

## International Standards for Environmental Impact Assessment: A case study of the solar saltworks proposed for the El Vizcaíno Whale Sanctuary

By Mark J. Spalding (August 2000)

There is now a well-developed concept of what should be in an environmental impact assessment (EIA) at the international level. Our increasingly global economy will probably trigger such “international standards” more often as investors cross national boundaries in search of opportunities.

As a demonstration of this, we note the development of standards for EIA by the World Bank, other multilateral development banks, and foreign assistance organizations such as USAID (US Agency for International Development). In addition, we look to the creation of customary international law through the many similar national standards for EIAs as well as to regional agreements related to transboundary environmental impact analysis. As such we seek to distill out what constitutes good EIA practice worldwide.

This article makes use of some of the key international standards through a case study of the recently rejected solar saltworks, which a joint venture including Mitsubishi Corporation had hoped to build in Laguna San Ignacio, Baja California Sur, Mexico.

### BACKGROUND

Specifically, as proposed by ESSA (Exportadora de Sal), a joint venture of Mitsubishi Corporation (49%) and the Mexican government (51%), the new saltworks would create a massive 116-square-mile industrial landscape of evaporation ponds, a million-ton salt stockpile, fuel and water tanks, a 1.25-mile long pier with a shipping dock and conveyor belts running from crystallization ponds to the pier’s end, workshops, headquarters buildings, and the facilities necessary to support 200 employees while onsite. Seventeen pumps operating 24 hours a day to draw 6,600 gallons of saltwater per second from the lagoon into the evaporation ponds. The new saltworks project was initially proposed by ESSA in 1994, seeking a building permit authorization supported by an EIA. Because the proposed project site is within a federally designated protected area, it is the responsibility of Mexico’s National Institute of Ecology (INE) (part of SEMARNAP [the Mexican Secretariat for the Environment, Natural Resources and Fisheries]) to decide whether the proposal can be approved. The Mexican government requires an EIA to be done by the proponent of development.

In 1994, a Coalition, then made up primarily by the Mexican environmental groups, moved against the saltworks project through various legal remedies, and asserted significant and substantive legal and scientific arguments. As a result, the first EIA regarding the Laguna San Ignacio saltworks was rejected by INE primarily because the project was not appropriate for a buffer zone of a Biosphere Reserve.

ESSA first appealed the rejection, then decided to prepare a new EIA document. In response to allegations of conflict of interest, SEMARNAP created an International Scientific Committee to advise INE and ESSA on what to include in the environmental assessment.

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SOLAR SALT-MAKING

The solar salt-making process is fairly uniform and straightforward. In this process, salt is produced by using the power of wind and sunlight to evaporate, in large open ponds, salt water from the ocean, a saline lake or, less-frequently, solution-mined brine or natural brine. The water evaporates in successive ponds until the brine is fully concentrated and salt crystallizes on the floor of the ponds. Ultimately, the remaining liquid is drained off so that the salt crystals may be collected. Solar evaporation is currently the lowest cost and highest yield salt production process in the world. A modern, properly operated solar salt plant can produce salt that is more than 99.7% sodium chloride. In spite of all these advantages, however, solar saltworks have come under serious criticism.

For one, the environmental track record of solar salt evaporation facilities is dismal. Solar saltworks by their sheer size and disruptive dike systems cause massive physical alteration of the ecosystems within which they are placed, thereby altering habitats and endangering life in the world's estuaries and coastal waters. On numerous occasions, they have also been found responsible for outright pollution through releases of highly concentrated brine wastes and hazardous chemicals.

Brine is essentially magnesium chloride and other naturally occurring salts, together with a small part sodium chloride. Although brine is found in nature, the concern over its toxicity is due to the fact that its salinity concentration in salt crystallizing ponds may be up to 10 times higher than that of normal seawater. Following brine drain-off or leakage, both common events at the world's saltworks, some animal species are unable to adapt to the increased salinity of the water. Brine drain-off has also been known to contaminate aquifers and groundwater systems. The release of brine onto land, furthermore, deposits various salts that are toxic to many plant species and to microorganisms in the soil.

Solar ponds are problematic in themselves. Fish, algae and other organisms rarely survive in these ponds as the salinity increases. Fish reproductive levels may fall due to the increased salinity level. In addition, some birds are attracted to the brine shrimp in salt-water ponds; as a result, the elevated salinity may cause reproductive problems and damage their feathers. The frequent construction of dikes near mangrove systems alters the drainage and freshwater flushing of mangroves, thereby threatening mangrove survival. Unfortunately, mangrove habitats coincide with the most ideal salt production conditions.

(Spalding and Marinova)

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In July 1996, the International Scientific Committee issued scientific terms of reference (TORs) for the new EIA. Concurrently, INE issued socioeconomic TORs that had also to be addressed

by the EIA. Obviously the project also has to be consistent with Mexico's environmental laws and regulations.

Sometime during the first quarter of 2000, ESSA submitted its EIA to INE. This submission should have triggered a review process that would include an initial assessment by the International Scientific Committee, followed by a "public consultation" opportunity. Finally, INE's Director General for Environmental Impact and Ecological Zoning, taking into account the following results:

the assessment made by the International Scientific Committee,  
the public consultation, and  
its own assessment as the competent authority,

was to propose a finding to the Secretary of the Environment, Julia Carabias, as to whether or not to authorize the project.

On Thursday March 2, 2000, however, Mexico's President Ernesto Zedillo announced that he had decided to cancel, and Mitsubishi Corporation had agreed not to pursue, the Laguna San Ignacio saltworks. While many were thankful that Mitsubishi's plans to put an industrial saltworks in a whale sanctuary had been rejected, we must remember that the project was not rejected on legal or environmental grounds, as it should have been. Mexico has a process for reviewing this EIA, but apparently President Zedillo had no qualms about derailing the "process." This is a bad precedent for Mexico, even if most believe that not building the facility was the right decision, because once again the legal process for project review was subverted and the competent authority sidelined.

## ANALYSIS

### 1. Burden of Proof

The burden of proof of harmlessness of a new development normally lies with the proponents, not with the general public. The facts, including project proposal and possible environmental effects both short term and long term, are up to the project's proponent to present. In order to assume responsibility for a development and reap the benefits as its sponsor, it is appropriate and obvious that the responsibility for the EIA should lie in the same hands. In other words, while the environmental community raised questions about the environmental efficacy of the proposed ESSA saltworks for Laguna San Ignacio, it was ESSA that had the burden of proof of the harmlessness of its proposed development – not the public, not the environmental groups, and not the local fishermen.

As an example of how common the assumption is that the burden of proof lies with the project proponent, we note that in 1991 numerous governments, including the United States and Mexico, came together to create the Convention on Environmental Impact Assessments in a Transboundary Context. The Convention text outlined and simplified the format and procedure of EIAs pertaining to environmental issues affecting more than one nation. It was decided as part of this Convention, as is the case with most, if not all, government agencies, that the project's proponent is the party responsible for preparing and carrying out the EIA.

## 2. The Law

Laguna San Ignacio has four levels of environmental protection:

- a. declared a refuge for migratory birds and land-based wildlife in 1972;
- b. declared a Pacific Gray Whale refuge in 1976;
- c. created a Biosphere Reserve in 1988; and
- d. added to the international Man and the Biosphere (MAB-UNESCO) network and UNESCO's World Heritage Site list in 1993.

Laguna San Ignacio is completely within the boundary of the Biosphere Reserve and the World Heritage Site.

### Sanctuary/refuge

Within a sanctuary or refuge, Article 55 of Mexico's 1988 General Law of Ecological Balance and Environmental Protection (LGEEPA) allows only those activities that constitute "research, recreation, environmental education that are compatible with the ecology and the characteristics of the area." Environmentalists were concerned that the proposed saltworks did not constitute research, recreation, or environmental education.

### Biosphere Reserve

The worldwide list of Biosphere Reserves consists of 368 sites in 91 countries as of January 2000. Significant work has been undertaken to identify common means to protect and manage biosphere reserves. Under such international standards, the type of development that is allowed even in the buffer zone of a biosphere reserve is **integrated conservation and development projects that are compatible with protection of the core of the biosphere reserve** (see Furze et. al. at pp. 207 - 17; and Price and Humphrey at pp. 1 - 7). Environmental groups believed ESSA could not reasonably argue that its proposed 116-square-mile industrial salt evaporation project constituted conservation, or protection for the core of the biosphere reserve. [Note that the entire area is stated to be completely within the buffer zone of the Biosphere Reserve.]

Article 48 of the 1988 LGEEPA (as amended in 1996) governs biosphere reserves in Mexico and states in part:

"The surface area(s) that protect the core from external impact in the reserves will be determined. These zones are buffer zones where only productive activities started up by the local communities living there at the time the respective decree was issued, or with their participation, can occur. These activities must consider future ecological programs and must be strictly compatible with the objectives, criteria and sustainable development projects within the respective decree and management program."

A key question here would have been how ESSA could have justified its project when the local fishing population is against it.

**As for the reference in Article 48 to the decree and management plan, we note the following:**

The Vizcaíno Biosphere Reserve Decree was published in Mexico's Official Federal Register on November 30, 1988. The preamble to the Reserve Decree provides:

“[B]uffer zones refer to surfaces that are set up to protect the core zones from external impact. Productive, educational, recreational, applied research and training activities can take place here. These activities should follow the technical ecological and land-use regulations.

It is necessary to protect the wealth and to promote the conservation of Baja California Sur's ecosystems. The objective is to preserve the natural beauty, standards, to rationalize the productive activities, and to carry out basic research activities and apply it to the reserve.”

Interestingly, the reason cited for President Zedillo's cancellation decision was that the new saltworks project would not preserve natural beauty.

The Management Plan for the buffer zones allows the following:

all types of existing human settlements to be left in place, manipulative research, and productive economic activities, provided

they are in strict compliance with ecological regulations (norms), and

they are in accord with research related to the rational and sustainable use of natural resources.

Thus, the ESSA project would be permissible in the buffer zone, as a productive economic activity, only if it is found to be environmentally sound, both under law and current **international** scientific standards for sustainable development of natural resources (which it was found not to be when rejected by Mexico's National Institute of Ecology in 1995).

In addition, the broad definition of what is allowed is somewhat narrowed by language in the management plan which describes “restricted,” “moderate,” and “intensive” use categories for the buffer zone. The areas around Laguna San Ignacio are restricted use areas in which fishing and tourism will be strictly controlled to avoid harm to the gray whale, as well as resident and migratory bird species. The intensive use category is limited to the already existing saltworks at Guerrero Negro. In other words, Laguna San Ignacio is not designated for the same intensive use, as is the land the existing saltworks occupies.

### 3. The Special TORs

In addition to the law there was the question of whether the EIA would address the International Scientific Committee's special terms of reference (TORs) for the EIA on this project.

The scientific TORs called for the following items:

- Maps of the project footprint and impact areas and existing ecosystems.

- A study of the construction phase including the identification of potential harm, as well as plans for environmental protection during and after construction (with a special focus on the pier).
- A study on the solar salt production including chemical/toxic by-products and the effect on water quality.
- A study on pumping from the lagoon including the effect on lagoon salinity, temperature and biotica. This study should also include information on the effects of the noise of the pumps on whales and birds.
- A study on the effects of the dikes and evaporation ponds.
- A study of the affected areas (surrounding the project footprint). This will include information on the use of local fresh water resources.
- A number of studies on land-based and marine flora and fauna (and a separate whale study) which should include inventories of commercial, endangered and indigenous species; a description of mitigation, protection and conservation measures; and a risk evaluation. This section of the report lists many species that must be studied specifically. It also calls for comparisons to be made to the experiences in Guerrero Negro.
- A study on whether the project is consistent with the special nature of the site as a protected Biosphere Reserve.

Concurrent with the 1996 issuance of scientific TORs, INE issued socioeconomic TORs that must also be addressed by the assessment.

The socioeconomic TORs required:

- A number of economic studies including the world salt market, current economic conditions and how to raise the region's contribution to Mexico's GDP, the regional economy, and local fisheries.
- A number of studies on potential human impacts including direct and indirect employment, population changes and demographic histories.
- An analysis of risks related to the transport and disposal of fossil fuels and related use of machinery.
- A number of studies on social services and infrastructure in the region, including waste management.
- A number of studies on water use and availability.
- A number of reports on stakeholders views, social consequences and alternative designs.
- A number of reports related to the biosphere reserve.
- A set of maps of the reserve, productive areas, zones of economic impact, population, as well as historical, archeological and cultural sites.

#### 4. International Standards

While the laws pertaining to EIAs vary between governments, the primary purpose for preparing EIAs is to determine the environmental consequences of a proposed action, thereby alerting the decision-makers as well as the public to the environmental risks and possible consequences of a proposed action. The intended outcome of this disclosure is to generate conscious environmental decision-making by the agencies involved and should be undertaken for reasons other than regulatory and legal compliance. The reasons for conducting an EIA are many but the premise is

that in order to utilize natural resources in an environmentally compatible way, and to protect and enhance the environment, it is necessary to explore how certain human activities will affect the environment.

“Environmental impact assessment (EIA) is a policy and management tool for both planning and decision-making. EIA assists to identify, predict, and evaluate the foreseeable environmental consequences of proposed development projects, plans and policies. The outcome of an EIA study assists the decision-maker and the general public to determine whether a project should be implemented and in what form. EIA does not make decisions, but it is essential for those who do.” (Modak & Biswas at page 12).

EIAs that are not complete and that identify studies still to be undertaken are insufficient for consideration by reviewing agencies as they miss the fundamental purpose of EIAs, which is to facilitate informed planning and decision-making. If there are studies, such as a wildlife impact assessment, that are not completed, then full information is not available to decision-makers. The only exception to this is that on occasion, there are some minor matters that may be identified during a decision-making agency review of an EIA and are made to be conditions for full project approval. However, approval is final only after they are completed and reviewed by the responsible authority.

The public and civil society organizations, as concerned reviewers, should not be reproducing the EIA itself. “Reviewers should not attempt to refute the findings presented in an EIA report or to supplant them with conclusions of their own. Reviewers should, rather, be alert to areas of weakness, omission, or even concealment in the report. These may most often occur when certain tasks are omitted, unsuitable or ad hoc methods are used, biased or inaccurate supporting data are introduced, often without references, or the rationale or justification for conclusions is not given.” (Modak & Biswas at pages 181-2). Often a main reason for defects appearing in an EIA relates to the lack of an open approach: for example, if the project was preordained and the EIA thus becomes a defense of a decision already made. In this fashion the EIA contractors are encouraged to argue away alternative sites, alternative projects for this site or information contrary to the pre-selected project. This may have been the case with the 2000 version of the ESSA saltworks. Its EIA probably took as a ‘decision already made’ the location and general size of the project, as that which was rejected in 1995.

## SUMMARY

We thus review EIAs to determine if they contain those elements commonly expected:

- Executive summary
- Policy, legal, institutional framework
- Project description
- Baseline data
- Environmental impact analysis
- Cost/benefit analysis
- Analysis of alternatives
- Mitigation plans
- Institution building

- Environmental monitoring plans
- Public consultation

Review of these elements is directed toward the following areas of concern:

readability/presentation,  
 consideration and focus,  
 data sources and their timeliness,  
 methods and procedures, and  
 interpretation of findings.

Some standard review questions are used to evaluate EIAs:

1. To what extent are both the beneficial and adverse environmental effects clearly explained?
2. How are the risks of adverse consequences evaluated and what are they?
3. What is the scope of the EIA in terms of external factors and time-lag effects?
4. What (if any) are the impacts of environmentally sensitive areas, endangered species and their habitats, and recreational/aesthetic areas?
5. What alternatives are considered: no project? Other sites? Other technologies?
6. What lessons from previous similar projects are incorporated?
7. How do the environmental effects change the costs and benefits of the project?
8. What adverse affects are unavoidable?
9. What public participation and review of project plans or the EIA have occurred?
10. What mitigation measures are proposed, and who is responsible for implementing them?
11. What are the parameters to be monitored so that the state of the environment can be studied throughout the project?

[from Modak and Biswas page 185]

All of these standards and questions would have been raised and examined had the EIA on the new Laguna San Ignacio saltworks gone through a thorough review as had been planned by the responsible Mexican authorities. While we can assume that many of these “international standards” are common sense in California and the US, are investors ready to meet them in an isolated desert in Baja California or some equally unlikely place?



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