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## RRI in Mining Workshop in Santiago de Chile

Special thematic issue

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RESPONSIBILITY PROJECT  
EVENT IN SANTIAGO DE  
CHILE.

### Responsible Research and Innovation in Mining - RESPONSIBILITY Workshop in Santiago de Chile, March 19 2015.

At the impressive new building of the Auditorium Beauchef 851 of the Faculty of Physical Sciences at the University of Chile, On 19th March 2015, the RESPONSIBILITY Consortium organised the workshop: "Responsible Research and Innovation in Mining". The main organizers the Advanced Mining Technology Center (AMTC) based in Santiago de Chile and the IPK Fraunhofer Institute in Germany brought together representatives of government, the mining industry, the academic, scientific and business sectors to introduce the concept of RRI and bridge it to the technological and socioeconomic challenges of one of the most prominent economic sectors of the country, the mining industry.

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The workshop led by Dr. Aki Zaharya Menevidis of Fraunhofer IPK and attended also by leading researchers from Germany, Italy, Belgium, Greece, Malaysia, United Kingdom, Cyprus and Chile, intended to introduce the concept of Responsible Research and Innovation (RRI) in the mining industry, so as to facilitate the development of aspects linked to social and environmental responsibility, community relations and the ability to act as a catalyst for scientific and technological development.

At the beginning of the workshop, Prof. Javier Ruiz del Solar, Executive Director of AMTC, stressed the importance of carrying out the AMTC objectives and context, noting that Chile is now facing a major challenge which is to add value to production processes through the development of



science and technology and innovation. In this task, the collaboration between academia and industry, between public and private organizations, as well as, cooperation in the national and international level, will inevitably have a key role. Quoting the vision of the Mining Commission and Development of Chile, setup by the National Council of Innovation for Development, Prof. Javier Ruiz del Solar stressed that mining is indeed a platform for the future Chile and that the challenge for the stakeholders involved is to build a virtuous mining environment, inclusive and sustainable.



According to the workshop agenda the project coordinator Dr. Menevidis welcomed the participants and gave an overview of the projects' main objectives. Addressing a mixed audience of researchers, public administration officials and industry stakeholders, Dr. Menevidis presented the aims of the forum and the virtual observatory on Responsible Research and Innovation (RRI) and the fact that it will facilitate networking of stakeholders to adopt and spread the RRI common understanding

among the various actors in Europe and around the world. Dr. Menevidis underlined that "Responsibility project is expected to become an effective tool for transfer of scientific knowledge and at the same time a point of reference for researchers, policy makers as well as industry stakeholders in the concept and practice of RRI. To this end the Responsibility Observatory constitutes an innovative way to the realization of innovation activities that support the research community in numerous different themes.

Elena Tavlaki of the Brussels based consultancy firm, SIGNOSIS, presented the socioeconomic dimensions of adopting an RRI governance framework and the expected benefits and ramifications on research and society. Using the integrated platforms of the RESPONSIBILITY Forum and Observatory the user will be able to engage into a dialogue that is self-regulatory open and remote having access at the same time into a vast pool of diverse knowledge on RRI related issues provided and also generated by the community involved. According to Elena Tavlaki the ultimate goal of the project is to deliver an Observatory of RESPONSIBILITY project with a sustainable, self-governed presence on the web and this will be achieved also by reinforcing synergies with relevant funded activities dealing with RRI.

### RRI Automation in mining industry - Javier Ruiz del Solar (AMTC)

In his presentation, Dr. Javier Ruiz del Solar, stressed the importance of automation in different stages of the mining process and how the application of robotic and mechatronic systems are directly related to aspects of RRI. The shift towards automation and the increased use of unmanned and semi-autonomous vehicles operating side by side with operators in the mines are creating a diverse working environment. "There are different reasons why you choose to use automation in mining. The main reason is to generate greater security and occupational health and ward off dangerous tasks of operators within harsh environments". There are also reasons that have to do with productivity, because there are certain repetitive tasks that are not as complex and that a robot can make more accurately, "said Dr. Ruiz del Solar.



*Prof. Javier Ruiz del Solar Executive Director of AMTC welcoming the participants of the workshop.*

### Mining in Chile: A platform for the future, Gonzalo Rivas – President of CNID

Mr. Gonzalo Rivas, president of the CNID, presented a brief overview on the proposal "Mining a Platform for the Future", prepared by the Mining Development Commission of Chile. Mr. Rivas emphasized that aiming to draw a strategy for mining leadership the mining proposal included the participation of various stakeholders: employers, workers, civil society, indigenous peoples, academics and experts, environmental organizations, mayors and representatives of the public sector.



*Mr. Gonzalo Rivas president of the CNID (Consejo Nacional de Innovación)*

The Commission consultation process was composed of two working groups: Excellence in Mining and Inclusive and Sustainable Mining. The results of the Commission reflect the challenges the country will face in the mining sector over the next 10-20 years. He says that we must be able to anticipate and work together to ensure that Chile not only sustains a predominant mining character but to remain a leader in mining worldwide. This inevitably requires having the ability and mechanisms to face and address the dilemmas and technological, social and environmental challenges. According to Mr. Rivas, the development of an inclusive and sustainable mining contributes to greater value for the social environment, making the public perceives that the benefits of mining in Chile reach all citizens.

The Commission proposal is structured around four pillars: Improving the production base, build collaborative programs of Innovations and R&D, reinforce the exporting capacity regarding equipment,



develop technology and knowledge-intensive services and assessment of capacities and human capital for sustainability. As for the strategic guidelines for the development of mining excellence being inclusive and sustainable, it is expected to continue strengthening research capacity and increase investment in infrastructure and equipment, strengthening the basis of Human Resources sector, creating training centers and implement a program to attract talents, along with implementing a policy that positions Chile internationally as a center of mining for the future. The strategic priorities defined by the Commission will allow Chile to export 130 to 150 million tons of copper, with the consequent development of technologies and knowledge-intensive services. Among these priorities is, to enable capacity building, citizen engagement and efficient environmental institutions a process that according to Mr. Rivas is highly relevant to the RESPONSIBILITY workshop.

Concluding his presentation Mr. Rivas underlined that the proposal having a budget of US \$ 35 million per year, is expected to achieve among others the accreditation of laboratories and environmental services with high standards of control and quality assurance; initiate the development of environmental standards and recommendations for the mining sector and to establish baseline funding for world class R & D, whose purpose is to produce systematic information on water, soil, air, biodiversity and ecosystem services. Moreover he noted that the proposal will strengthen research capacity, increase the number of researchers working in fields relevant to mining expecting to have nationwide 600 new researchers in mining by 2020.

**Continuous Conversion Reactor project: Current state of activities and main obstacles for responsible continuous conversion - Leandro Voisin (AMTC)**

Dr. Leandro Voisin spoke about the development project Continuous Conversion Technology and its environmental benefits held in conjunction with ENAMI (empresa nacional de minería). This technology is in a second stage of development and is intended to optimize operating parameters and capacity of an industrial plant. When implemented and fully adopted this new technology of continuous conversion would lay the foundations of industrial upgrading as well as packaging and marketing of both the process and the technology, generating a progressive replacement of existing pollutants, costly and operationally complex technologies such as batch conversion that tilting reactors in CPS. The management and development of the implementation and execution of pilot-industrial tests is carried out together with the company Buildtek SA, which participates in the design and construction of the new pilot-plants.



**Resource efficiency and effective Use of Water: Challenges for responsible water management in Mining - Rodrigo Fuster (UCH)**

Dr. Rodrigo Fuster spoke about the efficient use of water in a complex socio-environmental context. He said that mining has made significant progress in what is related to knowledge and technologies to prevent, mitigate, and reduce water-related issues and conflicts. Today water reuse efficiency in mining is an activity that developed considerably in relation to the situation 5 years ago. However, according to Dr Fuster the public fails to perceive these new developments and has no means to validate the data. As a results use of water by mining continues to be questioned.

**Round table discussion with local stakeholders**

At the end of the event the participants having obtained a detailed overview of the different challenges faced by the mining industry as an industrial priority for Chile attended a round table discussion with RESPONSIBILITY consortium members and a vivid open discussion followed. During this session the participants discussed about the most pressing issues facing the Chilean mining industry, such as water scarcity, the rising cost of energy, shortages of qualified personnel, security and health of workers and the consequent need to create innovative solutions involving the application of RRI. This becomes even more important especially when social conflicts emerge by possible negative impact on the environment and the communities living in the surrounding area the mining activities takes place.

Download the workshop agenda and full presentations (in spanish) here.

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