The Role of Research for the Promotion of Business and Trade in Developing Countries

Hans-Peter Egler, Trade Promotion Economic Cooperation and Development, State Secretariat for Economic Affairs SECO, hans-peter.egler@seco.admin.ch

Development Cooperation is promoting business development and business linkages, which are key drivers for poverty alleviation and are raising living standards in developing countries. Today, the global business environment becomes more and more complex. The State Secretariat for Economic Affairs SECO particularly supports sustainability approaches, which today offers new market opportunities for sustainable economic growth in developing countries. In order to better understand the manifold issues and to implement appropriate measures, development cooperation often relies on research. Research for development cooperation means to translate pure science into practical tools that can be applied on the project-level: to improve processes, to measure effects, to assess impacts or to design new policies for sustainable development. Switzerland has state-of-the-art knowledge and know-how in the industry and agriculture sector that can be transferred to developing countries. At the same time, Switzerland also benefits from research and lessons-learned provided by emerging countries, which in recent years developed promising solutions adapted to their particularly complex contexts and challenging situations. In sum, the challenges of globalisation require closer collaboration and exchange between developed countries and developing countries, namely emerging countries, as well as between science and policy makers.

Studying Community Multimedia Centres (CMC) in Mozambique: Improving Reach and Research

Lorenzo Cantoni, Faculty of Communication Sciences, University of Lugano, lorenzo.cantoni@lu.unisi.ch

RE-ACT (social REpresentations of community multimedia centres and ACTions for improvement) is a joint research project between the NewMinE Lab - New Media in Education Laboratory of the Università della Svizzera italiana (Lugano, Switzerland) and the Department of Mathematics and Informatics and the Centre for African Studies of the Universidade Eduardo Mondlane (Maputo, Mozambique). RE-ACT is funded by the Swiss National Science Foundation (SNF) and the Swiss Agency for Development and Cooperation (SDC).

By using the Social Representation construct, RE-ACT investigates conceptualizations of CMCs - Community Multimedia Centres - in Mozambique by representatives of associations owning the CMC, local staff, users and people of the community who do not use CMCs.

UNESCO (with the support also by SDC) created the Community Multimedia Centres (CMCs) model, which combines community radio, managed by locals broadcasting in local languages, with community telecentre facilities. The program got off the ground in 2001 with 40 CMCs set up in over 15 developing countries in Africa, Asia, and the Caribbean during the pilot phase. The scale-up phase of the CMCs then began in 2004 with three countries in Africa (Mali, Mozambique, and Senegal) selected for the development of a national network of 50 CMCs. At the moment, in Mozambique CMCs are mostly owned and managed by local associations.

The project aims at developing a tool to capture the extra-technological dimensions, which have an impact onto sustainability, studying the awareness and the understanding that different social groups

have of CMCs. To study discrepancies and misalignments of conceptualization, the research moves from the perspective of the Theory of Social Representation. A further aim is to conduct specific improvement actions co-designed with the local communities.
On the one side, the project has pushed researchers - both in Mozambique and in Switzerland - to expand their research tools, in order to better suit the actual situation. In particular, visual representations - pictures taken by staff members as well as by users - have been integrated within the research protocol, to better capture different approaches and deep understanding of their CMC experience.
In addition, improvement actions, which have been launched in June-July 2012, are helping local communities to participate in designing their own development agenda, at the same time suggesting new venues to Swiss researchers: e.g. integrating cinema and tourism within the areas to be touched by the project.

Providing Internet Access to Disconnected Populations by Means of Smartphones and Opportunistic Wireless Communications

Abdullah Alhussainy, Communication Systems Group, ETH Zurich , abdullah.alhussainy@tik.ee.ethz.ch

Opportunistic networks are a class of wireless P2P networks designed to support communications in a distributed infrastructure-less environment between smartphones or laptops. They can be also used to extend the coverage of an already existing infrastructure (WiFi access-point, 3G base-station) by relying on people's smartphones to disseminate data outside of the radio coverage thus reaching disconnected remote populations.
This project will provide a novel protocol stack combining opportunistic and broadband communications for smartphones and developing, deploying and testing applications from lab scale to field trials. Several scenarios to extend the reach of the Internet and e-platforms are envisioned focusing on how this technology can impact the lives of those less fortunate. For this project, ETH Zürich is collaborating with Amrita University, Kerala (India) to offer a unique opportunity for poor populations to be reached by e-platforms and be able to speak to the world through opportunistic communication. Additionally we will focus on a major use of such networks that is to uphold communications in times of disaster when the regular infrastructure has been destroyed.

Developing Low Cost and Sustainable Building Materials

Karen Scrivener, Ecole polytechnique fédérale de Lausanne (EPFL), karen.scrivener@epfl.ch

Concrete is the most used material on the planet. Cement, its main component, can be considered a local material, since it can be produced anywhere in the world. Developing countries account for more than 80% of world's cement production. The social housing programs in developing countries rely on the availability of affordable cement, among other applications, to produce concrete blocks or tiles, and mortar for masonry. There is a huge potential to improve cement manufacture through reduction of production costs and improvement on the environmental profile. Supplementary Cementitious Materials, SCM, are widely used to replace clinker in cement manufacture, and are reckoned to be a viable path towards improving efficiency. However, the current approach of using pozzolans as SCMs limits clinker

substitution to a maximum of 30%.
Collaborative research between the Laboratory for Construction Materials from Switzerland and The Center for R&D of Structures and Materials from Cuba program, initiated in 2005, has developed a cementitious system based on the combination of clinker-calcined clays-calcium carbonate. The experimental program carried out proves that up to 60% of clinker can be substituted without compromising strength and durability of the material. Clays and calcium carbonate are distributed throughout the earth, thus they can be considered local materials almost everywhere. Both are raw materials for the manufacture of cement, thus close to every cement plant there are facilities for quarrying these materials. The new cement can be produced with only 40% clinker, with a reduction of approximately 50% of CO2 emissions during manufacture, twice the CO2 reduction accomplished during the production of Portland pozzolan cements.
From the point of view of sustainable development, this technology is also highly relevant to developed countries such as Switzerland and to Swiss companies who produce and use concrete and related products worldwide.

Case Study: A Product Development Partnership

Reto Brun, Parasite Chemotherapy Unit, Department Medical Parasitology and Infection Biology, Swiss Tropical and Public Health Institute (Swiss TPH), 4002 Basel, Reto.Brun@unibas.ch

Neglected diseases are posing a significant threat to human health mainly in developing countries. Malaria, forming together with HIV/AIDS and tuberculosis the 'big three' of infectious diseases, is causing some 250 Mio malaria episodes and about 800'000 deaths annually. Other diseases caused by viruses, bacteria and parasites complement the 17 neglected diseases from which >1 billion people suffer world-wide. Most of the drugs available for these diseases are old, lack efficacy, are toxic or hard to administer or are confronted with drug resistant pathogens. There is an urgent need for new safe, effective and affordable drugs.

At Swiss TPH we maintain a Screening Centre for parasitic diseases, which collaborates with many partners in the field of R&D for new drugs. Main partnerships were established with the Medicines for Malaria Venture (MMV), the Drugs for Neglected Diseases initiative (DNDi) and the Global Alliance for Livestock Veterinary medicines (GALVmed). MMV and DNDi aim at developing drugs for human use while GALVmed covers neglected animal diseases. These PDPs include partners in the South that provide new compounds (mainly from natural sources) and clinical trial platforms as well as production sites. Research endeavours during the last 12 years resulted in several molecules, which are or soon will enter clinical trials for malaria or African sleeping sickness. Research projects receive external funding from PDPs and other sources which currently amount to >CHF 2 Mio per year. The Swiss TPH Screening Centre provides interesting job opportunities for 5 scientists and 9 technicians apart from training positions for MSc and PhD students from Europe and Africa.

Enhancement of Natural Water Systems and Treatment Methods for Safe and Sustainable Water Supply in India: The Saph Pani Indo-European Project - www.saphpani.eu

Thomas Wintgens, University of Applied Sciences Northwestern Switzerland, School of Life Sciences, Institute of Ecopreneurship, Muttenz, Thomas.wintgens@fhnw.ch

The Saph Pani project aims to improve natural water treatment systems such as river bank filtration (RBF), managed aquifer recharge (MAR) and wetlands in India by building on a combination of local and international expertise. The project aims to enhance water resources and water supply particularly in water stressed urban and peri-urban areas in different parts of the Indian sub-continent.

The objective is to strengthen the scientific understanding of the performance-determining processes occurring in the root, soil and aquifer zones. The removal and fate of important water quality parameters such as pathogenic microorganisms and respective indicators, organic substances, nutrients and metals will be considered. The hydrologic characteristics (infiltration and storage capacity) and the eco-system functions will also be investigated to strengthen the local or regional water resources management strategies (e.g. by providing buffering of seasonal variations in supply and demand).

The project focuses on a set of case studies in India. The field site investigations will include hydrogeological, hydrological and geochemical characterisation and depending on the degree of site development water quality monitoring or pre-feasibility studies for new treatment schemes. In addition to the natural treatment systems the investigation will recommend appropriate pre- and post-treatment steps to produce potable water quality and to avoid clogging of the sub-surface structures. The experimental and conceptual studies will be supported by modelling which improves the theoretical understanding of the sites and enhances the transferability of results.

In the project 20 partners from Europe, India and Australia are involved. The project is funded in the 7th Framework Programme and coordinated by the University of Applied Sciences Northwestern Switzerland. The is also a close contact to water utilities in Europe operating natural water treatment schemes, including the water supply company in the Basel area.

Saph Pani aims to foster the international collaboration capability of the European partners with respect to activities in emerging countries such as India. India has an extremely high demand in environmental technologies, particularly in the area of water and waste management technologies as well as resource efficient industry. In the decades to come India will be one of the most important clean tech markets globally and Switzerland has a range of products and services to offer for this market. However, there is a need to get to know the local conditions closely and to adapt the solutions. Projects such as Saph Pani can help to gain a better understanding of the needs and potential solutions. Swiss companies are invited to benefit from the dissemination activities of Saph Pani and to exchange experiences in international cooperation with India.