A Sustainable Development Framework for Coalbed Methane Development

Luke Danielson
Pendergast Sarni Group LLC
Denver, Colorado

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Luke Danielson has a broad background in environmental and social issues in natural resource development. Prior to joining Pendergast Sarni Group, Luke was the Project Director for the Mining, Minerals and Sustainable Development (MMSD) Project, an independent two-year process, begun in April 2000, of consultation and research with the objective of understanding how to maximize the contribution of the mining and minerals sector to sustainable development at the global, national, regional and local levels. Through this process, MMSD issued its Report, and a series of Working Papers, which among other things proposed a clear agenda for global change in the minerals sector. MMSD was managed by the International Institute for Environment and Development in London, under contract to the World Business Council for Sustainable Development.

Prior to the MMSD Project, Luke was Director of the Mining Policy Research Initiative, a project of the International Development Research Centre, which conducts and promotes research into the role of mining in economic and social development in Latin America and the Caribbean. Previously he was Visiting Professor at the Faculty of Law of the University of Chile, where he taught courses in environmental law and environmental management in the mining industry.

Luke has been a partner in several US law firms. His practice has concentrated on environmental litigation. He was also a member of the Colorado Mined Land Reclamation Board, the agency that regulates the environmental aspects of mining in Colorado, and was three times its Chairman. He conducted an inquiry for the state into the causes of the regulatory and financial failures at the Summitville Mine, and helped to lead the multistakeholder process that strengthened the state's laws and regulations.

He has been active in management or as a lawyer for a number of non-governmental organisations. He has undertaken consulting projects in the strengthening of environmental law and management for the Chilean Ministry of Mining, the Chilean national environmental agency, the Cuban Ministry of Science, Technology and the Environment, and the Chinese Ministry of Geology and Mineral Resources among others. Luke served as Chairman of the Board of Directors of the largest nonprofit community recycling company in the United States. He has advised the President of the World Bank, the Interamerican Development Bank, and a number of energy and natural resource corporations on environmental and social issues of development. He has served on numerous boards, committees and panels related to conservation, natural resources, mining and energy.

He has also taught courses on environmental and natural resource management, environmental issues in the mining industry, and international mineral development at university faculties in the US and South America. He has written on a number of subjects including public participation in natural resource decision-making, environmental impact assessment, and mine closure and reclamation.

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ROCKY MOUNTAIN MINERAL LAW FOUNDATION
SPECIAL INSTITUTE ON REGULATION AND DEVELOPMENT OF COALBED METHANE

INTRODUCTION

Coalbed methane is a resource with important potential. Whether that potential is realized depends heavily on the framework in which that resource is developed.

The goal for development of any resource – particularly one which is in large part publicly owned – should be maximising human welfare in the long run. This objective is particularly important in the case of depletion of a non-renewable resource such as coalbed methane. Achieving it requires that at the end of the day the total fund of capital available to society and the individuals within it is greater than it was at the outset. But it also requires an understanding that the available capital on which we all depend takes a number of forms – that natural capital and human capital, for example, also need to be counted in the equation.[1] There are many examples of natural resource development that have by this measure been successful; there are also many which have proven unsuccessful.

The promise is use of coalbed methane to create capital that will continue to yield benefits as the resource is depleted: better educated people, stronger communities, useful infrastructure, more productive ecosystems. The threat is a short sighted development that squanders and irreplaceable resource and leaves depleted ecosystems, destabilized communities, and useless capital equipment.

Whether our actions today to develop coalbed methane will ultimately prove to be successful or unsuccessful depends in large part on our ability to create an enabling framework that allows economic incentives and competition to function effectively, while insuring that other forms of capital are protected and enhanced in the process. That framework is in many ways the focus for this Special Institute which comes at a time when many of the elements of the regulatory system are still emerging and important questions are unanswered.

All economic activity takes place within a framework. Part of this framework is provided by law: the Constitution, statutes, regulations, and judicial decisions, and the public institutions that enact, administer and resolve disputes under these provisions. These broad systems that apply to everyone shade into the rules created by private agreements such as leases, contracts and conveyances, and private dispute resolution mechanisms such as arbitration. These in turn are closely related to non-legal but very

important customs and social conventions such as customary trade practices, expectations based on course of dealing, and socially accepted ideas of what is fair or appropriate behavior. In total, all of these things combined are sometimes referred to as a *system of governance* for an industry or economic sector.

But what is the set of ideas that can orient the activities of the public actors who are so important to establishing the parameters of any framework, and those who seek private economic benefit from it, and those who are in one way or another affected by it? Surely the idea of a shared framework has to be based on some set of shared values or ideas; some vision of where society and individuals are going and how to get there.

There has been considerable interest in the body of ideas referred to as sustainable development as a potential organizing principle to guide both the broad framework and the activities of companies, individuals, and other organisations within that framework. In a relatively new and growing industry such as coalbed methane development, where much of the framework is still in development and there are many unanswered questions, the need for some set of orienting principles may be particularly acute.

Sustainable development offers multiple potential benefits as such an organizing concept. Among these are:

- A useful and sensible framework for officials to make tradeoffs among competing values and priorities.
- A way for companies to build business value.
- A way to ensure that the use of a nonrenewable resource leaves society better off when we are done.
- Ways to manage inevitable conflicts in a manner that reduces transaction costs and comes to better results.

I. BASIC CONCEPTS

The idea of sustainable development is not new. It was given wide exposure by the work of the Brundtland Commission,[ii] accepted by virtually all governments in the 1992 Rio Declaration, and again endorsed at the recent World Summit on Sustainable Development in Johannesburg.[iii] This is not the place for a history of the idea of sustainable development.[iv] But certain basic concepts are important to the argument.

The Brundtland Commission definition is still widely used and accepted:

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

From this definition and considerable subsequent thinking it is possible to derive perhaps five core ideas:

- Sustainable development is in part about *development*; meeting the economic needs of the present generation.

- Human welfare depends not just on economics. Quality of life is also critically dependent on social development.

- Sustainable development is about meeting everyone's basic needs. Benefits need therefore to be distributed as equitably as possible.

- Development is not sustainable if it does not respect ecosystem limits.

- Our current actions must build the basis on which future generations can meet their own needs.

These general principles are more easily subject to quantitative analysis if the human resource base is regarded as divided into a series of at least potentially quantifiable capital stocks.

> "The idea of 'capital' lies at the heart of sustainable development. This goes well beyond the common idea of financial capital and has five main forms:
>
> - *Natural capital,* which provides a continuing income of ecosystem benefits, such as biological diversity, mineral resources, and clean air and water;
> - *Manufactured capital,* such as machinery, buildings, and infrastructure;
> - *Human capital,* in the form of knowledge, skills, health and cultural endowment;
> - *Social capital,* the institutions and structures that allow individuals and groups to develop collaboratively; and
> - *Financial capital,* the value of which is simply representative of the other forms of capital."[v]

The central idea is clear: activities that build these capital stocks are consistent with principles of sustainable development. Activities that detract from them leave us as a society worse off and are inconsistent with principles of sustainable development. The framework for development therefore needs to provide means to ensure that activities do not accumulate one form of capital at the expense of an impermissible drawdown of other forms of capital.

One other concept is important to the analysis. This is the idea of *scale.* Sustainable development cannot be measured on a single scale. A usable concept is that actions must be judged on three scales: *locally,* where both positive and negative impacts are often (but not always) most evident; *nationally,* where the sovereign adopts many important policies and laws; and *globally,* where in a globalized world, some of the problems have to be solved.

These ideas are highly relevant to lawyers. As will be seen below, these general concepts can be refined into some very specific tools that can guide business

behavior, help bring coherence to laws, policies and regulations, and help those affected by development steer that development into channels that create more positive and less negative externalities.

II. DEVELOPMENT OF NONRENEWABLE RESOURCES

Development of a nonrenewable resource poses some special challenges for sustainable development. In general, most of those who have examined this issue in depth have concluded that use of nonrenewable resources is consistent with principles of sustainable development, provided (i) that there is an important need for them; and (ii) that the rate at which they are used is slower than the rate at which substitutes are becoming available.[vi] The clearer these eventual substitutes are and the more vigorously they are being pursued, the more the nonrenewable resource can be developed with confidence that it is not leading us into a very uncomfortable future box.

These issues can be termed *need* and *availability*. They determine the rate of use that is consistent with sustainable development, and the time scale on which substitutes must be in place.

Existence of a market demand is an important element of analysis of *need.* If the market is free of subsidies and there is no market demand, development will certainly be problematic. But need is more complex than this. There may well be people who would like to use whale oil to light their homes, and are willing to pay a price at which an entrepreneur could make a profit producing it. But we have made a social decision that they do not *need* this commodity. There may be people who have trouble keeping warm this winter but who cannot afford to buy the coalbed methane they *need* to meet this most basic of human requirements. It is therefore clear that what constitutes *need* requires a more sophisticated analysis than simply to say that market demand equals need. The elements of that analysis have been identified and are known.[vii]

Similarly, physical availability of coalbed methane is a key part of the question of *availability,* but far from the whole story. There is some uncertainty about the size of the physical resource, and varying estimates about how much coalbed methane remains to be discovered.[viii] There is also uncertainty about what part of that resource can be produced with current technology, and the extent to which future technology will make it possible to produce more of the physical resource. And there is also an acute debate about when and under what circumstances any increase in financial capital may be more than balanced by a decrease in natural or other forms of capital. If there is physical coalbed methane in Yellowstone National Park, or where poor quality produced water cannot be disposed of without unacceptable damage to ecosystems, it may be *unavailable* in practical terms regardless of its physical existence.

This paper is not the place to attempt a full scale analysis of these questions, which have received a good deal of attention from others.[ix] It is simply necessary to underline that sustainable development of the resource requires both more intensive research and a broader consensus on the appropriate lines to follow. While it may be too much to ask for agreement among all actors in the debate, certainly a broader

consultative process could lead to some convergence of views, making the task considerably easier for policymakers.

II. MAKING DECISIONS

The world has learned through experience that sustainable development cannot be fostered successfully by rigid 'top down' approaches. Command economies have in general not produced increased well being at a rate satisfactory to their citizens. And they have an alarming tendency to produce environmental disasters, particularly where they are characterized –as command economies typically are – by lack of transparency about what is being done.

Sustainable development seems closely linked to ideas of individual autonomy, economic freedom, and ordered liberty: individuals pursuing their own interests within a set of general rules designed to ensure that individual goals can be realized in ways not detrimental to the general welfare. Economists might see this as a society in which external costs and benefits are internalized: economic actors pay the true cost of their activities, and are rewarded for creating positive benefits for others.

A key to such a system seems to be a set of checks and balances. As Nobel Prize winning economist Amartya Sen has observed, there have been no major famines in countries which have a free press and an independent judiciary.

Checks and balances require transparency: that key information is generally available,[x] and that decisions be taken openly, so that the public – the ultimate arbiter in a democratic system – can see what is being done and how the system is working.[xi]

Successful approaches also require more extensive public participation in decisionmaking, for a variety of reasons. First, open debate is the best available mechanism for identifying mistakes or giving innovative ideas a hearing. Second, there is no data base that tells us about each and every one of the assets we are seeking to protect and increase, or how a proposed action is likely to affect them. The more broad the participatory process, the more likely decisionmakers are to become aware of all the opportunities and the risks they are charged with managing. Third, the process can be an excellent form of education: a way to share this information among the many interested parties who may inn ordinary circumstances not be in communication with each other. Fourth, if we are to rely heavily on voluntary action, experience shows that people are much more likely to act voluntarily if they feel they have had a say in defining the program.

Finally, stability of policy is important to effective development. And stability is best insured when the basic elements of policy are broadly understood and agreed. When policy is imposed by one set of leaders without consultation, it tends to be reversed by other sets of leaders. This kind of instability of the legal framework is a deterrent to investment, particularly the kind of long term investment that characterizes the natural resource industries.

Consultation is not a 'one size fits all' remedy. Not all stakeholders are interested to the same degree; not all decisions are of equal importance; and not all processes should be the same.[xii]

III. A CHECKLIST OF ISSUES

The recently concluded Mining Minerals and Sustainable Development Project was the broadest effort undertaken to date at research and consultation in the minerals industries.[xiii] The project involved not only over 100 contracted research tasks, but an extensive process of consultation in which several thousand people worldwide participated.[xiv] While MMSD did not extend to coalbed methane, the framework of issues may be a useful first cut on the issues that should be considered in devising a sustainable development framework for coalbed methane development.
The project developed an eight part framework for sustainable development in the minerals industries. Each of those major sets of issues will be addressed in turn.

The objective is to identify the issues, not necessarily to resolve them. In many cases the issues are complex, or require additional research. But this may serve as a form of 'to do' list for the creation of a sustainable development framework for coalbed methane.

Some but far from all of this list is directed at government. There are actions that are vital but need to be taken by companies, communities, nongovernmental organisations, unions or others. When these various actors are pursuing their own interests in the framework of a shared goal of sustainable development, they can maximize the positive externalities of development.

Experience in a number of industries indicates that voluntary industry initiatives can be effective in raising the standard of performance. But it also seems to indicate that the effects are felt most in the best managed companies who are industry leaders, and that there is a need in many areas for a robust 'floor' on performance to deal with the industry laggards.

This list is merely indicative. If there is one thing that experience with application of sustainable development teaches it is that those most closely involved are those who are most knowledgeable about the problems: there is no substitute for consultation.

But even such a preliminary list, developed based on experience and consultation in a closely related industry, may have some value to practicioners.

A. A Viable Coalbed Methane Industry

A minimum requirement for sustainable development of coalbed methane is that it creates opportunities for success for the people and companies who engage in it. If it is unprofitable for companies or destructive to the people who work for them, financial and human capital will be eroded. In a competitive economy there is no guarantee of success. The legal framework for the industry can only ensure that there is a realistic opportunity for success for those whose capital or labor make the industry go.

Sustainable development is entirely consistent with free market economics. Indeed, it may demand that markets be freer of subsidies than the now typically are.

A.1. The regulatory environment should provide a pro-competition framework under conditions where companies have the opportunity to make a competitive return on capital invested. Neither a framework in which even poor performers are guaranteed a profit nor a framework in which it is unduly difficult to achieve financial success is appropriate to sustainable development of the resource.

A.2. An important factor is the quantity and quality of jobs generated by the industry directly and indirectly. The desirability of coalbed methane development as a national policy and at the local level is closely related to the number of livelihoods the industry creates and the sustainability of those livelihoods.

A.3. As development shifts from one new play to another, as fields mature and leave the development phase for a more mature operating phase, or as they are abandoned, a high degree of labor mobility will be necessary. This places stress on workers and their families as spouses are required to change jobs, children to change schools, and all to adapt to new communities. Experience in other industries suggests that these factors may give rise to high incidence of family stress, family violence, alcohol abuse and other factors. Workers, companies, and communities alike have an interest in developing concrete measures to minimize or eliminate these sources of stress. Among these measures may be emphasizing local hiring rather than cultivating a large migratory work force.

A.4. Working in the industry creates opportunities for workers to gain new skills – building human capital. Building this skill base is one way to ensure sustainable livelihoods where the expected life of coalbed methane production is shorter than the typical working career. But ensuring that the opportunity for skill-building is maximized requires a conscious effort by companies, workers, unions where they exist, and technical schools.

A.5. The tenure of a company in a community – its 'social license to operate' – can be protected if the company can find a way to ensure continuity in its relationship with the community. "[I]t is becoming clearer that the key to solving many problems is the continuity of policy, personnel, and approach.'[xv] It appears that [c]ommunities do not relate to the company as an institution as much as they do to company representatives as individuals. The relationship is a personal one, which does not automatically transfer to the next person in line."[xvi]

A.6. The company can also protect its position in the communities in which it operates by having a clear, widely known contact point for complaints and a transparent mechanism for acting on them. Where there is a problem, good management wants to know about it as soon as possible, and be able to act on it before it become more serious. Good legal advice solves problems early and before they escalate and will therefore encourage such mechanisms and help devise them. There is every reason that government officials should encourage companies to identify a contact point for problems. And there is no obstacle to their requiring it as a lease condition where companies are operating on federal lands.

A.7. Worker health and safety are essential to building human capital. And a high rate of accidents or occupational illness impose costs on companies and society as a whole as well as on workers and their families. Company health and safety programs have

been shown to be very effective in many industries. But there is also a need for a clear government regulatory framework to assure minimum standards are met by all.

A.8. In the long run, the industry will not be successful in creating either private or social benefits if it does not continue to innovate. Technological innovation has been rapid in the relatively new coalbed methane industry. The framework in which then industry operates needs to foster such innovation. It also needs to foster innovation in dealing with social issues such as community relations.

A.9. The industry needs to maintain access to capital for sustainable development to occur. This means among other things demonstrating that it can successfully manage environmental, social, political and economic risks in ways satisfactory to investors and lenders. The best way to control these risks is by an inclusive approach that recognizes the interests of those affected by the industry and which takes advantage of their perspectives and divergent interests to identify and manage risks and opportunities effectively. The framework for development should therefore include rather than exclude those affected by the industry's performance, and give room for their interests to be identified and respected inside rather than outside the process.

A. 10. Company success in taking advantage of the opportunities presented by sustainable development tools will depend in part on the ability of companies to orient their hiring, training, evaluation, compensation, and retention of employees toward overall performance, including their ability to interact positively with those affected by company activities.

B. Control, Use, and Management of Land

There may be no more fertile source of conflict in natural resource development than disputes over the occupancy and use of land. While the disputes may differ somewhat depending on whether the land involved is in public or private ownership, they are often quite difficult to resolve. But progress toward sustainable development requires progress in solving them, which requires:

- Increased dialogue among divergent interests;
- Acknowledging not just legal rights but also expectations; and
- Better means of managing disputes.

Fortunately, the disputes over relocation of populations, which are such a prominent feature of natural resource development in many developing countries appear to be rare in coalbed methane exploitation. To the extent that they arise, the World Bank's policy on resettlement[xvii] currently being revised and strengthened, is a good starting point for understanding best practice.

B.1. Best practice in dealing with the diverse land use (and other) issues may be the creation of regional or local advisory groups or consultative bodies to identify problems and opportunities and effective ways of managing them. While there may need to be broad national policies, "[t]he one thing coalbed methane plays in the U.S.

have in common is that they are all different. You have to consider the complete package of coal characteristics, regional geology, and infrastructure...you can't get locked into one mindset."[xviii] Writing prescriptive regulations that deal with all this local variation may be too great a challenge. There should be room for local guidelines or agreements to supplement a basic set of universally applicable rules.

B.2. Where there are split estates, there are going to be disputes between surface and subsurface owners. Effective management of these disputes requires recognizing the parties' legal rights. But it also requires recognizing and acknowledging reasonable expectations based on custom, past practice, or common sense. It also requires taking advantage of local knowledge: ranchers who have worked a piece of land for years are likely to have knowledge of its soils, vegetation, wildlife and water that even the best company experts do not. The long term value of a project to a company may have as much to do with its good relations with surface owners as it does with how fast a well is drilled. There is no substitute for prior consultation with surface owners and a healthy respect for their opinions and settled expectations. Prior consultation should be company policy; where government is involved its requirements should include defined steps to ensure that effective consultation occurs, not just at the permitting stage but on an ongoing basis.

B.3. The court system is an expensive and slow way to resolve disputes between surface and subsurface owners. Often the action is taken or the deed is done before redress can be sought. Money damages can be hard to prove. This suggests that speedy, inexpensive and relatively informal arbitration mechanisms may be the best route. Where government is a party, it has a clear interest in avoiding becoming enmeshed in such disputes, and therefore a clear interest in exploring the use of such systems. Lawyers for companies should look at the potential benefits to their clients of using such mechanisms in their dealings with surface owners.

B.4. Experience in the mining industry suggests that there is no effective way to decouple the right to use of land from the economic issues.[xix] If a surface owner has no possible way to gain anything from coalbed methane development, and is exposed to actual losses or risk of loss, it would be irrational for him to accept development willingly. A very high priority therefore is identifying ways that both parties can gain economically from development. This could include sharing of available water where its quality permits economic use, development of infrastructure (roads, telecommunications or energy utilities, dams) in ways that benefit both methane developers and landowners, or sharing of other benefits. These opportunities are likely to be highly site-specific, and consultation with the landowner is likely to be the best way to identify them.

B.5. Many communities make use of local public lands and resources based on long established customs and traditions. While they may not have a legal right to continue to fish, or hunt, or cut wood, the expectations these activities create are very real. There should therefore be a consultation and assessment process adequate to identify these traditional uses, and attempt to accommodate them. Well conducted impact assessments will do this; the framework for environmental assessment should attempt to assure this.

B.6. Development on Native American lands or that may affect Native American interests poses special issues that do not exist elsewhere. The conditions of development affecting aboriginal or indigenous peoples are an important focus of sustainable development. This is a complex subject that requires a more elaborate treatment than can be afforded here. ILO Convention 169, the literature around it, and World Bank safeguard policies,[xx] are the basis of an emerging international standard that all lawyers involved in negotiating methane development on tribal lands or that may impact interest important to Native Americans should be aware of.[xxi]

B.7. The question of natural resource development that may affect protected areas – such as National Parks, wildlife refuges, Wilderness areas, or other areas with special protection – is fraught with difficulty worldwide. These areas have been protected because they contain assets of importance to society such as biological diversity, watershed, or cultural or archaeological remains. Sustainable development requires that these forms of capital be protected or enhanced. In some places, schemes are under consideration that might permit some form of development of resources but on condition of offset, or on condition of enhanced protection of remaining natural capital perhaps funded in part by revenues from development. An equivalent U.S. model might be wetlands protection under Section 404 of the Clean Water Act. However these ideas are most attractive in very poor countries where lack of government revenues for management of protected areas is a critical problem, and population or other pressures are causing serious degradation of the protected resources, circumstances that are certainly less prevalent in our more wealthy society. Even there they are often highly controversial.

c. Methane and National Economic Development

If coalbed methane production is to be consistent with sustainable development principles, a critical question is how national policy can be developed that will help to capture some of this wealth in forms that will endure and provide opportunities to future generations. The idea that any economic activity automatically benefits society in sustainable ways is in essence an extreme form of 'trickle down' thinking; it is becoming clear internationally that this is not producing the desired benefits.[xxii]

Part of the revenue from natural resource development is captured by government through royalties, lease payments, or taxes. What government does with that share and how it is managed is a key issue.

Part of the revenue is received by developers or other private parties. What they do with that revenue is their decision, but government can provide an enabling framework to make it easier for them to accumulate the various forms of capital. In general, to use an analogy, government does not force people to save. But it provides Section 401K as an enabling framework to facilitate their doing so if they choose.

C.1. In general, development of a nonrenewable resource will come to an end. And there are often environmental and social costs at closure which wind up being borne by government. If all the revenue is being spent today in ways that create only transitory benefits, these costs will be borne by future generations, which will reduce their ability to meet their needs. Some form of bonding or guarantee by the developer

assuring that these costs will be internalised is probably appropriate. But there will still be costs borne by others; local government in particular may be hard hit by a combination of decreased employment coinciding with a drop in tax revenues. Sustainable development does not require any one solution to this problem. It does require that the problem be acknowledged and that some sort of coherent plan for dealing with it be devised.

C.2. With respect to government revenues, transparency and integrity in their management are fundamental. Corruption in the receipt and use of revenues from mineral resources is a worldwide problem.[xxiii] While corruption in the U.S. does not approach levels seen in some parts of the developing world, it is not a complete stranger. And there are examples more recent than Teapot Dome. Money which is siphoned off in corruption is money that does not go to sustainable development. The framework for the industry must include appropriate measures to control this potential.

C.3. Effective policy requires some clear division of total government revenues between national and local government. International experience indicates that neither extreme – all of the revenue going to national government, or all of the take going to local government – works.

C.4. An important test of whether development is sustainable in the case of exploitation of nonrenewable resources is whether there is a clear policy articulating 'what next,' and clear progress being made in development of substitutes against that day when the resource is depleted.

d. Coalbed Methane Development and Local Communities

The impacts of development – both positive and negative – are often seen most vividly at the local level. Communities may experience increased economic opportunity. They also may experience a series of impacts that are hard to cope with:

- Rising prices for housing and other necessities;
- Increased demands for schools, hospitals, police and fire protection and other public services.
- Transiency, overcrowding, and increases in social problems such as family violence or drug and alcohol abuse.
- Disparity of impact, where the most vulnerable members of the community such as women, the poor, or ethnic minorities bear a disproportionate share of the impacts.
- Disruption of existing economic activities, particularly those based on local use of natural resources such as water, hunting and fishing, or tourism.

A similar set of difficult issues are likely to arise when the initial development phase winds down, or when production ceases.

The test of sustainable development at the local level is whether the community is better off after than before the development took place, all factors considered.

D.1. Local land use and economic planning can help capture potential benefits and mitigate negative externalities. But this takes time and resources, or local officials will be constantly playing catchup. Particularly where the rate and timing of development are controlled by federal leasing, it should be possible to build local capacity before effects are felt.

D.2. Particular attention needs to be devoted to understanding and devising compensating mechanisms for dealing with the problems of those least likely to be able to cope with the impacts of development and least likely to benefit from it.

D.3. Where development requires infrastructure such as roads or utilities, there may be opportunities for 'win-win' solutions in which needs of both the developer and others in the community are served.

D.4. Where the community does not share sufficiently in economic benefits of development, conflict will be maximized. If all of the companies' necessities are imported from distant suppliers, and all labor is imported, the community may not experience benefits commensurate with the negative impacts. And in the case of labor, this may maximize the disruption both at the time of inmigration at the outset and the time of outmigration later in the cycle. Problems can be reduced where there is a conscious effort to hire and train local people, and a focus on identifying and using local suppliers.

D.5. Impacts on public health are a particular concern. While not discounting the possibility that emissions from facilities or other environmental issues may be a problem, experience in other industries may indicate that the biggest impacts are likely to be factors of social instability, such as potential increase in the rate of HIV/AIDS or other infectious diseases, higher stress levels, family violence, and alcohol abuse. It may be impossible to eliminate these problems, but they can be planned for, managed, and minimized.

D.6. These social and economic factors should be thoroughly dealt with in any impact assessment process conducted under federal or state law or voluntarily as a planning tool.

D.7. A key to maximising positive development benefits and minimizing erosion of local assets is continuous consultation through the project life. This probably should include at least these four elements:

- Early public consultation for scoping of issues continuing on into federal , state or local impact assessment and planning processes.
- Integrated impact assessment that includes all environmental, social, and economic factors of importance in a single process.
- Formulation of a Community Sustainable Development Plan under that or another name, with input from companies, government at all levels, local citizens, private organizations, and other interested parties.
- Linked to that plan, a clear vision of the post-closure economic, social and environmental conditions desired for the community with a clear allocation of responsibilities for achieving those results.

- A complaints and dispute resolution mechanism that provides quick, low-cost, and effective avenues to raise concerns by any of the parties, including the company, and get them resolved.

D.8. While coalbed methane development may yield additional usable water supplies which could be of local benefit, these supplies will not be permanent additions to locally available supply. The challenge of turning a short term benefit into assets that will yield an income of some kind into the future will not be easy; there is a danger of becoming dependent on a resource available only in the short term.

e. Coalbed Methane Development and the Environment

While short-term impacts may be very important to those who experience them, sustainable development teaches us that the most critical impacts are those that diminish natural capital: the ability of ecosystems to provide us with an ongoing flow of largely free benefits such as clean air, clean water, wildlife, grazing, timber and the like. Protecting natural capital also requires effective management and therefore the challenges of natural resource management are quite relevant to sustainable development.

While not discounting other impacts, it seems those which are most likely to be significant in terms of natural capital are these.

E.1. What is the impact on global accumulation of 'greenhouse gases' and alteration of climate? While using coalbed methane as an energy source may produce more such emissions than would, say, solar heating, it may be a marked improvement over some other fossil fuel alternatives now in use.[xxiv]

E.2. Road networks, drill pads and other facilities may dramatically increase human intrusion into areas now relatively undisturbed, with concomitant increases in off road vehicle use and other human activities that reduce extent and quality of vegetative cover, disturb terrestrial wildlife, and create therefore very long term impacts on biological diversity, water quality of runoff, and scenic and recreational values.

E.3. Changes in the groundwater regime as a result of development could have long term effects on the availability or quality of ground and surface water.

E.4. Changes in the quality or quantity of water or timing of flows in streams as a result of discharges from production, degradation of vegetative cover, or other causes could have impacts on aquatic biodiversity.

E.5 Rather than being concentrated in a limited number of facilities, coalbed methane development is dispersed over rather large areas which in many cases are relatively remote. This makes it very difficult to create effective checks and balances to ensure development is following regulatory requirements and is consistent with good practice. It places difficult burdens also on internal company environmental management systems.

f. An Integrated Approach to Coalbed Methane Development

Sustainable development requires us to look not just at resource production but at the whole chain of activities from exploration through development to production, processing and end use. Even the best managed conditions of production will not get us to sustainability if – to suggest two of a long list of possible examples – transportation of the gas creates unacceptable impacts, or perverse subsidies encourage its wasteful and profligate use.

In other words, sustainability must be judged on how the system as a whole is operating. If the product is clean and safe to use, and applied to very highly valued end uses, the result is still not sustainable development if it is being produced in conditions that are socially or environmentally unacceptable. If the conditions of exploration and production are impeccable, but the use of the product is hurting people, or creating a detriment to society, the result is likewise inconsistent with sustainable development principles.

While all of this is true in principle, part of the problem in ensuring this kind of 'cradle to grave' sustainability is that different organisations have responsibilities for different parts of the chain: the companies that produce are not always the companies that transport or the companies that sell to consumers; the Department on the Interior has a major role in production but the Department of Energy and other bodies are more responsible for the transportation and use.

Creation of a framework to facilitate sustainable development requires that ways be found to address ideas such as these:

F.1. Effective policy and economic efficiency require that prices be set to reflect true cost of production. This requires that externalities, both positive and negative, not only be internalised but also flow freely up and down the supply chain. If the product is overpriced through regulation or underpriced through subsidy (or failure to internalise cost) at any stage in the chain, it affects then other stages as well.

F.2. Firms and individuals make more efficient economic decisions if they are better informed. Are suppliers adequately informed about the changing demands and preference of consumers? Are consumers adequately informed about likely long term supply and cost? The fact that they may be separated from each other by several layers of intermediaries suggests they might not be.

F.3. Are there appropriate incentives for improved efficiency at all stages in the chain?

F.4. How can developers ensure that the activities of those ahead of them in the chain – exploration crews, for example – have not so soured relationships with communities, local landowners or others that the purchaser of the property winds up purchasing some serious negative baggage in then process? Does the industry need a code of conduct for relations with communities and standard warranties on sale that the code has been complied with?

g. Access to Information

The availability and reliability of information are a bedrock necessity for all of the actors concerned with coalbed methane development. Few complaints are heard more frequently than that information is not available or not trusted. Among the reasons that sustainable development requires attention to the quality and flow of information, these are key:

- Systems of checks and balances, from investor protection to environmental management systems will not work if needed information is absent or unreliable.

- Trust on the part of stockholders, regulators, workers, neighbors and others dramatically facilitates efficient and profitable business. Nothing undermines this trust faster than the impression that information is being withheld, falsified, or developed selectively.

- There is no way to identify the assets which need to be protected and enhanced and then potential impacts on those assets without reliable information.

G.1. How can the free flow of information within the company be facilitated? Effective management becomes very difficult if important information is not reported to proper company officials, or different departments create 'Chinese Walls' to prevent other departments from learning what they are doing.

G.2. What should company reporting policies be for the various stakeholders with an interest in the company's business? What information about company activities should be reported, on what frequency, and to whom?

G.3. How does the company deal with inquiries or requests for information? Does this build trust and business value or destroy it?

G.4. Do there need to be transparent processes for generating certain kinds of information so that it will be trusted? Some companies have decided for example that it is in their interest to let community representatives observe operations from the inside, or collection of environmental samples.

G.5. Similar sets of questions apply to government at all levels and to citizen groups.

G.6. What information should government insist that companies submit and be available to the public? What does existing law require, and should these be improved?

G.7. Where are the processes by which to resolve disputes over the accuracy of information? Anyone can be adversely affected by the circulation of false or misleading information or allegations. Is dealing with bad information one of the benefits of community councils or advisory boards including company, government and citizen member?

h. Sector Governance

Government is important to governance of the sector but is far from the whole story. Finding ways to make the sustainable development agenda a reality for coalbed methane development will require government to take leadership in adopting a set of laws, regulations and policies consistent with sound principles. The foregoing ideas should provide plenty of fodder for thought in that process.

But sound laws and policies alone will not be enough to maximize the potential of this resource for sustainable development unless accompanied by other actions, many of them voluntary. Examples which have found acceptance in other industries include:

H.1. *Company sustainable development policies*. Just as many companies have found it useful to announce company environmental policies, or adopt health and safety policies, they can express the company's commitment to sustainable development. As with any policy, it will yield more results if there is some internal process to review the company's operations to see how they can be brought into line with the policy. And there will be more 'buy in' if employees have a hand in devising it.

H.2. *Company training programs* in sustainable development may be very helpful. Then dispersed and relatively isolated work of many in the industry places a great responsibility on them for self-management. Training can help make that more effective.

H.3. *Internal audits* may be appropriate ways of making sure that training has been effective and that company policies are being observed throughout the organization.

H.4. Industry associations can develop statements of policy or *codes of conduct* for sustainable development.

H.5. In some industries these have moved to become mandatory as a *condition for association membership.*

H.6. Some industries have moved to formal *certification systems*, in which companies or individual operations can be certified as meeting industry standards. These are often accompanied by independent third party audit of compliance with standards.

H.7. Citizens concerned about development issues can form *citizen associations* to give voice to those concerns and negotiate on their behalf with government or companies. A number of these exist.

H.8. Officials of local governments where coalbed methane development is occurring or may occur could form *local government associations* to represent their interests.

H.9. There is an important role for formal or informal *councils or advisory bodies* at both the level of individual communities and the level of regional basins. They should include government, companies, and all other affected interests. They can be formed at the initiative of federal, state, or local government, or the initiative of companies, or the initiative of citizens or their representatives. These bodies can have a variety of functions:

- They may be an ideal way of identifying the site-specific issues that characterize each community and each coalbed methane play.

- They may as a result head off unnecessary disputes and conflicts.

- Where conflicts arise, they may have a role in dispute resolution.

- They can be guarantors to all of the reliability of crucial information.

- They may be able to exert peer pressure where a company or someone else is falling short of best practice or rules of fair debate.

There is no reason that any one such body has to have all of these functions, or why it could not have further functions as well. The point is to meet the needs of the situation.

IV. CONCLUSION

The many different actors in coalbed methane development have strongly divergent interests, values, and priorities. Nothing about sustainable development is going to change that.

But despite their differences, these diverging interests may share more than many think. This may include a recognition that things could be done considerably better, frustration at how hard it is to implement good ideas, and distress at how much of everyone's time, energy and money is being drawn into essentially unproductive disputes.

Sustainable development has proven to be a framework that can bridge differences. Some 200 governments accepted it in this spirit in Johannesburg in September of this year. The business community is increasingly aware that a powerful business case is being made for its potential to build shareholder value for companies.[xxv] Environmentalists see it as a way to reconcile their commitment to environmental protection with their recognition that there are many in society who need to be better off economically.

Lawyers have a key role in this process. While the 'clients,' the many in and around the industry who have interest they want to advance must be the ones to define those interests, lawyers are the ones who can develop the laws, regulations, institutions and dispute resolution mechanisms to get us there.

We may not even all agree on how to define sustainable development. But talking about it does even then hold the promise that we can develop a common vocabulary, a

way of talking that yields better results than what we in the West have seen with resource development too often in our past.

NOTES

[i] The idea of several sets of capital stocks is elucidated in the works of D.W. Pearce, such as *Economic Values and the Natural World*, (MIT 1993). See also P. Hawken, A. Lovins and L.H. Lovins, *Natural Capitalism, Creating the Next Industrial Revolution* (Little Brown & Co. 1999).

[ii] World Commission on Environment and Development, *Our Common Future*, (Oxford University Press 1987).

[iii] The Johannesburg Declaration on Sustainable Development and the related Plan of Implementation can be read on the United Nations World Summit website, http://www.johannesburgsummit.org/. Much useful background is also found on the website of the International Institute for Sustainable Development, http://www.iisd.ca/2002/wssd/.

[iv] A brief outline of the key ideas is contained in *Breaking New Ground*, the report of the Mining Minerals and Sustainable Development Project, at 18-23. (Earthscan Publications, Ltd. 2002). Hereinafter cited as *Breaking New Ground*. This report can be obtained through http://www.earthscan.co.uk/asp/bookdetails.asp?key=3758 <http://www.earthscan.co.uk/asp/bookdetails.asp?key=3758>.

[v] *Breaking New Ground*, supra note 4 at 21-22.

[vi] There is also the issue of a positive or negative *user cost*, that is the possibility that future generations may have needs we cannot foresee which coalbed methane would be uniquely suited to meet. Or that if we forego development now, such superior substitutes could be found by future generations that development of coalbed methane would never become economically viable. These issues, while important, are outside the scope of this paper.

[vii] See *Breaking New Ground*, supra note 4, at 74-77.

[viii] G. Bryner, *Coalbed Methane Development in the Intermountain West: Primer*,(U. of Colorado Natural Resources Law Center, July 2002) at 8.

[ix] *E.g.*, National Energy Policy Development Group, *National Energy Policy: Reliable, Affordable, and Environmentally Sound Energy for America's Future* (2001).

[x] The U.S. Freedom of Information Act has long been a model for ensuring broad availability of information; international agreements such as the Aarhus Convention build on its concepts but go considerably further in important respects. See Zillman, infra note 11.

[xi] For an excellent current look at how these concepts are developing, see D. Zillman *et al.*, Human Rights in Natural Resource Development: Public Participation in the Sustainable Development of Mining and Energy Resources, Oxford University Press (2002).

[xii] See *Breaking New Ground*, supra note 4 at 58, Box 3-1.

[xiii] Information on this project is available at www.iied.org/mmsd

[xiv] *Breaking New Ground*, supra note 4 at 7-11 and Appendix 1.

[xv] *Breaking New Ground*, supra note 4 at 126.

[xvi] Id. At 127. See also Table 6-1.

[xvii] Available at www.ifc.org/enviro/EnvSoc/Safeguard/safeguard.htm

[xviii] Mike Zubler of Schlumberger-Holditch Reservoir Technologies, quoted in Bryner, supra note 8 at 9.

[xix] See *Breaking New Ground*, supra note 4 at 148 *et seq.*

[xx] See note 17 supra.

[xxi] Convention (No. 169) concerning Indigenous and Tribal Peoples in Independent Countries, http://www.unhchr.ch/html/menu3/b/62.htm.

[xxii] See *e.g.* J. Stiglitz, *Globalization and its Discontents*, (Norton 2002).

[xxiii] See *Breaking New Ground*, supra note 4 at 184-187

[xxiv] Bryner, supra note 8, at 23.

[xxv] See *Breaking New Ground*, supra note 4, at 115-119; C. Holliday *et al.*, *Walking the Talk: The Business Case for Sustainable Development* (Greenleaf 2002); M.E. Porter and C. van der Linde, *Green and Competitive*, Harvard Business 3:120-134 (1995).