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Evaluation of NRC's Energy, Mining and Environment (EME) Research Centre

EVALUATION REPORT SUMMARY

July 22nd, 2018

National Research Council Canada   Conseil national de recherches Canada

Canada

Prepared by:
Office of Audit and Evaluation
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Approval:

This report was approved by NRC's President on July 22nd, 2018

SUMMARY REPORT

Overall Evaluation Findings

Relevance

- EME is focused on areas that are important to the Canadian economy, it has unique facilities and expertise in Canada, and it is addressing needs of stakeholders in the energy and mining sectors.
- EME can enhance the relevance of its work by better understanding stakeholder needs and the R&D ecosystem within which it operates.
- EME is aligned with federal government priorities related to the environment. The value propositions of EME mining programs need to be revisited to ensure they are contributing to EME's vision related to clean resources and clean technology.

Appropriateness of capabilities

- EME's capabilities support both EME and non-EME programs at the NRC. There were, however, some gaps in expertise and facilities for some of EME's programs.
- EME programs faced challenges with critical mass of human resources, which had a notable effect on the progress made by EME's energy programs toward their objectives.
- The extent to which EME's facilities were used could not be assessed because facility use was not consistently tracked by EME over the evaluation time period.

Scientific Excellence

- EME has notable strengths in several areas, including binder development, hydrothermal technologies, anaerobic digestion, battery materials, electrochemistry, laser-induced breakdown spectroscopy, ultrasonics, wear and corrosion, bio-remediation, bio-mining, and environmental sensing and monitoring.
- EME scientific and technical staff produced research that had a high scientific impact, that is of high scientific quality, and that is recognized nationally and internationally.

Stakeholder Engagement

- Aside from the clients that EME worked with, there was limited awareness of EME and its capabilities.
- EME programs made some progress reaching key stakeholders along the value chain, however, there are important gaps that need to be addressed.

Performance

- EME's mining programs are on track to achieve their objectives, however, the progress made by the energy programs may not be sufficient to ensure they have the desired impact within the program lifecycle. Contributing to this is the breadth of the programs and insufficient resources.
- Despite this, all four of EME's programs had a positive impact on its clients and collaborators, including the development or commercialization of new technologies, growth, increased productivity and decreased costs.
- One of EME's energy programs contributed to initiatives that will impact policy and regulations. The other three programs are conducting research that has the potential to do so in the future.

Recommendations and Management Response

Recommendation 1: EME should continue to increase its understanding of the mining and energy sector, stakeholder needs and the R&D ecosystems within which its programs operate.

Management Response: Accepted

EME, working with its four programs, will identify ways in which it can increase its understanding of stakeholder needs and the R&D ecosystem within which the programs work. This will include updating and executing each of the four program's Stakeholder Engagement Plans with a planned approach.

Recommendation 2: EME should consistently track the use of EME facilities and equipment.

Management Response: Accepted

EME will design and implement a consistent method of facility/equipment tracking.

Recommendation 3: EME should increase awareness of its research capabilities and its programs within the mining and energy sector.

Management Response: Accepted

EME will develop and execute a communication/ engagement plan to communicate its capabilities and programs in the mining and energy sectors. The plan will identify different ways EME will pursue to increase its awareness, as well as indicators of success.

Recommendation 4: EME should ensure the Bioenergy Systems for Viable Stationary Application (BE) program engages a greater number of utility companies, municipalities, provincial agencies and remote communities.

Management Response: Accepted

EME will work with the BE program to increase its engagement with the identified stakeholder groups. This will include updating the program's Stakeholder Engagement Plan to include strategies to increase engagement with the identified stakeholders.

Recommendation 5: EME should ensure the Energy Storage for Grid Security and Modernization (ES) program engages a greater number of material and component companies, Canadian utility companies and government bodies that plan and regulate provincial electricity systems.

Management Response: Accepted

EME will work with the ES program to increase its engagement with the identified stakeholder groups. This will include updating the program's Stakeholder Engagement Plan to include strategies to increase engagement with the identified stakeholders.

Recommendations and Management Response

Recommendation 6: EME should ensure the Environmental Advances in Mining (EAM) program engages the regulatory community to a greater degree.

Management Response: Accepted

EME will work with the EAM program to increase its engagement with the identified stakeholder groups. This will include updating the program's Stakeholder Engagement Plan to include strategies to increase engagement with the identified stakeholders.

Recommendation 7: EME should increase its collaborations with academic institutions.

Management Response: Accepted

In order to increase engagement with universities, EME will prepare and implement a plan to increase its collaborations with academic institutions. As part of this, a proposal will be developed for a collaborative research centre between EME and an academic institution.

Recommendation 8: EME should narrow the scope of its energy programs and accordingly make any necessary adjustments to its activities and value propositions.

Management Response: Accepted

EME will review the current scope of the two energy programs during FY2019, as outlined in the FY2019 operational plan. Consideration will be given to the capabilities and human resources that the programs have access to.

Recommendation 9: EME should modify the value proposition of its two mining programs to ensure:
   a. clear alignment with EME's focus on clean resources and clean technology, and
   b. they are attainable and measurable

Management Response: Accepted

The value propositions of EME's two mining programs will be revised as part of the program renewal process, to be completed through FY2019.
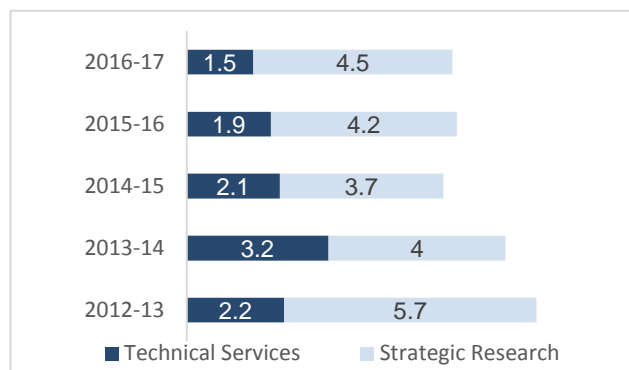
Program Description	Resources

Created in 2012, the EME Research Centre delivers advanced technology solutions to Canada's resource and utility sectors to increase industrial productivity and competitiveness and reduce environmental risk. There are currently four programs within the EME Research Centre: Bioenergy Systems for Viable Stationary Applications, Energy Storage for Grid Security and Modernization, High Efficiency Mining and Environmental Advances in Mining.

To fulfill its objectives, EME targets stakeholders across the entire supply and value chain in the mining and energy sectors, including industry, other government departments and academic institutions. EME also provides a large proportion of its labour to support other NRC programs (40%).

Between 2012-13 and 2016-17, EME's expenditures totaled $124M and it generated $33M in revenue. EME had an average of 177 staff per year, located in Ottawa, the Greater Montreal area and Vancouver.

Revenues ($M)

Year	Technical Services	Strategic Research
2016-17	1.5	4.5
2015-16	1.9	4.2
2014-15	2.1	3.7
2013-14	3.2	4
2012-13	2.2	5.7

Scope and Methodology

The evaluation of the EME Research Centre and its four programs covered the period from fiscal year 2012-13 to 2016-17 inclusive. The evaluation was carried out in accordance with the NRC's approved evaluation plan and TBS policies. The Research Centre and its programs had not been previously evaluated.

Data was collected by NRC's independent evaluation team. The evaluation employed both qualitative and quantitative research methods, including a document and data review, interviews ($n = 36$), market assessment, client survey ($n = 25$) and two peer reviews.