

1 INTRODUCTION

In the United States the planning of development projects were initially concerned with the effect of these projects on the physical environment. Today a more holistic approach is followed: not only the impacts on the physical environment, but also the impacts on the human environment receive attention. The legal recognition of this approach was greatly advanced by the 1969 National Environmental Policy Act (NEPA) of the United States, which included the human environment as a concern in environmental issues. Hence environmental impact assessments (EIAs) focus mainly on the physical and biological properties of natural environments, and social impact assessments (SIAs) concentrate specifically on human aspects of the environment, that is, on “people impacts”. Ultimately, as part of an EIA, an SIA provides information to understand the consequences of a project, activity or action on a specific community.

According to Burdge (1995), an SIA has no single, universally accepted definition. It is mostly described as the systematic analysis of the likely impacts a development event or project will have on the everyday life of individuals and communities.

Most of the theory, experiences and case studies of SIAs available today in South Africa are based on international cases, applicable to the first world or the third world. However, authors like Taylor *et al.* (1992) correctly state that a first world focus cannot be applied to third world countries because the environment, environmental problems and social development stages are different.

This study is an attempt to answer the following topical questions: What is the current situation in Southern African, where a mix of first and third world development problems prevails? What is the extent and nature of SIAs conducted in Southern Africa?

1.1 PROBLEM STATEMENT

The student in Southern Africa is referred to international theory and procedure, and case studies of SIAs in first or third world scenarios. In overseas countries, SIA procedure is backed by legislation, including a definition of the procedure and a set of social variables for addressing the social issues affecting individuals and the community. But what is the situation and procedure regarding SIAs in Southern Africa?

1.2 AIM OF THE STUDY

The aim of this study was to determine and understand the nature and extent of SIAs in the local context, in terms of the processes, variables and constraints encountered and addressed during their application, so as to provide the practitioner and student with a better view on Southern African vis a vis international SIAs. For this purpose literature reviews and documented case studies were perused. However, the ultimate aim was to develop a model for SIAs in the Southern African context.

1.3 OBJECTIVES AND HYPOTHESES OF THE STUDY

- To review the development of the SIA worldwide in order to understand which changes contributed to its current nature.
- To determine if SIAs are being done in Southern Africa, where they are not enforced by legislation.

Hypothesis: SIAs are undertaken when large-scale development projects are planned.

- To establish what process is followed, if SIAs are undertaken.

Hypothesis: An internationally adopted process is followed, but the steps in the SIA might be adjusted where the SIA is part of an EIA.

- To determine which variables and issues in international studies form part of local SIA content. Are there social variables unique to the SIAs in Southern Africa?

Hypothesis: Certain social variables might be unique to Southern African studies, that is, might not occur in international, first world studies.

1.4 METHODOLOGY

This study was based on data from literature reviews and documented case studies. For the purpose of the study five case studies in Southern Africa were investigated, more specifically their application process and variables, and their role in the planning of the projects concerned:

- The Saldanha Steel Project environmental impact assessment (Western Cape);
- The Corridor Sands environmental impact assessment (Gaza Province, Mozambique);
- The social impact assessment of the second phase of the Mohale Dam development (part of the Lesotho Highlands Water Project);

- The environmental study on the transmission line between Estcourt and Pietermaritzburg;
- The Durnacol Coal Mine social impact assessment on the closure of the mine.

The various case studies were selected on the basis of:

- Their location in Southern Africa;
- The studies had to address both first and third world characteristics;
- The studies needed to have a regional or large-scale impact;
- The studies had to be well known and accessible, either from a library, a consultant or an internet report;
- The studies had to represent different development projects (e.g. new industrial development, closure of a mining facility, new and additional infrastructure).

The literature on SIAs was reviewed with a focus on the methodology of SIAs, problems, and variables for measuring the change in the approach to human aspects. Furthermore, the relevant legislation and policy guidelines were perused. The case studies were evaluated against the internationally adopted process as well as a checklist of variables developed in 1992 by the South African Department of Environment Affairs (its name then), the issues identified by Burdge (1995) and the list prepared by the Interorganisational Committee on Guidelines and Principles for Social Impact Assessment (ICGP) in 1994.

The social variables extracted from the various case studies were compared against the “theoretical” checklist of variables. This comparison helped to determine the following:

- If variables were unique to a specific study or environment or specific circumstances;
- Whether a comprehensive set of variables would enhance the description and analysis of development impacts on a community as well as the development of alleviating measures as part of an SIA.

The study is reported by means of a theoretical discussion in the second section, followed by a description and analysis of the five case studies in the third section. The fourth section presents an evaluation of the variables. The fifth and last section

contains the model for SIAs in Southern Africa, a discussion of the results of the analysis, and a discussion of the initial hypotheses in view of the results of the study.

2 THE THEORY OF SOCIAL IMPACT ASSESSMENT

2.1 INTRODUCTION

This section addresses the history, status and process of the SIA from an international perspective. The South African legislation and guidelines are discussed, as well as the influence of these on the SIA procedure. Other issues covered in this section relate to why the SIA is needed and the contribution an SIA is supposed to make in the development process.

In terms of the feasibility of the SIA process, reference is made to the application of the SIA, the methods used during the SIA and the types of SIA. Methodology, design and social issues are investigated to enlighten the reader and assist in decision making. Shortfalls of the methodology and its application are also discussed.

2.2 WHAT IS A SOCIAL IMPACT ASSESSMENT?

Burdge (1995) stated that an SIA has no single, universally accepted definition. "The content and subject matter consist of distinguishable components that consistently appear when the SIA process is implemented." Burdge identified five characteristics of an SIA based on the writings of several SIA practitioners:

- SIA is a systematic effort to identify, analyse and evaluate social impacts of a proposed project or policy change on the individual and social groups within a community in advance of the decision making, in such a manner that the information derived from the SIA can actually influence decisions.
- SIA is a means for developing alternatives to the proposed course of action and determining the full range of consequences for each alternative.
- SIA increases knowledge on the part of the project planners and the affected community.
- SIA raises consciousness and the level of understanding of the community and puts the residents in a better position to understand the broader implication of the proposed action.
- SIA includes within it a process to alleviate the social impacts likely to occur if the affected community desires that action.

Wolf (1983) asserted that "social impact assessment" is what social science is all about and that social scientists are concerned with analysing the conditions, causes and consequences of social phenomena and social life. Determining the "social effects" or "social impacts" becomes merely an exercise in filling in the blanks. It would appear then that "social impact assessment" is a measure to estimate and appraise the condition of a society organised and changed by large-scale applications of technology.

Soderstrom (1981) defined "social impact assessment" as the change in the "activity, interaction, or sentiment of a unit" as it responds to the impacts on it from the surrounding environment and the resultant changes that occur due to the interdependent relationships in the *system*. A proposed project will therefore alter one or more of these elements in a unit to different degrees and these changes will in turn alter other elements and units.

An SIA is considered as a subset of an EIA, in that it is an assessment of the impact on people and society of major policies, plans, programmes, activities, and developments. Social impacts or effects are those changes in social relations between members of a community, society or institution, resulting from externally induced change. The changes might be physical or psychological and might affect social cohesion, general lifestyle, cultural life, attitudes and values, social tranquillity, relocation of residents, and severance or separation. For example, in the construction of large hydroelectric dams, large populations are relocated to unfamiliar environments. This results in social discontent, unhappiness, increased illness, and a loss of productivity and income (Gilpin, 1995).

Cock (1994) stated that SIA is something of a hybrid, a method of policy analysis, a planning tool, and a research approach. It is an essential part of understanding the process of social change and giving it direction. It involves different research methods and techniques to investigate at least four major categories of impacts:

- Demographic – population changes, displacements and relocation problems;
- Socio-economic – changes in employment patterns, systems of land tenure, income levels;
- Institutional – changed demands on local services;
- Community – changes to social networks and levels of social cohesion.

An SIA can provide better information for decision making and offers great potential for integrating scientific policy analysis in a democratic political process. An SIA is used to investigate the social and cultural impacts of development plans, programmes and projects. Furthermore, an SIA is an effective tool for informing the public, encouraging its participation in policy debate and reducing the disproportionate influence of special interest groups in decision making. The sociologist has both the research and analytical skills to participate in the execution of SIAs. An SIA has significant potential for promoting development and mitigating the adverse impacts of eco-tourism on the physical environment of local communities.

Vanclay (1999) defined an SIA as an all-encompassing framework for impact assessments that incorporate public participation and institutional issues. In such a model, the SIA includes the psychological and health effects experienced by individuals and the social and cultural effects experienced by communities, as well as the institutional and financial effects experienced by societies. The emphasis of an SIA must be on which impacts will be experienced and/or perceived by people, and it may be worth separating the SIA from more technical analysis focusing on physical impacts.

Social impact assessment can be defined as the process of assessing or estimating, in advance, the social consequences that are likely to follow from specific policy actions or project development, particularly against the background of the national or provincial environmental policy and legislation concerned. Social impacts include all social and cultural consequences to human populations of any public or private actions that alter the ways in which people live, work, play, relate to one another, organise to meet their needs, and generally cope as members of society (Burdge, 1995; Burdge and Vanclay, 1995; ICGP, 1994).

2.3 HISTORICAL DEVELOPMENT OF SOCIAL IMPACT ASSESSMENT

Authors like Finsterbusch (1995) and Burdge and Vanclay (1995) described the historical development of SIAs since the passing of the National Environmental Policy Act (NEPA) in 1969, when environmental history was made in the United States. NEPA made provision for the integration of the assessment of development impacts "on the human environment". It required the identification of methods and procedures "... which ensure that presently un-quantified environmental amenities and values be given appropriate consideration" (ICGP, 1994).

NEPA required that any “major federal actions significantly affecting the quality of the human environment” be included in the environmental impact statement (EIS). The aim of the EIS is to estimate the action’s impacts on the environment. Taylor *et al.* (1992) stated that the Santa Barbara oil spill was only one instance of environmentalism that stimulated the inclusion of an SIA in the EIS. Affluent Americans were faced with a direct affront to their environment – black, gooey oil on their heretofore pristine beaches. In terms of the NEPA requirements, federal agencies had to use a systematic and interdisciplinary approach to ensure the integration of the natural and social sciences in environmental design and planning that may impact on the environment. The result was impressive. In the first ten years after NEPA implementation, almost 12 000 environmental impact assessments were completed. Around 1 200 lawsuits contesting these assessments were filed.

Table 1 provides a brief historical description of other legislation in the United States that impacted on the support for SIAs.

Table 1: Statutes and Regulations that Mandate or Contain Provisions for the Conduct of Social Impact Assessment

DATE	LAW	PROVISIONS
1970	National Environmental Policy Act of 1969.	Calls for the integrated use of the social sciences in assessing impacts "on the human environment". It requires the identification of methods and procedures that ensure that presently un-quantified environmental amenities and values be given appropriate consideration.
1976	Magnuson Fishery Conservation and Management Act.	Where a "system for limiting access to fishery in order to achieve optimum yield" is deemed necessary, the Act requires the Secretary of Commerce and the regional Fishery Management Councils to consider in depth the economic and social impacts of the system.
1978	US Council on Environmental Quality 1978. Regulations for implementing the procedural provision of the NEPA.	"Human environment' shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment."
1978	Outer Continental Shelf Lands Act.	"The term 'human environment' means the physical, social, and economic components, conditions and factors which interactively determine the state, condition, and quality of living conditions, employment, and health of those affected directly or indirectly" by the resource development activities in question.
1980	Comprehensive Environmental Response, Compensation and Liability Act.	Calls for working with affected publics through community relations programs and assessing community and state acceptance of Superfund plans and affecting local populations.
1982	Nuclear Waste Policy Act.	Calls for the preparation of an EIS, specific demographic limitations on siting the nuclear repository; inclusion of affected Indian Tribes in the siting process and impact assistance.
1986	Superfund Amendments and Reauthorisation Act.	Work with an affected public through community relations programs and assessing the acceptance of plans by local communities.
1986	Council of Environmental Quality re-issue of regulations implementing the procedural provisions of the National Environmental Policy Act.	The treatment of incomplete or unavailable information is clarified.
Interorganisational Committee on Guidelines and Principles for SIA (1994)		

Although various pieces of legislation made provision for the inclusion of social aspects, Taylor *et al.* (1992) stated that the social dimension was rarely included in any detail in these early assessments. It can hardly be claimed that specific projects were approved, rejected or changed radically on the basis of social assessment. However, many decisions were affected in more subtle and indirect ways by the recognition of social factors.

Finsterbusch (1995) stated that during the 1970s a tremendous number of EISs were produced, of which many included SIAs. Since 1980 the production of EISs has declined greatly. The EISs for construction projects (roads, dams, power plants, airports, tunnels, bridges, power lines) declined the most. The Federal Highway Administration (FHA) was involved in the submission of SIAs, although most of the actual SIA work done was by the state highway departments and their contractors. The FHA produced more than a third of all SIAs up to May 1980. Towards the late 1970s most of the federal highway system was completed. As a result the number of FHA SIAs conducted under NEPA requirements declined substantially. The FHA filed only 24 final EISs in 1993 compared to 56 in 1980.

By applying a technique using project titles and maps, Finsterbusch (1995) estimated that the 24 road projects assessed and filed in 1993 did not exceed 200 miles of constructed roads. None of the projects indicated an extremely long or time-consuming social impact assessment, and none showed evidence of extensive social impact assessment activity.

According to Finsterbusch (1995), the Corps of Engineers was the second most active agency in the field of SIA in the 1970s. It produced nearly twenty per cent of EISs and was involved in dam projects that involved relatively complicated SIAs. Since 1980, however, dam construction has declined greatly caused by higher and realistic discount rates became available. The downward trend in the dam business was evidenced by the fact that the Corps of Engineers filed only one final EIS for a dam project in 1992 and none in 1993. The Corps of Engineers played a significant role in the environment and 16 final EISs were submitted in 1993. Most of them were for navigation, flood control, and beach erosion control projects, or for various non-construction projects that had few social impacts.

Another very important type of government action, which required an EIS with an SIA component, was energy development. These types of development were not

numerous but they became a major focus of SIA research and accounted for many of the best academic publications involving SIAs. However, since 1980 energy developments have dropped considerably.

Another major construction activity, namely the siting of hazardous and non-hazardous waste landfills that require an EIS with the associated SIA, has also dropped since 1980. This type of activity, including the siting of a national nuclear waste repository, has become a growing national concern and a major contributor to the virulent national NIMBY (not-in-my-backyard) syndrome. The Nuclear Waste Policy Act was passed in 1982 and in 1983 nine sites in six states were selected for consideration. By 1985 only three sites remained for consideration and political factors seemed to play a larger role in the elimination of these sites than environmental factors. In 1987 Congress legislated that the repository would be located at the Yucca Mountain site in Nevada, which was on federal land and therefore the least susceptible of the sites to public protests.

The only area where EISs and associated SIAs expanded was management plans for land and resource use. Such plans for the Forest Service became the leading government actions requiring an EIS, and increased from 16 final EISs in 1980 to 54 in 1993. The Bureau of Land Management filed 15 final EISs for land and resource use plans in 1993.

The SIA field has declined dramatically since 1980, according to Finsterbusch (1995), both in human and in research funding resources, because the construction of highways, dams and energy facilities has declined dramatically and the nuclear hazardous waste candidate sites have shrunk from nine to one. At the same time the practice of SIA has greatly increased in Canada and Western Europe and is developing in other parts of the world.

2.3.1 SOCIAL IMPACT ASSESSMENT IN OTHER DEVELOPED COUNTRIES

The New Zealand procedures show similarities to NEPA requirements but lack legislative backing. The Commission for the Environment was the agency for overseeing and reporting to the New Zealand government on the effectiveness of the procedures. The commission's primary role was to audit environmental impact reports. But the commission was often subjected to government's will, as it had no established legal mandate. The impetus for imposing environmental protection and enhancement procedures, according to Taylor *et al.* (1992), came from controversies

such as the raising of Lake Manapouri for electricity generation. There are interesting parallels between the Manapouri proposal and the Santa Barbara oil spill in that they both struck a note of widespread public discord, leading to formal environmental assessment requirements.

Taylor *et al.* (1992) mentioned that public participation was required in New Zealand for environmental audit procedures. The public participation process was sometimes confused with social assessment. But the process of public participation that was usually employed, was very limited and often simply provided the opportunity to make submissions or appear at formal hearings. These early efforts should therefore not be confused with the consultative process of a social impact assessment as advocated today.

In New Zealand, for instance, an early piece of social assessment research that gained international recognition was a large project monitoring the impacts of the Huntly thermal power project. The research received substantial government backing. Many planners, developers and others involved in the practical side of impact assessment and mitigation regarded the project by and large as an academic exercise.

Paradoxically, while there were examples of too little social analysis there were also examples of too much social analysis. This was more often the case when academics were contracted to do the work. In assessing the community in question in a traditional way, these studies tended to become lengthy social overviews. They lacked any real focus on issues or projections of likely future social effects, although they usually provided baseline data for subsequent, more focused assessments.

2.3.2 SOCIAL IMPACT ASSESSMENT IN DEVELOPING COUNTRIES

Third world development projects are another important area for SIAs. Social impacts have been considered in project design and selection processes since the Agency for International Development (AID) issued guidelines for “social soundness analysis” in 1975. In most cases, SIAs were social feasibility studies rather than impact assessments. These studies did not try to identify all the significant potential social impacts of the project, but constituted a community needs analysis. The purpose of these SIAs was to discover whether there were cultural or institutional factors that would hinder the success or feasibility of the project (Taylor *et al.*, 1992).

The guidelines governing the social soundness analysis were more vague than the SIA guidelines adopted by agencies working under NEPA requirements. The social soundness guidelines set out a few research requirements. Experienced anthropologists or other social scientists would be hired to develop the problem statement in order to assess the issues and how the proposed project would fit in with the affected communities and cultures. In their review of project design documents in 1988, Finsterbusch and Van Wicklin generally found that social soundness analyses were weak and the socio-cultural factors were negatively perceived, which often contributed substantially to poor project performance (Taylor *et al.*, 1992).

2.4 LEGISLATION AND GUIDELINES ASSOCIATED WITH SOCIAL IMPACT ASSESSMENTS

As mentioned at the beginning of this study, NEPA made definite changes to legalisation over the years, so that human aspects of the environment were included in impact assessments. NEPA made provision for specific sections in the social impact assessment procedure. An example can be found on the NEPA website: "Fact Sheet – What is Social Impact Assessment?" This site makes reference to the definition of, differentiation between, and legalisation on "social assessment", "socio economic impact assessment" and "social impact assessment". The website further addresses the essential components, such as the principles, variables, methods and typical steps of an SIA. The last section of the website deals with SIA contracts, including the scope of service and the principles the contractor should adhere to.

In the South African instance, broad policy guidelines stipulated the requirements for the management of the environment and resources, including the need to address the human aspects. The South African policy guidelines were conceived during the 1992 United Nations Earth Summit when a global plan for sustainable development was finalised. The Rio Declaration on Environment and Development noted several principles relating to the environment and society:

- *Principle 1: Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.*
- *Principle 3: The right to development must be fulfilled so as to equitably meet development and environmental needs of present and future generations.*

- *Principle 4: In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.*
- *Principle 5: All States and all people shall cooperate in the essential task of eradicating poverty as an indispensable requirement for sustainable development, in order to decrease the disparities in standards of living and better meet the needs of the majority of the people of the world.*
- *Principle 8: To achieve sustainable development and a higher quality of life for all people, States should reduce and eliminate unsustainable patterns of production and consumption and promote appropriate demographic policies.*
(<http://www.unep.org>)

As a member of the United Nations, South Africa has incorporated these principles into existing actions and legislation.

The then South African Department of Environment Affairs issued a series of guideline documents in 1992, which included a checklist of environmental concerns. This checklist includes a number of issues that need to be addressed during an EIA and SIA. The checklist is still being applied in practice. This checklist will be analysed in full later in this study.

The Department of Mineral and Energy Affairs issued a document in 1992, namely *Aide-Mémoire*, which stipulates the requirements and procedure for the preparation of environmental management programme reports for mines (EMPRs). *Aide-Mémoire* was compiled in terms of the environmental requirements and directives of the Minerals Act, No. 50 of 1997. The purpose of *Aide-Mémoire* was to assist in structuring EMPRs and provide a single document that would satisfy the various authorities concerned with the regulation of the environmental impacts of mining (South Africa, 1992).

More recent legislation in South Africa makes provision for the sustainable development and involvement of its communities. The Constitution of South Africa, Act No. 108 of 1996, article 24 (South Africa, 1996) states that:

“Everyone has the right –

- To an environment that is not harmful to their health or well-being; and

- To have the environment protected, for the benefit of present and future generations, through reasonable legislative and other measures that –
 - i. Prevent pollution and ecological degradation;
 - ii. Promote conservation; and
 - iii. Secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development.”

In addition, the National Environmental Management Act (NEMA), No. 107 of 1998 (South Africa, 1998), states under the heading “National Environmental Management Principles” that:

- The principles mentioned in the Act must serve as the general framework within which environmental management and implementation plans must be formulated.
- Environmental management must place people and their needs at the forefront of its concern and serve their physical, psychological, developmental, cultural and social interests equitably.
- Development must be socially, environmentally and economically sustainable.
- Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.
- The social, economic and environmental impacts of activities, including disadvantages and benefits, must be considered, assessed and evaluated. The decisions must be appropriate in the light of such considerations and assessments.

Although no requirements or procedures are stipulated in the current legislation, SIA reports are developed according to international standards and the 1992 environmental checklist guideline document and, where applicable, *Aide-Mémoire*.

2.5 FEASIBILITY OF SOCIAL IMPACT ASSESSMENT

Barrow (1997) mentioned that SIA has been applied in various situations, including development projects, investigations of affected groups, communication and

technology change, institutional and social change, structural adjustment and community development.

- *SIA and infrastructure:* Infrastructure developments, according to Barrow (1997), can affect urban and rural residents and include, amongst others, water supply dams and hydro-electric schemes, hydrocarbon exploitation, mining, agricultural development, flood control, land development, irrigation schemes, drainage schemes, resettlement, improved communications and industrial development. Some projects impact on a national or even global scale. An example of industrial development with a substantial impact is Henry Ford's production lines, which had global socio-economic impacts. This study investigated five projects: the Saldanha Steel Project in the Western Cape, which was aimed at the establishment of a new steel-producing facility; the Corridor Sands project in Mozambique's Gaza Province, which addressed the creation of a new mine in a rural area; the Mohale Dam project, which was aimed at the development of a dam and was part of a bigger water-providing project in Lesotho; the Durnacol Coal Mine study, which took a look at the impacts arising from the closure of a mining activity; and the Estcourt to Pietermaritzburg transmission line study, which evaluated the social impacts of the additional infrastructure, during and after their erection, in order to support infrastructure in the province.
- *SIA and tourism:* Tourism is considered to be a growing sector and an important area of development in both developed and developing countries. Tourism, according to Barrow (1997), provides the ideal opportunity for doing SIAs. Tourism can affect a region in various spheres, including the cultural, social, economic, health and physical environments. Impacts are greater in regions where the community is isolated and the development or innovations are rapid. There is no shortage of post-development assessments, which are valuable for establishing typical patterns of impact for determining the effectiveness of social impact assessments. SIAs with a pro-active tourism focus are less common. An example of such an SIA would be a study of a hotel complex to be built in a relatively undeveloped area with the aim of making recommendations on how assessment policies and procedures could be improved. SIAs can also be applied to ascertain the potential for conflict between the interests of the host community and the interests of the tourists. Tourists are likely to respond to local hostility or other social problems by going elsewhere.

- *SIA of different energy scenarios:* Barrow (1997) mentioned that SIA has been applied to possible future energy scenarios and proposals for various national energy policies, such as taxes on pollution.
- *SIA and land development/resettlement:* Land development is a broad subject that encompassed many things - from the development of unspoilt natural areas to the redevelopment of occupied land or derelict sites. The associated impacts are varied, according to Death and Christensen in Barrow (1997). SIA can be applied with great success and is seen as a valuable tool. Resettlement, whether voluntary or enforced, has caused marked social impacts. Most of these relocations resulted from large projects.
- *SIA and agricultural change:* According to Cernea, Chamala, Pinhero, Pires and Campbell in Barrow (1997), the modernisation of agriculture and the spread of technology in developing countries have been the focus of a substantial number of SIAs. Tremendous socio-economic impacts have been associated with Green Revolution innovations since the 1960s. Some largely unexpected and serious impacts have called for strategies that alter the negative impacts. In the past century the replacement of subsistence farming with cash crop production has affected huge areas of the world and has had serious impacts. Those accustomed to cash crop production have also had to face many developments and some have turned to contract production, thereby binding themselves to restrictive schedules and production options. This has resulted in major socio-economic impacts.
- *SIA and health:* The social impacts of a wide range of health issues in both developed and developing countries have been studied, including HIV/AIDS, ageing and dependent populations, migraine, cancer, heart disease, tobacco consumption, illicit narcotics, medical treatment innovations and new pharmaceuticals (Barrow, 1997).
- *SIA and technology change:* Technological innovations and change, according to Barrow (1997), constitute a field where SIA has been applied in developed and developing countries. Technology affects employment opportunities, habits and quality of life, and even minor changes have huge impacts such as the development of the personal computer and fax machine.

2.5.2 METHODOLOGY OF SOCIAL IMPACT ASSESSMENT

Carley (1983) asserted that SIA methodology should promote a systematic and disciplined approach to the study of development problems. This is important to simplify the complex reality for busy decision makers. SIA methodology should assist in problem

2.6 THE SCOPE OF SOCIAL IMPACT ASSESSMENT

This section describes the principles set for SIA, and the methodology and steps that need to be followed in the process. The various issues or variables that need to be addressed during an SIA will also be discussed from a theoretical point of view.

2.6.1 PRINCIPLES FOR SOCIAL IMPACT ASSESSMENT

There is general consensus that the SIA should include a discussion of the impacts of the proposed action on components of the human environment, and steps that could be taken to enhance positive impacts and mitigate negative ones.

Authors like Burdge (1995), Finsterbusch (1995) and Taylor *et al.* (1992) pointed out that the SIA practitioner should focus on the more significant impacts and quantify these where feasible and appropriate. These writers furthermore suggested that social impacts should be presented in such a manner that decision makers and community leaders could understand them.

The same authors listed the following principles, which they saw as benchmarks for conducting an SIA:

- Public involvement in SIA to identify affected groups;
- Taking cognisance of impact equity (who "wins" and who "loses") to accommodate sensitive groups;
- Highlighting the SIA focus area, possible impacts identified by the affected public and impacts identified through social science expertise;
- Explicitly identifying methods and assumptions, and determining their significance;
- Giving feedback to project planners;
- Using SIA practitioners to do SIA;
- Development agency and community taking joint responsibility for mitigation and monitoring;
- Identifying appropriate data sources for SIA;
- Addressing gaps in the data during the scoping phase.

2.6.2 METHODOLOGY OF SOCIAL IMPACT ASSESSMENT

Carley (1983) asserted that SIA methodology should promote a systematic, orderly approach to the study of development problems. This is important to simplify the complex reality for busy decision makers. SIA methodology should assist in problem

definition (or locating a problem), which is the first and often the most important step in an SIA.

Carley (1983) stated that SIA methodology should be designed to enlighten and assist political choice, not to predict the future. The methodology should furthermore assist in satisfying the information needs of all the parties to policy decision making. In addition, methodology should be developed for application in a wide variety of situations, as described by Barrow and mentioned earlier in this paper.

According to Carley, the following factors should be considered during the planning of an SIA:

- Data requirements
- Resource capability
- Quantification and qualification
- Desegregation of data
- Probability of impact occurrence
- Significance of impacts
- Sensitivity analysis
- Robustness measures
- Hierarchical structure
- Value assumptions
- Mitigation measures
- Communicability
- Public debate
- Causal understanding
- Validity

According to Taylor *et al.* (1992), the SIA strategy should involve the affected parties in the design of their future. This also suggests that the affected parties be involved in the development of alternative plans. Some planners and decision makers hold the view that “abstract futures” cannot be predicted with any degree of accuracy. This view is not well received by the managers of development projects, because they are faced with the finite constraints of their development or programme options, and the view does not concur with the legal requirements of the regulatory environment that they are working in.

2.6.3 THE SOCIAL IMPACT ASSESSMENT PROCESS

Burdge and Vanclay (1995), Finsterbusch (1995) and the Interorganisational Committee (1994) identified ten generic steps in an ideal SIA:

- Step 1 begins with a *public involvement programme* that communicates with affected parties to obtain their input throughout the impact assessment process. This is both a social scientific and political consideration. This step coincides with the view of most social scientists that the assessment of social impacts is not complete or valid unless the inputs of affected parties are obtained. Social scientists cannot speak for affected communities despite their sophisticated measurements of conditions and expected impacts. Public involvement is also a political consideration in that affected parties must be given the opportunity to participate in decision making.
- Step 2 and 3 relate to *obtaining information* on the alternatives being considered and on the existing relevant conditions. These steps provide basic information for both the SIA and any policy decisions that claim to be rational.
- Step 4 is "*scoping*" and is probably the key step in designing the SIA. First it requires the development of a relatively exhaustive list of potential impacts of the action. Second it requires the selection, from the list, of the potential impacts to be studied in the SIA. It is vitally important that the public participate in scoping, or at least that public concerns are well represented. Otherwise public trust will be broken and the likelihood of public protest will increase.

2.6.4 ON THE APPLICATION OF SOCIAL IMPACT ASSESSMENT

- Step 5 is the *main research step and leads to the projection of estimated effects*. The three main information sources for impact identification are the literature, experts and field research (including informant interviews). The social impact assessor tries to establish what happened in similar past cases through studying the available literature, as a guide to what could happen in the current case. The experts can advise on how they think the case will deviate from, or conform to, the normal patterns arising from past cases. The focus of the field study can then be to test the hypotheses of the experts and the applicability to the current case of the general patterns of impacts identified in past cases.
- Step 6 is the difficult task of *predicting how the affected parties will respond*. Most SIAs do not implement this step, or do very little of it. It is essential to estimate higher order impacts and the political consequences of the action – and this makes for information that should interest decision makers. It also

entails ascertaining the attitudes of affected parties toward both the action and its direct impacts, and their probable responses to the impacts. Respondents' statements about their responses may however poorly predict their subsequent actions, but the statements can at least alert the agency to potential problems and their possible solution by appropriate agency actions.

- Step 7 is the *estimation of indirect and cumulative impacts*. This is an obvious next step, but is often neglected or skimped. Again the patterns found in past cases can guide this step.
- Step 8 is the *recommendation of changes in the action or alternatives* that would avoid the predicated negative impacts and enhance the positive impacts. These changes should be subjected to an SIA before they are implemented.
- Step 9 is the *mitigation of the negative impacts* by avoiding, minimising or rectifying the impacts, or by providing compensation for them.
- Step 10 involves *monitoring* to ensure that the negative impacts are dealt with as they happen. Most SIAs lack this step but it should be remembered that the purpose of assessing impacts is to manage them. However, assessing social impacts is a very difficult task, and not all problems can be anticipated or dealt with ahead of time. A programme that monitors the impacts and adjusts the action to unanticipated new conditions must supplement an SIA.

2.6.4 CRITICISM ON THE APPLICATION OF SOCIAL IMPACT ASSESSMENT

Various writers, including Taylor *et al.* (1992), Finsterbusch (1995), Becker (2001) and Bowles (1981), who described the development of the SIA process, criticised the application of SIA.

According to Taylor *et al.* (1992), the first SIAs were characterised by a number of problems related to the inclusion of a social dimension within the overall environmental assessment. Sociologists and other scientists were slow to define the social dimension. An aspect highlighted by Cock (1994) is the ability of social scientists to get involved in the environmental arena. Even if the social dimension was defined, it was often left out of the analysis – perhaps because the results sometimes called into question the emphasis on economic analysis, went against political judgements, or simply failed to deliver useful input to management.

Economic analysis was often substituted for social analysis and, according to Taylor *et al.* (1992), this problem persisted. The substitution is understandable in that the study of economics is built around the structure of choices. Its quantitative nature also makes economics more immediately applicable to the needs of decision makers. When the economic analysis did move into the social arena, the focus was often on population change and quantifiable effects of developments and resource management decisions on jobs and demands for community services.

The World Bank and the Development Bank of Southern Africa incorporate less SIA aspects in their project planning than the AID. This is understandable as, due to their function, banks emphasise economic factors in project design. Both the above-mentioned banks have been criticised for the negative environmental and social impacts of some of their projects, so they have become more sensitive to these issues. Over the years the World Bank has substantially increased the number of sociologists and anthropologists on its staff to incorporate more social factors in its deliberations on policies and project designs.

Development agencies have been criticised for doing the wrong things and for doing things the wrong way. A more defined and clearer role for SIA in their deliberations should raise their scores on both these issues. Barrow (1997) mentioned that researchers like Nelson (1985, cited in Finsterbuch, 1995) accused development agencies of helping the rich more than helping the poor, and the Paddocks (1973, cited in Finsterbuch, 1995) and Kottak (1985, cited in Finsterbuch, 1995) accused them of starting chains of events that have unanticipated and unaddressed serious negative social impacts. Since SIAs address these problems they deserve to be more fully utilised by development agencies.

The criticism of the procedures of development agencies focuses on their top-down approach, which usually fails to attain significant client participation in design, redesign, implementation, operation and maintenance of projects. SIAs can help address this problem because they can be used to make the project process more participative.

2.5.5 DEFINING A SOCIAL VARIABLE

Carley (1983) argued for an examination of the SIA from a methodological point of view. According to him, Flynn (1981) reviewed a number of attempts at developing SIA methodology and found the following:

- They demonstrated a poor understanding of methodological developments in the social sciences.
- The scope and usefulness of the methods proposed were seriously overestimated.
- The quantification of impacts was often arbitrary and not done in a useful way.
- The critical areas of SIA were without any developed methodology.
- The titles of SIA methods were overblown and misleading.

According to Carley (1983), the problems were related to impact quantification, value measurement and value weighting, and the integration of socio-economic and environmental variables.

Although SIA procedure and guidelines have been clearly defined by authors such as Becker (2001), Bond (1995) and Lane (1997), other difficulties are encountered, including:

- The limited opportunity for community participation reflects the fact that practitioners generally undervalue the benefits of participation and misunderstand the role of public participation. By involving the public throughout the research process, the research is informed by local knowledge, articulates important value choices and demonstrates that impact assessment research is accountable and responsive to local communities.
- The most important problem these days relates to the politicisation of environmental and social assessments. In the process the adverse consequences of development are de-emphasised while the potential positive consequences are highlighted. SIA was designed to provide decision makers with an independent appraisal of the costs and benefits of a particular course of action. According to Lane, the use of SIA as a political tool has undermined its potential.
- Size and time of the study.
- Moral obligation towards the affected community.

2.6.5 DEFINING A SOCIAL VARIABLE

According to Burdge (1995), SIA variables point to measurable change in human populations, communities and social relationships, resulting from a development project or policy change.

2.4.5.1 International Variables

Burdge (1995) stated that an SIA variable must comply with the following:

- An SIA variable is operative when a community may be affected by project development and policy change. SIA variables do not refer to the total social environment; they only explain the consequences of the proposed impact event. Other portions of an environmental impact statement or planning document cover economic, physical and land use change.
- An SIA variable will alert the decision maker or planner to a specific consequence of the proposed action. The extent of the consequence depends upon the type of project and geo-political setting. The direction of change is not assumed in the labelling of SIA variables.
- An SIA variable always has a discrete, nominal, or continuous empirical indicator that can be measured, collected and interpreted within the context of a specific social impact setting.
- All SIA variables are based upon data that can be collected or made available during the planning and decision-making stage as well as other stages in the development of the project or policy. Because SIA information is required before the event, planners rely upon data that can be obtained in advance.
- An SIA variable does not require, but may utilise, information from surveys of the general population. Survey data vary in quality depending upon the amount of care taken in questionnaire design, sampling and interviewing. However, results from survey research might contribute to the understanding of several SIA variables. Data from well-designed questionnaires will address limited objectives and enhance the understanding of a community's responses to planned social change.
- An SIA variable is not to be confused with such sociological labels as "middle class", "ethnicity" or "small groups". These labels define sociological concepts and situations but do not describe changes that take place in communities due to project development.

What variables are examined in an SIA? In any given case, this will depend on the results of scoping, and adjustments may have to be made as the analysis proceeds. New variables may be found to be important, and some initially thought to be important may be found to be of less significance.

2.6.5.1 International Variables

In this section, various lists of social variables, which have been developed by various authors over the past forty years, will be studied. The reason for this is twofold: first, to determine the development of the variables and, second, to have a basis from which to develop a list of social variables that can be used in the Southern African context. Studying the various lists of social variables will ensure that a comprehensive list can be developed.

Table 2 lists areas of human concern as developed by Munn during the 1970s for inclusion in the SIA. Munn (1975) described an impact indicator as "an environmental element or parameter that provides a measure of a human concern, on at least some qualitative scale". What is important is that psychological dimensions feature in this definition.

Table 2: Areas of Human Concern (Impact Categories)

AREAS OF HUMAN CONCERN	IMPACT CATEGORIES
1. Economic and occupational status	Displacement of population; relocation of population in response to employment opportunities; services and distribution patterns; property values
2. Social pattern or lifestyle	Resettlement; rural deprivation; change in population density; food; housing; material goods; nomadic; settled; pastoral; agricultural; rural; urban
3. Social amenities and relationships	Family lifestyles; schools; transportation; community feelings; participation vs. alienation; local and national pride vs. regret; stability; disruptions; language; hospitals; clubs; recreation; neighbourliness
4. Psychological features	Involvement; expectations; stress; frustrations; commitment; challenges; work satisfaction; national or community pride; freedom of choice; stability and continuity; self-expression; company or solitude; mobility
5. Physical amenities (intellectual, cultural, aesthetic and sensual)	National parks; wildlife; art galleries and museums; concert halls; historic and archaeological monuments; beauty of landscape; wilderness; quiet; clean air and water
6. Health	Changes in health; medical services; medical standards
7. Personal security	Freedom from molestation; freedom from natural disasters
8. Religion and traditional belief	Symbols; taboos; values
9. Technology	Security; hazards; safety measures; benefits; emission of waste;

AREAS OF HUMAN CONCERN	IMPACT CATEGORIES
Community/institutional Arrangements	congestion; density
10. Cultural	Leisure, fashion and clothing changes; new values; heritage; traditional and religious rites
11. Political	Authority; level and degree of involvement; priorities; structure of decision making; responsibility and responsiveness; resource allocation; local and minority interests; defence needs; contributing or limiting factors; tolerance
12. Legal	Restructuring of administrative management; changes in taxes; public policy
13. Aesthetic	Visual physical changes; moral conduct; sentimental values
14. Statutory laws and acts	Air and water quality standards; safety standards; national building acts; noise abatement by-laws
Source: Munn, 1975	

Burde (1995) mentioned 26 variables, categorised under population impacts, community/institutional arrangements, conflicts between local residents and newcomers, individual and family-level impacts, and community infrastructure needs. The population impacts entail all the demographic aspects, as well as the influx and presence of temporary workers in the area, and possible relocation. The community and institutional issues relate to the forming of attitudes towards the project and their expression in the study area, and the changes that might occur in employment and occupational opportunities. The conflicts mainly derive from the introduction of new social classes and the change in the industrial and commercial focus. Individual and family impacts include the disruption in daily living, religious practices and social networks, and the change in leisure opportunities and perceptions of health and safety. Community infrastructure encompasses the change aspect, land issues and effects on cultural and historical resources.

Table 3 provides a more recent listing of social monitoring variables from Taylor *et al.* (1992). These variables reflect a better understanding of sociological and structural issues and a better representation of social impact assessment.

Table 4: The Social Impact Assessment Variables: The Current List of Twenty Eight

<i>Population Impacts</i>
• Population change
• Influx or outflow of temporary workers
• Presence of seasonal (leisure) residents
• Relocation of individuals and families

<ul style="list-style-type: none"> • Dissimilarity in age, gender, racial or ethnic composition
<i>Community/Institutional Arrangements</i>
<ul style="list-style-type: none"> • Formation of attitudes toward the project
<ul style="list-style-type: none"> • Interest group activity
<ul style="list-style-type: none"> • Alteration in size and structure of local government
<ul style="list-style-type: none"> • Planning and zoning activity
<ul style="list-style-type: none"> • Industrial diversification
<ul style="list-style-type: none"> • Living/family wage
<ul style="list-style-type: none"> • Enhanced economic inequities
<ul style="list-style-type: none"> • Change in employment equity of minority groups
<ul style="list-style-type: none"> • Changing occupational opportunities
<i>Communities in Transition</i>
<ul style="list-style-type: none"> • Presence of an outside agency
<ul style="list-style-type: none"> • Interorganisational co-operation
<ul style="list-style-type: none"> • Introduction of new social classes
<ul style="list-style-type: none"> • Change in the commercial/industrial focus of the community
<ul style="list-style-type: none"> • Presence of weekend residents (recreational)
<i>Individual and Family-Level Impacts</i>
<ul style="list-style-type: none"> • Disruption of daily living and movement patterns
<ul style="list-style-type: none"> • Dissimilarity in religious practices
<ul style="list-style-type: none"> • Alteration in family structure
<ul style="list-style-type: none"> • Disruption in social networks
<ul style="list-style-type: none"> • Perceptions of public health and safety
<ul style="list-style-type: none"> • Change in leisure opportunities
<i>Community Infrastructure Needs</i>
<ul style="list-style-type: none"> • Change in community infrastructure
<ul style="list-style-type: none"> • Land acquisition and disposal
<ul style="list-style-type: none"> • Effects on known cultural, historical, sacred and archaeological resources
Source: Taylor et al., 1992

The variables listed by the ICGP cover the same topics, but in more detail, as described by Burdge and Taylor *et al.* The following are key variables that need to be addressed, according to the ICGP (1994):

- *Population characteristics.* What are the current structure and organisation of the potentially affected population? Are they stable or changing? Are there ethnic, economic or social group distinctions within them? How are wealth, poverty, employment and levels of income distributed through the population? How are people employed? How many and what kinds of people are unemployed, and in what kinds of activities (particularly those that may be affected by the action under review)? Are there seasonal population changes,

or other kinds of influx and outflow? What effects could the alternative action have on these factors?

- *Community and institutional structure.* How are the affected communities organised, both explicitly (through systems of government, etc.) and informally (through voluntary associations, interest groups, etc.)? What are the employment and economic dimensions of each group? Are there any existing economic, social or cultural inequities among groups based on ethnicity or other factors? What experience of change do the various groups have? How are the groups linked (if at all) with regional and national organisations? Do local planning and zoning affect them? What changes in these variables may be caused by the alternative action?
- *Political and social resources.* How are power and authority distributed in the community, both formally and informally? Who are the relevant stakeholders? What are their interests? How do they organise and exercise power internally and externally? How do they react, or are they likely to react, to the alternative action?
- *Individual and family factors.* What factors influence the daily lives of potentially affected members of the community? What are the patterns of family, friend and acquaintance relationships? How stable is the pattern of residence? Do people in different groups feel that they currently have a satisfactory way of life? Are they concerned about what the proposed action would do to their way of life, or interested in possibilities for improvement? What attitudes do people have toward risk, health, safety and the proposed alternative? What values do they ascribe to the environment? Are they concerned about displacement or relocation, if this is perceived to be a possible result of the alternative? Do they trust their political and social institutions to handle change?
- *Community resources.* How do people use the land, whether urban or rural? How do they use the natural environment? Are there subsistence uses? Spiritual uses? Recreational uses? Are there conflicts among any of these uses? Are there historically or culturally sacred sites, or religious uses of the natural environment? Are there culturally valued neighbourhoods, shopping areas, recreational areas or gathering places? Are there culturally valued patterns of social interaction such as clubs and other informal groups? Are there valued historical places, archaeological sites, or collections of historical artefacts or documents? How available are housing and community services

like police protection, water, sewer service, electricity, schools, libraries and computer facilities? How will the proposed action affect any of these variables? (ICGP, 1994.)

Table 4 provides a more defined list of the twenty-eight social impact assessment variables found in *Community Guide to Social Impact Assessment* (Burdge, 1995). This list is clearly sociologically, structurally and system oriented.

Table 5: Social Impact Assessment: List of Social Impacts

INDIVIDUAL AND HOUSEHOLD LEVEL	COMMUNITY AND INSTITUTIONAL LEVEL
Death, death of a family member	Death of people in the community
Arrest, imprisonment, detention, torture, intimidation or other abuse of human rights inflicted on an individual	Violation of human rights, freedom of speech
Reduced availability of food and adequate nutrition	Adequacy of physical infrastructure (water supply, sewerage, services and utilities)
Reduced control over fertility (availability of contraception, and empowerment)	Adequacy of community social infrastructure, health, wealth, education, libraries etc.
Reduced level of health and fertility (ability to conceive)	Adequacy of housing in the community
Reduced mental health, increased stress, anxiety, alienation, apathy, depression	Workload of institutions, local government, regulatory bodies
Uncertainty about impacts, development possibilities and own life as a result of social change	Cultural integrity (continuity of local culture, tradition, rites)
Actual personal safety, hazard exposure	Rights over, and access to, resources
Experience of stigmatisation and deviance labelling	Influences on heritage and other sites of archaeological, cultural or historical significance
Reduction in perceived quality of life	Loss of local language or dialect
Reduction in standard of living, level of affluence	Profanisation of culture
Decline in economic situation, level of income, property values	Inequity (economic, social, cultural)
Decreased autonomy, independence, security of livelihood	Changed inequity, social justice issues in relation to minority or indigenous groups
Change in status or type of employment, or becoming unemployed	Gender relations in the community
Decrease in occupational opportunities, potential diversity, flexibility in employment	Economic prosperity
Moral outrage, blasphemy, religious affront, violation of sacred sites	Dependency/autonomy/diversity/viability of the community
Upsets (objection/opposition to the project), NIMBY (not in my backyard)	Unemployment level in the community
Dissatisfaction due to failure of a project to comply with heightened expectations	Opportunity costs (loss of other options)
Annoyance (dust, noise, strangers, more people)	Actual crime

INDIVIDUAL AND HOUSEHOLD LEVEL	COMMUNITY AND INSTITUTIONAL LEVEL
Disruption of daily living, way of life (having to do things differently)	Actual violence
Reduction in environmental amenity value	Social tensions, conflict or serious divisions within the community
Perception of community cohesion, integration	Corruption, credibility and integrity of government
Community identification, connection to place (Do I belong here?)	Level of community participation in decision making
Changed attitude towards local community, level of satisfaction with the neighbourhood	Social values about heritage and biodiversity
Disruption of social networks	
Alteration in family structure, family stability, divorce	
Family violence	
Gender relations within the household	
Changed cultural values	
Source: Burdge, 1995	

It is interesting to note that many of these impacts are strongly psychological and require a clear psychometric approach to measurement and description in that what is of concern are perceptions, attitudes, values, experience and subjective well-being. Such parameters are no less measurable than more nominal level events, but the measurement process involves more than categorisation and counting. Very few SIA practitioners appear to be comfortable with the measurement or indeed specification of psycho-social impacts. What appears to happen is that checklists and category lists are developed and treated as conceptual models, arguably at the expense of thinking through substantive conceptual and measurement issues (Vanclay, 1999). Individual respondents are quite capable of reporting on their *internal* as well as *external* environment, and indeed most measures relating to individuals' emotional experience or state are in fact a reflection of their assessment of, or their experienced relationship with, the immediate external environment.

2.6.5.2 The South African Case

In the case of South Africa the Department of Environment Affairs and the Environmental Evaluation Unit of the University of Cape Town developed in 1992 a checklist of environmental characteristics to support EIA and SIA in South Africa (Department of Environment Affairs, 1992). Their checklist comprised thirteen broad categories, which were broken down into more specific sub-categories of issues that need to be addressed. At the beginning of each category the question is put: "Could

the proposed development have a significant impact on, or be constrained by, any of the following?" Table 5 presents the checklist for the social aspects included:

Table 6: Variables used in the South African Checklist

<i>Cultural Resources</i>
• Structures and sites of architectural, cultural or historical heritage
• Sites of archaeological or palaeontological importance
• Special attraction of local sites, traditions or events
• Sites or areas of religious or spiritual significance
• Sites or areas of special social or cultural interest
• The integrity of cultural resources
<i>Socio-Economic Characteristics</i>
<i>Demographic Aspects</i>
• Growth rate of the local population
• Location, distribution or density of the population
• Existing age or gender composition of the population
• Existing biographical composition of the population
• Existing migration movements
• Inflow of tourists
<i>Economic and Employment Status of the Affected Social Groups</i>
• Economic base of the area
• Distribution of income
• Local industry
• Rate and scale of employment growth
• Labour needs and the spare labour capacity of the area
• Movement of labour away from existing employment in the area
• Competition through non-local labour moving into the area
• Non-labour remaining in the area after completion of the development
• Pressure to comply with particular skills, age range or gender needs
• Job opportunities for school leavers
• Short- and long-term unemployment trends
<i>Welfare Profile</i>
• Incidence of crime, drug abuse or violence
• Extent of homelessness and overcrowding
• Adequacy of services
• Adequacy of support systems such as crèches and shelters for destitute children
• Quality of life
<i>Health Profile</i>
• Availability of clinic/health services
• Incidence of disease
• Incidence of mental illness
• Threats to health from pollution

<i>Cultural Profile</i>
<ul style="list-style-type: none"> Existing lifestyles, household composition and family network
<ul style="list-style-type: none"> Religious and cultural attitudes, outlooks and expectations of local population
<ul style="list-style-type: none"> Cultural or lifestyle diversity
<ul style="list-style-type: none"> Cultural or lifestyle stability
Social Infrastructure Services
<i>Education</i>
<ul style="list-style-type: none"> Demand for specific types of technical skills training
<ul style="list-style-type: none"> Demand for specific types of industrial training
<ul style="list-style-type: none"> Adequacy of existing technical institutions
<ul style="list-style-type: none"> Adequacy of nursery, junior and secondary education facilities
<ul style="list-style-type: none"> Need for additional educational facilities
<ul style="list-style-type: none"> Demand exceeding the planned provision of educational facilities
<ul style="list-style-type: none"> Preschool facilities
<i>Housing</i>
<ul style="list-style-type: none"> Property values and levels of rates
<ul style="list-style-type: none"> Potential conflict over land use
<ul style="list-style-type: none"> Availability of housing stock
<ul style="list-style-type: none"> Need to release additional land for housing development
<ul style="list-style-type: none"> Acceptability of such land release
<ul style="list-style-type: none"> Adequacy of infrastructure for further housing development
<ul style="list-style-type: none"> Ability of private or local authority to provide housing
<ul style="list-style-type: none"> Compatibility of planned development with existing housing
<ul style="list-style-type: none"> Location for suitable housing sites
<ul style="list-style-type: none"> Sites suitable for construction camps
<ul style="list-style-type: none"> Standard of provision of facilities required by authority
<ul style="list-style-type: none"> Design and layout of site facilities
<ul style="list-style-type: none"> Use to which construction camp may be put after termination of the construction period
Social and Community Services and Facilities
<i>Health Service Facilities</i>
<ul style="list-style-type: none"> Adequacy of temporary facilities during construction phase of development
<ul style="list-style-type: none"> Adequacy of on-site health facilities
<ul style="list-style-type: none"> Adequacy of facilities for primary health care
<ul style="list-style-type: none"> Adequacy of the existing health services to cope with increased population
<ul style="list-style-type: none"> Projected provision of health service facilities
<ul style="list-style-type: none"> Need for additional facilities
<i>Emergency Services</i>
<ul style="list-style-type: none"> Adequacy of existing emergency services
<ul style="list-style-type: none"> Projected provision of services to meet increased demand
<ul style="list-style-type: none"> Need for additional emergency services
<ul style="list-style-type: none"> Adequacy of the emergency and safety services provided by the developer

<ul style="list-style-type: none"> Ability of the local resources to deal with emergencies
<i>Recreational Facilities</i>
<ul style="list-style-type: none"> Adequacy of existing facilities Projected provision of facilities to meet increased demand Need for additional facilities Recreational and service facilities in the workplace
<i>Risk and Hazard</i>
<ul style="list-style-type: none"> Level and identity of hazard to the public Probability of occurrence Extent of effect – local, regional or panoramic Standards required for process equipment Workers' safety/degree of risk Level of risk and hazard for other living organisms
<i>Health and Safety</i>
<ul style="list-style-type: none"> In the workplace Surrounding areas
Source: Department of Environment Affairs, <i>Checklist of Environmental Characteristics</i> , 1992

The “checklists” cover the same topics with some variation in the level of detail and focus. The above-mentioned categories cover the social and human aspects well and indicate the various effects that development projects might have on the human and physical aspects of a community.

2.6.6 COMPARISON BETWEEN VARIOUS VARIABLES

Table 6 presents a comparison of the above-mentioned three lists of variables. The comparison is aimed at determining, in the first instance, whether the lists address the same issues and, in the second instance, to what extent the variables have been expanded on. The basis for this exercise is the South African version of the variable list.

Table 7: Variables used in an SIA

VARIABLES	MUNN	BURDGE & TAYLOR	ICGP	SOUTH AFRICAN
<i>Cultural Resources</i>				
Structures and sites of architectural, cultural or historical heritage		X	X	X
Sites of archaeological or palaeontological importance	X	X	X	X
Special attraction of local sites, traditions or events	X		X	X
Sites or areas of religious or spiritual significance			X	X
Sites or areas of special social or cultural interest		X	X	X

VARIABLES	MUNN	BURDGE & TAYLOR	ICGP	SOUTH AFRICAN
The integrity of cultural resources		X	X	X
Physical amenities	X			
<i>Socio-Economic Characteristics of the Affected Public</i>				
<i>Demographic aspects</i>		X	X	X
Growth rate of the local population			X	X
Location, distribution or density of population			X	X
Existing age or gender composition		X	X	X
Existing biographical composition of population		X	X	X
Existing migration movements		X	X	X
Inflow of tourists/presence of seasonal (leisure) residents		X	X	X
Relocation of individuals and families	X	X	X	
<i>Economic and Employment Status of the Affected Social Groups</i>	X	X	X	X
Economic base of the area	X	X	X	X
Distribution of income			X	X
Local industry/industrial diversification		X		X
Rate and scale of employment growth		X		X
Labour needs and the spare labour capacity of the area		X		X
Movement of labour away from the existing employment in the area				X
Competition through non-local labour moving into the area				X
Non-local labour remaining in the area after completion of development				X
Agricultural activities	X			X
Pressure to comply with particular skills, age range or gender needs				X
Job opportunities for school leavers				X
Short-and long-term unemployment trends				X
Formation of attitudes towards the project	X	X		
Interest group activity		X		
Government structure/alteration in size and structure of government	X	X	X	
Changes in laws	X			
Planning and zoning activity		X		
<i>Welfare Profile</i>			X	X
Incidence of crime, drug abuse or violence				X
Extent of homelessness and overcrowding				X
Adequacy of services				X
Adequacy of support systems such as crèches and shelters for destitute children				X
Quality of life				X
<i>Health Profile</i>	X	X		X
Availability of clinics/health services	X	X		X
Incidence of disease	X			X
Incidence of mental illness	X			X
Threats to health from pollution				X

VARIABLES	MUNN	BURDGE & TAYLOR	ICGP	SOUTH AFRICAN
Role of nutrition/availability of food	X			
<i>Cultural Profile</i>			X	X
Existing lifestyles, household composition and family networks	X	X	X	X
Religious and cultural attitudes, outlooks and expectations	X	X	X	X
Cultural or lifestyle diversity		X	X	X
Cultural or lifestyle stability		X	X	X
Change in leisure opportunities	X	X		X
Presence of outside agency		X		
Introduction of new social class	X	X		
Presence of weekend residents - recreational		X		
<i>Social Infrastructure Services</i>				
<i>Education</i>	X		X	X
Demand for specific types of technical skills training				X
Demand for specific types of industrial training				X
Adequacy of existing technical institutions				X
Adequacy of nursery, junior and secondary education facilities				X
Need for additional education facilities				X
Demand exceeding the planned provision of education facilities				X
Pre-school facilities				X
<i>Housing</i>	X		X	X
Property values and levels of rates				X
Potential conflict over land use				X
Availability of housing stock				X
Need to release additional land for housing development				X
Acceptability of such land release				X
Adequacy of infrastructure for further housing development	X			X
Ability of private or local authority to provide housing				X
Compatibility of planned development with existing housing				X
Location of suitable housing sites	X			X
Sites suitable for construction camps				X
Standard of provision of facilities required by authority				X
Design and layout of site facilities				X
Use to which construction camp may be put after construction period				X
Land acquisition and disposal		X		
<i>Social and Community Services and Facilities</i>				
<i>Health Service Facilities</i>	X	X	X	X
Adequacy of temporary facilities during construction phase of development				X
Adequacy of on-site health facilities				X
Adequacy of facilities for primary health care				X
Adequacy of existing health services to cope with increased population				X

VARIABLES	MUNN	BURDGE & TAYLOR	ICGP	SOUTH AFRICAN
Projected provision of health service facilities				X
Need for additional facilities				X
<i>Emergency Services</i>		X	X	X
Adequacy of existing emergency services				X
Projected provision of services to meet increased demand				X
Need for additional emergency services				X
Adequacy of the emergency and safety services provided by the developer				X
Ability of local resources to deal with emergencies				X
<i>Recreational Facilities</i>	X	X	X	X
Adequacy of existing facilities				X
Projected provision of facilities to meet increased demands				X
Need for additional facilities				X
Recreational and service facilities in the workplace				X
Supporting infrastructure: police, libraries, etc.			X	
Shopping facilities			X	
Risk and Hazard				
Level and identity of hazard to the public		X	X	X
Probability of occurrence			X	X
Extent of effect – local, regional or panoramic			X	X
Standards required for process equipment				X
Safety and design review				X
Safety audits				X
Hazard and operability reviews				X
Failure mode and effect analysis				X
Workers' safety/degree of risk			X	X
Level of risk and hazard for other living organisms			X	X
Health and Safety				
In the workplace		X		X
Surrounding areas		X	X	X
Psychological Features				
Involvement	X			
Expectations	X			
Stress/frustrations	X			
Mobility	X			
Family lifestyles	X			
Community feeling	X			
Self-expressions	X			

Table 6 summarises the various issues and variables that are addressed during an SIA. Most of the categories are covered by the five sources. Only the level of detail and the particular descriptions of the variables vary. A category that is not covered by the South African version is physical amenities, although certain of its variables are mentioned, though not to the extent done by Munn (1975). The relocation of individuals or families, the effects of formations of attitudes towards a project on the affected communities, interest group activities, planning and zoning activity, the role of nutrition, the presence of new classes or groups, and the acquisition and disposal of land are also not present in the South African checklist. The governmental aspects, which include the formal and informal administrative structures and changes in laws, are also not listed. A change in government structure might occur during the development of a project, and it might have an impact. It is further interesting to note that Burdge and Taylor did not make specific reference to two social infrastructure services, namely education and housing. The ICGP only referred to the broader categories, while the South African version went into a detailed analysis of the educational and housing issues. It needs to be stressed that the issues and variables are only guidelines for projects. Individual projects could feature fewer or more variables, depending on the type of project and activity.

Munn was the only author who made reference to the psychological features, and that was already done in 1975. Burdge only referred to the psychological variables at a very late stage when he refined the variables and split the variables between individual/household and community/institutional levels. The psychological features are not covered in the South African list.

Land acquisition and the disposal thereof are not mentioned in the South African list, but agricultural activities are treated in detail under a separate heading and include aspects of the usage of farmland, availability of resources, pollution and disease control measures. Erosion, the spread of invasive alien plants and housing are also covered in the section under agriculture.

2.7 AN EVALUATION MODEL FOR SOCIAL IMPACT ASSESSMENT

The evaluation model has been developed from the literature studied as reflected in the preceding sections. It is based on the best practices encountered internationally and will be used to determine which aspects and variables need be included in an improved model for Southern Africa.

The process that should be applied during the assessment:

- Step 1: Identifying the *need* for a social impact assessment, and determining the *objectives* for such a study.
- Step 2: Introducing a *public involvement programme* for eliciting input from the affected parties throughout the impact assessment. This is both a scientific and political requirement in SIA methodology.
- Step 3: Identifying *the relevant topics and issues* that need to be addressed in the course of the public involvement process.
- Step 4: *Obtaining information* on possible alternatives and the existing relevant conditions. This is basic information for both the SIA and for any policy decisions that claim to be rational.
- Step 5: “*Scoping*”, which is probably the key step in designing the SIA. It involves, first, the development of a relatively exhaustive list of potential impacts of the action and, second, the selection, from that list, of the impacts to be studied in the SIA.
- Step 6: *Doing the actual research, and projecting the estimated effects*. The three main information sources for impact identification are the literature, experts and field research (including informant interviews). The social impact assessor tries to establish what happened in similar past cases by studying the available literature as a guide to what could happen in the case study.
- Step 7: *Predicting how the affected parties will respond*. Most SIAs do not implement this step, or do very little of it. It is essential to estimate higher order impacts and the political consequences of the action – information that should interest decision makers. This step also entails determining the attitudes of the affected parties toward both the action and its direct impacts, and their probable responses to the impacts. Respondents’ statements about their responses might poorly predict their subsequent actions, but the statements can at least alert the agency to potential problems that might be resolved by appropriate agency actions.
- Step 8: *Estimating the indirect and cumulative impacts*. This is an obvious next step, but is often neglected or skimped. Again the patterns found in past cases can guide this step.
- Step 9: *Recommending changes in the action or alternatives* that would avoid the predicated negative impacts and enhance the positive impacts.
- Step 10: *Mitigating the negative impacts* by avoiding, minimising or rectifying them, or providing compensation.

- Step 11: *Programmed monitoring* to ensure that negative impacts are dealt with as they happen. Most SIAs lack this step but it should be remembered that the purpose of assessing impacts is to manage them. A programme that monitors the impacts and adjusts the action to unanticipated new conditions must supplement an SIA.

A further element of the model will be the use of the variables as derived from the previous section. The comparative evaluation of the variables will be dealt with in a separate section of the study and will be presented in tabular format.

Each of the five case studies will be evaluated against these variables and processes. The model will be amended on the basis of the results of the evaluation. This model will then be presented for application in the Southern African context.

2.8 CONCLUSION

This chapter has reviewed the development in both the SIA process and the change in management towards the greater acknowledgement of ecological concerns. It has focused on the inclusion of social or human aspects in the environmental assessment. The changes in legislation are also in accord with the changes in management style in the 1970s and 1980s towards environment-friendly management. Although the number of SIAs has declined considerably in the United States since 1980, SIA procedure has matured and can now be applied to various fields. At the same time, SIA has become more popular in other parts of the world, although concern has been raised in third world situations that only social needs are identified.

Even legislation and policy statements clearly highlight that the human factor is part of the environment and that human and social aspects need to be addressed. Consideration of the human or social factor can either be enforced by broad environmental legislation, as in the case of NEPA, or can be dealt with by itself, as in the case of the South African legislation. The importance of the human and social aspects is stressed at various government levels. Government departments have been responsible for guiding the SIA process by developing various guideline documents for practitioners of SIA.

An SIA has a definite contribution to make in any development project. Various projects have human aspects that should be addressed, not only in terms of needs

but also in terms of mitigating measures. An SIA needs to be a holistic process with various people from different fields providing data. The level of community participation is very important for the practitioner, as the community has to determine its needs and ways to address them.

An SIA can provide better information for decision making and offers great potential for integrating scientific policy analysis in a democratic system. It is also an effective tool for informing the public and encouraging its participation in policy debate.

An SIA is a definite process consisting of several steps, some of which distinguish it from a social analysis. The latter only addresses needs and does not indicate the intensity of the impact. Neither does it suggest measures for mitigation. The steps in an SIA that are unique are scoping, responding to the affected parties, mitigation and monitoring. It has been noted that a social variable implies a measurable, changeable feature of human communities, a feature that relates to either the demographic composition of the community or the daily activity of the community, and to either economic or social aspects of the community. The variables used in an SIA must cover the community and institutional aspects, conflicts between the existing and new issues, aspects that might impact on an individual and family level, and community infrastructure needs. An SIA needs to pinpoint the specific consequences of a proposed action. The issues addressed during an SIA only refer to human aspects and activities, or infrastructure that might influence human activity during and after the proposed project.