
APS1012 Management of Innovation – Final Team Projects, Spring 2012

Green Engineering - An insight into technology, products, processes, policies, and best practices to make our planet livable

When projections for growth in population are considered against the vast amount of resources that are being consumed today, it becomes clear that we will need to be much smarter about how we design and operate those products and systems on which we depend. An introduction to “green engineering” is presented, and its policies and social impacts in different countries including Canada, China and Germany are discussed. The investigation includes the following steps:

- Identify green energy resources
- Demonstrate current green engineering technology
- Evaluate sustainability of green engineering
- Demonstrate the social and environmental impact
- Evaluate internal and external factors such as government policies and regulation
- Demonstrate successful examples of green engineering in different countries
- Provide recommendations for green engineering in Canada

The “greening” of engineering will have significant impacts on society and the environment. Government policies are of key importance to how readily and successfully the public adopt new energy resources, recyclable products and principles of sustainability. Most citizens are showing increasing concern for environmental issues and are support the use of renewable energy resources with less pollution, and governments are backing technological R&D in these areas.

New energy resources and recyclable products are being quickly developed in response to a large and growing market, and because “environmentally friendly” products often earn higher profit margins. Sustainability and social aspects are now considered from the initial design stage of a product or process.

Government approaches to green regulations vary considerably around the world, as they are driven by very different political systems and ideologies. In the United States the federal government codifies green policies as guidelines only; it is the responsibility of each state to set regulations therefore there is disparity across the country. In contrast the German government has an aggressive and consistent approach to reduce pollution that combines direct regulations and marking schemes which allow consumers to compare products on their environmental credentials; Germany has achieved tremendous improvements in terms of energy usage and greenhouse gas emissions. China is currently focusing on raising domestic environmental awareness, but has yet to openly share information with the outside world about its environmental efforts and sustainability. How to maintain rapid economic development while enforcing green policies is still an unsettled question for the Chinese government.