

**NYS Environmental Facilities Corporation
January 2009 Revised DRAFT EBM Report
Financing sub-outline**

Background

The New York State Ocean and Great Lakes Ecosystem Conservation Act (2006) calls for the “integration and coordination of ecosystem based management (EBM) with existing laws and programs,” and to use the principles of EBM to “conserve, maintain, and restore coastal ecosystems so that they are healthy, productive, and resilient, and able to deliver the resources people want and need”. Ecosystem based management:

- Integrates ecological, social, and economic goals and recognizes humans as key components of the ecosystem,
- Considers ecological boundaries as well as political jurisdictions,
- Addresses the complexity of natural processes and social systems and uses an adaptive management approach in the face of resulting uncertainties,
- Engages multiple stakeholders in a collaborative process to define problems and find solutions,
- Incorporates understanding of ecosystem processes and how ecosystems respond to environmental perturbations, and
- Is concerned with the ecological integrity of coastal-marine systems and the sustainability of both human and ecological systems.

Although programs have been initiated to address environmental issues, the health of the State’s marine and freshwater resources continue to deteriorate, and the demands on them continue to increase and are often conflicting. EBM has emerged nationally as an approach which builds on the strengths of existing programs and integrates those programs with gap filling measures to protect and restore the nation’s marine and freshwater ecosystems.¹ This section of the report will review the unique needs of financing ecosystem based management, give an overview of the existing programs, and conclude with several opportunities where the State can extend financing to support EBM projects.

Unique Needs for EBM Financing

The watersheds that provide ecosystem services form part of the infrastructure that is needed for water security. Ecosystem services are the benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services such as nutrient cycling that maintain the conditions for life.² With increasing recognition of the contribution of ecosystem services to human health, economy, and culture, more and more emphasis has been placed on determining the value of these services. Also, people have started to realize that they need to invest in the maintenance of ecosystem services, just as they need to invest in the maintenance of other types of infrastructure. Without such investments, the services that benefit users are likely to be degraded.³

¹ From an Oceans and Great Lakes Ecosystem Conservation Council program report, 2007

² Pay. <http://www.greenfacts.org/glossary/def/ecosystem-services.htm>

³ <http://data.iucn.org/dbtw-wpd/edocs/2006-054.pdf>

The activities involved with an EBM approach to protection and restoration of environmental resources will require funding to be successful. The traditional funding mechanisms typically available for financing activities involved with the protection of critical environmental resources generally have not been made available on a watershed basis. These more common means of funding, such as governmental grants or legislative appropriations, are most often available Statewide and may be administered by a jurisdictional or regional basis. EBM will require policymakers and administrators to refocus their efforts from a different perspective, particularly where funding decisions will be made.

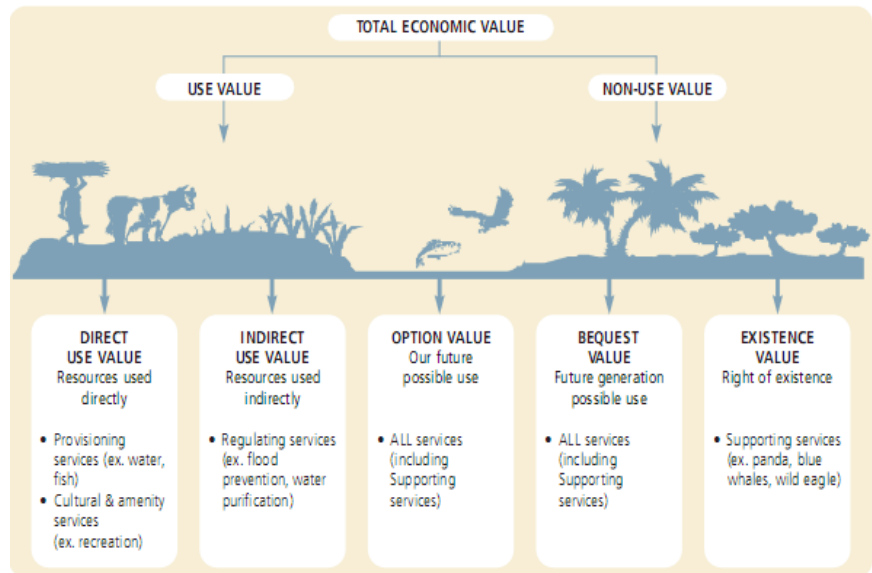


Figure 1. <http://data.iucn.org/dbtw-wpd/edocs/2006-054.pdf>

Financing the protection and propagation of ecosystem services represents a unique challenge because it requires the creation of a market that will internalize costs perceived as externalities. These externalities have generally only been valued upon crisis, such as after pollution of drinking water sources, and the value has been the cost of that remediation. Even then, the cost of cleanup may only represent a fraction of the true value of the service, as the linkages to other services are unexplored. Ecosystem-based management, on the other hand, requires that: the relationships between land uses and ecosystem performance are clear; the resultant pricing be based on sound science and economics; and the process for discovering those true costs and benefits of ecosystem-related projects are transparent.

Overview of Existing Funding Programs (to be provided by DOS)

Identified Institutional Challenges for Funding of EBM Priority Activities (after DOS provides section II)

Discussion of EBM Financing Opportunities

Pricing Ecosystem Services

Pricing ecosystem services is a necessary but somewhat elusive task because of the intangibility of the items being valued. It is clear that people are willing to pay for non-use, or passive use, environmental benefits just as they would pay for direct-use benefits from other natural resources. However, these passive benefits are likely to be implicitly assigned zero value by users unless their dollar value can somehow be estimated. For decades, economists have used different tools to develop these values, and have applied them to policy decisions

when necessary. The Environmental Valuation Reference Inventory⁴ is a database of “benefits transfer” cases; case studies of ecosystem valuation tend towards low transferability because of the specificity of each system, but this tool guides policy-makers on appropriate use of the painstakingly-arrived-at values for such services.

Methods of Valuation and Examples⁵

The following methods rely on the framework of total economic value, which considers and attempts to capture all of the use and non-use values (figure 1) in a dollar amount:

Contingent valuation (CV) is used to assess the value of both use and non-use values, and CV is an especially popular tool for valuing ecosystem or environmental services. CV is a “stated preference” tool, rather than a “revealed preference” tool because it asks participants to say how much they would be willing to spend to ‘purchase’ the environmental service, or how much compensation they would need to accept that service being taken away; a revealed preference can be observed in a regular market exchange. These are primarily survey-based, and are often used to price items such as “recreation-days” or other things that do not directly tie to a market.

In the hedonic pricing method, the basic premise is that the price of a marketed good is related to its characteristics, or the services it provides. This method is often most used when valuing services such as environmental quality, including air, water, or noise, which affect property values differently based on the interaction of these amenities. A case study at Peconic Bay on Long Island used this method to price a parcel of vacant land to be preserved based on its proximity to agricultural land, distance from roads, and other open space.

A third popular method used for pricing ecosystem services is the travel cost method. The Chesapeake Bay Area assessed the value of clean water to its beaches using this method, and they used it to raise the fee for visitors. In turn, knowing the high value of the water quality for tourists justified funding improvements for the non-point agricultural polluters, the primary threat to water quality in the area.

Last, the productivity method for valuing ecosystem services was used at Peconic Bay (the estuary on Long Island is also the place where the Great Lakes Initiative has undertaken their pilot study of EBM). This study focused on the fact that the price of restoring/maintaining an input (water quality of the area) was directly related to the production of commercially valued items (i.e. shellfish for eating, birds for viewing/hunting). Thus they were able to undertake restoration of habitat (for example, through reseeding eelgrasses) based on the price paid by consumers of the end products (shellfish or waterfowl).

Integrating EBM: The Role of the Agencies

Knowing the ability of the ecosystem to protect areas from flooding or produce clean water is not new; indeed the US Forest Service (1897) was granted powers to establish forest reserves in this country to “secure favorable conditions of water flow” which related the attributes of land to the quantity of water available. What is new is the idea that the State should reorganize itself to award projects on that watershed basis everywhere, not just in special cases such as filtration

⁴ <http://www.evri.ca/english/default.htm>

⁵ Adapted from several pages at www.ecosystemvaluation.org.

waiver situations. And especially now, as the DEC estimates \$36.2 billion in needed water infrastructure improvements⁶, we have the opportunity to address these issues in a new way that moves the state beyond end-of-pipe solutions.

Many agencies and organizations already run programs that address ecosystem issues, but they remain tied to political jurisdictions or one agency's agenda. Integrating the existing projects into a 'programmatic' vision (ideally at a watershed level) is a simple way of starting to think about EBM. The better examples that exist to learn from probably include our own Skaneateles Lake or NYC watersheds, where we have formally recognized and upheld the unimpeded water cycle as the best possible process to produce clean drinking water through forestland conservation, conservation easements, and many other activities.

With the primary mission of providing low-cost financing for environmental projects, EFC is one of the agents positioned to frame what desirable watershed projects should look like. For example, EFC has a limited ability to fund land acquisition projects as they relate to the purpose of enhancing water quality. A community could maximize the opportunity by assessing the total value of such a purchase to include recreation, property values, wildlife benefits, micro-climate effects, etc., and leverage financing to achieve multiple objectives (and protect others at the same time) from a fund dedicated to projects within that watershed. The Federal Targeted Watersheds Program is a useful example, but it requires interested communities to design their own watershed level programs in competition for grants. It may be necessary and beneficial to have State watershed programs that highlight priority projects within each of the designated watersheds. An ecosystem services survey (i.e. a needs assessment) on a watershed basis would need to be compiled from municipalities and agencies. A statewide assessment similar to this is being undertaken by the Local Government Commission on Efficiency and Competitiveness, where each of the traditionally independent municipalities submitted consolidation ideas in an attempt to address issues in a more holistic way- not unlike the principles of EBM.

In response to the 1987 Clean Water Act, which created and authorized funding of state revolving funds, New York State established the Clean Water State Revolving Fund (SRF) to help address wastewater infrastructure needs. The purpose of the SRF is to provide a financial resource of low cost loans and other types of financial assistance to eligible participants for the construction of wastewater treatment facilities and other eligible water pollution control projects. (In 1996, Congress authorized the creation of state drinking water revolving funds to help finance eligible water supply infrastructure needs and help facilitate compliance with state and federal drinking water regulations.) The SRF could be expanded to include more ecosystem services, once a decision method for pricing is determined. We have seen in this State that both wastewater treatment and drinking water production can successfully be managed using methods that include wetland retention and land acquisition for water quality preservation. Providing capital for municipalities to approach these issues in unique ways may also allow for increased capacity at existing facilities (as less water enters the facility) and hence demand less chemical treatment and less energy demand. Indeed, there are potentially many more ecosystem services available to be tapped, assuming human developments do not preclude them.

⁶ Water Infrastructure Needs of New York State. 2008. Department of Environmental Conservation.

The State could also look to emulate programs that base some portion of their funding on a performance basis. Some examples include:

- California funds its photovoltaic (PV or solar panel) projects on a performance-based incentive (PBI) system, where the participant receives funding dependent on the number of watts the PV system actually produces- not based on the installation of a certain size system;
- A recent bill in Congress forgives the balance of student loan debt after 10 years of P&I payments;
- A home-ownership incentive program in Syracuse pro-rates payback of borrowed closing costs based on length of owner occupancy in urban homes;
- The US Green Building Council's LEED pays itself for buildings that earn its platinum certification.

Applying performance measurements to environmental financing is practical: there are good measures of air and water quality, and with the implementation of cap and trade programs the idea has been frequently put into practice. And by offering technical expertise to guide the project over its lifetime so that the necessary actions occur to hit those goals, the State would also be standing behind the adaptive management principles of EBM.

Nitrogen Credit Trading

Nitrogen pollution from a variety of sources is known to have the potential to negatively impact water quality. A commonly encountered problem arising from excess nitrogen is hypoxia, a condition of low dissolved oxygen. Excess nitrogen fuels the growth of algae and other plant life, which then dies and eventually decays, consuming dissolved oxygen in the process. Although nitrogen may come from many point and non-point sources, one of the main contributors is sewage treatment plants.

One approach to managing - and ultimately limiting – nitrogen discharges into New York's waters is a nitrogen credit trading program. Under such a program, the State would establish a nitrogen credit market via the institution of a cap on the total nitrogen that may be discharged each year by each source within a defined geographic area, such as a watershed. Nitrogen generators (such as sewage treatment plants) would buy or sell nitrogen credits as needed to meet limitations on nitrogen discharges by each facility. Caps would be tied to SDPES permits or to some other regulatory controls such as TMDLs. Over time, the State could reduce the cap, thus reducing the discharge of nitrogen to target levels while providing a market-based mechanism to manage credit trading and reductions.

An interagency council would establish and manage the nitrogen trading market, setting the price of credits based upon the costs of nitrogen upgrades funded by the state and on operation and maintenance costs for nitrogen removal controls during the year in question. At the close of the year, the amount of nitrogen discharged by each plant would be calculated to determine whether the plant will be paid for excess credits, or if the plant must purchase credits to offset discharge overages. If more credits are created than purchasers need, the program would purchase the excess credits (credits would not carry over from year to year). A fund would need to be created to purchase the excess credits.

There are several states that have nutrient trading programs in place or under development. These include Connecticut, Ohio, Pennsylvania, Florida, Maryland, Minnesota, and West

Virginia. Connecticut's Nitrogen Credit Exchange (NCE) program stands out as it (1) is ecosystem management based, (2) focuses on reducing nitrogen pollution in the Long Island Sound and (3) has been operating since 2002.

Summary of Connecticut's NCE

According to the Connecticut Department of Environmental Protection (CTDEP), during the 2002-2006 period of completed trades the total value of credits bought and sold was over \$22 million⁷. This program provides an alternative to a facility-by-facility permitting approach to meeting nitrogen waste load allocations for 79 wastewater treatment plants (WWTPs).

In the Long Island Sound, the largest share of anthropogenic nitrogen is discharged by WWTPs. In the joint total maximum daily load analysis (TMDL), CT and NY agreed to reduce nitrogen loading to Long Island Sound by over 58% by 2014. The Long Island Sound Study spent considerable effort studying the potential for the NCE to accelerate nitrogen removal and save money. The NCE uses geographically based trading ratios to determine the relative cost of meeting nitrogen reduction limits at the WWTPs. Generally, the closer to the coastline a WWTP is located, the higher the trading ratio. The higher the trading ratio, the more economical treatment plant upgrades become. The lower the trading ratio, the more economically advantageous the NCE credits become. Furthermore, larger facilities benefit from economies of scale and can remove nitrogen at a lower per pound cost than smaller facilities. At this time, non-point sources and stormwater sources are not included in the NCE but are being studied for possible future inclusion.

From 2002 to 2006, the costs ranged from \$1.65 to \$3.40 per equalized nitrogen credit. The costs per credit are expected to increase over time as the easiest, lowest cost options are completed first. However, it is estimated that trading through the NCE will save from \$200 to \$400 million over the alternative of implementing nitrogen removal projects at all 79 facilities. While the savings are a positive result of the program, the primary benefit is availability of an alternative form of compliance which provides flexibility in meeting permit limits, increased nitrogen removal while eliminating the risk of permit non-compliance.

The NCE is regulated under the state-issued Nitrogen General Permit (NGP). NGP requires full accountability for each permittee and trading is a regulated process. The Connecticut Clean Water Fund is the equivalent to NY's Clean Water State Revolving Fund (CWSRF). Projects seeking Clean Water Fund financing can obtain higher scores related to their willingness to institute nitrogen removal adds points to SRF project scoring. The Clean Water Fund also provides the source of excess payments for NCE credit surpluses. The state is required to purchase all equivalent nitrogen credits that are created annually at an established value. When there is a surplus of credits, the excess payments are drawn from the Clean Water Fund and those credits become property of the State.

The NCE is a public process with a strong tradition of public outreach to the municipalities that are the primary stakeholders and their residents. The NCE process is controlled by the Nitrogen Credit Advisory Board (NCAB) which includes state agencies, and nine appointees of the

⁷ "Connecticut's Nitrogen Credit Exchange – An Incentive-based Water Quality Trading Program," September 2007 Connecticut Department of Environmental Protection, Bureau of Water Protection and Land Reuse. The above description of CT's NCE program is summarized from this 8 page report.

Governor's Office and state legislators. The NCAB must report annually to the CT General Assembly. These reports are publicly available. Recent cuts in Clean Water Fund financing could affect Connecticut's ability to meet TMDL goals by 2014.

Watershed-based Substate Revolving Fund

Both the federal Clean Water Act and the Safe Drinking Water Acts permit state SRF administrators to allocate SRF equity to the creation of substate revolving funds (SSRFs). The creation of watershed based substate revolving funds in New York State may require a re-tooling of current SRF practices. Currently the CWSRF is set up, by State statute, to allocate resources based on population categories. In addition, by direction of the DEC Commissioner, SRF resources can also be allocated to special subcategories to address unique water quality needs. As an example, Subcategory E sets aside SRF dollars for land acquisition projects that are deemed critical to water quality protection. Dollars allocated to this subcategory are available for land acquisition projects even if such projects score below the funding ranges for the population categories. Other means for capitalizing SSRF could also be considered. Funding from the Environmental Protection Fund (EPF), a future environmental quality bond act, general fund appropriations or other dedicated revenue sources (e.g. user fees or surcharges) could be dedicated to capitalizing SSRFs, or to support sector-specific or regional EBM project financing through SSRFs.

SSRFs could be established by the DEC Commissioner on a pilot basis by creating new watershed specific project funding subcategories on the SRF's Annual Intended Use Plan. However, before a statewide approach could be implemented the SRF statute would need to be reworked to allow for the allocation of resources by watershed for all classes of eligible projects. As a pilot program established by the Commissioner, SSRFs could be funded by allocating a portion of SRF annual retained earnings thereby limiting their impact on existing funding categories. The SSRF mechanism might work as follows:

- Establish new watershed specific funding categories on the Annual Intended Use Plan and allocate SRF dollars annually to critical NYS watersheds (partner with neighboring states and Canada as appropriate) from a percentage of retained earnings realized in the prior year;
- Accumulated dollars would be extended like a line of credit (meaning that dollars do not actually get delivered, but are committed to be called on to support lending to eligible recipients within the watershed) and would remain in the watershed's account once drawn and recycled;
- Watershed stakeholders would plan land acquisitions, critical non-point source projects, negotiate easements and best management practices around the steady flow of dollars committed by the SRF which would provide critical water quality protection in the state's critical watersheds;
- Projects undertaken that exceed the annual leveraging power of the equity investment could be financed through the SRF financing program's various financial assistance mechanisms, including market based short term and SRF guarantee financing (which would allow watershed communities to maintain pace even if financing needs out pace SRF funding and/or recycling rates);
- The state legislature could add matching funds to bolster the reach of SSRFs;
- SSRF accounts would be set up and held by the SRF Trustee. Once allocated dollars are drawn for eligible watershed based projects, recycled dollars and earnings realized

thereon would be remain in the SSRFs and be available in perpetuity for water quality protection purposes within the designated watershed.

Project Scoring Issues

SRF dollars would be allocated to substate revolving fund categories where watershed projects would be ranked and scored for funding with stakeholder input. This may or may not require regulatory change. Watershed projects might be ranked by their relative value in addressing Total Maximum Daily Loads (TMDLs). Subject to USEPA approval, projects could include the purchase of nitrogen or other sanctioned credit trading mechanisms that support water quality improvement within the watershed. New strategies for addressing water quality on a watershed basis such as mitigation banking could also be supported by SSRFs.⁸

This would allow the SRF to fund high impact projects (as it currently does) based on the existing scoring system while dedicating dollars (from retained earnings) to SSRFs, allowing them to fund projects that can address water quality problems at the source before they become a problem in sensitive watershed areas. In the long run, this should save on future wastewater and water supply capital outlays (that would compete for SRF funding) that might otherwise be needed in the future to remediate water quality problems.

Institutional Barriers

Before SSRFs could be implemented there are a number of issues that need to be addressed. Such issues include but are not limited to:


- There needs to be a better watershed-wide plan or guidance that would help to classify if particular projects are beneficial to the watershed. Although DEC tracks stream quality by watershed, it is not an all-encompassing watershed quality approach. Land use practices and the resulting non-point impacts are not addressed, for instance. For the watershed approach to work there need to be some standards or guidance developed specific for each watershed.
- The current SRF scoring system is geared primarily toward point source discharges. The DEC would need to develop additional criteria for non-point, land acquisition, or other types of projects which could vary between watersheds depending on the issues of importance in that watershed.
- Stakeholder input will be critical to the development of SSRFs and compatible scoring systems. Once operational, stakeholder feedback will be needed to make the necessary adjustments to achieve favorable long term outcomes.

Natural Resource Industry Sustainable Practices

There are many industries in New York State that are dependent on natural resources for their success. These industries are often some of the key forces behind employment in certain

⁸ Mitigation banking allows private investment on private land to create public benefit. The US Government defines mitigation banking as “wetland restoration, creation, enhancement, and in exceptional circumstances, preservation undertaken expressly for the purpose of compensating for unavoidable wetland losses in advance of development actions, when such compensation cannot be achieved at the development site or would not be environmentally beneficial”. It typically involves the consolidation of small fragmented wetland mitigation projects into one large contiguous site. Units of restored, created, enhanced or preserved wetlands are expressed as ‘credits’ which may subsequently be withdrawn to offset ‘debits’ incurred at a project development site. Source: Federal Guidance for the Establishment, Use and Operation of Mitigation Banks, Federal Register, November 28, 1995.

regions of the State. Encouraging these industries to adopt and embrace sustainable practices not only helps to protect the environment and provide for longevity of these industries, but it



Revolving Loans in Action: Natural Resource Industry Sustainable Practices

Sustainable Fisheries Fund

Initiative Summary: The New York State Sustainable Fisheries Fund would offer loans to New York fishing communities, groups, associations, and businesses to assist them with a transition to more environmentally and economically sustainable fishing practices. Examples of potential eligible projects include:

- Transition to gear types that have less impact on bottom habitats and reduced by catch rates;
- Reduce fishing capacity in overcapitalized fisheries;
- Support planning and implementation of management reforms for a particular fishery;
- Improve marketing for sustainable seafood products; or
- Improve fisheries-supporting infrastructure.

Initial Capitalization: Similar to California, the objective would be to capitalize the Fund from various resources including state, local, federal and grant contributions. California committed \$2 million as an initial capital contribution for their Fund, launched in March 2007. California's initial capitalization target is \$8 million with an ultimate goal of raising \$17 million. The initial fund target for NY could be \$1 million with an ultimate goal of raising up to \$5 million.

Eligible Organizations:

- Fishing, fish workers, or seafood organizations;
- Fisheries management agencies, university, academic or research organizations; and
- Industry related non-governmental organizations.

Proposed Advisory Committees:

Fund Advisory Committee (FAC) would focus on general oversight of the Fund during project start-up phase. Membership should have appropriate representation of various stakeholders including fishermen, industry groups, nongovernmental organizations, and community representatives. Membership on the FAC should be determined by the Oceans and Great Lakes Commission. The FAC's primary responsibilities would include:

- Develop and implement a capitalization strategy;
- Review loans to assure consistency with criteria associated with fund objectives;
- Advise on program development and provide general oversight;
- Review and approve reports on progress and business performance.

Fund Credit Committee (CC) reviews and approves all loans made by the Fund. Members of the CC will have an understanding of the conservation issues and community development lending.

Roles and Responsibilities: EFC could oversee and manage all aspects of Fund start-up and operations. In partnership with the Commission, DOS, EFC, and DEC would:

- Aide FAC in development and implementation capitalization strategy;
- Credit recommendations;
- Staffing support to Fund Credit Committee;
- Loan Closing and servicing;
- Risk Management;
- Compliance management;
- Portfolio management.

Sustainable Forestry Fund

Initiative Summary: The New York State Sustainable Forestry Fund would offer loans to timber operations within New York State as well as associations and businesses that may assist such operations as they transition to more environmentally and economically sustainable forestry and timber harvesting practices.

Examples of potential eligible projects include:

- Transition to machinery and gear types that have less impact on streams, waterways and forest ecosystems;
- Promote sustainable forestry and harvesting techniques;
- Support planning and implementation of timber management reforms;
- Improve marketing for sustainable timber products; or
- Achieve compliance with Sustainable Forestry Initiative Standard (SFSI).

Initial Capitalization: Our objective would be to capitalize the Fund from various resources including state, local, federal and grant contributions. The Fund's initial capitalization target could be \$1 million with an ultimate goal of raising up to \$5 million.

Eligible Organizations:

- Forestry, pulp and paper, and wood product companies and/or associations /organizations;
- Forestry management agencies, university, academic or research organizations; and
- Industry related non-governmental organizations.

Proposed Advisory Committees:

Fund Advisory Committee (FAC) will focus on general oversight of the Fund during project start-up phase. Membership may include up to eleven members and have appropriate representation of various stakeholders including foresters, timber management, pulp and paper, and wood product companies, industry groups, nongovernmental organizations, and community representatives. Membership on the FAC should be determined by the Oceans and Great Lakes Commission. The FAC's primary responsibilities would include:

- Development and implementation of capitalization strategy;
- Review loans to assure consistency with criteria associated with fund objectives;
- Advise on program development and provide general oversight;
- Review and approve reports on progress and business performance.

Fund Credit Committee (CC) – reviews and approves all loans made by the Fund. Members of the CC will have an understanding of the conservation issues and community development lending.

Roles and Responsibilities: EFC can play an integral role in overseeing and managing all aspects of Fund start-up and operations. In partnership with the Commission, DOS, EFC, and DEC would:

- Aide FAC in development and implementation capitalization strategy;
- Credit recommendations;
- Staffing support to Fund Credit Committee;
- Loan Closing and servicing;
- Risk Management;
- Compliance management;
- Portfolio management.

Sustainable Agriculture Fund

Initiative Summary: The New York State Sustainable Agriculture Fund would offer loans to agricultural and horticultural operations and food processing operations within New York State as well as associations and businesses that may assist such operations as they transition to more environmentally and economically sustainable agricultural production and processing practices. Examples of potential eligible projects include:

- Rotational grazing
- Use of Integrated Pest Management (IPM) practices on farms and greenhouses
- Promote sustainable agricultural and horticultural production and processing techniques;
- Support planning and implementation of low input sustainable agriculture;
- Improve marketing for sustainable agricultural and horticultural products; or
- Agricultural non-point source pollution control practices on farms

Initial Capitalization: Our objective would be to capitalize the Fund from various resources including state, local, federal and grant contributions. The Fund's initial capitalization target could be \$1 million with an ultimate goal of raising up to \$5 million.

Eligible Organizations

- Agricultural, horticultural, agricultural food processing companies, agricultural associations/organizations;
- Agricultural agencies, university, academic or research organizations; and
- Industry related non-governmental organizations.

Proposed Advisory Committees:

Fund Advisory Committee (FAC) will focus on general oversight of the Fund during project start-up phase. Membership may include up to eleven members and have appropriate representation of various stakeholders including farmers, horticulturalists, agricultural organization representatives, food industry groups, food processors, cooperative extension, academia, non governmental organizations, and community representatives. Membership on the FAC should be determined by the Oceans and Great Lakes Commission. The FAC's primary responsibilities would include:

- Development and implementation of capitalization strategy;
- Review loans to assure consistency with criteria associated with fund objectives;
- Advise on program development and provide general oversight;
- Review and approve reports on progress and business performance.

Fund Credit Committee (CC) – reviews and approves all loans made by the Fund. Members of the CC will have an understanding of the conservation issues and community development lending.

Roles and Responsibilities: EFC can play an integral role in overseeing and managing all aspects of Fund start-up and operations. In partnership with the Commission, Dept. of Ag & Mkts, EFC, and DEC would:

- Aide FAC in development and implementation capitalization strategy;
- Credit recommendations;
- Staffing support to Fund Credit Committee;
- Loan Closing and servicing;
- Risk Management;
- Compliance management;
- Portfolio management.

represents an economic boost to many regions of the State. Proper support, both financially and technically, will benefit New Yorkers in many ways.

One method of support could be to launch and manage revolving loan funds targeted towards specific industries transitioning into sustainable best practices such as fishing, timber harvesting and agriculture (see textboxes). California, for example, recently capitalized a revolving loan fund to aide its struggling fishing industry as it copes with reduced fish stocks and increased state and federal regulations of fishing practices. New York's timber industry could also benefit from the creation of a targeted revolving loan fund to aide in its deployment of new technologies designed to aide in the harvest of trees in an environmentally sustainable manner. Agriculture represents New York's largest industry. Support to ensure its continued importance through the utilization of new sustainable agricultural techniques is a critically important opportunity.

EFC is playing an important role in the mitigation of non-point pollution from farm operations. It currently administers the EFARM program, which provides 1996 Clean Water/Clean Air Bond Act funded grants to farms in the drafting and implementation of Comprehensive Nutrient Management Plans (CNMP). These plans, which are developed by planners certified by the Department of Agriculture and Markets, provide farmers with important benchmarks and techniques for reducing run-off from farm operations. Furthermore, in June 2007, legislation granting EFC the authority to invest up to \$10 million annually in a non-point source mitigation Linked Deposit program was approved. Through this program, EFC may deposit clean water SRF equity in qualified investments within commercial lending institutions and share interest earnings from such deposits to borrowers seeking to finance on-site wastewater treatment upgrades or improvements to farm operations intended to limit non-point run-off. The addition of a broad-based sustainable agriculture fund would help enhance efforts to support New York's agriculture industry while encouraging environmentally sustainable agricultural practices.

The Catskill Watershed Corporation's Catskill Fund (CFF) provides loans to various borrowers throughout the Catskill watershed. The CFF was capitalized in 1997 with \$65 million in proceeds resulting from the Catskill Watershed Agreement entered into by communities within the Catskill watershed and New York City. Such a place-based approach to funding and decision-making can serve as an example for other regions or watersheds of New York State.

Expansion/evolution of co-funding initiative

Adequate water and sewer infrastructure is critical for healthy thriving communities. Ensuring that these systems meet state and federal requirements often requires a significant financial investment if these systems need to be constructed, upgraded, expanded or replaced. There are several government agency programs available that provide funding for water and sewer projects. To assist communities in obtaining the optimal funding package for their projects, New York State introduced the Water and Sewer Infrastructure Co-funding Initiative.

At this time, the Co-funding Initiative is a formal cooperative effort between eight state and federal government agencies that enhances the efficiency and effectiveness of funding application processes, allowing communities to go to one source for help in obtaining an optimal funding package. Housed at the Environmental Facilities Corporation, the Co-funding Initiative acts as a clearinghouse, providing information and guidance on each of the participating co-funding agencies.

The success of this model makes it highly attractive for replication in helping achieve EBM goals. As the implementation of EBM principles and goals progresses, enhanced interagency coordination with respect to appropriate funding will be critical. Several approaches that build upon the water and sewer co-funding model should be examined for application under EBM. Expansion of the existing effort would build upon the expertise, networks and resources at EFC, while incorporating EBM into the well-established water and sewer funding programs. Enhancing this effort through participation by additional agencies would bring to the table more programs and funding opportunities targeted to EBM objectives. The level of communication and coordination required to make this effort successful would also help participating agencies more quickly incorporate EBM principles into their policies and programs. If indicated, an EBM co-funding staff function could be established to help direct clients to the best funding solutions to their EBM-related program needs.

It will be important to establish a co-funding type mechanism that will create a forum to allow agencies to collaborate and cooperate on projects. The co-funding mechanism could also be broadened to collaborate with non-profit and non-governmental organizations (NGOs). Through this broad cooperative effort, the co-funding staff could compile a list of potential projects that have been brought to their attention, helping to explain to the client what funding options may be appropriate for their project and putting them in touch with the appropriate agency staff. This list of potential projects could then be discussed at regular co-funding project review subcommittee conference call. This model is being successfully utilized by the existing New York State Water and Sewer Infrastructure Co-funding Initiative. Through this monthly conference call, a creative dialogue can occur which allows for various agency staff to discuss what funding options, or combination of various program funding could be combined into an efficient and cost effective co-funding package.

An EBM co-funding collaborative among participating agencies, non-profits, and NGOs would also provide a forum to ensure project efforts are coordinated and efficient. The achievement of EBM goals will be the guiding principles of such a collaborative. Independent consultation between participating agencies can be time-consuming and non-productive. A co-funding collaborative would streamline the process of coordinating each agency's needs and requirements within the context of the guiding EBM principles.

One of additional the benefits of using the New York State Water and Sewer Infrastructure Co-funding Initiative model is that it emphasizes the value of having one location to call for information without the need to call each individual agency. Yet, as part of this co-funding model, all appropriate agencies will be brought into the decision making matrix at the appropriate time to make sure that all government funds and staff resources are being utilized in a more efficient and cost effective manner. Once a contact is made with EFC, the client is counseled on the various funding programs that may be a good fit for the project and is then put in touch with the appropriate funding agency representatives for further follow-up.

The monthly co-funding project review subcommittee conference call allows for a follow-up conversation between the co-funding staff and the various funding agencies that may be involved in eventually providing support to the project. Because EFC is a small public authority, and has already established itself as the central location for sewer and water co-funding coordination, it is an attractive body to house an expanded co-funding initiative as part of a plan to further implement EBM principles and goals. Housing this co-funding initiative at a small

public authority could also help avoid the turf problems that may be more likely to arise if one of the larger, better known agencies were to take the lead in a co-funding endeavor that includes several other large and well known agencies.

Linked Deposit Program

EBM, although often applied on a watershed basis, has application on a localized scale and may provide ecological, economic and environmental benefits. When appropriate, the more practical approach of providing funding on an individual unit basis, rather than area-wide, may prove to be more protective of ecosystem services. For example, the replacement or repair of failing individual on-site wastewater treatment systems, in rural communities, would mitigate the environmental impacts of the offending septic system while preserving the undeveloped nature of adjoining vacant lands. By encouraging repair and replacement of individual on-site systems, the need to connect such failed systems to regional wastewater treatment facilities through collector sewers is diminished. Such collector sewers could offer the opportunity for uncontrolled growth to occur if proper local land-use controls are not in place. Repair and replacement of individual on-site treatment systems helps protect the environment without stimulating undesirable growth. However, financial assistance for individual homeowners, farmers and small businesses to defray the cost of localized ecosystem protection projects is often very limited or non-existent. The Water Pollution Control Linked Deposit Program (LDP) is intended to bridge this funding gap for these types of projects.

The LDP, already approved by the Governor and the State Legislature, will provide private borrowers with access to below market rate loans from commercial lending institutions for the purposes of:

- Replacing and upgrading residential or small business on-site wastewater treatment systems.
- Installing, replacing or upgrading farm infrastructure and equipment intended to mitigate non-point source run-off from agricultural operations.

Under the LDP, EFC would deposit SRF funds, equal to the conventional loan, with commercial lending institutions to “buy down” the interest rate charged to borrowers undertaking an eligible project. All or a portion of the interest earned on the deposited SRF funds would be used to directly subsidize the interest rate of the loan.

EFC is working in partnership with the Department of Agriculture and Markets, Department of Environmental Conservation, Department of Health, and Department of State to facilitate development of the LDP.

The concept of providing funds through a linked deposit program could be applied to other EBM related projects. For example, small-scale, individual green infrastructure projects can have significant effect on the water quality within a watershed. Currently, the ability to fund such projects is limited, if funding is available at all. A linked deposit program to support such green infrastructure features as rooftop gardens, stormwater infiltration galleries, and constructed wetlands would help to implement important aspects of EBM within various watersheds. Establishment of such a program would likely require legislative action.

Recommendations

Integrating enhanced methods of valuing ecosystem services into place-based or watershed level decision making will require new ways of thinking and new ways of collaborating to be successful. But the principles of adaptive management would first have the State build upon its achievements to incorporate EBM into existing programs, identifying their compatibility and expanding upon those that work. We have identified some of the programmatic gaps that exist currently and have introduced ways to finance them, and recommend first picking these “low hanging fruits”:

- Enhance the Co-funding Initiative. Coordinating the intent and criteria of funding sources from multiple State and federal agencies will create the synergy essential to place-based management.
- Apply the success of the water revolving loan funds to other forms of natural resource improvements. The fishing and forestry industries and agriculture could benefit from the availability of low-cost financing as they adopt more environmentally sustainable practices.
- Explore the potential of the linked deposit programs as they pertain to non-point sources and on-site wastewater treatment. The criteria set for funding programs in these categories could address downstream water issues when the individual projects are considered at a collective watershed level.

The second phase of financing the incorporation of EBM would necessitate “planting new seeds”. These initiatives have proven successful elsewhere but would require more intense research to implement:

- Establish a nitrogen cap and trade program.
- Pursue watershed based sub-state revolving funds.

In conclusion, the financing plans discussed only represent the ‘means’; they are a limited set of the options available for EBM funding. The goal of undertaking ecosystem-based management is at the very least to stop the degradation of the ecosystem, and is ultimately to capitalize on improved ecosystem functionality. Commencing discussions around these adaptive and collaborative initiatives is a positive step toward conserving, maintaining, and restoring ecosystems so that they are healthy, productive, and resilient, and able to deliver the resources people want and need.