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Inside...

Erratum
Our last issue misstated Penny Machinski's place of employment. Penny Machinski works for the West Linn Paper Company.

STEPS TOWARD NET ENVIRONMENTAL BENEFIT IN AGENCY DECISIONS

by J. Mark Morford and Sarah Stauffer Curtiss, Stoel Rives, LLP (Portland)

Introduction

In February 2009, the Oregon ***Insider*** published "*Sustainable Regulation, Weaving Sustainability into Regulatory Decisions*" (*see* Morford, ***Insider***#443). In that article, we advocated for incorporating sustainability principals into regulatory decision making. We explored agency programs and decisions that arguably produce poor environmental results when one considers the full range of energy, resource consumption, and other environmental impacts involved in their implementation. That article suggested that decisions by environmental agencies should achieve a "net environmental benefit."

This article explores what constitutes net environmental benefit, how it might be measured, impediments to its implementation, and a possible path toward incorporating net environmental benefit analysis into regulatory decisions.

Net Environmental Benefit

Net environmental benefit is an easy concept to support and, at first blush, easy to envision. Assimilating the concepts and value choices discussed in this section of the article, your authors offer the following definition:

> Net environmental benefit is the gain in accepted environmental values, ecological services, or public health attained by a particular action minus the detrimental environmental effects caused by that same action.

While simple in concept, defining net environmental benefit entails consideration of highly subjective elements. Defining the scope of values that should be included in the analysis opens a range of debates. Even deciding what is or is not a benefit or a cost can present profound value judgments. Nevertheless, agreement upon core values that advance sustainability in environmental regulation should be possible.

Environmental Values

In the United States, a majority of voters appear to agree on many environmental values, such as: attaining and maintaining air quality and water quality within some reasonably healthy range; preserving at least some natural lands in a wilderness state; preserving diversity (even if not abundance) of plant and animal species; preserving at least some natural vistas and unique natural features; limiting anthropomorphic noise and light to levels tolerable to humans; preventing uncontrolled releases of hazardous substances to the land; and reducing the generation and release to the atmosphere of carbon dioxide and other greenhouse gases (although Congress has yet to act, some form of climate change legislation appears to have broad support).

Other environmental values receive considerable support from the popular press and have vocal public support, but are not so clearly shared by a majority of voters or Congress, such as: reducing consumption of fossil fuels and energy generally; reducing consumption

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Environmental Values

of natural resources generally; containing urban sprawl or land area devoted to anthropomorphic activity generally; and retarding or reversing population growth. Public behavior, voting preferences, and government decisions suggest that this latter group of values is not fully embraced — for instance, driving habits and choice of vehicles suggest that the American public is generally not yet committed to significantly reducing consumption of fossil fuels or energy.

Despite the lack of an absolutely clear mandate from the public and our government, this article will consider all the foregoing to be "environmental benefits" (entailing corollary "environmental costs") in an effort to include a range of values generally regarded as protective of the environment. We will refer to these widely accepted environmental values simply as "environmental values."

Ecosystem Benefits

ECOLOGICAL SERVICES

In addition, this article will regard "ecological services" as environmental benefits and their loss as costs. In contemporary ecological theory, the concept of ecological services has emerged as a means of describing environmental values that flow from healthy ecosystems. Ecological services are benefits that the earth and its inhabitants derive from natural environmental conditions which remain uncompromised by human activities. Ecological services include: stormwater and floodwater buffering; groundwater recharge; production and balance of essential gases (e.g., oxygen); conversion of solar energy to chemical energy; nutrient recycling; aesthetic and spiritual values; habitat for biodiversity; human recreation; and scientific and educational values.

Regulatory Basis

PUBLIC HEALTH

This article will also consider protection of human health to be an environmental benefit. Your authors recognize that the extent to which such humanistic values should be considered in net environmental benefit analysis is debatable. For example, decisions that improve human health to the extent of extending average lifespan may have negative environmental consequences from increased human population, and decisions that improve human welfare (e.g., reducing hunger or improving quality of life) may have negative environmental costs from lifestyle changes that increase consumption of resources. Nonetheless, the predominant emphasis of environmental law in developed countries is protection of human health and welfare. For example, the Clean Air Act is devoted almost entirely to meeting air quality goals based on human health. Even water quality standards designed to protect ecological receptors are being reconsidered based on risk assessment for human consumption of fish. [See, e.g., News Release, Oregon Department of Environmental Quality, *Environmental Quality Commission Approves New "Fish Consumption" Rate for Revising Water Quality Standards* (Oct. 23. 2008), www.deq.state.or.us/news/prDisplay.asp?docID=2770.]

Respecting the important role of human health in environmental laws and despite the collateral environmental costs of some improvements in human health, this article will regard improvement of human health as an environmental benefit and degradation of human health as a cost. We do not, however, attempt to incorporate the more amorphous concept of human welfare in the equation of net environmental benefit despite its role in many environmental policies and laws.

Net Environmental Benefit Analysis & Metrics

Comparative Ranking

> "Net environmental benefit analysis (NEBA) is a methodology for comparing and ranking net environmental benefits associated with multiple management alternatives." [Efroymson and Nicolette, *A Framework for Net Environmental Benefit Analysis for Remediation or Restoration of Petroleum-Contaminated Sites* at ix — prepared for the US Department of Energy, National Petroleum Technology Office (ORNL/TM-2003/17; January 2003)].

In considering net environmental benefit analysis, we must first admit that we do not possess the knowledge or tools to predict all the environmental impacts of an action. Ecological systems are extraordinarily complex and predicting human behavior is an uncertain science. We also must accept that we do not have a common metric that can value — and therefore measure and quantitatively compare

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Impacts Importance

— all environmental costs and benefits. Philosophers and governments have pondered exhaustively the value of human life with no consensus. Similarly, with their highly subjective and personal roots, attributes such as aesthetic, cultural and spiritual values defy any sort of standardized quantitative measure. Lack of a comprehensive metric for environmental values, however, need not stifle net environmental benefit analysis. Many environmental attributes can be and are regularly quantified, and the less tangible values can be compared qualitatively to guide decisions. The key to successful net environmental benefit analysis is not whether it is quantitative or qualitative, but that it not exclude important environmental impacts.

AUTOMOBILE FUEL ECONOMY RATINGS

Useful Metrics

Regulators and the public continuously make decisions guided (correctly and not) by comparing environmental benefits using a broad range of metrics. Consider for example a consumer's choice of automobile based on US Environmental Protection Agency (EPA) gas mileage ratings. EPA has established a standardized methodology for measuring the gas mileage of an automobile (40 CFR Part 600). While the accuracy of these ratings in terms of real world miles-per-gallon (mpg) is questionable, they have provided a useful metric for consumers to compare vehicles when they wish to limit their fuel consumption.

Metrics' Shortcomings

Changes in the market, however, are challenging the bounds and utility of this metric as it is applied to hybrid vehicles and all electric vehicles. Chevrolet claims that its plug-in hybrid Volt will achieve an EPA mileage rating of 230 mpg (*Chevy Volt to get 230 mpg Rating*, CNN Money.com (August 11, 2009)). (Well yeah; it will go the first 40 miles on just its battery!) Nissan claims that its all-electric Leaf will achieve an EPA mileage rating of 367 mpg, but it does not consume gasoline at all (*Nissan Claims 367 mpg for its Electric Leaf - even though it doesn't use gas,* USA Drive On (August 12, 2009)). These hybrid comparisons are based entirely on consumption of fuel in the operation of the vehicle. No consideration is given to additional energy consumption necessary to produce the batteries, motors and other components of a hybrid vehicle in addition to the energy consumed in producing the gasoline-powered components. Possibly more important, the fuel consumption metric does not consider any other environmental impacts associated with the production or operation of these vehicles. Consumer choices in purchasing vehicles based solely on EPA's fuel consumption metric could have the perverse result of a greater environmental cost. A consumer purchasing an electric car with a 300 mpg rating with the belief that their purchase will have only 10 percent of the environmental impact of a 30 mpg gasoline vehicle is almost certainly wrong.

Holistic Comparisons Needed

To allow direct comparison of energy consumption of gas and electric vehicles, EPA is considering adjustments to its fuel consumption standard (*Agency Weighs Metrics for Assessing Plug-In Hybrids' Fuel Economy,* Vol XX, No. 21 Inside EPA Clean Air Report 26 (October 15, 2009)). To make truly informed decisions, consumers need either a metric that holistically compares the environmental costs for the entire life cycle of each vehicle or the ability to supplement a narrow energy consumption metric with a reasonable qualitative comparison of environmental costs and benefits.

WETLAND MITIGATION BANKING

Benefits as Numeric Credits

Another example of decisions informed by quantitative weighing of environmental benefits is wetland mitigation banking. A wetland mitigation bank is a wetland or other aquatic resource that is established or enhanced to compensate for unavoidable impacts to aquatic resources from development. Mitigation banks are typically large blocks of wetlands, for which the environmental benefits have been formulated into numeric credits — similar to deposits in a bank account. A developer can purchase or withdraw from the mitigation bank credits equivalent to the unavoidable impacts of the development. To ensure a net improvement in wetland benefits, both the United States Army Corps of Engineers and Oregon Department of State Lands set minimum compensatory mitigation ratios to guide the development of compensatory mitigation plans (33 CFR § 322.3(f); OAR 141-085-0690(4)). These minimum ratios require that for each acre of natural wetland lost, a greater area (or value) must be created or restored. Even within the narrow scope of wetland values, however, this metric is imperfect. Recent studies have noted that mitigation banks may not be effectively replicating the functions and values of the impacted wetlands (see, e.g., Amos Etsy, *Banking on Mitigation*, 95 Am. Scientist 122 (2007)). Because mitigation banking sites do not always mimic natural conditions, they may not provide the same environmental benefits (e.g., regulating water cycles, filtering water, and providing habitat for diverse flora and fauna) as the natural wetlands they replace. In short, because wetland mitigation banking tends to favor "wetness" over wetland functions, even a net gain in wetlands can result in greater environmental cost (see Fred Bosselman, *Swamp Swaps: The "Second Nature" of Wetlands*, 39 Envtl. L. 577, 614 (2009)). This metric also fails to consider the overall resource and energy consumption associated with the mitigation project. Again, to accomplish meaningful net environmental benefit analysis, qualitative factors that adequately supplement a narrow quantitative metric must be considered.

Program Shortcomings

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Unconsidered Costs

OTHER EXAMPLES

Other examples of metrics used to balance environmental decisions have similar shortcomings. The sulfur dioxide cap and trade program to curb acid rain does not consider the different environmental costs of mining or transporting low sulfur coal compared to high sulfur coal. Effluent trading programs use a single pollutant as currency and do not reflect collateral environmental costs and benefits (such as the habitat, carbon sequestration, and energy conservation benefits of choosing riparian tree planting over effluent cooling technologies). Moreover, to improve these metrics to reflect a truly complete range of environmental values would involve mind-boggling complexity and value judgments well beyond the capabilities of current science and politics.

Net Environmental Benefit Analysis in the Absence of a Quantitative Metric

NEPA Impacts Assessment

In the absence of a well defined metric for tallying environmental costs and benefits, net environmental benefit must be determined using at least some qualitative analysis. Although inherently subjective and less transparent than a strictly quantitative approach, such qualitative decision making is already well established in environmental law. Probably the best example is the National Environmental Policy Act's (NEPA's) environmental impact statement (EIS) process. Through NEPA, Congress imposed an obligation on all federal agencies to assess the environmental impacts of certain governmental actions, to consider alternatives that would have less environmental impact, and to document that analysis in an EIS (42 USC § 4332(2)(C)).

Required Analyses

NEPA requires federal agencies to take a "hard look" at the significant environmental consequences of a proposed action by considering its direct and indirect environmental effects (40 CFR § 1502.16). The Council on Environmental Quality (CEQ) rules implementing NEPA require agencies to consider, among other things: the land use implications; the energy requirements and conservation potential; and the natural resource requirements and conservation potential. Although public interest in climate change was not even on the horizon when the CEQ rules were promulgated in 1978, consideration of the carbon footprint for a proposed action would appear to fall squarely within the impacts to be considered, as would the full range of environmental values discussed above. However, agencies and the courts continue to grapple with whether the environmental impacts of energy consumption (such as climate change) should be considered as part of the EIS process. [See C. Grady Moore, Leslie Garrett Allen, & Mary R. Forman, *Indirect Impacts and Climate Change: Assessing NEPA's Reach*, 23 Nat. Resources & Env't 30 (2009); see also *Center for Biological Diversity v. National Highway Traffic Safety Administration*, 538 F3d 1172 (2008) (noting that the "impact of greenhouse gas emissions on climate change is precisely the kind of cumulative impacts analysis that NEPA requires agencies to conduct").]

Debated Considerations

Prohibition: "Uninformed" v. "Unwise"

Although many have argued that NEPA demands otherwise, it is well established that NEPA only prohibits "uninformed" — as opposed to "unwise" — agency decisions. [*Robertson v. Methow Valley Citizens Council*, 490 US 332 (1989).] Thus, while an EIS contains what is essentially a net environmental benefit analysis, the purpose of the EIS is to inform the deciding agency on the full range of alternatives related to a particular project. [*Lemon v. Green*, 514 F3d 1312, 1315 (D.C. Cir. 2008) ("The idea behind NEPA is that if the agency's eyes are open to the environmental consequences of its actions and if it considers options that entail less environmental damage, it may be persuaded to alter what is proposed.").]

Net Benefit Not Required

In other words, NEPA does not require that decisions achieve a net environmental benefit. When an agency makes a decision of where and how to build a highway, for example, NEPA does not charge that agency with finding a way to move people from one city to another with a net environmental benefit. Instead, NEPA expects the agency to consider the environmental impacts of the proposed action and its alternatives, and to choose low impact options that still achieve the underlying purpose of its action—building a highway.

NEPA - EIS Exemptions

The sort of environmental impact analysis required by NEPA, however, is not broadly applied under other federal environmental laws. Many agency decisions (particularly certain decisions by environmental agencies) are exempt from the EIS process on the basis that the agency's permitting process is the "functional equivalent" to an EIS. [See, e.g., *Environmental Defense Fund, Inc. v. EPA*, 489 F.2d 1247, 1257 (D.C. Cir. 1973).] One rarely sees, however, an exempt decision from any environmental agency that is based on, or even educated by, an analysis functionally equivalent to an EIS. As discussed below, the narrow focus of most environmental laws on single media or singular goals within a particular media, create impediments to a such complete analysis of environmental impacts.

Impediments to Net Environmental Benefit Analysis in Government Decisions

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Regulatory History

If net environmental benefit analysis is regularly conducted on a qualitative basis — as demonstrated by NEPA — why is it not a fundamental aspect of our environmental laws? The answer lies partly in the history of modern environmental laws that were drafted to address glaring environmental insults from the post World War II industrial era. When the Cuyahoga River caught fire in 1969 (again), no one questioned the obvious net environmental benefit of halting the open dumping of untreated industrial wastes to the river. Congress responded with a relatively simple Clean Water Act (CWA) in 1972 with proscriptive requirements for effluent control. The CWA requires promulgation of effluent limitations based on best available technology (33 USC § 1311(b)). Congress similarly did not ponder whether cleaning up Love Canal would produce net environmental benefits when it passed the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) in 1980. In establishing procedures and standards for responding to releases of hazardous substances under the National Contingency Plan, CERCLA provides for an analysis of relative cost (42 USC § 9605(a)). Although both statutes have elements of cost benefit analysis (environmental benefits weighed against monetary costs), these laws and others of the same era (such as the Clean Air Act and the Resource Conservation and Recovery Act) mostly mandate pollution controls according to proscriptive rules without consideration of the environmental impacts outside the narrowly targeted environmental goal of that law. We can deduce from this history that, when the environmental benefits analysis seems obvious, law makers are unlikely to consider complex analysis of environmental benefits and costs.

Proscriptive Rules

"Fortresses of Impediments"

Now that these laws are fully entrenched in our legal system and economy, they form fortresses of impediments to net environmental benefit analysis. These proscriptive and narrowly focused laws simply do not allow balancing, for example, of a water quality benefit with a resource consumption impact. Reform of these proscriptive requirements will be necessary before net environmental benefit analysis can be fully utilized. Experts have been advising EPA and Congress for decades that such reform is critical to comprehensive environmental management.

Reform Needs

IN 1984, THE NATIONAL ACADEMY OF PUBLIC ADMINISTRATORS ADVISED:

> "Congress and the EPA should begin to develop an organic law covering protection of earth, air and water. Progress toward a comprehensive environmental protection statute may be slow, but it is worth the effort." National Academy of Public Administrators, *Steps Towards a Stable Future: A Report by a Panel of the National Academy of Public Administration Assessing the Budget and Personnel Processes of the Environmental Protection Agency* 5 (1984).

Systematic Inertia

The other major impediment to net environmental benefit analysis is systemic inertia in the bureaucratic and economic landscape created by the last generation of environmental laws. For now, the affected interest groups (the public, agencies, and regulated industry) appear to prefer the certainty of existing proscriptive laws over the risks inherent in a shift to net environmental benefit analysis. This risk is not just the uncertainty of change, but worry that net environmental benefit analysis may not always further their respective interests.

Public Fears

Inherent mistrust of industry leaves the public afraid that some in the regulated community will be "gaming" the new regulatory system to avoid important environmental controls. Mistrust of government fosters fear that the politics of economics may prevail and subvert the net environmental benefit objective. Individuals and local public groups also may fear that they will locally bear the brunt of an environmental cost that is only outweighed by an environmental benefit enjoyed by the population generally.

Business Fears

Businesses may fear that net environmental benefit decisions could produce requirements that are more expensive in monetary terms (although such a result should be an exception given that monetary cost in today's economy typically reflects resource consumption). Some businesses may fear that net environmental benefit analysis will reveal the true environmental cost of some processes and cause the public to rebel against its products. Businesses also may view a move to net environmental benefit analysis as a slippery slope towards agency intervention in underlying business decisions about what products to make and how to make them. Finally, business may fear that a competitor will gain an advantage by finding a better way to produce a net environmental benefit.

Agency Fears

For their part, environmental agencies may fear that net environmental benefit analysis will reveal the shortcomings of certain regulatory programs when measured in the broad currency of environmental benefits and costs. Cleanup decisions under CERCLA's Superfund program — which often entail extraordinary monetary costs representing large scale consumption of energy, materials and land area — sometimes beg the question of whether the extent of cleanup really produces a net environmental benefit.

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EPA Policy Limitations

Such agency resistance is illustrated by EPA's initial refusal to even consider sustainability concepts in remedy selection. More recently, EPA has proposed a very limited role for green remediation concepts at the remedy selection stage. In doing so, however, EPA declares: "Site cleanup is inherently green." [EPA, *Superfund Green Remediation Strategy* (Public Review Draft, August 2009) at p. 1.] EPA's proposed guidance cautions: "Green remediation is viewed as a means to enhance remedy protectiveness, not as a disincentive to active remediation processes or an approach that reduces remedy protectiveness." [(*Id.* at p.5)] This same guidance encourages tactics to "enhance" the greenness of remedies with the purchase of renewable energy credits and requirements for advanced pollution control on diesel engines — actions that provide incrementally small benefits in comparison to the resource-intensive practice of dig and haul remediation. EPA's continuing refusal to consider the possibility that less immediately protective remedial options (such as greater reliance on natural processes) may yield greater net environmental benefits illuminates both the problem created by narrowly focused environmental laws and agency resistance to change.

Taking Small Steps toward Sustainability in Regulatory Decisions

Beneficial Opportunities

Despite these inherent barriers of risk and mistrust, too much can be gained through net environmental benefit analysis to allow such impediments to block progress toward more sustainable decisions. The opportunity for regulated industry is huge cost savings by reducing the energy and resource consumption that flows from narrowly focused mandates in existing laws and the flexibility to control environmental impacts in innovative ways rather than through adherence to proscriptive requirements. The public stands to benefit from lesser environmental impacts, while at the same time enjoying the indirect benefits of the cost savings for regulated industries (e.g., less expensive products and services and job retention resulting from more competitive American industry). Possibly, the best way to make progress toward these goals is in small steps that will build experience and trust that can help overcome the impediments.

DEQ Actions

The Oregon Department of Environmental Quality (DEQ) is adopting more flexible approaches in some program areas that can lead to net environmental benefit decisions. Allowing trading of effluent credits in connection with water quality impacts is one such example. [DEQ, *Water Quality Trading Internal Management Directive* (January 2005) http://www.deq.state.or.us/wq/pubs/imds/wqtrading.pdf] As an example, a facility discharging heat load under an NPDES permit may face proscriptive effluent limits, which typically can be met only by employing expensive (resource consumptive) technological controls. DEQ's water quality trading policy allows such a facility to discharge heat load that may not meet the otherwise applicable effluent limits if it offsets the heat load with riparian restoration projects at another location. [For a more complete discussion of heatload offset trading, *see Willamette Basin Ecosystem Marketplace,* Primozich, ***Insider*** #434] This type of trading is narrowly limited to the pollutants and the environmental media concerned, and it is essentially driven by a monetary metric (i.e., the discharger chooses the trading path to save money). The result, however, is to motivate a greater environmental benefit with a monetary cost savings. To the extent such cost savings also represent a savings in resource consumption, the overall effect should be a greater net environmental benefit than is possible using a resource and energy intensive technological approach.

Florida Actions

Florida has advanced these concepts with a statute that allows the Florida Department of Environmental Protection to enter "ecosystem management agreements" with regulated entities (§ 403.0752 (2009) Florida Statutes). This law allows the agency to utilize flexibility inherent in existing laws to grant waivers or variances to particular requirements in exchange for commitments that "will result in a reduction in overall risk to human health and the environment compared to actions conducted in the absence of the agreement." [(*Id.* 403.0752(2)(c)).] While a step in the right direction in that it promotes net environmental benefit, this law does not give agencies any flexibility not already inherent in the underlying laws. It requires that all standards in existing laws be met and allows flexibility only to the extent of waiver or variance provisions in those existing laws. Still, it allowed the St. Joe Company to approach development of its acreage in Florida on a comprehensive or "net" basis rather than property by property and, consequently, to preserve larger intact wetlands and other wild areas (13,000 acres).

DEQ Strategy Direction

DEQ has the opportunity to draw on these examples and its own unique Oregon experience to lead the country in advancing sustainability concepts in regulatory decisions. In recent discussion with one of your authors, DEQ Director Dick Pedersen stated, "DEQ is working with the Environmental Quality Commission to reset strategic direction, and sustainability will be a big part of that." Given the impediments outlined above and the importance of moving cautiously when revising broad agency policy, a transition to more sustainable agency decisions will likely be evolutionary.

DEQ and other agencies, however, already have a number of "small steps" towards sustainability in regulation available to them.

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Available Options

AVAILABLE "SMALL STEPS" TOWARDS SUSTAINABILITY IN REGULATION INCLUDE:

1) UTILIZE EXISTING FLEXIBILITY: When making decisions under existing laws, consider sustainability factors to educate and influence decisions within the range of discretion given the agency under those laws. To facilitate this step, an agency might develop a catalogue of decisions where it can exercise a range of discretion with the flexibility to incorporate sustainability factors. These may be decisions where the enabling rules specify decision-making criteria that reasonably can be interpreted to include sustainability factors (such as consideration of implementation risk in selection of remedial actions). Such a catalogue communicated to agency staff would both build awareness of opportunities and encourage progressive thinking within the agency.
2) INCORPORATE SUSTAINABILITY FACTORS: As the agency develops new rules in any program area, incorporate sustainability factors into decision making criteria in those rules to the extent allowed by the enabling statutes or applicable federal program. Rulemaking driven by other policy needs or statutory mandates (i.e., not initially prompted by sustainability goals) provides excellent opportunities for agency staff to begin creating rules conducive to net environmental benefit analysis. DEQ's pending development of new rules to govern beneficial use determinations for recycling solid wastes is a good example (*see*: www.deq.state.or.us/lq/sw/disposal/beneficialuse.htm). Early drafts of these rules were criticized as potentially frustrating recycling. In subsequent drafts, however, DEQ recognized its opportunity to use the rulemaking to sanction well-established recycling markets and to allow limited consideration of sustainability factors.
3) EDUCATION: Educate state legislatures about opportunities for and impediments to incorporating sustainability into government decisions. Encourage revisions to existing statutes to lift impediments to sustainability and to incorporate sustainability concepts.
4) ENCOURAGE FEDERAL ACTION: Use state level experience to encourage similar action at the federal level.
5) VISION DEVELOPMENT: Based on experience from the small steps above, develop a vision for changes to existing environmental programs that ultimately leads to organic environmental statutes that regulate at a holistic level.

Eventually, these first steps should begin removing regulatory and statutory barriers to small scale net environmental benefit decision making at the state level. A related action is identifying and removing regulatory and statutory blockades to making sound environmental choices. An example of such a step is DEQ's work with the Oregon legislature this year to pass House Bill 2080A, which removes some of the restrictions on the onsite reuse of residential gray water. Of course, the most pervasive environmental programs even at the state level function within bounds set by federal statutes and regulations. Although state agencies will not be able to work outside those bounds, they can use their local experience and successes to encourage the same first steps under federal laws.

Some groups within EPA are already looking at fundamental reform to incorporate sustainability concepts into environmental programs. A forwarding thinking EPA report released September 18, 2009 advocates life cycle analysis of materials with a heavy emphasis on reuse and recycling. [EPA, *Sustainable Materials Management, The Road Ahead* (EPA 530-R-09-009; June 2009) www.epa.gov/osw/inforesources/pubs/vision.htm] This report proposes an analytical framework for evaluating the full range of environmental impacts associated with extraction, processing, manufacturing, use, and waste management for a particular material. The report then applies this analysis to several hundred common materials and advocates rethinking materials management and use to limit resource consumption, energy use and waste. Even this report, however, does not venture into the statutory and regulatory changes necessary to facilitate its stated goals.

Conclusion

As experience is built, mistrust and risk should diminish and better and broader metrics should emerge. While fundamental change, such as a federal organic environmental statute, is probably years (perhaps decades) away — taking the small steps outlined above can yield meaningful gains in environmental benefits right away.

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