Nanotechnology may be more useful for Mexican society

Edgar Zayago Lau is a researcher of the Latin American Nanotechnology & Society Network (ReLANS), the most important research initiative related to nanotechnology and development in the Latin American context, headquartered in Zacatecas, Mexico. He is also a PhD. Candidate in Development Studies at the Universidad Autonoma de Zacatecas.

Currently, Edgar is looking at the manner in which nanotechnology is being inserted in the development pattern that Mexico is following. In late 2007, Edgar was accepted as a Latin American Visiting Researcher with the European Union's NANOFORUMEULA project. From January through April he was in the Netherlands, cooperating with the MESA+ Lab. He was located at the STePHS department in the University of Twente, Enschede.

What have you worked on during your visit?

During my visit I had the opportunity to work with Dr. Arie Rip to become familiar with a diverse set of technology assessment tools. These are useful to anticipate the social, political and economic aspects of the use of nanotechnology in the context of a developing country.

In other words, the research considered aspects of Mexican nanotechnology development beyond the technical. The study of such aspects included:

- the repercussions of investment and development of nanotechnology,
- the structure and objectives of the education system linked to this area,
- the labour-market,
- environmental impacts,
- intellectual property rights and other areas of significant concern for development in general.

In addition, I saw the strength of the Constructive Technology Approach (CTA) developed by Dr. Rip, in its capability to bridge the emphasis on innovation in nanotech with the analysis of the ethical, legal and social aspects of its development in México.

Why is that important for your research and for progress in nanotechnology?

The search for early signals about the impacts of nanotechnology development is of particular importance for México and all developing nations. The precarious nature of the economies in question leaves little room for missteps. Early identification of nanotechnological repercussions in economic, environmental and especially social terms is crucial. Setbacks in the form of environmental alteration or economic failure of the industry could seriously undermine efforts to use nanotechnology, if possibly, for development.

Why did you come to this European research centre to do this project?

The Netherlands performs pioneering work in linking nano research, innovation, policy, technology assessment and the Ethical, Legal and Social Aspects (ELSA). Dr. Rip's work has been a useful guide to analyzing México's development of nanoscience "parks" and in mapping the technological infrastructure under construction. Dr. Rip's work on Nano-districts (NoE Prime case studies), his intended work with NanoDistrict+ (extending the analysis to other regions/actors) and the EU-funded Deepening Ethics and Public Engagement for Nano project (DEEPEN) were a powerful incentive for connecting MESA+ / the University of Twente and RELANS/México to the benefit of both parties.

What are the results? How will you disseminate them?

The research plan for the visit emerged from the need to fill an important gap within the area of nanotechnology: its impact on developing societies. The plan carried out at the University of Twente institute represented an important opportunity to add value to the research area within the framework not only of Mexico but the entire Latin American continent.

The results allowed us (ReLANS' members) to contribute in ensuring that the pursuit of nanotechnology development in Mexico is approached utilizing a responsible process with a comprehensive knowledge of the current situation, trends in the industry and above all, a sense of direction. Additionally, the research provided some insights about the potential impacts for society and the economy of the use of nanotechnology. The project brought clarity and informed judgment to the process of policy formation and goal identification in the framework of developing countries.

Some of the results are to be disseminated in a chapter of a book (in Spanish) at a workshop-seminar organized in Uruguay at the end of July 2008. In addition, one article on the results is to be sent at a peer-reviewed journal. I am an on-staff columnist, covering socio-economic development topics, with the major Mexican national daily newspaper, *Milenio*. This provides another source of dissemination of the results obtained. Finally, some of the results are going to be presented at the Third Annual Conference of Nanotechnology at the Universidad de Guadalajara-Lagos de Moreno.

It is worth mentioning that, via the activities of RELANS, it is a prime objective that those institutions and actors in the field (private companies, research centers, government) be approached and informed of the research with the intention of deepening the reciprocal relationship between nanotechnology researchers and those institutional, regulatory and implementing agencies in this field.

Is this the first contact between both organizations or is your visit part of existing collaboration?

This is the first contact between both organizations.

What are the plans for future collaboration?

The research visit resulted in several contacts and developments such as the participation of Dr. Guillermo Foladori in the Summerschool on Ethics of Nanotechnology at the University of Twente, there are still several plans to develop more contributions.

One option could be a continuing relationship of academic exchange that can bring new perspectives from differing socio-economic perspectives. This could take the form of joint research with the participation of public research and development institutions in nanotechnology; establishing research collaborations with other Latin American countries via RELANS; and potentially influence public policy on nanotechnology in Mexico and other countries.

Do you intend to apply for funding in the EU 7th Framework Programme for RTD?

We are open to the possibility of applying for funding under the 7th Framework Programme. This was an excellent experience that benefited both parties so the potential to repeat it is high.

How may your project in the long term benefit the development of your country or Latin America in general?

As one of the handful of countries pursuing nanotechnology development in Latin America, and the one with perhaps the closest relationship with U.S.-based nanotechnology partners, México assumes a leading position in the appropriate development and implementation of the industry. Over the long-term, if México achieves some measure of success in ensuring that the nanotechnology industry development is carried out in a reflexive and responsive manner, while compensating for the potential social / economic / legal / environmental pitfalls, it will become the model to be emulated as nanotechnology endeavors are pursued by others in the region. These issues are at the core of the project conducted during the research visit in Twente.

A further benefit accrues from integrating partnerships with European partners, in the strengthening of the network of researchers and the transfer of knowledge in both directions. Given the situation in México, with an entirely science- and business-driven conceptualization of nanotechnological development, there is a need to undertake an assessment of these new technologies, and augment existing analytical capacity to implement appropriate reflexive and above all social assessments.

What are your plans for disseminating the results of your visit outside the research community in your country?

The Latin American Network of Nanotechnology and Society RELANS at the Autonomous University of Zacatecas is committed to providing ample opportunities for presentations to all audiences of interest to ensure the widest possible dispersion of the research. Particularly, RELANS, via its relationship with Rel-UITA, has the possibility of reaching workers continent-wide to ensure wide diffusion of the research among that constituency.

Links:

DEEPEN project:
http://www.geography.dur.ac.uk/projects/deepen/Home/tabid/1871/Default.aspx
PRIME NoE: http://www.prime-noe.org/
RELANS: http://estudiosdeldesarrollo.net/ReLANS-INGLES/index.html
U Twente: www.utwente.nl

About NANOFORUMEULA

This Specific Support Action Nanoforum EU Latin America is funded by the European Union under the Sixth EU Framework Programme for Research and Technological Development; Nanotechnologies and Nanosciences, Knowledge Based Multifunctional Materials and New Production Processes and Devices (FP6, NMP), from 1 December 2006 until 30 November 2008. See http://cordis.europa.eu/nanotechnology. The project aims to foster lasting research relations between European research organisations and research organisations in Latin America specialising in nanotechnology. We subsidise exchange visits for some twenty Latin American researchers to four European research organisations specialising in nanotechnology. Professor Aviles Cetina is one of these visiting researchers. We also organise two workshops and fact finding missions in Mexico (held in August 2007) and Brazil (4-13 September 2008) enabling European researchers and industrialists to identify opportunities for establishing working relations. Check our website for updates: www.nanoforumeula.eu or contact Ineke Malsch: postbus@malsch.demon.nl