WFEO MEETING REPORT
UNITED NATIONS CSD-19

A. INTRODUCTION

The Commission on Sustainable Development (CSD) of the United Nations met in New York from 2nd to 13th May 2011 to conclude its 2010-11 implementation cycle. This cycle, CSD-18 and -19, focused on progress in the following areas: transport, chemicals, waste management, mining, and a 10-year framework of programmes on sustainable consumption and production.

B. SCIENTIFIC AND TECHNOLOGICAL COMMUNITY

The scientific and technological community was represented by WFEO and ICSU (International Council for Science). Agreements with ICSU delegates, reached at CSD-14, allowed to voice the whole group's position through joint statements on the different issues of the Agenda, and to share in equal terms the time for interventions and the facilities assigned by the U.N. to the group.

C. PARTICIPATION OF THE WFEO DELEGATION

Appointed by the WFEO Executive Council, Ms. Maria J. Prieto Laffargue (WFEO President), and Messrs. Adel Al Kharafi (WFEO President-Elect), Daniel Clinton (CCB Chair), Darrel Danyluk (CEE Chair), Jorge Spitalnik (CE Chair) and Reginald Vachon (WFEO Vice-President) represented WFEO in this Session. David Lapp and G. Keith Watson (Engineers Canada), Jose Tadeu da Silva (FEBRAE), and Michael Karmis, Mike Sanio, Jessica Kogel, Christopher Scarpino and Deborah Shields (AAES) attended CSD-19 as members of the WFEO delegation.

The position sustained by the WFEO delegation was to stress the technical nature of the issues discussed that required a serious observance of scientific principles and engineering criteria when searching for solutions of sustainability and development. This position was agreed and followed by our ICSU colleagues. In Annex 1, the interventions of the Science & Technology Group representatives are included.

D. INTERGOVERNMENTAL PREPARATORY MEETING FOR CSD-19

A summary report on the Preparatory Meeting held from 28 February to 5 March 2011 is attached (Annex 2). This meeting was attended by Messrs. Darrel Danyluk (WFEO), Jorge Spitalnik (WFEO) and Jose Tadeu da Silva (FEBRAE).

E. CSD-19 CONCLUSIONS AND RECOMMENDATIONS

The 19th Session of CSD ended without consensus, due particularly to disagreement related to setting up an international fund for the implementation of a 10-year framework of programmes on sustainable consumption and production. However not binding, general agreement on issues specifically related to Science, Engineering and Technology was reached on the different thematic areas of CSD-19. Relevant conclusions and recommendations, on which there was consensus in principle, are described in the next section.

a) General

- Increase efforts to address all thematic issues of the cycle and enhance implementation of policy decisions, through technical assistance, access to and transfer of technologies on mutually agreed terms, capacity-building, financial resources, and exchange of knowledge and experience.
- Enhance efforts to mobilize adequate and predictable high-quality technical support, as well as to promote the development and dissemination of appropriate, affordable and sustainable technology and its transfer, which is crucial for the achievement of sustainable development and the Millennium Development Goals.
- Support the development, transfer and diffusion of new technologies in developing countries, on mutually agreed terms, across the five themes.
- Accelerate measures to facilitate the development, transfer and diffusion of environmentally sound technologies.

- Recognize the role of private sector research and development and investment in providing financing for technologies to support implementation of the CSD-19 themes.
- Encourage support for training, research and development, in particular on sustainable practices and dissemination of information, methods, practices including through e-extension, social media, and other forms of information communication technology.
- Strengthen the scientific base and knowledge sharing as well as public-private and other relevant partnerships in order to prevent harmful effects of chemicals and waste, build sustainable transport systems, achieve sustainable lifestyles and encourage sustainable mining practices. Recognize the importance of science, technology, and the need to improve science-policy interface at all levels.
- Implementation by developing countries of the following recommendations requires adequate financial resources, technology transfer and capacity-building.

b) <u>Transport</u>

- The development of new technologies, strategies and greater international cooperation, are key factors for achieving a more sustainable transport sector.
- Policies, programmes, technologies and partnerships can achieve an affordable, less polluting, more energy efficient and sustainable transport system, while contributing to important co-benefits including reduced greenhouse gas emissions, noise and air pollution and enhanced energy efficiency.
- Information technologies and partnerships can enhance sustainability and promote transport technology and systems innovation.
- Encourage improvements in the management of vehicle fleets, including vehicle maintenance and inspection, operational practices and logistics and the replacement of old vehicles by more efficient newer ones and/or the upgrading of old vehicles with the use of advanced technologies, recognizing that the achievement of this goal may require the transfer of such technologies to developing countries.
- Promote greater use of railways and inland waterways, in particular for high-volume passenger and freight transport over long distances and between cities and commercial centers as well as the modernization of railways and the integration of ports and airports with the hinterland, including through the promotion of technological improvements.
- Promote innovative goods movement systems, taking advantage of approaches to increase fuel efficiency, and encourage the integration of technological advances across the supply chain for enhanced sustainability.
- Further develop and improve transport technologies and operational procedures.
- Reduce air pollution from the transport sector by improving fuel quality, developing cleaner fuels, and promoting vehicle fuel economy and emission standards.
- Recognize the importance of investments in innovation, research and deployment of advanced motor vehicle and transport technologies, including the investment in technologies for cleaner vehicles and fuels and improved fuel use and engine efficiency.
- Support the improvement of transport infrastructure, including through strategies and technologies that address particular challenges faced by developing countries.
- Encourage the use of renewable energy and energy efficiency and advanced energy technologies, including advanced and cleaner fossil fuel technologies.
- Promote the scientific research and development of renewable energies, including biofuels.
- Strengthen sustainable transport infrastructure and services by enhancing transport data collection and analysis, development of tools and indicators, and use of modern information technologies.
- Achieve affordable, economically viable, socially acceptable, safe and environmentally sound transportation systems including infrastructure, technologies and institutional capacities in developing countries.
- Create an environment under which technologies and investments in clean transportation can succeed reflecting international agreements related to sustainable development.

- Encourage cooperation on transport technologies with a view to improve the transport systems, in particular in developing countries, including through renewable energy and energy efficiency and advanced energy technologies, including advanced and cleaner fossil fuel technologies.

c) <u>Chemicals</u>

- Developing countries and countries with economies in transition have insufficient human, technical and financial capacities to deal with the challenges related to chemicals management.
- Foster scientific research and production of safer alternatives to hazardous substances, with a view to their substitution where warranted, with safer alternatives.
- Establish or strengthen national or regional comprehensive, science-based regulatory systems that promote the sound management of chemicals throughout their life cycle, based on risk-assessment, risk-management, aiming at risk reduction and prevention.
- Develop and/or strengthen national scientific and technical capacities for technical assessments and management of chemicals and laboratory capacity for scientific research and monitoring.
- Encourage industry to continue developing cost-effective safer alternative chemicals and techniques for substituting or reducing the use of hazardous chemicals in products, processes and pesticides.
- Strengthen research on disease caused by chemicals.
- Recognize international and national responsibilities for implementation of sound chemicals management.
- Facilitate technology transfer to assist implementation of international commitments under the conventions on chemicals and wastes, SAICM (**S**trategic **A**pproach to **I**nternational **C**hemicals **M**anagement) and other initiatives.
- Consider the adequacy of financial and technical arrangements for SAICM implementation.
- Prioritize financial and technical assistance to developing countries and countries with economies in transition to support their efforts to mainstream sound chemicals management into national development policies and plans.
- Provide relevant training and technical assistance to developing countries and countries with economies in transition, including through the Basel and Stockholm regional centres. Strengthen the capacity of regional and sub-regional centres established under the Stockholm and Basel conventions for delivering capacity-building and transfer of technology in a synergistic manner.
- Strengthen cooperation between governments and industry at all levels for the development and transfer of technology, on mutually agreed terms, for use of non-hazardous and sustainable chemicals and production systems, materials and products to ensure that chemicals are used and produced in ways that lead to the elimination of adverse effects on human health and environment.
- Provide technical support to strengthen national or regional preparedness for chemical accident prevention and emergency management, including for the implementation of national and regional early warning systems to address and prevent chemicals risks and accidents from natural events.
- Strengthen technical and capacity support to public interest NGOs, research institutions and communities.

d) <u>Waste Management</u>

- Improve waste management systems, infrastructure and technology.
- Developing countries are facing challenges in the environmentally sound management of wastes including a lack of resources and lack of access to appropriate technologies. Promote the development and use of appropriate technologies to support environmentally sound management of waste.
- Sustain the implementation of environmentally sound waste prevention and minimization, reduction, reuse and recycling, recovery and disposal.
- Strengthen the dissemination and application of the technical guidelines on environmentally sound waste management adopted under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.

- Enhance capacity and technology particularly in developing countries for environmentally sound waste management.
- Mobilize adequate financial and technical support as well as facilitate access to environmentally sound technologies and technology transfer to developing countries to prevent and minimize, reduce, reuse and recycle (3R), recover and dispose of waste in an environmentally sound manner.
- Encourage investment in best practices in developing countries for environmentally sound management of various waste streams and promote the development of informational materials such as manuals, guidelines and technology summaries.
- Improve capacity of local research and development institutions, and build skills and capacities in local governments for integrated waste management, including technical and managerial skills.
- Encourage the development of education and training programmes related to waste management, including through university courses and other specialized education and training.
- Provide technical assistance and capacity building to developing countries for source separation and waste collection, establishment and improvement of waste inventories, development of policies, legal frameworks, programs, and infrastructure for waste management.
- Build environmentally sound waste management, infrastructure and technology including for waste collection, recycling, recovery and disposal.

e) <u>Mining</u>

- Foster sustainable mining practices through the provision of technical and capacity-building support to developing countries and countries with economies in transition for the mining and processing of minerals, including small-scale mining, and improve value-added processing, upgrade scientific and technological information, and reclaim and rehabilitate degraded sites.
- Promote competitiveness and investment through strengthened technical support and training for relevant public sector bodies, institutions and personnel.
- Provide technical support to artisanal and small-scale mining (ASM) communities to allow for the formalization, professionalization and technological upgrading of the sector.
- Strengthen technical capacities at the national level, including sustainable development content into the technical and managerial training for the mining sector, and technical capacity to analyze and negotiate contracts.
- Promote the dissemination of best practices on environmental issues, for example through on-site seminars and web-based training, and the creation of regional science-based networks.
- Support the transfer of sound technologies and know-how, to help developing countries reduce the negative environmental and social impacts of mining.
- Call on mining companies to apply environmentally sound technologies, irrespective of the country in which they operate.
- Encourage technology transfers and the sharing of best practices on mine closure and rehabilitation, sustainable water management, minimization of water contamination, minimization of energy consumption, increased energy efficiency, sound chemicals and mine waste management.
- Provide capacity building and technology transfer for the implementation of sustainable mining technologies.

f) <u>10-Year Framework of Programmes on Sustainable Consumption and Production (SCP)</u>

- Accelerate the shift towards SCP through improving efficiency and sustainability in the use of resources and production processes and reducing resource degradation, pollution and waste through technical assistance and capacity building for developing countries.
- Promote lifecycle approaches, including resource efficiency and sustainable use of resources, as well as science-based and traditional knowledge based approaches.
- Efforts to promote SCP should be pursued in a manner that supports new market development opportunities for products and technologies.

- Facilitate access to technical assistance, training, financing, technology, and capacity building, in particular for developing countries.
- Make use of the scientific and policy knowledge base and relevant international science policy mechanisms.
- Support developing countries' efforts to strengthen scientific and technological capacities to move towards more sustainable patterns of consumption and production.
- Accelerate a shift to SCP, including initiatives that promote the transfer of technology.
- Support the implementation of SCP programmes and initiatives in developing countries through transfer of and access to environmentally sound technologies and capacity building, based on relevant experience such as the Bali Strategic Plan for Technology Support and Capacity-building.
- Provide finance, technology and capacity building support for implementation of the 10YFP in developing countries and countries with economies in transition.
- Promote existing and new programmes that provide various forms of technical and development assistance and capacity building.
- Sustainable consumption and production programmes included in the 10YFP have to meet criteria like being grounded on a solid scientific and policy knowledge base. Actions are needed to strengthen capacity-building, promote technology transfer the scientific base and exchange of information and knowledge to developing countries.

F. WFEO SIDE EVENT

On May 6, 2011 WFEO held a side event at the UN Headquarters entitled "State-of-the-art, Innovative and Sustainable Technologies in Waste Management, Mining, Transport and Chemicals". This event was organized by the WFEO Standing Committees on Engineering and Environment (CEE), Capacity Building (CCB) and Energy (CE) that took care of all related costs. Invited by WFEO, ICSU contributed with a lecturer to this event. Annex 3 shows the event invitation announcement and Annex 4 summarizes the results of this event. This event was an excellent means to illustrate the state of the art and innovative trends of Engineering and Technology in matters related to CSD-19 issues, as a WFEO contribution to the understanding of the technical aspects of proposals under discussion.

Arrangements to associate WFEO Young Engineers to the UNCSD Children and Youth Major Group were made with this Major Group. The main objective of this association is to provide the young engineers with the opportunity to share their experience with other civil society members of their generation and, in addition, to contribute with the scientific and engineering viewpoints when the Children and Youth Major Group takes position on different issues of sustainable development. In order to allow this Group to have independent positioning of the younger generations upon issues under discussion, the young engineers attended CSD-19 as part of the Children and Youth Major Group. Members of the WFEO Young Engineers/Future Leaders Group, Kathryn Johnson **(US),** Vinicius Marchese Marinelli and Leandro Matsuda (Brazil) attended this CSD session.

G. NEXT SESSIONS

Next year's activities on Sustainable Development will be carried out on the occasion of the UN Summit Conference Rio+20 to be held in June 2012 in Rio de Janeiro, Brazil. This Conference will deal with green economy and sustainability management issues by bringing together governments at all levels, the UN system, and stakeholders from across civil society to build a global consensus on the future of sustainable development.

The Scientific &Technological community has a comprehensive programme of activities in the preparation of its participation at the Rio+20 Conference, aiming at providing scientific knowledge, engineering expertise and appropriate technologies that are timely, up-to-date, and targeted specifically to the Conference objectives.

Members representing WFEO at Rio+20 will be confirmed at the 2011 Executive Council meeting in Geneva.

1st June 2011

Jorge Spitalnik
Chair, WFEO Energy Committee
WFEO Liaison with ECOSOC & UNCSD

Annex 1

CSD-19 - STATEMENTS BY WFEO AND ICSU DELEGATES

Monday, 2nd May 2011
OPENING SESSION STATEMENT OF THE SCIENTIFIC AND TECHNOLOGICAL COMMUNITY

Maria Jesus Prieto Laffargue, President WFEO

Thank you, Mr. Chair, to giving the floor to the Scientific & Technological Communities.

We strongly believe that progress toward meeting sustainable development goals in all areas dealt with by CSD-19 will require substantial innovative advances in science, engineering and technology and extensive consideration of the feasibility of proposed solutions.

Enhanced sharing of best practices, North-South and South-South scientific and technological cooperation, knowledge networking and dissemination, as well as sharing of engineering know-how and technology will be essential.

The search of solutions to CSD-19 discussions should be based on sound science and engineering in order to deliver realistic policies. Actions toward the advancement, sharing and application of knowledge, science, engineering and technology should be incorporated in relevant policy recommendations to be agreed upon in this cycle.

There is clear evidence that human actions have become the main driver of global environmental change and that, in certain parts of the world, the current aggregate trends and patterns of consumption and production are unsustainable. It will be highly important to engage the Scientific and Technological Community, together with other stakeholders, in the implementation of Sustainable Consumption and Production programmes at national, regional and global levels.

Wednesday, May 4th 2011
NEGOTIATION WORKING GROUP 1 – MINING

Deborah J. Shields (WFEO)

The World Federation of Engineering Organizations has Member Societies in more than 90 nations and the Society of Mining Metallurgy and Exploration has members in nearly 100 nations. Our Professional Societies and members worldwide stand ready to assist with the transfer of existing and innovative technologies, and the implementation of Best Practices, to achieve the sustainable development goals articulated in the text on mining.

The science and technological community major group is committed to provide engineering and scientific contributions regarding state-of-the-art practices on:

1) Proper management of the mining process across the entire life of the mine in areas such as exploration, resource and reserve development, permitting, mineral extraction, mineral processing and post-closure activities; and
2) Technology transfer issues such as the dissemination of mining best practices, training and certification of miners and mining professionals, dissemination of unbiased and sound mining engineering and geotechnical information, life cycle analysis of mines and mineral products, environmental impact management, waste management, energy efficiency, and water management in mining.

Friday, May 6th 2011
DIALOGUE WITH MAJOR GROUPS
FARMERS, BUSINESS AND INDUSTRY, AND THE SCIENTIFIC AND TECHNOLOGICAL COMMUNITY JOINT STATEMENT

Peter Bates (ICSU)

<u>Shared issues</u>

Business and Industry, Farmers, and the Scientific and Technological Community will be crucial partners for the implementation of decisions made at the CSD.

- We support the development of action-oriented recommendations which provide enabling conditions for implementing such actions.

- The 10 YFP should be an inclusive and collaborative process. Oversight and evaluation will benefit from shared ownership that includes all of the Major Groups. Programs and policy frameworks should flexibly support appropriate regional, national and local structures and initiatives.
- It will be essential for governments to increase targeted investments for enhancing their scientific and engineering capacity, and R&D. A prerequisite is education, as a skilled workforce is the cornerstone of any strong, competitive economy.

Particular to Farmers

The Farming community would like to emphasise the importance of food security and encourage the inclusion of all parts of Millennium Development Goal 1 – calling for the eradication of both poverty and hunger. Thus we must encourage sustainable consumption and production through the whole of the food life cycle. This includes post harvest losses and reduction of food waste among consumers.

Particular to Science &Technology

The Scientific and Technological Community is certain that progress in all topical areas will require substantial innovative advances in science and technology, and thorough analysis of the feasibility of proposed solutions. We therefore strongly support calls for the evaluation and application of sustainable technologies in the fields of waste, transport, mining and chemicals.

Particular to Business and Industry

Business and Industry wish to emphasise that the development and commercialization of both effective existing clean technologies and new technologies, will substantially improve the future performance and reduce the cost of progress.

Achieving improved and equal conditions for transparency and integrity in doing business in all countries, including the fight against corruptive practices, is of paramount importance.

Wednesday, May 11th 2011
HIGH LEVEL OPENING

Peter Bates, (ICSU)

The search for solutions in all areas dealt with by CSD-19 should be based on sound science and engineering in order to deliver realistic policies.

Progress in all areas will require substantial innovative advances in science and technology and extensive consideration of the feasibility of proposed solutions. We therefore support calls for the evaluation and application of sustainable technologies in the fields of waste, transport, mining and chemicals. The development and application of technologies will not always be culturally accepted, requiring extensive research from the social sciences for determining the appropriate conditions for their uptake.

It is therefore essential for governments to increase targeted investments for enhancing their scientific and engineering capacity, and for enhancing interdisciplinary research and development.

Knowledge networking and dissemination, and education and capacity building, should also be incorporated in relevant policy recommendations to be agreed upon in this cycle.

Extensive collaboration of the Scientific and Technological Community, together with other stakeholders, will be essential in the implementation of decisions made at CSD-19. We stand ready to fulfill this role.

Wednesday, May 11th 2011
MULTI-STAKEHOLDER DIALOGUE ON MEANS OF IMPLEMENTATION

Jorge Spitalnik, (WFEO)

A close collaboration with the scientific and technological community will be essential for implementing the decisions made at this CSD. Here are our main thoughts on means of implementation.

On SCP

Develop national and international programmes of research and analysis, by monitoring SCP indicators to enhance the education and awareness of consumers for supporting changes in behavior.

On Transport

Increase investment in research and development to accelerate progress towards lower emissions of air pollutants and greenhouse gases in transportation technologies.

Bring down demand for personal vehicle transport and long-distance road transport of goods.

Develop integrated and inter-modal mass transport systems, using sound scientific and engineering modeling.

On Chemicals

Reduce gaps in sustainable management of chemicals, throughout the life cycle, in both the public and private sectors, by enhancing:

- regulatory frameworks at national and international levels;
- knowledge, data and education on chemical safety and toxicity;
- human and technical capacity for risk assessment and sound management.

On Waste

Develop policies and measures for waste management to include:

- data collection, research, engineering and education, with special attention to health and environmental risks;
- the introduction and operation of national and city "integrated sustainable waste management systems", and
- the establishment, monitoring and updating of national regulatory frameworks for hazardous wastes management.

On Mining

Develop, transfer and apply environmentally friendly technologies in the mining industry, and monitor their impacts, and

Enhance participatory processes at all stages of mine planning and operation, with research and monitoring of the social impacts of mining.

Thursday, May 12th 2011

CREATING AN ENABLING ENVIRONMENT FOR SUSTAINABLE MINING

Deborah J. Shields (WFEO)

For mining to contribute positively to sustainable development, negative impacts need to be minimized, potential benefits maximized, and the risks associated with alternative mining and mineral processing methods identified and dealt with. This necessitates a comprehensive understanding of the mineralogical characteristics of the deposit, the environmental systems within which it resides, including terrestrial and aquatic ecosystems, and the social systems and cultures of peoples adjacent to the proposed site as well as those potentially impacted by development. Such understanding will depend on input from geological, environmental, mining and metallurgical, mechanical, chemical and civil engineers, among others.

Sustainable mineral development (mine planning and development), and mineral and metals extraction and processing, closure, and reclamation technologies, as well as minerals and metals reuse and recycling, will require continued advances and innovation in technology, which can only be achieved through education of the next and future generations of scientists and engineers, and other professionals, as well as the funding of basic and applied research. In addition, a well trained workforce will be essential to ensure that life cycle thinking, best mining practices and cleaner production are followed. We therefore want to stress the importance of worker training, sharing of best practices, technology transfer, and capacity building in all relevant fields.

The Scientific and Technological Community Major Group is prepared to work in partnership with the United Nations, member states and all interested parties on these efforts.

Thursday, May 12th 2011

CHEMICALS AND WASTE MANAGEMENT

Jorge Spitalnik, (WFEO)

Chemicals

Stakeholders should enhance significantly support for the development and use of safe, environmentally benign substances in replacement of more hazardous ones, often based on renewable raw materials. Governments and industry

should encourage this "green chemistry" through increased research, education, incentives and favourable market conditions.

There is a great need to increase international cooperation in the development and transfer of technology for safe chemical substitutes and in capacity building for their production. Practical measures at the international level should include:

- launching an international mechanism to support education and capacity building in the implementation of the three Conventions of Rotterdam, Stockholm and Basel;
- implementing the Globally Harmonized System of Classification and Labeling of Chemicals;
- developing a global legally binding instrument on mercury;
- establishing a global system for communicating risk and hazards.

Moreover, special attention has to be given to five emerging issues: nanotechnology and manufactured nanomaterials, chemicals in products, lead in paint, electronic waste, and perfluorinated chemicals.

At the national level, priority areas for action should address the following aspects

- strengthening national legislation, with international cooperation and training on enforcement and compliance;
- integrating chemical management into national development priorities and budgets;
- establishing mechanisms for inter-sectoral cooperation in all countries.

Waste management

Policies for progressive limitation of release of waste involve a need for implementing waste management measures and for recycling materials and equipment. Stakeholders should enhance significantly their efforts in maximizing the "3Rs" of waste management: reduce, reuse and recycle; having as an ultimate goal a zero waste economy of closed materials and nutrients cycles.

Policies and measures must also include:

- more data collection, research, engineering, education, and public information, with special attention to health and environmental risks. One of the biggest returns on investment in health comes from providing clean water, sanitation and efficient waste management;
- national and city governments should conceptualize and operate "integrated sustainable waste management systems" and extend responsibility and accountability of waste producers;
- special care must be applied to the management of hazardous wastes. Respective national regulatory frameworks must be established, monitored and regularly updated. All countries should become parties to and implement the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal.

Poorly designed and maintained landfills represent an ongoing challenge, often even in developed countries. Seepage of effluent, sometimes into water courses, and the escape of greenhouse gases such as methane are surmountable technical problems that need to be addressed.

Friday, May 13th 2011
MINISTERIAL DIALOGUE - JOINT STATEMENT BY MAJOR GROUPS

Jangustav Strandenaes (on behalf of all Major Groups)

On behalf of all 9 Major Groups: Children & Youth, Indigenous Peoples, Workers & Trade Unions, Women, NGOs, the Scientific and Technological Community, Business & Industry, Local Authorities and Farmers, I would like to thank you for attending this session. We are very grateful for this opportunity to meet with you, and we hope that this will be a fruitful and productive dialogue for both the Major Groups and member states.

As this session falls towards the end of CSD-19, it was decided that this would be a good opportunity to look to the future and the next series of meetings, to Rio+20 and beyond.

Rio+20 comes at a vital point in time. As we face multiple crises – environmental, social and economic – there is an urgent need to reinvigorate sustainable development, as this provides an integrated approach to addressing these interrelated issues. With its global scope and high-level political profile, Rio+20 is the forum in which real change can be achieved. Our planet needs us to work together.

Rio+20 must bring together governments at all levels, the UN system, and stakeholders from across civil society to build a global consensus on the future of sustainable development. All 9 major groups are firmly committed to

contributing their unique expertise to this process. We will bring our diverse ideals, knowledge and perspectives to the process to the maximum extent possible.

Each of the Major Groups is already proactively involved with engaging its constituents, so they can bring wide reaching, global perspectives to Rio+20. We will share some of these activities with you during this session.

Indeed, we believe that this engagement with Major Groups and other stakeholders is crucial to a successful, relevant and effective outcome to Rio+20. Major Groups will also be essential partners in implementing the decisions made at Rio, and we stand ready to fulfill this role.

However, we note that often the engagement between Major Groups and Member States has not been satisfactory for either side. For example, we are concerned by the greatly reduced opportunities for Major Group participation at this session of the CSD. While we understand the constraints at CSD-19, it is essential that we raise the bar for Rio+20.

We believe that both Major Groups and Member States need to work together to improve dialogue, engagement and participation.

We would therefore like to use this session to discuss with Member States ways to maximize the relationship between Major Groups and Member States, and the avenues by which Major Groups can best provide input to the Rio+20 process.

We believe that Rio+20 should strive to be a model for best practice on Major Group participation. Rio+20 should be building on the long tradition of Major Group engagement. While we lost some of the early momentum, Rio gives us the opportunity to once again take the lead on this crucial aspect of sustainable development governance.

In this session we would therefore like to discuss our ambitions for true engagement at Rio+20. We would also like to hear from Member States what their expectations and aspirations are for Major Group involvement. Finally, we wish to discuss concrete modalities by which we can make this interaction happen.

In order to address these issues in this session, we aim to first provide a brief history of MG participation, drawing lessons learnt and best practices from the CSD and other related processes. We will then open up a dialogue, in which Member States and Major Groups will discuss their activities, ideas and recommendations for the Rio+20 process.

Once again, on behalf of all of the Major Groups I would like to thank you for participating in this session. We hope that this will move the ongoing dialogue between MGs and Member States to a new level, and that this will catalyze our partnership as we move towards Rio+20.

In this way we can work together to ensure that Rio+20 invigorates sustainable development at this crucial juncture in the history of our planet.

Friday, May 13th 2011
STRAIGHT TALK DIALOGUE ON CIVIL SOCIETY PARTICIPATION

Peter Bates, (ICSU)

Decisions reached at Rio+20 should be based on the best available scientific, technological and engineering knowledge.

This knowledge should be truly interdisciplinary, addressing the 3 integrated pillars of sustainable development.

The S&T community has a comprehensive programme of work in the run up to Rio+20, which aims to provide knowledge that is timely, up-to-date, and targeted specifically for this process.

These activities have a regional focus, to bring the specific needs and concerns in different areas of the world to the fore.

I will highlight a few of these activities:

Over 2011 we are running a series of five regional science and technology workshops, in Asia Pacific, Africa, Latin America and the Caribbean, the Arab states and Europe, the results of which we will bring to the regional preparatory meetings.

We have groups of scientists producing a series of 9 policy briefs on issues of key importance to Rio+20.

In March 2012, in London, in preparation for Rio+20, we are holding a major International scientific conference called ‘Planet under Pressure: new knowledge towards solutions’.

Also, we are organising a Forum on Science and Technology for Sustainable Development, that will run in parallel to the Rio+20 conference.

As you can see, our community is highly enthusiastic, and we are willing to bring a great deal of time, effort and expertise to Rio+20.

We are therefore particularly interested to hear how Member States would like to use this knowledge.

How can it be best presented to you?

What have you found to be the best ways to collaborate with the scientific and technological community?

What are the mechanisms that you have in place in your own countries for working with the S&T community?

And, are there any particular areas that you would like the S&T community to focus on?

Friday, May 13th 2011
MINISTERIAL DIALOGUE ON RIO+20

Jorge Spitalnik, (WFEO)

Decisions reached at Rio+20 should be based on the best available scientific, engineering and technological knowledge to deal with green economy and sustainability management issues. This knowledge should be truly interdisciplinary.

The Scientific &Technological community has a comprehensive programme of activities in the preparation of its participation at the Rio+20 Conference, aiming at providing scientific knowledge, engineering expertise and appropriate technologies that are timely, up-to-date, and targeted specifically to the objectives of such Conference.

These activities have a regional focus to bring to the fore the specific needs and concerns in different areas of the world.

The Scientific &Technological Community is committed to make available considerable effort and significant expertise to Rio+20.

Annex 2

Report on CSD-19 IPM

Feb. 28 to March 5, 2011 – UN Headquarters New York, New York

Purpose: To attend the Intergovernmental Preparatory Meeting and contribute to the discussions and preparation of the Chair's working draft of a negotiation document to be finalized at CSD-19 in May 2011.

Background: CSD recognizes 9 major groups, who are allowed to participate in the development of the documents throughout the CSD process. These are: Women, Children and Youth, Indigenous Peoples, Local Government, NGO's, Workers and Trade Unions, Business and Industry, Scientific and Technological Community (STC), and Farmers. WFEO and ICSU are the representatives of the engineers and scientists respectively, and work closely together in the development of the Group's contributions into the process.

Summary report: The WFEO representatives were Messrs. Jorge Spitalnik and Darrel Danyluk. Mr. Jose Tadeu da Silva (FEBRAE) attended as a member of the WFEO delegation. The STC Major Group interventions are shown in the following section. The principle thrust of these interventions was to inject the recognition of the need for science, engineering and technology as a foundation for addressing the theme areas. Since the theme areas for CSD-18/19 were: chemicals, transport, mining, waste management, and sustainable production and consumption, WFEO took the lead role within the STC Major Group.

STC Interventions:

Monday, February 28th 2011
OPENING STATEMENT
Gisbert Glaser, (ICSU)

The Scientific and Technological Community has contributed its part to the document available to this meeting on "Major Groups' priorities for action".

We strongly believe that progress toward meeting sustainable development goals in all topical areas dealt with by CSD-19 will require substantial innovative advances in science and technology and consideration of the feasibility of proposed solutions.

More generally, actions toward the advancement, sharing and application of knowledge, science, engineering and technology should be incorporated in relevant policy recommendations, to be agreed upon by CSD-19. In this respect,

it will also be essential to strengthen national scientific and technological capacity, in particular in developing countries.

The Scientific and Technological Community fully supports the establishment of a 10-Year Framework Programme on Sustainable Consumption and Production. It will be highly important to engage our community, together with other stakeholders, in the implementation of SCP programmes at national, regional and global levels. Different arrangements and structures for knowledge sharing and networking will also be crucial in this respect.

Finally, I wish to urge all delegates to read the priorities for action in Transport, Chemicals, Waste management, Mining, and a 10-Year Framework of Programmes on SCP, recommended by the Scientific and Technological Community, contained in document 12 to which I referred to earlier.

Tuesday, March 1st 2011
STATEMENT ON TRANSPORT
Jorge Spitalnik, (WFEO)

If the current trend is maintained, 2/3rds of the world population will live in urban environments by 2050. In several countries, the urban boundaries are expanding as peri-urban areas, which would subsequently evolve as new cities. It is thus important to develop a sound scientific modeling approach to allow designing integrated and inter-modal transport networks.

Transportation technologies are progressing on many fronts towards lower emissions of air pollutants and greenhouse gases. Despite this, there remains a strong need to reduce demand for personal vehicle transport and long-distance road transport of goods.

Nowadays, motorized transport depends on oil for its energy needs and contributes a growing share to global emissions of greenhouse gases. The contribution of biofuels and flex-fuel cars to sustainable development is a fact in some countries. However, introducing biomass production for fuels should be based on sound studies which have to evaluate risks of competition with food production and potential effects on crop prices.

Actions for promoting cleaner fuels and vehicles, including hybrid and electric cars, must also be complemented by policies to diversify mobility means, to introduce efficient and sustainable public transport in particular in urban zones, and to enhance public space management in cities with new modes instead of car usage.

The scientific, engineering and technological communities can play a key role in understanding the policy-implementation nexus, what has worked and what not, in order to provide the required information for developing new policies in this domain.

Wednesday, March 2nd 2011
STATEMENT ON 10YFP ON SUSTAINABLE CONSUMPTION AND PRODUCTION (SCP)
Gisbert Glaser, (ICSU)

The Scientific and Technological Community is fully supportive of CSD-19 launching a 10-Year Framework Programme on SCP. Indeed, in our view, there is an urgent need of changing consumption and production patterns from business as usual. As new scientific evidence shows, the current unsustainable consumption and production patterns have started to put the natural functioning of the earth system, as we know it, at risk.

Consequently, the 10YFP should be ambitious and actionable. It should have a strong science, engineering and technology base. This requires full participation of scientists, engineers and technology experts, as well as the engagement of researchers in social and natural sciences, in particular those involved in SCP research networks. Different arrangements and structures for knowledge sharing and networking will also be crucial in this respect.

In order for implementation of an ambitious 10YFP on SCP to make good progress, it will be essential for governments to increase investment in targeted national scientific and technological capacity, as well as research and development, and innovation systems, in particular in developing countries. North-South and South-South cooperation in the area of scientific and technological capacity building should be significantly enhanced, as well as technical and financial assistance to developing countries.

The Scientific and Technological Community aligns itself with the short message presented by our colleague representing the NGO community on behalf of all nine Major Groups. We, too, believe that the 10 YFP should be a collaborative process involving key agencies and stakeholders. Oversight and guidance should benefit from shared

ownership including stakeholders from all of the Major Groups. Programs and Policy Frameworks should put emphasis on supporting regional, national and local initiatives that advance the cause of sustainable consumption and production.

Wednesday, March 2nd 2011
STATEMENT ON MINING
Darrel Danyluk, (WFEO)

The Scientific and Technological Community includes the world's innovators who are the key to the technological solutions needed to address the real and current threats to sustainability.

Mining offers an interesting model in terms of sustainability. It is a wealth generator, an employer, a supplier of basic and fundamental infrastructures that provides opportunity for economic and social growth. Its impact on the environment throughout its life cycle can be long lasting and its legacy can cause serious concern.

We believe that sustainable mining includes:

- environmental and social impact assessments, undertaken in consultation with local communities as part of the planning process, and incorporated into the mine development plan that includes rehabilitation of impacted areas;
- adequate environmental monitoring systems and regular socio-economic studies over the life cycle of the mining operation;
- respective regulatory frameworks at national and international levels to address corporate social and environmental responsibility and complete accountability;
- more investment in targeted scientific and engineering research and in upgrading education and training;
- the development, transfer and application of environmentally friendly technologies, including those technologies that reduce water and energy consumption and impact;
- technical and financial support to developing countries that will strengthen the technical capacities of national institutions regarding the opportunities and challenges of mining, including establishing and managing contracts with international mining companies and organizing participatory processes that includes the local community.

The legacies and residual impacts of mining, such as the large physical footprint of a surface mine, should be carefully planned, implemented and monitored to minimize the environmental impacts during mining and to facilitate the return of the land to a sustainable post-mining use.

Friday, March 4th 2011
MULTISTAKEHOLDER DIALOGUE I
Gisbert Glaser, (ICSU)

The Scientific and Technological Community strongly believes that progress toward meeting sustainable development goals in all topical areas dealt with by CSD-19 will require substantial innovative advances in science and technology and consideration of the feasibility of proposed solutions. For example, innovative green chemistry needs to be supported by the public and the private sector, and through much enhanced international cooperation, including transfer of technology.

Development and more importantly implementation of an ambitious 10 Year Framework Programme on Sustainable Consumption and Production (SCP) will take us a long way in advancing the necessary transition to a more sustainable future.

In this respect, it will be essential for governments, in particular in developing countries to increase investment in national scientific and technological capacity targeted on the solutions of making chemicals and waste management, mining and transport more sustainable and implementing the 10YFP on SCP. Developing targeted research and development and innovation systems will be equally crucial.

Consequently, actions toward the advancement, sharing and application of knowledge, science, engineering and technology should be incorporated in all relevant policy recommendations, to be agreed upon by CSD-19.

The Scientific and Technological Community is committed to work with all stakeholders, governments, intergovernmental organisations and all other Major Groups in making implementation of the CSD outcome really happen.

Friday, March 4th 2011
MULTISTAKEHOLDER FORUM II
Gisbert Glaser, (ICSU)

The Scientific and Technological Community believes that the topics addressed by the CSD-19 and the launching of the 10-Year Framework Programme on SCP will need to feature prominently in the Rio+20 context.

Our Community is strongly supportive of CSD-19 launching an ambitious and actionable 10YFP and making it a central element of the Rio2012 outcome. Indeed, we believe that there is an urgent need of changing consumption and production patterns from business as usual. As new scientific evidence shows, the current unsustainable consumption and production patterns have started to put the natural functioning of the earth system, as we know it, at risk. Similarly, without meeting the MDGs and continued efforts to eliminate mass poverty also beyond 2015 the world will not reach its goal of global sustainability.

For us, it will be extremely important that CSD-19 feeds such a sense of urgency in the Rio+20 preparatory process. There is an urgent need for our societies to transition to a green economy. In fact, there is an urgent need for more far reaching societal transformations. Without such a major change of the course of human development on our planet we risk transgressing critical planetary boundaries and leaving billions of people in poverty. This was also clearly stated by both panelists.

Mr. Chair, your list of issues for Rio2012, including urbanization, food security, water for life, access to energy are being prominently addressed in the preparations of the Scientific and Technological Community for the summit in Rio next year, including in our four regional science and technology workshops. We would like to make these regional workshops multistakeholder dialogues with governments, intergovernmental organizations and all Major Groups.

Annex 3

INVITATION ANNOUNCEMENT
A Side Event at UN CSD-19

Scientific and Technological Community Major Group
Capacity Building – Words Into Action 2011
"State-of-the-Art Innovative and Sustainable Technologies in Waste Management, Mining, Transport and Chemicals"
UN Conference Room B, New York, New York
Friday May 6, 2011 1:15 to 2:45 p.m.

Abstract

This side event will focus on new and emerging technologies and technological approaches within the waste management, mining, transport and chemical sectors – the current focus of the United Nations Commission on Sustainable Development. The focus of these technologies is to minimize impacts and increase sustainability.

Presentations will be followed by a question and answer session and a forum discussion to identify the steps required for regional and local applications of these technologies.

An output document will be prepared and delivered electronically to registered participants. This document will include copies of the presentations.

Educational Objectives

Upon attendance at this event, participants should have:

Increased awareness of innovative technologies and their application towards meeting the world's sustainability needs in these sectors.

Identification of opportunities to apply these technologies at a regional, country or local level to show how words can be put into action.

Agenda

1:15 **Welcome and Introductory Remarks**
D. (Darrel) Danyluk, P.Eng. (Canada)
Vice-President - World Federation of Engineering Organizations (WFEO);
Chair – WFEO Committee on Engineering and the Environment

1:20 **Sustainable Solid Waste Management Through Innovative Technologies**
K. Watson, P.Eng.
Manager, Screening and Evaluation (Soil and Water),
Sustainable Technologies Development Canada

1:40 **Linking Technological Advances in Mining Environmental Management to Sustainability Performance**
D. Shields, PhD.
Department of Economics, Colorado State University

2:00 **New advances in sound chemicals management along the supply chain**
Martina Bianchini
Vice-President EU Government Affairs and Public Policy,
Dow Chemical

2:20 **Questions and Facilitated Discussion**

2:40 **Closing Remarks**
D. Danyluk, P.Eng.

List of Speakers

Darrel Danyluk, P.Eng. - Darrel is a distinguished civil engineer with over 30 years of consulting experience with Reid Crowther, eventually becoming the Chairman of the Board and Chief Operating Officer. In 2001, he joined the Department of Civil Engineering at the University of Calgary as a Distinguished Industrial Visitor and subsequently an advisor to the office of the Vice-President of Research and International, leading several high profile projects and alliances with municipal and non-government organizations.

He is a Past President of the Canadian Council of Professional Engineers (now called Engineers Canada), the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) and the Consulting Engineers of Alberta. Darrel is a Fellow of Engineers Canada, the Canadian Society of Civil Engineers and the Engineering Institute of Canada as well as a Member of the American Society of Civil Engineers.

His current leadership on environmental issues includes Chair of the Public Infrastructure Engineering Vulnerability Committee examining the vulnerability of Canadian infrastructure to the impacts of a changing climate. Internationally he serves as Chair of the World Federation of Engineering Organizations (WFEO) Committee on Engineering and the Environment, which includes participation in the UN Commission on Sustainable Development as well as the UN Framework Convention on Climate Change.

He has been recognized by APEGGA with the Honorary Life Membership Award, and by the Schulich School of Engineering as a Champion.

Keith Watson, P.Eng. – At Sustainable Development Technologies Canada Keith is Manager, Screening and Evaluation (Soil and Water). Since obtaining his degree in Civil Engineering from Queen's University in 1983, Keith has served in municipal government (City of Ottawa) and the consulting industry. Most recently, Keith worked as Resident Environmental Engineer on the redevelopment of the LeBreton Flats Brownfield site in Ottawa, Ontario, Canada.

Prior to his work as a consultant, Keith headed a major municipal waste management facility, served as an adviser for management of the municipal brownfields, and managed many environmental infrastructure projects. This work included development and implementation of a city-wide Old Landfill Management Strategy. Keith headed the leachate pre-treatment pilot project and chaired its technical advisory committee, facilitated micro-turbine electrical generation using landfill gas, and managed the investigation of a contaminated historical landfill site.

Keith has served as Chair of the Board and Chair of the Membership Committee for The Composting Council of Canada, and Chair for the Eastern Ontario Hub of the Municipal Waste Integration Network. He is a member of the Professional Engineers of Ontario, Ontario Society of Professional Engineers, Solid Waste Association of North America, and The Composting Council of Canada.

Deborah Shields PhD. – Deborah is part of the affiliated faculty in the Department of Economics at Colorado State

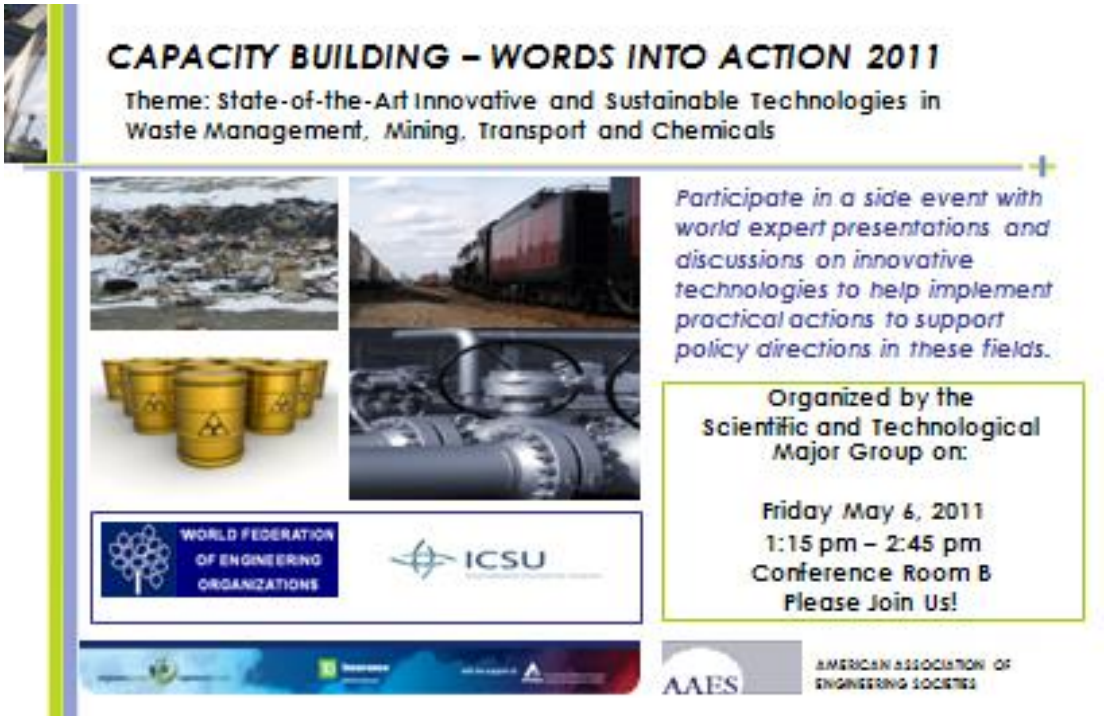
University and a Visiting Professor of Resource and Environmental Economics at Politecnico di Torino. She has an M.Sc. in Mineral Economics from the Colorado School of Mines, a PhD. in Ecosystem Science from Colorado State University.

Her research foci are minerals and energy in sustainable development, mineral economics and policy, decision theory and life cycle assessment.

Martina Bianchini is Vice-President of EU Government Affairs & Public Policy for Dow Chemical and the head of the company's EU Liaison office in Brussels, Belgium. In this capacity, she is shaping EU industry advocacy strategies on Dow's priority areas and ensures the consistent adoption of a transatlantic and global approach to chemicals management policies. A part of this strategy is to create an enabling policy framework for sustainable development and help the company achieve its 2015 sustainability goals in the areas of chemicals and health, sustainable chemistry and advanced manufacturing. She is the chair of the International Chamber of Commerce Green Economy Task Force which develops global business and industry positions on Green Economy into the UN process.

Prior to joining Dow in 2001, Martina worked 14 years in the private sector, both in the US and Europe on different assignments in Environmental, Regulatory, Public and Government Affairs and sustainability. Martina is a board member of SusChem, the European Union Technology Platform for Sustainable Chemistry; European Partners for the Environment, a former board member of Corporate Social Responsibility Europe and a member of the advisory council of the Kings Center for Risk Management. In 2008, she was awarded the title of Distinguished Visiting Fellow at the Institute of Contemporary European Studies (ICES) of the European Business School London.

Martina holds a bachelor's degree in Earth Sciences from the University of Trier in Germany and a Master of Science in Environmental Sciences/Toxicology from Louisiana State University, USA.



Invitation Handout

Annex 4

- **Committee on Capacity Building**
- **Committee on Energy**
- **Committee on Engineering & Environment**

Summary Report

May 6, 2011 UN CSD-19 Side Event
'State of the Art Innovative and Sustainable Technologies in Waste Management, Mining, Transport and Chemicals'

Introduction

This 90 minute event, which was jointly organized by the World Federation of Engineering Organizations (WFEO) and the International Council for Science (ICSU), consisted of three excellent presentations from prominent speakers, followed by questions and answers and a general discussion. There were over 30 participants from several countries and included government officials as well as representatives from non-government organizations, either at national or international levels.

This event is part of a continuing strategy of the Scientific and Technological Major Group to build awareness and understanding of current United Nations Commission on Sustainable Development (UN-CSD) themes from a scientific, engineering and technology perspective. The Scientific and Technological Major Group intends to continue these workshops and interventions on the subject agendas of the UN-CSD at the international and where feasible, regional meetings.

The workshop was facilitated by Mr. Darrel Danyluk, P.Eng., who chairs the Committee on Engineering and the Environment within the World Federation of Engineering Organizations.

The session was opened by Maria-Jesus PRIETO Laffargue, Spain, WFEO President, and attended by President Elect Adel Al-Kharafi, Kuwait, WFEO President Elect. Other key WFEO leadership included Jorge Spitalnik, Brazil, Vice President WFEO, Chair Energy Committee and WFEO Liaison to ECOSOC and UN-CSD, Dan Clinton, USA, Chair WFEO Capacity Building Committee, and Kate Johnson, USA, a member of the WFEO Younger Engineers/Future Leaders Task Group.

Additionally, American Association of Engineering Societies (AAES) representatives Jessica Vogel, President, Society of Mining Engineers (SME), Deborah Shields speaker and a member of SME, and Michael Sanio, American Society of Civil Engineers, Director Sustainability and International Alliances, and AAES International Activities Committee Staff contact, and Chris Scarpino, a member of AAES.

This side event focused on new and emerging technologies and technological approaches within the waste management, mining, transport and chemical sectors – the current focus of the United Nations Commission on Sustainable Development.

The educational objectives of the event were:

- Increased awareness of innovative technologies and their application towards meeting the world's sustainability needs in these sectors;
- Identification of opportunities to apply these technologies at a regional, country or local level to show how words can be put into action.

The three presentations covered solid waste, mining and chemicals. Copies of the presentations are available as electronic files in pdf format (by permission of the presenters) and are included as Appendix to this report. The organizers wish to thank the presenters for making these available.

The three presenters and their organizations were:

- Mr. Keith Watson - Manager, Screening and Evaluation (Soil and Water) Sustainable Technologies Development Canada.
- Ms. Deborah Shields – Department of Economics, Colorado State University.
- Ms. Martina Bianchini - Vice-President EU Government Affairs and Public Policy Dow Chemical.

Summary of Presentations

K. Watson: "Sustainable Solid Waste Management through Innovative Technologies"

The presentation opened with the following quote: "Up to 1,000 million tonnes of waste per year are completely unmanaged, wasting resources, jeopardizing public health and harming the environment. Global wastes are predicted by some to double in the next twenty years. Industrialized nations spend up to US$270 billion per year managing waste, and it is important that these costs are incorporated into the supply chain…"

Governments should create effective solutions to waste management through research, knowledge transfer, valorisation and dissemination.

The mission and mandate of Sustainable Development Technologies Canada (SDTC) was reviewed. SDTC is a policy delivery instrument of the Government of Canada to deliver environmental and economic benefits to Canadians through fostering the development and demonstration of innovative technological solutions that address clean air, water land and climate change.

With respect to solid waste the agency is focusing its efforts to:

- Take effective actions to clear away plastics from the oceans
- Treat waste as close to the source as possible
- Close materials and nutrient cycles
- Foster methods that encompass environmental sustainability, animal welfare, and food security in partnership with farmers.

The presentation included an introduction to the technologies and strategies the agency is pursuing within these efforts.

D. Shields: Linking Technological Advances in Mining Environmental Management to Sustainability Performance

The presentation began with a discussion of definitions around sustainability and sustainable development. The goal of sustainability with respect to minerals is to maintain the stream of benefits that minerals provide in such a manner that the contribution of the resource is a net positive over the life cycle of mine or field, and product.

The challenge to the mining industry is how to be sustainable material service providers to society, while contributing to sustainable development at all spatial and temporal scales. Innovative and existing technologies and best practices can be applied at each stage to minimize or eliminate negative environmental and social impacts, and increase worker health and safety, helping to ensure that the benefits of mineral production exceed the costs.

The presentation included a review of the environmental issues in the gold mining industry which include acid drainage from mines and heap/tailings and issues and methods to treat these wastes.

Then presentation concluded that integrating and using sustainability as a platform and within the actual planning process for mines was a good practice. As engineers we are evaluating our technology against sustainability development principles. We need to do this before the mining begins, and as part of the mine planning process. Thus, our mine planning process comes from a sustainable development platform.

There is also a need to develop a process for the implementation of a new technology to confirm that it will contribute to sustainable development.

M. Bianchini - New Advances in Sound Chemicals Management along the Supply Chain

Sound Management of chemicals is a high priority in global chemical industry. Chemicals have played a central role in the evolution of the concept of sustainable development. Sustainable Chemistry and LCA (Life Cycle Analysis) concepts contribute in this regard.

Chemicals are an important aspect of sustainability:

- Chemistry contributes to human development
- Huge volume + inherent toxicity + exposure = potentially significant environmental and health footprint
- Chemicals and chemistry are embedded in all major industrial processes
- Comprehensive effort by international community since UNCED (Rio 92) to address chemical risks.

Green chemistry is key enabler to drive sustainable development – and sustainable consumption and production (SCP):

- Process improvements to reduce material and energy intensity
- Product improvements to reduce footprint

- Process and product innovation is already hard wired in chemical industry.

The presentation included brief descriptions of a number of technologies developed by Dow Chemicals for water purification as well as addressing energy and climate change:

- Hydrogen flare technology
- Solar power
- The Passive House
- Photovoltaics
- Diesel particulate filters
- CO2 capture
- Innovative propylene oxide process.

The presentation concluded with reference to DowProductSafety.com. The company has implemented a policy to identify and manage chemical risks to ensure product safety.

Summary of Questions and Discussion

Following the three presentations there were a number of questions that opened the discussion:

- What waste management technologies exist for those living on less than $2/year?
- How can wastes be used safely as an energy source for the poor?
- The ethics of managing mining sites, the legacy of the past, following closure, what is the responsibility of mine owners?
- How are national governments engaged in Rio+20?
- What is the definition of sustainability, sustainable development?
- How can the Science and Technology Major Group work effectively with member states/national governments meet the challenges of Rio+20 effectively?

The following is a summary of the ensuing discussion.

Eduardo Orteu, Mission of Spain to UN, following CSD and Rio+20 preparations: How can we make many technologies affordable for developing countries? Developed countries want the best technologies for the future, but for less developed countries this is a matter of survival. Affordable technology for people on '2 dollars a day' will be crucial. How can we address the issue of energy requirements for technology in developing countries? I have experiences of bad mining activities, especially with companies leaving problems behind when they finish. How do we address the ethics of mining activities? Also how do the science and technological community perceive the way governments and politicians are dealing with this sustainable development agenda in the lead up to Rio+20? We would like view from non-governmental entities on this.

Martina Bianchini: Dow partners with big NGOs, one on one, but what is needed for Rio+20 is transformative partnerships, which can be replicated, scaled up and scaled down. We have set up a Green Economy task force, which has looked at the Green Economy report, particularly chapters on manufacturing and waste. Keith gave a good overview of what technologies are available. What is lacking in the developing world is infrastructure. Scaling down is therefore particularly important, and is a model suitable for replication. We need to find more ways to have UNEP or governments involved so that we can build transformative partnerships. Opportunities can be hidden.

Examination of the whole product life cycle is important - only then can you see all the opportunities. For example, Biolia (waste treatment company) say they can look at the composition of waste, which is different for different countries. These are resources that can be used, but the enabling conditions are not there. It is also important to give attention to social dimensions, for example the working conditions for waste workers, and to all 3 pillars of sustainable development in replicating technologies to places on under 2 dollars a day.

Keith Watson: There is not much energy available in some developing countries. However, for example, the small gasifier unit is self sustaining: the gas produced fuels, and it perpetuates itself once started. Dealing with waste at location also becomes very important. The same company is looking at the localised treatment of waste water. Dealing with waste products at location, and technology that reuses energy and is self-sustaining is important in isolated locations. Note that this can include ships and islands – as the same principles of isolation are there.

Deborah Shields: We recognise more and more the need for culturally appropriate engineering solutions. What works in Canada may not work in Malawi. It is essential that engineering designs are low energy and low maintenance. Young engineers in academia are very interested in ideas of designing culturally appropriate solutions. This can be promoted and encouraged. In relation to the arc of mining over time, Spain has long legacy of mining, which is not all pretty.

The oldest mercury mine in Europe is in Spain, and it is problematic. Older mines were built with a different mindset of how society and natural resources are related. In the past, resources were there to be used. This has evolved to a different understanding, more and more, and certainly in responsible mining companies, they are trying to implement the best technologies to minimise environmental damages and human health. Responsible mining firms are taking a leadership role in educating firms that do not have as good an understanding of the need for innovative technologies and best practice. In relation to mining legacy sites: many legacy sites were created 100s of years ago. They still need to be cleaned up, but one aspect is that when those sites were originally mined, it was with primitive technologies, so not all resource was extracted, and these can still exist in remaining materials. With thin film technologies, we now have needs for rare earth minerals. Back when lead silver ores were being processed we did not know of the existence, let alone the market for, these materials. They are still there in the smelting and mining waste, so governments are encouraging firms to go back into legacy sites, and they are creating a legal framework in which forms can reprocess ores and do site remediation as part of their contract. The firms make money by gaining ore, and the country gains a clean and regenerated site. This needs changes in legal frameworks, but this is coming, and with new technologies coming forward, we will see significant progress in this.

JingJing Chen: Question on waste management: In the CSD negotiations, some member states tried to insert 'materials management' with 'waste management'. What would you see as a consequence of this, if we really have enlargement of the definition from 'waste management' to include 'materials management'? Also, are technological and scientific mechanisms ready for this enlargement of definition?

Deborah Shields: In discussion, the broadening of the topic from a focus on waste to materials is a shift to a focus on viewing everything in the context of how we can continue to reuse it. This is because we live in a world of finite resources. We no longer have the luxury of throwing things away. Key terminology would be 'life cycle thinking'. Resources and materials are viewed in terms of provision and use, reuse, reprocessing and remanufacturing to bring them back into the system. This signifies a need for changes in legal language about waste. It's a delicate issue in the negotiations, but it is essential to move from talking about 'waste' to talking about 'materials in different stages'.

Keith Watson: The term 'waste' has a connotation that things no longer have a purpose, so a move to a definition of 'materials still with use' is useful. And the technology is ready to welcome this change. My group picks up technology once it comes out of the science community: we take it from the science bench to society as a useful product. We find ways to fund it, and move it into society's general use. This can be done on a policy basis by committing to funding demonstration and development phases.

Darrel Danyluk: Are there technologies that can be used to really improve the system? For climate change and reducing GHGs, 11 country studies were done, and by using technologies you can reduce significantly the emissions. The technology is there, but implementation is not there yet.

Karen Laughlin, US Government Delegation, with US Environmental Protection Agency: Some technologies are available, but the market demand is not there yet. The private sector has learnt a lot about how to help drive demand when a product or technology is available. How has the private sector created a role for itself on driving the uptake of green technologies?

Martina Bianchini: We talk about sustainable production and consumption. My sector focuses on production. In the question of how to influence consumption, where should the influence come from? From business? From governments creating enabling conditions? From educators creating the right public mindset? The challenge is that most consumers still buy on price. They demand better products, but are not prepared to pay more.

Karen Laughlin: If a company has a technology they think they can get consumers to buy, they have a motivation to try to change consumer patterns.

Martina Bianchini: Our business is B to B, we sell building blocks to other sectors. The final products are owned by other sectors. So we cannot go into those sectors and advertise their products, so we need to find new collaborations to generate more awareness of technologies and their use.

Darrel Danyluk: How can scientific and technological community engage for Rio+20? We would love to sit down with member states, and give best available advice one on one and answer specific questions. We have access to worldwide expertise. But in these processes, with 3 minute statements etc, there is not enough time. We need governments to open up the dialogue for us. If you want us to bring together expertise on a subject, we can bring together that expertise. We want to do it, but at present we have to force our information through a small window. Other Major Groups would say the same thing.

Eduardo Orteu: The system does not work, major groups can not engage. We are looking forward to a new procedure for engagement.

Darrel Danyluk: The key message from this session is that key knowledge and technologies exist. They are available. We don't need to do additional research. Dissemination is the key issue.

List of Attendees

	NAME	ORGANIZATION/Country
1.	Abiola Olanipekun	Federal Ministry of Environment/Nigeria
2.	Adel M.M.J. Al-Kharafi	WFEO/Kuwait
3.	Avi Yerushalmi	Ministry of Transport/Israel
4.	Christopher Scarpino	WFEO/USA
5.	Daniel D. Clinton Jr.	WFEO/USA
6.	Darrel Danyluk	WFEO/Canada
7.	Deborah Shields	WFEO/USA
8.	Eduardo Orteu	Spain
9.	G.I. Atsegwasi	Nigeria
10.	Jessica Kogel	WFEO/USA
11.	Jinjing Chen	DESA-DSD
12.	Joan Grimm	Anglican Communion
13.	Jorge Spitalnik	WFEO/Brazil
14.	Karen Laughlin	US Gov't Environmental Protection Agency
15.	Keith Watson	SDTC/Canada
16.	Lilian Tornqvist	Swedish Chemicals Agency
17.	Luminita Tirchila	Ministry of Environment & Forests/Romania
18.	Maria P. Laffargue	President WFEO/Spain
19.	Martina Bianchini	Dow
20.	Michael Sanio	ASCE/AAES/WFEO
21.	Miranda Amachree	NESREA/Nigeria
22.	Modon Kane Diao	Ministry of Land Transport and Railways Transport/Senegal
23.	Mojisola Amore	NAFDAC/Nigeria
24.	Patricia Ryan	Derechos Humanos y Medio Ambiente
25.	Peter Bates	ICSU/UK
26.	Rob Wheeler	Global Ecovillage Network, WTI
27.	Robynne Anderson	World Farmers Organization
28.	Rokhaya Samba Diene	Ministry of Mines/Senegal
29.	Sodnom Gankhuyag	Mongolia
30.	Trinidad Carlos Serna	Derechos Humanos y Medio Ambiente
31.	Xin Zhang	Yale/Maldives