

MOUNTAINTOP MINING AND SUSTAINABLE DEVELOPMENT IN APPALACHIA

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Introduction

Sustainable development is defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”¹ There has been considerable debate of late between environmentalists and mining operators concerning the current regulation and operation of mountaintop mining. To those not familiar with the practice, it essentially applies an area mining method to a mountaintop, removing all overburden above coal seams, resulting in full recovery of the resource with the excess or swell spoil material – (rock and dirt) being deposited in engineered fills in hollows to the side (known as hollow fills or valley fills – very similar to highway fills).

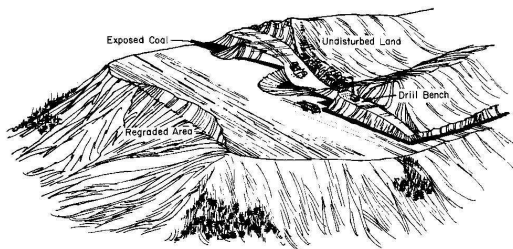


Fig. 1 Mountain Top Mining (Skelley & Loy, 1975)²

Because most of the dialogue has been adversarial and mining’s response is perceived to be primarily reactive instead of proactive, a rift in communication and value systems between the two sides has widened.

Since 1999, the global mining community has been concerned that there is a disconnect between mining practices and the values of today’s society.³ Working through the World Business Council for Sustainable Development (WBCSD), the International Institute for Environment and Development (IIED) was created to review mining practices in a project entitled Mining, Minerals and Sustainable Development (MMSD) driven by the following four goals:

- to assess global mining and minerals use in terms of the transition to sustainable development – its track record in the past and its current contribution to and detractor from economic prosperity, human well-being, ecosystem health and accountable decision-making;
- to identify if and how the services provided by the minerals system can be delivered in accordance with sustainable development in the future;
- to propose key elements of an action plan for improvement in the minerals system; and
- to build a platform of analysis and engagement for ongoing cooperation

¹ *Breaking New Ground: The Report of the MMSD Project*, International Institute for Sustainable Development, 2002, p. 21, http://www.iied.org/mmsd/mmsd_pdfs/finalreport_01.pdf.

² Stefanko, Robert, *Coal Mining Technology Theory and Practice*, Society of Mining Engineers, 1983, p. 316.

³ Task 2 Work Group, MMSD North America, *Seven Questions to Sustainability: How to Assess the Contribution of Mining and Minerals Activities*, International Institute for Sustainable Development, 2002, Preface, p. vii.

and networking between all communities of interest.⁴

As one task of five pursued in the project, MMSD North America developed tests/guidelines for sustainability by focusing on two objectives:

- to develop a set of *practical* principles, criteria and /or indicators that could be used to guide or test the exploration for, design, operation, and performance monitoring of individual operations, existing or proposed, in terms of their compatibility with concepts of sustainability;
- to suggest approaches or strategies for effectively implementing such a test/guideline.⁵

The results of the work produced a framework of seven questions to assess whether a mining operation or project's net contribution to sustainability is positive over time.⁶ The focus of this ongoing study is to investigate whether the use of mountaintop mining for coal provides a net positive contribution to sustainability. The primary focus will be on the alternative post-mining land uses that have been done and other potentially possible uses in Kentucky, Virginia, and West Virginia to show that the future benefits of the value added to the land provide a net positive contribution to sustainability by attempting to answer each of the seven questions proposed as a test for contribution to sustainability.

The Seven Questions

The questions proposed are intended to stimulate dialogue and learning and are not intended to be used as a "grade" or as the decision process itself.⁷ Application of the whole set is essential for the assessment and prioritization, sequencing, or relative weight of the questions are not implied.⁸

Question 1: Engagement

⁴ Ibid.

⁵ Ibid.

⁶ Id. at p. 1.

⁷ *Seven Questions* at p. 6.

⁸ Id. at p. 11.

*Are processes of engagement committed to, designed and implemented that ensure all affected communities of interest have the opportunity to participate in the decisions that influence their own future, and are understood, agreed upon by implicated communities of interest and consistent with the legal, institutional and cultural characteristics of the community and country where the project is located?*⁹

Indicators of whether engagement is effective is whether engagement processes are in place, some dispute resolution mechanism is available, reporting and verification is effective, adequate resources for community of interest participation is available, and informed and voluntary consent of the project is given.¹⁰

In Kentucky, West Virginia, Tennessee, and Virginia, all original mining permits are required by regulations to be published in the newspaper of the greatest circulation in the county where the proposed project is located. The permit is available for review at a particular regulatory site by anyone with interest in the project. This allows for any and all affected communities of interest to comment and give input into the decision whether the project can proceed, whether the project should be modified, or input any factors not considered in the permit which are important to the particular commenting interest. Comments are collected by the regulatory agency for a set time and conveyed to the operator seeking the permit for appropriate response. Once the operator responds, the regulatory agency reviews the response in terms of the comment to decide whether the permit should be issued and the project should be commenced, whether modifications are needed, or whether the permit should not be issued. This process serves as both a means of allowing engagement and as a means of dispute resolution as the operator is subject to a possible hearing on the comments, and regulatory recommendation and approval in the response to the comment.

The myriad of permits required for a mining project and associated regulations are designed to assure that ample evidence is available to support the assessment of trade-offs necessary in the project. At present, the permitting process is designed such that the interests of the various communities of interest are participatory through the regulatory agency and required compliance with regulations. Mining methods such as

⁹ Id. at p. 27.

¹⁰ Id. at pp. 27-8.

mountaintop mining and post-mining land uses are required parts of the permit and thus, the use of these methods and uses by operators is subject to landowner, public comment and regulatory adjustment and approval. Reporting and verification of compliance come in the form of regulatory inspection, oversight, and policing of the operator as the project progresses.

In effect, all communities of interest are invited to become informed of the project through the public notice. If no comments are forthcoming, it is presumed that the interested communities refraining from comment have given informed and voluntary consent to the project.

Question 2: People

Will the project/operation lead directly or indirectly to maintenance of people's well-being during the life of the project or operation and in post-closure?¹¹

Indicators of whether people's well-being will be enhanced by the project are whether the communities of interest have effective and representative organization and capacity; social/cultural integrity is maintained; worker and population health, safety, and well-being are being maintained or improved; infrastructure to meet basic needs are available; all direct, indirect, induced or diffuse effects are being considered and addressed; full social/cultural costs, benefits, and risks have been considered and factored into the project; costs, benefits and risks have been equitably distributed; assurance that responsibilities and sureties for long and short-term well-being have been fully assigned and accepted; and cultural/social stress and restoration are within acceptable reasonable levels.¹²

Mining means jobs. Several generations in several families were miners with some working for the same company at the same mine for generations. Mining is inextricably intertwined with the lives of the people of Appalachia and in many places is the culture of the region.

Still, coal companies operating in the Appalachian region have for decades been vilified as robber barons taking the wealth of Appalachia and leaving nothing but a legacy of poverty and environmental damage. As Barbara Freese noted in her book, "Coal a Human History," the U.S. and Great Britain owed their

rapid industrial growth and economic base to their respective coal industries that fueled these economies during that growth in the past.¹³ The U.S. still relies on coal for its economic base, of which the Appalachian coalfields are an important component.

In recent years the rise of large surface mines in Appalachian, particularly Mountaintop Mining (MTM) operations, have been vilified by the environmental community as destructive, forcing people from their homes, destroying the land and water forever. This image has been conveyed to the public across the country, resulting in politicians, churches, religious organizations, and many others condemning and asking for an abolition of the practice of mountaintop mining. There is another side to this story.

Mountaintop mining has been conducted in the central Appalachian region for decades. The mining practice was even refined and encouraged by federal research efforts and regulatory agencies in the 1970's. At the time it was initially practiced, there was not much thought given to the post-mining land uses. However, over time landowners, some whom were mining companies, realized the mining method was creating a valuable resource for central Appalachian region, i.e., useable land, in a region that had a short supply of land, which could be developed.

Many have compared central Appalachia to other Appalachian regions that have thrived and pointed to the coal industry as the villain holding back development potential in the area. They point to areas and cities such as Asheville, North Carolina, or other major cities that are in the region. While similar, topography between regions in Appalachia also differs. While mountains are prevalent in Eastern Kentucky, West Virginia, and western Virginia, the valleys are so narrow that potential for development is limited as opposed to the valleys on which Asheville, North Carolina was built. True there may be some blame to be shared by the coal industry and larger landowners, but there is enough blame to be spread around to all parties. Failed government social engineering programs from the 1960's have left an area with residents who are dependent upon government subsidies. Drug use has become prolific and a drug culture still exists.

¹¹ Id. at p. 31.

¹² Id. at pp. 31-37.

¹³ Freese, Barbara, *Coal a Human History*, Perseus Publishing, 2003, p. 13.

Analyzing the root causes of these problems is beyond our capacity as engineers. However, it is clear to us that blaming the coal industry and large landowners is a smokescreen for other problems. Success stories in the Appalachian region are generally in areas where there is good infrastructure and roads that make the areas attractive for development. Only in recent years has the central Appalachian region opened up with new highways crisscrossing the region making the travel to the region as easy as any other part of the country. The derivative benefit of these new highways and the new opportunity of developable land have changed the potential economic climate. Reclaimed mountaintop areas also open up tourism possibilities in the region, with land that can now be developed into golf courses, mountaintop retreats, fish and wildlife areas, and now large vast acres that can be open for the outdoor enthusiasts; including ATV users, horseback riders, etc.

Critics of mountaintop mining have also used the argument that only so much land can be developed and no mountaintop mining should be allowed unless there is designated use approved and financed upfront. Of the majority of the mountaintop developments that have taken place in recent years, some are on areas where development was not contemplated. Development was an afterthought and added benefit. The representative post mining land uses found in Table 1 below are examples of both planned and unplanned value-added development. The benefits of the projects in Table 1 will continue for generations into the future. Now that the potential has been realized, other areas can be mountaintop mined and held in reserve for future uses with greater planning from the outset of the mining project.

Table 1. Representative Post Mining Land Use Projects¹⁴

| | |
|--|---------------------------------------|
| Post Mining Land Use Projects in West Virginia | Twisted Gun Golf Course, Mingo County |
| | Mt. View High School, McDowell County |
| | FBI Complex, Clarksburg |
| | Pete Dye Golf Course, Bridgeport |
| | New Hope Village, McDowell County |

¹⁴ Rusk, George A. and Gardner, J. Steven, *Mountain Top Mining, New Challenges and New Opportunities*, Eastern Mineral Law Foundation, April 2004, p. 9.

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| | Knights of Columbus Community Park, Tucker County |
| | Davis Cemetery |
| | R.C. Byrd High School, Harrison County |
| | Logan County Airport |
| | Southwest Regional Jail, Logan County |
| | East Pointe Mall Area, Harrison County |
| | Mountain Greeneries, Fayette County |
| Post Mining Land Use Projects in Kentucky | Free-Ranging Elk Mountain Region |
| | Big Sandy Regional Airport, Martin County |
| | Wood Fabrication Plant, Boyd County |
| | Wildlife Management Area, Perry County |
| | Hatcher Field Airport, Pike County |
| | Julian Carroll Airport, Breathitt County |
| | Wendel H. Ford Airport, Perry County |
| | Stonecrest Golf Resort, Floyd County |
| | Industrial Parks, Hazard and Perry Counties |
| | Corrections Institutes, Morgan and Martin Counties |
| | Otter Creek correctional Center, Floyd County |
| | Housing Developments |
| | Appalachian Regional Hospital, Perry County |
| | Shopping Centers |
| Athletic Complexes, Letcher and Pike Counties | |
| Veterans Nursing Home, Perry County | |
| Post Mining Land Use Projects in Virginia | St. Mary's Hospital |
| | Norton Elementary School |
| | Nortal Community Hospital |
| | Wise County Community Fairgrounds |
| | B.A. Mullican Flooring Plant, Blackwood |
| | Lonesome Pine Airport |
| | Buchanan County Park Air Mall |
| Wal-Mart Shopping Center, | |

| | |
|--|-----------------------------------|
| | Norton |
| | Mountaintop Golf, Buchanan County |
| | Grundy Airport |
| | Red Onion Prison, Clintwood |

Question 3: Environment

*Will the project or operation lead directly or indirectly, to the maintenance or strengthening of the integrity of biophysical systems so that they can continue in post closure to provide the needed support for the well-being of people and other life forms?*¹⁵

Indicators of whether the environment will be maintained or enhanced are whether ecosystem function, resilience, and self-organizing capacity will be maintained or improved over the long-term; the capacity of the project-affected renewable and non-renewable resources will be maintained or improved such that the current and future generations' needs will be met; full costs, benefits, and risks to the ecosystem have been identified and factored into the project; assurance that responsibilities and sureties for long and short-term ecosystem well-being have been fully assigned and accepted; physical, chemical, and biological stress imposed on the ecosystem by the project do not threaten the function, resilience, and self-organizing capacity of the biophysical system and actions are taken to ensure the continuing integrity of biophysical systems.¹⁶

The evolution of mountaintop mining as being advocated by many activists' groups, now with the support of many national environmental organizations, and even religious groups, would be a true waste of natural resources. Natural resources in the ground that provide energy and raw materials are also a natural resource of a lost future opportunity for the landowners, potential owners, and future economic stability for a region.

Recent research at the University of Kentucky has shown that altering the reclamation and minimizing compaction on mountaintop sites greatly enhances the potential for tree growth, making mountaintop sites areas for renewable resources.

Another innovative use that has been developed is the placement of windmills on reclaimed mountaintop mine sites to produce

wind energy as a renewable energy source. It is conceivable to place solar collectors at such sites as well when the economics of solar energy are proven.

Many specialists in government and industry have had a "golf course mentality" concerning reclamation. That is, the reclaimed surface of the land should be graded smoothly with little visible rock. This is a very difficult task and adds significant cost to reclamation. As a result of the constant tracking back and forth of equipment, reclaimed mine spoils become more compacted. In theory this has impacted tree growth on these areas, resulting in small, slow-growing trees. Recent research has shown minimal compaction allows deeper root penetration and more rapid growth, vastly accelerating the growth of trees; leaving marketable timber in a much shorter time period. The resulting land surface gives the appearance of a rough rubble strewn surface, but this may be, in fact, a more natural environment.

Natural erosion processes formed the Appalachian Mountains. As the flow of water across the land eroded the hollows and valleys over the eons, mountains resulted. In fact, in many areas the natural surface is rubble strewn with rock that have broken over time, as the water courses eroded the softer materials, often leading to cliffs in many areas. The Surface Mine Reclamation Control Act of 1977 (SMCRA)¹⁷ dictated reclamation to approximate original contour (AOC). AOC has very little or scientific and technical justification other than aesthetics. An argument could be made that leaving high walls in the mountains would result in a more stable environment, more conducive to tree growth and wildlife. While this aspect of law is unlikely to be changed over time, it does give one pause to think.

Still, much of the regulation born of SMCRA is designed to guarantee that all short and long-term environmental costs, benefits, and needs are addressed to the satisfaction of the regulatory agencies tasked to police such issues. Bonding requirements are based on the cost of reclamation to satisfy the regulations protecting the environment in the short and long-term. Before the permit is issued allowing mountaintop removal, all environmental needs must be satisfied.

Question 4: Economy

¹⁵ *Seven Questions* at p. 39.

¹⁶ *Id.* at pp. 39-41.

¹⁷ 30 U.S.C. § 1201.

*Is the financial health of the project/company assured and will the project or operation contribute to the long-term viability of the local and regional economy in ways that will help ensure sufficiency for all and provide specific opportunities for the less advantaged?*¹⁸

Indicators of whether the economic well-being is maintained or enhanced are whether project or operation targets are achieved; mining and refining are efficient; the project is making an economic contribution to the local, regional, national, and international economy; community and adjacent regional economic targets are met; and a net economic contribution to governments and broader society is being made.¹⁹

For the most part, in the Central Appalachian Region, pre-mining land use would be unmanaged forest.²⁰ The approved list of alternate post-mining land use includes residential, commercial, industrial, institutional, educational, recreation, fish and wildlife, agricultural, or even managed timberland.²¹ A listing of post mining land uses achieved is found in Table 1 above. The nation has seen a rapid increase in demand for new housing in recent years, fed by fast population growth, new immigration and easier credit. Some rural Kentucky counties have seen small increases in population from retirees fleeing cities for a rural lifestyle or farmers from other states seeking cheaper land.²² The West Virginia Disaster Recovery Board concluded in 2002 after severe flooding and damage to communities in Southern WV that entire towns may need to be moved out of the flood plains to continue to be viable.²³

The Kentucky Coal Association recently did an informal survey of the Property Valuation Administrators (PVA)²⁴ in the eight largest coal-producing counties. The survey found: typical

undeveloped mountain property is valued at \$100-150 per acre, with the value growing to \$250-300 per acre for undeveloped land with mineral rights; identified sales of reclaimed MTM sites in excess of \$10,000 per acre; in Bell County, Kentucky a 500-acre tract recently sold for almost \$2000 per acre; Floyd County, Kentucky reported lots on a MTM residential golf course development were selling for \$40,000-\$50,000, the most expensive in the county.²⁵

As was stated previously, both the United States and Britain rely on coal for the basis of electrical power generation. Kentucky owes its record as having the lowest electrical power rates to the mining and use of coal in Kentucky. Lower rates mean that Kentuckians can spend the dollars saved on other needs to help diversify the economic base of Kentucky.

Question 5: Traditional and Non-market Activities

*Will the project/operation contribute to the long-term viability of traditional and non-market activities in the implicated community and region?*²⁶

Indicators of whether traditional and non-market activities are maintained or enhanced are whether the activity/use level is maintained, and traditional cultural attributes are maintained by the community in question.²⁷

Hunting and gathering were traditional activities in the Appalachian area prior to the introduction of mining. Kevin Houston, a longtime resident of southeastern Kentucky, can remember hunting trips with his father who said that before the mines came, game was scarce. Once the mines came and reclaimed their land, however, the amount of game became abundant such that it was rare to not be able to see a deer, turkey, or elk on any visit to the forest. Many reclaimed lands are managed in conjunction with State and Federal Fish and Wildlife Services to create wildlife habitat and conservation control areas. Re-introduction of elk and turkey on reclaimed land in the Appalachian region have been successful enough to allow controlled hunting of both species previously harvested in the region down to dangerously low numbers with elk, in fact, being non-existent in the region prior to the re-introduction efforts.

¹⁸ *Seven Questions* at p. 43.

¹⁹ *Id.* at pp. 43-45.

²⁰ *Mountain Top Mining* at p. 16.

²¹ *Ibid.*

²² *Ibid.*

²³ *Mountain Top Mining* at p. 17, also, *Lexington Herald Leader*, August 28, 2002, p B7, "West Virginia Study Says Towns Aren't Viable" See also, *The Wall Street Journal*, April 15, 2003, p. A1, col. 6, "Growing Scarcity of Land Alters Home economics; Building Boom and Constraints Cloud Dream of Owning, Add Volatility to Prices; A \$160 Million Wager in Vegas" Patricia Barta.

²⁴ *Mountain Top Mining* at p. 17. The survey reference was an informal survey conducted by Bill Marcum, Vice President of the Kentucky Coal Association and witnessed by J. Steven Gardner.

²⁵ *Ibid.*

²⁶ *Seven Questions* at p. 46.

²⁷ *Ibid.*

Question 6: Institutional Arrangements and Governance

*Are the institutional arrangements and systems of governance in place to provide a reasonable degree of confidence that the capacity to address project or operation consequences will continue to exist through the full life-cycle including post closure?*²⁸

Indicators of whether institutional arrangements and governance address project consequences throughout the life of the project are whether there is an effective mix of legislative rules, market incentives, voluntary programs and cultural norms in place; there is capacity in place to address the consequences of the project for the life of the project; that an adequate set of resources will be set aside during the project to ensure a smooth transition to an acceptable post-closure condition for the community that remains; and confidence that commitments made will be fulfilled.²⁹

After mining, the land must be returned to approximate original contour unless an exemption is approved. Section 515 of SMCRA provides an exemption to allow for industrial, commercial, residential, or public use deemed to constitute an equal or better economic or public use.³⁰ This allows for mining companies to plan post mining land uses that could potentially fit the economic and social needs of the local community while, as was mentioned in the answer to question 3 on the environment, all the plans for both the post mining land configuration and ongoing operations must be approved by the regulatory agencies tasked to police such issues. Regulations promulgated by state legislatures are designed to address most if not all of the issues important to the various communities of interest yet still allow productive use of the resources available for both the current and future generations.

Market incentives stem from the landowner's benefit of the greater value of the land discussed in question 4 on the economy. A market incentive on the part of the mining company is the potential decrease in reclamation cost by allowing the land to remain as gently rolling as opposed to hauling, placing, and stabilizing material on such a large scale.

The opportunities abound for voluntary programs when the land is allowed to be changed to provide benefit to various communities involved. Whether it be working with the state or federal fish and wildlife agencies to create new and better wildlife habitats and conservation areas or a recreational site for the benefit of the local community, no opportunity would be available without usable land.

The list of representative post mining land uses in the section answering question 2 on people are success stories showing that local communities in Appalachia have the capacity and resources to make good use of the usable land mountain top mining provides. While not all mountain top sites are developed, most of the successful uses were not pre-planned.

Mike Whitt, Executive Director of the Mingo County Redevelopment Authority, is developing a Land Management Master Plan for Mingo County, West Virginia that he hopes will be modeled by neighboring counties. His work has involved meetings with all the agencies and communities of interest involved with future land use planning including environmentalists, local and state government, utilities, mining companies and land companies. His goal is to plan utilization of land that will be and has been mountain top mined in an effort to create more development while at the same time lower the cost associated with such development. For example, by working with the various parties involved, a road project that is projected to cost \$400 million is now projected to cost \$60 million by coordination with a mining company to do the earthwork associated with the road base up to the specifications of the transportation department. It would cost too much for the local and state government to do the same work without the development opportunities afforded by coordination and planning of post mining land uses of mountain top mining areas.

Question 7: Overall Integrated Assessment and Continuous Learning

*Does a full synthesis show that the net result will be positive or negative; will there be periodic reassessments?*³¹

Indicators of whether overall the project net result is positive are whether all reasonable project alternatives have been considered; a

²⁸ Id. at p. 47.

²⁹ Id. at pp. 47-48.

³⁰ 30 U.S.C. §1265 (e) (Section 515 (e) of SMCRA).

³¹ Id. at p. 49.

strategic level review has taken place to confirm the project is needed; a synthesis has been completed and periodic reassessment is in place; and a commitment has been made to continuous learning and improvement.³²

As one can see by the answers above, it is clear that the benefits of innovative, higher, and better uses of the land allowed due to mountain top mining provide for both the current and future generations in Appalachia. Critics worry that mountain top mining will level the mountains of Appalachia and destroy the environment, taking a hardened stance to say that any mining whatsoever should not be allowed. However, according to the Environmental Impact Statement of Mountain Top Mining, in a 12 million acre study area including 59,000 miles of streams, only 6.8% of the acreage has been or could be affected by mountain top mining. 1,200 miles of headwater streams, or only about 2%, have been or will be directly impacted by mountain top mining. Given the benefits touted by the answers to the questions above as a trade-off of, at best, 6.8% impact, it is obvious that the progressive stance held by the mining and local communities clearly presents a win-win-win situation for utilization of land changes produced by mountain top mining.

Conclusions

Many in the environmental community have stated sustainable development and the coal industry in the Appalachian region is an oxymoron. We contend there is a strong case that today's progressive mining industry is, indeed, taking care of the needs of present and creating opportunities for future generations. This is clearly evident by the preponderance of the developments taking place in the Appalachian region that are creating jobs, living spaces, and recreation for this and future generations. This truly is one of the best examples of sustainable development, not only in the United States, but the world.

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4. Rusk, George A. and Gardner, J. Steven, *Mountain Top Mining, New Challenges and New Opportunities*, Eastern Mineral Law Foundation, April, 2004.
5. 30 U.S.C. § 1201.
6. 30 U.S.C. § 1265 (e).

³² Id. at p. 49-50.