

Responding to the challenge of artisanal and small-scale mining

How can knowledge networks help?



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Responding to the challenge of artisanal and small-scale mining

How can knowledge networks help?

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Executive Summary

Artisanal and small-scale mining (ASM) includes 20–30 million people worldwide, with three to five times that number indirectly supported through their activities. Yet development donors, governments, wider industry players and NGOs often neglect this sector, focusing on ASM's negative impacts rather than on addressing its structural challenges to improve the sector's opportunities for sustainable development.

ASM can be a resilient livelihood choice for people who are vulnerable or looking for economic diversity in their livelihoods. In fact, ASM generates up to five times the income of other rural poverty-driven activities in agriculture and forestry. The sector employs 10 times more people than does the *large-scale* mining sector, and stimulates considerable local economic development around ASM sites.

Section 1 of this document reviews what is known about the challenges in the ASM sector. The environmental and social impacts of ASM can be dire but so are the structural challenges underlying them. ASM is, for the most part, a poverty-driven livelihood chosen by people who are both vulnerable and marginalised. The diversity of sector players (including women, children, migrants and the most vulnerable) means considerable diversity in the drivers and incentives for ASM activity. The sector's structural challenges include: weak laws, policies and implementation and government marginalisation or repression; cultural marginalisation and exclusion of certain demographic groups; uncontrolled migration; low barriers to entry into informal or illegal ASM with its poor social and environmental protections; poverty-driven, short-term decision making; poor access to financial services, market information, technology, and geological data; political exclusion and 'policy blindness'; and a serious lack of data on ASM individuals and communities that reveal the true scale, nature and contribution of the sector.

One of the primary obstacles to addressing these challenges is poor coordination and use of what is, and an identification of what isn't, known about the sector from researchers, practitioners and miners and communities themselves. Section 2 of this document discusses the gaps in both the stock of knowledge on ASM and the way in which existing knowledge flows to influence policy at a national and international level.

There is a large amount of practice-informed knowledge in the ASM sector, offering 'hands on' experience of what does and

doesn't work. However, much of it is neither written down nor publicly shared. This is symptomatic of poor coordination and sharing between development practitioners, consultants and *large-scale* mining companies working with ASM communities across the world.

Marginalisation and informality means very little knowledge from ASM communities reaches and influences policymakers. Yet this knowledge is invaluable in understanding local opinions and values and testing interventions for local relevance and practicality. The failure to capture this 'citizen-knowledge' perpetuates uncertainties on both structural challenges and potential policy innovations for ASM.

Better knowledge on ASM, which also addresses the accessibility and visibility of what is currently known and used by policymakers, is essential for effective policy influence and innovation. This knowledge needs to feed into national policy and institutional improvements to achieve change 'on the ground' but also international industry initiatives and international sustainable development initiatives, where ASM is currently poorly represented.

Section 2 explores how a 'knowledge intermediary', which acts to link knowledge with policy, could address these gaps in the ASM sector. A knowledge programme or network achieves impacts at the local, national and/or international level by:

- Helping participants find their way through dispersed information
- Ensuring wider understanding of little-known or little-understood ideas
- Providing participants with the resources, capacities and skills to impact policy change through knowledge
- Bringing together a diverse range of stakeholders and building a community of shared values and standards
- Enabling participants to carry out their individual activities more effectively through learning from their peers

There are many different ways of organising a knowledge programme, depending on a sector's particular needs. IIED's experience in this area points to a number of options that have been particularly successful in improving national and international policy in different natural resource sectors – outlined in Section 2 and covered in more detail in Annex 2.

This document suggests a mix of options to address ASM's particular needs and challenges:

1. **Establish a 'virtual network'** centred on an interactive website database of projects, research, organisations and events as a solid base for information-sharing and knowledge coordination across a large number of interested stakeholders. Regular updates, analysis and horizon scanning of sector knowledge would ensure that users remain engaged with current understanding in ASM.
2. **Conduct a 'knowledge review'** by drawing on research, practice-informed and community- (or citizen-) based knowledge to design a tool for collecting baseline data on ASM communities. This tool should (a) allow policymakers to understand and respond to the diversity and structural challenges of the sector and (b) identify 'success metrics' for monitoring the effects of policy on ASM.
3. **Employ IIED's 'learning group' model** to convene select individuals within a country who meet, exchange ideas and information, learn together and then put their shared knowledge into action in their own working environment or networks. Incorporating artisanal and

small-scale miners into these groups so they can help identify local problems, challenges and possible solutions would specifically address the obstacles to citizen knowledge flow into national policy. Such learning groups can also take place across a number of countries with international coordination to facilitate cross-country knowledge sharing and international policy influence and innovation.

4. **Set up a series of in-depth dialogues** that bring together a diverse range of stakeholders to address particularly contentious issues in the sector. These can be local, regional or international dialogues that address different issues at different times – working through a process of knowledge synthesis and problem identification to reveal options and build consensus across sector stakeholders to build on synergies of influence and innovation.

Shared knowledge on ASM's diversity of causes, motivations and outcomes is the key to ensuring locally appropriate development responses for this important and neglected sector.

Introduction

There are 20–30 million artisanal and small-scale miners across the world (see Table 1 for a breakdown by country) and the sector supports three to five times more indirectly. However, there are no reliable figures, and this is symptomatic of a broader neglect and misunderstanding of the sector.

Box 1: Defining artisanal and small-scale mining (ASM)

Definitions for ASM are disputed; section 1.1 explores the diversity in the sector, including difference in scale, legality, demographics and seasonality. But broadly speaking, ASM operations exploit marginal or small deposits, lack capital, are labour intensive, have poor access to markets and support services, low standards of health and safety and have a significant impact on the environment (MMSD 2002:315). In this paper we use the phrase 'artisanal and small-scale mining' and the abbreviation 'ASM' to mean mining activities fitting this description.

ASM occurs in some of the most remote areas in the world and involves some of the world's poorest people. Despite the scale of need, many development donors and programmes don't engage with the sector, seeing ASM livelihoods as undesirable and fearing that engagement may perpetuate illegal or dangerous activities. So ASM continues to be underfunded and neglected compared to other rural, poverty-driven activities such as small-scale agriculture, forestry and fisheries. Each of those were mentioned in the post-Rio 2012 'Future we want' vision as important contributors to sustainable development. Artisanal and small-scale miners were not mentioned at any point in the document (UN 2012).

The *large-scale* mining sector (LSM) is often in conflict with ASM over land and resources, and governments tend to favour LSM or focus on top-down formalisation initiatives that fail to recognise the inherent structural challenges ASM faces.

The problem framing has changed little since the Mining, Minerals and Sustainable Development project of 2002 (MMSD 2002:314):

ASM activities are often viewed negatively by governments, large companies, environmentalists, and others. Concerns range from the use of child labour and the potential for

environmental damage (particularly through the use of mercury in gold mining) to the use of ASM revenue to finance conflicts, the social disruption and conflict sometimes caused by 'rush' operations, the high incidence of prostitution, and the spread of HIV/AIDS where migrant workers are involved.

At the extreme, governments consider the sector illegal and attempt to ban it through different means. In many cases (since ASM falls outside the regulatory framework), they simply neglect it, thereby allowing negative social and environmental impacts to be aggravated ...

The relationship between large companies and small-scale miners is poorly understood and often troubled, with mutual mistrust and sometimes conflict ...

However, there has been some progress over the past decade (Buxton 2012). MMSD tasked governments with responsibility for ASM and some have adopted more inclusive policies (including Uganda, Sierra Leone, Mongolia and Ghana), increasingly recognising ASM as a legitimate route out of poverty (Ethiopia is an inspiring case study). Organisations including Oro Verde, Fairtrade International, and the Alliance for Responsible Mining (ARM) have worked towards ethical supply chains for minerals, creating the Fairtrade and Fairmined Gold Standard and highlighting the sector's ability to lead innovation and change.

The World Bank's Communities and Small-scale Mining initiative (CASM), launched in 2001, improved understanding of the sector, envisioning a positive livelihoods approach to ASM and responding to the need for cross disciplinary solutions and improved coordination between the major stakeholders. Funding constraints restricted the initiative's impact and eventually led to its closure. Although CASM continues in name it is the technical assistance and capacity building events that the World Bank is investing in rather than the knowledge and network programme.

Yet demand for CASM's networking and knowledge generation role continues. An independent review of the CASM programme in 2010/2011 identified the value and demand for a more active and responsive network and knowledge programme 'designed and resourced to actively seek and make connections between key ASM actors and activities, as well as to distil and promote lesson learning from ASM products

and literature' (Resolve 2010:3).¹ Such a programme would ensure representation of ASM issues in major international fora and offer a space for dialogue between stakeholders at both regional and international levels, effecting change in both public and private policy design and implementation.

This paper lays the conceptual groundwork for such a knowledge and network programme by:

1. Outlining the artisanal and small-scale mining challenges based on major sustainable development thinking; and
2. Sharing IIED's experience and understanding of knowledge programmes and networks that may work to meet the particular knowledge and policy gaps in the ASM sector.

Section 1 explores existing knowledge and experience on ASM. It maps the key problems affecting the ASM sector (as articulated by both stakeholders and the literature) and highlights some of the known structural challenges preventing sustainable development. Section 2 looks at how knowledge might influence policy, maps the knowledge–policy gaps in the ASM sector and discusses how 'knowledge intermediaries' can act to fill knowledge gaps. The paper concludes by setting out how an improved knowledge and network programme could address the challenges of the ASM sector through knowledge and policy innovation.

¹ See Annex 1 for the programme options proposed by Resolve and discussed in the CASM Roundtable in 2010. In that list of programme options, CASM 1.0 referred to the work of the existing CASM – primarily a website database and yearly conference. CASM 2.0 describes the more active and responsive network and knowledge programme discussed here. And CASM 3.0 refers to the in-country capacity building and technical assistance work that now provides the basis for the World Bank's CASM programme.

1: What are the ASM challenges?

1.1 Mapping ASM activities

1.1.1 Understanding the scale and contribution

Estimates of artisanal and small-scale miners vary from 20 to 30 million. The last official figures were 10 million (including up to 50 per cent women and 10 per cent children), estimated by the International Labour Organization (ILO) in 1999. Over the past 10 years numbers have increased dramatically (see Table 1 below) – driven by a host of factors including increasing gold prices (rocketing from \$290/ounce in October 2001 to \$1740/ounce in October 2011), new conflict areas where ASM activity can be a source for funds (particularly in the Democratic Republic of Congo), and increased demand for minerals such as tin, tantalum and tungsten (all used by the booming personal electronics industries).

Overall, artisanal and small-scale mining contributes 15–20 per cent of global minerals and metals. Within this, the sector produces approximately 80 per cent of all sapphires, 20 per cent of all gold and up to 20 per cent of diamonds (Estelle Levin Ltd 2012).

ASM operates in over 80 countries and is the dominant livelihood in some. In the Central African Republic two-thirds of people are estimated to rely directly or indirectly on artisanal diamond mining and conservative estimates suggest it injects as much as \$144.7 million into the economy (Eftimie *et al.* 2012). In Bolivia, mining makes up approximately 40 per cent of current income from exports, 32 per cent of which comes from ASM, with 85 per cent of the mining sector's total employment in small mining cooperatives and mines (ILO 2005:6). In Mongolia, local economies near mining are worth an estimated \$505 million annually (Eftimie *et al.* 2012).

Table 1: Estimated number of ASM miners in different countries

Country	Number of Miners
Bolivia	72,000
Brazil	10,000
Burkina Faso	100,000–200,000
Central African Republic	> 100,000
China	3,000,000–15,000,000
Democratic Republic of Congo	2,000,000
Ecuador	92,000
Ghana	180,000–200,000
India	12,000,000
Indonesia	109,000
Malawi	40,000
Mali	200,000
Mongolia	40,000–60,000
Mozambique	60,000
Nepal	120,000
Pakistan	400,000
Philippines	185,400–300,000
Papua New Guinea	50,000–60,000
South Africa	10,000
Sri Lanka	165,000
Tanzania	550,000
Uganda	196,000
Zambia	30,000
Zimbabwe	350,000–500,000

Sources: Hayes 2007, Hentschel *et al.* 2002, Hinton 2009, 2011a, Krishnara and Shah 2004 and Lahiri-Dutt 2008 in Eftimie 2012:7

1.1.2 Understanding the diversity

ASM shows considerable diversity in scale (from rudimentary mining with picks and shovels to small-scale mining with simple machinery) and in employment (from ‘diggers’ to the ‘miner’ or ‘gang leader’). ‘Diggers’ tend to be wage labourers who are excavating, washing, hauling, picking and sorting waste and transporting or providing security. Different terms are used in different cultural contexts, and each role tends to have its own local incentives and accountability structures. Diggers often include women, the elderly, and children. They are hired by the miner or gang leader – owner of the equipment, ghetto or pit – who bears all the costs and sets the terms of employment.

Most ASM is informal – operating in the absence of an applicable or appropriate legal framework. However, some miners operate within a legal framework, holding land titles and government permits, paying taxes and subject to social and environmental regulations (Gamarra Chilmaza 2005). This is termed ‘legal’ or ‘formal’ ASM. Others are illegal – operating in contravention of an applicable or appropriate legal framework.

Miners can be local people or migrants from within country or from neighbouring countries. ASM may be year-round (‘permanent ASM’) or ‘seasonal’ (for example, in conjunction with farming). Newly discovered resources can draw huge migrations into an area (‘rush mining’). Increasing market demand and mineral prices (particularly for gold) also attract opportunistic and wealthy miners into the sector. But these should be distinguished from the majority of marginalised

and vulnerable miners, driven by poverty. ASM may also be a coping mechanism for shocks (‘shock-pull mining’) – such as loss of employment, conflicts or natural disaster.

So although ASM groups may face the same problems – such as child labour, mercury use, illegal trade – their structural challenges and drivers can be very different. Policy responses need to understand mining communities’ varying incentives and the particular challenges facing different groups within those communities. Figure 1 sets out the diversity in poverty-driven ASM graphically.

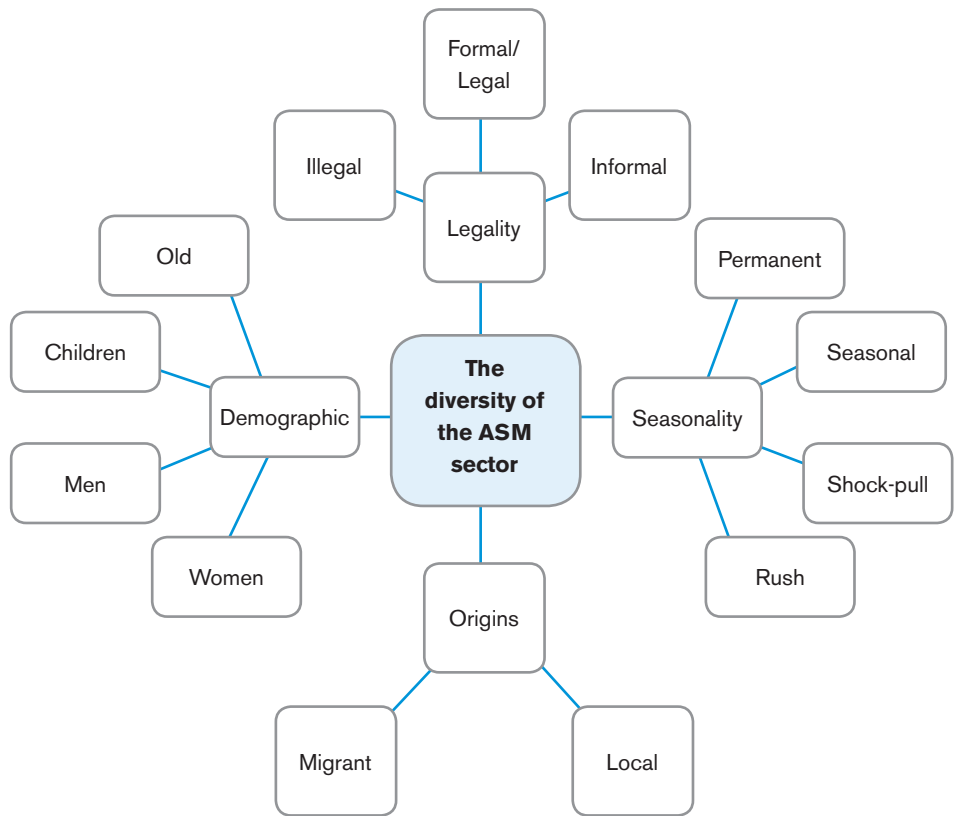
1.1.3 Understanding ASM’s counterparts

Counterparts in large-scale mining

The *large-scale* mining (LSM) sector employs approximately 2–3 million people. ASM employs roughly 10 times more, with earnings varying greatly from subsistence amounts to \$2,400 a year for gold miners in Indonesia (Telmer 2007) (although the average for gold miners is \$5–15 a day) (Siegel and Veiga 2010). *Large-scale* mining can make huge revenue contributions through national taxes, but benefits do not always reach local and poorer communities. In contrast, although ASM may not always be officially taxed, it can provide immediate, direct and local economic inputs.

In some countries, ASM production equals or exceeds that of LSM. For example, in China ASM produces 75 per cent of bauxite and in Indonesia ASM tin production equals that of LSM (MMSD 2002:318). In Brazil, small-scale miners mine 84 per cent of all construction and building materials. In Ecuador

Figure 1: Diversity in poverty-driven ASM



and Ghana, ASM produces 65 and 27 per cent of all gold respectively.

Comparisons between LSM's and ASM's environmental impacts are not straightforward. Comparing the impacts of ASM and LSM gold mining make an interesting example (see Telmer 2009). ASM uses less energy, releases fewer greenhouse gasses and produces less waste rock and tailings per unit of gold. However, pollution is a problem. ASM releases 40 times more mercury per unit of gold produced than LSM (and five times more overall). ASM gold mining using cyanide uses about twice as much per unit of gold produced compared with LSM. And ASM does not practice waste management.

Both ASM and LSM can have dire social impacts. Although, leaders in the LSM sector have developed many technical solutions to environmental problems over the years, LSM continues to struggle with the complexity of mining's social problems (Buxton 2012). LSM may not be the first cause of local poverty, but a new mine will often aggravate poverty's challenges or cause other social problems. An influx of people can put pressure on local resources, and the mine may force resettlement on communities. Social problems in the ASM sector, however, should not be viewed only as a mining problem, but additionally one of poverty and marginalisation exacerbated by the political economy of informality. The underlying challenges driving ASM are often conflicts, extreme poverty and vulnerability.

Counterparts in the other sectors

ASM as an economic activity compares both favourably and unfavourably with its counterparts in forestry, fisheries and farming – but it is much less well understood. Far fewer

studies have examined the structural challenges across a range of societies, communities and geographies, so less is known about how different ASM communities operate.

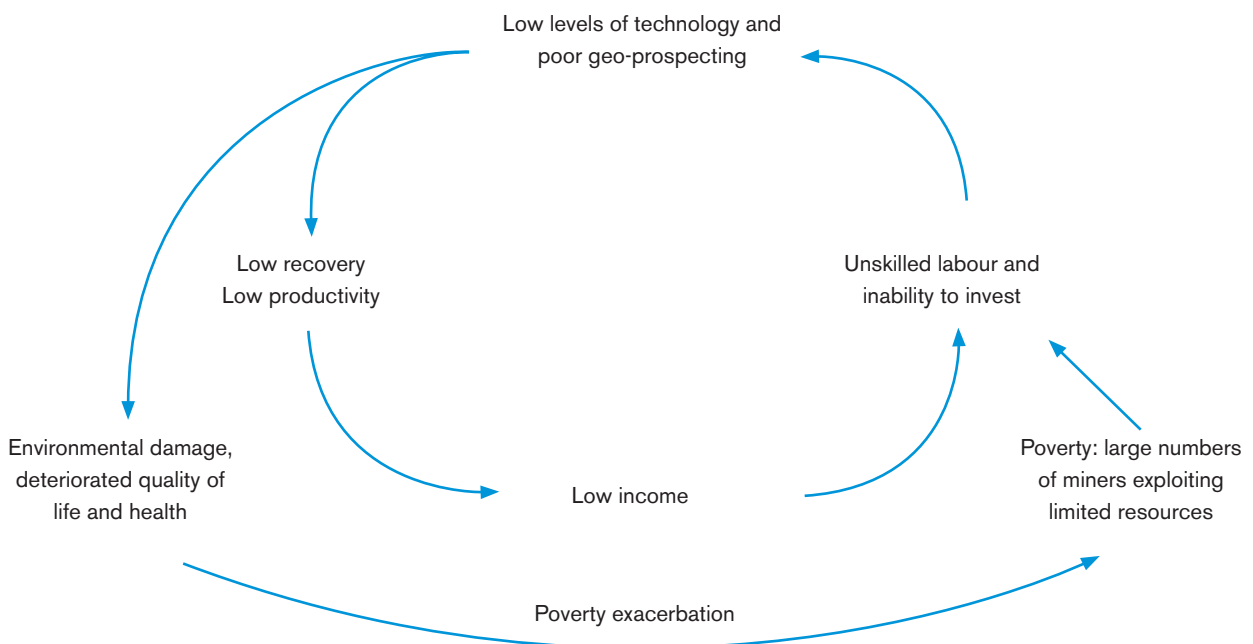
ASM is three to five times more lucrative than other small-scale, poverty-driven economic activities with impacts on both household income and contribution to local economies (Siegel and Veiga 2009) (also discussed in section 1.1.1 above). Wages range upwards of \$2 a day depending on the mineral, the miner's role, and geography. Uganda's 200,000 artisanal miners contribute around 20 times more to GDP than foresters, fishers and farmers (Eftimie *et al.* 2012:4). However, like small-scale fisheries, farming and forestry, ASM is largely an informal economy, so its contribution is often invisible to government decision makers and the general public.

Each natural resource sector's environmental impacts vary greatly in type and scale but ASM's social impacts tend to be the most harrowing. ASM has inherent health and safety risks and the prospects of lucrative rewards incite greater risk taking.

1.2 Mapping the issues

Often, artisanal and small-scale miners lack the most basic social and economic infrastructure needed to break out of extreme poverty (Siegel and Veiga 2010:277), making them unable to successfully educate their children, build upon their productive assets, and move ahead economically (Carter *et al.* 2007:838). Inappropriate technologies, poor information, low levels of environmental awareness and a low asset base perpetuate this poverty trap.

Figure 2: The ASM Poverty Trap



Source: Barry 1996 modified in Hilson 2012

Poverty is a much studied and theorised concept, its many facets framed and explained in many ways. The two facets explored here are vulnerability and marginalisation. These are further exacerbated by informality – though informality can also provide opportunities, as discussed below.

1.2.1 Vulnerability

ASM is frequently driven by vulnerability, offering an (often short-term) coping mechanism for poverty.

‘Vulnerability’ is a person’s (or group’s) particular characteristics or situation that influences their ability to anticipate and overcome shocks and hazards (Wisner 2004). People are vulnerable when they have limited ability to overcome unpredictable crises and shocks such as floods, drought, sickness, environmental degradation and worsening terms of trade (URT 2004:19). Poor people are especially vulnerable, as they have few buffers or resources to cope with hazards or shocks. Understanding poverty reduction requires an understanding of vulnerability (IDS 2012).

For example, gold mining is no longer just a boom and bust activity, but one driven by the inherent vulnerabilities of poverty (although there are some who continue to be driven by opportunism). Gold is currency for people who are unable to participate in the cash economy. Its high margins and low barriers to entry make it a highly lucrative activity for those with little human, physical and financial capital. ASM can thus provide a relief to vulnerability, particularly where resources are invested wisely.

But ASM is itself a livelihood that exposes its participants to vulnerability. For example, unstable mineral prices create vulnerability for those relying on ASM as their main livelihood. Price fluctuations affect a household’s ability to pay for food, schooling, health, and other basic needs. Cash economies can make women and children particularly vulnerable where men restrict or withhold money for household essentials. ASM communities are vulnerable to exploitation in trade, to criminal activity as well as to increasing health risks (as few have access to local hospitals and clinics).

1.2.2 Marginalisation

The Hivos–IIED Knowledge Programme on small producer agency describes ‘small-scale farmers’ by their degree of marginalisation rather than the size of their land or scale (Murphy 2010) – recognising that size does not always equate to prosperity. The same approach can be applied to artisanal and small-scale miners, regardless of their exact size, level of mechanisation, etc.

ASM faces the same marginalisation as other ‘small-scale’ sectors. Many miners operate in remote regions with poor transport and market access, suffering geographical marginalisation that makes them less able to access information, key technologies and inputs. It also leads to political marginalisation, as communities far from the capital or ‘centre’ are less able to influence policy and keep ‘in sight of’ policymakers. Small-scale producers may be marginalised in terms of access to markets – forced to sell through informal, illegal or less lucrative channels. Marginalisation is often linked to food insecurity. Concern International defines marginalised farmers as ‘farming yet hungry’ (Murphy 2010). The same

approach can be applied to ASM – ‘mining yet hungry’ – meaning the miners have insufficient assets or income to purchase adequate food for themselves or their dependents.

1.2.3 Informality

Informality – operating without an applicable or appropriate legal framework – was once considered synonymous with subsistence activities that offer no real opportunity for economic development. More recently, interpretations have become more nuanced. Informality can represent innovation and dynamism, and can offer poor producers an accessible route into economic activity (De Soto 2002; Hart 2006). However, it can also exacerbate problems of marginalisation and vulnerability. Informality marginalises a community politically, economically and even socially. Informality can both increase resilience by providing an economic livelihood activity and increase vulnerability as it removes the protections and opportunities provided by the government.

Most ASM is informal – but miners are not alone. Many small-scale producers in natural resources sectors operate informally and often this is the norm. In Bolivia, for example, people use the term ‘popular economy’ or ‘people’s economy’ (Hivos 2012a). This resonates with the ILO’s (1972) definition of informality as a ‘way of doing things’ defined by:

- low entry barriers to entrepreneurship in terms of skills and capital requirements;
- family ownership of enterprises;
- small scale of operation;
- intensive production with outdated technology; and
- unregulated and competitive markets.

Often, informality dominates because of formidable obstacles to formalisation. These processes tend to be overly complicated and bureaucratic, centrally determined and managed, reliant on the state for regulation, and lacking social relevance. This is both symptomatic of and exacerbates geographic, political and social marginalisation.

Informal systems often have rules and processes based on years of social and cultural tradition. Regulation is through cultural norms and social contracts – a form of ‘legal pluralism’ in which traditional, informal and formal rules overlap and operate simultaneously (Cleaver 2000). Although not perfect, they are usually socially relevant (Hart 2006). ASM, for example, is often viewed as chaotic and disorganised. But in reality there are often high levels of organisation based on years of cultural practice and social interaction (i.e. regulation – just not by the state) (see, for example, Vlassenroot and Van Bockstael’s 2008 studies of artisanal diamond mining).

Many academics have long expected informal sectors to be gradually absorbed into formal sectors as development progresses. But in many sectors, including ASM, this hasn’t happened. Governments often continue to be inefficient or even predatory in their regulation and management of the sector, and the formal sector’s capital intensity excludes many who still turn to the informal sector for employment and income. Legal systems often perpetuate informality and thereby prevent individual and country resources from being used efficiently.

So informality cannot be viewed simply as either a positive choice or a problem to be overcome. Rather, it can be seen as a response to government's failure to properly set and implement appropriate laws. To be effective, formalisation policies require the state to recognise the dynamism and resilience of the informal sector and incentivise small-scale producers to participate in the market in fair competition with their larger/already formalised counterparts.

1.2.4 Facing inherent structural challenges

The structural dynamics of the ASM sector are poorly understood. Despite significant documentation of ASM's environmental and socio-economic impacts there 'continues to be very little baseline information on how operators and activities are organised' (Hilson 2012:184). Table 2 (below) explores how the ASM sector is often perceived, understood and approached – the 'problem framing' – and then highlights some of what is known about the more problematic structural causes and challenges. Within these, certain trends begin to emerge that reveal what marginalisation, vulnerability and informality mean for ASM. These include:

- weak legislation, policies and implementation and often government marginalisation or repression (favouring LSM at the expense of ASM);
- cultural marginalisation and exclusion of certain demographic groups;
- low barriers to entry into informal or illegal ASM with its poor social and environmental protections;
- lack of legal protection for land and resource rights;
- poverty-driven, short-term decision making;
- uncontrolled migration;
- poor access to financial services, market information, technology and geological data;

- political exclusion (meaning miners are often excluded from decision making at various levels) and 'policy blindness';
- lack of baseline/census data on ASM individuals and communities; and
- reliance on mining in ASM communities due to vulnerability and marginalisation.

Structural challenges can vary dramatically by region or geography. For example, child labour in ASM varies between Latin America, Asia and Africa (ILO 2005:4–5). In Latin America, where ASM has a long history, children's involvement is part of that long tradition. In Asia, the private sector's involvement in ASM means there is less child labour. In South Asia the traditional stratifications of society means child labour is often seen alongside social marginalisation. And in Africa, where ASM is associated with civil war and conflict, weak government and social institutions means children are forced into mining through need.

So local knowledge and understanding on ASM is crucial. This paper discusses what is known at a broad level on the structural challenges facing the sector (with more detail in the bibliographic references). However, far more knowledge needs to be gathered and shared on the exact nature of the challenge in local ASM communities. The next section explores this need further.

In short, we should consider ASM as a response to poverty and vulnerability. This huge sector will neither vanish nor become formalised any time soon. The scale of both its problems and its opportunities demands more attention. Development agencies, governments and businesses need to learn and, where appropriate, act to ensure they recognise the positive contributions that ASM can make, and start to address its challenges.

Table 2: Mapping the problems and challenges of ASM

	How the impact or problem is expressed	What we know about the structural causes or challenges
Social Issues	Women are often involved in processing and waste disposal, exposing them to harmful chemicals, with severe consequences for family well-being and health, including during pregnancy. Women often suffer crime, domestic violence and rape and are forced into prostitution. Women's 'economic' activities are an addition to their domestic responsibilities. Women make less money for similar tasks (Eftimie <i>et al.</i> 2012:9); rarely control mining income (ibid); and usually work near the home in less profitable seasonal activities (Dreschler 2001 in Eftimie <i>et al.</i> 2012:8). Degradation of nearby natural resources needed for food, firewood and medicine particularly affects women.	Cultural or traditional 'factors, functions and expectations' determine roles, affecting resources rights and decision making (Eftimie <i>et al.</i> 2012:9). Women are often 'invisible' on mine sites, transporting and processing materials (often in domestic/private spaces) rather than digging (Eftimie <i>et al.</i> 2012). Their contributions are difficult to identify, poorly researched, informal and therefore perceived as marginal by policymakers. Women's unique role and challenges are often overlooked in policy responses where they are considered in the same paragraph as children or treated the same as men in 'gender neutral' policies. Women's employment in ASM tends to decrease as mechanisation and organisation increases – making them less likely to benefit from these developments. Lack of law and order makes women more vulnerable to crimes. Low incomes force them into prostitution.

	How the impact or problem is expressed	What we know about the structural causes or challenges
Social Issues	ASM is one of the worst forms of child labour because of widespread and severe hazards that risk death, injury and disease (ILO 2005). Children undertake arduous activities such as heavy lifting, digging, ore haulage and transport from as young as six years old and are working underground from the age of nine (MMSD 2002:24). Child labour can range from help after school to full time slave-like employment in the most hazardous conditions. Children can become involved in prostitution, drug and alcohol abuse and violence. In the early 2000s the ILO estimated a million children were artisanal miners. This number is likely to have increased with the threefold increase in the total number involved in ASM since that time.	The ILO (2005:2–3) identifies a number of structural challenges leading to child labour in ASM: Low barriers to entry, minimal mechanisation and a lot of physically demanding work with no need for education makes it easy to use children. Access tunnels may be so small that only children can fit down them. Poor regulation of health and safety expose children to extreme risks. ASM's poverty-driven nature and low margins force families to use child labour. Migration patterns associated with ASM disrupts children's schooling. Mining's health and environmental hazards are poorly understood, especially for children. Child labour is closely linked to women's burdens (both at the mine and at home) and to their extreme poverty, lack of education and lack of control over earnings.
	Conflicts between ASM and LSM activities are increasing as ASM increases and as LSM targets more remote areas. Violent interactions between the two (including deaths) necessitate security protocols. LSM can damage ASM communities by causing in-migrations, inflation, increased pressure on social services, dilution of culture and traditional beliefs and by undermining social cohesion (D'Souza 2007). Although LSM can bring better infrastructure and ways of working, it can also force ASM into less lucrative alternatives, restrict the land mined and damage other natural resources that communities rely on (ibid). ASM can be the single biggest problem for <i>large-scale</i> mines, particularly in gold. ASM can undermine a company's social licence to operate by creating environmental and public health problems, conflicts with security and allegations of human rights abuse, and by disputing rights to land and ownership of the resources. Managing interactions with ASM can take huge amounts of time, present a serious security issue, disrupt operations and undermine efforts to rehabilitate certain areas. The legal impacts can be huge and ongoing – preventing mines from securing project financing.	ASM workers often don't have formally recognised land rights making it difficult for them to defend their activities and making it difficult for LSM to identify them and determine the best way to interact with them. Governments often favour LSM with its large investments and government returns, and ignore ASM's role and contribution. This is reflected in laws and policies that fail to protect ASM. Long term conflicts and resistance arise where LSM and ASM compete for the same resources. Pre-existing ASM workers often act as 'unpaid geologists' for LSM to identify resources. Elsewhere, ASM miners may flock to an LSM site, re-mining waste products and taking advantage of easy access – either passively or with criminal intent. Policies for resettlement can be poorly thought through and fail to understand, or address, existing livelihoods' social, economic and political contexts. Remoteness and social and political marginalisation increase the likelihood of ASM getting a bad deal. There is much mutual distrust and misunderstanding between the sectors.

	How the impact or problem is expressed	What we know about the structural causes or challenges
Social Issues	Occupational and community health and safety tends to be very poor in ASM. Self-employed miners in the smallest underground mines typically work in unsupported tunnels (of 1.5 metres in diameter and up to 90 metres deep) drilling and removing rock with hand tools and carrying the ore to the surface in sacks. Most miners wear shorts, trainers and sometimes a shirt. Helmets are only occasionally worn. Use of earplugs, masks and gloves is rare. The most common accidents are trips or falls, being hit by machinery or a moving object, and cave-ins or rock falls (ILO 1999:19). The biggest health risks are: exposure to dust (silicosis); mercury and other chemicals; the effects of noise and vibration, poor ventilation (heat, humidity, lack of oxygen), and over-exertion; inadequate work space, and inappropriate equipment (ibid). Other commonplace health issues include poor sanitation and lack of clean water, malaria, typhoid, dysentery, tuberculosis, sexually transmitted diseases (including HIV/AIDS), malnutrition, and substance abuse. These can reach epidemic proportions when make-shift camps arise for rush mining.	The high levels of health and safety risks for ASM miners have several causes (ICMM <i>et al.</i> 2009): Informal and unregulated, much ASM activity operates outside of health and safety legislation or enforcement. Protective equipment, from helmets and dust masks through to guarding shields in front of operating blades, may be cost-prohibitive for ASM miners. Technical expertise in geological stress analysis in underground mines is typically absent, leading to more unpredicted rock falls. Even where miners introduce mechanised equipment and techniques, complementary safety measures are commonly overlooked. Even where those concerned are motivated to take and sustain action to improve safety, the necessary resources are too often lacking (ILO 1999). Few, if any, small mines have facilities for medical care. Apart from workers in government-owned or controlled mines there is no regular health screening of small-scale miners, and attendance at hospitals and clinics generally only follows serious injury or illness.
	ASM for gold is the world's second worst mercury polluter, responsible for one-quarter to one-third of global mercury pollution (Siegel and Veiga 2010:273). ASM releases 640–1350 tonnes of mercury a year from at least 70 countries. On average, 350 tonnes enter the atmosphere. The rest is released into the hydrosphere (rivers, lakes, soils, tailings) (Telmer and Veiga 2009). Mercury is discarded in tailings and released when gold–mercury amalgam is burnt during processing. Mercury impairs brain function, damaging coordination and memory, lowering intelligence, and causing hearing loss, birth defects and miscarriages (Ban Toxics 2010:14). The risks are therefore heightened for pregnant women, children and babies.	Poor regulation and poverty means that few miners consider mercury pollution, especially from gold processing, where profits are high. Processing gold ore using mercury is an easy one person job that is highly effective under field conditions. Miners most often say that they use mercury because it produces quick wins for daily subsistence (Ban Toxics 2010:20). Mercury tends to be highly accessible and extremely cheap compared to the price the gold is sold for. The alternatives are not as easy to use, are more expensive and usually less accessible. Many miners are not aware of the risks to health and the environment or alternative technologies. Many have no choice of alternatives. Mercury is usually traded illegally/ informally on the black market.
Environmental Issues	ASM's other environmental impacts include erosion and deforestation of protected areas, biodiversity loss and water pollution from dumped tailings, alluvial river damage, acid rock drainage, river siltation. These have knock on effects for health: contaminated drinking water, stagnant water that attracts mosquitos, increasing malaria etc.	Much ASM is for subsistence and is driven by immediate concerns rather than a view to the long term consequences of activities. Miners often lack the resources, knowledge and/or the requirement to work in an environmentally sensitive manner. As much of ASM is informal, regulators have little influence in enforcing good environmental practice.

	How the impact or problem is expressed	What we know about the structural causes or challenges
Economic issues	Illicit activities, smuggling and exploitation in the trade of minerals is commonplace in many ASM activities. Artisanal and small-scale miners sometimes receive as little as 70 per cent of the internationally agreed price of gold. Income is often squandered and debt financing is common. ASM trading chains are extremely complex and sometimes illegal. The sector is seen as disorganised and chaotic. Middlemen can be exploitative. There are high transaction costs of getting a product to market. ASM activities are rarely taxed, meaning huge revenue losses to the government and country from key natural resources.	Miners often work outside of the legal, or formal, system which makes them vulnerable to exploitation in trade. Poverty means product is sold quickly and the best price is not always secured. Miners rarely undertake value-adding activities because of restrictions on finance and investment. Informal organisations for economic activity aren't recognised by policymakers. Attempts to suppress ASM often forces these activities 'underground'. In cases where the government is the only official buyer of minerals, miners may be able to get more money by smuggling the product out of the country or trading illegally. Miners suffer geographical marginalisation without access to basic transport, infrastructure and equipment. Increasing consumer standards are placing additional barriers on already high entry into legal markets. ASM miners are poorly equipped to respond to these challenges due to insecure land rights, limited or no financial resources, inability to access credit and limited financial skills.
Governance issues	Conflict minerals are used by armed groups to fund violence and insurrection. So called "conflict minerals" include cassiterite (the ore for tin), coltan (the ore for a rare metal called tantalum), wolframite (tungsten ore), and gold. In the Kivu regions of the Democratic Republic of Congo (DRC), quasi-dictatorships have been established in areas where 'rebel' groups dominate and natural resource exploitation allows these groups to further their political goals. Local populations become more vulnerable and are often displaced by 'rebel' groups. They are subject to violence, forced labour and taxation. The UN reports massacres and the burning down of villages in order to seize artisanally mined coltan in the Kivu regions (UNHCR 2010:para 743). Systemic violence, particularly sexual, is endemic. Women and children are abducted from streets, schools, refugee camps and their own homes and forced into armed groups (Kim 2006:7). Rebel groups levy taxes on miners in the area leading to debt bondage and slave labour.	The structural challenges leading to conflict minerals include institutional weaknesses, government corruption, easy transportability of minerals and numerous buyers in complex trading chains. High demand and rising prices for these conflict minerals are driven by increasing demand for consumer electronics. Government corruption in these areas is rife. Official government troops in the Kivu regions are involved in the exploitation and trade of resources and as such of the population. The central DRC government has little control over the region and citizens are left with no recourse to justice. Increasing standards and requirements placed on minerals coming out of the DRC risks further marginalisation of poor communities that aren't able to access formal markets (see above).
	The problems seen in the case of conflict minerals can be replicated in many mine sites where security is poor. This includes problems of prostitution, theft, nuisance vandalism and armed conflict.	In cases of 'rush mining', a rapid increase in population can overpower existing formal or traditional security structures in the community (ICMM <i>et al.</i> 2009). Where different types of ASM operate – with both migrant and local communities, permanent, seasonal and rush miners – it can be difficult to identify leaders on whom communities can rely for law enforcement. Poor legal protection and land rights often lead to disputes over ownership and access to minerals.

2: Using knowledge to meet ASM challenges

2.1 What is the role of knowledge?

The previous section explored some of the challenges facing the ASM sector and highlighted the need for better understanding. This section begins to map out how those needs might be met, bearing in mind two underlying questions: where are the gaps in the current knowledge base that hinder ASM policymakers when making well-informed, well-reasoned judgments? and does the way in which knowledge informs policy represent the range of sector stakeholders and the different values they may hold?

Good knowledge is the basis for good development interventions. People take action when they feel empowered to do so, and they feel empowered when they have knowledge which is relevant to the context and the practical realities of the situation. Achieving this aim is the basis for a knowledge programme.

Box 2: Defining ‘policy’

The term ‘policy’ in this paper refers not just to public policy but also private sector and civil society policy. Public sector policy refers to the laws and legislation, guidelines and approaches adopted by government. Private sector policy is as important, however, in affecting change on the ground and refers to the values, methods, approaches and guidelines adopted by companies. The same definition holds for policies adopted and implemented by NGOs.

In developing such a programme it is important to recognise many different types of knowledge and that these represent people’s experiences and values – truly objective knowledge is a rare thing. This knowledge has different ways of flowing and of influencing policy. The table below outlines three types of knowledge and the ways they may influence policy.

Finding alternatives to mercury can serve as an example that puts these knowledge types into an ASM context. Some approaches rely solely on research-based knowledge – experts in a lab identify alternative solutions and develop technologies that are then handed to local communities. By

contrast, working with local communities to identify how they use mercury, and the incentives, benefits and challenges as they perceive them, is an example of collecting citizen knowledge to feed into policymaking.

This example also demonstrates the difference between top-down and bottom-up knowledge flows – a distinction that has long been debated in development literature, with different schools favouring different approaches (see Box 3).

Box 3: ‘Top-down’ and ‘bottom-up’

Top-down approaches tend to use external leadership and resources to plan, implement and evaluate development programmes (Macdonald 1995) – and are the epitome of policy processes that prioritise research-based knowledge or practice-informed knowledge from ‘experts’ in the public or private sector.

Bottom-up approaches tend to include comprehensive community participation, motivate local communities, expand learning opportunities in the community, improve local resource management, increase communication and information exchange, and ensure local access to finances and resources for development needs (Blanchard 1988). These approaches therefore explicitly incorporate and in some cases prioritise citizen knowledge and practice-informed knowledge from organisations and individuals operating ‘on the ground’. Those who follow this approach highlight the benefits as greater community empowerment and solutions that are better suited to local realities and demands (and are therefore more successful).

Innovative and effective policy solutions will need to incorporate ASM community (or ‘citizen’) knowledge on local realities, pull in practice-informed knowledge of what has and hasn’t worked, and use research-based knowledge where highly political issues require greater simplicity or independent views.

But knowledge is insufficient on its own. Influencing policy – both public and private sector – requires knowledge to be shared and communicated. ‘Knowledge intermediaries’ play this role, for example, by establishing knowledge networks.

Table 3: Different types of knowledge

Knowledge Type	Description	Influence on policy
Research-based knowledge	Held by scientists, academics or professional researchers. Based on empirical observation, usually written down in publications, reports and journal articles. Not completely independent of the values and assumptions of the researcher. Can be inaccessible to a broader audience because of high technical content and the way in which it is presented.	Helps clarify complex or highly politicised issues. High credibility where the research methods are seen as reliable and transferable to a range of contexts.
Practice-informed knowledge	Held by NGOs, companies and consultants. Based on hands-on experience of what does and doesn't work. Can be in written form (evaluations and annual reporting for example) and formally shared in meetings. But largely tacit in institutional memories, ways of working, precedents and relationships between individuals. Informed by the values and objectives of the organisation and the individual.	Helps decide and situate actions and ideas within logistical, ideological or management constraints – 'the realities of implementation'. Often, the process is informal; too much codification can make it meaningless and irrelevant. Its strength is its application to and understanding of certain contexts and situations
Citizen or lay knowledge	Held by local people and their representative organisations. Based on experiences, beliefs and values. Often held as 'social capital' – inherently tacit and best communicated through speaking or active engagement on a particular issue. Shared through the use of a particular language, lived experiences and everyday interactions. Can be highly subjective and heavily influenced by prevailing power structures and taboos that obscure the real issues. Highly context-specific so not always relevant to an international level or other contexts.	Invaluable in understanding local opinions and values and in testing ideas for local relevance and application. Getting this knowledge into policymaking requires ongoing and inclusive discussions and other participatory processes.

Source: Adapted from Jones *et al.* 2012

Knowledge intermediaries: A knowledge intermediary is an individual or organisation whose actions link knowledge with policy (Jones *et al.* 2012:xi). This role can be played in multiple ways and Section 2.3 gives examples. An intermediary complements its own skills and resources with those available within a network. An organisation like IIED can play the role of a knowledge intermediary by, for example, offering a space where a range of knowledge holders can combine knowledge towards a shared aim. IIED recognises that it has little to offer on the realities of local situations – citizen knowledge – but can offer research-based knowledge (and to some extent practice-informed knowledge) to provide a framework for sharing knowledge on a particular need or context.

Knowledge Networks: Knowledge intermediaries act through 'knowledge networks' to facilitate cooperation and coordination between individuals with knowledge on a particular topic. Networks:

- help members find their way through often unmanageable amounts of information;

- ensure that little-known or little-understood ideas are more widely understood;
- provide members with the resources, capacities and skills they need to effect policy change through knowledge;
- bring together multiple stakeholders;
- build a community of shared values and standards; and
- help members carry out their activities more effectively and learn from their peers (adapted from Mendizabal 2006 in Jones *et al.* 2012:67).

Networks are especially effective where the problem and its range of solutions are unclear. They can target particular knowledge gaps or ensure a better flow of knowledge to influence policy. The foundations for establishing a knowledge network should be assessing the stock of knowledge, understanding how it flows and responds to demand, and finding the most effective spaces in which it can influence policy.

2.2 Mapping knowledge and policy in the ASM sector

2.2.1 The stock of ASM knowledge

There is a large amount of high quality practice-informed knowledge in the ASM sector that has not necessarily been written down or publicly shared. This knowledge is held by private sector, public sector and civil society. It could be put to good use if captured effectively using reliable and transferable research methods across the diverse range of stakeholders in the sector. However, there is currently no way of systematically capturing this knowledge and providing spaces where it can be shared and fed into policy decision making.

The World Bank's CASM programme helped pool such knowledge over the past 10 years through annual international conferences, networking, and by funding research and providing a database of research and reports. Stakeholders involved in the network point to the conferences as CASM's most effective actions, as they convened key actors from the miner to the international policymaker, showcased innovative solutions, and let participants share experiences. But the CASM online database of research and reports (at www.artisanalmining.org) is hard to navigate and use and there was no systematic follow-up to capture the shared information from conferences. As CASM has now concluded its knowledge and network programme, there is no organisation playing this global role.

LSM companies and their consultants also hold a stock of practice-informed knowledge focusing on solutions to LSM-ASM interactions. This stock of knowledge – covering a range of issues and solutions from getting miners into alternative livelihoods to technical assistance, formalisation and employment of the ASM sector – is not always made public because of its contractual basis.

Only a limited amount of citizen knowledge has been captured for policy processes – particularly from ASM communities themselves. This is a significant gap and as a result ASM solutions tend to be top-down rather than bottom-up. This undermines their chances of success. For example, providing education services without incentives or opportunities for alternative income generation has been unsuccessful in tackling child labour in ASM (Hilson 2005). By contrast, interventions that consider the structural causes of child labour have greater success. For example, interventions that establish social services, improve technology or health and safety, provide incentives for micro-enterprise that generate income, or alternative employment for women, have successfully reduced child labour (ILO 2005: 20).

Finally, there is a small group of researchers and academics working on ASM issues, but they tend to focus on particular issues in particular geographies. Research-based knowledge tends therefore to be highly context specific and not necessarily active or successful in influencing policy.

2.2.2 The flow of ASM knowledge

The key knowledge holders in the ASM sector are artisanal miners and their communities, mineral processors and traders, local and national government actors, consultants,

companies, local and international civil society, researchers and international finance institutions.

Marginalisation and lack of organisation in ASM communities prevents miners collectively engaging in policy discussions, and means citizen knowledge rarely reaches policymakers at all (with some exceptions in Latin America where national-level mining associations have successfully influenced policy change (see for example Chilmaza and Rivas 2009). Marginalisation is compounded by the remoteness of many mine sites. Many people's jobs may be precarious, making them reluctant to speak out (an aspect of their 'vulnerability'). Supply chains may be relatively 'closed' with financiers having significant control of production and pricing. These realities foster a distrust of outsiders, who are seen as prying into mining practices. The national fora for engaging ASM are weak, again due to marginalisation and preference that is often given to large-scale mining investments. At the other end of the spectrum are large institutions, such as the World Bank, which have a far higher degree of influence on policymakers, particularly those in the public sector. Private sector policymakers tend to rely more on the advice of consultants (categorised here as practice-informed knowledge) but this knowledge is not always shared and made publicly available.

Certainly, knowledge flows are not coordinated in the ASM sector, particularly now the CASM programme has scaled back. There are few policy champions and ASM is still perceived to be an illegitimate sector.

Thus, the weaknesses in the existing flows of knowledge for policymaking in ASM can be summarised as:

- little citizen knowledge flowing in, which perpetuates poor understanding of both structural challenges and the livelihood opportunities ASM offers;
- insufficient coordination and formalisation of inputs across the knowledge types;
- poor accessibility and visibility of knowledge and its impacts; and
- failure to maximise opportunities for synergies in both knowledge/ understanding and practice in influencing policy improvements.

2.2.3 Demand for ASM knowledge

When it comes to demand for knowledge, different actors engage with different and separate issues, restricting both the flow and stock of knowledge.

NGOs, such as Global Witness and WWF, focus on issues of child labour, human rights, and the environment. This knowledge can be heavily value-laden and overridden with an advocacy agenda. Consultants tend to be hired by large-scale mining companies to undertake research on their interactions and conflicts with ASM. They generally focus on conflict minimisation and security, managing reputational risk, maximising community development opportunities, and meeting pressure for corporate accountability and maximisation of company benefit – such as exploration benefits and improved mine closure planning (ICMM *et al.* 2009:12). National governments demand technical assistance to realise ASM's potential and better manage its social

and environmental issues. Those holding practice-informed knowledge provide this assistance, but it does not necessarily incorporate either research- or citizen-based knowledge. This has been the main weakness in numerous failed formalisation efforts that omit to reflect the structural dynamics of trade, social contracts and informality in the local ASM sector (Vlassenroot and Van Bockstael 2008). It is also symptomatic of demands to end the 'problems' of ASM rather than viewing the issues as 'structural challenges' (as outline in Table 2 above).

Issues of governance and transparency, including international attention on conflict minerals and the US's Dodd Frank Act, are also driving demands for knowledge. But these demands may be being met at the expense of a broader, holistic approach to the sector. Certifications such as the ITRI/ iTSCi, BGR Certified Trading Chains scheme and the International Conference on the Great Lakes Region (ICGLR) regional mineral certification mechanisms have proliferated in response to the conflict minerals agenda, just as equivalent schemes have before in the agricultural and forestry sectors. Despite good documentation in other sectors, mining certification schemes are incurring many of the problems already uncovered elsewhere: a proliferation of overlapping standards, poor incentives for participation (with limited market access and often unsustainable price premiums) and universal standards that are poorly adapted to local realities and complexities, and therefore exclude the majority of miners.

2.2.4 The ASM knowledge-policy interface

There are numerous international conferences and initiatives looking at policy issues of mining and sustainable development. However, few give ASM the consideration its contribution and scale deserve. In many cases, ASM is considered only within sustainable development responses to mining and not as a sector in its own right. Some international codes, conventions and standards applicable to the mining sector mention ASM, such as the IFC Performance Standards, Global Reporting Initiative Mining and Metals Supplement and OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas. However, numerous other industry standards and codes do not mention ASM. These include the Voluntary Principles on Human Rights and Security, the Extractive Industries Transparency Initiative and the ICMM Sustainable Development Principles.

The complex, poverty-driven issues in ASM do mean the sector cannot be addressed within the mining industry alone, and needs to be considered within broader sustainable development initiatives. This has happened for mercury use, with ASM (the world's second largest mercury polluter) explicitly targeted in the Global Mercury Emissions Treaty or 'Minamata Convention' signed in January 2013. However, ASM needs consideration by many other international policy fora looking at sustainable development issues – from biodiversity and conservation to labour and women's rights.

Of course, international policy improvements alone will not achieve change 'on the ground'. National level analysis needs to assess ASM policy, how it is devised, and how well it

reflects local realities (for example, studies of laws affecting ASM in Uganda and Tanzania point to their failure to respond to the sector's idiosyncratic nature and complexity – ARM 2011a and b). Creating a link between ASM communities and national policymakers through multistakeholder process is necessary to ensure an effective knowledge-policy interface at the national level.

With the scaling-back of the World Bank's CASM initiative there is a real need for a new and networked multistakeholder 'space' for discussions – widely accepted as the most effective knowledge-policy interface for the ASM sector.

So, how might a network and knowledge programme respond to some of the challenges? The next section describes and analyses IIED's experiences on a number of such programmes.

2.3 Knowledge and network programmes

There are numerous ways of structuring a knowledge network to meet different objectives, and this section describes options IIED has used successfully before. Each involves multistakeholder dialogue to discuss, reflect on and promote solutions to ASM issues, incorporating research-, practice-informed and citizen knowledge. The options vary in cost, major outputs and outcomes, and in their 'depth versus breadth' of content. Many can be combined. For example, 'virtual networks' and 'dialogues', in some form, may be an essential core of any programme.

Each option described below offers an ASM 'theory of change' – the causal chain that helps planning achieve impacts. Annex 2 gives more in-depth case studies of how each option has been used in other sectors.

2.3.1 A virtual network

A 'virtual network' provides a solid base for information-sharing and knowledge coordination across a huge number of interested stakeholders, and can be run alongside any other option.

It is structured around email interactions and a website, which may offer:

- a searchable bibliographic database identifying and documenting relevant books, journal articles, policy papers, conference proceedings and other written materials that inform policy and practice;
- a database of organisations working on these issues (including locations and areas of interest) to foster synergies;
- a database of projects and initiatives including detail of practical initiatives; links to other web-based resources including tools, list serves, databases, newsletters etc.; and
- details of relevant forthcoming meetings and events.

By collecting and analysing information, a virtual network can offer quarterly 'horizon-scanning' or 'knowledge synthesis' for emerging issues.

Key elements of success – A successful virtual network does not simply dump information on databases and rely on users ‘pulling’ information out. Instead, it should include a ‘push’ element that encourages interaction with the information through analysis, discussion and evidence of application.

Theory of change – Better connections between a large number of disparate stakeholders, along with analysis of emerging ASM issues, will engage and inform users about the most recent debates and knowledge in the sector, supporting improved global coordination and consensus on ASM challenges and solutions.

IIED precedent – IIED runs a number of similar services including for the Poverty and Conservation Learning Group (<http://povertyandconservation.info/>) and the Green Economy Coalition (<http://www.greeneconomycoalition.org/>). The Green Economy Coalition is particularly effective at providing regular updates to its networks with, for example, briefings on ‘who is doing what and where’ (GEC 2012a) and short monthly updates on major developments (see for example GEC 2012b).

2.3.2 A knowledge review

This is a project-based option with a short timeframe that pulls together knowledge on an issue, solution or set of issues and solutions. The output may be an in-depth scoping of challenges facing the sector, a review of national or international policy fora, or an easy-to-use guide and set of proven tools. All draw on existing practice-informed, research- and citizen-based knowledge. Multi-stakeholder dialogues may be held to identify the key challenges, or test and discuss proposed solutions. Where solutions are proposed, in-country pilot programmes may be needed to test them.

Key elements of success – The process must incorporate practice-informed, research- and citizen-based knowledge, and pilot programmes where solutions are being proposed. The output should not duplicate existing efforts but add value through distillation of knowledge, easy reference or better incorporation of the range of knowledge types.

Theory of change – Change is most likely when stakeholders have confidence that knowledge is proven in a variety of contexts, and when guidance is readily available to help them select and use the most appropriate approaches for local circumstances and experiences. A knowledge review can offer this, provide a shared understanding of the knowledge across the sector, and enable measurable impact on practice and policy in both international and country programmes.

IIED precedent – IIED’s Forest Connect programme has produced a Facilitator’s Toolkit for supporters of small and medium forest enterprises that covers 16 challenges in the sector and their solutions (Forest Connect 2012). The process involved (1) determining the key issues and challenges facing the sector at a workshop of key stakeholders, (2) commissioning short papers on what is already known about solutions to those challenges, (3) piloting solutions across a number of country partners, and (4) feeding in ‘on the ground’ lessons and experiences to finalise and publish the toolkit (a pocketbook that is easy to use and reference).

2.3.3 A dialogue series

A ‘dialogue series’ offers a physical space that brings diverse stakeholders together around a table to build trust and engage in in-depth, solution-oriented discussions. A dialogue series works through crucial or contentious issues (in ASM this may be local governance, trading and supply chains or access to resources), moving from synthesis of knowledge and problem identification to options and consensus. A series might include specific regional discussions on local issues (in Latin America, Africa and Asia Pacific), international policy dialogues (which also pull together the learning from the regional dialogues), and an expert workshop (that draws on technical expertise, research and practice-informed knowledge, on a particular issue).

Key elements of success – This model relies on enthusiastic ‘champions’ as it involves people freely giving their time to promote and facilitate stakeholder actions in support of the collaborative solution. Impacts can be ensured by engaging participants before and after a dialogue to map and monitor follow-up activities.

Theory of change – Particularly contentious and challenging issues affecting the ASM sector are best addressed through shared learning and solutions, both at the level of local specificities and at international policy level. Given the resources needed to run multiple dialogues, early prioritisation of an initial limited set of issues with stakeholders is critical to managing real subsequent change, and ensuring the associated dialogue can itself engage stakeholders in the early stages of a knowledge network.

IIED precedent – IIED has been involved from the beginning in The Forests Dialogue (TFD), a highly successful initiative that now runs up to four dialogue initiatives (i.e. looks at four issues) at any given time. Issues have included: rationalising certification; implementing free, prior and informed consent; addressing forests and climate; and solutions for illegal logging. The TFD model includes a large, multi-stakeholder steering committee responsible for selecting and agreeing the issues and supporting fundraising and a secretariat with four full-time staff housed at Yale University in the United States.

2.3.4 Learning groups

‘Learning groups’ are a cost-effective way to draw together and build on the knowledge and expertise of practitioners and opinion-leaders in a specific country or theme. They comprise small carefully selected groups of self-starting, policy connected individuals who meet, exchange ideas and information, learn together, put these skills into action within their own working environments or networks, and share the results. These informal spaces complement more formalised policy processes and allow stakeholders who might not otherwise interact discuss issues freely in a ‘closed room’. Different programmes may have particular ambitions, for example involving those affected by policy decisions, such as artisanal and small-scale miners, so as to make explicit linkages and drive dialogue with those setting policy. In-country learning groups are complemented by regular international learning events where national representatives come together to share their experiences. Global lessons

distilled from this process can be used to influence international policy.

Key elements of success – Learning groups need a strong well-connected convenor (or ‘knowledge intermediary’), carefully-selected members with diverse perspectives but converging interests, well-developed links to wider networks, a strong and independent host in-country to manage finance, and an ability to plan strategically and to leverage funding. The group should be big enough to ensure diversity but small enough to remain personal. They work best when collective, professional or personal goals overlap and they need strong integration with existing in-country and international initiatives to ensure ‘ground level’ change at low cost.

Theory of change – Personal and professional development for change champions with the ASM sector would improve the linkages between them and with initiatives at national, regional and international levels. Learning groups strengthen arguments for policy change and the confidence with which individuals present that case in their existing programmes and initiatives to ensure their success.

IIED precedent – IIED has run a number of learning groups over the past 15 years, most notably on Poverty and Conservation (PCLG) and Forest Governance (FGLG). FGLG runs learning groups in 10 different countries with members undertaking research, identifying best practice, offering guidance and engaging key decision-makers to support the solutions they propose. IIED facilitates international and cross country learning. In-country projects are not funded by FGLG but members work through other processes to implement the solutions discussed.

2.3.5 Large events

Large events create a convening space for broader discussions across a wider range of stakeholders on shared issues such as the interaction with *large-scale* mining, informality, revenue management and environmental conservation.

Key elements of success – Tracking impacts from a large event can be difficult given the large number of people involved in different discussions and activities. Identifying in advance any required impacts and then providing a space and resources for follow up is key to ensuring impacts are better managed and monitored.

Theory of change – Large-scale events can provide an important space to bring together an increased number of key stakeholders in the sector to network and facilitate dialogue that may otherwise be beyond the direct activities of ASM stakeholders and an individual programme.

Precedent – Stakeholders report that CASM’s annual ASM conferences were its most effective actions, convening actors from miners to international policymakers, sharing experience and showcasing solutions. The conferences were the only opportunity for stakeholders specifically interested in ASM to come together to share experiences and knowledge. The conferences took place in countries where ASM occurs to ensure local economic opportunities for those communities. A defining feature was the involvement of artisanal miners themselves – a unique opportunity to facilitate engagement on an international platform. Poorly resourced and managed follow-up meant that the true impact of these conferences was never recorded.

Conclusion: What next for designing a knowledge programme for ASM?

Section 2.3 identified a range of options for a knowledge intermediary, based on IIED's extensive experiences. That experience has also uncovered certain critical success factors that cut across knowledge and network programmes. In summary:

- It is important to ensure the correct stakeholder representation and recognise the unique value added by each individual or participating organisation. Different stakeholders can not only bring different knowledge and value but can create a tension that challenges the status quo and develops new thinking. It is important to allow space for dissent. Active selection of network members may be needed to achieve diversity. However, some networks take time to become truly diverse as they often begin with a group of individuals who are familiar with each other and have worked together in the past.
- The role of the knowledge intermediary should be identified based on an assessment of the sector's needs. In the learning group model, for example, the knowledge intermediary's role is to help frame the sustainable development context and convene stakeholders for global knowledge sharing. Considerable importance is placed on the country teams themselves identifying key issues so as to ensure local relevance and to incorporate local knowledge for bottom-up policy influence. In the dialogue model, the intermediary acts simply as an 'honest broker' providing an independent space for dealing with contentious issues and assisting with planning the follow up activities and monitoring.
- Knowledge programmes should identify opportunities for capacity building of knowledge holders previously excluded from policy debates – such as ASM communities themselves. This can happen by co-producing knowledge and joint learning, as seen in the dialogue, learning group and knowledge review options.
- Quantifying the impacts for the ultimate beneficiaries (artisanal miners themselves) can be difficult. Results may be more anecdotal. Mapping out a clear theory of change, the outputs, outcomes and desired impacts, and the way in which this will be monitored is particularly important in a knowledge and network programme (see DFID 2011 and Hivos–IIED 2012).

- A network can take time to 'bed in' and build enough social capital between members to facilitate knowledge and information sharing. This means longer time frames to impact than most development projects, and requires a patient donor. Having flexibility upfront in the agenda, goals and activities can be crucial to convening the right number and type of stakeholders. This is particularly the case when trialling new ideas or concepts. Having a series of short-term deliverables, outputs or targets can help ensure donors and key stakeholders remain interested in the programme. A knowledge network need not expect to exist indefinitely. Having shorter-term goals and objectives can ensure it remains responsive and exists only to meet the demands of the sector (see the evolving agenda of Forest Connect in Annex 2).

This paper has articulated the challenges facing the ASM sector from a sustainable development perspective. The knowledge options described above show different ways a knowledge intermediary can meet various needs – whether that is producing knowledge that informs stakeholders, identifying and gathering expertise for a particular challenge, helping frame discussions with knowledge, or providing a space for multiple stakeholders to collaborate.

So how might a knowledge programme for ASM best draw these aspects together?

The 'learning group' approach will be particularly useful in the ASM sector, as it has been in both the forest and conservation sectors, to promote learning in country close to local policymakers and local knowledge. This is particularly true given the poor understanding of the structural challenges faced at a local level and the inadequate links between ASM communities' citizen knowledge and policy making. Based as it is on integration with existing initiatives, this low-cost approach recognises the work of development actors and others in ASM around the world and seeks to find complementarities with these – embedding knowledge about how to achieve progress with those who have the mandate to deliver it. It also integrates capacity building through shared learning and the co-production of knowledge, ensuring local actors improve their ability to influence national (and international) ASM policy.

The contentious issues in the ASM sector may require dialogues to bring together the multiple stakeholders to identify and agree the problem and solution framing. Dialogues can be incorporated at different scales into a programme. The programme may focus solely on dialogues to address contentious issues, it may choose to address one contentious issue at a time alongside other programme activities, or it may seek to hold a dialogue on an ad hoc basis when the need arises.

The 'knowledge review' component of a knowledge programme for ASM should seek to address the particular gaps in synthesis of understanding and what is known from each of the major stakeholder groups. There is a need to better understand the structural challenges facing local miners and their communities in each area to ensure successful and appropriate policy design and implementation. Identifying a tool for collecting baseline information from an ASM community – what needs to be known for policy to reflect understanding of the diversity and structural challenges of the community – and the metrics to determine 'success' in ASM and sustainable development is a knowledge gap that needs filling by drawing on what is already known and testing it to gather citizen knowledge from ASM communities themselves. Such work could be carried out through a knowledge programme.

Finally, a knowledge programme could provide spaces to meet ongoing demand for events where a larger number of ASM stakeholders can come together to share knowledge and lessons from their work. To ensure successful outcomes and impacts from these events, content should be drawn from other aspects of the programme as well as broader sustainable development issues. These events could run alongside industry or other suitable development events to promote integration into a wider agenda. Providing spaces (both physical and virtual) for follow-up activities that allow for the programme to monitor impacts will be key to holding these events.

ASM has much potential to offer a *sustainable* livelihood for poor and small-scale producers in developing countries. Where this is not possible, *alternative* livelihoods should be sought and incentivised. However, the reality is that ASM is an attractive livelihood opportunity for millions of poor people around the world and that, as with *large-scale* mining, there is market-driven demand for the resources they produce.

There is a pressing need to better understand ASM's structural challenges, and find solutions. A knowledge and network programme that fully incorporates the diverse range of stakeholders and knowledge types could build on the previous work of CASM and meet some of these needs.

Annex 1: Excerpt from the summary of outcomes of the Roundtable on the future of CASM

ROUNDTABLE ON THE FUTURE OF THE COMMUNITIES AND SMALL-SCALE MINING (CASM) INITIATIVE

Summary of Roundtable Outcomes

21 July 2011, RESOLVE

Excerpt of 'Program Elements' (pages 2–4)

Roundtable participants clearly articulated the benefits of CASM's network features and its contributions over the past ten years as a platform and connector for information sharing and networking. At the same time, participants noted that, to garner sufficient interest and funding to continue in the future, CASM must have the mandate and resources to enable more concrete results on the ground in countries with artisanal and small-scale mining (ASM) communities. These themes emerged from the pre-meeting interviews and the meeting itself.

Participants began envisioning the CASM program as a package of a network base, stronger delivery capacity related to existing activities and services, with a more active in-the-field support role aimed at bolstering host country capacity and cooperation between government, private sector, civil society, and ASM practitioners. A central element of this new program role centred on the notion of tri-partite (government, industry, civil society) or multi-party mutual contribution and mutual accountability for supporting improvements in the ASM sector in specific countries.

Roundtable participants generally supported the development of a business plan with the following package of program elements:

CASM 1.0: Affirm and strengthen current network, website, and tools. Participants saw significant value in the CASM Network and wanted to ensure CASM met its current commitments and obligations, particularly during this transition stage and interim period. CASM should continue to operate its website and it should make investments in strengthening its web presence to ensure that it remains up to date.

CASM should also ensure that all reports and tools are current and available on the website. CASM should begin to plan for a meeting but recognise a) that the meeting should occur after a business plan is developed and b) that it is likely to be necessary to secure additional funds, including sponsorships, to support the meeting. A date should be set once a timeline is finalised for the business plan. The commitment to these activities during this period of transition will send a message that, while its form and function will change in the coming months, stakeholders and donors continue to value and support the CASM brand and its evolution into a more active entity.

CASM 2.0: Activate and enhance the CASM network and network services. Stakeholders recognise the value of CASM's existing network and information-sharing functions, as well as the need for the organisation to take a more active role in the future. As such, roundtable participants recommended that the next CASM Secretariat be designed and resourced to actively seek and make connections between key ASM actors and activities, as well as to distil and promote lessons learned from ASM projects and literature. Additionally, participants supported the idea that small-scale miners and others should be asked to join the network and become actual members, demonstrating the network's importance and need.

For example, rather than simply collecting relevant documents on the CASM website, staff would review literature to identify trends, best practices, and other information of relevance to CASM members/stakeholders. CASM may also take a more active research role to fill in knowledge gaps.

Further, CASM would help identify and connect to key global initiatives for which ASM is or should be a central issue. For example, CASM could liaise with the Global Mercury Partnership and the treaty process, either by directly participating or identifying CASM members/stakeholders who can represent and advocate for sustainable ASM/SSM in those fora. CASM would also organise an active roster of experts and service providers to support members and in-country activities.

CASM could also convene tripartite discussions when major issues needing multi-stakeholder discussion and action arise. These would occur on both a global and regional level. This would position CASM as a support and service to communities, governments, mining companies, companies in the supply chain, and others as they grappled with issues related to the ASM sector. CASM would be seen as a 'go-to' for necessary dialogue and solutions.

CASM 2.0 would be enhanced by a more advanced suite of collaborative technology tools to increase access and provide network members with enhanced services.

CASM 3.0: Provide solutions – in-country capacity building and accountability. Roundtable participants noted that there is a need for in-country work with governments, private sector, civil society, and ASM practitioners to support stronger relationships, project planning and troubleshooting, and effective implementation of ASM-related policies and practices. Participants also identified a need for accountability mechanisms to measure and report on progress in these areas. The future CASM could play this role by supporting work at the country and perhaps regional level, either providing in-region services directly or identifying other qualified technical assistance providers.

As part of this work, CASM could convene multi-sector teams to support governments in development of sector goals. This would entail working with governments and other local stakeholders to create 'action plans' or 'roadmaps' that address social, economic, environmental, and other key ASM issues, and that build in milestones and accountability

mechanisms to measure progress against objectives. The program could also include pilots to test solutions, training and capacity building to support progress towards goals.

Within the context of in-country objectives, and support, stakeholders and experts would work together to develop and implement strategies to address issues such as mercury and cyanide use, conflict and conflict metals, supply chain systems and transparency, and conflicts between large-scale and small-scale mining. This would position the new CASM to make a solid contribution to addressing these challenges on-the-ground and with regard to global policy dialogues.

If successful, this work could bolster government capacity and improve investor/donor opportunities in countries. As such, CASM could also consider designing and supporting (directly or through fundraising assistance) a financing mechanism for in-country projects that correspond to country-specific objectives and that benefit the ASM community and promote responsible mining, health and safety, alternate livelihoods, and other goals.

It is important to note that the frame for this solutions focused program is one of supporting and advancing sustainable development, not simply addressing ASM. As such strategies and tools would address broader development issues.

Roundtable participants suggested these program elements as a reflection of CASM's existing strengths, while recognising opportunities for a more active, results-oriented approach to its work.

Annex 2: Case studies on IIED's knowledge programmes

Forest Connect

Objectives

To equip supporters of small forest enterprises with the facilitation skills to do their job effectively, with the overall goal of reducing poverty and deforestation by better connecting small forest enterprises to: each other, emerging markets, service producers, and decision-makers.

This ad hoc international alliance sought to address a particular problem: that small forest enterprises are isolated – from each other, from markets and information, from providers of business development and financial services and from policy and decision makers. They are further isolated geographically by poor transport and communications infrastructure, lack of scale and capacity, and language or other cultural barriers (Mayers and Macqueen 2008 in Forest Connect 2008). This makes sustainable forest management inefficient and hinders profit generation, and the reinvestment of that profit for the good of forest-dependent peoples.

The alliance's focus on facilitated 'market system development' to improve small forest enterprises followed analysis that mapped interventions in the sector and encouraged a move in this direction (Macqueen 2008).

Target audience

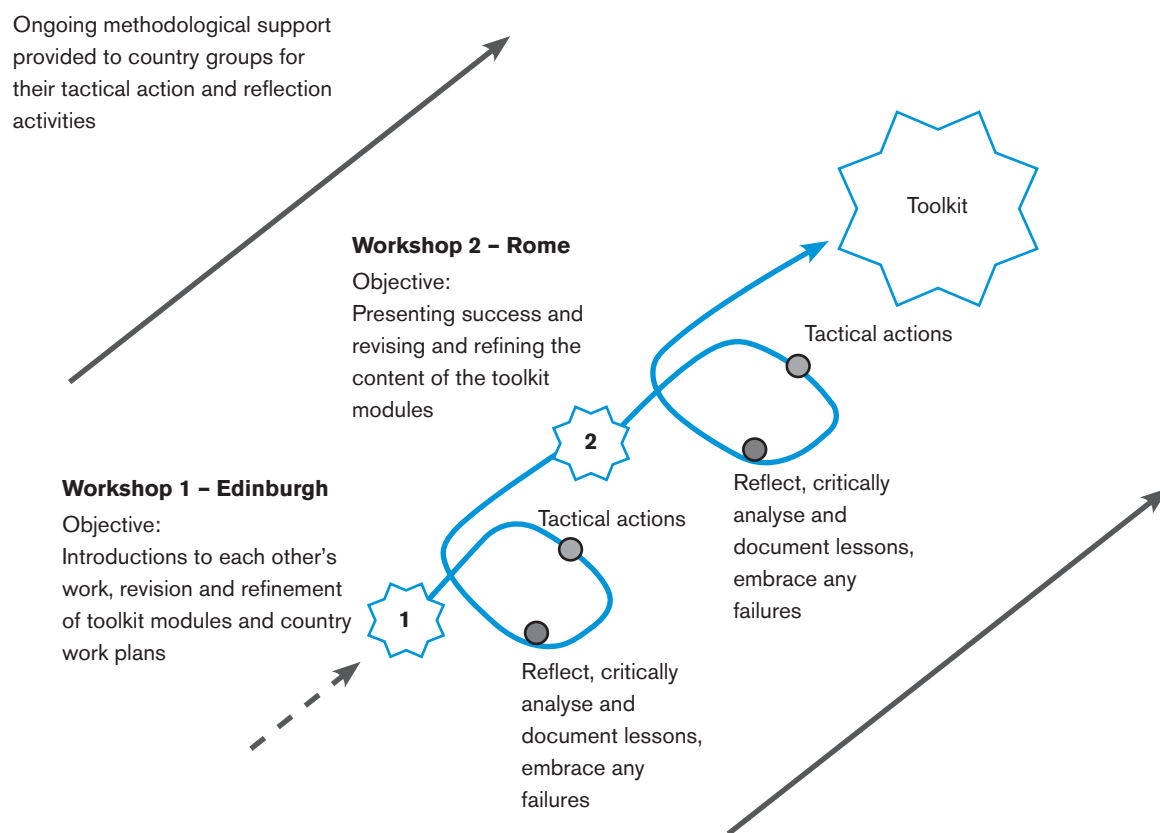
Supporters of small forest enterprises – there are at least 20 million people formally employed in small forest enterprises, but since the vast majority of such enterprises are informal (not registered) the real number is much larger, probably running into mid-high hundreds of millions (Forest Connect 2008). IIED doesn't have the field presence to reach all of these producers directly and, moreover, their issues tend to be context specific. Targeting their supporters means that the network is able to help small forest enterprises through institutions that have local knowledge and presence.

Activities

One project-based part of Forest Connect's work has been to develop a facilitator's toolkit for supporting small forest enterprises (Forest Connect 2012). This toolkit was developed over two phases, the first of which determined what guidance supporters of such enterprises needed and the second of which shared country experiences to test and enrich the draft guidance (see further Forest Connect 2010 and Forest Connect 2008).

Phase 1 (2008–2010) – A workshop developed the framework for the toolkit based on the needs expressed by participating country partners. The workshop included presentations from country teams on the issues of Small and Medium Forest Enterprises (SMFEs). These identified opportunities, challenges and successful interactions. There were also a few presentations from experts on solutions to well-known challenges affecting SMFEs. At the end of the workshop, 16 areas, or 'modules', were identified, ranging from product development and financial planning for SMFEs to identifying national SMFE support institutions and setting up evaluation processes for external agencies. Papers by well-known experts on the topic were commissioned to provide guidance on each of these modules, based on what was already known. These five-page papers provided the draft guidance that was tested and discussed in Phase 2. Ongoing in-country support funded by Forest Connect provided a rich test bed of experience on which to draw.

Phase 2 (2010–2012) – In-country work continued, but with a specific mandate to test different modules of the guidance prepared in the first phase. A workshop was held to share experiences that enriched the draft guidance. The draft toolkit was prepared in advanced (based on previously commissioned studies) and enriched at the workshops with shared field experiences and case studies. A final toolkit was then written and published.

Figure 3: Forest Connect's iterative process of action learning

Source: Forest Connect 2008

The toolkit is made up of 16 modules with transferable guidance targeted at the supporters of SMFEs. Each module considers:

- Purpose – a few sentences describing what the tool is for
- Outline – the main steps needed to try the tool out
- Useful tips – practical advice based on experience and case study boxes documenting experiences from the testing of the draft guidance
- Further information – where to get further advice

Forest Connect's core business is active programmes of work in 12 countries with a much more practical focus on helping facilitators offer support to small forest enterprises. Such work typically involves carrying out national diagnostics of the main opportunities and challenges facing small forest enterprise sub-sectors, more detailed value analysis of the most promising sub-sectors, and then a range of facilitated interventions (e.g. business training, association building, design workshops).

Forest Connect also runs a broader network of 900+ supporters in 60 countries linked by an international social networking site (<http://forestconnect.ning.com>).

The output from these two workshops, in country work programmes and network interaction is a community of practice linked by strong shared interests and a commitment to both people and forests.

With the toolkit complete, Forest Connect has moved to follow-up work, including awareness building, publication and launch of the guidance modules in English, French and Spanish.

Participants and stakeholders in the network have also been working to help develop a new framework called 'Investing in Locally Controlled Forestry' (ILCF) which captures recent thinking on how to attract asset investment towards the small forest enterprises subsector (TFD 2012).

Looking to the future, Forest Connect has commissioned an independent third-party review of the past four years of work, and is also commissioning eight national forward-looking papers. These forward-looking papers, which acknowledge the scarce resources available for small forest enterprise support, assess which small forest enterprise sub-sectors are likely to best deliver the landscape-level imperatives of livelihood improvements and sustainable management that forests urgently require from local to global levels.

Governance and operating structure

Forest Connect is co-managed by staff within IIED and FAO. Partners provide in-country support using their wide networks and local presence.

A steering committee is made up of four country team representatives and one additional external expert (nominated by the country teams). It provides strategic guidance, helps with fundraising and profile raising, and acts to monitor and evaluate the activities of Forest Connect.

Funding

Two phased grants of \$125,000 each (totalling \$250,000) funded the toolkit – including the workshops and commissioned expert papers.

IIED and FAO have contributed \$200,000 a year (totalling \$800,000 over the four-year period to date) to support in-country teams testing how to implement the guidance.

Total budget over four years to date: ~ \$1 million spread over 12 countries (i.e. small)

Impact

The main deliverables from the project have been (i) a community of practice sharing learning across more than 900 members from 60 countries; (ii) a web-based and learning event platform serving that community; (iii) 12 country programmes of action learning in support of small forest enterprises; (iv) six stories of change from those programmes and (v) the facilitator's toolkit. This latter deliverable has been both tested and implemented across a number of countries.

In the 12 countries that Forest Connect has work programmes, it has had a measureable impact on government, NGO and private sector policy for forest enterprise support. This has, for example, led to improved training and capacity building programmes (in line with the guidance in the toolkit), an integrated communications strategy and national platforms for SMFE eco-tourism operators and new product development. Test sites for the toolkit have spurred other initiatives within in the sector. National communication platforms for SMFEs have emerged in 11 of the countries and act to share lessons on tools and tactics at the national level.

Forest Connect's work directly complements that of its donors and partner organisations, so multiplying the impacts and helping spread the guidance.

Forest Connect has maintained its relevance beyond its original objectives and, at the request of its stakeholders, is building on its successes to develop more in-depth guidance on particular development issues, such as gender and the nitrogen use in forests.

Forest Governance Learning Group (FGLG)

Objectives

Improved governance of forest resources in ten countries in Africa and Asia

Target audience

Those who make and implement policy governing forest resources.

The immediate target group are key change agents and advocates for reform in the forest sector; leading allies in important adjacent sectors such as agriculture and forest ministries; well-connected forest friendly power brokers and deal members in government or NGOs; and leaders in forest enterprise (Blomley 2009:34). Individuals from these

stakeholder groups are represented in each country team/ learning group.

The ultimate target group/ beneficiaries are the local communities at the forest margin who own or use forest products and services as well as community-based or privately owned small and medium forest enterprises (SMFEs). These groups benefit through the actions of intermediaries such as national representatives of the poor, national government departments, national and international forest industry associations and international forest governance institutions.

Activities

FGLG is an informal alliance of forest governance stakeholders within 10 countries, facilitated by IIED. The informal nature of the alliance means that members rarely communicate externally as 'FGLG' but find other channels through which to make their voices heard.

The country teams undertake a series of activities based on annual work plans and budgets (these can be found at IIED 2013). An example of work undertaken for a specific theme is shown below.

Theme: Illegal and corrupt forestry that degrades livelihoods is reduced through the adoption and spread of practical approaches to improved forest governance

Suggested activities:

- Research practical approaches to addressing the links between illegality and poverty in country; and promote this research widely
- Refine approaches to tackling the impacts of illegality/ poverty where an existing body of knowledge exists
- Shape the above findings into specific guidance materials and tools that can effect change within key strategic frameworks (such as national forest programmes, decentralisation and related processes)
- Engage key decision makers within these strategic frameworks to ensure they support the practical changes suggested
- Develop and run training events to build long term capacity to tackle illegality and enhance livelihoods

Source: Blomley 2009:12

The activities and composition of the learning groups are very different between countries. Each country team is supported by a host organisation – a local/ national NGO (in most cases), a consultancy firm or an enterprise. This host organisation is responsible for receiving and disseminating funds, reporting on progress and convening the network in country.

IIED provides a supporting and facilitation role for all the teams, creating a platform for shared learning and an overarching framework for activities on the ground. The IIED team also helps identify critical issues in country, develop work plans and provide intellectual inputs to the studies, such as policy briefs and other outputs. But country teams have considerable flexibility to engage in issues that are most relevant locally.

The FGLG carefully and deliberately selected certain individuals and institutions for each of the 10 learning groups to ensure they represented diverse stakeholder interests and institutional affiliations. The size of groups ranges from 3 to 25 in different countries. Countries were selected on the basis that IIED staff had an established network or strong linkages with the work ongoing in that country. This pragmatic approach meant it was possible to get the work started quickly (although it did mean that certain countries facing severe forest governance challenges, such as the Democratic Republic of Congo, were not included).

The country teams produce policy research reports, policy briefs and governance tools.

IIED organises an annual 'international event' to facilitate exchange and mutual learning between country teams. These events include a field trip to share lessons from the host country and presentations by all country teams on achievements, tactics, lessons, challenges and upcoming work plans. Informal peer review of the presentations facilitates discussion, critique and lesson sharing. The discussions at these events have improved over the years as social capital between the participants has built up (although there continue to be difficulties of translation with and the ability of non-English speakers to participate in fast moving discussions).

Bilateral learning between country teams now takes place on an informal basis when shared interests are identified.

There are also frequent email exchanges (or 'governance gossip') across country teams on areas of shared learning and interest. This can take place spontaneously when contentious issues arise or can act as a 'call to arms' when support or advice on issues is needed.

FGLG ran initially from 2005 to 2009. The project's success meant that another five-year funding grant was awarded to continue activities.

Governance and operating structure

This programme is run and facilitated by IIED staff who have extensive experience and knowledge of forest governance issues in the participating countries.

Each country has a host organisation responsible for convening the country network, overseeing activities, managing funds and reporting on progress.

There are three international partners to the programme who were brought in because of their in-depth knowledge of the sector or experience in countries in the alliance. Two consultancy firms provide one off studies and time bound facilitation. A non-profit training institute based in Thailand has engaged more actively in supporting the countries in the region.

FGLG has an Action Advisory Group that was set up to bring the beneficiaries – namely the in-country teams – into decision making. It includes representation from both the in-country teams and international conveners, and aims to 'steer and optimise' activities.

Funding

FGLG received a grant from the European Commission of ~ €2 million and co-financing from the Dutch government of €570,000 over the first 5 years of the project.

Each country team received a total of between €72,000 and €100,000 over the entire three- or four-year period.

Impact

FGLG outlined four key governance challenges and articulated a set of outputs, within a logframe for each. Country teams pick up on particular challenges and explore various sub-themes within them that are specific to the local context.

An assessment has been made of FGLG's impacts on:

- Immediate target group (members of country learning groups) – this group showed the strongest and most visible impact in terms of personal and professional development and improved linkages at national, regional and international levels
- Intermediary target group – the representatives of local NGOs, trade networks and government departments have benefited by direct or indirect participation in the network and deliberate efforts to reach out to them

Table 4: Examples of FGLG outputs

Generic governance challenge	Defined outputs within the project's logical framework
Poverty reduction strategies, national forest programmes, decentralisation programmes	Output 1: Poverty reduction strategies, national forest programmes, decentralisation programmes and related processes enable improved forest governance
Tackling illegal and corrupt forestry that degrades livelihoods	Output 2: Illegal and corrupt forestry that degrades livelihoods is reduced through the adoption and spread of practical approaches to improve forest governance (see above activities associated with achieving this output)
Forestry enterprise initiatives and private sector associations	Output 3: Forestry enterprise initiatives and private sector associations comply with the law and spread practical approaches to improve forest governance
Ownership, access rights, policy and management frameworks	Output 4: Ownership, access rights, policy and management frameworks are improved to support local control and benefit from forestry

- Ultimate target group of local and marginalised forest communities and small and medium forest enterprises – this is where it is hardest to quantify impact. Evidence of impacts is more illustrative and anecdotal, without necessarily having direct attribution.
- International level – FGLG has influenced thinking and programme direction in the institutions with which it has engaged (whether at a country or international level).

Although each country team operated with an extremely modest budget, the impacts of activities were increased by:

- integrating FGLG activities within other projects in country with similar objectives
- ensuring members of the learning group were part of wider formal and informal networks that they could access and influence
- the IIED team playing a facilitation and supporting role to country teams over the years
- using the issues being tackled by the forest experts as a platform for entry in wider governance debates (such as the interplay between local national and international levels, and the failure to effectively capture and use revenues)
- engaging the media to ensure improved and more accurate reporting on these issues
- linking in to complementary initiatives on forest governance and on trade to multiply collective impact

FGLG made certain assumptions that provided the basis for its activities and proposed theory of change. Although most of these assumptions turned out to be correct, some didn't and most notable among these was the assumption that there would be incentive and political will for change when it came to developing and implementing policy. Highly entrenched practices and powerful patronage networks in certain countries have meant that it will take longer than the initial 3–4 year timeframe to achieve impacts.

The Forests Dialogue (TFD)

Objectives

'Better forests, improved livelihoods. To contribute to sustainable land and resource use, the conservation and sustainable management of forests, and improved livelihoods by helping people engage and explore difficult issues, find collaborative solutions, and make positive changes' (TFD 2011:6).

TFD stimulates multistakeholder platforms for discussion, reflection and promotion of solutions by:

- getting stakeholders with different views engaged;
- enabling them to take a respectful and structured approach to contentious issues;
- building a shared understanding and common interest; and
- contributing to positive change in challenging forest related issues.

Target audience

'Forest sector leaders' who are able to convert the results of dialogues into effective international, national and local action. The ultimate beneficiaries are forests and those dependent on them for their livelihoods.

Activities

The Forests Dialogue (TFD) emerged from the 'Towards a Sustainable Paper Cycle' initiative – a research and engagement process similar to the Mining, Minerals and Sustainable Development programme, which outlined the sustainable development knowledge in the paper and pulp sector (IIED 1996). At that time, a CEO forum on sustainable paper production was also being set up, creating momentum for action across the sector. Certification schemes for forests were beginning to emerge, providing TFD with its first issue on which to focus.

In its early years, TFD operated in an ad hoc manner – growing organically under the simple strapline of being an 'honest broker' for contentious issues and offering a set of 'key principles' for dialogues. TFD has evolved from a single dialogue structure, focused solely on building trust and shared understanding between the key stakeholders, into an initiative-based and action oriented organisation looking to achieve tangible and collective outcomes. Throughout the past decade, TFD has retained its focus on dialogues alone and believes this has been key to its success.

The key principles of a dialogue are:

1. Identify the key issues, build trust among leaders, share perspectives and information
2. Seek consensus about the main challenges and opportunities to collaboratively solve a particular issue
3. Actively promote and facilitate stakeholder actions that lead to collaborative solutions, with impact in policy and on the ground.

Issues are selected on the basis of certain key criteria (TFD 2011:9) including:

- the issue's significance and priority in relation to TFD's purpose, mission and goal;
- the dialogue's potential, as suggested by the information base, willingness of stakeholders to engage, access to effective analysis, and clear possibilities to achieve impact and change;
- TFD's comparative advantage on the issues and in the possible locations;
- indication of interest from local partners and country offices of Steering Committee members' organisations;
- the likely ability of partners to reach and engage key stakeholders including government, NGOs, indigenous peoples and private sector; and
- the availability of financial and logistical support.

From 2011 to 2015 TFD is running four concurrent dialogue initiatives. In 2011 these initiatives were: REDD readiness; free, prior and informed consent; Investing in locally controlled forestry; and the '4F dialogues – changing outlooks on food,

fuel, fibre and forests'. A fifth dialogue on the potential role of GM trees within intensively managed planted forests is also being scoped.

The typical steps of a dialogue are:

- Issue identification and clarification
- Preparatory work and collation of background papers
- Translation for all participants
- Introduction of stakeholders
- Establishment of ground rules
- Sharing of experience
- Exploration of views
- Analysis and reasoned argument
- Decisions on action steps or recommendations

Dialogues can be small, intimate groups or large fora involving hundreds of participants. Where possible, field visits are included in dialogues to ensure direct engagement with issues on the ground. Dialogues sometimes use internet-based communications to allow more stakeholders to participate from across the world.

The main types of dialogue that TFD uses are:

- Field dialogues – four-day dialogue, with two days in the field following by two days in a meeting room, with 50 participants (up to 35 of whom are sponsored by TFD) – crucial to engaging with issues 'on the ground'
- Non-field dialogues – two-day dialogue in a meeting room with 40 participants (up to 35 of whom are sponsored by TFD) – for mid-way through an initiative, usually following field dialogues
- Technical workshops – 2 day meetings with 10 participants (up to six of whom are sponsored) – to address particular issues that may require expert or international expertise

Each initiative will include a number of different dialogues across different countries, regions and internationally. A typical dialogue initiative will have 10 dialogues over four years – with a mix of country-based field and non-field dialogues and technical workshops where required.

Governance and operating structure

TFD has a large and influential steering committee made up of 25 individuals who are considered leaders in the forest sector and able to build shared understanding and a collaborative space. The size of the groups means that a diverse set of stakeholders are involved. The effectiveness of the group is their ability to build key connections and trust. Within the Steering Committee, a smaller executive team has been set up to take forward key decisions.

The TFD Secretariat supports and coordinates the work of the Steering Committee. On dialogue initiatives, the Secretariat works closely with the Initiative Advisory Group (set up for each initiative), and collaborates with initiative partners, donors and local partners. TFD has the equivalent of 4 full time staff: an Executive Director (who also sits on the Steering Committee, oversees all the initiatives and is responsible for

fundraising and acting as a spokesperson for the issues dealt with in TFD initiatives), a Program Manager (who manages the content related aspects of the Initiatives and individual dialogues), a Program Coordinator (who manages all the dialogue logistics) and student interns (who support the logistics for initiatives and individual dialogues).

The Secretariat is housed at Yale University. This has both strengths and weakness. Yale is highly regarded for its work on forest issues. However, this can influence the culture of dialogues.

Local host organisations are key to ensuring the dialogue is run efficiently and effectively in country based on their local knowledge and capacities.

Funding

TFD recently become more strategic in its activities, and put in place a strategic plan (TFD 2011). This has been necessary to secure funding as the initial funders reduce their investments, which were intended as 'start-up', and as the scope of TFD increases. Previously, TFD relied largely on in-kind donations and the capacity and clout of the larger organisations involved.

Core resources are approximately £50,000 per year for the secretariat.

Approximate figures for dialogues themselves are:

- £100,000 for a 4 day field dialogue with 35 sponsored participants
- £70,000 for a 2 day dialogue with 35 sponsored participants
- £30,000 for a 2 day workshop with 6 sponsored participants

Impact

The outcomes of dialogues are communicated through press conferences, presentations, publications, web-based communications and follow-up meetings. TFD has had a wide range of impacts that follow from its dialogues and the 'bringing together' of diverse stakeholders to discuss issues and spur collaborative action:

- Key publications that are recognised as internationally influential on forest issues, such as the 'Beyond REDD' consensus statement agreed by a group of 250-plus forest sector leaders stimulated by TFD.
- TFD has served as a catalyst and model for partnerships, and has helped bring together stakeholders that don't usually engage with each other, such as the Indigenous Peoples' group and the World Bank, and the World Business Council for Sustainable Development and WWF.
- The TFD model has inspired the creation of local dialogue processes in countries after a dialogue has been held. This continues the momentum and creates an ongoing space for national participants to engage with the issues and find locally appropriate solutions.
- Dialogues have forced policymakers to take action on forest issues. For example, the Chinese government took action on illegal logging following a dialogue and closed the Nanxun Sawmill in Guangdong Province.

- Dialogues provide a vehicle for civil society (and 'citizen knowledge') to influence policy. TFD had direct influence on the Europe and North Asia Forest Law Enforcement and Governance process leading to the St Petersburg Declaration. TFD provided a catalyst for events leading to the US Lacey Act being amended to ban commerce in illegally sourced timber.
- Dialogues help deal with contentious issues, such as intensively managed planted forests, and help reduce conflict between key stakeholders in a country.
- TFD has helped create and develop international stakeholder collaborations that have gone on to influence international policy processes such as the 'international super alliance' for locally controlled forestry between the International Alliance of Indigenous and Tribal Peoples of the Tropical Forests, the Global Alliance for Community Forestry and the International Family Forestry Alliance and a 'community of practice' on REDD readiness.

TFD ensures the impacts from its dialogues by:

1. Communicating with dialogue participants in advance to ensure they are prepared to communicate the dialogue results through their organisations, media and follow up meetings, partnership building and materials.
2. Working with stakeholders to develop and commit to plans for how they will influence change. These plans are closely monitored for impacts.

Poverty and Conservation Learning Group

Objectives

To promote better understanding of the links between conservation and poverty in order to improve conservation and poverty policy and practice.

Target audience

Both conservation and development practitioners in order to address the growing divide between these policymakers on the link between biodiversity and poverty reduction (Roe and Elliot 2005).

Although the broader network has a broader target audience, PCLG specifically targets organisations that develop (or have the capacity to influence) policy and practitioners who have a role in sharing experience and promoting good practice in their learning activities. This is to ensure action through these groups.

Activities

The Poverty and Conservation Learning Group achieves its aims through:

1. Promoting good practice amongst policymakers and practitioners through information provision and dissemination via an open access website.
2. Facilitating dialogue and mutual learning amongst different types of organisations actively working on conservation-poverty linkages (including those who are often under-

represented in international debates) through provision of a programme of learning activities.

As this learning group model is similar to that of the FGLG, we focus on those activities that are unique to PCLG – primarily activities under 1.

PCLG promotes good practice through a website, monthly newsletter, disseminating free publications and database of donors. It actively uses and shares knowledge, avoiding dumping information on databases that are difficult to search and use.

The PCLG website (www.povertyandconservation.info) includes:

- information about the activities of PCLG;
- a searchable bibliographic database identifying and documenting relevant books, journal articles, policy papers, conference proceedings and other written materials that inform policy and practice on linking conservation and poverty;
- a database of organisations working on these issues (including locations and areas of interest) to allow for easy identification and synergies of work;
- a database of conservation-poverty projects and initiatives including detail of practical initiatives (also used to produce a biannual directory of conservation-poverty organisations and initiatives);
- links to other web-based resources including tools, list serves, databases, newsletters etc; and
- details of relevant forthcoming meetings and events.

The website has a broader target audience than the learning group activities as it is open access.

PCLG circulates a monthly electronic newsletter, *PCLG News*, to all its contacts. This includes news from members as well as updates on ongoing poverty-conservation initiatives, including research updates, meetings, new publications, resources available.

PCLG disseminates free publications on poverty-conservation linkages.

Most recently, it has established a database of potential donors for conservation-poverty activities (in cooperation with Terra Viva Grants).

Governance and operating structure

IIED provides the convening role and a secretariat for the PCLG. A part time researcher (working three days a week) is responsible for overseeing the website, and consolidating and analysing information to share with the network.

Funding

Website management and other 'virtual network activities' cost £30,000 per year. This includes website maintenance and the time of a junior researcher to add and manage content.

Impact

Six-month monitoring found the web portal was visited 3500 times (including over 2000 unique visitors). People visited the

website from 116 different countries, demonstrating its global reach.

The monthly newsletter is the main channel of communication and is sent to over 900 subscribers. PCLG members actively contribute news and use the newsletter to circulate information.

The e-bulletin, BioSoc, which highlights recent relevant research findings, is produced periodically, and has over 2300 subscribers.

References

- ARM. 2011a. 'Analysis for stakeholders on formalisation in the artisanal and small-scale gold mining sector based on experiences in Latin America, Africa and Asia: Uganda case study. Alliance for Responsible Mining. Available at <http://www.communitymining.org/>.
- ARM. 2011b. "Analysis for stakeholders on formalisation in the artisanal and small-scale gold mining sector based on experiences in Latin America, Africa and Asia: Tanzania case study". Alliance for Responsible Mining. Available at <http://www.communitymining.org/>.
- Ban Toxics. 2010. The price of gold: Mercury use and current issues surrounding artisanal and small scale gold mining in the Philippines. Ban Toxics! Available at www.bantoxics.org.
- Blanchard, D. 1988. 'Empirical strategies of bottom-up development'. ICA International IERD Regional Development Symposia, pp. 318–338.
- Blomley, T. 2009. 'Evaluation of the work of the Forest Governance Learning Group 2005 – 2009'. IIED, London. Available at www.iied.org.
- Buxton, A. 2012 *MMSD+10: Reflecting on a decade of mining and sustainable development*. IIED Discussion Paper, IIED, London. Available at <http://pubs.iied.org/16041IIED.html>.
- Carter, A.S, Hayes, K., and Ziulkowski, A. 2009. 'Connecting ASM to markets', Annual CASM Conference ASM: An Opportunity for Rural Development, Communities and Small-scale Mining.
- Chilmaza F.G. and Rivas, M.R. 2009. 'Lessons in advocacy work for public policies for small-scale mining: Peru case'. Alliance for Responsible Mining. Available at <http://www.communitymining.org/>.
- Cleaver F. 2000. 'Moral Ecological Rationality: Institutions and the Management of Common Property Resources, in *Development and Change* 31 (2): 361–83.
- D'Souza, K. 2007. 'Global Perspective: LSM-ASM Relationships Worldwide'. CASM presentation, Large-Scale & Artisanal Mining & Infrastructure Workshop. Democratic Republic of Congo. Available at <https://www.artisanalmining.org>.
- DFID. 2011. 'How to note: Guidance on using the revised Logical Framework'. A DFID practice paper. UK Department for international Development. Available at <http://www.dfid.gov.uk/>.
- Eftimie, A., Heller, K., Strongman, J., Hinton, J., Lahiri-Dutt, K., and Mutemeri, N. 2012. *Gender dimensions of artisanal and small scale mining: A rapid assessment toolkit*. The World Bank, Washington DC.
- Estelle Levin Ltd. 2012. *Understanding Artisanal & Small-scale Mining in Protected Areas and Critical Ecosystems: A growing global phenomenon*. Presentation for ASM Protected and Critical Ecosystems London Roundtable November 2012.
- Forest Connect. 2008. *Developing a toolkit for facilitation of support for small forest enterprises – Workshop Report*. IIED. Available at <http://pubs.iied.org/pdfs/G02295.pdf>.
- Forest Connect. 2010. *Testing and enriching guidance modules for the „facilitation of support for small and medium forest enterprises – Workshop Report*. IIED. Available at <http://pubs.iied.org/pdfs/G03112.pdf>.
- Forest Connect. 2012. *Supporting small forest enterprises: A facilitator's toolkit*. IIED. Available at <http://pubs.iied.org/pdfs/13558IIED.pdf>.
- Gamarra Chilmaza, F. 2005. *Programa para la Prevención y Eliminación Progresiva del Trabajo Infantil en la Minería Artesanal de Oro en Sudamérica: Estudio Sociolaboral en los Centros Poblados de la Rinconada y Cerro Lunar, Puno*. International Labour Organization. Available at <http://redsocial.pe/IISOCIOLABORAL.pdf>.
- Green Economy Coalition. 2012a. 'Background paper: Surveying the 'green economy' landscape post Rio+20'. Available at <http://greeneconomycoalition.org/>.
- Green Economy Coalition. 2012b. 'December Monthly Update'. Available at <http://greeneconomycoalition.org/>.
- Hart, K., 2006 'Bureaucratic form and the informal economy' in Guha-Khasnobis, B., Kanbur, R., and Ostrom, E. (eds) *Linking the formal and informal economy: concepts and policies*. Oxford University Press, UK.
- Hentscehl, T., Hrushka, F., Priester, F. 2002. *Global report on artisanal and small scale mining. Working Paper 70, Mining, Minerals and Sustainable Development (MMSD) Project*. IIED, London.
- Hilson, G. 2005. *Challenges with eradicating child labour in the artisanal mining sector: A case study of the Talensi-Nabdam District, Upper East Region of Ghana*. University of Reading, UK.
- Hilson, G. 2006. "Strengthening artisanal mining research and policy through baseline census activities" in *Natural Resources Forum* 29: 144–153.

- Hilson, G. 2012. 'Poverty traps in small-scale mining communities: the case of sub-Saharan Africa'. *Canadian Journal of Development Studies* 33 (2): 180–197.
- Hivos–IIED 2012. *Meeting small-scale farmers in their markets: Understanding and improving the institutions and governance of informal agrifood trade*. Draft report of a workshop of the Hivos–IIED Knowledge Programme held in Amsterdam 29–30 November, 2012.
- Hivos. 2012. *Hivos Knowledge Programme – Theory of Change*. Hivos. Available at www.hivos.net.
- ILO. 2005. *A Load too Heavy: Child labour in mining and quarrying*. International Labour Organization. Available at www.ilo.org.
- IDS. 2012. *Vulnerability and Poverty Reduction*. Institute of Development Studies, UK. Available at www.ids.ac.uk.
- ICMM, CASM, IFC-CommDev. 2009. *Working together – how large-scale miners can engage with artisanal and small-scale miners*. International Council on Mining and Metals (ICMM), Communities and Small-scale Mining (CASM) and IFC Oil, Gas and Mining Sustainable Community Development Fund. Available at www.icmm.com.
- IIED. 1996. *Towards a Sustainable Paper Cycle*. IIED, London. Available at www.iied.org.
- IIED. 2013. *Forest Governance Learning Group*. IIED, London. Available at <http://www.iied.org/forest-governance-learning-group>.
- ILO. 1972. *Employment, Incomes and Equality: a Strategy for Increasing Productive Employment in Kenya*. International Labour Organization, Geneva.
- ILO. 1999. *Social and labour issues in small-scale mines*. Report for discussion at the tripartite meeting on social and labour issues in small-scale miners. Sectorial activities programme. International Labour Organization, Geneva.
- Jones, H., Jones, N., Shaxson, L., and Walker, D. 2012. *Knowledge, policy and power in international development: A practical guide*. The Policy Press, Bristol, UK.
- Kim, S. 2006 'Weary from War: Child Soldiers in the Congo' in *Harvard International Review* 27(4).
- Larrison, C.R.. 1999. 'A Comparison of Top-down and Bottom-up Community Development Interventions in Rural Mexico: Practical and Theoretical Implications for Community Development Programs'. 12th National Symposium on Doctoral Research in Social Work.
- Levin, E. 2008. 'Artisanal Diamond Cooperatives in Sierra Leone: Success or Failure?' DDI Policy Brief. Available at <http://www.pacweb.org>.
- Macdonald, L. 1995. 'NGOs and the problematic discourse of participation: Cases from Costa Rica' in D.B. Moore and G.J. Schmitz's (eds) *Debating development discourse: Institutional and popular perspectives*, (pp. 201–229), St. Martin' Press Inc New York.
- Macqueen, D. 2008. *Supporting small forest enterprises: A cross sectoral review of best practice*. IIED, London. Available at <http://pubs.iied.org/pdfs/13548IIED.pdf>.
- MMSD. 2002. *Breaking New Ground: Mining, Minerals and Sustainable Development*, IIED, London. Available at <http://pubs.iied.org/pdfs/G00905.pdf>.
- Murphy, S. 2010. *Changing Perspectives: Small-scale farmers, markets and globalisation*. Hivos–IIED Available at <http://pubs.iied.org/pdfs/16517IIED.pdf>.
- UNHCR. 2010. *Report of the Mapping Exercise documenting the most serious violations of human rights and international humanitarian law committed within the territory of the Democratic Republic of the Congo between March 1993 and June 2003*. UN Office of the High Commissioner for Human Rights. Available at <http://www.unhcr.org>.
- Resolve. 2010. *CASM 3.0 Future Options: Options for Program, Governance, Structure and Housing*.
- Siegel, S. and Viega, M.M. 2009. 'Artisanal and small-scale mining as an extra-legal economy: De Soto and the redefinition of "formalisation"'. *Resources Policy* 34: 51–56.
- Siegel, S. and Viega, M.M. 2010. 'The myth of alternative livelihoods: artisanal mining, gold and poverty'. *International Journal of Environment and Pollution* 41 (3/4): 272–288.
- Telmer, K. 2009. *Artisanal and Small Scale Gold Mining*. Presentation at the CASM Conference September 2009. CASM. Available at <https://www.artisanalmining.org>.
- Telmer, K.H. and Veiga, M.M. 2009. 'World Emissions of Mercury from Artisanal and Small Scale Gold Mining' in N. Pirrone and R. Mason (eds) *Mercury Fate and Transport in the Global Atmosphere*. Springer.
- TFD. 2011. 'The Forests Dialogue: Strategic Plan 2011 – 2015'. The Forests Dialogue. Available at www.theforestsdialogue.org.
- TFD. 2012. *A Review of TFD's Initiative on Investing in Locally Controlled Forestry 2009–2012* TFD Review. The Forests Dialogue Available at <http://pubs.iied.org/pdfs/G03446.pdf>.
- UN. 2012. 'The future we want: Outcome document adopted at Rio+20'. United Nations. Available at <http://www.un.org/en/sustainablefuture/>.
- URT. 2004. *Vulnerability and Resilience to Poverty in Tanzania: Causes, Consequences and Policy Implications*, 2002/03 Tanzania Participatory Poverty Assessment (TZPPA) Main Report, Research and Analysis Working Group.
- Vlassenroot, K. and Van Bockstael, S. (eds) 2008. *Artisanal diamond mining. Perspectives and challenges*. Academia Press.
- Wisner, B. 2004. *At Risk: Natural Hazards, People's Vulnerability and Disasters*, Routledge, London.
- World Bank. 2013. *Small scale mining*. Available at <http://go.worldbank.org/4K0MT244R0>.



Responding to the challenge of artisanal and small-scale mining: How can knowledge networks help?

This paper reviews what is known about the problems and structural challenges facing the 20–30 million artisanal and small-scale miners and their communities, worldwide. Better understanding of these structural challenges is needed to improve policies and policy implementation to further sustainable development opportunities for the sector. The paper explores the current gaps in knowledge to achieve policy change from researchers, practitioners and artisanal and small-scale miners themselves. It explores how a 'knowledge intermediary', which acts to link knowledge with policy, could address these gaps and includes case studies of IIED's work on knowledge and network programmes. The paper concludes by proposing a way forward for designing a knowledge programme to meet the particular needs of the artisanal and small-scale mining (ASM) sector, and by inviting ASM sector stakeholders to share their views on the options outlined. The paper provides the foundation for a new knowledge programme at IIED for ASM.

The International Institute for Environment and Development (IIED) is a policy and action research organisation working to promote sustainable development, development that improves livelihoods in ways that protect the environments on which these are built. Based in London and working on five continents, we specialise in linking local priorities to global challenges. In Africa, Asia, Latin America, the Middle East and the Pacific, we work with some of the world's most vulnerable people to ensure they have a say in the decision-making arenas that most directly affect them – from village councils to international conventions.

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