WFEO Model Code of Practice for Sustainable Development and Environmental Stewardship

World Federation of Engineering Organizations
Committee on Engineering and the Environment

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Fédération Mondiale des Organisations d'Ingénieurs

Agenda

- Introduction
- Model Code Principles
- Closing Remarks

What is Sustainable Development?

"Sustainable development is development that meets the social, economic, and environmental needs of the present without compromising the ability of future generations to meet their needs."

✧ Brundtland Commission Report (1987)

- The needs of the world's poor are a fundamental societal challenge requiring engineering involvement
- Population, social organization and technology can impose limits
  - Environmental decline or enhancement
  - Inability or ability to meet current and future needs
- Technology can also be applied to counter some of the negative impacts on the environment

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What is Environmental Stewardship?

"Environmental Stewardship is the prudent use of the finite resources in nature to produce the greatest benefit while maintaining a healthy environment for the foreseeable future"

- Human society is a part of the environment
  - Protecting and enhancing the environment is good for society
- A healthy environment = a healthy society = a healthy economy

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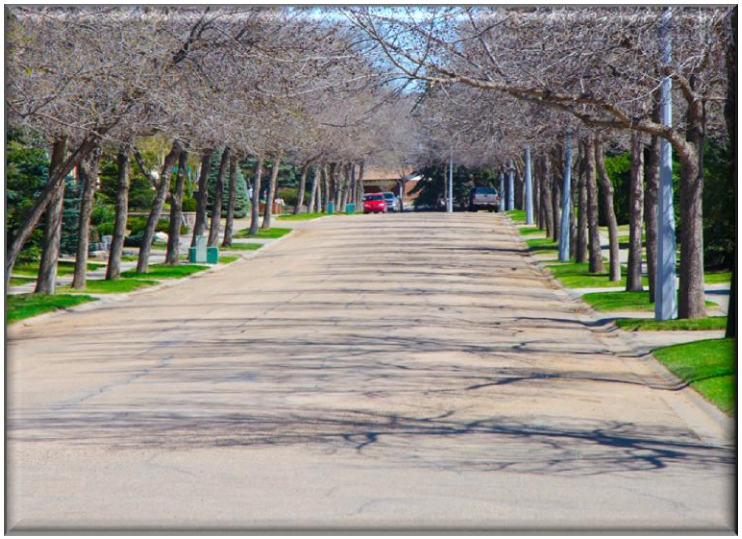
Sustainable Development & Environmental Stewardship are Linked

"Effective environmental stewardship requires all of us to manage natural resources in ways that protect and enhance – rather than compromise – the ability of future generations to meet their own needs"

- US EPA (2005)



- Environmental Stewardship & Sustainable Development meet in the present and carry forward together
  - There can be no sustainable development without environmental stewardship
  - In order for a society to protect and preserve the environment it must be able to engage itself in the effective use of its affordable resources

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Sustainable Development, Environmental Stewardship & the Engineer

"Engineers are involved with two kinds of projects:

- *They design and build projects that meet basic human needs …*
- *They design and build facilities and systems to mitigate environmental problems … "*

✧ WFEO (2002)

- The engineering profession is neutral
- Engineering projects are NOT neutral
- Engineering activities offer many opportunities to pursue sustainable development and environmental stewardship
  - Engineers can advocate and contribute to a positive future through clean(er) technologies
  - Engineers placing more emphasis on technologies and mechanisms that substitute high impacts with lower impacts e.g. renewable energy

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Sustainable Development, Environmental Stewardship & the Engineer

"Engineers are faced with a dilemma. They may not be the decision-maker. They may not share the perspective of the local community."

Three demands on the engineer

1. Sensitivity to local communities
2. Providing robust information to decision-makers
3. Assuming leadership roles when opportunities are presented

The engineer can contribute to a positive future by providing leadership in their area of practice

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The Model Code of Practice

Think Global – Act Local

- The Model Code of Practice identifies ten principles that engineers can follow to establish leadership
- Each Code principle provides context
  - Detailed guidance
  - Explanatory commentary
- The Code principles ….

1. ***Knowledge & Competency***
2. ***Limits to Competency***
3. ***Social Impacts***
4. ***Sustainability Outcomes***
5. ***Costing & Economics***
6. ***Planning & Management***
7. ***Innovation***
8. ***Communication & Consultation***
9. ***Regulatory & Legal Requirements***
10. ***Risk Mitigation***

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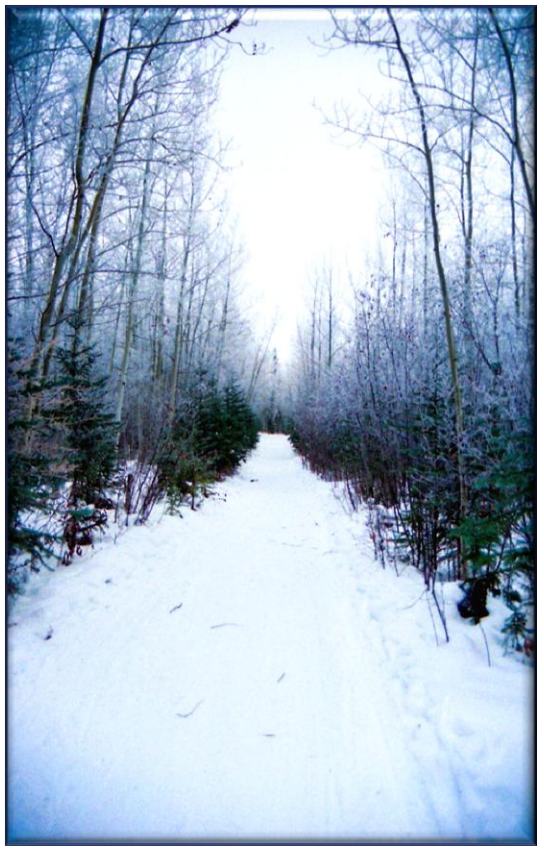
Model Code of Practice 1

Knowledge & Competency

Maintain and continuously improve awareness and understanding of environmental steward ship & sustainability principles



Engineers should:

- Recognize the extent that professional activities affect the environment and sustainability
- Have a working knowledge of sustainability
- Recognize the importance of Environmental Management Systems (EMS)
- Stay informed of major environmental issues
- Maintain expertise and keep up with advancements

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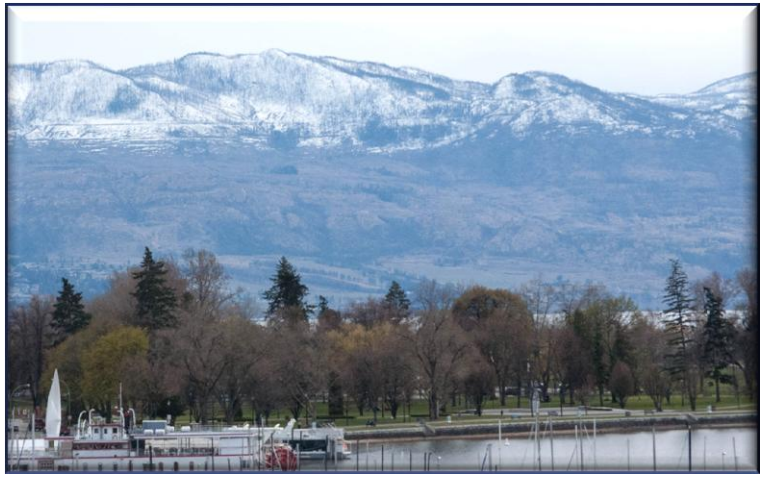
Model Code of Practice 2

Limits to Competency

Use expertise of others in the areas where your own knowledge is not adequate



Engineers should:

- Recognize that environmental issues and sustainability are interdisciplinary in nature
- Undertake only the aspects of environmental work that they are competent to perform
- Seek out and use environmental specialists to provide expert advice on environmental issues
- Consult disciplines outside of engineering
  - Social impacts
  - External economic impacts

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Model Code of Practice 3

Social Impacts

Incorporate global, regional and local societal values applicable to your work

Engineers should:

- Keep a broad perspective beyond local conditions and the immediate future
- Note that local conditions and social impacts influence engineering actions
- Identify the positive and negative effects of proposed actions
- Seek information and input on societal values
- Look beyond initial solutions to better understand broader consequences
- Entertain a healthy skepticism on behalf of the public good

Model Code of Practice 4

Sustainability Outcomes

Implement sustainability outcomes at the earliest possible stage employing all applicable standards and criteria

Engineers should:

- Begin the environmental assessment process at the earliest planning stages of an initiative
- Consider scientific research, engineering design principles and local operating experiences
- Comply with environmental assessment requirements
- Explore, develop and document criteria which reflect sustainability standards
- Recognize the value of multi-disciplinary involvement in decision making
- Identify and promote cost-efficient solutions that integrate social, environmental and economic factors
- Communicate relevant technical, economic, environmental, and social information to decision-makers

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Model Code of Practice 5

Costing and Economics

Assess the costs and benefits of environmental protection and sustainability in evaluating the economic viability of work

Engineers should

- Conduct and economic analysis of their project in comparison to the benefits
- Include all capital, operating, maintenance, commissioning, decommissioning, social and environmental costs into the analysis
  - Include environmental protection and sustainability in life cycle assessment
  - Consider true costs including the use of a raw resources, manufacturing, by-products and end-of-life disposal
  - Recognize that environmental protection and associated costs are integral to project development
    - Costs and benefits of GHG reduction
    - Costs of adaptation to improve resilience to the impacts of changing climate

Model Code of Practice 6

Planning and Management

Integrate environmental stewardship and sustainability planning into life-cycle planning and management of activities

Engineers should:

- Recognize that their projects may have impacts on the environment
- Identify environmental effects and sustainability aspects of a project
- Prevent adverse effects
- Seek opportunities to protect and enhance the environment and its sustainability
- Use an EMS
- Design and operate infrastructure to minimize environmental impacts
- Find innovative ways to minimize the need for resources
- Account for the short, long-term, direct and indirect consequences
- Assess reasonable alternatives
- Monitor the effect of changing climate
- Comply with all relevant legislation, approvals and orders

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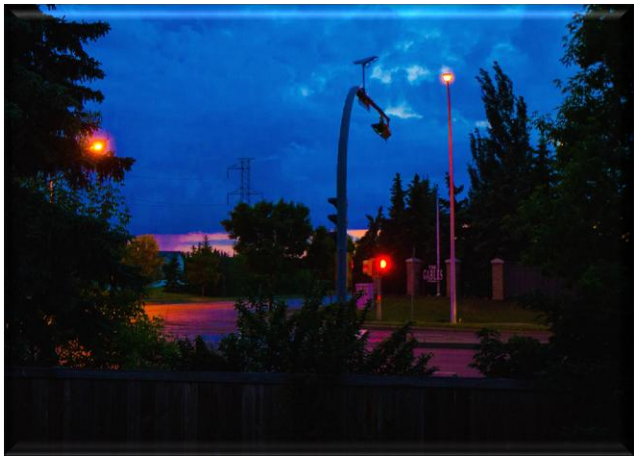
Model Code of Practice 7

Innovation

Seek innovations that achieve a balance between environmental, social and economic factors while contributing to healthy surroundings in both the built and natural environment.

Engineers should:



- Play a key role in transforming science into technology for application in the real world as structured problem solvers
- Recognize that innovative solutions can be reapplied throughout the profession
- Recognize that resources may be limited
- Balance environmental, social & economic factors
- Promote the re-application of good innovative solutions

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Model Code of Practice 8

Communication and Consultation

Develop locally appropriate engagement processes for stakeholders

Engineers should

- Assign a high priority to informing internal and external stakeholders
  - Accountability, inclusiveness, transparency, commitment and responsiveness
- Reach out to all who are affected
- Provide clear, timely and complete information
- Allocate sufficient resources
- Be responsive, accessible and endeavor to understand public and other stakeholder concerns
- Encourage stakeholder involvement
- Recognize need for local, neighborhood, traditional and input
- Document their approach to problem solving
- Immediately advise employers and clients of concerns
- Work with other disciplines
- Share expertise
- Participate in professional societies

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Model Code of Practice 9

Regulatory and Legal Requirements

Ensure that projects comply with regulatory and legal requirements

Engineers should:

- Maintain knowledge of local legal requirements
- Ensure proper documentation
- Manage & assign professional responsibility for both action and omission
- Comply with all relevant legislation, approvals & orders
- Endeavour to go above and beyond standards and regulatory requirements
- Keep authorities aware of environmental effects
- Maintain confidentiality unless otherwise required by relevant laws, regulations, approvals or orders
- Notify proper authorities where they believe that public safety or the environment is endangered
- Apply international or other national regulations, codes or standards judged to be locally appropriate
  - Countries where limited regulatory standards exist

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Model Code of Practice 10

Risk Mitigation

Mitigate risk to minimize environmental impacts

Engineers should:

- Use precautionary, risk assessment, processes to recommend actions to protect, restore & improve the environment
- Address uncertainties in scientific data or incomplete evidence of adverse impacts through risk management
- Understand the consequences of actions and also of inaction
- Provide decision-makers a clear statement of the actions required to protect, restore & improve the environment

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Leadership in Sustainability and Environmental Stewardship

"The engineering profession must lead the way and be seen to lead the way towards a more sustainable future."

- Engineers can work towards better solutions and contribute to the profession's ability to promote sustainability and environmental stewardship

- The World Federation of Engineering Organizations and its more than 15 million engineers worldwide have pledged to engage in sustainable development and environmental stewardship in the practice of engineering

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Questions

More Information

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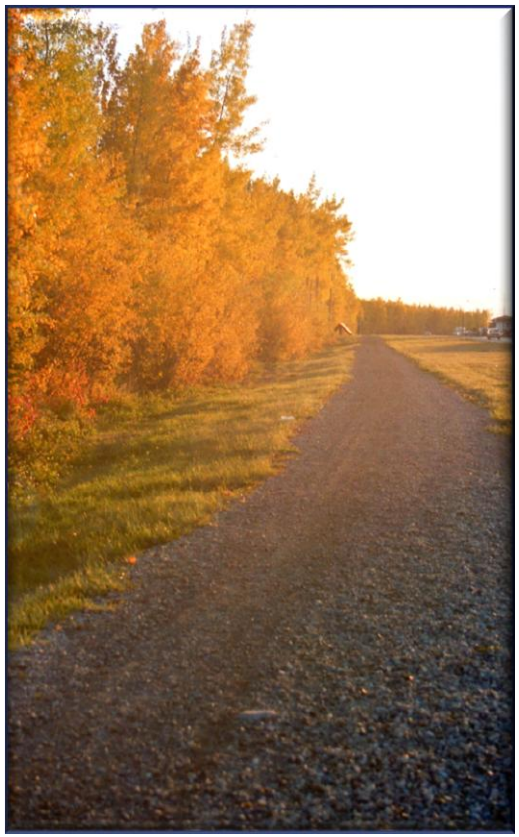

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