

dence on fossil fuels and strengthen the economic vitality and competitiveness of the Nation. Resource management on Federal land will need to accommodate ecosystem-based practices to balance competing demands, particularly as off-shore Federal lands may face increasing pressure for development.

How the USGS Can Help

The USGS is uniquely qualified to implement this science strategy because of its broad range of expertise, experience in interdisciplinary thinking and action, and proven skills in building customer relationships. The science strategy unites and integrates all USGS capabilities and takes advantage of its strength and position as a nonregulatory Federal agency with national scope and responsibilities.

The USGS will build on its traditional strengths of mapping, modeling, and conducting fundamental research to improve the reliability and accuracy of national and global assessments of



Gold mining operation at the Waihi mining district, New Zealand. The USGS supports research and assessments of minerals, as well as collection of minerals information on a global scale. Photograph by Robert S. Seal, U.S. Geological Survey.

energy and mineral resources. Long-term databases and information summaries will be expanded to include a broader range of related land, water, and environmental concerns and to place a greater

emphasis on environmental consequences of resource use. The USGS, with its expertise in geology, hydrology, biology, and geography is ideally poised to move in this expanded direction.

USGS Science Can Meet the Challenge

The USGS is ready to take action by:

- Maintaining and updating USGS long-term geological and geophysical databases and geochemical baselines used to develop resource assessments.
- Producing, updating, and improving national and global assessments of energy and mineral resources, especially as energy sources diversify and new requirements for rare and scarce materials used by the Nation emerge.
- Developing multidisciplinary approaches to energy and mineral assessments to account for the “life cycles” of resources and the environmental effects of exploration, extraction, and use.
- Developing procedures to evaluate and understand the effects of resource use on ecosystem processes.
- Making USGS assessments and research available to the public and government officials so that science can inform, advise, and engage decisionmakers.
- Continuing to improve and expand geologic, biologic, and hydrologic understanding of assessment methodology for alternative energy resources as the Nation moves to a more diversified energy mix (such as coalbed methane, oil shale, tight gas sands, shale gas, gas hydrates, geothermal energy, uranium, and biofuels).
- Anticipating, identifying, and developing understanding of the occurrence, genesis, and risk associated with using new mineral resources.
- Improving scientific understanding of the origin and occurrence of energy and mineral resource deposits, using this knowledge to improve the accuracy and reduce the uncertainty of resources assessments.
- Developing scientific methods for monitoring and assessing biological and geological carbon sequestration resources, including assessment of interdependencies among land, water, and ecosystem resources that may be affected by carbon management decisions.

A Vision For the Future

Energy and minerals information from the USGS, including national and global resource assessments, remains the standard used by industry and government. Evaluation of alternative energy and mineral resources (including renewable resources) keeps pace with technological developments. Scientists in USGS continuously enhance their understanding of the formation of energy and mineral resources and routinely include environmental and “life-cycle” expertise into studies and assessments.

For Additional Information

U.S. Geological Survey, 2007, Facing Tomorrow's Challenges—U.S. Geological Survey Science in the Decade 2007–2017: Available online at <http://pubs.er.usgs.gov/usgspubs/cir/cir1309>

Also, visit the USGS home page at <http://www.usgs.gov/>