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| Institution: Cardiff University |
| Unit of Assessment: 19 – Business and Management Studies |
| Title of case study: Addressing issues of social vulnerability and environmental degradation in Ibero-America |
| <p>1. Summary of the impact (indicative maximum 100 words)</p> <p>People's welfare, particularly in poorer countries, is undermined by both social vulnerability (linked to poverty, age or lack of education) and environmental hazards (both natural and the consequences of business activity). These factors are typically treated as separate policy agendas, yet in practice often negatively reinforce each other to create so-called 'risk hotspots'. Research carried out by members of Cardiff Business School (CBS), created an innovative conceptual framework and a methodology to help businesses, policy-makers and communities to identify hotspots and generate well-informed management strategies to deal with underlying risk factors. Through interdisciplinary, collaborative research, the method has been developed and applied in four countries, demonstrably aiding governments in their planning and decision making to protect vulnerable populations, for example, by enabling targeted improvements of vital infrastructure.</p> |
| <p>2. Underpinning research (indicative maximum 500 words)</p> <p>Poverty, social vulnerability, environmental degradation and unsustainable business strategies represent a major threat to many countries, including those of Latin America. In particular, the intertwined nature of poverty and environmental deterioration, often described as a 'vicious circle', has not been well understood^{3.1}. Against this background, Dr. Diego Vazquez-Brust (Senior Research Associate 07-12) and colleagues (see end for details) sought to understand the relationship between the effectiveness of environmental management and other stakeholder issues^{3.2}. The results of a survey of Spanish firms and two later surveys carried out on Argentinian firms^{3.3} & ^{3.4}, emphasised the benefit of adopting a more holistic approach to the poverty-environmental deterioration problem. These findings prompted the initiation of a project entitled "<i>Firms' Environmental Impact, Social Vulnerability and Poverty in Ibero-America: Analysis of Interaction and Diagnosis of Areas of Potential Risk</i>" (2008-9). The principal aims of this project, conducted within the ESRC Research Centre for Business Relationships, Accountability, Sustainability and Society (BRASS) and led by Vazquez-Brust, were to:</p> <ol style="list-style-type: none"> 1. Develop an integrated framework from sociology (Social Theories of Risk) and management (stakeholders, institutional and entrepreneurship theories) to analyse the potential risk to populations and the environment in a given geographic area as a result of social-demographic characteristics <i>and</i> of industrial activity, with the aim of identifying areas of high risk (hotspots). 2. Develop a model of business and policy intervention, building on concepts of stakeholder engagement, corporate social responsibility (CSR), entrepreneurship and adaptability. <p>In addressing point one above researchers developed a framework for risk diagnosis that consisted of five dimensions: exposure, hazard, vulnerability, governability and uncertainty^{3.5}. Quantitative indicators for the social vulnerability and industrial hazardousness dimensions were generated, using data relating to housing quality, levels of education, etc. and particulate emissions, respectively. The use of multiple indicators for measuring social vulnerability proved more powerful than using tools that simply equate vulnerability with poverty. The innovative approach used to evaluate environmental hazards enabled researchers to identify and assess high risk situations due not only to large firms, but also to the combined emissions of clusters of small firms that tend to be less regulated. By combining social vulnerability and industrial hazards information, researchers were able to determine risk at both the regional and national scales. A geographical information system was used to present the results in the form of heat maps.</p> <p>In addressing point two above researchers examined a series of existing community-business partnerships aimed at reducing vulnerability and environmental deterioration in the identified hotspots. This revealed the importance of citizenship and personal engagement as well as companies' proactivity to open institutional spaces to generate bottom-up projects. Management tools and/or approaches that can reduce social vulnerability while also reducing (or at least not increasing) environmental risk were identified from real life examples of good practice identified through case study analysis. Based on their findings, researchers developed a model to guide business intervention strategies to help break the 'vicious circle' between poverty and environmental deterioration^{3.6}.</p> <p>The project was a joint venture between CBS and the Universities of Almería in Spain (José Plaza-</p> |

Úbeda) and Buenos Aires in Argentina (Claudia Natenzon). Vazquez-Brust of BRASS took a leading role in the original project proposal development; coordination; writing of outputs; and development of the methodology for mapping environmental risks which was central to the project. Clovis Zapata (Research Associate and PhD Student 05-09) played a key role in the case study analysis conducted in Brazil and went on to work as a Senior Research Associate for the United Nations Development Programme's International Policy Centre for Inclusive Growth. All the data analysis for the project was done at CBS.

3. References to the research (indicative maximum of six references)

1. **Vazquez-Brust, D.**, Plaza-Úbeda, J. and Natenzon, C. (2009) The challenges of businesses' intervention in areas with high poverty and environmental deterioration: promoting an integrated stakeholders' approach in management education. In Wankel, C. and J. Stoner (eds) 'Management Education for Global Sustainability', Information Age Publishing, New York, pp. 175-206. ISBN 9781607522348. Copy available upon request from HEI.
2. Plaza Úbeda, J.A., Burgos-Jimenez, J., **Vazquez-Brust, D.**, Liston-Heyes (2009) The win-win paradigm and stakeholder integration, *Business Strategy and the Environment*, 18 (8): 487-499. [10.1002/bse.593](https://doi.org/10.1002/bse.593)
3. **Vazquez-Brust, D.**, Liston-Heyes, C., Plaza-Úbeda, J. and Burgos-Jimenez, J. (2010) Stakeholders pressures and strategic prioritisation: an empirical analysis of environmental responses in Argentinean firms, *Journal of Business Ethics*, 91 (2): 171-192. [10.1007/s10551-010-0612-0](https://doi.org/10.1007/s10551-010-0612-0)
4. **Vazquez-Brust, D.** and Liston-Heyes C. (2010), Environmental management intentions: an empirical investigation of Argentina's polluting firms, *Journal of Environmental Management*, 91 (5): 1111–1122. [10.1016/j.jenvman.2010.01.005](https://doi.org/10.1016/j.jenvman.2010.01.005)
5. **Vazquez-Brust, D.**, Plaza Úbeda, J.A., Burgos Jiménez, J. De, Natenzon, C.E. (2012) Business and Environmental Risks: Spatial Interactions Between Environmental Hazards and Social Vulnerabilities in Ibero-America, Springer. ISBN 978-94-007-2741-0. Copy available upon request from HEI.
6. Burgos-Jimenez, J., **Vazquez-Brust, D.A.**, and Plaza Úbeda, J.A. (2011) Adaptability, entrepreneurship and stakeholder integration: Scenarios and strategies for environment and vulnerability. *Journal of Environmental Protection*, 2 (10): 1375-1387. [10.4236/jep.2011.210160](https://doi.org/10.4236/jep.2011.210160)

4. Details of the impact (indicative maximum 750 words)

Latin-American economies have traditionally been unable to decouple environmental damage from economic growth, with low levels of governability leading to poor management of the resulting risk posed to local communities. In this context, by providing a methodology that can help those involved achieve increased awareness, improved understanding and effective risk management, CBS researchers have enabled governments and corporations in Latin America to make progress towards alleviating risk hotspots. By using the framework developed, risk maps were produced for Argentina, Spain and Bolivia, and for selected regions within these countries. In each case, the project created quantitative indicators and a methodology for data collection adapted to the local conditions and resources. In Brazil, researchers focused exclusively on case study material due to the lack of available data for producing the maps.

Argentina

In Argentina, CBS research has contributed to “a much needed better understanding of relations between poverty, vulnerability and environmental impact among policy-makers and communities”^{5.1}. The impact has been felt in two main areas of **policy development - infrastructure and education**.

The **Ministry of Planning, Public Investment and Services** has taken up the methodology to evaluate the environmental hazard posed by firms and integrated it into cost benefit analyses of the socio-environmental impacts of new infrastructure projects at the **national level**. This adoption was the result of representatives from the Ministry being involved in the project from the outset; this ensured a “high level of bottom-up engagement”, which gave users “the opportunity to be part of the design of objectives and products of the project from its early stages. In this way, the outcomes of the project have been responsive to the needs and context of [the] organization.”^{5.2}

In 2012, the research team signed a Technical Cooperation Agreement with the **Ministry of Infrastructure, Buenos Aires Province**, to “use the results of this project to identify target areas of the Strategic Plan for Water and Sanitation, specifically for the expansion of health infrastructure

and optimization of existing infrastructure, maximizing the benefits in terms of reduced environmental risk, health and social vulnerability”^{5.3}. The **Provincial Department of Public Utilities Water and Sewer, Buenos Aires**, have successfully applied the maps and methodology to identify “populations that are in situations of vulnerability”^{5.4} that can be mitigated by sanitation infrastructure. CBS researchers helped technicians to adapt the methodology to capture situations of sanitation risk. The approach has also been integrated into the geographic information system that supports the province’s “MasterPlan” (a works plan for infrastructure)^{5.4}.

A report published in 2010 by the Defensor del Pueblo de la Nación (ombudsman) in Argentina (an independent body related to the Argentine National Congress responsible for the defence of human rights) presented the conceptual and methodological framework contained in 3.5 as part of an **Environmental Risk Atlas of Argentina’s Children**^{5.5}. The Atlas was the output from a United Nations Development Programme (UNDP)-sponsored project and provides a tool for the government to assess the interaction between environmental hazards arising from production activities and/or services, and human groups susceptible to being affected by them. Natenzon, also of the Environment and Natural Resources Research Program (PIRNA) of the University of Buenos Aires, presented the framework to the technical team in charge of the project in two workshops.

Since 2012, the **Ministry of Education of the City of Buenos Aires** has used the project’s findings and methodology in two of its **school programmes** – Plan Sarmiento and Escuelas Verdes (Green Schools)^{5.6}. Plan Sarmiento is an integral part of the Ministry’s Digital Education Plan and aims to promote innovation in teaching and learning processes within the new digital society model. The Green Schools programme aims to promote sustainable development through environmental education and management. The project’s findings and methodology, including interactive maps, have been used “to introduce the concepts of social vulnerability to primary school children” and feedback from teachers “suggests that maps are powerful resources to introduce the topics of environmental threats and its relation to social vulnerabilities, mainly because they are based on visual information. This seems to be more friendly and engaging...”^{5.1} The project has also “informed the successful implementation”^{5.1} of a Buenos Aires Municipality supported project, ‘[Fantasias 2.0](#)’. This project followed on from a pilot project funded by the telecommunications giant Telefonica and examined by researchers as an example of a community-business partnership. The initiative, designed to break poverty traps by stimulating creative thinking in children from one of the most critical hotspot areas mapped in Argentina (La Boca neighborhood), subsequently underpinned the development of a similar initiative in schools^{5.1}.

Brazil

In Brazil, the research impact has been centred on the biofuel sector. In 2004, the Federal Government introduced the National Biodiesel Program a key element of which was the incorporation of small-scale family farmers into the supply chain. In a case study, researchers analysed the interaction between actors and processes in the programme, offering insights into its effectiveness of as a sustainable development tool. This opened avenues to influence the thinking of the corporate world, with researchers being invited by the multinational firm **Petrobras** to investigate how they in particular could engage small-scale farmers while promoting sustainability in the Biodiesel Program. Findings were published in 2010 as part of the UNDP’s International Policy Centre for Inclusive Growth’s (IPC-IG’s) series of research briefs ([Retrofitting the Brazilian Biodiesel Programme: Implications for Policy Design](#)) and working papers ([Productive Inclusion of Smallholder Farmers in Brazil’s Biodiesel Value Chain: Programme Design, Institutional incentives and Stakeholders Constraints](#)). To date, the impact of this research, enhanced by Zapata’s move to become a researcher at the IPC-IG, has been to:

Inform policy debates The Brazilian Government invited researchers to present their findings to the Presidency of Brazil (with the participation of senior public officials). The research and its policy implications featured in two Brazilian radio programs, including the ‘Talk about Politics’ programme from the Chamber of Deputies for which Zapata was interviewed ([The National Program for Production and Use of Biofuels in debate](#), 20 May 2011) and which is very influential for future policy negotiations. The bio-fuels research also successfully engaged a global audience. In August 2010, Zapata was invited to present the biofuel case study to both the Ministry of Science and Technology of China^{5.7} and to the UNDP in India. Furthermore, in 2012, the IPC-IG working paper was cited in a policy briefing prepared by ‘Evidence and Lessons from Latin America’, a programme sponsored by the UK Government Department for International Development^{5.8}.

Inform CSR policies Among their recommendations to Petrobras, published as a short policy brief by the IPC-IG in 2010 ([How can Petrobras Biocombustíveis engage small-scale farmers while promoting sustainability in Brazil's Biodiesel Program?](#)) and presented directly to the company's technical arm, was an enhancement of stakeholder integration into the programme.

Enhance public understanding The research findings contributed to the wider public debate in Brazil via online news articles, for example, by Agência Brazil, the national broadcaster who quoted Zapata in a 2011 article ([Lack of investment in research threatens the hegemony of Brazilian sugarcane ethanol, experts say](#)), and via a television show on bio-fuels.

In **Bolivia**, the research results and methodology have been included in the curricula of Secondary School Pestalozzi, in Sucre. After the project, a conference was introduced to disseminate the results to students. The conference has been “well received” and the content is considered to be “of interest to the students and teachers and even parents.” In 2013, the research was introduced into the school's Workshop on Entrepreneurship in order to “teach how the environmental risks of a venture have to be evaluated and taken into account within the business plan.” [5.9]

In **Spain**, the primary beneficiaries of the research are firms looking to establish operations in developing countries. The results of the project contributed to the enhancement of the CSR standards of the Chamber of Commerce and Industry of Almeria Province which represents 42,000 firms. This professional association states on their [website](#) how the results of the project have informed the design of “internationalization strategies” aimed at reconciling “the achievement of competitive advantage with sustainable development”^{5,10} and the recent introduction of a form to register interest in a dossier with recommendations from the project has seen 520 requests.

5. Sources to corroborate the impact (indicative maximum of 10 references)

1. Statement: Operational Director of Technology, Ministry of Education (Argentina). Corroborating the use of the mapping methodology in the education of primary school children.
2. Statement: Technical Coordinator, Ministry of Federal Planning, Public Investment and Services (Argentina). Corroborating the use of the mapping methodology by the Ministry.
3. Ministry of Infrastructure, Buenos Aires (2012) Strategic plan: Technical Cooperation Agreement with the University of Cardiff, 22 June 2012. News feature on agreement to use the results of the project in policy by the Direction of Water and Sewage, available at: <http://www.mosp.gba.gov.ar/sitios/aguacloaca/unanoticia.php?id=799>.
4. Statement: Provincial Director, Public Water and Sewer (Buenos Aires). Corroborating the use of the mapping methodology by his department.
5. Statement: Head of Natural Resources and Environmental Research Program (PIRNA), University of Buenos Aires. Corroborating the use of the research in the Defensor del Pueblo de la Nación (2010) Niñez y Riesgo Ambiental en Argentina report, evaluating the impact of environmental hazards on children in Argentina. A copy of the report is available at: <http://www.dpn.gob.ar/areas/des3363701.pdf>. See ref. to PIRNA on p.17&29, and the methodological approach described in Chapter 5 (in line with that presented in Ch. 6 of 3.5).
6. Buenos Aires City website (2012) News features about use of the mapping methodology in school's programmes in Buenos Aires. Search for “Cardiff” at: http://buenosaires.edu.ar/areas/educacion/programas/intec/novedades.php?menu_id=19770
7. The Central People's Government of the People's Republic of China (2010) Write up of Clovis Zapata's visit to the Ministry of Science and Technology of the People's Republic of China, corroborating contribution of research to policy discussions. Available at: http://www.gov.cn/qzdt/2010-08/18/content_1682242.htm
8. Evidence and lessons from Latin America (2012) Brazil's public policy package for successful farmer adaptation. A policy brief from the Department for International Development, available at: http://r4d.dfid.gov.uk/PDF/Outputs/ELLA/120106_ENV_AdaSemReg_BRIEF%203.pdf
9. Statement: Headmaster of Colegio Pestalozzi, Sucre, (Bolivia). Corroborating the use of the mapping methodology in Schools in Bolivia.
10. Chamber of Commerce and Industry of Almeria (2012) Social Action. Report on collaboration with Cardiff University and recommendations drawn from the project, available at: <http://internacional.camaradealmeria.com/index.php/noticias-camara/87-accion-social.html>.

All documents and web pages were saved as pdf on 11.10.13 and are available on request from the HEI, including approximate translations of foreign language websites.