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Transparency and accountability in the extractives sector
A synthesis of what works and what does not

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About this working paper

This paper, *Transparency and accountability in the extractives sector: a synthesis of what works and what does not*, uses evidence from seven rigorous impact evaluations of information disclosure and deliberation interventions in the extractives sector. It discusses the impact of these interventions on increasing citizens' knowledge, awareness, trust, and demand for accountability and civic action, as well as their implications for public service delivery, and environmental and development outcomes.

Transparency and accountability in the extractives sector: a synthesis of what works and what does not

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Acknowledgements

Summary

The extractives sector accounts for about 90 per cent of total exports and budget outlays in some developing countries. These countries are also amongst the poorest in terms of gross domestic product per capita, poverty headcount and human development, and they have a high risk of conflicts. In what is often described as the 'resource curse', these resource-dependent countries often fail to optimally benefit from their natural resource wealth and, in some cases, become entangled in violent conflicts. Unaccountable and mismanaged institutions are believed to be the root cause of conflicts and poor use of resource wealth. Better transparency and accountability in the natural resources sector is considered to be the antidote to the resource curse.

There is a wide array of transparency and accountability initiatives (TAIs) in the natural resources sector to increase citizens' awareness and the demand for good governance. Despite considerable efforts, the overall evidence on the impact and effectiveness of TAIs is remarkably sparse. It is often challenging to establish a rigorous control group and counterfactual for TAIs, because these initiatives are mostly macro-level, nationwide standards or soft guidelines that apply to all the players in the sector and cannot be targeted and/or randomly assigned to a specific set of recipients. It is therefore difficult to estimate impact rigorously.

3ie developed the Transparency and Accountability Evidence Programme at the community level to increase the body of high-quality, policy-relevant evidence on TAIs in the natural resource governance sector. 3ie-funded grants evaluated TAIs in the natural resources sector in Ecuador, Ghana, India, Mozambique, Peru, Tanzania and Uganda.

This paper synthesises seven rigorous impact evaluations funded under this programme to evaluate the role of information disclosure and deliberation interventions on increasing citizens' knowledge, awareness and demand for accountability, and the implications the interventions have on public service delivery and development outcomes. Given the diversity of sub-sectors in the extractives sector and the context of these impact evaluations, we employed narrative synthesis methods to synthesise the findings and impact pathways.

Interventions and key findings

All seven studies evaluated programmes that provided information to promote awareness and/or knowledge of the generation and allocation of revenue from the extractives industries and the environmental implications of the extractives sector. Five of them evaluated programmes that combined information with some form of deliberation to provide a platform for people to engage, process and understand the information, weigh alternative preferences, and voice their opinions. Some of the programmes complemented the information and deliberation interventions with a few supportive interventions, such as feedback to political elites based on the citizens' deliberations, inexpensive monitoring tools and lab-in-the-field experiments to promote transparency and accountability.

These studies evaluated the TAIs' impact on participants' knowledge, attitudes, demand for transparency and accountability, civic action, trust, behavioural change, and developmental and environmental outcomes:

- Knowledge is typically measured by the self-reported level of awareness on natural gas exploration and revenues management. Our synthesis finds mixed evidence on the ability of information alone to lead to changes in knowledge and awareness, whilst information aimed at political leaders and elites did not trickle down to the general public.
- Changing attitudes is measured as a change in perception on the rights and entitlement of people with regard to extractives revenues, the obligation of government and companies to publish information, and citizens' right to demand information. The synthesis finds weak evidence on the effectiveness of information campaigns to lead to changes in attitudes if the intervention targets citizens rather than elites.
- There is a strong positive effect on the demand for transparency and collective action when the information campaign is combined with deliberation. Similarly, there is evidence that combining information with deliberation fosters trust.
- Providing information to political elites alone does not lead to trickle down. However, providing citizens' feedback to the elite helps create an accountability loop, in which the elites align their views with citizens' preferences.
- One of the studies that evaluated the impact of TAIs on development outcomes, and three studies that looked at environmental outcomes, did not find any significant effects.

Lessons for designing new transparency and accountability initiatives

There is a need for more realistic theories of change and manageable evaluation scopes. The theory of change for TAIs in the extractives sector is uncertain and moderated by several contextual factors that affect the outcomes at each stage. Attempting to measure the impact of an information campaign on governance or development outcomes is set up for failure. Instead, the programme and the evaluation theory of change should formulate measurable, short-term goals at each stage of this process. We need evaluations on multiple intermediate outcomes within the larger theory of change of transparency for development.

Information should be combined with deliberation. This synthesis shows that information alone may not be sufficient. Platforms for deliberating the new information help transform citizens' knowledge into a demand for accountability and into collective action. Similarly, legislation alone may not work. Implementing agencies should emphasise strengthening effective information flows and deliberations rather than establishing new policies and laws.

Interventions should seek to provide more clarity on action steps to be taken. TAIs should provide or help communities reach clear action points for citizens to pursue in response to the information they receive and deliberate.

Interventions should reduce information asymmetry between the elite and ordinary citizens. These seven studies show that information in the hands of leaders and local elites does not trickle down to the general public. However, when the information is shared with the public and the elite alike, and complemented with deeper stakeholder engagements, there is a higher level of trust. TAIs could therefore usefully seek to

reduce information asymmetry between local elites and the general public and build feedback loops to help the elites understand the preferences of the majority.

Evidence gaps, and lessons for funders of evaluations

Little evidence on long-term impact exists. The relatively short time span of the studies in the 3ie TAI evidence programme made it difficult to assess the long-term impact of the interventions. Six of the seven studies did not evaluate long-term development outcomes. A follow-up survey of selected studies from the evidence programme could shed more light on the development impact of TAIs and the sustainability of impact.

A need exists for more evidence on different modes of providing information and deliberation. We know very little about the relative importance and effectiveness of various modes of information disclosure and deliberation. Future studies should evaluate the relative importance of different forms of information sharing (e.g. infographic, videos and pamphlets), information channels (e.g. theatre, information and communication technology, and mainstream mass or community media), deliberation (e.g. workshops, stakeholder forums at the local level and nationally representative deliberative polling) and focal groups, and their impact on knowledge and demand for accountability.

Technology and big data have a role in implementing TAIs and measuring their impact. Newer technology (e.g. satellite images, remote sensing and mobile devices) can be used successfully in implementing TAIs and in impact evaluations to gather data innovatively and cheaply to measure the outcomes. Most developing countries have low capacity for site monitoring, and some sites are physically impossible to reach. The studies in the 3ie-funded evidence programme provide a proof of concept for how technology can complement traditional methods of monitoring, data collection and transmission.

A need exists for more gender-responsive and equity-focused evidence. Although a few of the studies explored differential impacts on women and other sub-groups, none of the interventions studied had gender-sensitive TAI programming, let alone gender-responsive programming. Extractives affect women's and men's lives differently. There is a substantial evidence gap on the differential impact of extractives on women – for whom the presence of local industry carries disproportionate social, economic and environmental risks – and on what works for them in ensuring equitable access to resources from the extractive industries.

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Abbreviations and acronyms

3ie	International Initiative for Impact Evaluation
CIEP	Citizen information and engagement platform
DFID	Department for International Development
EIA	Environmental impact assessment
EITI	Extractive Industries Transparency Initiative
PIAC	Public Interest and Accountability Committee
RCT	Randomised controlled trial
TAI	Transparency and accountability initiative

1. Introduction

Abundant natural resources can be a boon to economic prosperity, providing increased investment in infrastructure, public goods and international trade. However, transforming sub-soil natural resources into more tangible physical and human capital for faster growth has not been straightforward.

Some empirical evidence suggests a robust negative correlation – often described as the 'resource curse' – between natural resource dependency and economic growth (Gelb 1988; Sachs and Warner 1999; Collier et al. 2009; Venables 2016). There is, however, also a growing literature suggesting a positive correlation between natural resource abundance and economic growth. This literature calls for a more nuanced approach to defining natural resources and points to dependency, not abundance, as the curse (Cavalcanti et al. 2011; Moshiri and Hayati 2017).

Resource-dependent countries with poor socio-economic development often fail to optimally benefit from their natural resource wealth. These countries face slow economic growth and, in some cases, become entangled in violent conflicts. For instance, Chad, the Democratic Republic of Congo, Guinea, Mauritania and Nigeria – whose natural resource exports can make up close to 90 per cent of total exports – are also the countries with the lowest per capita income in the world (IMF 2012; Venables 2016). Unaccountable and mismanaged institutions, coupled with the discovery of natural wealth, are believed to be the root cause of economic failure and conflicts.

Multilateral organisations, researchers, activists and policymakers alike believe transparency is the antidote to the accountability deficit associated with natural resource dependence. Despite considerable efforts to support improved transparency in the natural resources sector, however, the overall evidence on impact and effectiveness of transparency and accountability initiatives (TAIs) is remarkably sparse.[1] Most of the existing evidence is anecdotal and relates to perceived challenges and risks associated with TAIs. There is scant evidence on what works in terms of transparency interventions and on the factors that contribute to the success of such interventions.

This report is an important contribution to help fill the evidence gap in the extractives sector whilst uncovering further gaps and questions that need to be researched. It synthesises seven rigorous impact evaluations.[2] These studies evaluate TAIs from seven highly resource-dependent countries – Ecuador, Ghana, India, Mozambique, Peru, Tanzania and Uganda – four of which, Ghana, Mozambique, Tanzania and Uganda, have been classified as prospective natural resource exporting low-income countries or lower middle-income countries (IMF 2012).

The seven studies evaluate the role of information disclosure and deliberation interventions on increasing citizens' knowledge, awareness and demand for

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[1] However, there is some evidence on the effectiveness of TAIs in education, health and service delivery (Waddington et al. [in press]; McGee and Gaventa 2010).
[2] This is intended to be a synthesis of studies included in the programme and is not a systematic review; hence, there was no systematic search for evaluations of TAI in the extractives sector.

accountability, and the implications for public service delivery and development outcomes. Although it is not a systematic review, this report summarises what we learnt across the studies in a variety of contexts.

The synthesis addresses three research questions:
- What did the seven studies find in terms of the type of information interventions and circumstances that lead to increased public knowledge and awareness about extractives revenue and management?
- To what extent did the studied TAIs lead to more civic action and demand for transparency and accountability in extractives revenue management?
- What can the studies tell us about whether more transparency and accountability towards the service users lead to better public service delivery and development outcomes, and under what circumstances?

The remainder of this report is divided into five sections. Section 2 describes the role of TAIs in the extractives sector, the theory of change, the current evidence base and the challenges in evaluating TAIs in this sector. Section 3 provides an overview of the 3ie TAI evidence programme and a brief description of the interventions, beneficiaries and intended outcomes that were evaluated in the studies under the programme. Section 4 highlights key findings on common outcomes across the seven studies. Section 5 outlines important learning and knowledge gaps and recommendations for future TAIs in the extractives sector for multilateral initiatives, donors, implementing agencies and evaluators. Section 6 summarises the findings and lessons.

2. Methodology

Given the diversity of sub-sectors in the extractives sector and the context of these impact evaluations, we employed narrative synthesis methods to synthesise the findings and impact pathways, as suggested in Popay and colleagues (2006) and Snilstveit and colleagues (2012). The purpose is to provide insights on the hypothesis that TAI leads to increased public knowledge and awareness about extractives revenue and management, leading to more civic action and demand for accountability, and resulting in better public service delivery and development outcomes.

We first developed a theory of change for how TAIs work and why, spelling out the intermediate outcomes necessary and sufficient for realising the final outcomes and impact. We then developed the preliminary synthesis across predefined themes, based on the types of intervention, using tabulation, groupings and clusters from the textual description of studies. We explored the relationship between the evaluations through sub-group analyses and triangulation, and then critically reflected on the preliminary narratives to extract emerging lessons and gaps.

3. Transparency and accountability initiatives in the extractives sector

The extractives sector accounts for as much as 90 per cent of total exports and budget outlays in several developing countries, which are also amongst the poorest in terms of per capita gross domestic product, poverty headcount and human development, and have a high risk of conflicts (IMF 2012; Collier et al. 2009).

Empirical literature shows that natural resource abundance does not necessarily lead to rapid growth and, in fact, is negatively correlated with growth (Gelb 1988; Sachs and Warner 1999; Gylfason 2011; Venables 2016) and positively with the risk of civil war (Collier et al. 2009).

A number of high-income countries have managed their abundant natural resources well, as have a few middle-income countries, such as Botswana. Botswana was amongst the poorest countries in the world in 1996, but had one of the fastest-growing economies throughout the last quarter of the twentieth century. It did so by managing the export boom through sensible macroeconomic policies, such as avoiding external debt, diversifying the domestic economy (Hill 1991) and investing in and achieving a minimum level of institutional quality (Mehlum et al. 2006).

The literature identifies two broad mechanisms of impact – economic and political. The economic explanation includes a relative decrease in competitiveness of the non-resource sector, often described as 'Dutch disease' (Matsen and Torvik 2005), neglect of human capital (Bravo-Ortega and De Gregorio 2005), volatility of commodity prices (Frankel 2010), fiscal mismanagement, debt overhang (Manzano and Rigobon 2001) and failure of economic policy, including environmental degradation. Political factors include the erosion of already weak democratic institutions, rent-seeking, conflicts, corruption and patronage (Van der Ploeg 2011).

Solutions to economic problems associated with the resource curse include sensible macroeconomic policies that avoid excessive debt, control inflation and pursue competitive exchange rates (Sarraf and Jiwanji 2001; IMF 2012). However, the economic explanation does not sufficiently account for the heterogeneity amongst the countries for a given level of resource dependency. Gradually, this has led to more attention on the political explanation of the resource curse, which reflects on the combination of resource abundance, combined with poor governance, leading to rent-seeking behaviours, conflicts and corruption. These are found to correlate with poor growth (Torvik 2001; Mehlum et al. 2006; Collier et al. 2009).

3.1 Transparency as an instrument for good governance

Substantial revenue from natural resources and less reliance on public taxation can undermine public scrutiny of government action and policies (Collier et al. 2009; Venables 2016). When citizens lack a sense of public ownership of state revenues, it is easier for governments to maintain secrecy over revenues and expenditures from extractives. Furthermore, when the extracting company pays taxes directly to the state, citizens have minimal oversight regarding the flow of revenue and expenditure. This lack of information and ownership towards resource revenue leads to an accountability deficit (Van der Ploeg 2011).

The disclosure of information by government agencies and extractive companies is a political process that typically requires national and international public intervention. The international community and advocacy groups have been promoting transparency of extractives revenue and expenditure as a means of boosting public accountability to reduce corruption, misappropriation and the general weakening of democratic

institutions. Transparency and accountability have been on the agenda of good governance since the 1990s. Companies and government agencies usually have exclusive access to information on extractives revenue, expenditures and environmental impact. In this context, the definition of transparency used in the literature could be roughly summarised as information 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). There is an added challenge of communicating complicated information about the extractives sector to the public, especially for countries with low educational levels.

Several multi-stakeholder initiatives have been established to encourage public disclosure of information. Apart from mandating this disclosure, these initiatives aim to create platforms for debate and to empower civil society organisations to use the information and engage with the government for better transparency and accountability, and ultimately improved development outcomes. Programmes such as the Extractive Industries Transparency Initiative (EITI), Publish What You Pay, the Kimberly Process Certification Scheme, the Natural Resource Governance Institute and the Revenue Watch Institute facilitate information sharing on natural resources to increase public awareness and spur demand for good governance. The EITI and Publish What You Pay require their member countries and signatory companies to disclose information along the extractives sector value chain, such as who received the contract, details on royalties and fees, fiscal and legal requirements, the government's revenue share and how this revenue is allocated in the national budget. The Natural Resource Governance Institute promotes accountability and effective governance through research and advocacy.

3.2 From information disclosure to development: a theory of change

The extractives sector is governed by government decisions all along its value chain, including the decision to extract, regulation and monitoring of extraction activities, revenue arrangements (royalties, fees and taxes) and fiscal management of revenue resources (allocation and spending). TAI activities in the extractives sector provide information to stakeholders at every stage of the extractives value chain and can be broadly classified as disclosure of information to the public – providing a platform for deliberation – and sharing the information with the political elite.

The theory of change behind these initiatives is depicted in Figure 1. The information and deliberation interventions are expected to lead to discussions around revenue collection and spending, which contributes to the acquisition of new knowledge, creates awareness, and equips citizens with a channel for engagement with the government and extractive companies. The new knowledge and opportunities to engage with one another should then make civic organising easier, and lead to collective civic action and enhanced bargaining power. The companies and government agencies are then expected to recognise the demand for action and engage with citizens to implement improvements, leading to inclusive policies and services, good governance and, ultimately, development outcomes.

Figure 1: Transparency and accountability causal mechanism
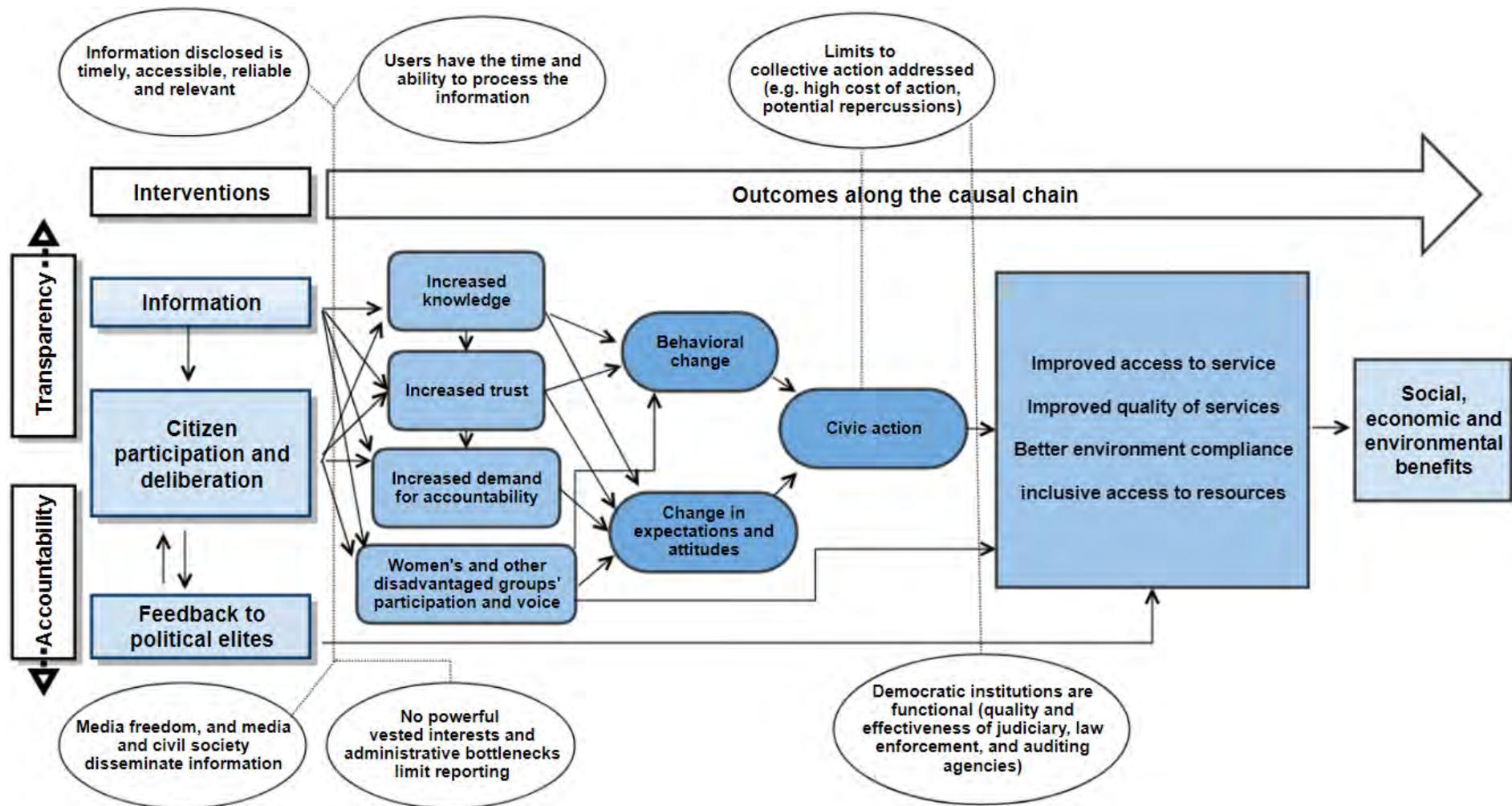
However, several key assumptions along this causal chain might not hold. First, transparency initiatives are expected to lead to a timely and relevant supply of information, but evidence suggests that countries with low institutional capacity, powerful vested interests and administrative bottlenecks often lack incentives, which could limit reporting and result in failures in implementation of transparency regimes (Mejía Acosta 2013). Under India's Right to Information Act, for example, public officials are required to provide timely information and public documents to citizens. Although this could be a powerful tool, soliciting information remains a challenge. Pande (2015) mentions 235 reported cases of death, assault and harassment of information seekers during the 2007–2014 period.

The second assumption is that supplying information leads to new knowledge gains. This premise ignores contextual factors and the fact that the information disclosed would have to be timely, accessible, reliable and relevant, and the users would need the time and ability to process the information.

It is also important that the receivers display an interest in accessing the information to translate it into knowledge. However, evidence shows that information disclosed is often incomplete, incomprehensible and irrelevant to the intended audience (Fung et al. 2007). At best, this is due to inefficiencies, but in countries where democracy and the freedom of the press are curtailed – as is the case in many resource-dependent countries – this sub-optimal information provision is likely to be by design, not by default (Fung et al. 2007; Ofori and Lujala 2015; Epremian et al. 2016). The above premise also assumes that the media successfully processes, repackages and disseminates information to the public, thereby influencing citizens' choice in demanding, interpreting and using information.

The third assumption is that there are several hurdles to citizens' ability to translate new knowledge and understanding of the problem into collective action. Lack of incentives (rational apathy), high cost of action, uncertainty of benefits, potential repercussions (Pande 2015), lack of resources, challenges in forming and sustaining a coalition, and other context-specific issues hinder citizens from participating in collective action (Kosack and Fung 2014; Marquette and Peiffer 2015).

Fourth, it is assumed that civil society successfully creates political pressure through public mobilisation to compel the government to take action against the misappropriation of revenues, and that public accountability mechanisms (e.g. auditing agencies, law enforcement agencies and the judiciary) perform timely investigation and prosecute corrupt officials. However, evidence suggests that resource-dependent countries typically lack a vibrant civil society and public watchdogs (McGee and Gaventa 2010; Devarajan et al. 2014; Hickey and King 2016).

The long route to accountability is expected to work through the election process, which would incentivise politicians to act in the interest of citizens, provided that process is free from coercion, fraud and ethnic biases. Again, however, evidence indicates that elections in many resource-rich countries are not fair and that the administrative capacity and incentives required to respond to public demand are weak (Keefer and Khemani 2005).

As this discussion has shown, the causal chain from information disclosure to development is moderated by many contextual factors and relies on multiple assumptions. The effectiveness of transparency interventions could therefore be constrained by intended users' limited ability to process the information, barriers to collective action, weak democratic institutions, lack of media freedom, powerful vested interests, administrative bottlenecks, and lack of incentives in political and bureaucratic accountability mechanisms.

3.3 Evidence base and gap

Recent literature reviews reveal that there is little rigorous evidence on TAIs in general, although with relatively more in sectors such as service delivery and budget transparency (Waddington et al. [in press]; McGee and Gaventa 2010). TAIs have been used to improve service delivery for some time now. Transparency initiatives provide information on users' rights to various services, whereas accountability is widely recognised as an attempt to agree on standards, gain information, elicit justification, render judgement and impose sanctions (World Bank 2003).

Transparency measures in service delivery include complaint mechanisms, citizen report cards, public expenditure monitoring, information campaigns, right to information campaigns and voluntary disclosure of revenue (McGee and Gaventa 2010; Waddington et al. [in press]; World Bank 2017). Waddington and colleagues (in press) show that TAIs improve access to and quality of public services, such as health and social protection, but do not improve use of services. The study also shows moderate improvements in well-being outcomes such as health and productivity, but this is not consistent across different outcomes. Furthermore, there is no evidence on TAIs improving service providers' responsiveness (as perceived by service users), especially around public spending, staff motivation and corruption.

On TAIs in the extractives sector, there are two broad approaches to assess the impact on developmental and governance outcomes. First, a cross-country comparative approach that analyses how TAIs – e.g. multi-stakeholder initiatives such as the EITI and Publish What You Pay, the Kimberly Process Certification Scheme and budget transparency – affect developmental and governance outcomes.

Recent surveys show a positive correlation between EITI membership and the indicators of good governance and development – e.g. perceptions of business climate, rule of law, voice and accountability, per capita gross domestic product and foreign direct investment (Brockmyer and Fox 2015) – but less so with corruption (Corrigan 2014; Papyrakis et al. 2016). There are also some positive correlations between EITI membership and more proximate indicators such as compliance, auditing, reporting and civil society participation (Rustad et al. 2017). However, these cross-country studies show broad associations but do not establish a causal relationship or show the mechanisms of change (Mejía Acosta 2013). It is quite plausible that there is a self-selection of countries that are doing well on indicators of good governance into EITI membership.

The second approach explores within-country variations and the causal mechanisms of impact of information initiatives and multi-stakeholder platforms for deliberations and action on knowledge acquisition, demand for accountability, and developmental and

governance outcomes. Vincente (2010) provides rigorous evidence using a natural experiment in São Tomé and Príncipe and Cape Verde, all former Portuguese colonies until their independence in 1975. This study shows that the discovery of oil has increased corruption in the public sector and the election process in São Tomé and Príncipe compared to Cape Verde. Similarly, Caselli and Michaels (2013) show that higher oil receipts have been associated with more corruption and political patronage in the coastal municipalities of Brazil.

Rigorous evaluations are rare in the extractives sector. We know, to some extent, that TAIs in this sector are correlated with immediate outcomes (e.g. compliance, auditing, reporting and civil society participation), development outcomes (e.g. gross domestic product per capita and foreign direct investment) and governance indicators (e.g. business climate, the rule of law, and voice and accountability). But we know little about whether TAIs lead to better accountability and about the pathways of impact. Several researchers have called for unpacking the causal mechanism for better understanding of what works, for whom and when (McGee and Gaventa 2010; Mejía Acosta 2013; McDevitt 2017).

3.4 Challenges in evaluating transparency and accountability initiatives

Mejía Acosta (2013) reviews the evidence on TAIs in extractives, finding virtually no rigorous evaluation studies, partly because of the difficulties of attribution. Puri and Rathinam (2015) also discuss the challenges in evaluating TAIs in extractives. White (2011) suggests that a high-quality impact evaluation is feasible only when the following are available: well-defined interventions and outcomes, a theory of change connecting the activities to outcomes and impact, and a well-defined control or comparison group for attribution purposes. TAIs in extractives generally do not satisfy these attributes, making it challenging to evaluate them rigorously.

Establishing a rigorous control group for TAIs is often difficult, because these initiatives are mostly macro-level, nationwide standards or soft guidelines that apply to all the players in the sector and cannot be randomly assigned to any target group. Furthermore, the theory of change that outlines how better information disclosure (transparency) leads to restrained government discretionary spending and better service delivery (accountability), which helps achieve better development outcomes, is vague and may be non-linear. Estimating impact therefore becomes difficult.

3.4.1 Lack of a valid control group and counterfactual
Randomised controlled trials (RCTs) require a counterfactual analysis based on a valid control group and using data from a large number of observations, preferably before and after the intervention. Random assignment of the programme to the treatment and control eliminates the problem of selection bias. However, programmes or policies promoted at the national level, e.g. a nationally applicable law or trade reform, which apply to all the constituencies, are not generally amenable to a typical randomised approach with a control group that does not have access to the intervention.

For example, countries that sign up for the EITI commit to publishing reports on how government agencies manage oil, gas and mining contracts and revenue. Since the published information is available to all interested stakeholders, there is effectively no

control or comparison group that could be compared with the treatment group for rigorously attributing the impact to the EITI.

Furthermore, information is a non-rival good; artificially limiting the flow of information to some potential users for creating a counterfactual could be unethical. Nevertheless, Gaarder and Annan (2013) point out that even in such situations, one can use randomised encouragement design to create treatment and control groups and tease out the effect of the intervention.

3.4.2 Voluntary codes of conduct and soft policies
Again, these global initiatives are soft policies or voluntary codes of conduct with voluntary membership; countries are not bound to comply with agreed standards. Even though countries may adopt voluntary initiatives, weak or non-existent enforcement mechanisms remain a hindrance for effective implementation. But, since this process involves multiple country-specific stakeholders (e.g. the government, extractive companies and civil society in general, who exhibit diverse levels of motivation and capabilities), these initiatives often lack effectiveness due to lack of participation, enforcement and accountability.

3.4.3 Inadequate, linear theories of change
Many TAIs lack a coherent narrative of the causal mechanism that adequately accounts for the complex and non-linear causal pathway from programme inputs to final outcomes, and that involves multiple intermediate outcomes and associated assumptions. As several enabling factors (e.g. the rule of law and the strength of the judiciary) also contribute to the effectiveness of TAIs, it can be difficult to sufficiently control for changes in their implementation in order to be able to attribute the change to any one intervention. Furthermore, there could be a considerable time lag between some of the structural interventions and the intended outcomes we would like to measure, thus requiring the timelines of evaluations to be sufficiently long (Mejía Acosta 2013).

4. 3ie transparency and accountability evidence programme

3ie developed and launched the transparency and accountability evidence programme, a grant-making mechanism that increased the body of high-quality, policy-relevant evidence about transparency and accountability in the natural resource governance sector.[3] The main objectives of this evidence programme were to fill critical gaps in our knowledge about TAIs at a community level in this sector, reinforce learning and uptake amongst practitioners and policymakers and, ideally, generate rigorous evidence that would have an immediate added value and inform the scaling up of effective TAIs in the future (Puri and Rathinam 2015).

3ie-supported evaluations were expected to address the following questions:
- Which, how and when do different types of TAIs directed at governance of natural resources generate development outcomes?
- What TAIs are effective? Under what conditions and in what contexts? Why?

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[3] More information about this evidence programme and summaries of the impact evaluations can be found here.

- What are the outcomes of TAIs – both intended and unintended – in natural resources governance sectors?
- Are there trade-offs between effective and efficient governance on one side and transparency and accountability on the other, or are these complementary?

3ie-funded grants evaluated different pathways for increasing transparency and accountability in administering and distributing the benefits of nationally available natural resources in Ecuador, Ghana, India, Mozambique, Peru, Tanzania and Uganda (Figure 2). The resources include commodities such as oil, gas and minerals.

Figure 2: Countries in the 3ie transparency and accountability evidence programme
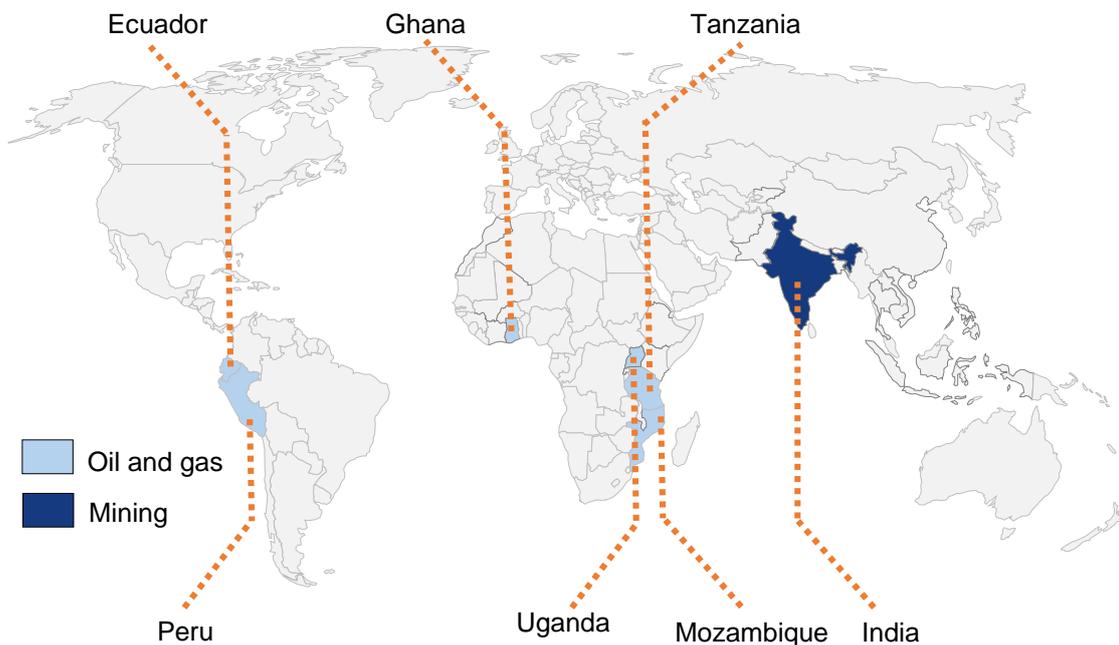
Note: Source is authors' own.

4.1 Brief description of the studies

This sub-section and Table 1 summarise the interventions, beneficiaries and intended outcomes that were evaluated.

In Tanzania, the study (Birdsall et al. 2018) explored whether ordinary citizens could make meaningful judgements about complex resource management issues where large natural gas reserves were recently discovered. The authors used deliberative polling (a form of public consultation that attempts to assess what the public would think about policy choices both before and after they have a chance to engage with the issues and become more informed about them) to assess the impact of effective communication and deliberation on citizens' knowledge of the extractives sector and their demand for public accountability.

In Ghana, the 2011 Petroleum Revenue Management Act created the Public Interest and Accountability Committee (PIAC) to provide citizens with timely and reliable information on oil and gas revenues, which is critical for enabling citizens to exercise their voice, monitor and hold government to account, and enter into informed dialogue about decisions that

affect their lives. This study (Edjekumhene et al. 2018) used a randomised field experiment covering 120 districts to evaluate the effectiveness of PIAC's information dissemination and engagement efforts on citizens' knowledge, attitude towards natural resources revenue, and demand for better transparency and accountability.

In Mozambique, the study (Armand et al. 2018) evaluated the effectiveness of holding citizens' meetings to deliberate on the main priorities for spending extractives revenues on the behaviour and expectations of villagers and local elites' in the Rovuma Basin. This team used a randomised evaluation design with three treatment arms and lab-in-the-field experiments. The first treatment arm, the local elite, received information about natural resources and their management. The second arm, the general public, received information along with the local elite. The third arm was a group of citizens who received information and deliberated on spending the revenues from natural resources.

In Uganda, the study (Coleman et al. 2019) evaluated the effectiveness of multi-stakeholder forums in western Uganda's oil and gas sector on demand for knowledge and accountability and development outcomes for communities. The forums explained to community members the key junctures in an oil company's planning cycle, as well as their rights and how to exercise them; encouraged them to develop discussion priorities when engaging with oil companies and the government; and helped them understand reasonable expectations from this process. This RCT, conducted in 107 project villages, evaluated whether this multi-stakeholder engagement improved transparency (knowledge of oil sector matters), accountability (civic actions, e.g. community members' participation in village meetings and oil sector meetings) and development outcomes (better land management, health and education).

In India, the study (Pande et al. 2019) evaluated India's 2006 environmental clearance reforms, which required all major mining projects by the private sector or the government to seek regulatory approval before beginning extraction. Before the 2006 reforms, any mine larger than 25 hectares had been required to hold a public hearing before approval. The reforms expanded this requirement to include mines between 5 and 25 hectares. This study rigorously evaluated this historical discontinuity in clearance requirements. The authors estimated a difference-in-difference, comparing mines smaller than and larger than 25 hectares that had applied for approval before and after the 2006 reform to estimate the impact of the expanded public hearing requirement on the costs and benefits of the clearance process. For mines just around this cut-off, the only differential change in the environmental clearance process around the date of the 2006 notification was the additional requirement of a public hearing for mines smaller than 25 hectares.

In Ecuador, the study (Pellegrini 2018) evaluated a rapid and relatively inexpensive transparency programme that could improve water treatment, management and storage at the household level in the context of oil-related contamination. The study examined whether households in the treatment group would adjust their behaviour to reduce exposure to contaminated water in the face of better and credible information. This was captured through outcomes such as the share of respondents who boiled, chlorinated and/or cleaned the rainwater harvesting system.

In Ecuador and Peru, the study (Pellegrini [in press]) evaluated the impact of community monitoring of the extractives sector's socio-environmental liabilities using a combination of

advanced technologies and big data. The introduction of a set of custom-designed technological innovations was expected to enhance communities' detection, monitoring and reporting capability for oil spills in their territories as a strategy to strengthen their ability to produce socio-environmental claims. The intervention trained and equipped communities with high-tech but relatively inexpensive tools such as mobile phones, drones and online apps. The combination of advanced technology and capacity building amongst the local youth who worked as monitors was expected to increase the rate of detection of environmental liabilities and the dissemination of the reports to appropriate authorities, maximising the possibility of official action on them.

Table 1: Country, programme, evaluation design and outcomes

Country	Design	Intervention	Type of intervention	Implemented by	Mode of information	Mode of deliberation	Key outcomes	Sample size
Ecuador	RCT	Participatory workshop amongst communities on water quality, providing materials to participants and community representatives	Information; follow-up video	Researcher-driven with the support of key non-governmental stakeholders	Workshops; videos; printed materials	n/a	Behavioural change; environmental outcomes	1,191 households from 60 communities (control: 571; treatment: 620)
Ecuador and Peru	Phased-in randomisation	Monitoring package consisting of training, software and hardware (smartphones and drones)	Information	Researcher-driven with the support of key governmental and non-governmental stakeholders	Monitoring package using apps; smartphones; drones and user-friendly interfaces	n/a	Demand for more T/A; detection of environmental liabilities	24 monitoring teams (12 per country)
Ghana	RCT	Leaders and citizens' information engagement forums; use of interactive voice response, SMS, and other information and communications technology tools	Information; deliberation; follow-up SMS	Government of Ghana	Infographics; citizen engagement platforms; SMS	Citizen information and engagement platform; interactive information, and information and communications technology platform	Knowledge and awareness; attitude; demand for T/A	3,516 respondents across Treatment 1– meeting (893) Treatment 2–ICT platform (849) and Treatment 3–both (882); control: 892
India	Difference-in-Differences	Environmental impact assessment published on the website; project and environmental impacts discussed in the public hearing	Information; deliberation	Government of India	Website and press conference	n/a	Environmental clearance time and cost; air pollution, water pollution and forest cover	934 mines

Country	Design	Intervention	Type of intervention	Implemented by	Mode of information	Mode of deliberation	Key outcomes	Sample size
Mozambique	RCT	Information module combined with a platform for deliberation and community theatre	Information, deliberation	Researcher-driven with the support of key non-governmental stakeholders	Information flyers; community theatre; explanation of the content in local language by trained facilitators	Voting process	Awareness and knowledge; citizen mobilisation; trust and demand for T/A; elite capture (by local leaders); rent-seeking behaviour; likelihood of violence	2,065 households across 206 communities (55 control; 50 information to leaders; 51 information to leaders and citizens; 50 information and deliberation).
Tanzania	RCT	Public consultation on natural gas discovery; information provided via video, followed by small group deliberation	Information, deliberation, feedback to the elite	Researcher-driven with the support of key non-governmental stakeholders	Video; Q&A with expert panel	Informational video to also reach the non-literate audience	Knowledge; perception on commercialisation; saving; direct distribution; spend on services; demand for T/A	2,000 individuals (information-only arm: 300; information and deliberation arm: 400; control: 1,300); elite pool: 125 individuals
Uganda	RCT	Information package and a two-day stakeholder engagement workshop	Information, deliberation	Researcher-driven with the support of key governmental and non-governmental stakeholders	Information packet; structured multi-stakeholder forum	n/a	Transparency; civic action; demand for T/A; satisfaction index; access to social services	Total: 3,110 households from 109 villages (control: 1,620 households; treatment: 1,590 households)

Note: T/A is transparency and accountability.

4.2 Key interventions

TAIs can be broadly classified in three categories – information, deliberation interventions and feedback to the political elite – including other supportive interventions. This sub-section highlights the focus of different interventions to improve transparency and accountability in the extractives sector that were evaluated in the 3ie evidence programme.

4.2.1 Information interventions

Information interventions intend to promote awareness on the generation and allocation of revenue from the extractives sector and on the environmental implications of the sector. This may also include information on legal and regulatory frameworks governing the sector. In order to become more informed, citizens must have access to reliable information, which could lead to more civic engagement and demand for accountability. Many global and local interventions mandate publishing information about laws, contracts, and tax and royalty payments the extractives sector pays to government.

Several channels are used to disseminate information in the sector, e.g. videos, print media (flyers, infographics), workshops, citizen information and engagement platforms (CIEPs), information and communication technology (ICT) and websites. In Ghana, PIAC discussion forums provided information on oil and gas revenue management, including citizens' rights, in easy-to-understand infographics to the District Assembly and Unit Committee members and other local stakeholders. PIAC also used a CIEP to disseminate information on the quantity and use of oil revenue and oil and gas revenue management to local political leaders, traditional authorities and citizens.

In Mozambique, the information package contained information on the expected size of the natural gas windfall and potential implications for provincial government revenues, job creation and citizens' legal rights (e.g. various laws related to land, mines, forests and fishing). The package also provided details about the discovery of natural gas in Cabo Delgado, including plans for exploration and implications for communities. The final content of the information package was discussed and approved by all sponsoring organisations involved in the project for better neutrality. This was shared with higher-ranked government representatives in each community, with village chiefs and with neighbourhood chiefs in urban settlements.

In Tanzania, a 30-minute video provided information on natural gas discovery and the pros and cons of various gas policy options. The video provided a balanced view of controversial alternatives, reviewed and approved by an independent panel of researchers, Tanzanian extractives sector representatives, civil society leaders and politicians.

In Uganda, the researchers delivered two hard copies of an information package containing questions and answers on community and local government concerns about oil and gas activities in the Albertine Graben region. These concerns were captured by civil society organisations and central government agencies during various interactions with communities and local governments over time.

In India, the environmental clearance process required any mine larger than 5 hectares to submit an application, including an environmental impact assessment (EIA) based on

standardised terms of reference. The EIA typically contained information on the project size, location, baseline environmental characteristics, anticipated environmental impacts and mitigation measures, and social costs and benefits. The report was shared with the Ministry of Environment, Forest and Climate Change and relevant district-level and regional authorities, with a summary in English and in the local language. The report was also made available to the public through the ministry's website.

In Ecuador and Peru, youth monitoring teams received an enhanced monitoring package during the evaluation in a phased-in manner. The package consisted of training, software (smartphone apps for information collection, transmission and management) and hardware (smartphones and drones). The intervention trained and equipped communities to use hi-tech tools to increase the rate of detection and reporting of oil spills.

In Ecuador, the information package comprised a poster and a brochure with information on water analysis, the importance of handwashing, and how to prevent faecal contamination, as well as a short video.

4.2.2 Combination of information and deliberation

Deliberation provides a platform for people to engage, process and understand the information, weight alternative preferences, and voice their opinions about natural resources with government officials, the private sector and civil society, including fellow citizens from affected communities (Heller and Rao 2015; World Bank 2017). These public consultations involve some form of social interaction, usually face-to-face, in which stakeholders with different perspectives engage in reasoned debate through moderated small group discussions and interactions with experts representing different points of view (Ozanne et al. 2009). Some common deliberative methods include deliberative focus groups, deliberative polling, citizens' juries, consensus juries and scenario workshops (Gregory et al. 2008).

Different combinations of information and deliberation were provided in the impact evaluations funded under this programme. In Ghana, one of the treatment arms received access to the CIEP, where PIAC sent participants SMS messages on various subjects, such as the petroleum law, the annual budget funding amount and projects funded by it, and how oil and gas revenues were distributed at the local level. The CIEP offered four languages – English, Ewe, Hausa and Twi. This treatment group also had the opportunity to interact with PIAC by leaving a voice message. The treatment arm with the PIAC discussion forum could engage directly with PIAC representatives to share comments and suggestions and discuss petroleum revenue management.

In Mozambique, the third treatment arm involved an information module delivered to leaders and citizens, accompanied by a deliberation platform for discussing extractives revenue and expenditure policy priorities. The content was communicated through community theatre, played by a team of three actors in a traditional family setup, discussing the expected size of the natural gas find, potential positive and negative implications on communities, and their legal rights.

In Tanzania, a randomly drawn subset of 400 individuals who also received the information treatment were invited to a national deliberative event. After viewing the

video, participants deliberated in small groups on whether Tanzania should sell its natural gas or discount fuel for Tanzanian citizens, whether the extractives revenue should be saved for the future or spent now, what the priority areas for spending should be and so on. The deliberation was followed by question-and-answer sessions with experts.

In Uganda, the treatment villages participated in a rigorous, two-day stakeholder engagement, in which their representatives interacted with community representatives from other oil-bearing districts, representatives of Association of Uganda Oil and Gas Service Providers and the Ministry of Energy and Mineral Development to learn about the status of Uganda's petroleum sector, and with representatives from the Ministry of Lands, Housing and Urban Development, who presented the Albertine Graben Physical Development Plan. On Day 2, the community representatives developed a village action plan based on the priority concerns of their communities, identifying what roles each community representative should play in executing the plans and agreeing on a reasonable time frame by which each of the actions would be completed.

In India, the 2006 reform notification from the Ministry of Environment, Forest and Climate Change directed that all mines larger than 5 hectares hold a public hearing. Mine proponents held public hearings and the audience was allowed to ask for clarifications on the project and give opinions after a representative for the project proponent described the project and the EIA report. The district magistrate had to sign off on a written summary and video recording of the proceedings, which were sent to the ministry for consideration in the project's environmental clearance process.

In Ecuador, information provision was complemented by community-based approaches (community involvement and engagement), social marketing (reports and documentation), sanitation and hygiene messaging (presentations during the workshops) and approaches addressing psycho-social factors (participation and commitments). Community workshops in the treatment areas were designed as dialogues that reflected on how water sources could become contaminated, the extent of oil pollution in drinking water, biological contamination, health risks associated with contamination, and what measures the community, households and individuals could take to protect themselves from contamination.

4.2.3 Other supportive interventions

Some of the studies complemented the information and deliberation interventions with a few supportive interventions to promote transparency and accountability.

Follow-up: Several deliberation interventions were followed up to provide continued information and/or reinforce earlier activities. The Mozambique intervention was complemented with live community theatre. The Ghana study followed up the CIEP intervention with two pre-recorded voice messages and weekly SMS messages to the treatment group, summarising key points on oil and gas revenues and expenditures and citizens' rights; a hotline was available throughout the intervention period for participants to dial in and listen to the message at their convenience. The Ecuador intervention included follow-up visits to share a short film, featuring key messages from the workshop to each community, highlighting the commitments they had made to improving water quality.

Feedback to the elite: As part of a second-order experiment to measure public accountability, the Tanzania study provided the citizens' polling results to a group of randomly selected elites. Their opinions on key policy questions (from the original deliberative polling process) were polled before and after they learnt of citizens' preferences. The aim was to understand the appetite amongst elites to align with the views of informed citizens in managing public resource revenues.

Inexpensive monitoring tools: In Ecuador and Peru, the intervention equipped communities with open-source apps, smartphones, drones and user-friendly interfaces with routines and protocols for the collection, storage, organisation and transfer of information in standard formats. This enhanced monitoring package enabled the communities to detect oil spills early using drones; document spills with the help of global positioning system information and smartphone apps; and efficiently transmit the information to the headquarters of indigenous organisations (apps for the collection of synchronised and backed-up information), state agencies, oil companies and mass media through cloud-based synchronisation and transmission.

Artefactual field experiments: The Mozambique study employed a number of artefactual field experiments (lab-in-the-field experiments) to further measure behavioural preferences in a controlled framework:

- Structured community activities, directed towards leaders and community members, followed 'concrete real-world scenarios which allow unobtrusive measurement of leader and community decision-making' (Casey et al. 2012). The team carried out several sub-activities: the 'leader: zinc roof tiles' activity measured elite capture of the resources; the 'leader: funds for meetings' activity examined whether leaders appropriated funds set aside to cover food items for community members during their meetings; the 'leader: appointing a task force' activity measured the propensity for favouritism by leaders choosing individuals for specific tasks; and the 'leader and community: auctions' activity measured the propensity of leaders and citizens to engage in rent-seeking activities. The 'match grants and meeting' and 'postcards' activities were targeted at the community to explore social cohesion and contribution to the provision of local public goods and the individual measure of demand for political accountability, respectively.

- The trust game measured elite capture by leaders, citizens' trust in local leaders and their demand for accountability. This game involved 10 participants from the community (citizens) and the community leader. Each citizen was given an endowment of 100 meticais, in the form of 10 tokens worth 10 meticais each. Citizens had to decide to keep this income for themselves or send a portion to the leader. Funds sent to the leader were tripled. The leader then had to decide how much of this tripled amount to give back to the citizen.

- The rent-seeking game, involving 10 citizens and one leader, assessed citizens' willingness to engage in rent-seeking behaviour at the expense of a more productive activity. Each citizen received an endowment of 10 tokens worth 10 meticais each, for a total of 100 meticais, and had to choose how many tokens to send as a 'gift' to the leader (rent-seeking), with the remaining units 'put aside' (for a productive purpose). The leader had to choose one citizen after observing the behaviour of all of them; the selected citizen received a bonus, and the rest the 'gift' units accrued to the leader.

- The public goods game measured social cohesion and contribution to a common goal. Each individual received an endowment of 100 meticais (again, 10 tokens worth 10 meticais each), and had to decide whether to keep this income or contribute to a public account. All contributions were doubled and divided back equally to all 10 individuals, independent of their individual contributions.

5. Results and discussion

The theory of change for TAI in the extractives sector in Figure 1 suggests that the information and deliberation interventions, and their combinations, can improve the following intermediate and long-term outcomes along the causal chain: participants' knowledge of, attitudes toward and demand for transparency and accountability; the participation of women and other disadvantaged groups; trust, behavioural change and civic action; and developmental and environmental outcomes. This sub-section and Tables 2 and 3 summarise key findings on these outcomes from across the studies.

5.1 Knowledge and awareness

Knowledge is typically measured by an individual's self-reported level of understanding of natural gas exploration and revenue management. For example, the Ghana study measured knowledge of key aspects of the Petroleum Act, projects funded, key accountability enforcement agencies and so on; the Uganda study measured knowledge as a percentage of nine true-or-false questions about local oil sector development answered correctly; and the Mozambique study used an index of 12 indicator variables concerning knowledge of whether the government was receiving revenues from natural gas extraction, the firms involved the location of the discovery and so on.

The Mozambique study found that the information campaign was effective in raising both the leaders' and citizens' knowledge and awareness of natural gas discovery and management. The effect on leaders' knowledge, awareness and salience (defined as whether respondents considered gas discovery as one of the more important events in the past five years in Mozambique) is positive across all treatment arms.

The study did not observe an effect on citizens' knowledge and awareness when the information was distributed only to the leader, suggesting that leaders did not introduce any clear within-community effort to distribute the information to citizens. More importantly, there was a large increase in awareness and knowledge when the information was distributed to citizens and when information was combined with deliberation. Similarly, in Ghana the information-only campaign aimed at policymakers increased local policymakers' knowledge but did not percolate to the citizens, whereas the CIEP had a positive effect on citizens' knowledge of the sector.

In Tanzania, on the other hand, there was little support for information-only campaigns leading to positive changes. This study found that the combined treatment of information and deliberation produced a stronger effect on knowledge. It was found that providing information without deliberation had no significant impact beyond marginal knowledge gains. Extended, structured and participatory deliberation generated a measurable increase in knowledge of the gas sector and was the key to changing participants' perspectives. Deliberation altered opinions, whilst information alone did not.

In Uganda, the intervention provided the information packet to both the treatment and control group to ensure that all study participants – control or treatment – would have access to similar information to balance the differential flow of information at the sub-county level. Hence, it is not surprising that there was no significant difference in actual knowledge gain in the treatment group relative to the control group. However, the multi-stakeholder engagement led to strong positive change in independent pursuit of information about oil development.

Overall, we find mixed evidence on the ability of information alone to lead to changes in knowledge and awareness, and that information aimed at leaders and elites does not trickle down to the general public. There is clear support for combining information campaigns with some form of deliberation, which has a significantly higher impact on knowledge and awareness.

5.2 Changing attitudes

Changing attitudes is measured as a change in perception on the rights and entitlement of people regarding extractives revenues, the obligation of government and companies to publish information, and citizens' rights to demand information.

The Uganda study showed that the multi-stakeholder forums helped increase transparency, as measured in terms of efforts to pursue information, information outreach and transparency perception. However, citizens' increased transparency perceptions did not change their baseline assignment of credit and blame to any of the stakeholders (e.g. central government, local governments and/or the oil company).

The Mozambique study showed that the information campaign made the treatment group more optimistic about the future benefits of the oil discovery to the household and the community in general. This effect is significant only when the information was targeted at citizens. On the other hand, the Ghana study found no improvement in the feeling of entitlement towards natural resource revenues amongst the treatment arms (local leaders or ordinary citizens). This could be because the feeling of entitlement was already high at the baseline.

Overall, we find weak evidence on information campaigns' leading to changes in attitudes if the intervention is targeted towards citizens.

5.3 Trust

Trust is generally the self-reported belief by citizens that institutions and political representatives will share valuable information on extractives sector revenues and expenditures. The Mozambique study measured trust using survey questions and citizens' behaviour in the trust game. Trust was measured as an average of all self-reported measures of trust in community leaders, provincial government and national leaders on a four-point scale (1–4, where 4 is the maximum level of trust).

The Uganda study assessed whether stakeholder engagement helped respondents trust that decision makers would share important information. This was measured through a question, 'Do decision makers share information with communities always, sometimes,

or never?' The study found that the multi-stakeholder forums significantly increased participants' trust in the key decision makers' sharing of information with the public.

The Mozambique study found a significant positive effect on trusting local leaders[4] when information was given to leaders and citizens combined with deliberation, providing strong evidence that deeper stakeholder engagements can help foster trust. However, there was little effect on trust when information was provided only to the leaders. Similarly, the trust game – structured to measure the elite capture and participants' trust in local leaders and their demand for accountability – did not find any significant change in citizens' desire to contribute or to punish across the interventions arms.

5.4 Elites' and leaders' attitudes and roles

In Tanzania, outcomes from the citizen survey were used as an input into a survey amongst a sample of political elites in Dar es Salaam. The elite polling results revealed a tendency amongst elites to align their views with other citizens. This suggests that deliberative polling could aid in creating an accountability loop in which elites who are more informed of citizens' views might make decisions that more closely resemble the majority of citizens' preferences.

PIAC leaders' information dissemination forum in Ghana had a positive but small effect on District Assembly members' and Unit Committee members' knowledge and awareness of natural resources revenue and management. However, there was little effect on citizens who did not participate in the PIAC information dissemination forum.

Similarly, the Mozambique study did not find any effect on citizens' awareness when the information was distributed to the leader only, suggesting that leaders did not introduce any clear within-community effort for distributing the information to citizens. On the other hand, distributing information only to the leaders led to elite capture, resulting in a preference for corruption, embezzlement and nepotism and fewer women appointed in community public services. The leaders-only intervention also increased rent-seeking by citizens, made evident from more reported contacts with influential people and bidding for meetings with the district administrator.

5.5 Collective action for demanding more transparency and accountability

Collective action for demanding more transparency and accountability was defined in the Uganda study as respondents' being engaged in attending oil sector meetings, voting, participating with civil society organisations, meeting with village leaders, meeting with sub-county leaders, meeting with district leaders, calling police, writing petitions, using courts or mediation, and lobbying. The Ghana study took a broader view of collective action, defining it as the frequency of discussing natural resource revenue management during meetings amongst citizens and whether respondents considered the handling of oil and mining revenues to be important in deciding in deciding how they would vote in the next presidential or parliamentary election.

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[4] The political representative in the village was generally the local leader with whom the trust game was played.

The Uganda study provided considerable information on collective action and demand for transparency as a result of the multi-stakeholder engagement. The combination of information and deliberation the multi-stakeholder forums provided increased participants' access to local and central decision makers; through subsequent public meetings, these decision makers had a chance to interact continuously with a wider group of residents in the affected communities. The study found that the intervention had increased participants' self-pursuit of independent information about oil development and increased their attendance at village meetings and meetings with oil sector representatives. Qualitative evidence suggested that lobbying and protests increased.

The Mozambique study also found a strong positive effect on citizens' demand for transparency in the treatment group when information was provided with deliberation (a 5–7 percentage-point increase). Citizens' demand for transparency was measured by membership in relevant professional or local organisations and active participation in meetings. The effect was strongest when information was combined with deliberation. The intervention also increased citizens' mobilisation and demand for voice and accountability, and decreased the likelihood of violence.

In Tanzania, there was a marginal but positive effect of the treatment on demand for transparency and oversight. Similarly, in Ghana, the CIEP seems to have had a positive effect on ordinary citizens' willingness to demand transparency, but it did not have the same effect on local leaders.

In Ecuador and Peru, the treatment has increased the number of detections of oil spills and the number of liabilities reported to the media and the state. Overall, the results suggested that the treatment led to an increase in the detection of environmental liabilities, reporting to state authorities and reporting by the media.

Overall, we find a strong positive effect on the demand for transparency and collective action when the information campaign is combined with deliberation.

5.6 Behavioural change

The Ecuador intervention aimed to induce behavioural changes around enhanced water, sanitation and hygiene practices in the treatment group, in the context of oil and biological water contamination. A two-pronged intervention, combining informational flyers and workshops on the best practices, however, did not find any significant behavioural change in how water was treated by the treatment group compared to the control group. The study found statistically significant but very modest change in the practice of boiling water. The authors attributed the null findings to the fact that the intervention was not sufficiently long and intense. Second, baseline data showed that about 35 per cent of the respondents boiled water at baseline; qualitative data revealed that those who did not do so cited several reasons, including disliking the taste of boiled water, something the intervention did not address sufficiently.

5.7 Development outcomes

As discussed in the theory of change, the impact of TAIs on development outcomes is uncertain, as there are several strong assumptions that are unlikely to hold unless accompanied by complementary interventions. Hence, many TAI evaluations did not

attempt to evaluate the impact on development outcomes (Mejía Acosta 2013; Puri and Rathinam 2015).

This is true for six of the seven studies in this synthesis as well. The Uganda study did not find any significant impact of the multi-stakeholder forums on land management or land ownership. This could be because the pressure on land might not have materialised, since oil and gas development had only just begun in many treatment areas, or because of larger secular trends in land demarcation and registration. Similarly, the study did not find any significant improvements in access to public services. There was little improvement in access to secondary schools, electricity or safe drinking water. The null effects could be due to long impact pathways and the relatively short study time frame.

5.8 Environmental outcomes

The India study postulated that information disclosure and a public hearing requirement would lead to better regulatory compliance and, hence, better environmental performance of mining and oil companies. Regulatory compliance is measured by deforestation relative to year of environmental clearance, measured as the year of deforestation minus the year of clearance. Environmental outcomes here include change in average annual PM2.5 concentrations, mine's water alkalinity at the nearest water monitor to measure mine's water, and change in annual median Enhanced Vegetation Index at mine sites.

However, the study found no significant effect of the intervention on regulatory compliance or on environmental compliance, measured as air pollution, water pollution and forest cover. There is some weak evidence that the treatment mines (those that applied for clearance after the 2006 notification) experienced lower increases in some measures of water pollution, but they were more likely to have illegally deforested before the date of clearance. Although the study design measured only the short-term impacts and does not cover the full range of potential benefits, e.g. local employment and investments, the null results indicate potential weaknesses in the legislative provisions and implementation of the public hearing requirement. Anecdotal evidence indicated non-compliance with the public hearing requirements in several cases.

The results from the Ecuador and Peru studies showed that community-based, high-tech environmental monitoring of extractive industries, especially in remote, hard-to-reach areas, can be an effective tool to increase transparency.

5.9 Cost of regulatory compliance

In India, the new regulatory requirement for mines larger than 5 hectares mandated public disclosure of information and public hearings. Increased scrutiny, however, may lead to higher costs of compliance. The cost of compliance was measured by the total costs of mining, as well as the duration of the clearance process, measured as the average number of days required to obtain a clearance letter from the Ministry. The results show that the increased scrutiny did not increase the total costs of mining or the duration of the clearance process. The authors caution that these findings could have been influenced by the lack of precise data on mining capital costs.

5.10 Heterogeneity analysis

TAIs in the extractives sector have differential impacts within populations, for example, between women and men. Three of the studies in this programme looked at whether women and other sub-groups, e.g. rural versus urban residents, had equitable access to information and other resources and/or if they were affected differently.

The multi-stakeholder forum in Uganda seemed to have increased the perception of transparency for men and women by a similar magnitude. The baseline differences in men and women's allocation of blame of central and local governments disappeared at the endline. This could be due to increased female and male interactions through more village and oil sector meetings. The researchers argued that one reason for a similar effect of the intervention on men and women could be the fact that the implementing agency insisted on female participation in the multi-stakeholder forums to get women's inputs on priority setting and planning.

The Ghana and Tanzania studies did not find any significant difference in the impact on men and women, but the information and communications technology intervention arm in Ghana seems to have had a positive effect on younger respondents. The Tanzania study estimated heterogeneous effects based on respondents' baseline education and knowledge, sex, wealth and trust in government. Although the study found no statistically significant differences by sex in opinion or knowledge at baseline, there seems to be a significant positive knowledge gain for men, compared to women, at the endline. Educated respondents seemed to support transparency measures, whereas wealthier individuals and people who had more trust in government at baseline tended to have a lower demand for transparency measures.

The heterogeneity analysis of the information treatment in the Mozambique study found that the positive effect of information and deliberation on leaders' and citizens' knowledge and awareness was primarily driven by rural communities, whereas in urban and semi-urban communities the effect was positive but not precise.

Table 2: Summary of key findings of information intervention

Key outcome	Knowledge & awareness	Demand for T/A	Trust	Behaviour	Civic action	Environmental outcomes*	Development outcomes
Ecuador	n/a	n/a	n/a	↑	n/a	−	n/a
Ecuador and Peru	↑	↑	n/a	n/a	↑	↑	n/a
Ghana	−	−	n/a	n/a	n/a	n/a	n/a
Mozambique	↑	↑	↑	n/a	↑	n/a	n/a
Tanzania	↑	−	n/a	n/a	n/a	n/a	n/a
Uganda	↓	↑	n/a	n/a	↑	n/a	−
India	n/a	n/a	n/a	n/a	n/a	−	n/a

Note: ↑ positive effect; ↓ negative effect; − null effect; n/a outcome not considered in the study; demand for T/A is demand for transparency and accountability.
* Except for environmental outcomes, this table represents key outcomes, primarily focusing on the citizen group; environmental outcomes include time and cost of compliance to the firms and air and water pollution and forest cover around the mines.

Table 3: Summary of key findings of information and deliberation intervention

Key outcome	Knowledge & awareness	Demand for T/A	Trust	Behaviour	Civic action	Environmental outcomes*	Development outcomes
Ecuador	n/a	n/a	n/a	↑	n/a	−	n/a
Ecuador and Peru	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Ghana	−	↑	n/a	n/a	n/a	n/a	n/a
Mozambique	↑	↑	↑	n/a	↑	n/a	n/a
Tanzania	↑	↑	n/a	n/a	n/a	n/a	n/a
Uganda	↑	↑	↑	n/a	↑	n/a	−
India	n/a	n/a	n/a	n/a	n/a	−	n/a

Note: ↑ positive effect; ↓ negative effect; − null effect; n/a outcome not considered in the study.

6. Key lessons and evidence gaps

Findings from the studies in the 3ie TAI evidence programme provide useful lessons for designing improved theories of change for the interventions and evaluations; determining the scope of the evaluations, and designing new TAIs. They also highlight some of the key evidence gaps.

6.1 Theory of change and the scope of evaluations

6.1.1 Need for more realistic theories of change and manageable evaluation scopes

The theory of change for TAIs in the extractives sector aims to promote transparency, demand for accountability, collective civic action, better financial management of revenues and service delivery by the government and, ultimately, development outcomes and poverty reduction. This relationship is lengthy, non-linear and uncertain, and is moderated by several contextual and institutional factors that affect the outcomes at each stage of this theory of change (Fox 2007; Mejía Acosta 2013; Puri and Rathinam 2015; Epremian et al. 2016).

An information campaign on its own is unlikely to have a large enough effect on governance or development outcomes, as was the case in Ghana, Mozambique, Tanzania and Uganda. The programme and the evaluation theory of change should therefore include measurable short-term goals at each stage of this process. For example, an evaluation of an information campaign should look to measure how well the information has been understood, changes in attitudes, demand for more accountability, civic actions, citizens' engagement with various government actors, changes in power relations and the relative effectiveness of different modes of disseminating information. A sufficiently long-term intervention that helps citizens create action plans for reaching out to relevant government players to seek better accountability could aim to measure the changes in access to services in the context of extractives.

We need evaluations on multiple intermediate outcomes within the larger theory of change of transparency for development. A synthesis of evaluations on several of these intermediate outcomes, and in multiple contexts, could then shed light on whether TAIs in a series of small steps could lead to accountability and, ultimately, development outcomes. This also points to the issue of national versus local interventions. A clear theory of change for macro-level interventions (i.e. nationwide interventions affecting demand for transparency, good governance and development outcomes) is lacking.

National-level interventions may be too lengthy and convoluted to have measurable and identifiable development outcomes. On the other hand, more community-based interventions may not be big enough to generate wider impacts, nor do we know if a series of local interventions could bring about a system-wide change.

6.1.2 Little evidence on long-term impact

The relatively short time span of the studies in this evidence programme made it difficult for researchers to assess the long-term impact of the interventions. In fact, six of the seven studies did not attempt to measure long-term development outcomes. The Uganda study looked at – but did not find significant impact of – multi-stakeholder forums

on land management, land ownership and access to different social services, possibly due to long impact pathways and a relatively shorter study time frame. A follow-up survey of selected studies in the evidence programme could shed light on the development impact of TA interventions and the sustainability of impact.

6.2 Lessons on designing new interventions

6.2.1 Information should be combined with deliberation

A general lack of awareness of extractives revenue and government spending amongst the population is found in most of the studies assessed here. Hence, information campaigns are crucial for creating more awareness and then demand for accountability. However, the studies showed that information alone might not be sufficient.

Platforms for deliberating the new information help transform citizens' knowledge into a demand for accountability and into collective action. We find only mixed evidence on information alone leading to the desired changes; instead, interventions that combine some form of information with deliberation seem to positively affect knowledge and awareness, trust, and civic actions for more accountability.

Similarly, legislation alone may not work. Ghana's Petroleum Revenue Management Act was passed in 2011 with a clear mandate to ring-fence resources for spending on a few development sectors. However, the Ghana study showed that study participants' general awareness of the management of oil and gas resources was underwhelming at baseline. Nevertheless, concentrated efforts to share information at the local level, combined with deliberation, seemed to increase knowledge and awareness.

Similarly, although India's 2006 environmental clearance reforms mandated information disclosure and public hearings, evidence suggests that ineffective public hearings could be the reason for the lack of impact of the intervention on key environmental outcomes related to mining. Implementing agencies should emphasise strengthening effective information flows and deliberations, rather than establishing new policies and laws.

6.2.2 Interventions should seek to provide more clarity on action steps

TAIs primarily aim to provide information and, in some cases, successfully combine information with options for a more informed deliberation. However, very few interventions provided clear action points for citizens to take in response to the information they received and deliberated. Of the seven studies in this synthesis, only one attempted a clear course for action. On Day 2 of the multi-stakeholder meetings in Uganda, community representatives developed a village action plan detailing their concerns, a plan for following up with relevant government authorities and a time frame for action. Other interventions did not suggest a clear action path or provide guidelines for coming up with an action plan.

6.2.3 Reduce information asymmetry between the elite and ordinary citizens

These studies show that information in the hands of leaders and local elites does not reach the general public and, at times, could be detrimental to the public cause. The Ghana study shows that information provided exclusively to the leaders and office holders had little effect on citizens' knowledge and did not contribute to building trust, and the Mozambique study provides credible evidence that leaders' exclusive access to information and resources led to more capture and embezzlement.

However, when the information is shared with the public and elite alike, and complemented with deeper stakeholder engagements, there is a higher level of trust. In Tanzania, information about citizens' preferences helped the elites align their preferences to the majority preferences. TAIs could therefore usefully seek to reduce the information asymmetry between the local leaders and elite and the public, and build feedback loops for the elites to understand the preferences of the majority.

6.3 Evidence gaps

The seven studies provide some insights into the role of sharing information, but we know very little about the relative effectiveness of different modalities of information sharing, deliberation and their combinations. Similarly, we know there is a need for more evidence on the role of technology and big data in designing new TAIs and TAI evaluations, and on what works in gender-responsive TAI programming. There are also gaps in our knowledge of how gendered bargaining power changes for individuals and what contributes to positive changes.

6.3.1 Need for more evidence on different modes of providing information and deliberation

Setting up transparency rules and disclosing information alone are not sufficient to affect change, but they are critical first steps. A key gap in the literature, including from the 3ie TAI evidence programme, is that the studies do not assess the relative importance of different modes of information disclosure and/or deliberation.

For example, information is shared through a video in Tanzania and Ecuador, through an information package and infographics in Mozambique and Uganda, through presentations and SMS in Ghana, and through a self-assessment report as a part of an application in India. Modes of deliberation include a platform for discussion in Ghana and Mozambique, a two-day stakeholder forum in Uganda, a nationally representative deliberative event in Tanzania, a set of workshops designed as a dialogue in Ecuador and public hearings in India.

There is little information available on the relative effectiveness of these and other potential modes of information dissemination and deliberation. Future studies should evaluate the relative importance of different forms of information sharing (e.g. infographics, videos or pamphlets), channels of information flow (e.g. theatre, information and communications technology, or mainstream mass or community media), different forms of deliberation (e.g. workshops, stakeholder forums at the local level or nationally representative deliberative pooling), and focal groups and their impact on knowledge and demand for accountability. For example, Masset and colleagues (2013) conducted an experiment on the effectiveness of disseminating information – in this case, research findings in the form of policy briefs – in changing people's beliefs. Their study shows that the policy briefs, as a form of disseminating information, helped some participants form an opinion but did not change their prior beliefs.

6.3.2 Role of technology in implementing and measuring impact

New technology (e.g. satellite images, remote sensing and mobile devices) can be used successfully in implementing TAIs and in impact evaluations to gather data inexpensively to measure the outcomes.

The Ghana study used an information and communications technology platform to share information with the treatment group. The platform provided information to citizens on the natural resources revenues, who could then raise questions and provide feedback via a phone hotline or by sending SMS to PIAC, an independent public body that provides oversight on the use and management of petroleum revenue.

The India study used freely available remote sensing data to measure environmental compliance, including land use change and vegetation indices, without the need for a physical audit. The team compiled global positioning system locations of all sample mines and combined these with satellite-based measures of air pollution, land cover and water quality. The team calculated annual maximum, median, mean of the above outcomes and date of deforestation near the mine sites using this data.

The Ecuador and Peru study is a successful example of how high-tech but low-cost technology could help communities detect severe environmental hazards that are otherwise difficult to detect in time, and even less likely to be reported to the relevant authorities and the media. The drones and open-source apps help communities detect oil spills sooner, and cloud-based transmission of data to headquarters, the media and relevant authorities helps the cause of the local communities.

In sum, these studies show the importance of inexpensive[5] but computationally intensive remote-sensing and satellite data to monitor the environmental compliance of mines in developing countries, and the use of information and communications technology for more efficient information sharing. Most developing countries have low capacity for site monitoring, and some of these sites could be physically impossible to reach. These studies show that technology could complement traditional monitoring methods, and provide a proof of concept for the use of satellite data to measure air pollution, water pollution and oil spills. Satellite data could be used for designing TAIs and for evaluation of these interventions.

6.3.3 Role of big data in measuring impact

The India study used publicly available administrative data on mines' clearance applications and free remote-sensing data on air and water pollution and vegetation coverage to measure the impact of mines on local environment. This study, apart from its contribution to the TAI literature, shows that in a low-resource environment such as India, remote-sensing data can be substituted for more expensive forms of monitoring (e.g. regulators' site visits to mines), both during the application process and in post-clearance monitoring of compliance. This study provides a simple proof of concept for these low-cost monitoring tools.

Evaluation studies can also benefit from using low-cost satellite data to measure a range of environmental and economic outcome variables relatively inexpensively. The India study also adds to a growing body of geospatial impact evaluations that use remote-sensing data to obtain large-scale data on generally hard-to-measure outcomes at low marginal cost in a substantial geographic temporal scale (BenYishay et al. 2017;

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[5] The survey cost for the India study was US$15,000, and for the Ecuador and Peru study was US$79,000, whereas the average survey cost for 3ie-funded impact evaluations is about US$134,000 (Puri and Rathinam [in press]).

Donaldson and Storeygard 2016). The challenge is staff capacity to measure and use satellite data in developing countries. More TAIs should aim to build the capacity of regulators in developing countries to collect and use low-cost satellite data.

6.3.4 Need for more gender-responsive and equity-focused evidence

Although a few of the studies here explored differential impacts on women and men, none of the interventions had gender-sensitive, let alone gender-responsive[6] TAI programming. Extractives impact women's and men's lives differently. For women, local presence of the sector presents disproportionate social, economic and environmental risks. TAI programmes should ensure that men and women have equal access to the benefits and opportunities accruing from extractives, and women should not be at higher risk of being harmed from them.

Interventions should mainstream[7] gender in their design, implementation, monitoring and evaluation. For example, community consultations should include women; pay attention to how women are represented and heard; and ensure that particular attention is paid to the disproportionate social, economic and environmental risks women face when there is disruption. In a changing social environment induced by natural resource extraction and wealth, women (who typically have gendered responsibilities for family food, fuel and health) tend to experience disproportionately negative impacts from land degradation and loss, changing household dynamics due to new household income, and increasing alcoholism and sex work associated with male labour in extractives (Scott et al. 2013).

More gender-responsive and inclusive TAIs and evaluations should be designed using a politically aware context analysis and a published gender analysis framework; should disaggregate participants at a minimum by sex and age (and, as possible, by ethnicity, religion, caste, education, income and disability status); should have gender considerations in primary objectives or questions and gender expertise in equitably inclusive implementation, monitoring and evaluation staffing; and should use implementation and evaluation tools based on recognised gender analysis methodologies for analysis and reporting. This approach would help ensure that programming and evaluation raise and address practical and strategic gendered contexts, needs, interests and impacts; consider the gendered division of labour and

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[6] The World Health Organization (2009) defines gender-sensitive programming as 'programmes where gender norms, roles and inequalities have been considered and awareness of these issues has been raised, although appropriate actions may not necessarily have been taken' and gender-responsive programming as 'programmes where gender norms, roles and inequalities have been considered, and measures have been taken to actively address them'. There are also gaps in the benefits and risks faced in subpopulations within socio-economic factors, such as the young versus old, educated versus uneducated, extractives geographic area versus other regions, one ethnicity versus another.

[7] The 1997 conclusions of the United Nations Economic and Social Council defines gender mainstreaming as 'the process of assessing the implications for women and men of any planned action, including legislation, policies or programmes, in all areas and at all levels. It is a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetrated. The ultimate goal is to achieve gender equality' (UN, 1997).

intra-household decision-making process; and estimate treatment effects by sex and age, at a minimum.

The multi-stakeholder forum in Uganda called for a woman to fill at least one of the two community representative roles from each village to voice women's concerns. However, the study does not find any significant differential impact on men and women in any of the key outcomes considered. This could be because the intervention did not address practical and strategic gender needs and interests. Furthermore, women's representation was about only 20%, rather than the originally intended 50%, because the multi-stakeholder forums included the elected member of the Local Council (LC1 – the smallest administrative unit of Uganda), who tended to be male.

7. Conclusion

Sustainable Development Goal 16 underscores the need to 'promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels' (United Nations 2015). Transparency and effective information disclosure and dissemination are considered to be an efficient means of enhancing accountability in the natural resources sector and delivering sustainable development. However, this process is not straightforward.

In synthesising key findings from studies in Ecuador, Ghana, India, Mozambique, Peru, Tanzania and Uganda, this report has highlighted useful lessons for designing the scope and theory of change for TAIs and their evaluations and for some key evidence gaps. Although this review summarises useful evidence, there is still a considerable gap in the literature, as there are very few rigorous counterfactual evaluations in the extractives sector.

Multilateral initiatives and national policies that intend to enhance transparency are inherently difficult to evaluate. Their contribution to good governance through enhanced transparency and accountability is moderated by several contextual factors that affect governance and public service delivery. There is a need to test the assumptions underlying the theory of change, from information disclosure to governance outcomes to development impact.

As the studies in this synthesis show, any rigorous attempt to evaluate TAIs should concentrate on disseminating well-structured information, aimed at very clearly defined sets of stakeholders within a manageable geographical scope. More attention should be paid to the type and format of the information, the mode of dissemination, the intended recipients and the frequency of information provision.

Interventions that combined information with some form of deliberation improved the absorption of the information and resulted in more support for collective action and demands for accountability. This report also points to the need to reduce the asymmetry of information between community elites and ordinary citizens in order to promote more trust and collective action.

This synthesis also shows that information alone is not sufficient. Platforms for deliberating the new information help promote the citizens' demands for accountability and collective action and enhance their trust. Interventions that combine some form of

information with deliberation seem to positively affect knowledge and awareness, trust, and civic actions for more accountability.

Similarly, legislation alone may not work. The studies from Ghana and India show that mandates to disclose information alone do not lead to better information flows, but concentrated efforts to share information at the local level, when combined with deliberation, seem to increase citizens' knowledge and awareness. Although combining information with deliberation may work better, we know very little about the relative effectiveness of different modalities of sharing information, deliberation and their combinations. Similarly, there is a need for more evidence on the role of technology and big data in designing effective TAIs and evaluations.

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While there are a number of transparency and accountability initiatives in the natural resources governance sector, evidence on the impact of these initiative remains sparse. This paper synthesises key lessons from seven impact evaluations of these initiatives in the extractives sector. The synthesis shows that providing information alone may not be sufficient. Instead, information combined with deliberations positively affect knowledge, trust and demand for accountability. Information leads to higher levels of trust only when shared with the public and not when it is solely in the hands of political elites. There is very little evidence on the relative effectiveness of various modalities of sharing information, deliberation and their combinations. Similarly, need exists for more evidence on the role of technology and big data in informing the design and evaluation of these initiatives. There is also a substantial evidence gap on the gendered differential impacts of extractives on women and on ensuring equitable access to resources from the extractive industries.

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