

**WORLD FEDERATION OF ENGINEERING ORGANIZATIONS (WFEO)
COMMITTEE ON ENGINEERING AND THE ENVIRONMENT (CEE)**

**Progress Report
October 2012 to March 2013**

Background

At the WFEO General Assembly held in New Delhi, India in November 2007, Engineers Canada was approved to assume the Chair of the Standing Committee on Engineering and the Environment (CEE) for a four-year term. In September 2011 Engineers Canada was re-appointed to continue hosting and chairing the Committee for a second, and final, four year term. This term will expire at the December 2015 General Assembly in Kyoto, Japan.

The Chair is Mr. Darrel Danyluk, P.Eng. FEC, a Past President of Engineers Canada and of APEGA. The Secretariat is provided by Engineers Canada staff within the Department of Professional and International Affairs. Mr. David Lapp, P.Eng., Manager, Professional Practice works half-time on this file with additional administrative support provided by Ms. Lynn Tremblay, Assistant Professional and International Affairs.

Travel and staff related expenses for the Chair and Secretariat are provided through Engineers Canada.

Membership

As of February 2013, representatives from 23 countries and two international members of WFEO constitute the membership. In addition, there are several individuals who actively support their representative and participate in committee meetings and theme-based activities.

Regional Representatives

The Committee created the position of Regional Representative to provide an interface and point of contact, to increase the awareness of its work throughout the world and to help solicit volunteers and local support for the work of the themes in the strategic plan. The current roster is as follows:

Europe – Spyros Papagrigoriou (Greece)
Africa – Alade Ajibula (Nigeria)
Asia – TBD
South America – Irene Campos (Costa Rica)
North America - Darrel Danyluk (Canada)

A volunteer country and individual to cover Asia is still in negotiation.

WFEO Meetings, Events and Teleconferences

There were no meetings or teleconferences of the Committee as a whole during this period.

United Nations Activities, Meetings and Workshops

The Committee maintains an active profile with several United Nations agencies through activities carried out under its strategic plan and working with the Committee on UN relations chaired by Jorge Spitalnik of Brazil. These bodies include the United Nations Framework Convention on Climate Change (UNFCCC), the United Nations Environment Program (UNEP) and the United Nations Commission on Sustainable Development (UN-CSD). Its focus is on supporting discussion and work around climate change and sustainable development.

Work continued on WFEO's efforts on improving the awareness of the role and contributions of engineers as well as our future participation in United Nations processes. Chair D. Danyluk was actively engaged and contributed significantly to the considerable progress achieved in 2012.

United Nations Commission on Sustainable Development Meeting – New York October 20-21, 2012 – Rio + 20 Follow-on Consultations

Chair D. Danyluk attended this meeting on behalf of the UN Committee, CEE and WFEO to provide input on forms of engagement between United Nations and external stakeholders on sustainable development issues for the next three years. The objective was to identify potential entry points for stakeholders in the follow-up processes of Rio+20 and how to actualize multi-stakeholder engagement in these processes and subsequent forums. The discussions were focussed into three subject areas:

- Discuss the sustainable development governance setting in the post Rio+20 context, the potential role of Major Groups, and the space for engagement.
- Discuss how to further the green economy and the role of Major Groups in relevant policies and actions, including the Ten Year Framework of Programmes on sustainable Consumption and Production.
- Look forward to post-2015 and map how stakeholder engagement in the process (international, national and local) can be enhanced to determine the UN post-2015 development framework, in particular defining Sustainable Development Goals and the role of Major Groups in their design and implementation.

World Meteorological Organization (WMO) - WFEO Memorandum of Understanding

Chair D. Danyluk negotiated and finalized a Memorandum of Understanding between the Federation and WMO that was signed in November 2012. The MOU enhances WMO's ability to utilize appropriately the capabilities and information of the WFEO in developing and improving WMO climatic and disaster risk reduction information and services to the worldwide engineering community. It is designed to encourage collaboration on projects of mutual interest, in support of implementation and effective operation of the WMO Global Framework for Climate Services.

It defines the general areas of cooperation and the scope and nature of collaboration through the development and delivery of joint and separate consultations, the definition, design and evaluation of climate and disaster risk reduction information products and services, presentations, technical workshops and training sessions.

In 2013, activities under this MOU will be pursued by the Committee by many of the themes in the strategic plan. The first one is the organization of a one day workshop on infrastructure climate risk assessment to be delivered at WES 2013. WMO will participate in this workshop by providing a speaker and running a session on climate information needs for engineers. Daniel Favrat of Switzerland is the key contact between WFEO-CEE and the WMO.

World Meteorological Organization Global Forum on Climate Services Meeting – Geneva, Switzerland – October 26-27, 2012

Chair D. Danyluk and Daniel Favrat attended this meeting to finalize the final details of a Memorandum of Understanding between WFEO and the World Meteorological Organization for collaborative work on climate change adaptation. They participated in the meeting to provide engineering input for climate data and climate service needs definition.

United Nations Framework Convention on Climate Change – Conference of the Parties Meeting No 18 – Doha, Qatar – November 26 to December 8, 2012

Three delegates from WFEO attended, including the incoming WFEO President and a delegate from the Committee on Engineering and the Environment. The Committee representative attended a meeting of the Nairobi Work Program on Adaptation to present an update on Committee activities and the status of its Action Pledge. This person also attended a meeting of the Future Climate - Engineering Solutions project that is examining the application of existing technologies for GHG reduction to mitigate climate change.

These individuals also attended numerous side events and workshops to gather information and make additional contacts. The travel for all three individuals was covered by their own budgets.

United Nations Educational, Scientific and Cultural Organization (UNESCO)

In 2012, each Federation standing committee was assigned a point of contact within UNESCO to pursue cooperative activities and projects that are within the scope of their work. This initiative followed high-level discussions between the two organizations to work together more closely. At the request of the WFEO president, the chair participated on an UNESCO ad hoc committee in the development of a report to the UN Secretary General that outlined methods to increase the input of the sciences and engineering into the UN system.

Initial scoping of potential areas of work is underway for discussion with the CEE theme leaders and CEE's UNESCO contact. It is expected that a draft outline will be available for face-to-face discussion with UNESCO in April 2013.

WFEO United Nations Relations Committee (WURC)

The Chair and Secretary became members of the World Federation of Engineering Organizations' United Nations Relations Committee at the invitation of the Chair Jorge Spitalnik of Brazil. Both contributed to the preparation of the proposed Terms of Reference that is being presented to the Executive Board in April 2013.

Other International Relationships

Organization for Economic Cooperation and Development (OECD)

In April 2012, the OECD approached the Federation with some ideas for specific areas of cooperation that included many subjects that are within the mandate and strategic plan of the committee. Negotiations were started in December 2012 to define specific projects that would be jointly executed. Chair D. Danyluk, the Secretariat and some members of the Committee are engaged in these discussions.

These discussions were ongoing during this reporting period in preparation for a possible face-to-face meeting in Paris in April 2013. For CEE, potential cooperative activities have been identified and are under discussion with OECD. They are linked to climate change adaptation and engineering and agriculture as identified within the CEE 2012-2015 strategic plan.

WFEO-CEE Strategic Plan – 2012-2015

The strategic plan for the second term of the Committee was approved at the September 2012 meeting and tabled at the WFEO Executive Council held at the same time. It includes five themes and one theme under development. Each is led by a Federation member country with a volunteer chair. The themes and lead countries include:

1. Engineering and Climate Change Adaptation – Canada
2. Climate Change Mitigation and Engineering – United Kingdom
3. Engineering and Agriculture – Tunisia
4. Sustainability and Mining – United States
5. International Code of Practice on Sustainable Development and Environmental Stewardship – Canada
6. Oceans, coastal and maritime issues – Mexico (under discussion)

Each theme organizes a task group of volunteers that includes members from the Committee augmented by subject matter experts and other individuals that have been secured by each theme leader with support from the secretariat. Each theme leader reports to the Chair of the Committee.

Theme 1 - Engineering and Climate Change Adaptation

The work under this theme focuses on the relationship of a changing climate and existing infrastructures and to implement tools for engineers to use in assessing impacts from an engineering perspective.

Knowledge development and capacity building are the two key strategies being used, with a current focus on Latin and South American countries.

Honduras Highway Bridge Climate Risk Assessment Project

In January 2012, Engineers Canada received funding from the International Affairs Branch of Environment Canada to undertake a highway infrastructure climate risk/engineering vulnerability assessment of four bridges in Honduras using the PIEVC Engineering Protocol. The project is being delivered in partnership with the Honduras Colegio of Civil Engineers (CICH) and work continued to its completion date of March 31, 2013.

The objectives of the project include knowledge development and capacity building for engineers and other professionals in Honduras to learn and apply tools and processes to adapt their infrastructures to climate change. As well the project is reviewing Honduras construction and procurement standards and their application in for current and future climate. Two teams were formed to undertake the key components of the project:

1. Honduras Highway Bridge Risk Assessment Project Team
2. Joint working group on construction and procurement practices and policies.

The risk assessment includes a series of joint workshops of Canadian engineering and climate experts working with a team of Honduras engineers and climatologists. These workshops focused on the steps necessary to assess the climate risks to the bridge using the PIEVC Engineering Protocol. Two such workshops were held in Tegucigalpa, Honduras during the reporting period – October and December 2012.

The final workshop and presentation for the project is March 20-21, 2013. The participants in the final workshop include several senior Honduras government officials involved in the administration of the country's infrastructure. Other international agencies are to be invited including WMO, UNEP, UNDP, World Bank, IDB and GIZ*, a German international funding agency. This workshop will increase awareness of the engineers work on climate change adaptation of infrastructure. It will establish local capacity in Honduras and extend this work from a previous project completed with the Costa Rica Colegio of Engineers and Architects.

The second component involves a review of Honduras construction and procurement standards, policies and procedures in relation to the impacts of climate change by a joint working group of Canadian experts working with Honduran engineers and authorities. The objective is recommend changes and additions to the country's codes and standards as well as policies and practices to ensure climate change is considered in the future. The joint working group met in Honduras in December and January and will complete its work by March 31.

Regional Workshop Training Proposal

A proposal was developed to develop and deliver a one –week workshop on the application of the PIEVC Engineering Protocol as well as methods of climate analysis and future projections. The proposal is to

provide one week of training in San Jose, Costa Rica in partnership with the Costa Rica Colegio of Engineers and Architects for up to 60 engineers and climate scientists flown in from up to 20 countries in Central and Latin America.

It was requested by the International Affairs Branch of Environment Canada, but was ultimately turned down in because of other higher priorities. It has been modified and being promoted as a WFEO project to international financial institutions and United Nations agencies for funding support.

Discussions with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

The GIZ, a large German organization for international cooperation in sustainable development, approached the CEE at aside event at the UNFCCC 2012 Bonn meetings to learn more about CEE's work. A follow-up meeting was organized in late January for a meeting between Chair D. Danyluk and GIZ staff on April 15, 2013 in Frankfurt.

Theme 2 – Engineering and Climate Change Mitigation

This theme focuses on the application of existing technologies and engineering best practices towards the mitigation of climate change through GHG reduction. The Danish Institute of Engineers led a project entitled Future Climate -Engineering Solutions which has evaluated options for greenhouse gas (GHG) reduction using existing technologies and engineering solutions. The United Kingdom Institute of Mechanical Engineers (IMECHE) is now the lead organization for this project.

The Institute of Civil Engineers (ICE) completed a cooperative agreement with IMECHE to co-chair Federation and Committee efforts to support the Future Climate-Engineering Solutions project.

The climate change mitigation working group aims to promote the key role of civil engineering and clean technologies efforts to mitigate climate change and thus reduce GHG emissions. The group strives to create an international pool of knowledge and collaborative group, building upon the extensive network and resources of the Future Climate Engineering Solutions project (<http://www.fc-es.net/>).

- To produce additional country reports for the Future Climate Engineering Solutions Project.
- To advocate engineering solutions for climate change mitigation to the United Nations and WFEO member countries.
- To inform and educate policy- and decision-makers.
- To facilitate the engagement of WFEO member countries to participate in the Future Climate Engineering Solutions project.
- To develop presentation and training materials for use and delivery by CEE members and WFEO member countries to inform and education policy- and decision-makers.
- To collaborate with IMechE and any other partners to help form FC-ES's third framework.
- To successfully host an event or present at WES 2013 in Singapore.
- To send delegation (or at least some representatives) to COP-19.

The group is working with the FC-ES project to create a third framework. Norway and Finland have already offered their support in drafting this third framework. FC-ES has currently identified the World Engineering Summit in Singapore as their next major international event. As such, they are hoping to 'publish' the Third Framework at WES 2013, and are currently negotiating to present at the conference. The FC-ES and climate change mitigation working group joint presence at WES in September will help to

gain more international members for both projects, and produce some national reports and make additional resources available to WFEO members.

Theme 3 – Engineering and Agriculture

This theme is focusing on issues related to elements of the agricultural supply chain in selected regions of the world (including Africa) that can benefit from engineering. The final selection of topics and what work will be undertaken will depend on interests, expertise and availability of the volunteers.

The Task Group Leader and Secretariat prepared a draft action plan that has been circulated widely to solicit members for the task group. Recruitment efforts continued during the reporting period but uptake has been slow. The objective is to have at least one member from each agricultural region of the world, along with members from national members where agriculture is a large share of GDP. Additional subject matter experts will be sought in the subject areas that will be the focus of the committee's work.

The Task Group Leader attended the UNFCCC COP-18 meeting held in late November in Doha Qatar on behalf of WFEO and CEE. Activities and meetings attended there included:

- Participation in the Sixth Focal Point Forum of the Nairobi Work Program on Impacts and Adaptation. This included presenting a progress report from CEE on the WFEO-CEE Action Pledge.
- Representation of WFEO-CEE and participation at a side event of the Future Climate Engineering Solutions project
- Attendance at several side events and workshops including:
 - Workshop organized by the World Bank on Adaptation on the Arab world and impact of climate change on the Arab nations.
 - Putting transport into the climate policy agenda with a focus on Africa. Transport is an important link in the agricultural supply chain.
 - Meeting on agriculture, landscapes and livelihoods to discuss issues on rural development, food security and climate change: which comes first adaptation or mitigation?
 - Side Event on Green Innovation from George Town University and ICTSD for green innovations and implications for climate negotiations

The theme leader met representatives of African Development Bank in Tunis to explore collaboration in the areas of food security, land preservation and water use. The ADB welcomes a partnership initiative as WFEO can provide a good resource of engineers who are expert in such fields. They have informally asked to send a formal letter of an offer of cooperation to the bank president.

Discussions are underway through WFEO Headquarters for collaboration with OECD on a project on food security and rural infrastructure in Africa. The task group is advising on this project and is prepared to take the lead if it becomes one of the mutually agreed projects between the two organizations.

Events in the early planning stages include two workshops:

1. Seminar on the use of salted water on agriculture
2. Workshop on grain storage and waste reduction.

This theme continues to manage the working relationship between the Committee and the Farming First organization. Farming First exists to articulate, endorse and promote practical, actionable programmes and activities to further sustainable agricultural development worldwide. It enjoys the support of 131 organisations representing the world's farmers, scientists, engineers and industry as well as agricultural development organisations.

Theme 4 – Sustainability and Mining

The Society of Mining Engineers, part of the American Association of Engineering Societies, leads this theme and has formed a working group that has wide geographical and regional representation. The group enlarged its membership with the addition of Spyros Papagrigoriou of Greece, who volunteered his services at the meeting in Slovenia. This brings the total membership on the task group to 22 individuals representing 16 countries.

Each of the five theme areas has successfully established their own internal communications methods for their members and goals that include specific tools and work products that reflect the overall purpose of their respective theme areas. The five theme areas include: Environmentally Sound Engineering Practices and Technology; Best Practices in Social Sustainability and Responsibility; Best Practices in Eco-Efficient Use of Resources; Engineering Solutions to Reuse, Recycle and Repurpose Minerals; and Risk Analysis, Mitigation, and Management Techniques.

The Risk Analysis, Mitigation, and Management Techniques theme area will create a tool box to help small to medium sized enterprises in the mining and minerals sector build their capacity for risk analysis, mitigation and management and gain their social license to operate and credibility while simultaneously strengthening their skills and confidence in their ability to apply the risk management techniques and methodologies.

The theme area on Environmentally Sound Engineering Practices and Technology will identify environmental practices and technologies that can support the contributions of mining projects to sustainable development and how these practices and technologies can be introduced and disseminated to small and medium enterprises, including the importance of capacity building in such enterprises.

The theme area Engineering Solutions to Reuse, Repurposing and Recycling of Minerals will identify examples of existing solutions, which enable improved total resource efficiency in existing and future mining endeavors.

Each theme area, led by their co-chairs, is also working on programming for the 6th **International Conference on Sustainable Development in the Minerals Industry to be held in Milos, Greece June 30-July 3, 2013**. The objective of this Conference is to assist the minerals industries in their global transition to sustainable development.

Abstracts have been submitted on topics that reflect the mission and purpose of each theme area. In addition, there will be a panel discussion that discusses Mining Industry Initiatives in Sustainable Development, Engineering Education and Sustainability in Curricula, and Capacity Building and Sustainability in the Engineering Disciplines. CEE Chair and WFEO Vice President Darrel Danyluk will attend this conference and address this last topic.

Theme 5 – International Code of Practice on Sustainable Development and Environmental Stewardship for Engineers

The Review Draft of this document was approved by the CEE to submit to the Executive Board to approve its distribution to all WFEO members for review at the April meeting. It was submitted for inclusion in the Executive Board April 2013 meeting materials.

Theme 6 – Oceans, Coastal and Maritime Issues

A proposal was submitted by Mexico to the Federation in November 2012 to form a standing committee to work on this subject area. The Executive Board referred the request to the Committee to incorporate Mexico's proposed work into the 2012-2015 strategic plan.

Correspondence was exchanged with Mexico representatives. This included a proposal to join the CEE as another theme for a two year period commencing at the General Assembly in September 2013. This proposal is currently under consideration by Mexico.

WFEO-CEE Newsletter

The newsletter is one of the primary means of communication for the work of the committee within the WFEO community as well as externally.

The next newsletter is scheduled for publication in April 2013. It will focus on the theme of engineering and climate change mitigation. The newsletter was in preparation during the reporting period.

WFEO-CEE Website

Further updates to the CEE's portion of the website were provided on a periodic basis.

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WFEO-CEE Secretariat

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