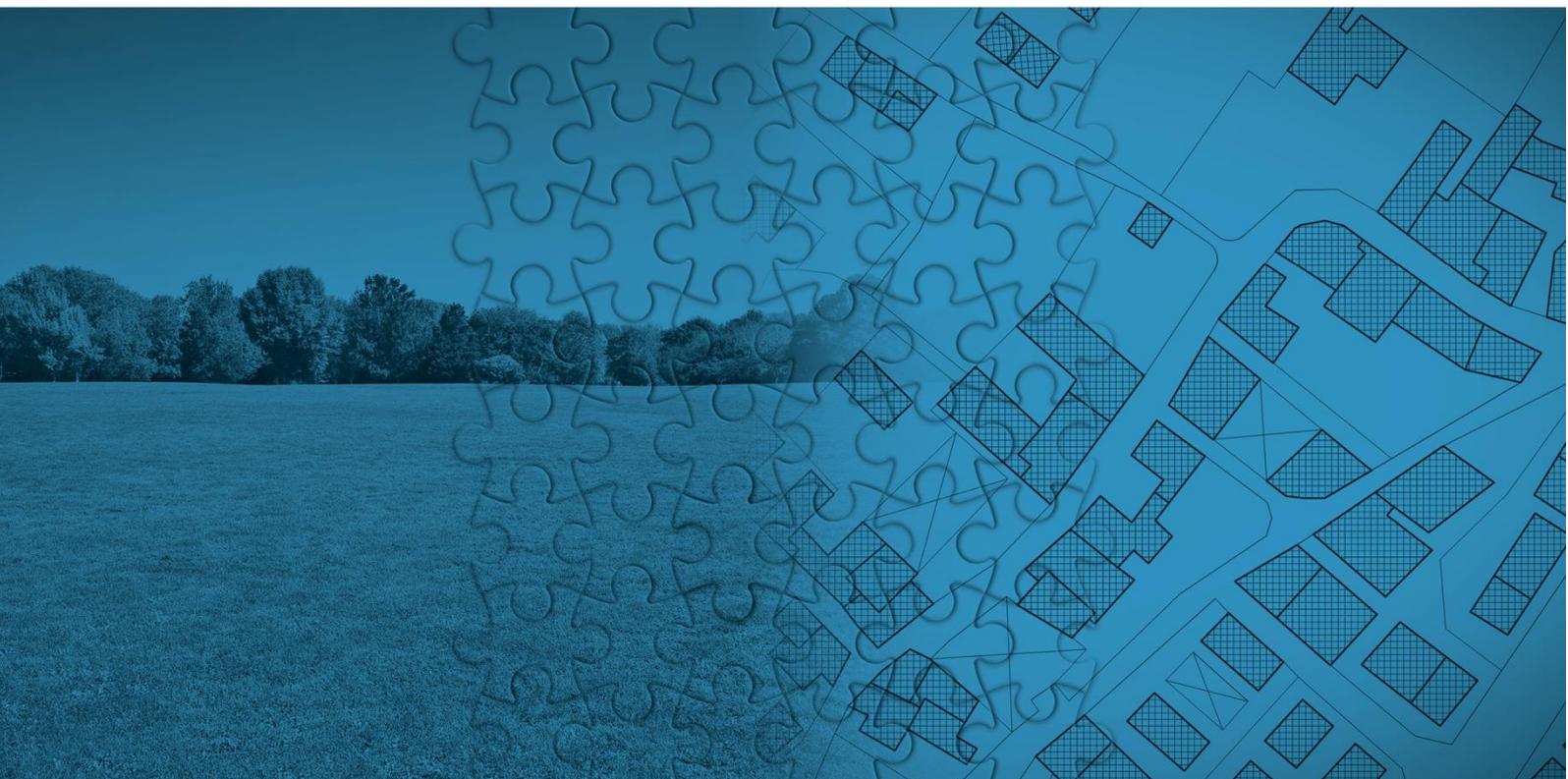


Generic Process Description

Socio-Economic Impact Assessment

World Bank Implementation Methodology



Credits

This template has been prepared by the World Bank Urban, Disaster Risk Management, Resilience and Land Global Practice' (GPURL), Land and Geospatial Team, and supported by the Korea Green Growth Trust Fund.

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The concepts for the methodology are based on the Integrated Geospatial Information Framework (IGIF), which was adopted by the United Nations Committee of Experts on Global Geospatial Information Management (UN-GGIM), August 2018.

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SOCIO-ECONOMIC IMPACT ASSESSMENT

Generic Process Description

1. Introduction

This document sets out, in an abbreviated and generic form, the process recommended to complete a Socio-Economic Impact Assessment¹ (SEIA) according to the World Bank Integrated Geospatial Information Framework (IGIF)² methodology.

Although, other techniques can be adopted it is assumed that the result of this work will be a cost-benefit analysis. The World Bank periodically publishes advice concerning recommended best practice on use of such financial techniques and consultants should ensure they are following the latest advice. However, consultants should also consider current economic conditions and local accepted accounting conventions on key decisions such as discount rates and project life cycle.

The general approach to undertaking the SEIA involves the following process:

- Establish scope of use cases to be assessed and the counterfactual³
- Identify the impacts over a defined period (the life cycle).
- Where impacts can be monetised, develop cash flows of costs and benefits.
- For non-quantified benefits, document in descriptive (qualitative) terms.
- Discount the quantified cash flows of costs and benefits to calculate Net Present Value , Benefit-Cost Ratio, or Internal Rate of Return, as required.
- Test the sensitivity of the result to variations in costs and benefits.
- Document quantifiable and qualitative results.

¹ The title Socio-economic Impact Assessment, rather than socio-economic benefits assessment, is an acknowledgement that not all impacts will be benefits, there will inevitably be dis-benefits to investment and these need to be included in any assessment.

² <https://ggim.un.org/IGIF/>

³ The counterfactual represents the situation that would arise without the identified project.

2. Six Step Approach

Breaking down the process is helpful to being able to collect and analyse the information necessary to present a coherent, business case⁴ for investment:

Step 1: Establish Scope and Priorities

The terms of reference, deliverables, timeframes are discussed and agreed with stakeholders. Strategic inputs to the decisions on scope and priorities include consideration of:

- Results of the analysis of the Baseline (Current State) position in respect to SDI development. Under the World Bank methodology this will have been completed using the Diagnostic Tool (DT) and documented in the Baseline Report. It will help to identify existing investments and their performance in delivering the current SDI.
- Analysis of the Geospatial Alignment to Policy Drivers (GAPD). The GAPD is the second stage in the World Bank Methodology that links geospatial use cases to Government policy objectives this helping to define priorities for future investment.
- National Accounts – a breakdown of the economy to determine which sectors, for example, Agriculture, Manufacturing and Professional Services contribute most to the overall Gross Domestic Product (GDP) of the country. Ideally the contribution of a given sector should be based on its value added to the economy. These are derived from Input / Output tables where available⁵. This is helpful to evaluate to what extent investment in a sector will have a large impact on economic growth.
- External influences - political, economic, social, technological, legislative, and environmental. Often political pressures will be more important than purely financial outcomes. Understanding these influences will help to draw the optimum balance between competing potential priorities.

The business case approach also needs to be established at this stage and is normally based on how other similar investment projects been prepared for appraisal by Government decision makers in the country being studied.

Experience indicates that the most viable method of arriving at a justifiable assessment, accepted by economists and decision makers, for this type of project is cost-benefit

⁴ A business case provides justification for undertaking a project, programme, or portfolio. It evaluates the benefit, cost and risk of alternative options and provides a rationale for the preferred solution. Association for Project Management.

⁵ Where input / output tables are not available, a discussion of value-added substitutes can be found in Eurostat Methodologies and Working Papers NACE Rev.2, published by Eurostat.

analysis⁶. A well established and commonly used technique for financial and economic investment appraisal.

Furthermore, it is recognized that the results achievable in what is usually time constrained research where existing statistical data is likely to be scarce, are likely to represent an “order of magnitude” impact. Consequently, the numbers should be caveated as only indicative of the likely return on investment. A conservative estimation ethos should therefore be adopted to ensure that the results are not overly optimistic, but rather represent a minimum level that could be improved if more time and data were available.

Step 2: Develop Engagement Plan

The study team should draw up a list of key organizations to engage with to gather evidence for the SEIA. This should be derived from interviews conducted in the earlier stages of the World Bank methodology based upon the strength of the use cases for SDI identified at that stage.

Organizations on both the supply (data producers) and demand (users) side, including commercial sector bodies, should be involved. The primary objective is to identify the most significant quantifiable impacts, principally related to economic growth, increased productivity, and improved citizen outcomes in the various sectors. However, impacts of a more socio-economic nature that are not so easily quantifiable should also be collected through the process. It is often easier for stakeholders to describe the impacts of SDI in qualitative terms, for example how it will improve services to users, before then selecting those that can potentially be quantified.

Briefing sessions should be undertaken to introduce the objectives of the study and approach. In addition, tutorials for stakeholders should also be held to introduce the concepts of socio-economic appraisal and outline the type of evidence that needs to be collected.

Within the selected organizations, suitable individuals with an understanding of geospatial value may have already been identified. If not, then the initial approach to the organization should clearly set out the attributes of suitable interviewees.

For each engagement, the most appropriate type of interaction needs to be assessed. In most cases for the public sector, this is likely to be by face to face interviews based on a small set of pre-circulated questions designed to open up discussion. A similar approach is usually adopted for private sector engagement.

⁶ A cost-benefit analysis is the process of comparing the projected or estimated costs and benefits (or opportunities) associated with a project decision to determine whether it makes sense from a business perspective to make an investment.

A market survey can be an alternative approach for the private sector market engagement. However, bear in mind that it may prove difficult to obtain statistically significant results if the market in each sector is relatively small.

Successful interviewing to elicit quantifiable socio-economic impacts can be challenging. A separate guide to recognised good practice is part of the package of SEIA support materials.

It should be borne in mind that it is rare for quantifiable economic impact information to be fully gathered on a single engagement. Often it is necessary for such information to be assembled (and/or assessed) from several different departments. An on-going dialogue is often required to gain authorisation at a senior level to share financial information and assurances about restrictions on use of such data may need to be documented. The potential for extended duration, due to such causes needs to be factored into project planning.

Step 3: Collate Base Socio-Economic Evidence

Information to underpin the analysis needs to be gathered from various sources, this is often referred to as a literature review:

Existing Geo-economic Studies

An increasing body of evidence of previous socio-economic studies of the value of geospatial infrastructure is available from public sources:

Sector-specific Studies – examining the impact of individual use cases for geospatial information or focusing on a series of use cases across one industry or market sector.

National Studies – although still mostly from developed countries, completed IGIF Action Plans are a growing source of assessments for the developing world. The literature review, in the IGIF good practice guide (Appendix 3.7 Attachment 1) is a useful starting point.

Global Studies – these include reports by economic consultancies commissioned by large corporations and national Governments to assess the total impact of geospatial systems and services. There are also a small number of meta-analyses that look across a range of studies to derive general metrics.

National and Regional Economic Reports

There are many sectoral reports regularly produced for countries and regions by the World Bank, OECD, United Nations Development Program (UNDP) and United Nations Environment Program (UNEP), for example.

To assist in “triangulating” the assessments of value and refining methodological approaches, studies of economic assessments from other disciplines should also be reviewed, particularly from the domains of digital transformation, transport, and environmental management.

Economic Metrics

- i) **Size and Structure of the Economy** (national accounts) – often collected from the National Statistics agency. These provided sector level economic activity by NACE⁷ codes, the international standard for this type of breakdown.
- ii) **Scaling Factors** – which are required if it is necessary to scale benefits that have been assessed in previous studies in other geographies (see benefits transfer description below). These can be derived from the World Bank’s database of relevant indicators to allow comparison with other countries. The most commonly used factors include:
 - GDP per head of population.
 - Human Development Index.
 - Population size (rural / urban split).
 - Physical characteristics – area, length of coastline, land cover.

Step 4: Analysis

The study team should adopt a standard approach to cost-benefit analysis, as outlined in, amongst other references, the United Kingdom Treasury Green Book⁸. In essence, this involves:

Identification of costs

The cost side of the business case should consider:

- a) Investment in the development of governance arrangement, capacity development, infrastructure, data standards, legal and regulatory framework, consulting support and data upgrades required by central and local government, but also by the private sector, communities, and individuals.
- b) Investment in the promotion and support of use of the SDI by third parties, who will derive and create additional value to the economy.

⁷ Statistical Classification of Economic Activities <http://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/KS-RA-07-015> (retrieved 2nd April 2021)

⁸ Treasury Green book webpage <https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government>

- c) Operational funding for on-going capacity development, data maintenance, IT maintenance, management and distribution and periodic infrastructure upgrading, amongst other recurrent costs.
- d) Parallel running of different systems during the process of upgrade.
- e) Opportunity costs of not investing.

Identification of benefits

An initial list of all identified benefits by use case and stakeholder will be assembled. Benefits are separated into quantifiable and qualitative, and we will assess them according to likely size of impact and includes any identified dis-benefits.

Many different types of benefits may be considered, here we mention some of the most common types identified in developing countries:

- a) Economic Impacts
 - **New Job creation** - from innovative software products and services based on geospatial data.
 - **Increased tax revenues** – based on more accurate and complete knowledge of property locations and values.
 - **Higher agricultural production** – resulting from increased crop yields from using precision farming.
 - **Asset Value Enhancement** – an example would be **Land market growth** due to ability to secure loans based on official recognition of land use rights, such as ownership.
 - **Lower Production costs** – decrease in fuel required to transport people and goods, by reducing traffic congestion and route optimization.
 - **Process Efficiency** – removing the need for data duplication through more effective sharing and system interoperability.
- b) Social Impacts
 - **Faster emergency response** - by Police, Fire and Ambulance services resulting from more complete and authoritative knowledge linking incident reporting to street addresses and points of interest.
 - **Discouraging crime** – using geospatial pattern analysis to increase intelligence for police officers enabling prosecution rates to rise.
 - **Improved water quality** - through smarter planning of network extensions to serve more citizens and lowering costs of pipe maintenance.
 - **Reduced numbers of Land and Property-related Court Cases** by increasing the accuracy of cadastral parcel and immovable property data.

- **Helping Public Health** – improving methods of tracking the spread of diseases such as COVID-19.
- **Supporting decentralization** – by developing tools that help better informed and more localized decision making.

c) Environmental Impacts

- **More sustainable Urban Development Planning** using 3D city models to allow decision makers and public to better visualize the impact of building projects.
- **Climate Change Adaption** from improved flood prediction using more accurate hydrological modelling.
- **Preventing Land Degradation** by using satellite imagery to monitor deforestation.
- **Reducing air pollution** by allowing location-referenced crowd sourced data to pinpoint the causes.

Calculation of Quantifiable Benefits

Two principal methods are used:

- **Primary evidence:** used for those benefits where the evidence is directly derived from interviews during the engagement.
- **Secondary evidence: often referred to as benefits transfer,** involves scaling impacts to the national level from case studies in other geographies with strong provenance, based upon metrics such as population, area, and GDP.

Step 5: Construct Financial Model

The model assumptions should cover:

- **Life Cycle** – typically a 12-year period is adopted, consisting of 5 years implementation of the SDI program followed by 7 years of use. This is commensurate with the long-term infrastructural nature of this type of investment.
- **Discount rate** - in the absence of more specific local advice, a “rule of thumb” is to use a figure of 3% above Central Bank base rate. SDI investment is normally considered a relatively low risk endeavour, relying as it does on well-proven GIS technology and leveraging good practice from other geographies, through adopting IGIF guidance.
- **Inflation** – it is normal practice for the effects of inflation to be ignored since they can be expected to affect both costs and benefits equally. However, if there are specific components of either that are established to be more sensitive to such changes, then this should be explicitly justified in the analysis.

From the information detailed above, a discounted cash flow model should be created and populated. The key assessment criteria for the result would be a simple Benefit to Cost Ratio (BCR) or Cumulative Net Present Value (NPV).

In some cases it may be appropriate to calculate an Internal Rate of Return. This is the discount rate that equates the present value of benefits with the present value of costs. Internal Rate of Return (IRR) assume that all cash surpluses from project can be invested at the IRR and all project financing can be sourced at the IRR. For high IRRs (say greater than 20 per cent) this is not likely to be the case. In such circumstances the other alternative measures are more meaningful.

To support risk assessment, a sensitivity analysis should be built into the model by varying the value of key factors where the range of potential values, from worst to best case, was largest.

Step 6: Report

The final stage of the process is to create a narrative based upon the information gathering and analysis, together with the results. A recommended structure for the report is as follows:

- Executive Summary
- Introduction – background and overview of country
- Scope – the identified potential “entry points”
- Methodology – options, choice, and assumptions

- Literature Review – relevant economic benefit studies
- Analysis – primary cases and benefits transfer choices
- Results – calculation of costs and benefits
- Conclusions and Next Steps

A range of communication products (Presentations, blogs, social media posts and videos) may also be required to socialize the results with different stakeholder groups from politicians to economists to technical experts and to the public.

Document Ends