



Indirect impacts on biodiversity from industry

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Summary

Management of the impacts of an industrial project is a key part of corporate social responsibility. Environmental Impact Assessments (EIAs) are usually used to identify impacts and potential mitigation actions, but often fail to identify the full scale of a project's impacts. This briefing paper outlines why indirect impacts are so complex, why their management is important, and how to manage them.

Indirect impacts on biodiversity from project development, such as increased hunting or spread of invasive species, are hard to predict and can appear difficult to manage. Such impacts are often greater than direct project impacts. The combined effects of social and economic factors with population growth and induced access can create the conditions for such impacts to arise. Regulators and financial institutions often require indirect impact assessment and management. Management benefits include improved access to finance, improved stakeholder relationships, and reduced risks and liabilities. Avoidance and minimisation are better than mitigation after the event: early planning reaps rewards. Although indirect impacts may not be seen as industry's responsibility, The Biodiversity Consultancy (TBC) recommends taking an active outcomes-based approach to minimising such impacts. This is often in industry's best interest and is preferable to project delays or prolonged litigation about liability. Partnerships with government and communities are essential to management of indirect impacts through activities such as strategic infrastructure placement, preferential recruitment of locals and control of bushmeat transport on vehicles.

1 What are indirect impacts?

The environmental impacts of an industrial project can be broadly separated into two categories: 'direct' and 'indirect'^{1,2,3}. Direct impacts result specifically from project activities or operational decisions and may be predicted based on planned activities and knowledge of the ecosystem. Indirect impacts are induced by, or 'by-products' of, project activities. Predicting indirect impacts is more complex as they derive from interactions of multiple factors and stakeholders with the project. Indirect impacts are sometimes called 'secondary impacts', but their negative consequences for biodiversity are often very large.

Impact types

Direct impacts are a direct result of project activities or decisions. They are predictable, usually occur near to project activities, occur during the project lifetime, and are easily identified during planning and the EIA.

Indirect impacts result from interactions of the project with social, economic, political and environmental factors and also with actors such as local communities, migrants, government and project personnel.

Compared to direct impacts, they often have:

- a larger geographical scope (cover a broader area);
- a lower intensity (a lower impact per unit affected);

¹ [IFC \(2012\) Performance standards on environmental and social sustainability. International Finance Corporation, Washington DC.](#)

² [ICMM \(2006\) Good practice guidance for mining and biodiversity. International Council on Mining and Metals, London.](#)

³ [EBI \(2003\) Negative secondary impacts from oil and gas development. Energy and Biodiversity Initiative, London.](#)

- a lower predictability, and thus more complex a priori mitigation;
- a higher likelihood of involving third parties not directly related to or under project authority;
- unclear boundaries of responsibility.

Cumulative impacts are the successive, incremental and combined direct and indirect impacts of project development⁴. They arise from compounding additional activities of a project or projects.

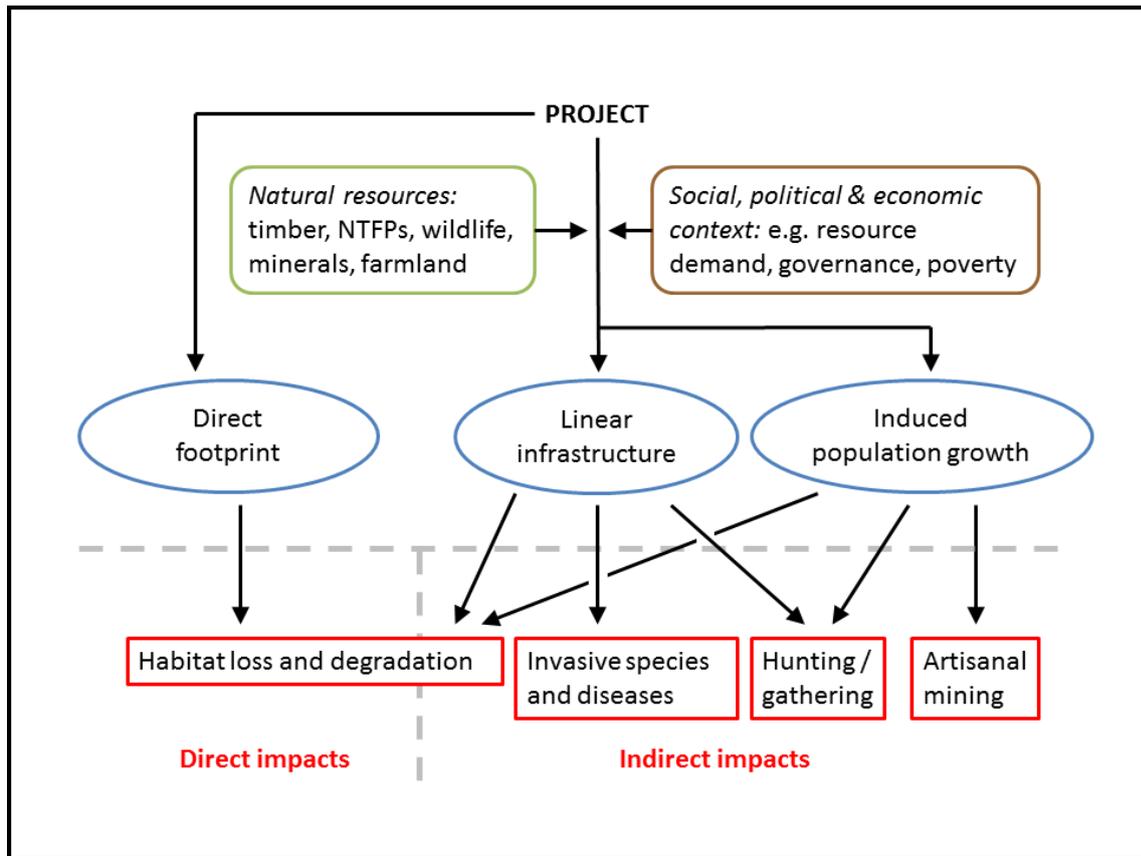


Figure 1. The major indirect impacts (in red boxes) associated with industrial projects. The interaction of external factors and natural resources with project effects (primarily linear infrastructure and induced population growth) creates the opportunity for indirect impacts to develop.

Indirect impacts occur mainly because of linear infrastructure and induced human migration. As shown in Figure 1, these can result in serious issues of:

- *Hunting and gathering* at unsustainable levels owing to higher demand for food, raised local purchasing power and increased access;
- *Deforestation* from, e.g. farming, logging or fire, following induced human in-migration and increased access along linear infrastructure (e.g. roads, railways or pipelines);
- *Habitat fragmentation and edge effects* along linear infrastructure;

⁴ Franks, D.M., Brereton, D., Moran, C.J., Sarker, T. & Cohen, T. (2010) *Cumulative impacts – a good practice guide for the Australian coal mining industry*. Centre for Social Responsibility in Mining & Centre for Water in the Minerals Industry, Sustainable Minerals Institute, The University of Queensland. Australian Coal Association Research Program, Brisbane.

- *Invasive species and diseases* introduced along linear infrastructure to previously remote areas or islands: competing with native species and harming human health and livelihoods;
- *Artisanal mining* on tailings and other resources at site potentially interfering with operations.

2 The risk and opportunities of indirect impacts to industry

Risks of indirect impacts on biodiversity and opportunities to business of managing them can be classed as^{5,6}:

- *Operational* – e.g. risk of water shortages through hydrological impacts versus improved employee motivation and community relations from good management;
- *Regulatory and legal* – e.g. risk of fines or delays, or, with good management, reduced liabilities, shorter permitting cycles with better regulatory agency relationships;
- *Reputational* – e.g. risk to 'licence to operate', but benefits if business takes the lead, including development of supportive partnerships with NGOs;
- *Market and product* – e.g. risk of damage to brand, but opportunity to differentiate brand given best-practice;
- *Financing* – e.g. risk of higher loan costs, but, with good management, increased access to finance, e.g. from banks following IFC Performance Standards (>75 Equator Principles banks).

Risks of complex and difficult to predict indirect impacts may look difficult to manage. Attribution of responsibility between government, NGOs and business may also appear a barrier to management. There are, however, often simple and effective management solutions, particularly if management is planned at an early stage in project development. The opportunities for long-term sustainable benefits and risk management gained through reducing indirect impacts present a strong business case for addressing the issue. Management of impacts will reduce project delays and litigation in relation to disputes about liabilities.

Examples of regulatory and financing drivers for indirect impact management

European Commission Directive 85/337/EEC and amendment 11/97/EC: "The environmental impact assessment shall identify, describe and assess... the direct and indirect effects of a project."

IFC Performance Standards and Equator Principles: "The project will identify... indirect project impacts on biodiversity or on ecosystem services upon which affected communities' livelihoods are dependent," and "should consider direct and indirect project-related impacts on biodiversity and ecosystem services and identify any significant residual impacts."

Canadian Environmental Assessment Act 1992: "Every screening or comprehensive study of a project... shall include a consideration of the following factors: (a) the environmental effects of the project, including... any

⁵ [Hanson, C., Ranganathan, J., Iceland, C. & Finisdore, J. \(2012\) The Corporate Ecosystem Services Review: Guidelines for](#)

[Identifying Business Risks and Opportunities Arising from Ecosystem Change. World Resources Institute, Washington DC.](#)

⁶ [ICMM \(2006\) Good practice guidance for mining and biodiversity. International Council on Mining and Metals, London.](#)

cumulative environmental effects that are likely to result from the project in combination with other projects or activities...”

3 How to manage indirect impacts

Companies will benefit through managing indirect impacts such as induced population growth, increased access and habitat fragmentation, raised local purchasing power, invasive species and hunting⁷. Early engagement with government, communities, NGOs and other stakeholders will increase cooperation in indirect impact management and aid minimise misunderstanding. TBC recommends strategic planning for indirect impacts as a priority. If possible, this should take place early in project development, taking an outcomes-based approach to avoid or minimise the emergence of such impacts in the first place. Attempting to mitigate indirect impacts late in project development will be more difficult, particularly for immovable linear infrastructure: some impacts will already have developed, and others will be largely unstoppable owing to politics or investments to date.

What is an outcomes-based approach?

Outcomes are the site values or conditions desired in the long term, for example: 'Intact forests around the mine supporting community livelihoods and a viable elephant population'. An outcomes-based approach maintains the focus on long-term goals. It avoids overly detailed and prescriptive management plans which may quickly become out-of-date: indirect impacts are hard to predict and can change rapidly. Annual workplans, adaptively updated on the basis of an outcomes-based strategic plan, will best enable managers to change activities to address changing impacts or new information about those impacts.

Key potential management activities are listed below. Some activities may be appropriate for managing multiple impacts:

Induced population growth

- a. Stakeholder engagement early in the project life-cycle to incorporate project policies into regional and local planning.
- b. Recruitment at locations away from the project site, prioritising local residents over migrants.
- c. Awareness-raising through radio and other media on qualifications and health requirements for workers.
- d. Engagement with communities and government to prevent new settlements and relocate in-migrants away from sensitive habitats.
- e. Preferential purchase of produce from local communities.

⁷ [EBI \(2003\) Good Practice in the Prevention and Mitigation of Primary and Secondary Biodiversity Impacts. Energy and Biodiversity Initiative, London.](#)

Habitat loss and degradation

- f. Placement of infrastructure, particularly roads, railways and pipelines, in habitats of lower conservation concern, avoiding intact natural habitats and following existing infrastructure.
- g. Prevention of non-project access to the project site and the project's linear infrastructure.
- h. Closure and blocking of unused construction roads once a project is operational.

Invasive species and diseases

- i. Inspections and quarantine of cargo on arrival in country and at project site.
- j. Disinfection and washing procedures for vehicles and on-site wastewater treatment.
- k. Controls on movement of vehicles, equipment, materials and personnel.
- l. Controls on transportation by workforce of live animals, plants or seeds.

Hunting and gathering

- m. Prohibition of workforce from hunting, purchasing, consuming or transporting bushmeat or wildlife products, or using hunting tools (e.g. guns, snares, dogs, poisons).
- n. Engagement with local and national government to implement hunting controls and forest management activities.

Case studies of effective management planning

Simandou: An iron ore project, managed by Rio Tinto and partners in Guinea, located in one of the poorest areas of Africa. There has been rapid growth of some local towns following in-migration. Government and Rio Tinto cannot prevent this population growth, but must manage it to mitigate indirect impacts on biodiversity (including chimpanzees and community natural resource-based livelihoods) as well as potential impacts on operations. Government and Rio Tinto developed measures to reduce local conflict over jobs: preferential recruitment of locals and recruitment only through the provincial town (not at the mine gate) have reduced impacts. Both partners have enhanced biodiversity protection through management planning which has identified community control of hunting and community livelihoods development as priorities.

Tangguh LNG: This BP project is in West Papua, the poorest province of Indonesia. It attracts non-Papuan migrants from Java causing competition for scarce resources, as well as social and cultural tensions because migrants run most commercial activities. BP has worked with government to manage risks by supporting local livelihoods, recruiting only from regional centres, prioritising employment of indigenous Papuans and accommodating workers in closed camps, but in-migration remains an issue.

PROGEPP: CIB, a logging company in Republic of Congo, developed sustainable forest resource use in its concessions to meet Forest Stewardship Council (FSC) standards. Working with government and WCS, a conservation NGO, it developed controls on in-migration and bushmeat transport on company vehicles, and supported community livelihoods activities. These efforts have helped conserve populations of elephants and great apes and maintained good community relations, resulting in FSC certification and access to broader and more profitable markets.