Environmental Frameworks Notes

Environmental Impact Assessment

Environmental Impact Assessment and Major Developments

What are the main environmental and social impacts?

- Pollution/contamination of soil, water and air
- Resource use (minerals, non-renewable and renewable materials, land use)
- Energy consumption (fuels and electricity)
- Global warming (climate change)
- Biodiversity loss (plants and animals)
- Ecotoxicity – when something is toxic to plants and animals
- Human toxicity – health e.g. air pollution causes respiratory problems
- Noise, odours and other nuisances, accidents
- Visual impact

What is a development assessment?

Infrastructure and other developments like housing require approval from a council, a Regional Panel or the Minister of Planning. It is a document that is legally required for large developments. These types of developments range from house extensions to major port facilities, roads and industrial projects. Some other developments have such a minor impact or can be carried out in compliance with accepted building and environmental standards, and do not need approval from a consent authority – may still need approval from a government agency.

What are some examples of major developments?

CBD and South East Light Rail Project, Galilee Coal project (Adani Coal mine), Abbot Point Coal Terminal Expansion in the Great Barrier Reef, Raise Warragamba Dam, West Connex in Sydney, Open-cut coal mining near Lithgow

What is an environmental impact statement (EIS)?

An environmental impact statement (EIS) is a document legally required for certain actions 'significantly affecting the quality of the human environment". An EIS is a tool for decision making. It describes the positive and negative environmental impacts of a proposed action, and it usually also lists one of more alternative actions that may be chosen instead of the action described in the EIS.

What are the Secretary's Environment Assessment Requirements (SEARs)?

They set out the general requirements for assessing environmental impacts of major developments.

What are the two sections of the standard SEARs?

- General Standard SEARs: provide requirements for the environmental impact assessment process, the structure and general content of the Environmental Impact

Statement, the general process to be followed in undertaking the assessment and preparing the EIS, and consultation.

- Key Issue standard SEARs: provide the technical requirements for the assessment of each potential issue. Key issues listed include: air quality, biodiversity, climate change risk, flooding, health and safety, heritage, noise and vibration protected and sensitive lands, socio-economic issues, land use and property, soil, transport and traffic, sustainability, urban design, visual amenity, waste and water (quality and hydrology).
    - The Key Issue Standard SEARs represent a comprehensive list of potential issues that may arise, and how the proponent must assess that issue.

Assessing Environmental Impacts

What are environmental impact assessments (EIA)?

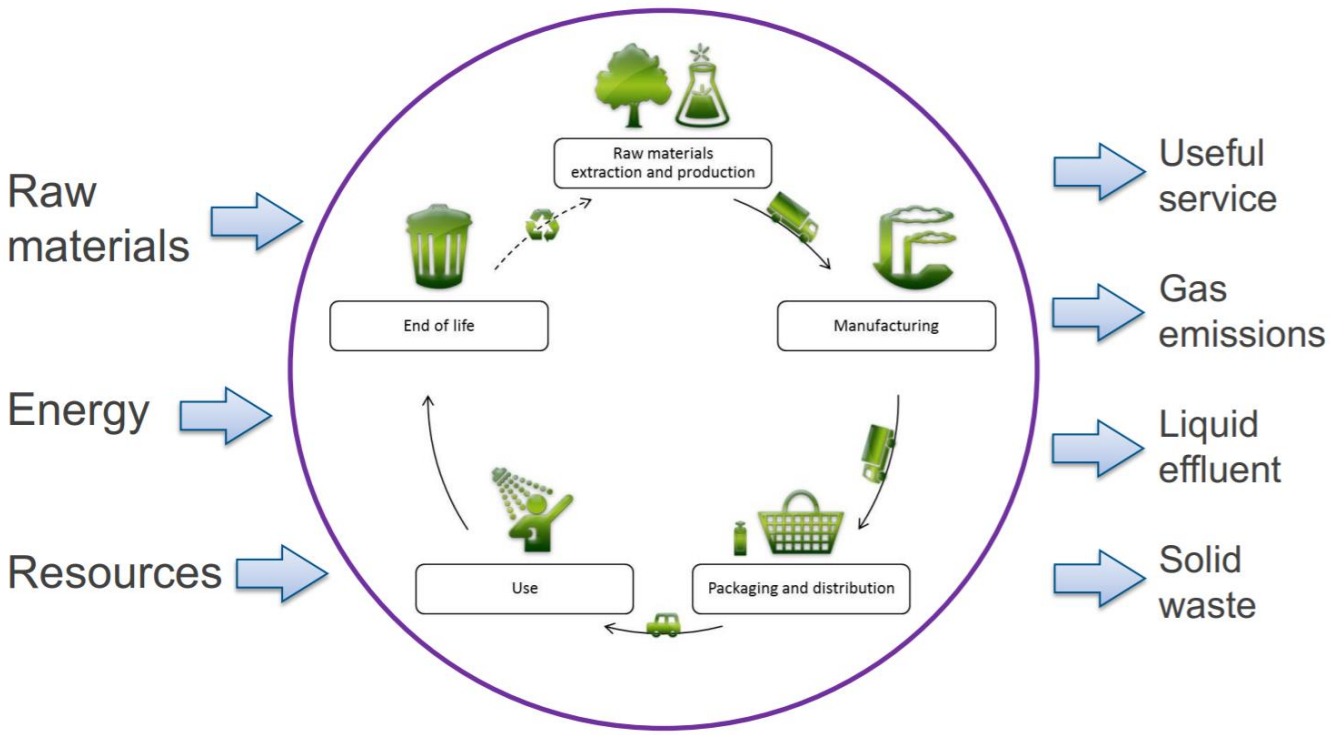
A general term which refers to the process of assessing the potential impacts of a proposed development or activity. Most development applications must be accompanied by some form of EIA (as part of an EIS). Environmental impact assessments enable the decision maker to understand the likely impacts of the proposal before deciding whether to grant consent or not. The assessment process also encourages the applicant and the decision maker to consider what measures can be adopted to minimise the impact of a proposal.

Life Cycle Assessment

What is a life cycle assessment?

It is an EIA tool to examine and improve the whole of life environmental performance of products or projects. It focuses on the design of products (or projects or technologies), especially new and improved design. It involves life cycle thinking, which is a way of thinking that includes the economic, environmental and social consequences of a product or process over its entire life cycle.

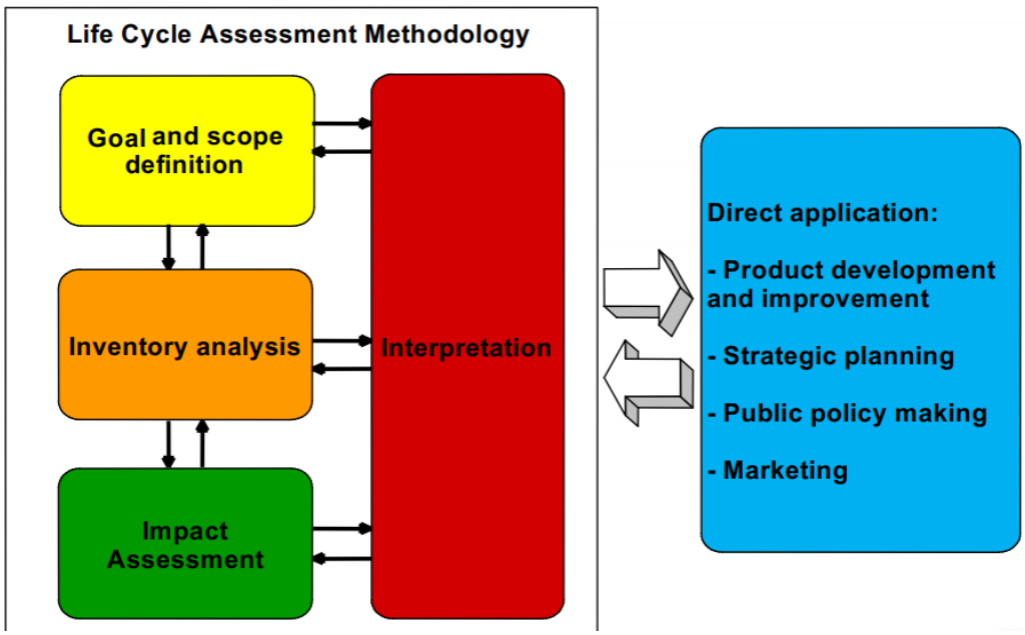
What are the



impact categories and what area of protection do they relate to?

- Human health: climate change, ozone depletion, human toxicity, respiratory inorganics, ionising radiation, noise, accidents, photochemical ozone formation
- Natural environment: climate change, ozone depletion, ionising radiation, photochemical ozone formation, acidification, eutrophication, ecotoxicity, land use, desiccation, salination
- Human resources: land use, resource depletion, desiccation, salination

LCA Methodology



What is the carbon footprint?

A life cycle assessment where global warming (climate change) is the only impact category. Carbon footprint measures total greenhouse gas emissions caused directly and indirectly by: an organisation, a product, a project (e.g. major development), a person, a region or nation, an activity event or process etc. It considers all six Kyoto protocol greenhouse gases and is measured in tonnes of carbon dioxide equivalent (t CO_2e).

What are the six Kyoto Protocol greenhouse gases?

Carbon Dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6).

What are the different scopes of emissions?

1. Scope 1 (direct): emissions from direct on site sources, emissions resulting from activities within the organisation's control e.g. company owned vehicles, on-site fuel combustion, manufacturing and process emissions, refrigerant losses
2. Scope 2 (indirect): emissions from purchased energy/utilities, indirect emissions from electricity, heat or steam purchased and used by the organisation e.g. purchased electricity for own use
3. Scope 3 (indirect): indirect emissions from supply chain or services, any indirect emissions from sources not directly controlled by the organisation e.g. employee business travel, waste disposal, contractor owned vehicles, product use, production of purchased materials, construction materials

The SEARs key issue on climate change does not include the impact of the project on climate change, only the impact from climate change on the project

What is a material flow analysis (MFA)?

Its aim is to investigate a particular element or material of concern. The method is: define region, choose goods and processes that are significant, establish materials balance for goods, derive element balance for region

What are the environmental assessment methods?

- **Life cycle analysis (LCA): focus on products, how best to make and use a good, what materials to use, the total impacts of an activity**
- **Environmental footprints (Carbon, water, ecological etc.): focuses on specific impacts through direct and indirect resource use and pollution, total specific impact of an activity**
- **Material flow analysis (MFA): material/element focus, identifies all significant goods, processes in region – how best to achieve sustainable use of the material/element**

Sustainable Development

Why is sustainable development needed?

2015-2018 were the four warmest years on record as the long-term warming trend continues. Technology alone does not solve the problem. Energy efficiency has increased (carbon intensity decreasing – burned less coal), but greenhouse has emissions have also increased. This is because environmental impacts are a product of population, affluence (consumption per capital) and technology. We are using more energy due to population growth and increased wealth (using more – gross domestic product).

In detail:

$$I = persons \times \frac{economic\ unit\ (\$)}{person} \times \frac{env.impact}{economic\ unit\ (\$)}$$

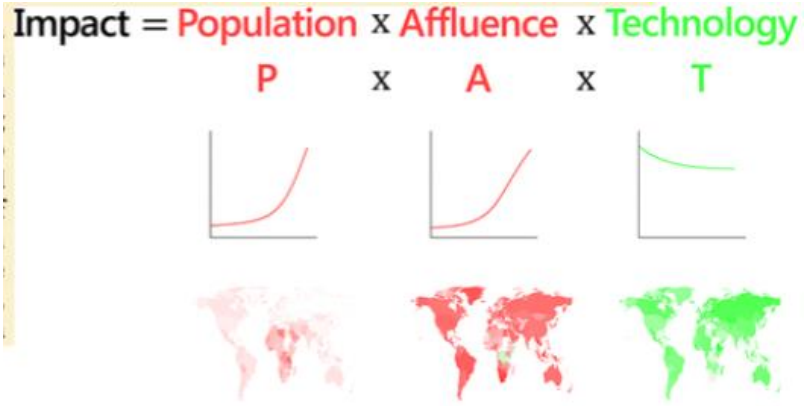
$$\mathbf{I = P \times A \times T}$$

I = Environmental Impact

P = Population

A = Affluence (consumption per capita)

T = Technology



What is sustainable development?

Sustainable development is development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs. The concept was credited to the report "Our Common Future" which was presented by the UN in 1987. Sustainability means that future generations will enjoy environment, social and economic conditions that are equal to or better than those enjoyed by the present generation.

What are the three aspects of sustainability?

- **Environment: preservation, conservation and protection of the environment and the prudent use of natural resources**
- **Economy: promotion of sustainable means of achieving economic stability and regeneration**
- **Society: relief of poverty and the improvement of the conditions of life in socially and economically disadvantaged communities**