Conference Report: Paper Abstracts

The conference speakers addressed various challenges of combining sustainable development with economic progress, again with a specific focus on scaling up social and environmental projects in Colombia. Apart from the student-driven project « Liter of Light»/«Un litro de luz», conference participants discussed, among other aspects, the challenges of urban water supply, the introduction of responsible water usage in school curricula, how a critical mass of good practices in the informal construction sector could be obtained, or cases such as the cooperation «SuizAgua» in Colombia.

Ernst von Kimakowitz and Roberto Gutiérrez Poveda: Obstacles to the Adoption of New Business Models in the Clean Energy Sector: A Stakeholder Perspective

Our research is based on looking into initiatives by large utility companies that aim to supply low income communities with basic utilities. We are framing such initiatives as social intrapreneurship and our working definition is that: social intrapreneurship describes initiatives by conventional business organizations that deploy core competencies of the business with the primary objective to generate positive social and/or environmental impact. These initiatives are focused on the creation rather than the appropriation of value. We can observe that, on the one hand, some pilot programs are being undertaken in this arena but that simultaneously these fail, in most cases, to reach a scale where substantial impact is generated. The main obstacle to scaling up those initiatives, we found, is the lack of a viable business model that allows serving low income communities profitably. Hence the question is how large utility companies can adapt business models that are geared towards more affluent customers, to serve low income communities. In this context we advocate a deeper stakeholder engagement to support business model innovation on a systemic as well as an organizational level. On the systemic level we see that civil society stakeholders such as NGOs or grass roots organizations have gained substantial capacities to exert pressure on private sector organizations to focus their operations more strongly on the creation of value aligned to societal needs. On the organizational level our preliminary findings are that large utilities companies can gain substantial inputs for the innovation of business models by actively engaging in a dialog with those stakeholders that are directly involved in and touched by the provision of basic utilities to low income communities.

Prof. María Catalina Ramírez: Responsible Water Consumption as Part of the High School Curriculum

Ingenieros sin Fronteras (ISF) is a group formed by Universidad de los Andes and Corporación Universitaria Minuto de Dios. ISF works to generate effective solutions for social problems in Colombia. One of their projects, «Engineering education for development: theories of competition and information technologies for water management,» encourages high school

students (from the Colegio Departamental El Carmen) to consume water consciously. The project uses information technology that appeals to students and, therefore, has achieved water savings of 17.5 % among the families of these students. You can watch a video describing this experience at: http://youtu.be/FlDYtQ9UKCU

Christian Vousvouras:
Urban Water Supply in Colombia

In Colombia, urban water supply coverage has fallen over the last 20 years from 98% to 92%. According to JMP data, 3 million Colombians living in cities lack access to piped-in water. Reform efforts, emphasizing privatization and decentralization, have failed to bring about major progress. Despite the strong presence of small-scale suppliers in Latin America, urban water planners in Colombia have preferred large-scale monopolies. The presentation compares barriers to growth of large- and small-scale systems in Asuncion (Paraguay) and Santa Cruz (Bolivia). Large-scale systems face a high degree of operational complexity, leading to high water losses and production costs. Small-scale systems tend to operate more efficiently but beyond the scope of public regulators. As a result, small-scale operators struggle with informality and access to finance. A hybrid model that relies on small-scale operators bundled under the umbrella of managing platforms could be a promising alternative to existing urban water supply models in Colombia and other Latin American countries.

Apolina Rojas et al.:
Development of a Sustainable Regional Project – Water Management in the Colombian Eastern Flatlands

The case of Asohumea, a water management district in the Colombian eastern flatlands, exemplifies the application of a structured sustainable model of regional development. Thereby, it takes into account habitat, cities, their surroundings, and their relations with other cities. The project builds upon three strategies (i.e. environmental assessment, social sustainability, and increased competitiveness) to conduct research. In the first phase, Asohumea will develop an environmental, socioeconomic, and territorial baseline, in addition of the environmental and socioeconomic impact assessment of existing development regional plans. Based on these results, the research team will assist Asohumea to improve the existing model and/or

propose, implement, monitor and validate an alternative model of regional sustainable development.

Christoph Birkholz:
Impact Investment between Switzerland and Colombia

For social entrepreneurs to scale, gaining access to finance is among the most important and most challenging activities. This is particularly true in contexts of lower economic development such as the Colombian Amazonas region. While conventional capital such as bank loans and venture capital are lacking, impact investors provide financial resources to starting and growing social entrepreneurs. However, we do not know how the impact investing process actually works: How does a social entrepreneur from the Colombian Amazonas region find impact investments? Which criteria do impact investors apply when selecting a social start-up? How do both the social entrepreneur and the impact investor balance impact and financial returns along the investment process? To shed light on these questions, we explore a case study on a Swiss impact investing in a southern Colombian social enterprise which sells high-quality products from Amazonian fruits. The company thus contributes to economic development in a less developed region and helps conserve the Amazonian rainforest which is prone to deforestation for cattle and natural rubber production. We compare the findings with a supplemental case example of a Colombian start-up in renewable energies in order to draw cross-sector comparisons and contribute to the industry focus of the Water & Light conference.

Martin Eppler:
Knowledge Visualization for Social Enterprises

According to David Bornstein, a key research challenge of today in the domain of social entrepreneurship consists in the description and invention of fitting methods that social entrepreneurs can use in their daily activities. Social entrepreneurs face many resource-related challenges on the one side, and need to interact with a great variety of stakeholders, ranging from early investment and promoters, to collaborators, and end customers on the other side. They thus need versatile and yet inexpensive methods to support them in their various stages. In this contribution, we show that knowledge visualization can provide versatile and inexpensive ways to augment their activities systematically. More specifically, we develop a simple knowledge

visualization framework for social entrepreneurs and provide illustrative real-life examples for each of its steps from today's social enterprises. The framework consists of five social enterprise phases, namely idea generation, idea refinement, fund raising, reaching and instructing end customers, as well as monitoring. In the framework, we argue that each of these stages in social entrepreneurship can be supported by a different knowledge visualization genre: idea generation can be supported by heuristic sketches. Idea refinement can be facilitated by business canvases. Fund raising can be improved when social entrepreneurs make clever use of visual metaphors to explain their business model and services. They can inform and instruct end customers about their offerings through visual storytelling. As a final step, they can track their progress and performance through charting or quantitative visualization. The examples we provide of these five knowledge visualization types show the great potential of graphic representations for the social enterprise process. However, they also point at several risks of using images in this context, which we discuss in the conclusion (such as intercultural differences leading to misunderstandings). We also provide pointers towards future research needs and opportunities in this emerging field.

Yvette Sánchez:
Symbolic-cultural Configurations of Water

I examined to what extent the cultural and symbolic wealth of water can contribute to the consolidation of a general environmental awareness and the creation of a «culture of water» in Colombia that is not reduced to penalization/punishment.

Instead of recurring to foreign cultural references, it would be rewarding to apply the Colombian patrimony, including its literary heritage. Nobel Prize winner Gabriel García Márquez, for instance, celebrates water in different forms in his narratives, from its scarcity to abundance, from the flood in Macondo to a tribute to the Río Magdalena. In the context of the project «Liter of Light,» the short story «La Luz es como el agua» (1978/1992) is of particular interest. Moreover, indigenous and Afro-Colombian heritage would be an inspiring source for contemporary symbolic and ritualistic sensitization (e.g. through the «canto al agua» as a rite of reconciliation with nature, reproduced in several artistic performances). In addition, iconographic representations would gain more momentum, if they were less stereotyped. As a synonym of life, with its purifying and manifold spiritual

characteristics, water is revered in a myriad of archetypal rituals all over the world. Any myth of origin is related to an aquatic core. In Colombia, the basic paradox of water as a life-giving and at the same time destructive force is especially pertinent, as the country experiences the hydric ambivalence in the co-existence of overabundant water (floods) and the lacking access to drinking water in other areas. The country finds itself at a point of inflection, though, as several initiatives by the public sector (e.g. Ingenieros sin Frontera), semi-private institutions (e.g. EPM, the Water Museum in Medellín,) and by private companies (AcuaCare) show, although the environmental impact has not yet reached all social strata.
It will be interesting to figure out how cultural attitudes towards hydric resources in Colombia vary in zones of scarcity (arid zones as the Guajira) or abundance (e.g. in the Chocó region), whether the latter pay less attention to, show less esteem or veneration for the precious liquid.

Camilo Herrera Díaz:
Illuminating Houses, Transforming Lives

As we went through the roof of Margarita Peña's house in a poor neighborhood of Duitama, we were breaking ground for an initiative that has benefitted more than 1,800 families in Colombia. A single mother of three, she makes ends meet by selling sweets informally at street corners. Having a daily income under two dollars, she was quite happy to reduce her energy bill with the daylight provided by «Liter of Liter Colombia.» «Liter of Light» is a disruptive social innovation that improves the quality of life immediately. Since it is constructed with easily available materials and basic carpentry skills, it offers an ecological and cheap alternative for lighting a house during daytime. It has a lifespan of seven years and it can be easily be replicated elsewhere. Around this initiative, civil society organizations, communities, universities, private partners and state agencies have been generating a social ecosystem that goes well beyond the bottle.

Nicolas Koslowski:
How to Scale up «Liter of Light» Sustainably

The network of «Liter of Light» grew fast and, in only two years, spread across continents to over 20 countries. But the scaling up process does not run as unobstructed as it seems on the first sight. Only in three countries the lighting system could be installed in more than 100 households, and we can only speak of a major impact in those particular cases. Based on our

experiences, «Liter of Light» Switzerland faces three key challenges (keep momentum, involve community, and align both stakeholders) and tries to develop possible approaches to each challenge by dip diving to volunteer management, social entrepreneurship and presenting a frame for a sustainable business model.

Alexander Pfaff, Maria Alejandra Vélez, Pablo Ramos, and Adriana Molina:
Norms in a Vertical Setting: Scarcity, Abundance and the Importance of Sequence

The location of farmers along a watershed or irrigation system defines a sequence of water-appropriation decisions which implies that cooperation, or leaving water for those to follow, inevitably involves a selection. In this context, climate change may influence cooperation and its outcomes through its effects on water availability. This paper explores the effect of water scarcity on a vertical collective action setting, in light of theories which suggest opposite effects. We conduct a framed field experiment with farmers from Campo Alegre, Huila, in Southwestern Colombia, where 48 irrigation systems are located and water variability is common. Each player in a group of five was randomly assigned to a position along the watershed, representing the order in which each player could extract water. Players made decisions during 12 rounds where initial units of water depended on rainfall. We explore the effects of two treatments that differ in the order of water quantity faced by participants: (1) from scarcity to abundance: 4 rounds of 20 units of water, 4 rounds of 60 units of water, and 4 rounds of 100 units of water; (2) from abundance to scarcity: 4 rounds of 100 units of water, 4 rounds of 60 units of water, and 4 rounds of 20 units of water. We found that early water scarcity induces durable selfish behavior, even when facing abundance later. That is, having experienced scarcity in earlier rounds increases water extraction under abundance. Moreover, previous players' extraction increases extraction of others in the group which exacerbates the selfishness effect of early scarcity due to the seemingly endogenous establishment of a selfish norm among group players.

Diana Rojas Orjuela:
Contributions from International Cooperation – The Case of SuizAgua Colombia (Spanish)

Iniciativa piloto del Programa Global del Agua de la Agencia Suiza para Cooperación y el Desarrollo (COSUDE), con el objetivo de desarrollar capacidades entorno a la puesta en práctica de la huella hídrica: estimación y reducción de los impactos por uso del agua. El piloto inició en el 2010, como una alianza público – privada entre COSUDE y un grupo de empresas suizas (Clariant, Holcim, Nestlé y Syngenta). A partir del 2012, integraron también el proceso 7 empresas colombianas, en coordinación con el Centro Nacional de Producción más Limpia y se realiza el estudio de huella hídrica de la cuenca del Río Porce (Antioquia), liderada por el Centro de Ciencia y Tecnología de Antioquia.

Ejes de acción:

- Estimación de la huella hídrica bajo el marco del análisis de ciclo de vida a nivel empresarial y a nivel de cuenca aplicación de la metodología de la Red Internacional Huella Hídrica – WFN.
- Implementación de acciones de reducción de huella hídrica por parte de las empresas
- Desarrollo de proyectos de responsabilidad social y ambiental enfocados en favorecer una mejor gestión del agua en áreas de influencia de las empresas.
- Apoyo científico de COSUDE al desarrollo de la norma ISO 14046 – huella hídrica: lineamientos y requerimientos.
- Escalamiento del proyecto con 10 empresas en Chile y Perú, en el marco de SuizAgua Andina.

Philippe Schneuwly:
How to Reach a Critical Mass of Good Practices in the Informal Construction Sector in Colombia

In Colombia, 67% of the housing units are of informal origin and an estimated 20 million people live in deficient habitat conditions. Analyses reveal three areas of major concern: houses are highly vulnerable to earthquakes, involve important health risks for residents and have a negative environmental impact, including excessive use of water and energy. Government policies to tackle the problem through subsidies are ineffective and widely insufficient. With support of the HILTI Foundation, Swisscontact has developed an alternative approach which enables people to prevent and

mitigate high risks on their own. First experiences reveal that awareness-raising and professional training of construction workers offer an effective method to increase the quality and sustainability of the informal construction market. If the public sector is fully engaged in this strategy, further growth of the problem could be prevented and some major risks mitigated. Further outreach is possible through the involvement of the private sector in service delivery. One particularly promising channel are hardware dealers, which can increase their business by offering training courses and technical assistance as an embedded service to their clients. Some major construction material companies have already started to promote this model within their customer loyalty programs. The main limitations of the approach are related to the costs and the complexity of retrofitting highly vulnerable houses, since such interventions cannot be undertaken by residents without professional support and without the necessary financial resources.