

Integrating SEA into Planning Tools

by Dan Biller

Mr. Dan Biller is a Lead Economist for Environmental, Natural Resource and Social issues of the World Bank. He was a senior economist at the OECD, working on natural resource management, the economic aspects of biodiversity, agriculture and environment, and sustainable consumption. He has extensive field experience in many parts of the world and served the technical committee of the Summit Conference on Sustainable Development in the Americas, focusing on energy and forestry issues. He was a professor of natural resource economics courses and received his Ph.D. in Economics from the University of Illinois at Urbana-Champaign..

Looking at the presentation, basically we will cover an introduction--we just did that; we will look into policies, plans, and programs; we will compare strategic environmental assessment and environmental impact assessment, a concept that you're probably well familiar with; we'll look at SEA examples; we will look at using examples using valuation in policies, plans, and programs and projects; and we will also look at a real-life example from South Africa; and we will conclude the presentation.

So the planning process, in fact, has several levels. One level is policy. Policy is the road map with defined objectives, set priorities, rules and mechanisms for implementation, usually done in the start of a government period.

Plans, on the other hand, basically set specific priorities, options and measures for resource allocation, according to resource constraints, following sector and national or global policies. One could think of several five-year plans that China has as a mixture between policies and plans.

A program generally is an agenda with defined goals to be implemented, translated into activities and projects within the policy and principle framework.

And, finally, a project is a detailed proposal, scheme, or design of a development action indicating an investment schedule.

So why not just use an EIA to analyze the PPPs, the three P's?

Basically, we see that the SEA has a fairly different objective, set of objectives than an EIA. For example, the nature of the SEA is primarily strategic. It is conceptual. The EIA is fairly much operational, applying things on the ground. The focus of the SEA, it follows primarily a decision process, while the EIA focuses on final outcomes. The type of decisionmaking in an SEA is to facilitate while in an EIA it is to require. The alternatives looked at in SEA is towards integration while the EIA is quite specific.

The scale of an SEA is a macro--it could be global or regional--while the scale of the environmental impact assessment is a micro, it's local.

The scope of an SEA can be social, economic. The EIA is looking generally at physical and biological processes.

The use of economic methods--and I both italicize and underline this because we will talk about this in a little bit more detail later--you can use input-output models in an SEA to assist in the decisionmaking process. We can use computer- generated living models. We can use valuations. We can use cost/benefit analysis. In an EIA, usually you use cost/benefit analysis or perhaps valuation. The responsibility of an SEA generally falls in planners and to decisionmakers. The EIA is usually required to project proponents.

The time period that an SEA encompasses is usually medium to the long term, while EIA is really looking at short to the medium run. Data sources could be on the SEA environmental reports, Agenda 21, plans, policies, different statistical reports, while the EIA needs few gathering samples analysis and monitoring and local statistics.

The data in the SEA is often descriptive and quantitative. The EIA is usually quantitative. Of course, the SEA has a lot more uncertainty, and the EIA attempts really to minimize or have less uncertainty.

Finally, the SEA benchmarks are the objectives while the EIA benchmarks are really the best practices. The public perception of an SEA is somewhat distant because it doesn't often involve local issues, while the EIA is clearly the idea of NIMBY, or Not In My Back Yard. Post-valuation, again, strategic actions, perhaps projects, and the EIA is the construction or the operation of the project.

So where can we apply SEAs then? Well, basically the ideas of SEAs is primarily to apply in policies, plans, and programs, as we discussed. This includes spatial and land plans, regional development programs, natural resource management strategies, legislation and regulatory bills, investment and lending, national budgets, national development plans, international treaties, for example, trade agreements, and a lot more tools that one has in a planning process.

I mentioned to you that we will be discussing a little bit more the use of valuation in PPP and projects. When I say PPP, I talk about policies, plans, and programs.

So at the project level, of course, valuation can be used in AS, as we discussed. At the PPP levels, we can use valuation on the prevention side, on understanding compliance, and correction. And we can also use it in international agreements. I will give examples of each of them so you can see how we can integrate valuation both in strategic environmental assessment, more importantly, but also in environmental impact assessments.

Take an example first of an environmental impact assessment type of problem. This comes to us from Jamaica. A particular area of Jamaica was being considered for a large infrastructure investment, port facilities and so on. An analysis was done using valuation to see the alternative, and believe it or not, the alternative would transform this particular area into a protected area. A net-present-value cost/benefit analysis was done, and over the 25 years at 10-percent discount

rate, the incremental costs would be \$19.2 million. The incremental benefits of having a protected area would be \$41 to \$53 million, depending on the tourism scenario.

So you see that right there you have a very clear decision to make in terms of whether to engage in the infrastructure project or basically engage in a protected area sort of project.

Typically, environmental laws are based on EIAs and environmental policy instruments. Good EIAs should look at alternatives. Valuation enables them a better understanding of alternatives and cost/benefit analysis of mitigation measures.

As we can see, valuation has been used to influence projects, programs, and policies throughout the world, but not consistently.

Let's look then at an example at the policy level, primarily focusing on prevention. The Colombia Environmental Law 99, enacted in 1993, basically has an article that includes two primary charges: one is a pollution charge; the other one is a natural resource user charge.

The idea here is to charge polluters for the pollution that they cause. So the law ought to charge natural resource users for the use of this natural resource. The Law 99 basically links this charge to valuation, and implementation of this law was basically done by the Ministry of Environment determining a method annually. The full depreciation needs to be accounted, including social and environmental costs and return to a prior state before the pollution problem. Depreciation should be calculated using an economic assessment. A charge should be mathematically defined based on coefficients and variables, and coefficients should take into account local and physical, chemical aspects. The law clearly links the charge then to valuation.

Now, the law basically tries to prevent pollution. We can also look at an example of valuation attempting to understand compliance. This comes from Europe on the European Directives. The European Union has several directives; particularly the one case in point is the Beach Quality Directive--and by beach quality I mean bathing water--and Municipal Wastewater Treatment Directive.

The United Kingdom Parliament was worried about complying to new EU--European Union--standards. So they actually commissioned several valuation studies.

In particular, there has been valuation done on beach quality in the United Kingdom, and all of them, as you can see from the table, show that there is a positive value that residents and tourists and local users of beaches put in a beach quality and water quality.

For example, a study done in '98 used continued valuation method--I won't get into the detail of the methodology--in a particular beach municipality called Great Yarmouth and Lowestoft. They found out that an increase in the beach quality, in the water quality of the beaches, residents would be willing to pay \$15 to \$22 per year, and it's transformed, of course, from British pounds. With the perceived reduction of illness, later studies showed that tougher standards would even--the residents would be--the households would be willing to pay more,

between \$32 and \$60 per household per year. And, in fact, you have the Great Yarmouth beach failing the European Directive.

If you look at a recent study that involves both review preferences and stated preferences, meaning travel cost methods and contingent behavior methods, the aggregate benefit can be calculated approximately at \$2 million a year, improving municipalities or the beach quality of certain municipalities.

Now, those are quite high figures, but they have to be compared also with the costs of improving this water. And very often these costs lay elsewhere, for example, in installing and implementing treatment plants, sewage treatment plants. Often the pollution comes from non-point sources, like agriculture. Very often the costs are quite large, and to really encompass a good analysis or a complete analysis of the valuation of environmental goods and service, one has to look at the different values associated with the environment. In this case, basically it primarily looked at beach quality.

Valuation can also be used for correction, and, in fact, most laws that are available on environmental issues, they try to address correction, in other words, restoration--what I call liability type legislation. You have both the liability type legislation in the U.S. and the European Union White Paper 2000 indicates.

Basically, the European Union White Paper recognizes that many European Union countries have liability laws. In other words, the costs of restoring, the need for restoring the environment to its previous state, for example, the Germany Environmental Liability Act of 1990, the Danish Compensation for Environmental Damages Act in 1994. Basically assessments are based on market techniques, but what the White Paper tries to do is to cover the little gaps. Restating the environment as it was before very often do not cover non-use values and things link to individual preferences, for example, existence of different ecosystems and biodiversity. So there you have another use for valuation in a strategic environmental assessment concept.

Finally, I can give you an example from an international agreement. The Convention on Biological Diversity recognizes the importance of valuation in its decision, in its Conference of the Parties Decision 4/10. Basically the decision states that the convention recognizes that economic valuation of biodiversity and biological resources is an important tool for well-targeted and calibrated economic incentive measures and encourages the parties, governments, and relevant organizations to, among other issues, take into account economic, social, cultural, ethical valuation in the development of relevant incentive measures.

Basically all of this is setting up the need to use valuation on both strategic environmental assessment and environmental impact assessment.

Now, let's look at the specific example of a strategic environmental assessment done in a national park in South Africa. The place is quite beautiful. It's in the southern tip of South Africa. It's called the Addo Elephant National Park in Eastern Cape near Port Elizabeth, just for you to locate where this was done.

The problem was the decision to expand the area of the park, so in order to--before expanding the area of the park, the park management decided to engage in a strategic environmental assessment and several other studies. So the solution for the problem was contracting several studies, including a detailed SEA, and implementing them. The source of funding for these studies and the SEA was the Global Environment Facility.

Now, what did the SEA do? Basically it identified opportunities on the natural resource side, for example, biodiversity conservation, limited human population in the park where the park would be extended, low agricultural potential of the area, climate change protection, research opportunities, and important fossil deposits. But it also identified constraints on the natural resource side. The constraints that you would like to avoid is environmental fragmentation, fishing, existing agricultural potential, competing land use, industrial development, presence of alien flora and fauna species.

More important, however, they did the same sort of approach for socioeconomic factors. So on the opportunities, they found out--they identified the low population density, benefits to neighboring communities, unstable agricultural sector, availability of donor money to engage on applying this expansion, poverty-alleviating potential, growing wildlife industry in Southern Africa, potential for cross-subsidization between national parks, taking advantage of some government incentives.

And the constraints in the socioeconomic part, they identified the potential for resettlement issues of farm laborers, negative perceptions of the people related to expansion of parks, the establishment costs of this expansion, trying to find equitable benefits.

So the mitigation would be developing a resettlement policy framework, developing a communications strategy, resolving neighbor issues, minimizing establishment costs, and creating employment options.

So how did they do that? Well, they went and tried to analyze each and every economic agent that was present in the potential area of expansion. Most of the economic agents were there in this area for a number of years, so they went one by one to try to compare the rate of return on their activities.

So subsistence farming, primarily pastoralism, had about 80 rands per hectare rate of return. Rand is the local currency of South Africa.

Sixty percent of the expansion would cover subsistence farming. Game farming without ecotourism had a rate of return of 103 rands per hectare.

Now, notice that ecotourism itself would provide a rate of return of 157 rands per hectare, so convincing subsistence farming and game farming to engage in ecotourism should not have been very hard. They needed a program to do this, for example, capacity building, et cetera, bringing game to this area.

On the other hand, intensive dairy farming provided a rate of return of 177 rands per hectare, which is higher than ecotourism. That was the primary idea for alternative of livelihoods to the area. So it is clear that dairy farmers would not be interested in having their land incorporated in the park.

What this has caused was that the park managers had to go back to the drawing board and analyze if it would be necessary to engage in incorporating the dairy farms.

So the results of this analysis indicated that the total costs of land acquisitions and game introduction would be around 170 million rands, basically coming out from grants and donations of wildlife; the park's operation and management to be covered primarily by ecotourism and sales; and the strategic environmental process continues with negotiations both with the private sector and the different stakeholders.

Basically what also has happened is that the park was redesigned in order to avoid attempting to incorporate dairy farms, which could be quite costly to incorporate in the expansion.

So, to conclude, the strategic environmental assessment clearly allows for incorporation of different economic planning tools and methods involving macroeconomics, microeconomics, valuation, and different factors discussed in a different presentation. It has the potential to be more than assessment to involve scenario projections. In other words, we can use the different economic tools and methods that we discussed when we compare SEAs with EIAs to actually engage in two scenarios. Since it is a planning exercise, it has to face and deal with substantive uncertainty. In fact, if all necessary variables are considered, the planning process itself can be considered an SEA. It would be a perfect case of integrating or mainstreaming SEA in the planning process.

Now, the potential applications of SEAs in China, as we know China has a long and well-developed planning history, primarily dominated by the five-year plans. It continues to have a substantial investment program to foster its already high rates of economic growth. Yet it is also interested in the quality of its growth, which translates into sustainability of the growth, equity, and environmental quality. An SEA, for example, linked to the 11 five-year plans may be a way to go.