2 Part Two: Understanding Project-induced In-migration

To effectively manage project-induced in-migration, one must first understand the phenomenon. This section provides answers to key questions:

- **The who, what, when, where, why, and how of project-induced in-migration;**
- **The positive impacts of project-induced in-migration;**
- **The negative environmental and social impacts of project-induced in-migration;**
- **Understanding Artisanal and Small-Scale Mining (ASM) related influx;**
- **How project-induced in-migration may affect resettlement and indigenous peoples programs;**
- **In-migration risks in areas of high biodiversity value;**
- **In-migration risks to cultural heritage**

Introduction

The design of effective in-migration management strategies requires an understanding of the dynamics and potential impacts of the phenomenon, taking into account specifics of the locations and sectors in which the in-migration will occur. The following section provides a general overview of the dynamics and impacts of the in-migration phenomenon. Subsequently consideration is given to the impacts of in-migration in specific circumstances, such as areas of high biodiversity value, or on specific programs (e.g., resettlement and indigenous peoples development programs).

The dynamics of project-induced in-migration

WHY ARE MIGRANTS ARRIVING?

The majority of projects face the risk of unforced or voluntary migration,[1] where it is assumed that migrants are acting out of a rational self-interest as the motivating factor for moving. Often, if people are leaving behind adverse home conditions, they are migrating because of perceived opportunity rather than any specific guarantee of a job, particularly if a member of their extended family is already resident in the area. Migration is expected to yield positive benefits for the individual migrant (and his/her household), whether through remittance of incomes or settlement in the new location. In some circumstances, a significant migrant population may exist prior to project arrival, including artisanal and small-scale miners, nomadic hunter-gatherers and herdsmen, forest dwellers, and fishermen.

It must also be noted that certain countries host large populations of "non-economic" migrants: people who have been forced to move because of natural disasters, such as drought or flooding, and man-made factors, such as political and religious persecution, civil strife, and war. While the motivation for forced migration is survival, refugees and internally displaced people (IDPs) residing in host countries have more acute and immediate needs for economic survival as well as high mobility, which often leads them to seek employment as unskilled (and often illegal) workers. In such cases, project-induced in-migration is associated with acute needs for survival, and projects being developed in such areas face a considerably higher risk of project-induced in-migration. Furthermore, in some cases warring factions may enter the project area of influence and assume control of both legal and illicit economic opportunities.

Irrespective of whether in-migration is voluntary or forced, project-induced in-migration most commonly occurs in response to direct and indirect employment and economic opportunities. Project development and operation offers an array of legitimate and illegitimate economic opportunities, including:

- Employment with the project;
- Benefits offered by the project's compensation (for infrastructure, land, and crops) and community development activities;

1 Nyame, F.G. and Grant J.A., (no date) Implications of Migration Patterns Associated with the Mining and Minerals Industry in Ghana.

- Opportunities to provide support services to the project;
- Opportunities to supply goods and services that capture the substantial increases in disposable cash incomes in the area once employment begins;
- The chance to exploit resources identified and/or made accessible by the project (e.g. for artisanal miners, illegal loggers);
- New business opportunities catalyzed by the development and operation of the project (e.g., hotels, guest-houses, restaurants, bars, brothels); and
- Other speculative activities.

Image 2. The prospect of employment and entrepreneurial opportunities led internally displaced people (IDPs) from conflicts elsewhere in Azerbaijan to settle in abandoned railway coaches next to Sangachai Terminal, Baku, Azerbaijan, ACG Phase 1 (Sangachai Terminal) BTC Pipeline.

Projects often need migrant labor to overcome shortfalls in the local labor supply – due to unavailability, inadequate numbers, lack of capacity, or unwillingness to source from local pools – while migrants are increasingly aware of the potential benefit streams deriving from project development, including employment, business opportunities, and increased access to and availability of resources.

Mining operations may also experience resource-based in-migration, with artisanal and small-scale miners moving into a project area in response to increases in the accessibility and availability of mineral resources, support infrastructure, and services. In certain circumstances, people may be attracted by expectations or promises of compensation, royalty, and other payments. At times, a project may have to overcome unrealistic expectations created by similar projects that have established precedents and set both positive and negative expectations in the region.

WHEN DO IN-MIGRANTS ARRIVE?

The long development cycles of large-scale projects can mean high levels of initial public awareness and speculation about project development, often well before the project has a substantial physical presence. Such speculation raises local, regional, and national expectations of, and interest in, the potential for capturing benefits from the project. Informal communication channels alert the non-local workforce of potential employment opportunities and may exaggerate both the opportunities and the potential benefits. Thus begins a process by which various stakeholders position themselves to take advantage of any real or perceived project-generated opportunities.

Where they exist, government registration systems do not necessarily require (timely) local registration, and policing may be absent or weak. Often, in-migration is well underway by the time projects develop workforce management and recruitment plans and seek to share them with concerned stakeholders such as local and regional governments and local communities. Such migration is seen at the village and town level nearest the project site, at initial project bases/locations and/or at project service and supply centers, where, over a period of months, a new population enters the environment. As project activity increases and public consultation and disclosure begins, in-migration usually picks up.

The pattern of labor-based and economic in-migration typically follows project demand for labor. For most projects, the construction phase has the highest workforce requirements. As the project moves from construction to operations and requires a smaller and more stable workforce, recently arrived migrants may move on as employment opportunities decrease and the disposable income of the local population declines. High construction phase employment demands often are associated with boom/bust cycles, with high initial labor demand and in-migration during construction, followed by lower operational phase workforce needs and out-migration. In contrast, projects with high ongoing demand for labor and goods and services may create project-dependent local economies that directly and indirectly support a large population.

WHO ARE THE IN-MIGRANTS?

In-migrants may be categorized as either "true" migrants, who are genuinely mobile in their search for economic opportunities, or extended family members, who rely on ties of kinship as a basis for claiming rights to reside within the project area (and thereby claim project benefits). Kinship-based migration and residence present significant problems in distinguishing migrants from locals. For example, in many traditional societies, such as in sub-Saharan Africa and Melanesia, extended family members have significant "kinship rights," i.e. the ability to "visit" and indefinitely live in a local kin's household.

True migrants can be characterized in many ways: by their nationality, ethnicity, tribal/clan/kinship affiliation (including migrant indigenous people), profession, age, gender, marital status, language, religious affiliation, or culture. However, the utility of these criteria is context-specific. Where large numbers of any one group exists, they may form - or be encouraged to form - groups so as to facilitate project interaction with them. Various attributes, such as ethnicity and religious affiliation, may serve as a basis for inter-group conflict.

Table 1 provides a typology of in-migrants. Typically, opportunistic migrants in search of employment and entrepreneurial opportunities form the largest group of spontaneous in-migrants, and as such are the main target of management approaches.

The stages of project development play an important role in defining the demographics and professions of migrants over time, as the type and availability of, and the risks associated with securing project benefits, changes as the project progresses. For example, early in the project cycle, migrants are more likely to be men traveling alone, who are able to deal with the uncertainty and risks associated with the uncertain prospect of project benefits. The majority of these migrants are likely to be unskilled or semi-skilled workers seeking wage employment with the project and its contractors. Semi-skilled and skilled workers may include transitory migrants who move from one project to the next in search of better entrepreneurial opportunities, working conditions and wages or when their previous employment ends.

As project-derived economic benefits become both more certain and more widely available, migrants with different skills and professions are attracted to the project area. Commercial migration may involve entrepreneurs seeking business opportunities to provide secondary support services and commodities to the project as well as goods and services that capture the increased disposable incomes of the local workforce. This includes traders in household products, hardware, luxury goods, and other merchandise. Other entrepreneurial interests - including banks, fuel stations, restaurants, guest-houses, bars, brothels, small appliance dealers, and transport services - may move into the project area to provide services and profit from the project's existence. Regional indigenous groups may be tempted to re-position themselves to establish "original occupancy and land tenure rights" to strengthen their claims for compensation, royalty payments, employment, and other project benefits. Other largely illegal activities that may crop up because of the project include prostitution, protection rackets, alcohol and drug sales, gambling, smuggling and other criminal activities.

TABLE 1: TYPOLOGY OF IN-MIGRANTS

	Characterization	Profession/economic motivation	Location of residence
1	Returning family, extended family members, and former residents of the area	Returnees seeking improved living conditions and employment, or opportunities to provide goods and services to the project or local population	Existing households in villages and towns
2	Project employees from outside the project area and their immediate and extended families	Temporary or permanent workers employed by the project or its contractors who move to the area with or without family to be close to their place of employment	Villages, towns, cities
3	Exploitation of natural resources	Opportunists seeking to take advantage of increased accessibility and availability of resources through artisanal and small-scale mining, small-scale timber and non-forest timber products exploitation, small-scale crop and livestock production, plantations, harvesting of marine products	Villages and towns
4	Potential providers of goods and services to the local population	Traders, entrepreneurs, small and medium enterprise owners, commercial sex workers, etc., from the formal and informal sectors, aiming to capture substantial increases in disposable income through provision of goods and services	Villages and towns
5	Service providers to the project	Entrepreneurs and SMEs from the formal sector; aiming to secure contracts to provide goods and services to the project and its contractors	Towns and cities
6	Entrepreneurs	From the formal sector; aiming to take advantage of new business opportunities catalyzed by the development and operation of the project	Towns and cities
7	Opportunistic migrants	Unskilled, semi-skilled or skilled people seeking direct or indirect employment or entrepreneurial opportunities. Often very skilled, experienced and mobile workers who travel from project to project or with major contractors	Villages and towns proximate to project site

HOW DO IN-MIGRANTS REACH THE PROJECT AREA?

In many countries, the belief that being closer to the project site increases the likelihood of securing employment drives migration toward the project site. Migrant networks play an important part in this in-migration phenomenon. These networks, which are "sets of interpersonal ties that connect migrants, former migrants, and non-migrants in origin and destination areas through ties of kinship, friendship, and shared community origin,"[2] actively assist newcomers with employment opportunities, housing, and other logistics involved in getting settled in a new area. Migrant networks also facilitate the spread of information regarding potential opportunities and help reduce some of the social and financial costs and risks associated with moving to a new area or region. In some circumstances, there may be active local recruitment networks operating in the home communities that promote awareness about the project and may even provide money for transport and guarantees of employment.

Typically, where in-migration toward a project occurs on a national or regional scale, in-migrants pass through larger centers served by the existing transportation system. From these centers, in-migrants use existing and newly developed access routes to reach the villages and towns closest to the project site or project base camps. The development of new access routes and siting of projects at the road head creates feeder routes leading to and concentrating in-migrants at the heart of the project area of operations. These destinations serve as the immediate point for settlement, and typically spontaneous migrants develop a foothold. Other in-migrants may have been encouraged to come to the site through connections with extended family or through recommendations from acquaintances; their particular path will then lead them to the extended family or contact, whereupon they settle in their host's community. Development of new access routes provide migrants with the opportunity to be closer to the project site, and also serve to increase access to other resources.

PATTERN OF MIGRANT SETTLEMENT WITHIN A PROJECT AREA

A project's overall in-migration footprint[3] is likely to include: (i) regional towns; (ii) access routes; (iii) small towns near the project area and project base camp/s; (iv) villages near the project area and base camp/s; and (v) newly formed settlements in the immediate vicinity of the project.

Projects often occupy and develop multiple bases as they progress from exploration to construction to operations. Bases serve as focal points for in-migration and even temporary project use may lead to significant in-migration and social and economic change. Even relatively few in-migrants can disrupt a small village population.

2 Nyame, F.G. and Grant J.A., Implications of Migration Patterns Associated with the Mining and Minerals Industry in Ghana.

3 It is now common to use the term "footprint" to describe the actual physical impact of the project. Usage of the term "social footprint" is less frequent and more poorly defined, in part because the social context of a project is context-specific and multi-faceted, and different aspects have different footprints, e.g., directly affected people, health or disease-specific footprint (malaria, schistosomiasis), business footprint, in-migration footprint.

EXAMPLE: THE TANGGUH LNG PROJECT, PAPUA/INDONESIA

The Tangguh Project operated multiple bases between exploration and operations. During site feasibility studies, a contractor established a base in Tanah Merah village (the resettlement village). The main BP base camp was a "temporary" camp established adjacent to Saengga Village (a host village for the resettlement program). This camp was used between 1998 and 2003. By the end of 2003 a new project base had been developed adjacent to the upgraded airport in Babo, allowing relocation of the BP team. Construction of the LNG site commenced in late 2004 and by the end of 2005, BP staff involved with construction relocated to the camp within the project site. Babo Base Camp was retained as a logistical base. Use of multiple bases promoted the development of spatially and temporally distinct (albeit overlapping) in-migration hotspots and affected a wide variety of project activities, including construction of resettlement villages in Saengga, livelihood restoration and project employment for resettlement-affected villages, and small and medium enterprise development in Babo.

The subsequent departure of project-related people and activities may generate effects similar to those associated with project closure, including economic decline, out-migration, and ghost settlements. Projects located in isolated areas without any nearby settlements, or with only small settlements or towns, often use such small settlements and towns as the initial project base, thereby providing a focus for potential in-migrants. These situations often result in the de facto development of "boom" towns, existing to function as service centers to the project and supply centers to the growing population.

Where the project has multiple locations, with associated facilities distributed over a wide geographic area, the situation is generally more complex. In these situations, projects take on a linear pattern, spread across multiple human and ecological zones. An analysis of in-migration risk and management needs to consider both the regional and local scale and all of the project's sites.

Because migrants feel that it is easier to get a job the closer you are to the project site, the main physical (and subsequently social) in-migration footprint will likely develop as close as possible to the project site, base camp and/or service and supply center. Using established means of transportation and access routes, migrants arrive at the larger towns within the project area and either settle there, or continue to move toward the project site - usually the nearest office or camp. Typically, this starts with the rental of a shack, room, or house from a local resident or securing access to land upon which to build a simple shelter. While the greatest rates of population growth occur in these locations, the actual physical and social impacts of this growing population are determined by the rate and magnitude (or scale) of in-migration, together with the assimilative capacity of the area.

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Image 3. Squatter settlement adjacent to the Hernic Chrome Mine, Brits, South Africa. The prospect of employment at the mine and in nearby Brits led to an influx of migrants from across South Africa and Zimbabwe who settled on mine lands.

For projects located in urban and peri-urban settings, a migrant population may move toward the project, residing in rental accommodation and moving into existing or developing new squatter settlements. While these projects may not have a specific influx footprint as the incoming population is absorbed within the city, there may still be impacts, including an increased demand on municipal services and transport systems, inflationary effects on land, housing, food, and fuel, development of slums, increased social conflict, and increased criminal activity.

For projects located in rural areas, the migrant population tends to be concentrated in villages and towns in the immediate vicinity of the project site and/or base camp. Rapid population growth often exceeds the assimilative capacity of the villages and towns, resulting in the development of squatter settlements and negative effects on infrastructure, services, and utilities. In addition, there is a potential "halo effect" from large projects, where migrants move farther out, to previously "non-impacted" areas in search of cheaper housing and food sources. These previously categorized "non-impacted" areas can become rapidly impacted and influenced by new migrants.

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Image 4. The Tangguh LNG Project in Papua, Indonesia needed to physically relocate Tanah Merah village to secure land for construction of the LNG plant. Construction of the resettlement village was located close to Saengga Village occured from 2002-2004. Migrant workers in search of employment settled in villagers' houses and on the lands behind Saengga village and subsequently were engaged on the construction of the new resettlement village. Migrant workers from Tanah Toraja in Sulawesi constructed a hostel with a frontispiece typical of their point of origin (centre)

RATE AND MAGNITUDE OF IN-MIGRATION

The rate and magnitude of in-migration are determined by the project characteristics (i.e., workforce requirements, ongoing demand for labor, goods, and services) and the area's capacity to meet the project needs.

Rate

Typically, the highest rates of in-migration occur during the project construction phase, when project employment workforce requirements are highest and most diverse and the project makes the greatest contributions to the local economy. Those projects with a significant operations phase demand for labor, goods, and services will continue to experience high rates of in-migration, and often lead to the development of enclave economies supporting a large workforce and secondary population.

As seen in extractive industry projects in Asia and Africa, project-induced in-migration-driven annual population growth rates frequently range from 10-15 percent on a sustained basis, compared to national average annual population growth rates of 2-3 percent. Often, the best estimates of potential rates of in-migration come from evaluating the in-migration experiences of comparable projects in similar settings.

Magnitude

Over time, as the number of in-migrants increases, they can overwhelm the local population, infrastructure, services, and utilities. As indicated above, some large-scale projects may lead to sustained annual population growth rates of between 10-15 percent, leading to large absolute increases in the population. Table 2 presents a sample of population statistics for several large mining projects, indicating the large absolute population increases that may occur.

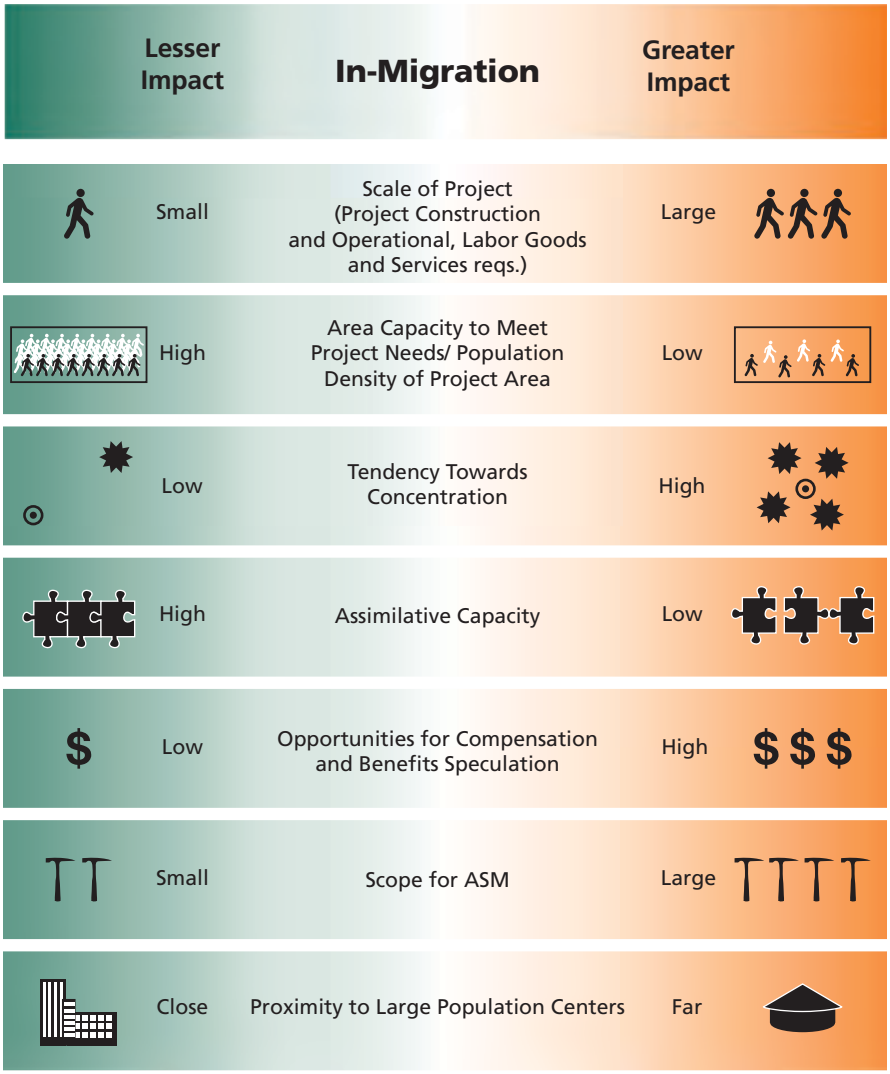
TABLE 2: POPULATION GROWTH OVER TIME FOR SELECTED LARGE MINING PROJECTS

Project Details			Population Growth in Project Area			
Name	**Location**	**Start date**	**0 yrs**	**+5 yrs**	**+10 yrs**	**+15 yrs**
Porgera Joint Venture/ Barrick Gold	Porgera, Papua New Guinea	1989	3,000		22,000	
PT Freeport Indonesia[1]	Papua, Indonesia	1967	2,500		50,000	75,000-100,000
Sadiola Gold Mine[2]	Sadiola Commune, Mali	1996	850	3,850 (+2yrs)	10,000	
Kamsar Bauxite	West Guinea	n.d.	300			75,000
Simandou/Rio Tinto Alcan	Guinea	2006	17,835	24,441 (+2years)		

1 Banks, G., (unpublished), Faces We Do Not Know: Mining and Migration in the Melanesian Context
2 Pollett, T (pending), Lessons Learned from Sadiola Gold Mine, Mali

Figure 4 illustrates key factors leading to high rates of influx and large migrant populations. The magnitude of in-migration and, to a large extent, its associated impacts is relatively more significant with projects with high construction and operational phase labor requirements and an ongoing demand for goods and services that are located in remote regions. These regions are characterized by low population densities, their distance from major population centers and limited economic activity/diversity of economic alternatives. In such areas, local people are unable to meet project demand for labor, limited existing infrastructure and services promote concentration of the incoming population, and the assimilative capacity of the environment is limited.

FIGURE 4. KEY FACTORS LEADING TO HIGH RATES OF INFLUX AND LARGE MIGRANT POPULATIONS.



In the mining sector, which has high construction and operations phase demand for labor and continued demand for goods and services, it is estimated that every formal job with the mine creates between three and ten additional jobs in the project area. Thus, a project with a construction phase workforce of 5,000 may create between 15,000 and 50,000 employment opportunities, providing significant opportunities for in-migrants.

In addition, there is an inevitable increase in "camp followers," such as petty traders and small-scale service providers, particularly during large construction phases. The ratio of camp followers to employment is not easy to predict but can be quite substantial, and can easily reach a ratio of three to four camp followers for every actual job. Many of the unsuccessful job seekers will turn to more familiar camp follower activity such as petty trading. Some female migrants can become rapidly marginalized and turn to transactional sex as a means of financial support. Even at a very basic level, such figures can be used for predicting the increase in population, increased demand for infrastructure, goods and services, and promoting better management.

Environmental and social impacts associated with in-migration

This section describes the potential environmental and social impacts of project-induced in-migration. In-migration has the potential to – and often does – bring a range of positive impacts to the project area. However, experience demonstrates that project-induced in-migration is also typically associated with negative environmental, social, and health impacts. Also, several issues related to project-induced in-migration require separate consideration, including artisanal and small-scale mining (ASM), resettlement, impacts on indigenous people, impacts in high biodiversity value areas, and impacts on cultural heritage. The final part of this section briefly considers these specific issues.

POSITIVE IMPACTS

POSITIVE IMPACTS

- Increased links to mainstream economy
- Increased local skills base
- Business development opportunities
- Employment creation
- Increased local labor pool
- Opening of new markets for local products and services
- Increased accessibility and availability of goods and services
- Alternate livelihood opportunities
- Improved local wage and income levels (including opportunities for local sourcing and higher prices obtainable for local products)
- Increased local tax revenue levels
- Increased individual, household, and community empowerment stemming from increased income and wealth
- Improved local training and skills development opportunities
- Monetization of remote rural economies, improving purchasing power and increasing trade
- Opportunities to build community organizational structures
- Improved access through development of road systems
- Improved information and communication
- Improved housing, water and sanitation
- Improved access to and expansion of infrastructure, public services and utilities (health, education, waste management, electricity, water supplies, telecommunications)
- Increased attention and input by government authorities, NGOs, etc.
- Increased political power

In-migration can generate a range of positive environmental, social, and health impacts, including:

- **Improved links with the mainstream economy:** Better communication, improved transportation, greater economic linkages and monetization of rural economies can lead to increased purchasing power and trade opportunities for local communities and new markets for local products and services.
- **Individual, household, and community empowerment:** Increased technical capacity, earning capacity, wealth accumulation, and purchasing power can provide new opportunities and power to local people.
- **Access to, and expansion of, infrastructure and public services:** Migrant-based population growth may serve as the basis for greater national allocation of resources to a region, thereby stimulating the development or expansion of infrastructure and public services. A more world-wise and articulate migrant population allows for the development of a more empowered and articulate population, capable of placing greater demands on

local government for: (i) better infrastructure, public services, and utilities; (ii) access to the legal justice system; and (iii) more responsive and effective public security forces.

- **Business opportunities:** Both the arrival and the activities of migrants have the potential to stimulate business development by introducing or increasing demand for goods and services in the area. Migrants' need for transportation, accommodation, and food stimulates the local economy, and additional development of new businesses may create further demand for goods and services, fueling more local business and infrastructure development.
- **Improved range, availability, and accessibility of goods and services:** Local employment provides the local population with increased disposable income, leading to increased demand for goods and services. Such demand is often met by migrant entrepreneurs and traders who establish commercial facilities within the area. Competition between migrants can facilitate market structure, promote competition, increase variety, and reduce the prices of certain goods.
- **Higher skill base:** Migrants bring new skill sets into a project area. By employing and working with the local population, they can contribute to building the capacity, skills and knowledge of local people.
- **Increased local employment:** The development of small and medium enterprises by migrants is often associated with increased demand for a local workforce. While much of this employment relies on the transfer of wealth from the project to the enterprise and onto the workforce, project development often leads to further unrelated development, through improved access and communication, introduction of and/or links to other markets, and provision of enough demand to guarantee expansion and capture of other markets.

NEGATIVE IMPACTS

In-migration may have a wide range of negative impacts on the host communities resident within the project area of influence including negative impacts on the environment; public infrastructure, services and utilities; the local and regional economy; livelihood strategies; public health; the social and cultural environment, and; legacy issues. These community-level impacts have the potential to directly and indirectly affect the project. Direct project impacts are most evident in the case of project security and the health of the workforce.

Environment

NEGATIVE ENVIRONMENTAL IMPACTS

Landscape –level Environmental Impacts

- Logging
- Deforestation
- Exploitation and loss of biodiversity
- Land-use change
- Land degradation
- Depletion of natural resources (fuelwood, water, aquatic resources, etc.)
- Erosion and loss of soil productivity
- Disruption of waterways (backwaters, rivers, tributaries)
- Increased pressure on, and possible disputes over, land use and common property natural resources

Point-Specific Environmental Impacts

- Air, noise, water, and soil pollution
- ASM related pollution events associated with use of mercury

Population increases may cause both landscape-level and point-specific environmental impacts. At the landscape level, increased population pressure and easier access to less-developed areas may lead to higher levels of unrestricted use of open access/common property resources, including forests and aquatic resources, causing ecosystem degradation and species loss. Exploitation of forests may involve increased logging, hunting of wildlife and trade in endangered species, and increased collection of fuelwood. However, the biggest threats to forest resources from in-migration come from forest conversion (change in land cover and land use) by in-migrants seeking land for housing and agriculture. Changing land-use patterns, reflecting migrants' priorities for different crops and livestock, may lead to changing demand and allocation of scarce water resources, introduction of potentially invasive alien species, and use of fertilizers and pesticides that can damage the local environment.

Image 5. In-migration driven population growth in Komé Atan settlement, Chad, near the Chad-Cameroon Oil Pipeline Project created pressure on inadequate waste management systems, leading to an accumulation of garbage with potential community health risks.

EXAMPLE: LANDSCAPE-LEVEL ENVIRONMENTAL IMPACTS

In the **Selous Game Reserve, Tanzania**, seismic lines cut through the forest for oil and gas exploration by Shell in the 1980s enabled an influx of poachers and small-scale farmers who decimated the population of elephants and rhino in the reserve.

At the **Tangguh LNG Project** in Papua, Indonesia, migrants seeking project employment settled in the resettlement-affected villages of Tanah Merah and Saengga. Over time and while awaiting formal employment, some migrants began prawn harvesting. With better resources, including boats and nets, and better market linkages, these migrants were able to harvest more prawns than local fishermen, leading to conflict and unsubstantiated accusations that the migrant fishermen were depleting the local resources.

Increased and unsustainable land use may also lead to land degradation such as loss of soil fertility or erosion, causing declines in productivity and negatively impacting local waterways. Increased demand for construction material may lead to increased unregulated artisanal quarrying. Increased demand for and use of aquatic resources may lead to overfishing, pollution, and the potential depletion of such resources.

Point-specific environmental impacts often result from rapid, unplanned development of settlements (especially squatter settlements) that can lead to depletion of water resources and local pollution associated with the lack of or inadequate sanitation and solid waste management systems. These environmental impacts have potentially significant health effects, including increases in water-borne diseases and changes in vector-borne diseases, such as malaria, schistosomiasis, dengue fever, lymphatic filiriasis, and onchocerciasis. Projects associated with an influx of artisanal and small-scale mining (ASM) may also observe point-specific mercury pollution causing land sterilization, pollution of river water and habitats and potential adverse health impacts.

Infrastructure, Services, and Utilities

NEGATIVE IMPACTS ON INFRASTRUCTURE, SERVICES, AND UTILITIES

- Increased use of existing roads and transportation systems
- Increased pressure on education and health services
- Increased pressure on waste management systems
- Increased demand for electricity, water supplies, and sanitation
- Unplanned and uncontrolled development of squatter settlements
- Increased demand on communications networks
- Increased demand for housing
- Increased use of/demand for community, religious, and recreational facilities

Rapid in-migration places new demands on infrastructure, services, and utilities. Many project development areas have limited existing public infrastructure such as roads and wharfs and little or no provision of basic services and utilities, including transportation, health care, education, water and sanitation, waste management, emergency services, electricity, heating, or public water supplies.

Primary and secondary schools often have inadequate staffing, limited educational materials and large class sizes, while district hospitals and field clinics have inadequate staff and limited medical supplies and bedding. The needs of the incoming population can put a serious strain on these already inadequate systems. They may also have to deal with a new and diverse range of health challenges and other issues.

Image 6. Poor sanitation and drainage associated with in-migration driven population growth in Komé Atan settlement, Chad, near the Chad-Cameroon Oil Pipeline Project. An inadequate number of latrines together with poor drainage led to deteriorating sanitary conditions, thereby creating community health risks.

EXAMPLE: POINT-SPECIFIC ENVIRONMENTAL IMPACTS

The **Porgera Joint Venture/Barrick gold mine** is located in Porgera, in the Papua New Guinea highlands. Before the mine opened, the Ipili were widely dispersed agriculturalists practicing mound-based sweet potato cultivation on steeply sloping lands. Mine development required the displacement of artisanal miners and the initial (and subsequently repeated) resettlement of a number of Ipili villages. As the mine developed, Porgera became the focal point of in-migration, particularly of the Huli and Enga, leading to an explosion of the population from 3,000 people who lived in the valleys surrounding the mine prior to the start of the project to more than 22,000. Migrant settlement patterns in the area are varied: in resettlement villages and around Porgera town, migrants joined existing households or established their own houses. Housing density increased dramatically and without adequate water and sanitation conditions rapidly became unhygienic and unsanitary, with potentially significant health impacts.

Economics and Livelihood Strategies

NEGATIVE IMPACTS ON THE LOCAL ECONOMY AND LIVELIHOOD STRATEGIES

- Increased poverty
- Increased cost of living (inflation)
- Competition for economic resources and employment, e.g., loss of productive land to urban settlement
- Reduced availability and increased cost of land, food, fuel and housing
- Reduced reliance on local subsistence production systems
- Increased dependence on broader cash-based economy to meet needs
- Increased economic vulnerability for marginal groups (women, elderly, minorities, etc.)
- "Boom /Bust" cycles associated with initial construction, eventual closure

The environmental and social consequences of influx can significantly impact the economy and livelihood strategies of people resident within the project area. As increased development and population lead to increased demand for food, fuel, housing, and land, short-term shortfalls in supply can lead to medium-to-longer-term inflationary pressures on prices in a project area.

Reduced supply, increased food costs and increased reliance on new wage incomes, coupled with reduced dependency on subsistence agricultural systems, may encourage local people to opt for cheaper but nutritionally inferior food types. Increased cost of accommodation may make continued residence unviable and cause relocation. Increased land costs may price local people out of the market. In cases where land is held communally, increased land pressures may place significant new pressures on traditional management structures, and decisions by individual leaders to sell communal landholdings can cause a significant breakdown in existing social structures, norms, and values, and loss of prime agricultural lands.

The arrival of more skilled and sophisticated traders frequently drives the less competitive local vendors out of business. This disrupts the local economy, and may exacerbate tensions. Local companies may demand that the company establish sole-source, non-competitive purchase agreements with "local" suppliers to stay in business. Failing this, local shopkeepers may eventually revert to becoming menial labor in the newcomers' stores.

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Image 7. The presence of the Tangguh Babo Base Camp at the Tangguh LNG project in Papua, Indonesia, stimulated in-migration and land speculation. In the area immediately adjacent to the airstrip and camp and along the road leading to the Babo jetty, both local and migrant businessmen actively and successfully sought to acquire communally held tribal lands, generally reaching negotiated settlements with selected clan representatives prior to completion of formal titling processes. Land values increased significantly over a short time period.

Health

NEGATIVE HEALTH IMPACTS

- Increased incidence of accidents and fatalities associated with project traffic
- Increased pollution (air, water, dust, noise, traffic)
- Proliferation of communicable diseases (including sexually transmitted infections, respiratory infections, waterborne diseases)
- Insufficient number of health centers, staff and medical supplies
- Inadequate public hygiene facilities
- Changes in nutrition status

A large number of new residents in an area can significantly impact the health of the local population and the project workforce. Increased use of and demand for already inadequate community housing, water, sanitation, food, and medical services can mean that health needs go unmet and new health challenges arise.

Rapid influx may significantly alter existing levels of communicable diseases, including respiratory problems, diarrheal diseases, vector-borne diseases such as malaria, and sexually transmitted infections, by introducing "new infectives" and increasing the number of people who might spread illness. For example, one case of malaria will typically produce five additional cases by increasing the reservoir pool of infectives for the mosquitoes that spread the disease, unless there is an effective vector control program. Community and regional-level disease control programs for illnesses such as malaria, tuberculosis, and HIV/AIDS, may be overwhelmed by the increasing cases, while demand on maternal and reproductive health services may significantly outpace existing local services and infrastructure.

Image 8. In-migration driven population growth caused rapid expansion of Komé Atan settlement, Chad, near the Chad-Cameroon Oil Pipeline Project, leading to the failure of inadequate drainage systems. The accumulation of standing pools of water served as breeding sites for the mosquitoes that spread malaria, increasing risks to employee and community health.

The influx of urban job seekers into rural areas may also significantly alter the burden of non-communicable diseases, such as diabetes, hypertension, or cardiovascular diseases, on local medical services that are ill-equipped to deal with this spectrum of problems. The introduction of new zoonotic diseases (diseases that "jump" from animals to humans) can also be significantly facilitated by changes in traditional herding and migration patterns.

In addition to changes in disease patterns, increased accidents and injuries due to changes in road traffic may significantly and adversely affect levels of trauma and accidents, placing a severe strain on local health care infrastructure. Increased social problems, such as alcohol and drug abuse or domestic violence, may also contribute to increasing health problems in the area. Finally, the return of migrant workers to their home communities may lead to the further spread of communicable diseases, such as sexually transmitted infections, tuberculosis and malaria.

One method for analyzing project-triggered health impacts is the Environmental Health Areas (EHAs) framework,[4] which is a systematic evaluation of 12 areas of risk[5] (see Table 3).

4 The EHA framework is used in the 2007 IFC Guidance Notes for Performance Standard No. 4, Community Health, Safety, and Security. Add link

5 The 12 areas of risk identified within the EHA are: (1) housing and respiratory issues; (2) vector-related diseases; (3) sexually transmitted infections (STIs); (4) soil- and water-borne diseases; (5) food and nutrition related issues; (6) accidents/injuries; (7) exposure to potentially hazardous materials; (8) social determinants of health (SDH); (9) cultural health practices; (10) health services infrastructure and capacity;, program management delivery systems; (11) non-communicable diseases; and (12) veterinary medicine/zoonotic issues

TABLE 3: POTENTIAL PROJECT-INDUCED HEALTH IMPACTS IN EACH EHA

Environmental Health Area (EHA)		Potential Impacts
1	**Housing and Respiratory Issues**	Acute respiratory infections (bacterial and viral), pneumonia, and tuberculosis; Respiratory effects from housing, overcrowding, and housing inflation
2	**Vector-Related Diseases**	Malaria, trypanosomiasis, onchocerciasis, lymphatic filariasis, dengue and ectoparasites (fleas, ticks, lice), etc.
3	**Sexually transmitted infections**	HIV/AIDS, syphilis, gonorrhea, chlamydia, hepatitis B
4	**Soil- and Water-Borne Diseases**	Geohelminths (e.g., giardia, hook and pin worms, etc.)
5	**Food and Nutrition Related Issues**	Changes in subsistence practices; stunting, wasting, anemia, micro-nutrient deficiencies (including folate, vitamin A, iron, iodine); gastroenteritis (bacterial and viral); food inflation
6	**Accidents/Injuries**	Road traffic-related accidents; spills and releases; construction (home and project-related) accidents; drowning
7	**Exposure to Potentially Hazardous Materials**	Road dust; air pollution (indoor and outdoor related to industrial activity, vehicles, cooking, heating, or other forms of combustion/ incineration); landfill refuse or incineration ash; effects of other project-related solvents, paints, oils, or cleaning agents
8	**Social Determinants of Health (SDH)**	Psychosocial effects; resettlement/relocation; violence; security concerns; substance misuse (drugs, alcohol, smoking); depression and changes to social cohesion
9	**Cultural Health Practices**	Changing role of traditional medical providers; loss of indigenous medicines and unique cultural health practices
10	**Health Services Infrastructure and Capacity including Program Management Delivery Systems**	Excess strain on physical infrastructure; inadequate staffing levels and competencies, or technical capabilities of health care facilities Coordination and alignment of the project to existing national and provincial level health programs, (e.g., TB, HIV/AIDS), and future development plans
11	**Non-Communicable Diseases**	Hypertension, diabetes, stroke, and cardiovascular disorders
12	**Veterinary Medicine/Zoonotic Issues**	Potential disease distributions secondary to changes in animal migration patterns due to project-related activities or infrastructure

Social Dynamics

NEGATIVE IMPACTS ON SOCIAL DYNAMICS WITHIN THE PROJECT AREA OF INFLUENCE

- Impacts on traditional beliefs, damage to cultural heritage
- Loss of knowledge, skills, and experience related to traditional livelihood activities
- Upheaval in traditional leadership, behavior, customs, values, and norms
- Changes in power relationships, including undermining and changing of leadership and traditional authority structures
- Welfare imbalances and differential wage incomes, wealth accumulation and opportunities
- Dilution of social cohesion and cultural disruption (separation of households and communities)
- Changing relationships between groups (gender, age, socioeconomic status, ethnicity)
- Possible marginalization of women, ethnic minorities, and other vulnerable groups
- Loss of local identity
- Creation of land markets leading to changes in traditional land tenure systems
- Increased tension, disputes, and conflicts between locals and migrants concerning natural resources, employment opportunities, and other project benefits
- Increased incidence of social ills, including alcoholism, drug abuse, prostitution, gambling
- Increase in domestic violence
- Increase in criminality
- Decrease in law and order
- Increased ethnic tension and violence

Project development may lead to significant and permanent change in the social, cultural, economic and political environment of the project area of influence. In-migration is an underlying cause driving many of these changes.

As described below, in-migrants compete with locals for natural resources and may use, commercialize and possibly deplete resources that traditionally support local livelihoods, e.g., land, pasture, fuelwood, and water. These actions, as well as greater competition for limited services and utilities may threaten the health and welfare of both local and migrant communities, can aggravate relations between locals and in-migrants, and may lead to increasing resentment and social unrest.

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Image 9. Migrants seeking employment and entrepreneurial opportunities with the Simandou Iron Ore Project, Guinea mostly settled in Moribadou village near the Canga East Base Camp. Migrants and increased cash flows stimulated the development of this video club and telephone service in the village.

Beyond competition for resources, services, and utilities, the rapid influx of workers and their families can profoundly impact the social and cultural fabric of local communities, threatening their values, norms, and traditions. For example:

- The new population dynamics may undermine or change existing social structures, including authority structures, leadership, and representation.
- Changes in traditional land tenure systems may result, as migrants drive the creation of land markets and may take advantage of local people with customary ownership rights but without legally recognized titles to the land. Local people may be unfamiliar with land markets and unaware of the commercial opportunities that the project's presence generates.
- Projects may have to deal with the consequences of both unsatisfied expectations on the part of local people, as well as increased dependency within communities relying on benefits or compensation from the project.
- Influx populations may hasten the introduction and/or increased expression of vices such as prostitution, gambling, alcoholism, and drug use, which can have significant negative social impacts and consequences. Increased criminality, conflict, and violence and declining law and order may also present additional social challenges for both local communities and the project.

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Image 10. Migrants seeking employment and entrepreneurial opportunities with the Simandou Iron Ore Project in Guinea mostly settled in Moribadou village near the Canga East Base Camp. Migrants and increased cash flows stimulated the development of bars and other services in the village.

Project Closure

IMPACTS ASSOCIATED WITH PROJECT CLOSURE

- Economic decline
- Sustainability of infrastructure, services, and utilities
- Out-migration
- Continued residence of more vulnerable groups
- Changing social dynamic as balance between local and migrant population changes

In-migration-related legacy issues associated with project closure need separate consideration because they occur after project closure, and thus are often overlooked. These impacts are associated with the economic decline of a region after a project is completed and may include the threat of unemployment and poverty, issues related to out-migration, and the lack of sustainability of infrastructure, services, and utilities. These issues occur at a time of changing management and responsibilities, with an increased role for government and a diminishing role for the project.

Project closure is of particular importance to the oil, gas, and mining sector. ICMM's *Planning for Integrated Mine Closure: Toolkit* provides an approach to addressing the issue, a critical component of which is community engagement and involving the community throughout the project life-cycle.

Project closure is an issue particular to the OGM sector. ICMM has recently developed a specific document (*Planning for Integrated Mine Closure: Toolkit*) that sets out an overall approach, identifies closure outcomes and goals and key stakeholders. Key to the recommended approach is community engagement – the document identifies the need for community involvement when scoping the challenge, conceptualizing the solution, implementing the design and verifying the outcomes. The document recommends early closure planning, operational implementation of progressive closure planning, and a cross-functional approach to developing effective exit strategies.

Project Security

NEGATIVE IMPACTS ON PROJECT SECURITY

- **Reduced ability to protect the workforce**
- **Reduced ability to safeguard physical assets**
- **Increased threats to business continuity e.g., threat of blockades, protests**
- **Increased threats to reputation on the project (affecting the company's/project's social license to operate)**

Typically, a project's security objectives are to: (i) protect the work force, (ii) safeguard the physical assets, (iii) sustain business continuity, and (iv) preserve the reputation of the project and company. Because project-induced in-migration and its associated impacts can affect the ability of the project to achieve these security objectives, it should be considered as a threat to project security, and managed as such. Project security issues to consider related to in-migration are direct and indirect security threats and issues that may arise due to conflict between locals and in-migrants.

- Direct threats to project security are driven by effort to secure project assets and competition for project benefits and efforts to influence or control a project's decisions regarding the distribution and awarding of those benefits.
- Indirect threats to project security and to law and order generally in the project area include competition for control over economic activities outside the project, including monopolization of legitimate business activities such as transportation and food distribution, as well as criminal and semi-criminal activities such as money lending, extortion, gambling, prostitution, drug and alcohol dealing, and gangs.

Migrants compete for benefits associated with project development and operations. They derive strength from numbers, better and more sophisticated skills, greater economic powers, and better links to the mainstream economy. Their arrival introduces a local-migrant dynamic to the competition for benefits and may bring other factors such as ethnicity or religion into play, creating a potentially socially volatile situation. Ultimately, security threats may involve theft, fraud, extortion, protests, demonstrations, malicious mischief, vandalism, sabotage, obstruction of project operations, threats, and violence.

The common response to growing social volatility is to invite or demand additional public security forces (police, gendarmerie, or military) to the area, on the basis that it is the host government's responsibility to maintain law and order. However, there are a number of potentially damaging implications of such an action, which many companies fail to foresee when they request public assistance. These issues, which can pose significant risks to the reputation of the company, include:

- Public security forces may feel this is not their problem but rather is something "caused" by the company and for which the public forces lack resources;
- Public security forces may lack the leadership and discipline to help manage the issue;
- Government security commitments are often unreliable, particularly during election periods;
- Competing public security forces (police vs. military) are often drawn from separate locations to prevent them from having conflicting loyalties. For example, locally recruited police may side with local communities should the security issue escalate. On the other hand, national police or military units sent to the area from outside may generate local hostility and feelings of repression;
- Minority groups, especially in-migrants, often seek shelter under the protection of the public security forces and develop symbiotic relationships with them, to the detriment of impartial justice;
- In a confrontation, public security forces may lack the tools and training to handle a confrontation without using excessive force. They have often been taught to overmatch violence as a deterrent to future confrontations; and
- Once in place, the company holds liability for, but little control over, the actions of the public security forces. Often, the company may have to supply resources – food, accommodations, transportation, and communications – to the under-resourced public security forces.

Project-Induced In-Migration And Artisanal And Small-Scale Mining, Resettlement, Indigenous People, Biodiversity, And Cultural Heritage

The potential and specific nature of in-migration impacts on certain programs or in certain areas requires separate consideration. These issues include artisanal and small-scale mining (ASM), resettlement, impacts on indigenous peoples, areas with high biodiversity value, and cultural heritage. This section briefly discusses each of these individual issues.

ARTISANAL AND SMALL-SCALE MINING

While labor- and commerce-based influx is the most common type of in-migration, and the main subject of this paper, project development can also lead to increased access to natural resources and additional in-migration of people seeking to exploit those resources. Around large-scale mining projects, there is often a significant number of in-migrants seeking access to mineral resources. [6]

6 Third-party utilization and extraction of natural resources utilized by projects are not limited to mining although they occur less frequently in other industries. In the oil industry there are examples of small-scale producers illegally accessing oil deposits. In Nigeria, for example, there is massive crude oil theft and bunkerage, while in Cepu, Indonesia, existing small-scale producers operate side-by-side with ExxonMobil's major investment on the same concession.

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Image 11. Kalukundi fly village, an artisanal miners' settlement on an Africo Resources mining concession in Katanga, DRC. The photo shows the transient nature of the village, which has been hacked out of *miombo* forest next to a mineralized fragment (ore body). The majority of the residents are young diggers who have no intention of staying long term and have no community ties. Common social problems associated with the village include substance abuse, commercial sex and associated sexually transmitted infections, gambling, a lack of water supplies, and inadequate sanitation.

While artisanal and small-scale mining (ASM) may be practiced by both local people and migrants, and often precedes the arrival of large-scale mining operations, the development and operation of a mine may simultaneously (i) restrict access to the resources, thereby negatively affecting the livelihoods of people dependent on ASM; (ii) increase the accessibility and the availability of the mineral resources, thereby encouraging further exploitation; and (iii) provide necessary infrastructure and services, thereby facilitating increased in-migration of artisanal and small-scale miners;.

ASM-based in-migration has a number of special attributes that will require specific management approaches where there is a risk of such influx. These attributes include:

- In many countries, ASM is deemed illegal. Alternatively, legislation may exist to legitimize ASM but may not be supported by outreach and enforcement. The relationship between ASM and the larger exploration and mining concession may be poorly defined, and generate multiple parallel legitimate means of accessing the resource.
- ASM is often a long-standing part of the local economy. Local artisanal and small-scale miners may already have their own established communities. Migrants may form their own settlements or communities and/or integrate with existing communities.
- In many countries, especially in Africa, migrant ASM is a major issue associated with mine development and operations. Often, ASM represents a significant unregulated sub-economy, including middle-men providing loans and equipment and materials, and payment of rent to the local population.
- Because national regulatory frameworks define ownership and use of the mineral resource and the rights of artisanal and small-scale miners, they also define what projects do (security) and what they *can* do, such as develop co-management systems. Typically, the ability of the project to control access to its concession is limited and a degree of "illegal" ASM is inevitable. Where access to and availability of the resource is dependent on development of the mine, ASM activities have the potential to directly impact upon the operations of the project.

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Image 12. Artisanal miners in a disused pit, Ruashi Mining on the outskirts of Lubumbashi, DRC. Tens of thousands of artisanal miners flooded into partially abandoned DRC copper-cobalt mines after the virtual collapse of the state mining company Gecamines in the mid-1990s. Today, as private industrial miners return, many of these artisanal miners are being displaced under a range of agreements or eviction orders.

- ASM can lead to competition with local communities on issues such as use of land or damage to water resources.
- In contrast to the project workforce and derivative commercial activities, the project is not fully in control of the metal and/or mineral resources. As many aspects of ASM are deemed "illegal," the ASM sector is, in many ways, similar to the operation of other illicit activities. Unlike labor, the sub-economy is only peripherally related to and controlled by the company.
- Artisanal and small-scale miners seek the same resource as the project. ASM may have a direct impact on operations in terms of illegal and unregulated access to the concession, increased concern for mine security, disruption of operations (e.g. blasting, tailings), and increased risk of injury and death to both project staff and artisanal and small-scale miners.
- In certain circumstances, environmental, social, and health impacts associated with ASM are significant. These include unmanaged utilization and disposal of chemicals, and large numbers of single men using their cash and free time to engage in gambling, alcohol, drugs, and sex.

Projects that anticipate or already experience ASM-related influx should develop an ASM Management Plan. The Plan should include a section addressing influx issues and their impacts.

RESETTLEMENT

Projects requiring land acquisition and resettlement of communities to allow for project development typically develop a Resettlement Action Plan, which outlines plans for the replacement of housing, infrastructure, services, and utilities and the restoration of displaced households' livelihoods. In general, resettlement programs involve:

- Provision of compensation to resettlement-affected communities;
- Development and construction of replacement housing, infrastructure, services, and utilities to a standard higher than the norm for the area.
- Provision of secure (albeit often unfamiliar) forms of land tenure to displaced households, often carrying significant economic value;
- Creation of new market opportunities as displaced communities establish new market linkages; and
- Considerable investment of resources in assisting the displaced population to re-establish their livelihoods.

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Image 13. Artisanal miners from all over Guinea and West Africa, working an abandoned mine pit, Siguiri Gold Mine, Guinea.

EXAMPLE: THE TANGGUH LAND ACQUISITION AND RESETTLEMENT ACTION PLAN

Development of the Tangguh LNG Project in Papua/Indonesia required the resettlement of Tanah Merah Village as a pre-condition to project construction. The Tanah Merah community was to be resettled to two new villages, Tanah Merah Baru and Onar Baru, which were to be built on land adjacent to the existing Saengga and Onar Lama villages, respectively. Construction of the resettlement villages occurred prior to development of the overall project human resource recruitment policies and guidelines and prior to the adoption of any in-migration mitigation measures. During construction, the Saengga population swelled with the arrival of speculative migrants seeking employment. Migrants rented rooms in existing houses or established their own dwellings on empty lands behind the village proper. Given the proximity of the resettlement villages to the project site, early arrival and participation in resettlement village construction also served as a springboard to secure employment on the construction of the project.

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Image 14. Following relocation of the Tanah Merah community to the new Tanah Merah village, in-migrants flooded into the village in search of employment and business opportunities. More influential villagers sold the 'rights' to build infrastructure and operate small businesses, and thereby benefited from the arrival of the entrepreneurial migrants, while the community as a whole was able to access a greater range of goods and services and, in some cases, lines of credit.

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Image 15. Area of new Sadiola Village assigned for settlement of new arrivals, Sadiola Gold Mine, Sadiola, Mali.

EXAMPLE: RESETTLEMENT PLANNING FOR THE SADIOLA HILL GOLD PROJECT, MALI

After project operations had commenced, and as part of on going exploration, it was discovered that the ore body extended under Farabakouta village and very near to Sadiola village, which were the villages closest to the pit. In considering physical resettlement of the villages, it was also necessary to address the resettlement of migrant newcomers who were seeking employment and entrepreneurial opportunities associated with th mine and had established a settlement over the ore body adjacent to Sadiola village, increasing the population of affected communities from 800 to nearly 4000 people. Participatory planning was undertaken to find suitable sites to resettle both the original inhabitants and the migrants. This resulted in the construction of better housing for the original inhabitants and improved infrastructure to serve affected communities, including the newcomers (roads, water supply, schools, health clinic,local administration offices). Newcomers who resettled (196 households) were not provided with new housing but were compensated for their built structures (dwellings, shops for petty commerce) and were assisted to transport materials to the new village site, and to legally acquire demarcated residential plots.

Lessons from influx of newcomers and resettlement at Sadiola were applied to resettlement activities associated with the proximate Yatela mine. A ' New Arrivals' site was identified and planned with the nearby village of Kourketo prior to mine construction. The site was located near Kourketo, but at a sufficient distance not to interfere with day-to-day activities of the village, and on a major crossroads providing business opportunities associated with transportation. The project developed a spatial plan for the new settlement, using participatory methodologies, to encourage orderly settlement. In addition, public infrastructure (roads, market place, water supply-borehole) was developed *in situ* to serve as a magnet to attract and promote settlement of new migrants at the selected site. Nonetheless, there has been a fourfold increase in the population near Yatela mine. One small hamlet, Niamboulama, located over the ore body, was resettled at a site away from the newcomers since they did not want any impacts by migrants on their cropland and farming activities.

The real and perceived benefits of resettlement programs offer significant incentives for in-migration of direct and extended family members, members of the same clan/tribe in neighboring villages, spontaneous migrants, and others. In-migration relating to resettlement activities may occur in order to:

i. Secure employment on resettlement-related construction activities. Resettlement-related construction is often a large-scale construction project in and of itself, and has the potential to create project-induced in-migration independently of the main project under development;
ii. Take advantage of the ready availability of relatively high-standard housing with provision of services and utilities;
iii. Take advantage of potential land and property markets associated with the provision of secure land tenure;
iv. Capture resettlement benefits;
v. Develop small enterprises that capture the locals' increased disposable incomes; and
vi. Anticipate larger project development.

In-migration may therefore threaten the short-, medium- and long-term benefits promised to the displaced communities. Further when resettlement affected villages become a locus for in-migration the adverse environmental and social impacts generally associated with project-induced in-migration are often magnified in these villages. In this way, in-migration can threaten the success of project-sponsored resettlement programs.

In light of the above, when planning resettlement programs, projects should ensure that Resettlement Action Plans include consideration of the risk of resettlement- and project-induced in-migration and, where risks are high, include specific programs to address this risk. For example, a RAP could include an overarching Land Access and Management Plan to address risks associated with influx, speculation, ASM, etc. Besides detailing specific measures to mitigate in-migration once it has occurred, action plans should also include measures to manage the overall risk of project-induced in-migration by:

- Ensuring that design of resettlement site plans and infrastructure, services, and utilities are: (i) based on local standards for housing, services, and utilities; (ii) are cost-effective (and reflect local financial capacity); (iii) match local-level availability of materials for construction and maintenance; (iv) are readily maintained and repaired; and (v) are readily replicable so as to allow expansion when influx occurs;
- Designing resettlement infrastructure, services, and utilities to account for natural population growth rates and some degree of influx population growth;
- Providing a plan for workforce management, recruitment and housing, since resettlement related construction often precedes the official start of construction;
- Structuring home ownership and land tenure documents to safeguard against sale, by requiring signatures by both parties and including no-sale clauses in land-tenure documents;
- Designing programs to safeguard vulnerable populations against exploitation; and
- Engaging local communities to build awareness about and management of in-migration and developing collaborative management strategies involving government, the project and resettlement-affected communities.

Indigenous Peoples

Indigenous peoples may be referred to in different countries by a wide range of names, including indigenous ethnic minorities, aboriginals, hill tribes, minority nationalities, scheduled tribes, first nations, or tribal groups. While there is no universally accepted definition of "indigenous peoples," the term is used in a generic sense to refer to a distinct social and cultural group possessing the following characteristics in varying degrees:

- Self-identification as members of a distinct indigenous cultural group and recognition of this identity by others;
- Collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories;
- Customary cultural, economic, social, or political institutions that are separate from those of the dominant society or culture; and
- An indigenous language, often different from the official language of the country or region.

Indigenous peoples are often among the most marginalized and vulnerable segments of the population. Their economic, social, and legal status often limits their capacity to defend their interests in, and rights to, lands and natural and cultural resources, and may restrict their ability to participate in and benefit from development. They are particularly vulnerable if their lands and resources are transformed, encroached upon by outsiders, or significantly degraded. Their languages, cultures, religions, spiritual beliefs, and institutions may also be threatened by such major changes. Because of their unique place in a society, indigenous peoples are vulnerable to different types of risks and severity of impacts, including loss of identity, culture, and natural resource-based livelihoods, as well as exposure to impoverishment and disease.

Many indigenous cultures and identities are inextricably linked to the lands on which they live and the natural resources on which they depend. In many cases, their cultures, identities, traditional knowledge, and oral histories are connected to, and maintained through the use of and relationships with, these lands and natural resources. The land and resources may also be considered sacred or have a spiritual significance. Use of sacred sites and other places of cultural significance may have important functions for the conservation and sustainable use of the natural resources upon which indigenous peoples rely for their livelihoods and well-being. Thus, project impacts on lands, forests, water, wildlife, and other natural resources may affect their institutions, livelihoods, economic development, and their ability to maintain and develop their identities and cultures.