1] require member countries to disclose information along the extractive industry value chain. There are also a number of nonprofit organisations funded to implement programmes aimed at increasing participation and/or disseminating information to citizens about extractive industry projects. This includes information on the processes through which, for example, a contract or license is awarded, revenue is collected and expenditures are allocated, as well as compliance with environmental standards.

1.2 Evidence gap map objectives

Despite considerable efforts to support improved governance of natural resources in the extractive sectors, the overall evidence on the impact and effectiveness of transparency and accountability initiatives (TAIs) is sparse. In an annotated bibliography of all the sources published up to 2017 on transparency, accountability and participation along the natural resource value chain, only four out of 150 sources were randomised experiments or evaluations (Eisen et al. 2018). The majority of other sources listed were case studies or observational data sets.

In 2015, 3ie launched a thematic window on transparency and accountability in natural resources to support seven new impact evaluations and a synthesis (Rathinam et al. 2019). Acknowledging the need to identify critical knowledge gaps in this sector, the programme was expanded to produce this evidence gap map (EGM), which identifies

[1] The EITI is a global standard that countries can opt into that establishes a global standard for the accountable management of oil, gas and mineral resources. Within each participating country is a supporting ecology of governmental officials, private sector companies and civil society organisations. The EITI promotes multi-stakeholder engagement at every level to publish information about the country's extractive sector and inform public discourse (EITI 2018).

these gaps by visually mapping the existing literature. The primary objectives of this EGM are as follows:

- To identify, appraise and summarise existing evidence from impact evaluations and systematic reviews of the effect of TAIs in the extractive sectors on development and environmental outcomes; and
- To identify existing evidence gaps where new primary studies and systematic reviews are needed to better inform transparency and accountability interventions directed at governance of the extractive sectors.

1.3 Overall methodological approach

EGMs are tools to help policymakers and researchers working in a sector or thematic area make evidence-informed decisions. They make existing evidence more accessible and ease the prioritisation of future research by mapping existing studies in a field on a framework of interventions and outcomes.

EGMs are built using systematic methods to identify and describe all completed and ongoing impact evaluations and systematic reviews relevant to research objectives. Studies identified are mapped onto a framework of interventions and outcomes, providing a visual display of the volume of evidence for combinations of interventions and outcomes, the type of evidence (completed or ongoing impact evaluations and systematic reviews), an indication of research gaps and, for systematic reviews, a confidence rating reflecting the study quality.

The final maps, available through an interactive platform on the 3ie website, allow users to explore the available evidence through different filtering options. A full overview of the overall methodological approach for EGMs can be found in Snilstveit and colleagues (2016).

1.4 Report structure

The second section of this report covers the scope of this EGM and includes descriptions of the conceptual framework, interventions, outcomes, study designs and population inclusion criteria. In the third section, we provide a brief description of our methods, including limitations of this EGM. The findings of the map are presented in Section 4, and we draw conclusions and recommendations from these findings in Section 5.

2. Scope

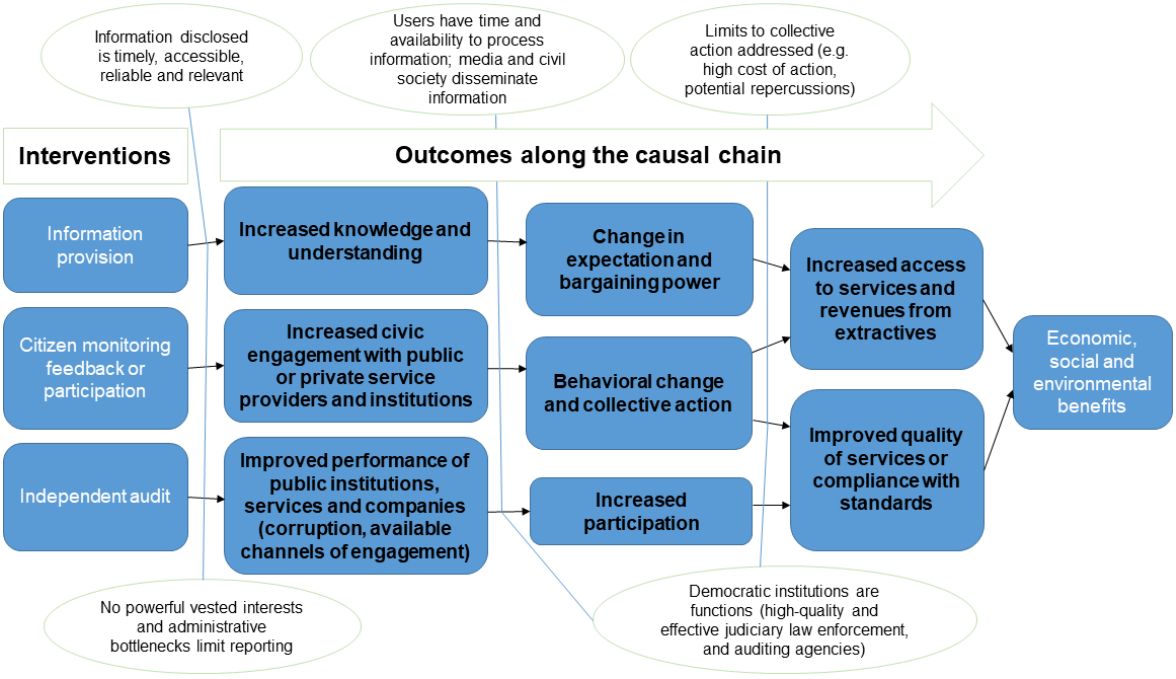
2.1 Conceptual framework

The conceptual framework for this EGM relies on our theory of change of transparency and accountability interventions in the extractives sector (Figure 1). The theory of change shows how different types of interventions lead to different pathways of change, which ultimately affect welfare outcomes (economic, social and environmental benefits).

This reasoning pushes us to look at a variety of intermediary outcomes along the causal chain. The framework of the map therefore includes all the possible interventions and outcomes that might play an intermediary role in the process, even though some outcomes are not expected to change with certain interventions.

For our intervention classification, we drew on the intervention mapping developed in a previous 3ie systematic review on interventions aiming at improving participation, inclusion, transparency and accountability more broadly across other sectors (Waddington et al. 2018). The classification was also informed by an exploration of the current landscape of programmes and policies implemented in this field.

Figure 1: Theory of change for transparency and accountability interventions



Note: The bubbles represent the conditions necessary for the change to happen.

For this theory of change, we understand transparency and accountability mechanisms as follows:

- *Transparency* refers to information delivered to the public that is timely, accessible, reliable and relevant, and enables the understanding of the rules, plans, processes and actions (Epremian et al. 2016).
- *Accountability mechanisms* hold individuals, an institution or a company responsible for executing their powers and mandates according to a certain standard (Waddington et al. 2018). Such mechanisms have a sanctionable nature, which means the institution or company would face consequences if they did not comply with the rules or fulfil their commitments. Sanctions could be a fine or increase in the production cost, barriers to operation, civil disobedience or decreased political support.
- *Participation* is very much interrelated with these two mechanisms. It refers to the opportunities and processes that enable citizens to engage and advocate with other actors and provide their input to policy, strategy design and planning. It is rarely the only element at play, and often either drives transparency or accountability or can be the direct outcome sought in improving transparency and accountability.

Transparency and accountability can mutually support each other, and participation can be either a driver or an outcome resulting from these two mechanisms. Indeed, allowing citizens to participate in meeting or decision-making processes may lead them to be more engaged, which may ultimately put pressure on a service provider, an institution or a company. Increased participation could, in this case, lead to greater accountability.

In contexts where participation channels exist but citizens do not use them, providing them with information about their rights, or about the performance of different stakeholders, could increase participation. Transparency could, in this case, lead to greater participation.

Based on this theory of change, an intervention providing information to citizens about their rights to compensation (e.g. if they are displaced) could lead to increased knowledge and understanding of the situation. Their expectations of the benefits to which they are entitled from this new situation may change, and they could have more bargaining power when claiming their compensation. This would lead to increased compensation from the government or company displacing them, improving their economic situation. This theory relies on the assumption that the way information is disclosed is timely, accessible, reliable and relevant. Other conditions are that users of the information are able to process the information and that there are no barriers to collective action (Rathinam et al. 2019).

Furthermore, as citizens are more informed, they are more likely to engage in activities at the community level and advocate for their rights collectively. Rather than a one-time negotiation on a specific issue, this could lead them to put pressure on private or public actors, because they exist as an engaged civil society group, and ultimately improve the stakeholder's compliance with social or environmental standards. The assumption behind this pathway is that collective action is not forbidden or repressed in a given context (in which case, the costs of protesting or advocating might be too high for the community to engage in such activities).

Independent audits of pollution in the extractive industry point to a different causal pathway. An independent oversight or audit authority may make it difficult for conflicts of interest to arise and force companies to comply with environmental standards. The assumptions behind this theory are that the audit is truly independent, the implementer does not have any vested interests in this process and effective institutions exist that have the capacity to enforce sanctions.

2.2 Interventions included in the map

The interventions of interest in this map aim to improve transparency and accountability in the extractive sectors, specifically mining (industrial or artisanal), gas and oil. Based on our conceptual framework, we include four groups of interventions, corresponding to eight types of interventions. We aimed to include all interventions that fall under the definition of these interventions or combine different interventions as a package of a multi-component programme.

2.2.1 Group 1 – international initiatives

This group comprises international initiatives promoting the application of transparency and accountability standards across different countries in the extractive industries and mobilising a range of stakeholders through a single or a package of interventions:

- EITI: this international initiative requires its member countries to meet the global standard for a more open and accountable management of extractive resources. The initiative requires the disclosure of information along the extractive industry value chain from the point of extraction to how revenues make their way through the government and how the revenues affects communities. It also requires independent audits and civil society participation in monitoring state and private actors' performance.
- Other international initiatives promoting the application of transparency and reporting standards for the extractive industries across different countries and mobilising a range of different stakeholders. This includes the Kimberley Process Certification Scheme and Publish What You Pay campaign.

2.2.2 Group 2 – information provision to citizens

This group comprises those that provide information or promote media involvement in disseminating information to citizens about their rights and responsibilities, or about the performance of government and private actors in the extractive industries:

- Information about citizens' rights and responsibilities: Provision of information or promotion of media involvement in sharing information with citizens about their rights and responsibilities, including their rights to participate in decision-making processes, their entitlements to benefits from the public budget coming from extractive resources, their rights to compensation, their access to services, their rights as users and service providers' responsibilities. Dissemination methods include leafleting, information packages, face-to-face information campaigns, online and SMS broadcasts, and theatre.
- Information provision about the performance of industry public or private stakeholders includes extractive revenues of the government, allocated funds or budget plans for public institutions and subnational governments and their usage; companies' environmental liability and compliance; bidding and revenue sharing arrangements (e.g. contracts and licenses, taxes, royalties, and production and equity sharing) between the companies and the government; and transparency of corporations' actual payments to the government. Dissemination methods include leafleting, information packages, face-to-face information campaigns, online and SMS broadcasts, and theatre.

2.2.3 Group 3 – citizen monitoring and participation

This group comprises those providing channels of engagement for the community and citizens, understood as opportunities to monitor public and private actors' performance in the extractive industries, to discuss and give community feedback or to participate in decision-making related to revenue and environmental hazards related to the industry:

- Citizen monitoring and feedback mechanisms: provision of platforms for meetings between citizens and relevant stakeholders (e.g. government, company) to discuss citizens' rights and feedback concerns or priorities, or to develop citizen action plans and/or setting up grievance redress mechanisms with stakeholders. Interventions include face-to-face meetings and online forums, community

scorecards and social audits. Although these interventions can include citizen participation in meetings, they do not necessarily give citizens an opportunity to take part in the decision; rather, they provide a channel for engagement or advocacy through which citizens can hold stakeholders to account.

- Citizen participation in decision-making: Facilitation of public participation in public institutions' decision-making processes, priority setting or budget allocation decisions, including participatory budgeting. These interventions give citizens the opportunity to make their opinions count by being part of the decision process. Interventions include face-to-face meetings with citizen participation, deliberative polling and citizens' committees.

2.2.4 Group 4 – audits

Introduction of independent, third-party audits of financial transactions between the private sector and the government in the extractive sectors, the public sector's levels of spending and cost-efficiency in these sectors, or public and/or private sector compliance with environmental standards:

- Financial audit: Introduction of independent third-party audits of financial transactions between the private sector and the government in the extractive sectors, and the public sector's levels of spending and cost-efficiency in the extractive sectors.
- Environmental audit: Introduction of independent third-party audits of public and/or private sector compliance with environmental standards.

2.2.5 Other programmes

We excluded programmes did not have a focus on improving transparency and accountability and those that focused on other sectors, such as:

- Rule-of-law interventions, such as policing, security and justice, which is a large thematic area in its own right;
- Interventions introducing democratic political processes, such as the introduction of political elections. These are covered in another 3ie evidence gap map focused on state-society relations more broadly (Phillips et al. 2017);
- Social welfare provision, such as cash transfers and grants, user fees in public sector goods provision, public-private partnerships and training for public sector workers, which is another large thematic area in its own right;
- Community resource management interventions, such as community forest management;
- Peacebuilding, post-conflict rebuilding and psychosocial interventions;
- Multi-component interventions for which only a small element corresponded to one intervention category;
- Internal tools, processes and information systems that companies use to monitor their own activities; and
- Broad anti-corruption programmes, transparency initiatives or corporate social responsibility policies that do not focus on the extractive sectors, even though they may include actors of this field in their analysis.

2.3 Outcomes included in the map

We include five groups, corresponding to 16 outcomes, in our map.

2.3.1 Group 1 – citizen and community engagement

This group comprises outcomes related to how citizen and communities engage in the extractive sectors:

- Knowledge and understanding: citizens' understanding and knowledge of extractives revenue, budget sharing, and public service availability and rights.
- Attitudes and beliefs: beliefs, attitudes and perceptions of natural resource extraction, transparency and use of revenues from extraction, and public services and safety;
- Participation and inclusion: inclusion or participation in decision-making body, civil society organisation or community monitoring or feedback mechanism, including attending meetings, participating in meetings and membership in organisations; and
- Collective bargaining power: enhanced bargaining power and capabilities at collective levels.

2.3.2 Group 2 – performance of public and private actors

This group comprises outcomes related to public and private actors' performance in terms of transparency and accountability in the extractive sectors:

- Channels for negotiation and engagement: increased channels for engagement, negotiation and adjudication (e.g. existence of a functioning grievance mechanism, implementation of a requirement for community informed consent before a firm may operate) between the state and/or private sector and citizens;
- Transparency in reporting: reports to the government published in local languages disclosing information about all aspect of the industry activities, such as contracts and licenses, exploration plan, investment, payments to the government and environmental reports;
- Corruption: measures of corruption, including incidences of financial or administrative misreporting, investigations, prosecutions, convictions and self-reported incidences of being asked for a bribe;
- Resource allocation: measures of public finance or goods allocation or their alignment with citizens' needs or preferences;
- Public confidence or trust in institutions and politicians: perception by the public of the quality of services, the performance of public servants (including elected representatives) and levels of corruption and transparency; and
- Quality and/or effectiveness of government and institutions: objective measures of quality and effectiveness of government and services delivered by public institutions.

2.3.3 Group 3 – environment

This group comprises outcomes related to the environmental impact of the extractive industries:

- Environmental compliance: compliance with environmental requirements, including those related to environmental clearance, environmental impact assessment and other relevant, published compliance documents; and
- Environmental damage and pollution: damage caused by extractive activities to the environment, including quantity and gravity of an accident affecting the environment (e.g. an oil spill, explosion, a mine collapse) or through a measure of water or air pollution.

2.3.4 Group 4 – conflict resolution and reduction of violence

This group comprises outcomes related to conflict resolution and reduction of violence generated in the extractive industries:

- Forced displacement: eviction or displacement, or risk of eviction or displacement, of a community or population in a village for extractive purposes, imposed by force and without their consent; and
- Conflict: instances of conflict, understood here as armed conflict or non-violent confrontation and protest by the community.

2.3.5 Group 5 – individual and household well-being

This group comprises outcomes related to the economic, social and psychological well-being of the population affected by extractive industries, individuals or households:

- Economic outcomes: income, consumption, expenditure, employment, poverty and ownership, and access and rights to land; and
- Psychosocial outcomes: measures of happiness, empowerment, quality of life, gender and social relations and status, and physical and psychological well-being.

We exclude economic outcomes measured only at the national level (e.g. gross domestic product) and business interest type of outcomes such as financial investments, because we believe these are not representative of the social impact of the programmes evaluated.

2.4 Types of studies included in the map

The main goal of 3ie EGMs is to identify evidence on the effects of interventions, which is why the maps comprise impact evaluations and systematic reviews.

We include the following study design for impact evaluations:

- Experimental design studies using randomised assignment (randomised controlled trials);
- Natural experiments (instrumental variables, regression discontinuity design);
- Controlled before-and-after studies using appropriate methods to control for selection bias and confounding, such as:
    - propensity score matching or other matching methods;
    - instrumental variable estimation or other methods using an instrumental variable such as the Heckman two-step approach;
    - difference-in-differences;
    - or a fixed- or random-effects model with an interaction term between time and intervention for baseline and follow-up observations;
- Other quasi-experimental studies, including synthetic control studies;
- Lab-in-the-field type experiments using experimental designs; and
- Cross-sectional or panel studies with intervention and comparison groups, using methods to control for selection bias and confounding, as described above.

For reviews, we include studies explicitly described as systematic reviews and reviews that describe search, data collection and synthesis methods according to the 3ie database of systematic review protocols (Snilstveit et al. 2012).

2.5 Populations

The studied population is restricted to L&MICs, as defined by the World Bank (2018) at the time when the intervention was implemented, not at the date of publication. These include countries categorised as low-income economies, lower middle-income economies and upper-middle economies. For 2019, this includes all countries with a gross national income (GNI) per capita of US$12,055 or less in 2017.

3. Methods

3.1 Summary of methods

We developed a search strategy in consultation with an information specialist and ran the searches in late November 2018. We searched general bibliographic databases and hand searched specialist databases and impact evaluations repositories. We limited our searches to studies published between 2000 and 2018, as we expected evidence in this field to be relatively recent. This was confirmed by the dates of publication of our included studies, which were all published after 2013.

We tested different methods for the screening process to compare their efficiency and inform methods for future research. All records were screened independently by two reviewers at title and abstract level; those included were also double screened at full-text level.

We conducted data extraction according to 3ie protocols for coding impact evaluations and systematic reviews. Systematic reviews included in our map were critically appraised according to 3ie's quality assessment tool, adapted from the Specialist Unit for Review Evidence checklist (see the link in Appendix A and a report of the full quality assessment rating in Appendix D).

Appendix A provides a detailed description of our methods, search process, screening, and data extraction.

3.2 Limitations

Unlike systematic reviews, EGMs do not synthesise the results of studies. EGMs are intended to provide policymakers and researchers with a description of the characteristics of the evidence base and an analysis of the existing gaps in research.

The scope of this EGM was limited in terms of study type, which was the main reason for exclusion at full-text screening. We did not include qualitative evaluations. We acknowledge that qualitative evidence can allow policymakers to answer a different set of questions; however, qualitative evaluations are outside the scope of this EGM because they have no causal claims.

There is always the possibility of error in the screening process. At title and abstract level, relevant impact evaluations might have been excluded because they did not clearly specify their methods or the sector of focus.

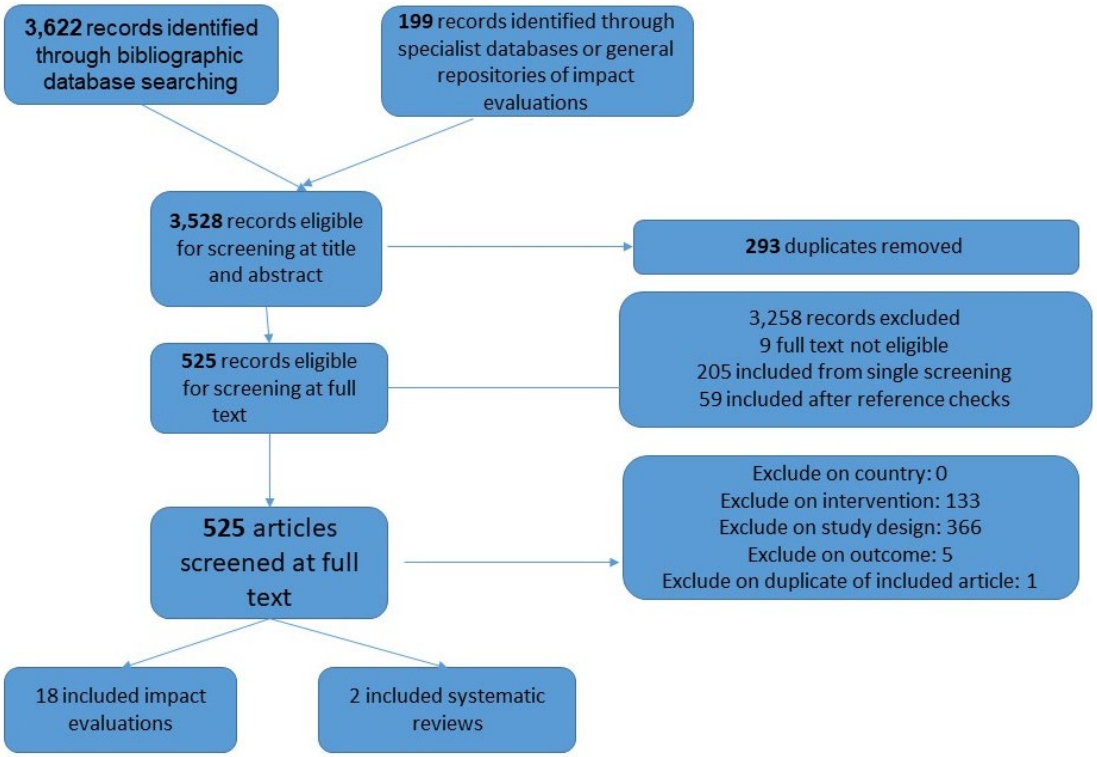
4. Findings

4.1 Volume of the evidence base

We found very limited evidence in this sector, with only 20 studies meeting our inclusion criteria. All studies were published recently, between January 2013 and January 2019. Appendix E provides a list of all included studies.

Our searches resulted in 3,821 records, with 3,622 from bibliographic databases searches and 199 from hand searching specialist databases or general impact evaluation repositories. Figure 2 shows the records count at different stages of the search and screening process.

Figure 2: Search and screening flow diagram



Note: as we explain in the detailed methodology (Appendix A), we tested two screening methods (double screening and single screening with safety first) on the same sample of studies at title and abstract level. Another 205 studies were included from single screening, which we then merged with the list of studies included from double screening.

We screened 3,528 records according to the double and single screening methods. (Appendix A describes the single screening with safety first method in more detail.) Combining the pool of included studies from both samples resulted in 466 records eligible for screening at full-text level. We screened an additional 59 studies after checking the references of included studies.

At the title and abstract screening stage, we excluded 2,370 studies on the basis of the scope of the intervention, 634 on study design and 111 studies because they focused on high-income countries. In full-text screening, the majority of exclusions were based on study design (366), followed by the scope of the intervention (133). No studies were

excluded on countries during full-text screening; this was unsurprising, as the title and abstract screening allowed us to identify them early on.

This last stage of screening left 18 impact evaluations and two systematic reviews for inclusion in our map.

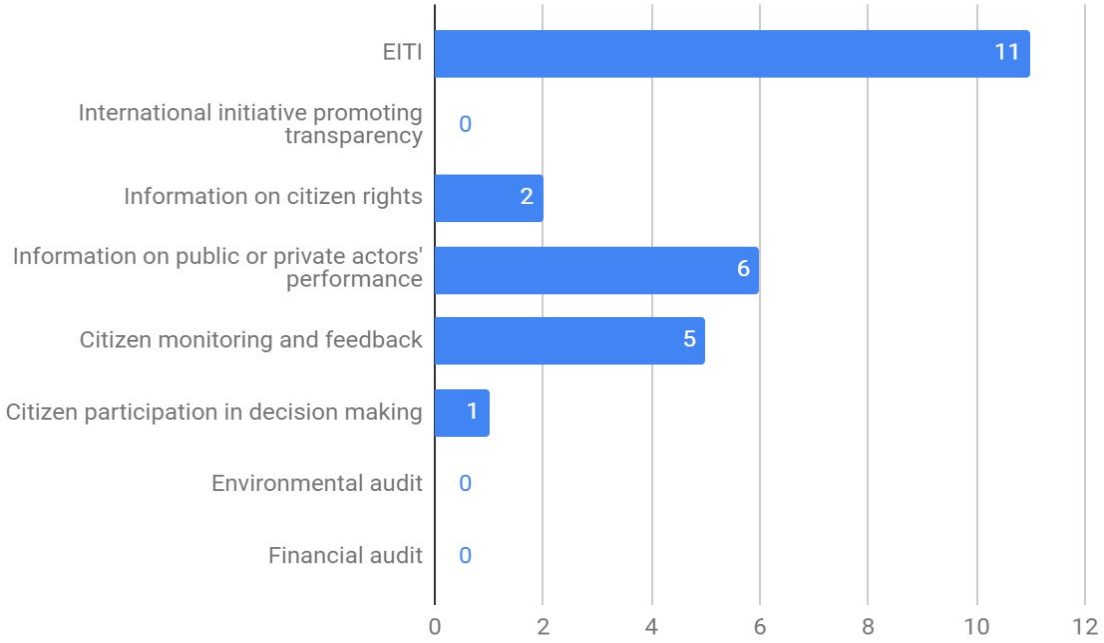
4.2 Characteristics of the evidence base

4.2.1 Interventions

International initiatives

Half of the impact evaluations (nine) and two systematic reviews in our map look at the impact of the EITI,[2] aking it the most studied intervention type. Figure 3 displays the number of studies by intervention type.

Figure 3: Number of studies by intervention types



Note: The number of studies in the figure is greater than 20 (the total number of studies in the map) because some have multiple components and fall under multiple interventions, outcomes and methodologies.

Five of these nine impact evaluations assess any kind of EITI membership status and its impact on our outcomes of interest, whereas four studies make a distinction and conduct a separate analysis between EITI candidature and EITI compliance. EITI candidature is the stage at which a country has made a public statement about its intention to join the scheme and is working on a plan to set up concrete objectives. EITI compliance or membership is the stage at which the country is implementing the EITI requirements and has set up a multi-stakeholder group, and the EITI board has accepted the country as a member.

[2] The EITI is a global standard that countries can opt into that establishes a global standard for the accountable management of oil, gas and mineral resources. Within each participating country is a supporting ecology of governmental officials, private sector companies and civil society organisations. The EITI promotes multi-stakeholder engagement at every level to publish information about the country's extractive sector and inform public discourse (EITI 2018).

We found no studies evaluating other international initiatives promoting transparency only, such as the Kimberley Process Certification Scheme or the Publish What You Pay campaign.

Information provision

We identified seven studies that evaluate an information provision intervention or include an information provision component. Two interventions assessed in these studies provided information or training on citizens' rights and responsibilities (Sexton 2017; Edjekumhene et al. 2019). Six included information about government or private actors' performance, making this the second most studied intervention, after the EITI. Of these, only one study combined the two types of information (Edjekumhene et al. 2019).

Citizen monitoring and participation

Often combined with information provision, citizen monitoring and participation interventions are evaluated in six studies, among which four had either an information provision component incorporated in the main intervention or a separate intervention arm comparing participation and/or monitoring with information provision alone.

Citizen monitoring and feedback mechanisms is the third most studied intervention, with five studies looking at this type of programme. One study assesses an intervention allowing citizens' participation in decision-making (Armand et al. 2018).

Audits

We found no studies assessing the impact of financial or environmental audits in the extractive sectors. It is worth noting that we screened out an impact evaluation of environmental audits conducted in India (Duflo et al. 2013), because it does not distinguish firms based on the industry sectors. We would not have been able to detect findings specifically relevant to the extractive sectors.

Multi-component interventions

Four studies either evaluated several interventions separately, using different intervention arms in their study design, or combined different intervention types as a multi-component intervention. Given the sparse evidence in this field, we decided this was not a sufficient number of studies to create separate categories for each combination of multiple interventions. We therefore classify these studies as belonging to multiple categories, and they appear on multiple rows on the map.

Edjekumhene and colleagues (2019), for example, included three treatment arms, including one in which public meetings were organised in the community to provide information about the institution in charge of oil revenue management, its activities and mandate, and citizens' rights with respect to natural resource governance. We coded this intervention arm in both information provision intervention types, because neither is more important than the other. Because the other treatment arms include a citizen engagement and deliberation component, this study appears on three rows: information provision about citizens' rights, information provision about government performance, and citizen monitoring and feedback.

Format

We extracted information on the format used to provide information to citizens or to implement a system that allows citizens to monitor and provide feedback to public and

private actors in the extractive sectors. In six studies that looked at this kind of intervention, implementation was done through public forums or workshops. Two studies used mobile technologies to disseminate information or allow citizens to monitor and send feedback (Edjekumhene et al. 2019; Pellegrini et al. 2019). Four studies used in-person campaigns that required going door-to-door; two of these included the distribution of leaflets (Armand et al. 2018; Paler 2013).

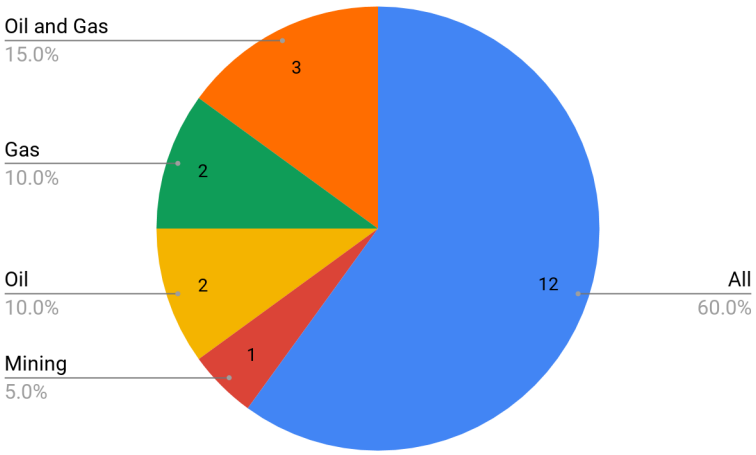
Two of the experimental studies were close to lab-in-the-field experiments of information campaigns, in which the information provision and survey to measure outcomes happened at the same time (Paler 2013; de la Cuesta et al. 2017). People received a piece of information orally and/or through a leaflet, and their attitudes and beliefs were measured immediately after.

Sector and value chain

As Figure 4 illustrates, all the EITI studies were coded as dealing with all extractive sectors (mining, oil and gas). For the remaining nine studies, one evaluation dealt with all of these sectors (Sexton 2017), two focused on the oil sector (Pellegrini et al. 2019; de la Cuesta et al. 2017), three focused on both oil and gas (Edjekumhene et al. 2019; Coleman et al. 2019; Paler 2013), two focused on the gas sector (Birdsall et al. 2018; Armand et al. 2019) and one focused on the mining sector (Pande and Sudarshan 2019).

We found no studies that focused on artisanal mining. This was not an exclusion criterion.

Figure 4: Number of studies by extractive sub-sector



The point of the value chain at which the programme intervenes is also relevant in our map, as there can be gaps in the topic or issue on which transparency and accountability need to be improved. We used the definitions from the Natural Resources Governance Institute benchmarking framework (Manley and Pitman 2017) to classify our studies at different points of the value chain (Figure 5):

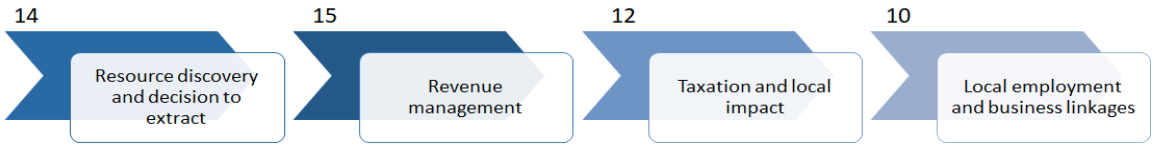
- *Resource discovery and decision to extract* refers to the point at which natural resources are being explored and government institutions decide to allocate contracts and licenses to allow extraction;
- *Revenue management* refers broadly to the use of rent from natural resources, including its distribution, its volatility and the effectiveness of spending;

- *Taxation and local impact* refers to how private rent from natural resources is taxed and the impact of tax revenue on local communities; and
- *Local employment and business linkages* refers to the government's investment in sustainable development and private sector development resulting from the extractive industry activities, and might be illustrated by indicators such as local employment.

We coded all the studies on the EITI as dealing with all steps in the extractive sectors value chain, as that is the aim of the EITI, despite possible imbalances in implementation.

Outside of the EITI studies, there is an emphasis on early stages of the value chain, with five studies touching on the resource discovery and decision to extract and six dealing with revenue management and spending. Three studies touch on taxation and local impact (Pande and Sudarshan 2018; Pellegrini et al. 2019; Coleman et al. 2019). Only one study looks at local employment and business linkages (Pande and Sudarshan 2018).

Figure 5: Number of studies along the extractive industries value chain



Note: The number of studies in this figure is greater than 20 (the total number of studies in the map) because some focus on multiple points along the value chain.

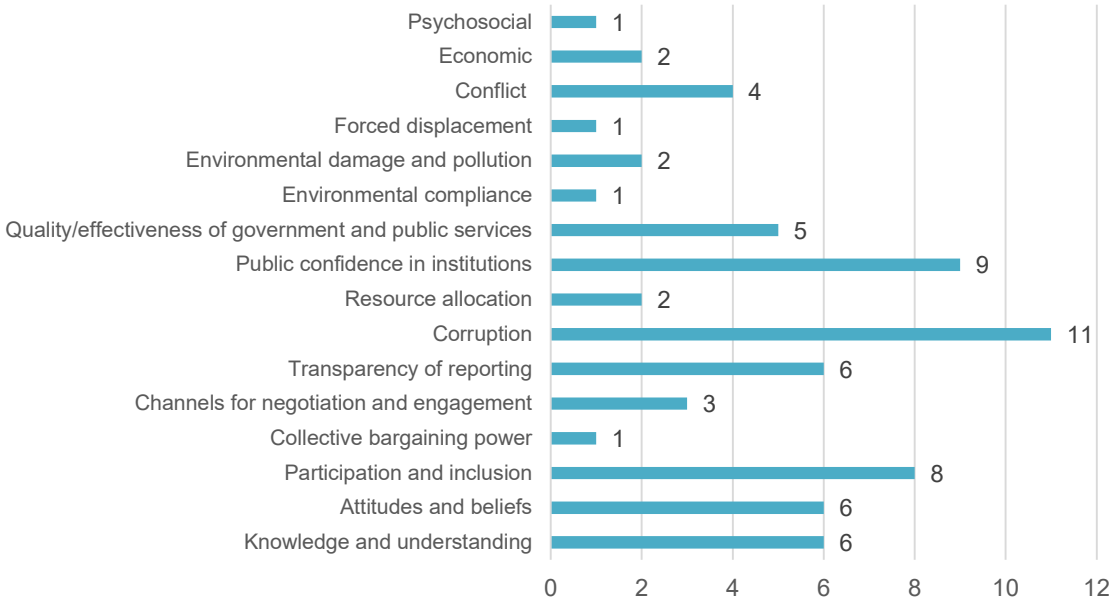
Table 1: Interventions included

Intervention type	Mechanism(s)
Information provision – entitlements and responsibilities of citizens	Transparency for improved participation
Information provision – government/private sector performance	Transparency for improved accountability
Information provision – media	Transparency for improved participation
Citizen feedback and monitoring	Participation for improved accountability
Citizen participation in planning	Accountability
Environmental audits	Accountability
Financial audits	Accountability

4.2.2 Outcomes

Figure 6 shows the number of studies measuring outcomes in each category.

Figure 6: Number of studies measuring each outcome type



Note: The number of studies in this figure is greater than 20 (the total number of studies in the map) because some have multiple components and fall under multiple interventions, outcomes and methodologies.

Citizen and community engagement outcomes

Eleven studies assess the impact of the transparency or accountability interventions on citizen and community engagement outcomes. The most studied outcome in this category is participation and inclusion, with eight impact evaluations, followed by knowledge and understanding and attitudes and beliefs, each assessed in six studies.

One study assesses collective bargaining power as social cohesion (Armand et al. 2018), using a lab-in-the-field experiment that measured how much people cared about contributing to the community's goals.

Performance of public and private actors

Corruption is by far the most studied outcome, in this category and across all categories, with 11 studies. Nearly half of these focus solely on this measure of impact. Corruption is measured using national indicators in EITI studies, such as Transparency International's Corruption Perception Index or the World Bank's Control of Corruption indicators. In experimental studies, corruption is measured through surveys with local leaders or the community.

Nine studies assess perceived performance, named in the map as public confidence in institutions and politicians and referring to subjective measure of government or public services quality. Objective measures of government and public service effectiveness and quality are assessed less frequently, in five studies.

Three studies measure the impact of channels of engagement, all looking at the same outcome – a World Bank indicator for the existence of democratic processes (Brockmyer and Fox 2015; Corrigan 2014; Claussen 2016).

Six studies include transparency of reporting as one of their outcomes of interest.

Environment
Only two studies assess the impact of TAIs on environmental outcomes, looking specifically at different measures of air and water pollution, deforestation, environmental liabilities and companies' compliance with environmental requirements (Pande and Sudarshan 2018; Pellegrini et al. 2019).

Conflict and violence
Although four studies look at conflict as an outcome, it is worth noting that these refer to different kind of outcomes. Two impact evaluations and one systematic review look at conflict at the national level, measured through assessing the stability of the government using World Bank indicators (Corrigan 2013; Claussen 2016; Brockmyer and Fox 2015). A third study looks at beliefs in the communities and includes a measure of citizens' willingness to protest against their political representative (Sexton 2017).

One study looks at forced displacement, measured by the number of claims made over the land of the household by other people (Coleman et al. 2019).

Individual and household well-being
Only one impact evaluation looks at individual and household well-being, reporting both economic and psychosocial outcomes (Coleman et al. 2019). This study looks at a wide range of outcomes related to land, access to education and health, access to electricity and roads, and oil sector employment.

One systematic review aims to synthesise the EITI's impact on economic development (Rustad et al. 2017).

None of the studies in this map assess cost-effectiveness. Only one study reports cost data, but the authors do not conduct any cost-effectiveness or cost-benefit analysis (Edjekumhene et al. 2019).

Table 2: Outcome categories

Category	Outcome
Citizen/community engagement	Knowledge and understanding Attitudes and beliefs Participation and inclusion Collective bargaining power
Performance of public institutions and services	Channels for negotiation and engagement Allocation of public funds or goods Service access and use Public confidence in institutions/politicians Corruption
Performance of industry	Transparency of reporting
Environmental outcomes	Environmental compliance
Individual/household well-being	Economic situation Social and psychological situation Agency Change in gender/social relations and status

4.2.3 Geography and populations

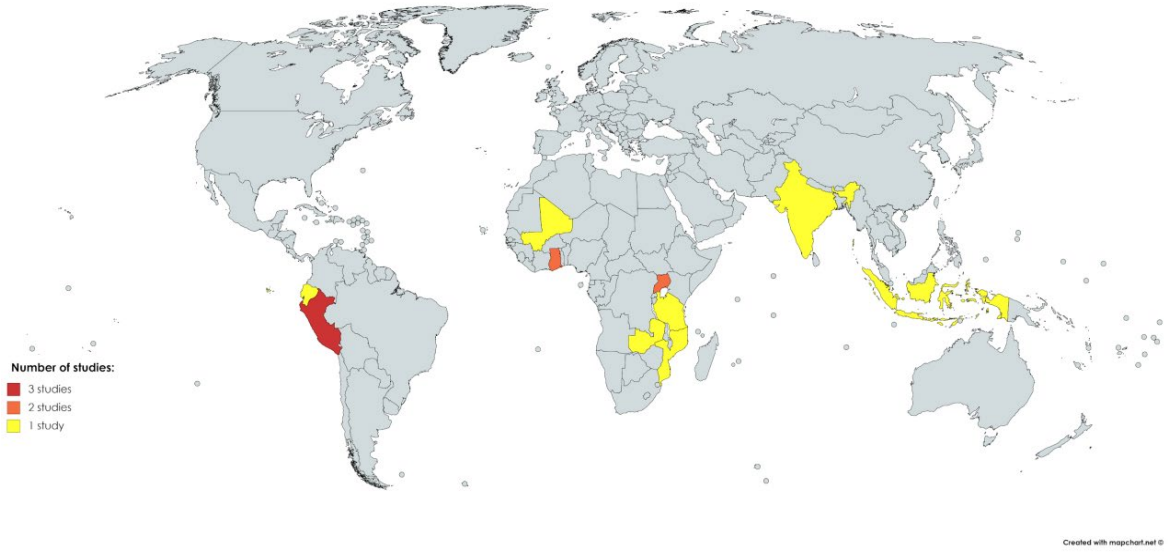
Seven impact evaluations focus on the implementation of EITI standards across member countries, and hence cover almost all of the world's regions: Europe and Central Asia, East Asia and Pacific, Latin America and the Caribbean, the Middle East and North Africa, South Asia and Sub-Saharan Africa.

This also applies to the two systematic reviews synthesising the effects of the EITI, although the exact list of included countries is not reported. One impact evaluation data set of EITI members includes the United States (Corrigan 2017), which makes it the only study covering North America.

The remaining 10 studies were conducted in Sub-Saharan Africa, South Asia, East Asia and Pacific, or Latin America and the Caribbean. Three look at an intervention conducted in Peru, two were conducted in Ghana and Uganda, and one was conducted on each of the following countries: Ecuador, Indonesia and India, Mali, Mozambique, Tanzania and Zambia.

Figure 7 maps number of studies conducted in each country, excluding studies on the global impact of EITI for clarity.

Figure 7: Included impact evaluations by geographical locations



Two impact evaluations assess the impact of interventions targeted at rural populations (Coleman et al. 2019; Sexton 2017) and one focuses on the impact of a programme focused on indigenous populations in Ecuador and Peru (Pellegrini et al. 2019).

The rest of the included studies include relatively representative samples of the countries' populations, in urban and rural areas. However, most of the impact evaluations, outside studies on the EITI, focus on communities most affected by the extractive industries.

4.2.4 Study designs

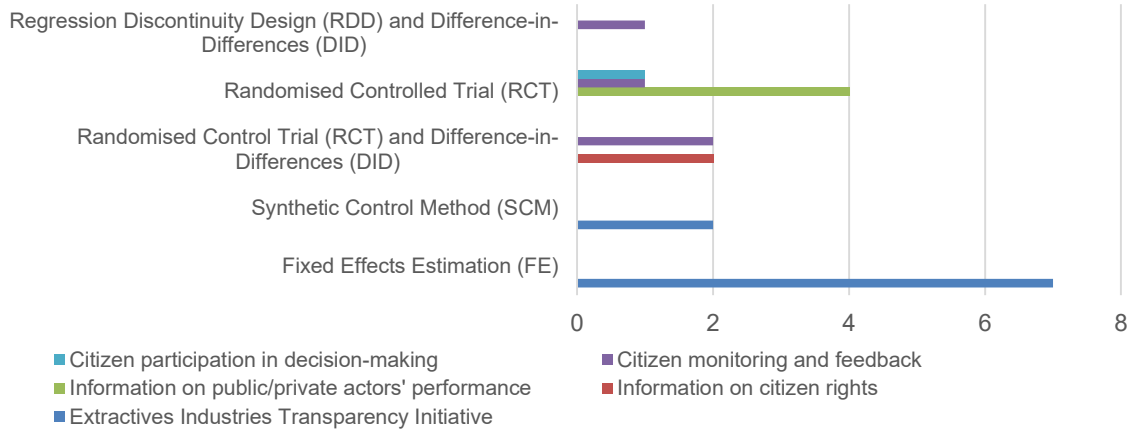
Eight studies in this map are randomised controlled trials. We found 10 studies using quasi-experimental designs. One study in India uses regression discontinuity design to exploit a natural experiment (Pande and Sudarshan 2018), two studies use a synthetic

control method (Etter 2014; Villar and Papyrakis 2017) and seven studies use fixed-effect estimations. Four of the randomised controlled trials use a difference-in-difference estimation to complement their estimation strategies.

It is worth noting that five studies use a mixed-method design, including qualitative methods to complement their quantitative methods.

Figure 8 shows the number of studies by design and statistical analysis method, and highlights the distinction between evaluations of the EITI through fixed effects and synthetic controls, compared to the use of randomised controlled trials or natural experiments for other intervention types. The two synthetic control studies look at the EITI's effect on specific countries, rather than globally, using data from all its member countries.

Figure 8: Number of studies by study design and statistical analysis method



Both systematic reviews use narrative synthesis for quantitative studies and content analysis for qualitative studies. Rustad and colleagues (2016) included 45 studies, and Brockmyer and Fox (2015) included 79 studies. After conducting the critical appraisal, we concluded that we have low confidence in the findings of both reviews. Appendix D provides the rating of each criterion for the quality assessment.

4.2.5 Gender and equity considerations

Table 3 summarises equity themes and methodologies used by authors of impact evaluations and systematic reviews. A majority of the studies (11) do not address gender and equity in any way. Given that none of the EITI impact evaluations mention equity themes, it is not surprising that this is also true for the two systematic reviews.

Five studies report subgroup analyses conducted on several dimensions. One study reports analysis by age group (Edjekumhene et al. 2019), five by sex, and one by sex, socioeconomic status and education (Birdsall et al. 2018). One study does not report results for subgroups, but does disaggregate data by sex (de la Cuesta et al. 2017).

Six studies refer to ethical approvals or at least went through some review committee that approved the study design and processes (e.g. Birdsall et al. 2018; Coleman et al. 2019; Edjekumhene et al. 2019).

One study targets a vulnerable population – indigenous people living in Ecuador and Peru, who are particularly affected by the extractive industry (Pellegrini et al. 2019).

Table 3: Number of studies addressing gender and equity

Equity method	Number of studies
Does not address gendered inequality	11
Study refers to ethics approval	6
Subgroup analysis by gendered inequality	5
Intervention targeting specific vulnerable population(s)	1
Gender and inequality sensitive methodologies	0
Measure effects on an inequality outcome	0
Research process informed by gendered inequality	0
Approach to ethics informed by gendered inequality considerations	0
Sex-disaggregated data	1

4.2.6 Time frame

Three studies use lab-in-the-field experiments to measure outcomes almost immediately after the information provision intervention (Alex et al. 2019; de la Cuesta et al. 2017; Paler 2013). The remaining impact evaluations examining programmes other than the EITI measured outcomes in time frames between 11 months to 2 years. This explains why economic and environmental outcomes are rarely reported; one would expect the kind of intermediary changes these interventions aim to achieve to take longer to have an impact on individual and household well-being.

The EITI studies looked at varying time frames, depending on each country in the data set and the year it joined the initiative. For some countries, the data look at more than 10 years of implementation of the EITI standards.

4.2.7 Program, funding and implementation

Table 4 summarises the sources of funding for programmes and research, and implementation agencies for the programme evaluated in the included impact evaluations. This table excludes systematic reviews, for which the only information collected was on the sources of research funding.

Table 4: Number of studies by implementer and donor type

	Implementing agency	Program funding agency	Research funding agency
Government agency	11	13	8
International aid agency	2	1	1
International financial institution	0	0	0
Nonprofit organisation	13	3	9
For-profit firm	9	9	0
Academic institution	0	0	1
Charitable or private foundation	0	2	7
Not specified	1	2	7

Program implementer

A multi-stakeholder group – a coalition of governments, companies, investors and civil society organisations – oversees the EITI process in implementing countries and internationally, through the EITI Board. Therefore, for studies assessing the

implementation of the EITI, we coded the implementers as being government agencies, for-profit firms and nonprofit organisations.

The majority of studies evaluated programmes partly or fully implemented by nonprofit organisations (13 of 20 studies). Besides evaluation of the EITI, two of the studies also look at national reforms or programmes (Pande and Sudarshan 2018; Edjekumhene et al. 2019). This brings the total number of programmes implemented by government agencies to 11, making it the second most common implementer.

Two studies looked at programmes implemented by international aid agencies (Armand et al. 2018; Birdsall et al. 2018). One study did not report this information (de la Cuesta et al. 2017).

Program funding agency
In terms of programme funding, we coded studies focusing on EITI as for-profit firms and government agencies, given that this international initiative is supported by governments of the member countries and companies working in this sector.

Outside of these studies, programmes were funded partly by other government agencies for four other impact evaluations, and by nonprofit organisations for three studies (Coleman et al. 2019; Pellegrini et al. 2019; Paler 2013). One study programme was supported partly by an international aid agency (Birdsall et al. 2018), and two studies received support partly from charitable or private foundations (Paler 2013; Birdsall et al. 2018).

Research funding agency
Most studies focusing on EITI do not specify the source of their funding. The exception is the two studies by Corrigan (2014 and 2017), which were both supported by a nonprofit organisation, The One Campaign.

3ie funded six of the included studies through the Transparency and Accountability in Natural Resources Evidence Programme, which was supported by the UK Department for International Development and the William and Flora Hewlett Foundation.

One of the systematic reviews in our map received financial support from a charitable or private foundation (Brockmyer and Fox 2015), and both reviews received funding from government agencies.

One impact evaluation received support from various groups of an academic institution (Paler 2013).

4.3 Main findings and gaps

The main finding from this map is that the evidence in this field is scarce. Although this map has a much narrower scope than most EGMs produced by 3ie, transparency and accountability in the extractives sector is a global challenge that drives significant investment from donors every year. It is clear that there are gaps across all interventions and outcomes, given that we found only 20 studies for inclusion in the map. However, we identify five relatively more important gaps in primary research and evidence synthesis.

4.3.1 Gaps in interventions studied

There are absolute gaps in interventions introducing third-party audits of any kind (financial and environmental), and in studies evaluating international initiatives focused on promoting transparency other than the EITI, such as the Kimberley Process and the Publish What You Pay campaign. We did not find any evidence base for these interventions.

Citizen participation in decision-making is another neglected intervention, with only one study assessing the impact of such programmes.

4.3.2 Gaps in outcomes studied

Reported outcomes focus on citizen and community engagement and public and private actors' response to TAIs. As we describe in our conceptual framework (Section 2.1), these are intermediary but necessary steps to achieve impact on people's lives. However, longer-term outcomes measuring actual change in individual or household well-being remain very much neglected.

Only two studies look at environmental outcomes, two measure impact on economic outcomes and one looks at psychosocial outcomes. Only one systematic review and two impact evaluations look at violence, and two of these measure this outcome only at the national level. This finding applies across all intervention types.

In the categories with larger evidence bases, there are also important gaps. Authors report very few outcomes related to collective bargaining power, which is an important component of the theory of change for interventions relating to giving citizens opportunities to monitor and provide feedback to government and private sector stakeholders working in the extractive industries.

Surprisingly, only two EITI studies report revenue allocation, which does not reflect the fact that many studies have focused on information provision about government spending of rent from natural resources.

4.3.3 Major gaps in evidence synthesis

Although there are only 18 impact evaluations, the map highlights a cluster of evidence for some intervention and outcome combinations, and a need for evidence synthesis in these areas. This includes the effect of interventions providing information on public and private actors' performance, citizen monitoring and participation, citizen and community engagement, and some public and private actors' performance outcomes (e.g. knowledge and understanding, attitudes and beliefs, participation and inclusion, and public confidence in institutions and politicians).

Given that both systematic reviews conducted on the EITI are rated as low quality, a high-quality synthesis would be useful to summarise findings from the nine impact evaluations done on this intervention.

4.3.4 Methodological gaps

The descriptions of characteristics of the evidence in the previous sections also highlight existing gaps in research methods, especially in consideration of gender and equity dimensions. Four studies do not conduct subgroup analysis by gender or other factors of inequality, and only three studies look at vulnerable populations.

Mixed-method experiments are the most informative, because they complement findings from the quantitative evaluation with qualitative evidence to enrich understanding of how the programme worked and why. This is another relatively important gap, given that only four of the included impact evaluations have a qualitative evaluation component.

There is a huge gap in terms of cost measurement. Only one study reports cost information, and none of the included studies include any form of cost-effectiveness analysis.

Finally, of the 18 impact evaluations included, only six of them systematically reported ethical approval.

4.3.5 Geographical gaps

Given that only seven studies focus on individual countries (or two countries), any additional study – even in countries where research has already been conducted – would be valuable.

It is also worth highlighting that countries studied in this EGM are not necessarily the most resource-rich countries. Not all of these countries are highly resource dependent, but they do have relatively large extractives industries. Based on World Bank data on natural resources rent as a percentage of a country's gross domestic product, the most resource-dependent country studied in our map is Mozambique, with 17.2% of gross domestic product coming from natural resources rent.[3] Twenty-two countries with higher resource dependency – such as Liberia (49.9%), Kuwait (44.7%), Iraq (42.4%) and Democratic Republic of Congo (32.7%) – did not have even one rigorous evaluation.

5. Lessons and implications

Given the large investments geared towards transparency and accountability programmes by global initiatives and national authorities, the lack of rigorous evaluation and accountability for results is alarming. At present, we do not know the extent to which programmes achieve their objectives. There is an urgent need to invest in rigorous impact evaluations to learn about the effects of these interventions.

In this section, we discuss the methodological and political challenges that have led to this evidence gap, and potential solutions to resolve them.

5.1 Methodological challenges and the need for innovative approaches

One key finding is that much of the existing research is of insufficient quality or rigour, constituting lost opportunities to learn more in an under-researched field. Study design was the most frequent exclusion criteria at the full-text screening stage. For a majority of these cases, we excluded the studies because the researchers did not use an impact evaluation design to answer the effectiveness questions; they used a case study approach, conducted a pre-post impact assessment with no consideration for counterfactuals or used solely qualitative methods.

[3] World Bank staff estimates are based on sources and methods described in *The Changing Wealth of Nations 2018: Building a Sustainable Future* (Lange et al. 2018).

In some cases, the authors chose an appropriate impact evaluation design, but the methodology lacked rigor. There is a need to fund more rigorous studies in this field that take a counterfactual approach to examine the effectiveness of transparency and accountability interventions.

Mejía Acosta (2013) and Rathinam and colleagues (2019) argue that establishing a rigorous counterfactual for TAIs in the extractives sector is challenging, as many of these global initiatives are voluntary standards that affect all the stakeholders in the sector. This poses two inter-related problems for designing rigorous evaluations:

- identifying a valid control group is difficult; and
- voluntary standards often lack effective participation as few adhere to the standards and there could be differences between *de jure* and *de facto* adherence.

Although evaluating TAI may present methodological challenges, Rathinam and colleagues (2019) and the studies reviewed in the synthesis show such evaluations are feasible at the local level.

Further, programmes and initiatives with a small number of units ('small-n') for treatment allocation require different methods. We did not identify any good examples of such studies while screening, but we encourage more extensive use of existing guidelines (White and Phillips 2012) for rigorous small-n evaluations in such contexts.

Another consideration may be to focus on the most promising interventions using evidence from rigorous synthesis. Given that synthesis evidence is limited, using systematic reviews of evidence on transparency and accountability mechanisms implemented in other sectors could be useful to identify promising interventions. A recent systematic review of interventions aiming at improving participation, inclusion, transparency and accountability across a variety of sectors (Waddington et al. 2018) would be particularly appropriate for this purpose.

Beyond adopting the most rigorous study design that is feasible to evaluate intervention effects, certain other characteristics are likely to improve the relevance and usefulness of results for policy and practice. In particular, studies using mixed methods and considering process and implementation can help inform future programme design. Moreover, to learn about effects across population groups, studies should address equity through subgroup analysis, gender- and equity-sensitive methodologies and/or evaluate interventions targeted at the most vulnerable.

Finally, measurement of a broader range of outcomes, including environmental and well-being outcomes, in addition to cost-effectiveness data, would ensure future research findings are most useful for improving people's lives.

5.2 Scope for more evaluations on global multi-stakeholder initiatives

Nine EITI impact evaluations underscore the potential to expand the evidence base at low costs by conducting more quasi-experimental studies on other international initiatives such as the Kimberley Process Certification Scheme and the Publish What You Pay campaign for more transparency.

Given the gaps in interventions and outcomes we describe in Section 5.1, a specific finding for the EITI is that studies assessing its impact on government performance and corruption are probably lower in priority, but much remains to be learned in terms of how this initiative might have impacted socioeconomic development for individuals living in member countries. This is true for global studies; however, some of the included studies demonstrate that it is possible to evaluate the EITI's impact on specific countries, so this frequently studied intervention-outcome combination is still valuable as a topic of research if it focuses on specific countries.

Lastly, more EITI studies would be valuable if they focus on specific member countries, using low-cost methods such as synthetic controls. Seven of the studies in this map look at the impact of the EITI globally.

5.3 Political economy of rigorously evaluating TAIs

The lack of rigorous evaluation of TAIs in the extractives sector could be due, in part, to methodological challenges such as difficulties in finding rigorous counterfactuals. There may also be political impediments, on the part of governments and companies, to providing the necessary information.

Lipschutz and Henstridge (2013) have reviewed the global effort to promote governance in the extractives sector in Asia, Africa and Latin America. A rough calculation suggests that about US$420 million was committed for promoting better governance from 2011 to 2016. However, there is a disconnect between the amount of funding destined for TAIs in the extractives sector and the lack of rigorous evaluation of these initiatives. Future studies should systematically map the international and national efforts to promote governance, and TAI in particular, and explore the political economy of large donor-funded, multi-stakeholder initiatives not being rigorously evaluated.

6. Conclusions

We found 20 studies evaluating or synthesising the effects of TAIs on socioeconomic and environmental benefits for people and communities affected by the extractives industry in L&MICs. Nine of the studies and two systematic reviews were conducted on the EITI using quasi-experimental methods.

The remaining nine studies are experimental studies, with one natural experiment using regression discontinuity design, evaluating various forms of information provision and citizen monitoring and participation interventions. The authors report mostly on outcomes early on in the causal chain, such as citizen and community engagement and public and private actors' performance.

The 'absolute gaps' we identify in this report – areas with few or no impact evaluations – represents a need for more coordinated and better prioritised research in a field where the evidence is scarce. We also identify synthesis gaps, where systematic reviews could add value and help inform future programming. In particular, there are emerging clusters of evidence on the effect of interventions providing information to citizens about the extractive sectors, and on citizen monitoring and feedback mechanisms.

We call on funders to prioritize funding for rigorous research, in line with programme funding trends, to meet the most urgent needs for evidence. Further, funders and researchers should ensure future studies evaluating the effects of new programmes adopt rigorous study designs. We excluded around two thirds of the studies because they did not adopt a rigorous study design. This constitutes wasted resources and lost opportunities to learn more in a very under-researched field.

Although the types of programmes in this sector may present some challenges for conducting quantitative impact evaluations, the small and growing evidence base demonstrates that such studies are indeed feasible (Rathinam et al. 2019). Planning for and integrating impact evaluation with implementation of TAIs will enable greater use of high-quality, mixed-methods experimental or quasi-experimental evaluations.

Appendix A: Detailed methodology

Search process

We developed a systematic search strategy, in consultation with an information specialist, after finalising the framework.

Our search strategy drew on a previous 3ie systematic review on interventions aiming at improving participation, inclusion, transparency and accountability more broadly across other sectors (Waddington et. al. 2018). See a sample of our search strategy in Appendix B.

We searched the following general databases:

- CAB Abst: https://www.cabi.org/publishing-products/online-information-resources/cab-abstracts/
- Econlit (Ovid): http://www.ovid.com/site/catalog/databases/52.jsp
- Ebsco Discovery: https://www.ebscohost.com/discovery
- Scopus: https://www.scopus.com/
- Social Sciences Citation Index (via Web of Science): https://library.maastrichtuniversity.nl/collections/databases/ssci/

Bilateral and multilateral agencies and general repositories of impact evaluations in international development:

- 3ie Impact Evaluation Repository: http://www.3ieimpact.org/en/evidence/impactevaluations/
- 3ie Registry for International Development Impact Evaluations: http://ridie.3ieimpact.org/
- USAID Development Experience Clearinghouse https://dec.usaid.gov/dec/content/evaluations.aspx
- Innovations for Poverty Action: www.poverty-action.org/project-evaluations
- J-PAL - Abdul Lateef Jameel Poverty Action Lab: www.povertyactionlab.org
- AEA RCT Registry: https://www.socialscienceregistry.org/
- DFID Research for Development: http://r4d.dfid.gov.uk/
- Campbell Collaboration: www.campbellcollaboration.org
- African Development Bank: https://www.afdb.org/en/documents/publications/
- BREAD: http://ibread.org/bread/papers
- Center for Effective Global Action: http://cega.berkeley.edu/evidence/

We searched specialist organisational databases, which might have included evidence on transparency and accountability in the extractive sector.

- EITI publications database: https://eiti.org/publications-highlights
- Centre for Social Responsibility in Mining: https://www.csrm.uq.edu.au/publications
- Transparency International Australia: https://transparency.org.au/resources/
- U4 Anti-Corruption Resource Centre: http://www.u4.no/publications/
- Oxfam International: https://policy-practice.oxfam.org.uk/publications
- Evidence in Governance and Politics Evidence Briefs and Registry: www.egap.org

We checked references of all the studies we found in our searches that met our inclusion criteria.

Given the relatively recent state of the evidence base in this field and the fact that most programmes/initiative have started to flourish in the 2000s, we conducted searches from 2000 onwards.

Screening process

We imported all records found through the searches into the Evidence for Policy and Practice Information (EPPI) reviewer. Given the small sample of studies, this EGM was also used as an opportunity for 3ie to test different methods of screening and compare their relative efficiency to inform future EGM methods.

Training: We first conducted training with a team of five reviewers that consisted of going through the protocol inclusion criteria to ensure a common understanding of the scope of the EGM, and a group screening of the exact same sample of 100 studies. We reconciled as a group and discussed reasons for inclusion or exclusion for each record where there was a disagreement.

Double screening versus single screening at title and abstract: Following the training, we split up in two groups, with one team conducting double screening of titles and abstracts and the other team conducting single screening with safety first. With the safety first method, only one reviewer screens each record, but that reviewer has the opportunity to code the record as ‘to discuss’ to avoid any false negative and to avoid missing studies that should be included.

Full-text screening: We then merged included studies from both teams to create the final sample of studies for full-text screening. We used the double screening method for full text.

Machine learning: We used a machine-learning tool, provided by the Evidence for Policy and Practice Information reviewer, to test how much screening efforts could be reduced. This tool uses the screening decisions from a small sample of studies to predict the likelihood of inclusion of the remaining studies. It then sorts the studies by decreasing likelihood, which makes the screening process more efficient and allows the reviewer to stop screening when a large number of studies have been excluded in a row.

One potential risk with this approach is that some studies could be missed; however, we went through all studies for this EGM, as our plan was to identify the point at which we could have stopped screening and measure the time gained from using the tool. This was meant to inform future studies. However, this did not provide very successful results, potentially due to the varied vocabulary used in this field to refer to governance issues, and its resemblance to some scientific or agricultural terms for the extractive industries, which made it harder for the software to learn from the screening.

Data extraction and critical appraisal

We extracted data on all the included studies according to the coding tools reported in Appendix C. This included the coding of how the authors of each study addressed gender and equity, according to 3ie’s synthesis and review office’s gender and equity

tool. Data extraction was done either by research associates experienced with the coding tool or by a recently trained reviewer (in which case, a second reviewer checked the data). Although this is not usually a realistic approach for EGMs, the low number of studies found for this one made it possible and ensured the quality of the coding.

We conducted a quality assessment of the systematic reviews included in our map according to the 3ie critical appraisal tool, adapted from the Specialist Unit for Review Evidence checklist. The assessment was conducted by one reviewer and verified by a second reviewer.

Analysis

To conduct the analysis for this report, we used relevant data from the extraction sheets and either did a simple count, which was possible given the low number of studies, or created tables and graphs using Google spreadsheets.

Appendix B: Sample of the search strategy

Below is a sample of our search strategy, developed in collaboration with an information specialist. The numbers (# 1, # 2 and so on) represent search strings, followed by the number of hits in brackets.

Web of Science (SCI, SSCI & ESCI) – Searched 24 November 2018

1 (2,691 hits)

(((disaster* NEAR/2 reduc* NEAR/2 risk*) OR (disaster* NEAR/2 (respond* OR response* OR manag*)) OR ((hazard* OR risk* OR vulnerab*) NEAR/2 (map* OR assess*)) OR HVA OR HVRA OR DRR) NEAR/6 (participat* OR inclus* OR consult* OR communit*))

2 (5,230 hits)
((communit* OR inclus* OR particip*) NEAR/6 (((climate-change OR "climate change") NEAR/2 (adapt* OR mitigat* OR vulnerab*)) or resilien*))

3 (104,389 hits)
("community engagement" OR "community consultation*" OR "political dialogue" or (deliberat* NEAR/2 platform*)) OR TS=((citizen* OR "human right*" OR entitlement* OR (("collective action" OR bargain* OR negotiat*) NEAR/3 (citizen* OR communit* OR population)) OR ((advocacy OR "corporate campaign*" OR boycott* OR "legal reform*") NEAR/3 (transparen* OR accountab* OR "corporate social responsibility" OR CSR))))

4 (50,102 hits)
((inclus* OR particip*) NEAR/6 (strateg* OR action* OR budget* OR development OR plan*))

5 (21,032 hits)
((health OR healthcare OR hospital*) NEAR/3 (committee* OR "action group *" OR council* OR association* OR shura))

6 (4,967 hits)
(("natural resource*" OR natural-resource OR NRM OR "common property" OR common-property OR "common resource*" OR common-resource* OR land-use* OR "land use*" OR land-management OR "land management") NEAR/6 (participat* OR transparen* OR inclus* OR represent* OR consult* OR community* OR committee* OR council* OR association* OR group* OR shura))

7 (153 hits)
((communit* OR district* OR cluster OR cluster-level) NEAR/6 development NEAR/3 (committee* OR council* OR association* OR shura))

8 (83 hits)
((((disaster* OR disaster-risk* OR accident* OR "oil spill*" or pollut*) NEAR/6 (respond* OR response* OR management OR reduc* OR preparedness)) OR DRR) NEAR/3 (committee* OR council* OR association* OR shura))

9 (7,579 hits)
("e governance" OR e-governance OR egovernance OR "electronic governance") OR TS=((politic* NEAR/3 (inclus* OR participat* OR quota OR quotas)) OR (quota* NEAR/3 participat*))

10 (5,220 hits)
("report card*" OR reportcard* OR report-card* OR "score card*" OR scorecard* OR score-card*) OR TS=("political reserv*" OR "reserved place*" OR "reserved position*" OR "reserved seat*")

11 (37,885 hits)
(((accountab* OR transparen*) NEAR/2 (mechanism* OR system* OR arrange* OR organi* OR regulat* OR initiative*))) OR TS=((social OR public OR "civil society" OR environmental OR financial OR third-party OR "third party" OR independent OR non-partisan) NEAR/3 (audit* OR monitor* OR complian* or governance))

12 (10,207 hits)
((service* OR one-stop OR "one stop") NEAR/1 (centre* OR center* OR shop*)) OR TS=((communit* OR community-based OR citizen*) NEAR/3 (monitor* OR audit* OR feedback OR grievance* OR "action plan*" OR decision* OR budget* OR (priorit* NEAR/1 setting)))

13 (299 hits)
("standard service*" OR standard-service* OR standardized-service* OR standardised-service* OR "standardized service*" OR "standardised service*")

14 (986,946 hits)
(((sms OR "short message*" OR "text message*" OR bulk-messag* OR "bulk messag*" OR mass-messag* OR "mass messag*" OR media OR "public awareness" OR engagement OR information OR online OR internet OR Web) NEAR/3 (campaign* OR strategy OR strategies)) OR (information NEAR/3 (disseminat* OR provi* OR access* OR communicat* OR disclos* OR diffus* OR report* OR pack* OR face-to-face OR "face to face" OR presentation* OR display* OR sheet* OR material*)) OR "social media" OR news* OR journalis* OR theatr* OR drama OR leaflet* OR brochure* OR poster* OR flyer* OR pamphlet* OR handout* OR "advert* hoarding" OR audio OR video OR tv OR television OR radio OR multimedia OR "multi media")

15 (1,205,978 hits)
#14 OR #13 OR #12 OR #11 OR #10 OR #9 OR #8 OR #7 OR #6 OR #5 OR #4 OR #3 OR #2 OR #1

16 (54,773 hits)
((extracti* or mining or gas or oil) NEAR/3 (industr* or sector* or business* or enterprise* or firm or firms OR company OR companies)) OR TS=((extracti* or mining or mine or mines) NEAR/3 (ore or ores or metal or coal or shale or gemstone* or "precious stone*" or diamond* or gold or copper or (iron NEAR/2 ore) or silver or tin or feldspar or lithium))

17 (679 hits)
(EITI OR "Extractive Industry Transparency Initiative" OR KPCS OR "Kimberly Process Certification Scheme" OR PWYP OR "Publish What You Pay" OR "Revenue Watch

Institute" OR "Cordaid Extractives" OR "Institute for Natural Resources in Africa" OR IM4DC OR "Global Policy Reform" OR "Transparency International" OR "Petroleum Revenue Management Act" OR "Global Witness" OR "Initiative for Responsible Mining Assurance" OR "Global Gas Flaring Reduction Partnership" OR "Oil and Gas Climate Initiative" OR "Information Centre for the Extractives Sector" OR "The Access Initiative" OR "Transparency and Accountability Initiative" OR "Environmental Democracy Index" OR "African Mining Legislation Atlas" OR "Resource Extraction Monitoring" OR "Global Reporting Initiative" OR "Project on Government Oversight" OR "Transparency and Accountability Program")

18 (55,355 hits)
#17 OR #16

19 (2,837 hits)
#18 AND #15

20[4] (1,723 hits)
#18 AND #15. 1,723
Refined by: WEB OF SCIENCE INDEX: (WOS.SCI)

21 (793 hits)
#18 AND #15.
Refined by: WEB OF SCIENCE INDEX: (WOS.SCI) AND WEB OF SCIENCE CATEGORIES: (ENVIRONMENTAL SCIENCES OR WATER RESOURCES OR PUBLIC ENVIRONMENTAL OCCUPATIONAL HEALTH OR ENVIRONMENTAL STUDIES OR ECOLOGY OR TELECOMMUNICATIONS OR MULTIDISCIPLINARY SCIENCES OR ECONOMICS OR BIODIVERSITY CONSERVATION OR MANAGEMENT OR AGRICULTURE MULTIDISCIPLINARY OR OCEANOGRAPHY OR HEALTH CARE SCIENCES SERVICES OR FORESTRY OR HEALTH POLICY SERVICES OR FISHERIES OR BUSINESS OR GEOGRAPHY OR ETHICS OR PSYCHOLOGY APPLIED OR SOCIAL SCIENCES BIOMEDICAL OR SOCIAL SCIENCES MATHEMATICAL METHODS OR HUMANITIES MULTIDISCIPLINARY OR SOCIAL ISSUES OR SOCIAL SCIENCES INTERDISCIPLINARY OR URBAN STUDIES)

22 (1,445 hits)
#18 AND #15
Refined by: WEB OF SCIENCE INDEX: (WOS.SSCI OR WOS.ESCI)
Indexes=SCI-EXPANDED, SSCI, ESCI Timespan=2000-2018

23 (1,993 hits)
#22 OR #21
Indexes=SCI-EXPANDED, SSCI, ESCI Timespan=2000-2018

[4] In # 20, search strings # 18 and # 15 were combined with a Boolean ‘AND’, resulting in 1,723 hits. We limited these results to certain Web of Science subject categories to make it more focused.

Appendix C: Coding tools

Impact Evaluation Repository: data extraction protocol

Variable name	Variable description
Coder name	Coder's name.
Line ID	Unique records should be numbered beginning with 1.
database source	Select a database source according to "source" indicated in your spreadsheet.
study id	Unique id ascribed to each record.
title name	Use only the English version of the publication's main title. If paper is not written in English and has the title translated, use the translated version of the title. If the publication does not provide an English version, include the title in its original language. Please enter title in sentence case. Ensure there are no line breaks.
foreign title	When the publication is not written in English, code the original title using original accents and special characters. Example: Intervençãoeducacionalemequipes do Programa de Saúde da Família para promoção da amamentação If not applicable, code "not applicable".
language	Select **full text** language that applies: English, French, Spanish or Portuguese.
author name	Enter all authors one by one. Each cell should contain only one author. The format is "First name" "Second name" (if any) and "Last name/s" Example: Shayda Sabet Shayda M. Sabet Shayda Mae Sabet When a publication only provides first name initials and last name, coder will have to perform a cursory online search using the name and paper title to find the author/s' full name. If search is unsuccessful, author/s will be coded following the format: "First name initial" "Second name initial" (if any), "Last name/s". Example: J. Miranda J. M. Miranda
author ranking	Rank the authors as they are listed in the article.
author affiliation institution	Use the institution with which the author is affiliated *according* to what is noted *in the article*. If no information is included in the reference, output code as "unidentified". Do not spend time extracting this manually.

Variable name	Variable description
author affiliation country	If specified or obvious, select country in which the author's institutional affiliation sits. If the institution's headquarters are in one country but the organisation has affiliates or country offices all over the world (such as the World Bank or JPAL), and the affiliation mentioned does not specify a country office, then select the HQ country. For example, if the affiliated mentioned is simply "JPAL" select United States; if it says "JPAL Africa", then select South Africa
publication type	Select from list: • Journal article • Working paper (*these include discussion papers and technical reports/papers, if they are part of a series*) • Report • 3ie Series Report • Book or book chapter
Doi	Code the study's DOI. If no information is found, code as "no DOI". Example: 10.1007/s11127-017-0452-x
abstract	Copy and paste study's abstract. If there's no abstract, code as: "no abstract" Ensure there are no line breaks.
journal name	Use full journal name. Do not abbreviate name. Do not include "The" at the beginning. Example: Journal of Development Effectiveness If publication is a working paper, write the series name. If publication is a report, write the publishing institution Example: World Bank Policy Research Working Paper
Journal volume	Use Arabic numerals (do not use Roman numerals). For working papers, include series number.
Journal issue	Add journal issue, if any.
Pages	For example: 321-340 If no page numbers are given in reference (i.e. working papers that are only online), indicate "not applicable"
Year of publication	Select the year when the print version of the study was published. The format is YYYY. If the study was only published online, use this. If the study does not have the year information, select 9999.
URL	If the study is a journal article, enter the URL of the landing page from the journal publisher's website; if the study is a published working paper or published report, enter the URL of the document's landing page from the publishing website;

Variable name	Variable description
	If the study is a published working paper or published report and there is not a landing page, provide URL of the full-text PDF.
Open access	If the study's (full-text) content is available, code as "Yes". If study has paywalls, code as "No". Please save the PDF in the Dropbox folder called “Full Text PDFs” using the following format: Firstauthorsurname_year_record id If the study has multiple versions (in other words, if the study has been published as both a journal article and a working paper), both versions may be included in the IER.
Sector name	Select ONE sector that applies according to the intervention evaluation: • Agriculture, fishing & forestry • Education • Energy & extractives • Financial sector • Health • Social protection • Industry, trade & services • Information & communications technologies • Public administration • Transportation • Water, sanitation & waste management
Sub-sector name	Select all sub-sectors that apply according to the sector indicated in the previous column. For two or more sub-sectors in one sector, enter in a new row.
Themes	Select all themes that apply (up to 3) If not applicable, select "not applicable"
Sub-themes	Select all sub-themes that apply according to the theme indicated in the previous column. For two or more sub-themes for one theme, enter in a new row. If not applicable, select "not applicable"
Other topics	Select one or more other topics that apply. • Agricultural technology • Business training • Cash transfers • Community driven development • Cost-benefit/effectiveness analysis • Farmer field schools • Humanitarian aid • Microfinance • Payment for ecosystem services • Performance-/results-based financing • Rotating savings and credit associations

Variable name	Variable description
	If none applicable, select "not applicable"
Equity focus	How does this study consider gender and/or* equity? Choose as many factors as you find from the below list: • Sex-disaggregates data • Does not address gender or equity • Gender and/or equity-sensitive analytical frameworks • Theory of change • Subgroup or population analysis by gender and/or equity (trigger) • Gender and/or equity sensitive methodologies – other • Intervention targeting a specific vulnerable population(s) • Measures effects on gender and/or equity outcome • Research process informed by gender and/or equity • Study refers to ethics approval • Approach to ethics informed by gender and/or equity considerations
Equity dimension	Which dimension(s) of gender and/or equity does the intervention target? Please select one or more answer from the below list as applicable: • Place of residence (rural, urban, peri-urban, informal dwellings) • Ethnicity • Culture (includes language) • Sex (includes the use of the term gender meaning the biological sex of a person) • Religion • Education • Socioeconomic status (income or poverty status) • Land size • Land ownership • Head of household (female or male) • Social capital • Age • Disability (medical, physical, neurological, mental disorders) • Sexual orientation • Sexual identity • Gendered social norms • Refugees • Conflict-Affected • Other (vulnerable group not typified by any of the above) • Power dynamics or relations between the studied population(s) or subpopulation and a power holder(s)
Equity description	Open answer – provide a description of how the study considers gender and equity, and for which population to corroborate answers above (include page numbers where relevant)
Keywords	Enter all author provided keywords, one per row. If the author does not provide any or if there are important keywords you think are missing, please add them (maximum 6 in total)

Variable name	Variable description
Continent name	Select the continent/region in which the study was conducted: • East Asia and Pacific • Europe and Central Asia • Latin America and Caribbean • Middle East and North Africa • North America • South Asia • Sub-Saharan Africa If multiple continents, add in new row
Country name	Select the countries in which the study was conducted (drop-down menu)
Country income level	Automatically indicates income level when country name selected. **Do not touch**
FCV country	Automatically indicates yes/no when country name selected. **Do not touch**
Region name	Enter all the regions in which the study took place, if provided in the study. This includes both intervention and control groups.
State/Province name	Enter all the states/provinces in which the study took place, if provided in the study. This includes both intervention and control groups.
District name	Enter all the districts in which the study took place, if provided in the study. This includes both intervention and control groups.
City/Town name	Enter all the cities, towns or villages in which the study took place, if provided in the study. This includes both intervention and control groups.
Location name	Enter any locations in which the study took place. This includes both intervention and control groups. Locations can be broad geographic areas that extend across regions or villages. Locations can also be specific target locations that go beyond the city, town or village level, such as municipality, parish and neighbourhood, among others.
Evaluation design	Select one of two options, defined as: **1. Experimental:** a) Randomised controlled trial, defined as prospective randomised assignment, where randomisation is implemented by researchers (or by decision makers in the context of an evaluation study) **2. Quasi-experimental:** a) Quasi-random assignment: i) regression discontinuity design (sharp designs) or ii) natural experiment in which exposure to treatment is random b) Non-random assignment: i) Studies that control for unobservables (difference in difference, fixed effects, instrumental variable [IV], fuzzy regression discontinuity design [RDD], ITS) or ii) studies that control for

Variable name	Variable description
	observables only (e.g. statistical matching, synth control, regression adjustment)
Evaluation method	**If Experimental, then select:** Randomised controlled trials **If Quasi-experimental, then select:** Sharp RDD Difference in difference Fixed effects estimation IV estimation RDD Statistical matching (includes PSM) Synthetic control method
Mixed methods	Select YES if study includes quantitative and qualitative analyses; otherwise select NO.
Additional methods 1	Select additional method if any. If none, use N/A
Additional methods 2	Select additional method if any. If none, use N/A
Unit of observation	Enter all the levels of observation of the variables used for the analysis: • Country • Community • Village/city • Cohort (includes schools or clinics) • Household • Individual If more than one, include in separate rows
Project/ Programme name	Code the name of the project/programme being evaluated (if any)
Programme implementation agency category	Select one of the following: • Government agency • International aid agency • International financial institution • Nonprofit organisation • For-profit firm • Academic institution • Charitable foundation or private foundation • Not specified
Programme implementation agency name	Input the name of the agenc(ies) implementing the programme

Variable name	Variable description
Programme funding agency category	What category of funding agency funded the programme? *Note: only code if reported in the study; no need to do additional research to find.* Select one of the following: • Government agency • International aid agency • International financial institution • Nonprofit organisation • For-profit firm • Academic institution • Charitable foundation or private foundation • Not specified
Programme funding agency name	Input the name of the agenc(ies) funding the research (note: this is not the same as organisations that fund the research of the evaluation)
Research funding agency category	What category of funding agency funded the research? *Note: only code if reported in the study; no need to do additional research to find.* Select one of the following: • Government agency • International aid agency • International financial institution • Nonprofit organisation • For-profit firm • Academic institution • Charitable foundation or private foundation • Not specified
Research funding agency name	Input the name of the agenc(ies) funding the research (note: this is not the same as organisations that fund the programme)

Systematic Review Repository: data extraction protocol

Variable name	Variable description
review_status	Indicate if this review is completed, a protocol, or a title.
publisher_location	For working papers, reports, and books, indicate the city in which it was published. For journal articles, write not applicable.
review_type	Indicate if the review is an effectiveness review (drawing on evidence from impact evaluations), mixed-methods review (effectiveness + other RQ) or other review.
quantitative_method	If applicable, describe the quantitative synthesis method. For example: narrative/thematic synthesis, meta-analysis. **Note: the method used is considered a meta-analysis if authors provide a forest plot. If they did not provide a pooled estimate, leave it as a meta-analysis, put "Not reported" in the point estimate column and add a comment flagging the issue in the comment section.** **Note: if the review or intervention-outcome combination includes zero or one study, please report this here as a narrative synthesis, write the intervention and outcome studied and write "Not applicable" for the variables related to the pooled estimate. A synthesis should include findings from more than one study.** If not applicable, code "not applicable"
quantitative_method_other	If you chose other above, then please describe the quantitative method used. If not, then write not applicable.
qualitative_method	If applicable, describe the qualitative synthesis method; you may select multiple if they apply but attempt to choose the smallest number possible. For example: thematic synthesis, interpretive synthesis, meta-ethnography. Note: this refers to synthesis of qualitative studies rather than narrative synthesis of quantitative studies; for example, a barriers and facilitators analysis. If not applicable, code "not applicable"
qualitative_method_other	If you chose other above, then please describe the qualitative method used. If not, then write not applicable.
overall_no_studies	Indicate the overall number of studies included in the systematic review.

Variable name	Variable description
overall_no_high_qual	Indicate the number of high-quality **studies in this review** based on their risk of bias/quality assessment. If they make no assessment, write “Not reported”
overall_no_medium_qual	Indicate the number of medium-quality **studies in this review** based on their risk of bias/quality assessment. If they make no assessment, write “Not reported”
quality_assessment_tool	Select one risk of bias/quality assessment tool used by the author to rate the included studies from the below list: Cochrane – Risk of Bias tool Cochrane – Other tool (non-randomised studies) IDCG EPOC Newcastle-Ottawa Other
quality_assessment_tool_other	If you chose other above, then please describe the quality assessment tool used. If not, then write not applicable.
extract_comment	Please add any information here explaining your decision to put on hold/extract/not extract findings for some intervention and outcome combinations. **Note: please add a comment if there is only a Cochrane or Campbell Summary, or no summary at all.**
findings_intervention	Select ONE intervention from the below list: **List (incl. definitions) to be created** **FOR NOW: please create a reasonable label (e.g. community forest management or school-based sexual education) for the intervention; work will be done to consolidate these into a list.** Only report intervention and outcome combinations where evidence is reported in majority for L&MICs (i.e. not for high-income country [HIC] data only or for mixed L&MICs and HICs with a large proportion of HICs). If the study mixes L&MIC and HIC data with a high proportion of HIC data, put the study on hold for now. If a great number of combinations meet these requirements and are synthesised in separate meta-analyses (> 50), double check with someone if all are necessary before extracting all the findings.
findings_intervention_descrip	Provide authors’ detailed definition of the intervention(s) being included.
findings_outcome	Select one type of outcome from the below list:

Variable name	Variable description
	List (incl. definitions) to be created **FOR NOW: please create a reasonable label (e.g. nutrition or water treatment behaviour) for the outcome; work will be done to consolidate these into a list.** Only report intervention and outcome combinations where evidence is reported in majority for L&MICs (i.e. not for high-income country [HIC] data only or for mixed L&MICs and HICs with a large proportion of HIC data). If the study mixes L&MIC and HIC data with a high proportion of HIC data, put the study on hold for now. If a great number of combinations meet these requirements and are synthesised in separate meta-analyses (> 50), double check with someone if all are necessary before extracting all the findings.
findings_outcome_descrip	Provide authors' definition of the outcome measure being reported.
findings_subgroup	Are the following findings being reported for the whole population or a specific subgroup? Please select suitable answer from below list.
findings_subgroup_other	If you chose other above, then please describe the subgroup here. If not, then write not applicable.
findings_format	Use the drop-down list to indicate whether the point estimate listed in the next column is a standardised mean difference (SMD), odds ratio (OR), relative risk (RR) or unstandardised (this would cover point estimates with a unit).
findings_point_estimate	Provide the meta-analysis point estimate for the intervention and outcome combination listed above. Use the correct number of significant figures. This should usually be a unit less standardised mean difference. If multiple point estimates are calculated for the same outcome and intervention combination, report the findings using the highest quality evidence base. Write "Not applicable" in this section if no meta-analysis is conducted, a meta-analysis is conducted but no pooled estimates are reported or the analysis includes only one study.

Variable name	Variable description
	Note: If a systematic review reports both meta-analysis and meta-regression findings for an intervention-outcome combination, only extract meta-analysis findings.
findings_significance_level	Choose the significance level of reported findings or not applicable.
findings_confidence_interval_l	Provide the low bound of the confidence interval for the above point estimate. Use the correct number of significant figures and ensure it is consistent with the point estimate. If no meta-analysis is conducted, write “Not applicable” in this section.
findings_confidence_interval_h	Provide the high bound of the confidence interval for the above point estimate. Use the correct number of significant figures and ensure it is consistent with the point estimate. If no meta-analysis is conducted, write “Not applicable” in this section.
findings_heterogeneity_chi	Do they report a chi-squared statistic for this intervention-outcome? Yes No Not applicable (if no meta-analysis conducted)
findings_heterogeneity_chi_no	Provide the chi-squared test statistic or indicate not applicable.
findings_heterogeneity_I	Do they report an I-squared statistic for this intervention-outcome? Yes No Not applicable (if no meta-analysis conducted)
findings_heterogeneity_I_no	Provide the I-squared test statistic or indicate not applicable.
findings_heterogeneity_tau	Do they report a tau-squared statistic for this intervention-outcome? Yes No Not applicable (if no meta-analysis conducted)
findings_heterogeneity_tau_no	Provide the tau-squared test statistic or indicate not applicable.
findings_no_participants	Provide the number of participants included in the above meta-analysis. Indicate “Not reported” if necessary.

Variable name	Variable description
	If no meta-analysis is conducted, write “Not applicable” in this section.
findings_no_studies	Provide the number of studies included in the above meta OR narrative analysis. Provide the number of participants included in the above meta-analysis. If no meta-analysis is conducted, write NA in this section.
findings_no_high_qual_studies	Indicate the number of high-quality studies included **in this analysis** based on their risk of bias/quality assessment. If they make no assessment, write “Not reported”.
findings_no_med_qual_studies	Indicate the number of medium-quality studies included **in this analysis** based on their risk of bias/quality assessment. If they make no assessment, write “Not reported”
findings_comments	This section is a free comments section to note any other important details about the findings that could help with interpreting them (for example, the patterns in a forest plot). This can include (but is not limited to): Please note if this finding is from a meta-regression instead of a meta-analysis. Note if the overall finding is positive/negative but it also has some outlier results that are negative/positive (i.e. an inverse of the average). Note if the overall finding is large and statistically significant but a cluster of studies had non-significant results.

Coding variables specific to this evidence gap map

Variable name	Variable description
Intervention category	Select the intervention category studied: • International initiative • Information provision to citizen • Citizen participation and monitoring • Audits • Other – multicomponent
Intervention name	Select the specific intervention within that category (see list of included interventions)
Intervention description	Describe the intervention as defined by the authors. Provide as much detail as possible.
Intervention format	If the intervention is about information provision, select through which media channel(s) the information is provided: • Leafleting • Radio • TV • Newspaper • Social media • Internet • In-person campaign • Public forum/workshop • Mobile phone • Not applicable
Extractive sector	Select the extractive industry sub-sector(s) on which the intervention focuses: • Mining (industrial) • Mining (artisanal) • Oil • Gas
Value chain	Select which part of the extractive industry value change is concerned by this intervention • Resources discovery and decision to extract • Taxation and local impact • Revenue management and spending • Local employment and business linkages
Outcome category	Select the outcome category studied: • Citizen or community engagement • Performance of public or private actors • Environment • Conflict and violence • Individual or household well-being

Variable name	Variable description
Outcome name	Select the specific outcome within that category (see list of included outcomes)
Outcome description	Describe the outcome as defined by the authors. Provide as much detail as possible on how it is measured.
Cost-effectiveness data	If there is any information provided on cost or cost-effectiveness of the programme, select YES; otherwise select NO.
Cost-effectiveness description	If applicable, select what kind of information on cost is provided: • cost of programme only • cost-benefit analysis • cost effectiveness analysis
Population	Select the population targeted by the intervention • whole population • rural • urban • indigenous • conflict-affected population • refugees • internally displaced • ultra poor • women • men • disabled • children • extractive industry workers • artisanal miners • land owner/farmers
Time frame	Specify the time frame of the study. If baseline data was collected, specify the time lapse between date of baseline data collection and endline data collection.

Appendix D: Critical appraisal of included systematic reviews

Questions	Brockmyer and Fox (2015)	Rustad and colleagues (2017)
Section A: Methods used to identify, include and critically appraise studies		
A.1 Were the criteria used for deciding which studies to include in the review reported?	Partially	Partially
A.2 Was the search for evidence reasonably comprehensive?	No	Partially
A.3 Does the review cover an appropriate time period?	Can't tell	Can't tell
A.4 Was bias in the selection of articles avoided?	No	No
A.5 Did the authors use appropriate criteria to assess the quality and risk of bias in analysing the studies that are included?	No	No
A.6 Overall, how much confidence do you have in the methods used to identify, include and critically appraise studies?	**Low confidence** (limitations are important enough that the results of the review are not reliable)	**Low confidence** (limitations are important enough that the results of the review are not reliable)
Section B: Methods used to analyse the findings		
B.1 Were the characteristics and results of the included studies reliably reported?	No	No
B.2 Are the methods used by the review authors to analyse the findings of the included studies clear, including methods for calculating effect sizes if applicable?	Yes	No
B.3 Did the review describe the extent of heterogeneity?	Yes	Yes
B.4 Were the findings of the relevant studies combined (or not combined) appropriately relative to the primary question the review addresses and the available data?	Partially	Partially
B.5 Does the review report evidence appropriately?	No	No
B.6 Did the review examine the extent to which specific factors might explain differences in the results of the included studies?	Partially	Partially
B.7 Overall, how much confidence do you have in the methods used to analyse the findings relative to the primary question addressed in the review?	**Low confidence** (limitations are important enough that the results of the review are not reliable)	**Low confidence** (limitations are important enough that the results of the review are not reliable)
Section C: Overall assessment of the reliability of the review		
C.1 Are there any other aspects of the review not mentioned before that lead you to question the results?	No other quality issues identified	No other quality issues identified
C.2 Are there any mitigating factors that should be taken into account in determining the review's reliability?	Limitations acknowledged	Limitations acknowledged

Questions	Brockmyer and Fox (2015)	Rustad and colleagues (2017)
C.3 Based on the above assessments of the methods, how would you rate the reliability of the review?	Low confidence in conclusions about effects	Low confidence in conclusions about effects

Brockmyer and Fox 2015 – summary of the quality assessment

This review aims to synthesise the effect of multi-stakeholder initiatives for public accountability. The authors of this review searched several databases and websites and carefully defined the scope of their review and outcomes of interest. To synthesise the evidence, the authors have grouped the studies appropriately, by type of multi-stakeholder initiative and outcome achieved, and provided a nuanced synthesis of their findings. However, there are major limitations in the methods used to identify studies for inclusion: the inclusion criteria for study design were not clearly defined, the authors did not check the reference list of the included studies and they did not have at least two reviewers conduct independent screening of studies. The methods used to analyse and synthesise evidence also suffer from limitations: the authors did not assess the quality of included studies, they failed to have two reviewers conduct an independent data extraction and they did not report quantitative results for each study in the text or a summary table. All these elements make it challenging to interpret the findings as the authors report them.

Rustad and colleagues (2017) – summary of the quality assessment

The authors of this review conducted a comprehensive search and provided a clear definition and categorisation of outcomes of interest. They have grouped studies' findings appropriately, based on the categories and types of outcomes reported. They discuss differences in the results of the studies and use a rating system to synthesise the overall success of the programme. Although this simplified system allowed them to report findings from qualitative and quantitative studies in a harmonised way, this has some limitations. It puts an equal weight on all studies, regardless of their quality, and does not allow for discussion on the magnitude of effect. With regards to the methods used to identify, critically appraise and extract data from the included studies, the authors unfortunately did not conduct an independent screening of search results to decide on the inclusion or exclusion of studies, and did not assess the risk of bias in the included studies. Finally, the authors did not report having two reviewers conduct independent data extraction, a lack that could have introduced error and bias.

Appendix E: List of included impact evaluations and systematic reviews

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This report outlines the main findings of the map on effect of transparency and accountability interventions in the extractive sector. The map aims to fill the need to identify critical knowledge gaps in this sector. The authors identify, appraise and describe existing evidence from impact evaluations and systematic reviews on such interventions in the extractive sector. In doing so, the authors provide an overview of the evidence that exists and highlights evidence gaps. Although considerable efforts are being put into supporting improved governance of natural resources in the extractive sectors, the overall evidence on such interventions is sparse.

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