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***CLEARuff*: An integrated assessment model to evaluate environmental and economic impacts of unconventional fossil fuels.**

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The industrial development of oil shale is often indicated as a good option to increase domestic oil supply, reduce oil imports, improve the national balance of payment, and increase energy security. On the other hand, serious environmental concerns represent major obstacles for the growth of a domestic oil shale industry. Water use, wastewater management, greenhouse gas emissions, air pollution, and land use are the main environmental issues related to oil shale production. A comprehensive analysis of the interrelationships between these factors and those of the new energy needs required for production is necessary to avoid serious negative impacts to the environment and the economy. We used the *CLEARuff* (CLimate-Energy Assessment for Resiliency for Unconventional Fossil Fuel) model to investigate the broader impacts of the large scale development of oil shale in a region known as the Western Energy Corridor, an area that comprises parts of Colorado, Utah, and Wyoming. *CLEARuff* is an integrated assessment model for studying interdependencies of energy development, resource requirements and impacts. These interdependencies result from complex processes that involve water, energy, social pressure, climate, economics, regulations, and technical advances. Our model enables assessment of these components with specific analysis of their links and feedbacks because, due to the complex nature of the problem, the interrelated sectors cannot be properly studied or assessed independently. The *CLEARuff* model interface, which can be exported as a web applet, helps analysts, stakeholders, and policy makers to understand and evaluate options for implementation of technologies and to avoid unintended consequences.