The use of economic analysis for evaluating programs of floodplain management and mitigation is necessary but can often result in unintended impacts. In an idealized situation, an economist would be able to quantify all the variables that come into play in analyzing a project (economic growth, environmental consequences, social impacts, and others) and come to a rational, economic-based decision about whether proceeding with a proposed project is in the nation’s best interest. The reality, however, is that the current practice in economics falls far short of what theory envisions, and in most cases our projects are justified solely on those benefits and costs that are readily quantifiable in financial terms, rather than on adequately measured less-tangible elements, such as environmental quality or non-monetary human preferences. In the National Research Council’s 2004 report, *Analytical Methods and Approaches for Water Resources Project Planning*, the committee commented on benefit/cost analysis and stated, “Benefit/cost analysis should not be used as the lone decision criterion in judging whether a proposed planning or management alternative in a Corps planning study should be approved” (NRC, 2004, p. 5).

Although this recommendation was directed at the Corps of Engineers, the shortcomings of the benefit/cost approach apply equally to programs of the Corps, the Federal Emergency Management Agency (FEMA), the Natural Resources Conservation Service, and any other federal programs that attempt to justify projects purely on benefit/cost analysis. These federal decisions, in turn, drive outcomes at the state and local levels that likewise are biased toward economic measures.

The Economic and Environmental Principles and Guidelines for Water and Related Land Resources for Implementation Studies (known as the Principles and Guidelines), set out by the Water Resources Council in 1983, go one step further by optimizing water resource development projects that maximize the a single federal objective of “national economic development” (NED). Critics of the Principles and Guidelines (and related manuals) see a bias in them toward structural solutions to flooding problems, and a failure to properly evaluate nonstructural alternatives. Although the Corps recently has begun requiring that environmental quality be maximized to some extent, this is a matter of agency policy only and its positive impact on nonstructural flood mitigation has yet to be seen.

In far too many cases we have allowed economics—as measured by NED or determined according to a benefit/cost ratio—to become the bottom-line indicator of the feasibility and the appropriate selection of alternatives in any project. Although economics clearly must play a role in the decisionmaking process, the policy evolution that has made benefit/cost economics the acid test is ill founded. Stepping back from the perceived logic of benefit/cost to view the situation in perspective, we have a national policy that does the following three things.

First, flood control spending has become premised on an economic return. This begs the question whether we are directly or indirectly encouraging investments in high-risk areas. Disallowing the calculation of indirect benefits in a benefit/cost analysis devalues the true economic benefits of a project and creates a situation in which projects that may provide an immense quantity of indirect benefits may not even be approved.

Second, the systems may not be set up to recognize “least cost” alternatives because of the way in which they are constrained by policy or overarching objectives. For example, when federal spending is guided by an objective of maximizing national economic development, the fundamental premise is that the federal spending is an investment and that, within reason, project
cost is not necessarily a constraint because the objective is to maximize the net benefits of the project as compared to its cost. This approach, however, may not adequately consider a more narrowly focused mission of merely mitigating the flood damage for the least potential cost. Thus, projects that tend to lead to evacuation of the floodplain may not compete as well as with projects that can demonstrate a return even if the evacuation option is a lower-cost alternative.

It must be recognized that there are limits to how much the federal government will spend annually on flood loss reduction projects and a policy of maximizing national economic development in fact limits the number of projects the federal government can afford at any given time and thereby limits the total amount of flood mitigation that can occur. The ASFPM is unaware of any comprehensive study that has evaluated the actual investment return of these expenditures under the national economic development model and the total flood mitigation that has been purchased under that model as compared to a model that would attempt to maximize the amount of flood hazard mitigation that would occur if the objective were to expend funds on a least-cost mitigation solution to a given threshold or standard.

Third, our investment-based approach does not fully consider that the real policy problem facing the U.S. Treasury is cash flow. During the 1990s Congressional debate over disaster funding shifted from funding disaster costs by increasing the national debt, to funding them by making offsetting cuts in other domestic programs. This is a sound fiscal approach, but its policy ramifications are large. Now in 2007, we have returned to a policy of debt financing because our disaster costs greatly exceed our ability to pay, especially for catastrophic events such as Hurricanes Katrina and Rita. This means we are using our grandchildren’s futures to subsidize current development.

In summary, our current policy does little to match project activities with the goal of minimizing the creation of tomorrow’s losses. Instead, it is heavily focused on repairing yesterday’s mistakes with old technology. A new vision is needed that focuses on adequate consideration and representation in decision making of economic, environmental, and social benefits in light of contemporary water resource planning needs for the 21st century, the severe environmental degradation facing our waters and estuaries, and the realization that federal funding for investments or for disaster recovery will be further constrained in future federal budgets when discretionary funding shrinks. In essence, a policy of leveraging (and often exploiting) our water resources for economic return and expansion was an important strategy for the 20th century, but now we need to decide whether this is the right choice for the 21st century, considering the previously mentioned factors and the need to preserve and often to restore the environment we have degraded. This examination should also consider whether we have properly accounted for the long term operation and maintenance costs we are and will continue to encounter for the structural projects built over the last decades.

These steps are recommended for establishing a more far-seeing federal water policy.

- The White House and Congress should evaluate the recommendations of the 2004 National Research Council report and convene an interagency work group to evaluate implementation of the most pertinent study recommendations. The aim would be to develop a viable and sustainable water resource development approach for use of federal taxpayer dollars.

- The estimated costs of proposed alternatives to flood problems should include both
implementation costs (direct financial outlays for design, real estate acquisition, construction, operation and maintenance, and project monitoring) and economic opportunity costs—any current benefits that would be foregone if the solution is implemented. This would also include any “negative benefits” in the form of project-induced damage that can be expected in the future. It is important that the opportunity costs of foregone benefits be accounted for and brought to the table to inform the decision.

- FEMA should approach the Office of Management and Budget to seek a reassessment of the regulations governing benefit/cost analyses. The time has come for all benefits to be included in a benefit/cost analysis. These should include recreation benefits, avoided damage to land use (erosion, crop losses, etc.), increase in real estate values due to proximity to open space, ecosystem improvements, and revenue generation from tourism. Consideration should also be given to allowing FEMA some flexibility in the use of discount rates.

- FEMA should re-establish its National Benefit/Cost Analysis Team—a group of experts that can offer advice and guidance in program policy and implementation—to evaluate FEMA’s benefit/cost procedures. The team should include representatives of a broad range of stakeholders, including state and local personnel.

- Better methods for quantifying the economic benefits of natural and cultural resources must be developed, adopted, and applied.

- A federal water policy coordinating body should be re-instituted and an early task should be an evaluation of the Principles and Guidelines, with an eye toward broadening the basis of project selection beyond national economic development, incorporating environmental and economic sustainability and the benefits of public safety (lives saved), and refining the methods of accounting for benefits.

- The principles of sustainability should be incorporated into any revision to the Principles and Guidelines.

- A study should be done of the feasibility of a unified floods-only benefit/cost method that would be used by both FEMA and the Corps.

- A joint committee should be formed and charged with finding a mutual standard for estimating damage. The discontinuity between Corps and FEMA estimates of damage and their models is serious enough to warrant this action.

- The old and outdated damage curve values being used in FEMA’s benefit/cost analysis software modules should be reassessed.

**National Interest**

For nearly a century the nation’s interest in economic growth and expansion drove the programs of the Corps and other related federal initiatives. This policy focus emanates from a time when there was a need to expand populated settlements into remote areas of the nation, for both growth and
security reasons. Water was a key resource that the federal government could leverage to promote this growth.

That was then. The United States has just exceeded 300 million in population with explosive growth in areas of the country that would not have grown as rapidly—if at all—in the absence of a water resources policy that provided federal taxpayer subsidies. It is time to recognize that for all practical purposes we have leveraged our water resources to the point that supplies are being exhausted and ecosystems have been seriously strained, especially in estuaries, coastlines, unstable arid lands, and riparian zones.

Environmental degradation and loss represents an ever growing threat to our national welfare and economy. One only needs to look at the environmental degradation of Eastern Europe to understand this relationship. For the most part our current environmental programs marginally protect and rarely restore resources because of a heavy emphasis on regulation. If the nation is going to sustain its economic position, investments in restoring and conserving water-based natural resources are absolutely vital, and debate should ensue as to whether a vision of environmental restoration should in fact be our principal national water resource interest for the next century.

Congress should task the National Research Council to determine whether the nation’s water resources policy should be shifted from a development focus to a focus on management and sustainability, and whether the National Economic Development (NED) policy standard for water resource investments should be replaced by a policy of National Economic and Environmental Sustainability (NEES).