

# Household and Network Analysis for Understanding Social Changes in Mining Development<sup>1</sup>

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The aim of this paper is to discuss the limits of the conventional Social Impact Assessment (SIA) approach, and propose the use of a Household and Network Analysis (HNA) for a better comprehension of resource development transformations within local communities and mining regions. In order to address this objective, the critically discusses some of the major limitations of the conventional SIA approach and presents the main features of the HNA as a complementary way for dealing with these shortcomings. It argues that HNA is especially suited to grasp an emic or local population's perspective in the context of cumulative impacts. The paper provides examples from experiences of current large-scale mining in Peruvian Andes.

There is no doubt that mining development leads to major social, economic, and cultural impacts in resource regions; especially among rural populations. These impacts could involve production and labor shifts, local inflation, changes in consumption patterns, migration, modification of residence styles, social mobility, or changes in power relations, including gender dimensions (Bainton 2010; Castillo & Soria; Damonte 2008; McMahon & Remy 2001; Ward & Strongman 2011; World Bank 2001; Zegarra, Orihuela & Paredes 2007).

SIA is the standard tool adopted within the extractive industries to identify, measure and manage the effects of mining development on the social conditions of a population. SIA is intended to avoid or minimize negative impacts and to promote the positive ones (Becker & Vanclay 2006; Franks 2012; Vanclay 2003; Vanclay & Esteves 2011). Despite being a powerful methodology, SIA also presents significant limitations. In what follows, I briefly indicate some of these and discuss how a HNA could help to overcome these limitations.

- **Territory-focused.** SIA methodology has been developed following environmental models. Usually, these models contemplate an external action (i.e. the construction of an

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open pit) in an accurately identifiable time and place and then predict the impacts that this action will have on the surrounding environment (i.e. water flows) in a radial, continuous and decreasing way. However, the social effects of mining development do not necessarily match physical actions (for instance, pressure for prices of local properties could begin before any construction has started). Importantly, their effects on people are spatially multi-polar, discontinuous and not necessarily decreasing in intensity. In other words, mining development affects social networks and not geographical units. For instance, in many rural localities of the Peruvian Andes the land belongs to families or communities rather than individuals. As a result of complex land holding arrangements and low farming yields, younger family members have started to migrate to cities leaving some (generally adult couples) to continue cultivating the land. In this instance, migrant members generally maintain their status as land-owners, some also receive farming products and return to their localities to work seasonally during farming peak times. Thus, any impact on the land does not simply affect people near a mining site but also has significant and lasting impacts on people far away from the project. This situation blurs the distinction between direct and indirect areas of influence usually asserted in the environmental models.

- **Cumulative impacts.** The determination and assessment of cumulative impacts –on populations and over time– is one of the most complicated issues that confronts any SIA. Regional inflation is an example of the complexities of cumulative impacts. The rising of relative prices are usually due to increases in demand for goods and services as a result of new consumers and/or as a consequence of higher purchasing power of some buyers (this is especially notorious in the case of housing and services); combined with decreases in the supply (especially of farming products when local agricultural labor is displaced by mining-related jobs because of the differences in salaries). These effects escalate, sometimes in exponential ways, when other projects are executed in the same region but also when an attraction of multiple services and businesses in the area has occurred. A HNA could contribute to better identifying the families and individuals that are benefit from or become more vulnerable as a result of the processes of economic growth.

Taking another example, from a standard SIA perspective it would be difficult to understand the large social and political opposition that a project as Conga found (particularly given that construction is yet to be initiated). HNA would point to the cumulative processes of mistrust and disappointment that people have developed regarding Newmont's presence in the region. Paying special attention to the actor's perspectives provide an understanding of how impacts from different origins can accumulate and enhance the sense of social and political stress (expressed in collective memory).

- **Company-centered and top-down approach.** As a result of institutional and regulatory frameworks, SIAs are typically defined and exercised by extractive companies and embedded in the company perspective. For instance, in Peru mining companies directly select and hire environmental consultant firms and instruct them on the identified population to be included in the assessment. On the one hand, this could lead to a limitation of the social scope as way of avoiding the inclusion of larger populations and generating increased expectation within populations. On the other, this focus tends to miss local actors' agency and perspective. Contrarily, HNA starts with the priorities, experiences, and internal perspectives of the local actors in order to understand the social changes set into motion by mining developments and contrast those perspectives with the company actions and the broader regional social and economic context.
- **Use of binary attributes.** Partly derived from the previous issue, SIA generally assigns positive or negative attributes to social and environmental impacts from an external and *a priori* perspective. However, changes are generally complex and ambivalent, depend on particular circumstances of the individuals and families affected, and could vary over time. Migration is a good example of the complexity of social outcomes and how they could be experienced differently when factors such as age, wealth, gender, kinship, ethnicity or class are taken into consideration. For instance, elderly Quechua-speaking poor women are in an extreme of low social and geographical mobility and, when they migrate (with different levels of willingness or compulsion), they could experience migration as a traumatic process and develop a sense of loss and uprooting.

- **Focus on individuals as units of analysis.** Traditionally, standard SIAs collect and analyze data at the individual level; for instance, income. However, anthropological research in rural societies, including the Andes, has indicated that extended family networks significantly affect individual decision-making. For example, the production and circulation of goods and services within rural societies is suggested to occur largely within the space of the household, therefore, income is obtained collectively by different family members and pooled into a single basket. Another factor overlooked through an assessment of individuals is the significance of kinship relations in shaping individual behaviors and actions. Therefore, focusing only on single persons makes understanding the interrelation between individual and collective forces shaping social and economic decisions difficult.
  
- **Interaction with actors and organizations at different scales.** SIAs are constrained in their capacity to capture linkages between organizations and stakeholders operating at different scales. For example, the political impacts of a mining project are rarely limited to the individuals living near the site. The political consequences of protest and resistance to mining development could involve international NGOs, international courts, members of the Catholic Church, international lending organizations, company hearth quarters, central government entities, regional leaders and movements, as well as a diverse conglomerate of groups of interest. A HNA is well equipped to untangle these complex relations, especially the local – regional binomial.
  
- **Difficulty for capturing social differentiation.** The emphasis on individuals in SIAs makes it difficult to capture social differentiation, across gender, age or ethnic lines. A HNA could be more sensitive to the changes that mining developments prompt over age and gender relations at the family or community level. For instance, mining projects potentially bring opportunities of formal and paid employment for women in rural areas that could produce significant changes.<sup>3</sup> Some women might be able to directly capture

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<sup>3</sup> It must be noted that this is not always the case. Women do not automatically gain formal employment as result of the presence of mining. This situation depends on different factors, for instance, an explicit gender-sensitive company policy of local employment or a relatively flexible local social structure that allows women to participate in

part of the income and allocate it to nutrition, health and education issues, which differ from men's priorities. This situation could alter the socio-economic position of women within their families and their localities and challenge established relations and expectations about women's roles in domestic and public spheres. Gender studies emphasize the way in which changing relations between men and women, such as in cases whereby male domination is challenged, can lead to forms of gender violence. Another notable gender impact is where newly employed women continue being responsible for domestic duties in the home in addition to work life, effectively increasing work activities. In other cases, some women transfer domestic labor duties to their daughters, reproducing gender inequalities and jeopardizing the success of girls in the school system. In other occasions, families that benefit from mining-related employment opportunities could hire other women to carry out these domestic tasks. In the context of poorly developed labor markets, considerations of age, ethnicity and race intersect with these practices of contracting women for domestic tasks in rural localities.

- **Challenges of prediction.** As Franks (2012, p. 6) points out, SIA is “most effective as an iterative process across the life cycle of developments, rather than a one-off activity at the outset of mining.” However, following the minimum requirements of State regulation, many SIAs implemented for Peruvian mining developments are a discrete activity generally performed at a project's feasibility stage. Thereafter it becomes extremely difficult to predict impacts that will occur during the project's construction and operation stages. A HNA usually requires more time to be developed and hence it is more prone to be designed and executed as a continuous process rather than as a discrete activity.

In conclusion, as a complementary approach, HNA manifold advantages that could help to surmount some of the major shortcomings that SIA faces. It emphasizes social networks instead of territories; begins from local perspectives for the understanding of social change; tends to avoid the classification of impacts in a binary and an *a priori* set of positive or negative

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employment opportunities and to retain generated income. In addition, in many occasions mining development promotes the creation of informal and/or illegal employment, like prostitution, where young women became particularly vulnerable.

effects; focuses on family networks rather than on individuals; is sensitive to social differentiation; considers the interaction with actors and organizations operating at different scales; facilitates a better comprehension of cumulative impacts; and, finally, requires a more attentive monitoring system for its appropriate functioning. A fail in the understanding of social complexities might lead to weak community relations planning. However, it also faces challenges; specifically, to be able to operationalize its method into clear and discrete indicators and proxies, to allow some degree of quantification for comparisons, the need of longer periods and trust, and to move from voluntary to compulsory practice/methodology.

## References

- Bainton, N 2010, *The Lihir destiny: cultural responses to mining in Melanesia*, ANU E Press, viewed 24 January 2013, <[http://epress.anu.edu.au/lihir\\_destiny\\_citation.html](http://epress.anu.edu.au/lihir_destiny_citation.html)>.
- Becker, H & Vanclay, F (eds.) 2006, *The international handbook of social impact assessment: concept and methodological advances*, Edward Algar, Cheltenham.
- Castillo, G & Soria, L 2011, *Report: gender justice in consultation processes for extractives industries in Bolivia, Ecuador and Peru*, Oxfam, Lima.
- Damonte, G 2008, 'Industrias extractivas: el caso de la gran minería. Ponencia balance', in Damonte, G, Gomez, R & Fulcram, B (eds.), *SEPIA XII*, SEPIA, Lima, pp. 19-77.
- Franks, D 2012, *Social impact assessment of resource projects*, International Mining for Development Centre, viewed 12 March 2013, <[http://im4dc.org/wp-content/uploads/2012/01/UWA\\_1698\\_Paper-02\\_Social-impact-assessment-of-resource-projects1.pdf](http://im4dc.org/wp-content/uploads/2012/01/UWA_1698_Paper-02_Social-impact-assessment-of-resource-projects1.pdf)>.
- McMahon, G & Remy, F (eds.) 2001, *Large mines and the community: socioeconomical and environmental effects in Latin America, Canada, and Spain*, The World Bank, Washington DC.
- Vanclay, F 2003, 'International principles for social impact assessment', *Impact Assessment and Project Appraisal*, vol. 21, no 1, pp. 5-11.

Vanclay, F & Esteves AM (eds) 2011, *New directions in social impact assessment: conceptual and methodological advances*, Edward Elgar, Cheltenham.

Ward, B & Strongman, J 2011, *Gender-sensitive approaches for the extractive industry in Peru: improving the impact on women in poverty and their families*, The World Bank/ESMAP, Washington D.C., viewed 25 November 2012, <<https://openknowledge.worldbank.org/bitstream/handle/10986/2516/578680PUB0Gend11public10BOX353782B0.pdf?sequence=1>>.

World Bank 2001, *Engendering development: through gender equality in rights, resources, and voice*, World Bank/Oxford University Press, New York, viewed 16 November 2012, <[http://www-wds.worldbank.org/external/default/WDSContentServer/WDS/IB/2001/03/01/000094946\\_01020805393496/Rendered/PDF/multi\\_page.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/WDS/IB/2001/03/01/000094946_01020805393496/Rendered/PDF/multi_page.pdf)>.

Zegarra, E, Orihuela, JC & Paredes, M 2007, *Minería y economía de los hogares en la sierra peruana: Impactos y espacios de conflicto*, working document n° 25, GRADE, Lima.