IMPACT SIGNIFICANCE DETERMINATION—
BASIC CONSIDERATIONS AND A SEQUENCED APPROACH

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Determination of the significance of anticipated impacts of proposed projects is a key component in the overall environmental impact assessment (EIA) process. Definitions of significance and/or significant impacts are now included in the EIA guidelines or regulations of many countries and international organizations. Where possible in an EIA study, it is desirable to identify and/or establish the significance determination criteria prior to actual study conduction. This paper summarizes some findings of a survey of such definitions resulting from American, European, and other international experiences; both generic definitions and substantive area definitions are highlighted. Traditional perspectives on significance determination have involved institutional (or governmental or regulatory), technical (or professional substantive area), and public interest considerations. A sequenced approach for impact significance determination is described, with this approach organized around ten groups of issues or questions. Examples of such issues include project type/size, project locations in areas with protected or critical resources, and environmental stresses resulting from waste residuals from the project. Examples of significance criteria pertinent to the issues are presented through the paper. Finally, the uses of significance criteria can be noted; included in such uses are: (1) determining if an environmental impact statement (EIS) will be required, or if an environmental assessment/finding of no significant impact (EA/FONSI) will suffice; (2) identifying the impacts that should be mitigated; (3) planning a baseline and/or post-EIS environmental monitoring program; and (4) documenting the interpretive rationale used in the conduction of the environmental impact study.

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Introduction of Significant Determination—ESA/FONSI

In the context of NEPA, the Council on Environmental Quality (1977) defined significant determination as the process of identifying and assessing actions that are likely to have a significant impact on the environment. This determination is essential to ensure that Federal agencies consider the potential environmental effects of their actions. The objective is to identify and evaluate actions that could result in substantial changes to the environment, thereby informing decision-making and promoting sustainable practices.

The significance determination process is guided by the National Environmental Policy Act (NEPA) of 1969, which requires Federal agencies to consider environmental impacts before undertaking actions that may affect the environment. The process is designed to ensure that decisions are made in a responsible manner, taking into account the potential impacts on the environment.

The NEPA requires Federal agencies to prepare environmental impact statements (EIS) for significant actions, whereas for actions that do not meet the significance threshold, a finding of no significant impact (FONSI) is required. This distinction is crucial as it reflects the level of scrutiny and analysis required for different types of actions.

Significant determination is a critical step in the NEPA process, ensuring that potential impacts on the environment are adequately considered and that decisions are made with informed regard for environmental consequences. This approach is intended to promote environmental stewardship and ensure that the actions of Federal agencies are consistent with the principles of sustainable development.
environmental variables for monitoring during a baseline and/or post-EIS monitoring and auditing study; and (3) documenting the interpretative rationale used during the conduction of the environmental impact study.

This paper is a condensed version of a paper by the same authors and with essentially the same title presented at the 12th Annual Meeting of the International Association for Impact Assessment, Washington, D.C., August 19–22, 1992.

References


FIGURE 1. Three levels of analysis in the EIA process. * Number denotes paragraph in CEQ regulations that contains definition (Council on Environmental Quality 1987).

Federal agencies that guide or prescribe alternative uses of federal resources, and upon which future agency actions will be based; and adoption of programs, such as a group of concerted actions to implement a specific policy or plan; or systematic and coordinated agency decisions allocating agency resources to implement a specific statutory program or executive directive. In addition, federal actions include approval of specific projects, such as construction or management activities located in a defined geographic area. Projects also include actions approved by permit or other regulatory decision as well as federal and federally assisted activities.

A categorical exclusion refers to any category of actions that do not individually or cumulatively have a significant effect on the human environment, and that have been found to have no such effect in procedures adopted by a federal agency in implementation of the CEQ regulations and for which, therefore, neither an EA nor an EIS is required.

An EA is a concise public document for which a federal agency is responsible that serves to briefly provide sufficient evidence and analysis for determining whether to prepare an EIS or a FONSI; aid an agency's compliance with the NEPA when no EIS is necessary; or facilitate preparation of an EIS when one is necessary. A FONSI
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secret process to select the appropriate determination process. The position of the proper process is a cost-effective one. However, there are many environmental and economic effects on water. For example, action must be taken to prevent the spread of waterborne diseases. In the event of a spill, containment and disposal techniques must be developed. acciones de la empresa. Esta empresa se encarga de la calidad de la empresa.
TABLE 7. Considerations in Significance Definitions from Various Countries and Other Groups (Continued)

<table>
<thead>
<tr>
<th>Country</th>
<th>Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SPAIN</strong></td>
<td>In significance determination, the nature and location of the project, and the effects on the natural and human environment are considered. Some mandatory significance has been assigned to certain EC Directive projects.</td>
</tr>
<tr>
<td><strong>SRI LANKA</strong></td>
<td>No formal requirement, but informal procedure. EIA reports are required for manufacturing projects in Free Trade Zone.</td>
</tr>
<tr>
<td><strong>UNITED KINGDOM</strong></td>
<td>Recent adoption of an EIA Procedure (1988) has required certain projects by virtue of their nature, size, and location to be considered significant. There is also consideration for the natural environment, social concerns, and the nature and magnitude of impacts. In addition, certain projects require mandatory EIA, based on the EC Directive.</td>
</tr>
<tr>
<td><strong>URUGUAY</strong></td>
<td>No legal provisions for EIA; however, private and public organizations may ask for project evaluation. Several EIAs have been completed on agro-industry projects, tourist projects, and dams.</td>
</tr>
<tr>
<td><strong>FORMER USSR</strong></td>
<td>All new enterprises and renovation of existing facilities are required by legislation to examine impacts on air, water, and the human environment.</td>
</tr>
<tr>
<td><strong>VENEZUELA</strong></td>
<td>There is a legal system and institutional framework for the protection, conservation, and enhancement of the environment. EIA is required for projects that will produce either qualitative or quantitative significant impacts; this is in relation to size and location of projects. Most EIAs concern water management projects, mining, oil exploration, and coastal developments.</td>
</tr>
<tr>
<td><strong>WALES</strong></td>
<td>There are three main criteria of significance: (1) context of project with attention to physical size; (2) location of project (particularly in sensitive environments, i.e., parks); and (3) potential effects on natural and human environments, i.e., pollution. Also, there is a special list of projects that require EIA and a list that is dependent on the size, location, or scale of the project.</td>
</tr>
<tr>
<td><strong>WORLD BANK</strong></td>
<td>Projects are screened for significance based on nature, magnitude, and sensitivity of the environmental issue. Other factors, such as environmental management capability in the country are considered. There is a listing of types of projects that are significant.</td>
</tr>
</tbody>
</table>

TABLE 1. Context and Intensity Considerations in Defining "Significantly" as Used in the NEPA Process in the USA (Council on Environmental Quality 1987)

(a) Context. This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the local area rather than in the world as a whole. Both short- and long-term effects are relevant.

(b) Intensity. This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:

1. Impacts that may be both beneficial and adverse. A significant effect may exist even if the federal agency believes that on balance the effect will be beneficial.
2. The degree to which the proposed action affects public health or safety.
3. Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.
4. The degree to which the effects on the quality of the human environment are likely to be highly controversial.
5. The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.
6. The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.
7. Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terminating an action temporarily or by breaking it down into small component parts.
8. The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.
9. The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.
10. Whether the action threatens a violation of federal, state, or local law or requirements imposed for the protection of the environment.

2, 3, 8, 9 and 10 in the list); and (2) those related to other considerations and how they in turn may have implications for environmental laws, regulations, policies, and executive orders (points 1, 4, 5, 6, and 7 in the list).

An excellent series of review questions for assessing significance has been developed by the U.S. Army Corps of Engineers (1983). Additional factors to consider in characterizing impacts from proposed programs/plans/projects include whether the impacts are: (1) beneficial or detrimental; (2) naturally reversible or irreversible; (3) repairable via management practices or irreparable; (4) short-term or long-term; (5) temporary or continuous; (6) expected for the construction or operational phase; (7) local, regional, national, or global; (8) accidental or planned (recognized beforehand); (9) direct or primary, or indirect or secondary; and (10) cumulative or single.
and not only.

involves more operation. The focus here is not limited to specific ecological aspects, rather a broader perspective. The potential environmental impacts need to be considered in the initial stage of project development. This involves understanding the ecological impacts in a broader geographical scope.

The environmental impact assessment (EIA) process is a critical step in the decision-making process. It assesses the potential environmental impacts of a project or activity, and provides information to decision-makers to enable them to make informed decisions. The EIA process is a tool that helps to identify and evaluate the potential environmental impacts of a project, and to develop and implement measures to mitigate these impacts. It is an important aspect of sustainable development and environmental management. In addition, the EIA process helps to ensure that projects are developed in a way that minimizes their environmental footprint and integrates social, economic, and environmental considerations.

<table>
<thead>
<tr>
<th>Significant Environmental Impacts</th>
<th>Various Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Climate change and biodiversity</td>
<td>2. Water resources</td>
</tr>
<tr>
<td>3. Air pollution</td>
<td>4. Noise pollution</td>
</tr>
<tr>
<td>5. Land use changes</td>
<td>6. Freshwater availability</td>
</tr>
</tbody>
</table>

Table 1: Significant Concerns in EIA from Various Countries

In addition to the things that can be done in the EIA process, mitigation measures can also be implemented during the construction and operational phases of a project. These measures can help to reduce the impact of the project on the environment, and to ensure that the project is developed in a sustainable manner. It is important to note that mitigation measures are not a substitute for avoiding or minimizing impacts in the first place. Therefore, the focus should be on preventing impacts, rather than simply mitigating them.

The EIA process is an important tool for ensuring that projects are developed in a sustainable manner, and that the environmental impacts of projects are minimized. It is a process that involves the participation of various stakeholders, including project developers, environmental experts, and the public. The EIA process is an ongoing process, and it is important to monitor the project throughout its lifespan to ensure that the mitigation measures are effective in reducing the impact of the project on the environment.
TABLE 7. Considerations in Significance Definitions from Various Countries and Other Groups

Asian Development Bank
Broad listing of types of projects (with reference to size) that are considered significant.

Belgium
Walloonia: Significance is based on type and size of the project, social considerations, and health and safety effects.
Flaunders: The Flemish Executive has authority to determine which projects require EIA and, therefore, which action is significant. This determination is based on the location of the project, economical and social impacts, health and safety effects, and the importance of the project.

Brazil
There are directives that provide a list of the activities for which EIA must be submitted (project type and size).

China
Significance is defined by the type of project, but this is in regard to location, environmental impacts, social considerations, and health and safety effects.

Colombia
There is a formal EIA process which has a list of projects that require environmental impact statements. Projects included are based on type, public health effects, nonrenewable resource development, and impacts on water quality.

Denmark
Environmental impact procedures are not specifically instituted, but major construction projects require permits from environmental authorities—it can be assumed that a type and size significance determination is used.

European Community (EC)
Specific projects with threshold levels are included on a listing of mandatory significance. This list is based on type, size, and location of project.

France
There is a listing of general and specific types (with size reference) of projects with mandatory significance. Other decisions are made based on: importance of project, potential environmental effects, and a monetary threshold. Potential environmental effects include the natural and human surroundings (environment). Further, the Ministry of the Environment may develop impact studies on its own initiative.

Germany (Federal Republic)
EIA is not quite "formalized"; the Federal Council viewpoint is inconsistent and contradictory. However, significance is based on Appendix I Projects (EC) and type and size of the action.

FIGURE 2. Conceptual framework for screening and scoping.

It would be possible to directly determine the need for a comprehensive environmental impact study, and then to address the scope of the issues/impacts that are relevant. Conversely, it may be necessary to conduct a preliminary study as a part of determining whether or not a comprehensive environmental impact study would be necessary. A confusing point is that this "preliminary study" is referred to by different terms in different countries. For example, in the United States the term environmental assessment (EA) is used, whereas in Canada and other countries the term initial environmental evaluation (IEE) finds application. Two fundamental approaches for determining whether or not to prepare a comprehensive environmental impact study for a proposed program/plan/project include the use of policy delineations based on project type or size, or the conduction of a preliminary study.

Screening Via Policy Delineations
An example of a policy basis for screening is the European Community Directive on EIA; this directive has categorized projects depending upon their needs for comprehensive environmental impact studies. Table 2 contains a list of these projects in accordance with project type and size (European Communities 1985). To serve as an example of the member states of the European Community developing further guidance for projects listed in Annex II of Table 2, the United Kingdom has indicated that the need for preparation of an EIA is "unlikely" for the following projects: thermal power stations below 50 MWTh; hydroelectric power stations below 10 MW; windfarms below 1 MW; combined heat and power installations below 50 MWTh; transmission lines below 132 KV; and overhead lines less than 1 km in length. Another example of a policy-based screening approach is that utilized by the World Bank in their guidance on the
impact significance determination
TABLE 6. Hierarchy of Significance Determination Criteria

I. PREDETERMINED CRITERIA

A. ATTRIBUTES OF PROJECT
   1. Type
   2. Size
   3. Location
      (a) urban/rural
      (b) national park
      (c) historic site
      (d) archaeological
      (e) sensitive area
      (i) wetlands
      (ii) tidal area
      (iii) preserves
      (iv) floodplain
      (v) coral reef
   (f) science value
   (g) educational
   (h) deep scope
   (i) farmlands
   (j) residential

B. GUIDELINES/REGULATIONS
   1. Mandated Significance
   2. Categorical Exclusion
   3. Established Laws/Policies
      (a) endangered species law
      (b) wetlands protection law

II. JUDGMENTAL CRITERIA

A. ENVIRONMENTAL CONSIDERATIONS
   1. Natural Environment (ecology)
      (a) water
      (b) air
      (c) soil
      (d) flora and fauna
      (e) pollution
      (f) microclimate
      (g) endangered species

B. DISCRETION OF DECISION-MAKER
   1. Sensitivity of Issue/Project
   2. Importance of Issue/Project
   3. Controversial
   4. Context
   5. Executive Authority
   6. Landuse Conflict
   7. Precedence Setting
   8. Short-term Use vs. Long-term Use

C. IMPACT BASIS
   1. Size
   2. Type
      (a) adverse
      (b) beneficial
      (c) direct vs. indirect
   3. Complexity
   4. Duration
   5. Intensity

| TABLE 2. Categorization of Projects as Used by the European Communities | (European Communities 1985) (Continued) |
|--------------------------------------------------------------------------------------------------|
| (g) Extraction of natural gas.                                                                 |
| (h) Extraction of ores.                                                                            |
| (i) Extraction of bituminous shale.                                                                |
| (j) Extraction of minerals other than metalliferrous and energy-producing minerals by open-     |
| cast mining.                                                                                       |
| (k) Surface industrial installations for the extraction of coal, petroleum, natural gas and ores,|
| as well as bituminous shale.                                                                       |
| (l) Coke ovens (dry coal distillation).                                                            |
| (m) Installations for the manufacture of cement.                                                   |

3. Energy industry
   (a) Industrial installations for the production of electricity, steam, and hot water (unless |
       included in Annex I).                                                                       |
   (b) Industrial installations for carrying gas, steam, and hot water; transmission of electrical |
       energy by overhead cables.                                                                   |
   (c) Surface storage of natural gas.                                                               |
   (d) Underground storage of combustible gases.                                                     |
   (e) Surface storage of fossil fuels.                                                              |
   (f) Industrial briquetting of coal and lignite.                                                   |
   (g) Installations for the production or enrichment of nuclear fuels.                             |
   (h) Installations for the reprocessing of irradiated nuclear fuels.                              |
   (i) Installations for the collection and processing of radioactive waste (unless included in |
       Annex I).                                                                                   |
   (j) Installations for hydroelectric energy production.                                           |

4. Processing of metals
   (a) Iron and steelworks, including foundries, forges, drawing plants and rolling mills (unless |
       included in Annex I).                                                                       |
   (b) Installations for the production, including smelting, refining, drawing and rolling, of |
       nonferrous metals, including precious metals.                                                 |
   (c) Pressing, drawing and stamping of large castings.                                            |
   (d) Surface treatment and coating of metals.                                                      |
   (e) Boilermaking, manufacture of reservoirs, tanks and other sheet-metal containers.            |
   (f) Manufacture and assembly of motor vehicles and manufacture of motor-vehicle engines.        |
   (g) Shipyards.                                                                                    |
   (h) Installations for the construction and repair of aircraft.                                   |
   (i) Manufacture of railway equipment.                                                            |
   (j) Swaging by explosives.                                                                      |
   (k) Installations for the roasting and sintering of metallic ores.                              |

5. Manufacture of glass

6. Chemical industry
   (a) Treatment of intermediate products and production of chemicals (unless included in |
       Annex I).                                                                                   |
   (b) Production of pesticides and pharmaceutical products, paint and varnishes, elastomers and |
       peroxides.                                                                                   |
   (c) Storage facilities for petroleum, petrochemical, and chemical products.                    |

7. Food industry
However, these may be influenced in part by determinants in decision-making processes. In the case of California, the California Environmental Quality Act (CEQA) requires that environmental impacts be considered in decision-making.

A project will normally be considered significant if it will have a significant environmental effect. (California CEQA, 1992)

**TABLE 1.** Significance Determination

<table>
<thead>
<tr>
<th>Project Impacts</th>
<th>Determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water quality</td>
<td>Significant</td>
</tr>
<tr>
<td>Air quality</td>
<td>Significant</td>
</tr>
<tr>
<td>Land use</td>
<td>Significant</td>
</tr>
</tbody>
</table>

**TABLE 2.** Classification of Projects as Defined by the California Environmental Quality Act (CEQA, 1973)

- **Minor** projects have minimal impacts and are not significant.
- **Major** projects have significant impacts and require environmental impact reports.

**Minor Projects**

- Development of water projects
- Construction of roads and highways
- Agricultural development

**Major Projects**

- Development of water projects with significant water quality impacts
- Construction of major public works projects
- Large-scale development projects

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1. **References:**

- California Environmental Quality Act (CEQA, 1992)
- California Code of Regulations, Title 14, Chapter 33.1
- California Board of Equalization, Environmental Impact Reports (EIRs)

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11. **Other notes:**

- Development of water projects
- Construction of roads and highways
- Agricultural development
TABLE 4. Questions Related to Significance Determination in Canada (Federal Environmental Assessment Review Office 1985)

1. Is the environmental component legally recognized as important?
   - environmental component is important if it is specifically protected by a law, policy, plan, control, or regulation; or is part of a legally defined management unit (e.g., a national park or an ecological reserve);
   - level of legal protection (i.e., federal, provincial, regional, or local) and the type of protection (i.e., law, plan, policy, control, or regulation) can affect the level of importance;
   - present legal status, the past and future predicted status.
   - environmental components legally identified as significant are commonly, also publicly, politically, and professionally, identified as important and, as such, usually rank high in relative importance.

2. Is the environmental component politically or publicly recognized as significant?
   - conditions affecting recognition of an environmental component as politically and publicly important:
     (a) conflict over the use(s);
     (b) resource availability and supply, and changes to that base;
     (c) demand and changes in demand; and
     (d) knowledge about the component and changes in that knowledge.
   - importance can be identified by any segment of the public, and the importance may be perceived rather than real.
   - assessment of the importance of an environmental component based on public input should consider:
     (a) who and how many consider the environmental component to be important;
     (b) the past history of the use;
     (c) the public’s expectations of future use;
     (d) value of the environmental component to the public (monetary and otherwise); and
     (e) real or perceived importance.

3. Is the environmental component professionally judged to be important?
   - professional judgment may often form the only basis for recognizing the significance of an environmental component. Careful documentation of that determination is essential.
   - key aspects evaluated by the professional in analyzing importance of an environmental component include:
     (a) past, present, and projected future condition in the assessment area;
     (b) the condition in the context of the local area, the region, the province, the nation;
     (c) the size and extent of the environmental component;
     (d) scarcity;
     (e) monetary value; and
     (f) biological, physical, and socioeconomic attributes of the environmental component.

A detailed listing of effects normally considered as significant under CEQA (Bass and Herson 1991).

Review of Significance Determinations from Various Countries/Agencies

To obtain further information on the significance determination process, the EIA requirements of several countries and agencies (including international organiza-

conduction of environmental assessments (World Bank 1989). Specifically, four categories of projects are delineated: those which would normally require an environmental impact study (Category A), those which may need some limited environmental review (Category B), those which normally do not need an environmental analysis (Category C), and environmentally beneficial projects and emergency recovery projects (Category D). As noted earlier, in the United States the approach has been to delineate categorical exclusions from the EIA process.

Screening Via a Preliminary Study

The second fundamental approach for screening is to conduct a preliminary study and, pending the findings of the study, either proceed to a comprehensive environmental impact study or document that the findings of the preliminary study were such that a comprehensive impact study would not be required. As noted earlier, the key is to determine if significant impacts are expected. Three examples from the United States and Canada will be used to illustrate this approach. The examples typically involve review questions and/or criteria.

Three considerations have been delineated for water resources projects in the United States. Specifically, Principles and Guidelines (1983) defined significance for environmental quality (EQ) resources based on institutional, public, and/or technical recognition. The relevant definitions are included in Table 3 (Principles and Guidelines 1983). The concept is that if one or more of these recognition bases indicate that an EQ resource or attribute is significant, then the impacts on such would also be considered as significant.

Another example involving the conduction of preliminary studies is the procedure developed and utilized in Canada. Figure 3 illustrates the role of screening and initial environmental evaluations in conjunction with the evaluation of a project (Federal Environmental Assessment Review Office 1985). The concept of screening can lead to some proposals being automatically excluded and some being automatically referred. Screening permits the proponent to arrive at one or more of the following conclusions relative to the potential impacts of the proposal: (1) there are insignificant adverse effects; (2) there are significant adverse effects that are mitigable; (3) there are significant adverse effects that may or may not be mitigable; (4) uncertainty exists relative to the environmental effects; (5) the effects are unknown; or (6) significant adverse effects are anticipated, and/or significant public concern exists, thus an environmental impact study should be conducted.

Based only on Figure 3, it is not immediately obvious as to the basis for reviewing the findings of the initial environmental evaluation and determining if a comprehensive environmental impact study should be conducted. In accordance with the procedures in Canada, the central consideration is also associated with determining the significance of the anticipated impacts. In the approach used,
The revised draft of the initial assessment phase of the Environmental Assessment Process focuses on identifying and evaluating the potential impacts of proposed projects. The process involves screening, scoping, and evaluation, and includes public involvement and stakeholder engagement.

**Table 3. Impact Significance Determination for Water Resources Projects**

<table>
<thead>
<tr>
<th>Water Users</th>
<th>Impact Significance Determination</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Medium</td>
</tr>
<tr>
<td>Medium</td>
<td>Low</td>
</tr>
<tr>
<td>Low</td>
<td>None</td>
</tr>
</tbody>
</table>

**Figure 2. Conceptual Process Flowchart**

The conceptual process flowchart illustrates the steps involved in the Environmental Assessment Process, including screening, scoping, and evaluation. The flowchart is designed to help stakeholders understand the sequence of steps and the decision-making process.

**Table 1. Water Quality and Capacity**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Measurement Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>°C</td>
</tr>
<tr>
<td>pH</td>
<td>1</td>
</tr>
<tr>
<td>Dissolved Oxygen</td>
<td>mg/L</td>
</tr>
<tr>
<td>Salinity</td>
<td>ppt</td>
</tr>
</tbody>
</table>

**Figure 1. Conceptual Framework for Water Quality**

The conceptual framework for water quality includes factors such as temperature, pH, dissolved oxygen, and salinity, which are critical parameters for water quality assessment.