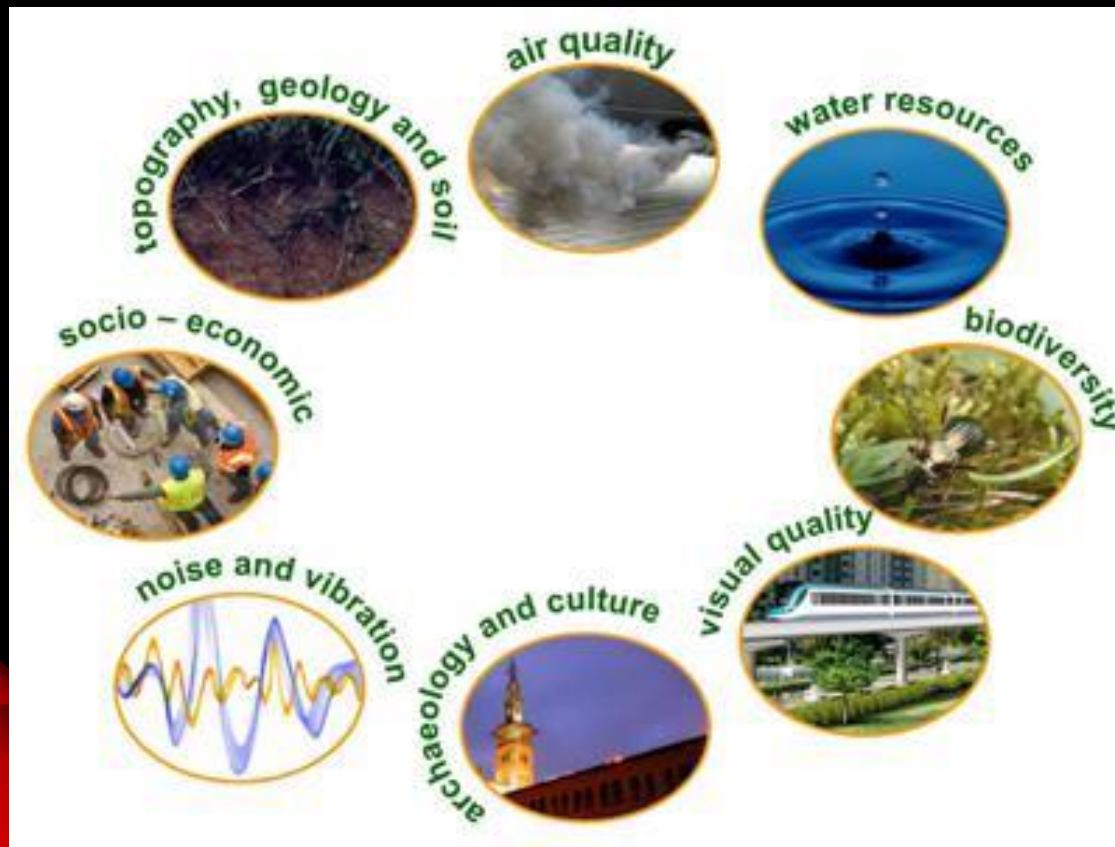


ENVIRONMENTAL ASSESSMENT: DOES IT HAVE A ROLE IN ACHIEVING THE SDGS?

With all developments, there is a potential impact on the environment and SD (not necessarily negative).



IMPACTS OF DEVELOPMENT

- Introduction 3 mins
- Direct loss of habitat - if only the footprint of the development.
- Severance - this is where the development forms a barrier and possibly divides existing habitats. This leads to fragmentation.
- Disruption to the local hydrology - including watercourse damage, polluted run-off, sedimentation and erosion.
- Disturbance of particular notable species - eg badgers, bats, owls, etc.
- Eden: environmental assessment
 - [://www.youtube.com/watch?v=9xTxA4y6ctg](http://www.youtube.com/watch?v=9xTxA4y6ctg)



BACKGROUND

Historical Development

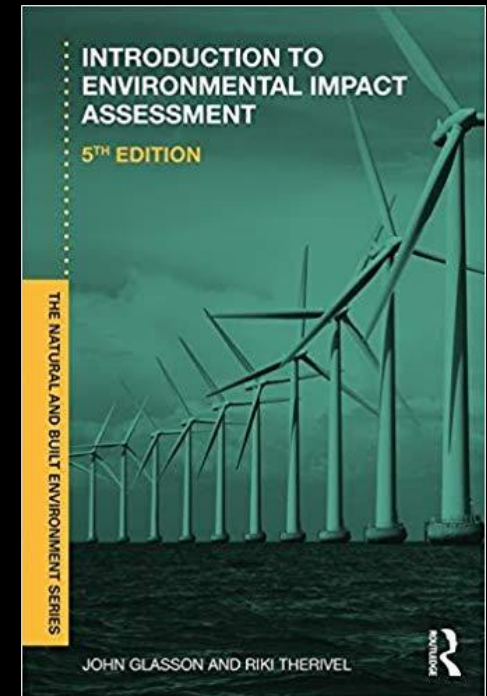
- NEPA – National Environmental Policy Act 1969 in the USA
 - Required federal agencies to carry out environmental assessment of policies and activities.
 - Driving force of environmental law and assessment
 - (Holder, 2007)



BACKGROUND

Historical Development

- 1973 – First Environmental Action Plan from the European Commission highlighted the importance of Environmental Impact Assessments (EIAs)
- 1985 – Directive (85/337/EEC) EIA procedures were mandated at project level
- Previously EIAs were voluntary or carried out due to local authority request
(Glasson *et al*, 2019)



BACKGROUND

- **Definition**
- EIAs may have a range of definitions. The EIA process is described by Glasson *et al* (2019: 34) as:
'a systematic process that examines the environmental consequences of development actions in advance. The emphasis, compared with many other mechanisms for environmental protection, is on prevention.'

LEGISLATION

- The process of Environmental Impact Assessment in the context of town and country planning in England is governed by the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 (the '2017 Regulations'). These regulations apply to development which is given planning permission under Part III of the Town and Country Planning Act 1990 (Gov.uk, 2018)

BACKGROUND

- **Requirements**

- An EIA is required from developers where projects may have significant affects on the environment.
- Environmental impact assessments are designed to give due weight to issues of sustainability - environmental, economic and social factors, in relation to planning.

(Department for Communities and Local Government, 2016)

Shale gas in Lancashire: You Tube ARUP consultants

[What do you think?](#)

BACKGROUND

- Strategic Environmental Assessment (SEA)
 - 1970s -Environmental impact assessments to be carried out at the levels of policy, plan/program and project. Its application was to be for use in prevention of environmental detriment and integration of environmental aspects into the decision making process (Feldmann, 1998).
 - EU Advice
 - [Overview](#)
 - <http://ec.europa.eu/environment/eia/eia-support.htm>

LEGISLATION AFFECTING DEVELOPMENT

- Town and Country Planning Regulations 1988 Act 1990.
- Town and Country Planning Order 1995
- The Environmental Impact Assessment Regulations 1999 (part of TCPR)
- The Environmental Impact Assessment Regulations 2002 (dealing with uncultivated and semi-natural areas).
- The Town and Country Planning (Environmental Impact Assessment) Regulations 2017 [National Archive 2017](#)

OTHER LEGISLATION

- Conservation of Natural Habitats and of Wild Fauna and Flora Regulations 1994 (commonly Habitats and Species Directive)
- Wildlife and Countryside Act 1981
- Countryside and Rights of Way (CROW) Act 2000
- Protection of Badgers Act 1992
- Hedgerow Regulations 1997
- Tree Preservation Orders.
- SEA Council Directive 2001/42/EC of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (SEA Directive) etc [Dutch case](#) (10 mins)

DIFFERENCE TO LCA

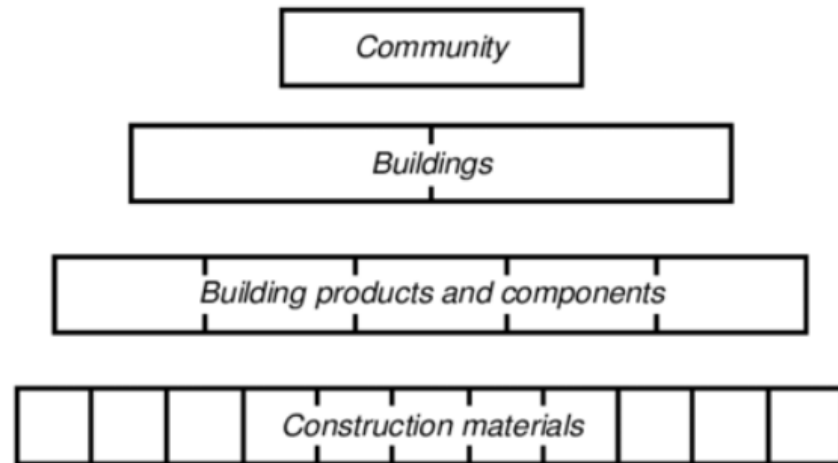
(CRAWLEY, 2015)

Environmental Impact Assessment (EIA)

- site and context specific actual impacts on the environment
- applied on large capital stock investments, infrastructure projects etc

Life Cycle Assessment (LCA)

- non site specific potential impacts on the environment
- standardized principles (ISO 1404x)
- applied on the product level



Conceptual differences between environmental impact assessment (EIA) and life cycle assessment (LCA).

SEA EVALUATION

- Commission evaluated SEA in 2019
- undertaken the evaluation of the SEA Directive to ensure that it is "fit for purpose"
- The evaluation has shown that the SEA Directive brings multiple benefits to the EU, contributing to wider goals on attaining the sustainable development goals (SDGs) and environmental protection, by integrating environmental concerns into the appropriate plans and programmes.
- To this end, it has clear EU added value. The Directive is coherent with other EU legislation prescribing environmental assessments. The benefits it provides do not cause disproportionate costs for the national administrations.
- The effectiveness of the Directive differs between sectors and the types of plans and programmes to which it is applied, but depends significantly on how it is transposed into national law and further implemented in each Member State.
- The SEA Directive remains fit for purpose. Its effectiveness and efficiency can be affected by many practical factors, for example the timing of the SEA, its synchronisation with plans and programmes subject to SEA, and the use of scoping in order to limit the costs and frame the content of the environmental report.
- The central issue for the future is the scope and purpose of the SEA Directive. While some stakeholders have favoured a broader and more strategic application of the Directive, others have abstained from acknowledging its merits when applied to high level planning and would prefer to see it applied at a lower level.
- SEA reflects the principles of sustainable development and provides for the systematic inclusion of environmental concerns in the plans and programmes that authorise developments and other activities likely to impact the environment.



STRATEGIC ENVIRONMENTAL ASSESSMENT AND SUSTAINABILITY APPRAISAL

- A sustainability appraisal is a systematic process that must be carried out during the preparation of local plans and spatial development strategies.
- Its role is to promote sustainable development by assessing the extent to which the emerging plan, when judged against reasonable alternatives, will help to achieve relevant environmental, economic and social objectives

DEVELOPING A SITE

Be aware of what is present on the site and plan around it.

Environmental Assessment - broad-based term to describe the process of assessing or surveying land and the likely impacts of any development. From simple **ecological survey** looking at the presence or absence of a particular protected species through to a full-blown **Environmental Impact Assessment** survey.

ENVIRONMENTAL IMPACT ASSESSMENTS (EIAS)

Used to:

- Assess the potential impacts of an action such as the erection of a new building.
- Look at the present situation and predict what changes the development may cause on the surrounding environment.
- Provide an umbrella approach to facilitate the formulation of environmental statements and subsequent management strategies.

EIA (CONTINUED)

The necessity for a full EIA is dependent on the size and type of the project and the planning authority involved. Two benchmarks:

- Annex 1 projects must have an EIA.
- Annex 2 projects are judged on a case-by-case basis.

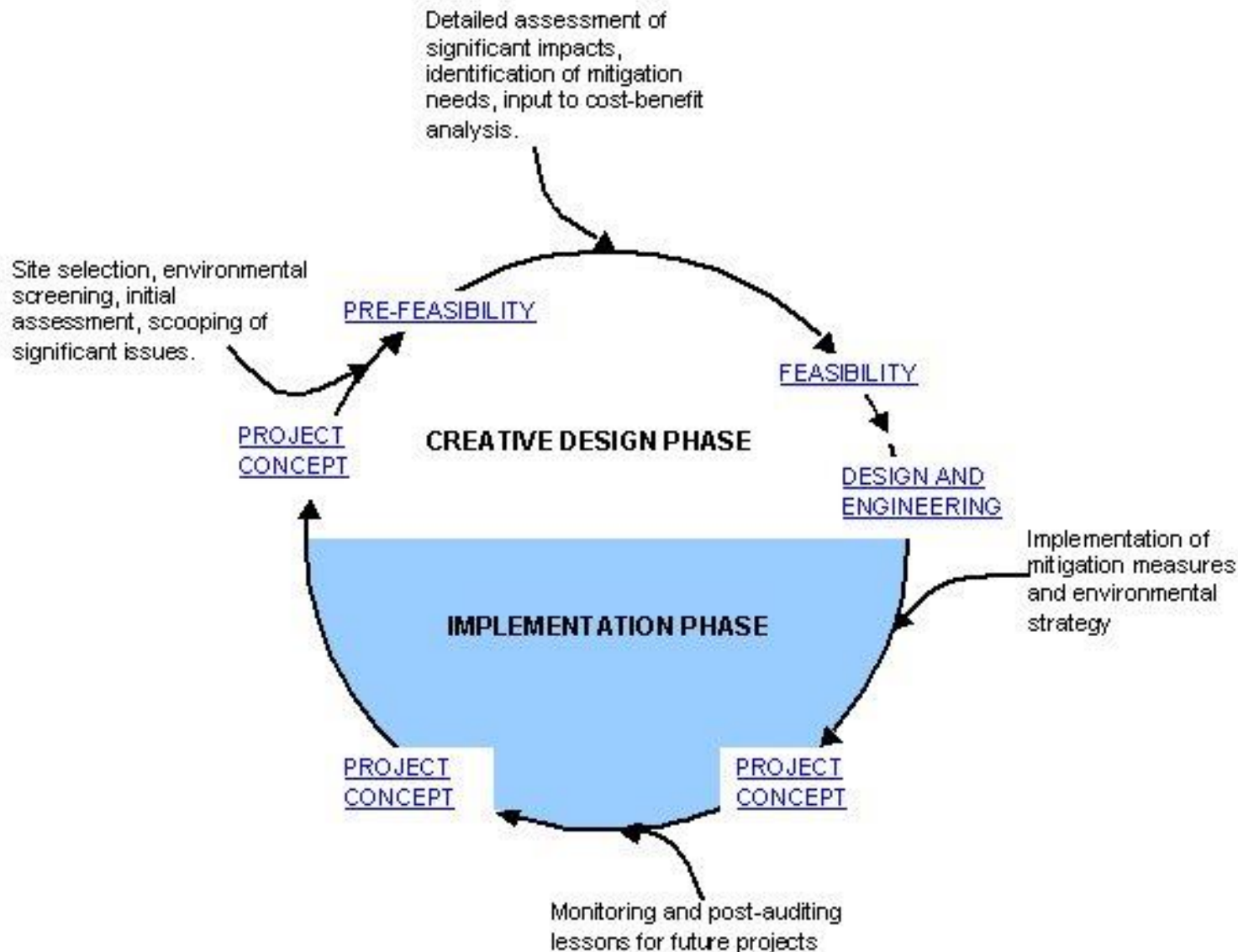
EIA (CONTINUED)

- If the relevant planning authority deem an impact assessment is required, then an environmental statement must be produced and should contain:
 - **A description of the project** - including raw materials, land use requirements, proposed access, etc.
 - **A description of the site and its surroundings** - including human population, flora and fauna, soil, water, air, landscape - both topography and architectural/historical value.
 - **An assessment of effects** - including direct and indirect; short, medium and long-term; positive and negative on all aspects that is human, land, flora/fauna, water/air.
 - **Mitigating measures/alternative approaches** - used to counter potentially adverse impacts.



Exeter, 2018

ENVIRONMENTAL IMPACT ASSESSMENT PROJECT CYCLE AND PROJECT MANAGEMENT



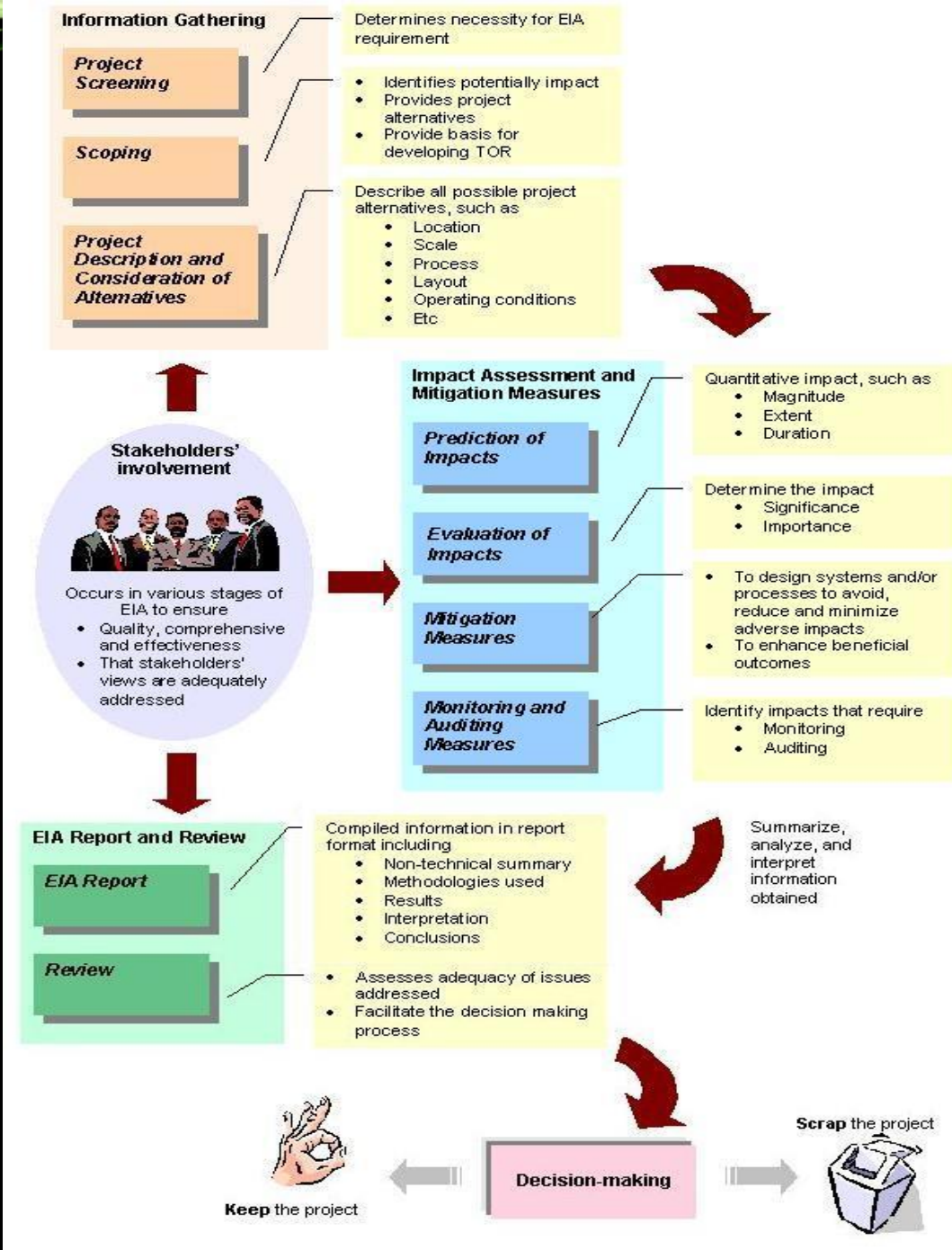
PROCESS 1

- **Project screening** Not all development projects require EIA. Project screening will help identify the ones that actually do..
- **Scoping** The process of scoping helps determine the coverage or 'scope' of the EIA.
- **Baseline data collection** A brief explanation on the concept of baseline data collection and its purposes.
- **Identification of environmental impacts** Various types of environmental impacts of development projects both beneficial and adverse.
- **Impact prediction comparison of alternatives and determination of significance** considerations for impact prediction, uncertainties in impact prediction and comparison of alternatives for impact prediction.

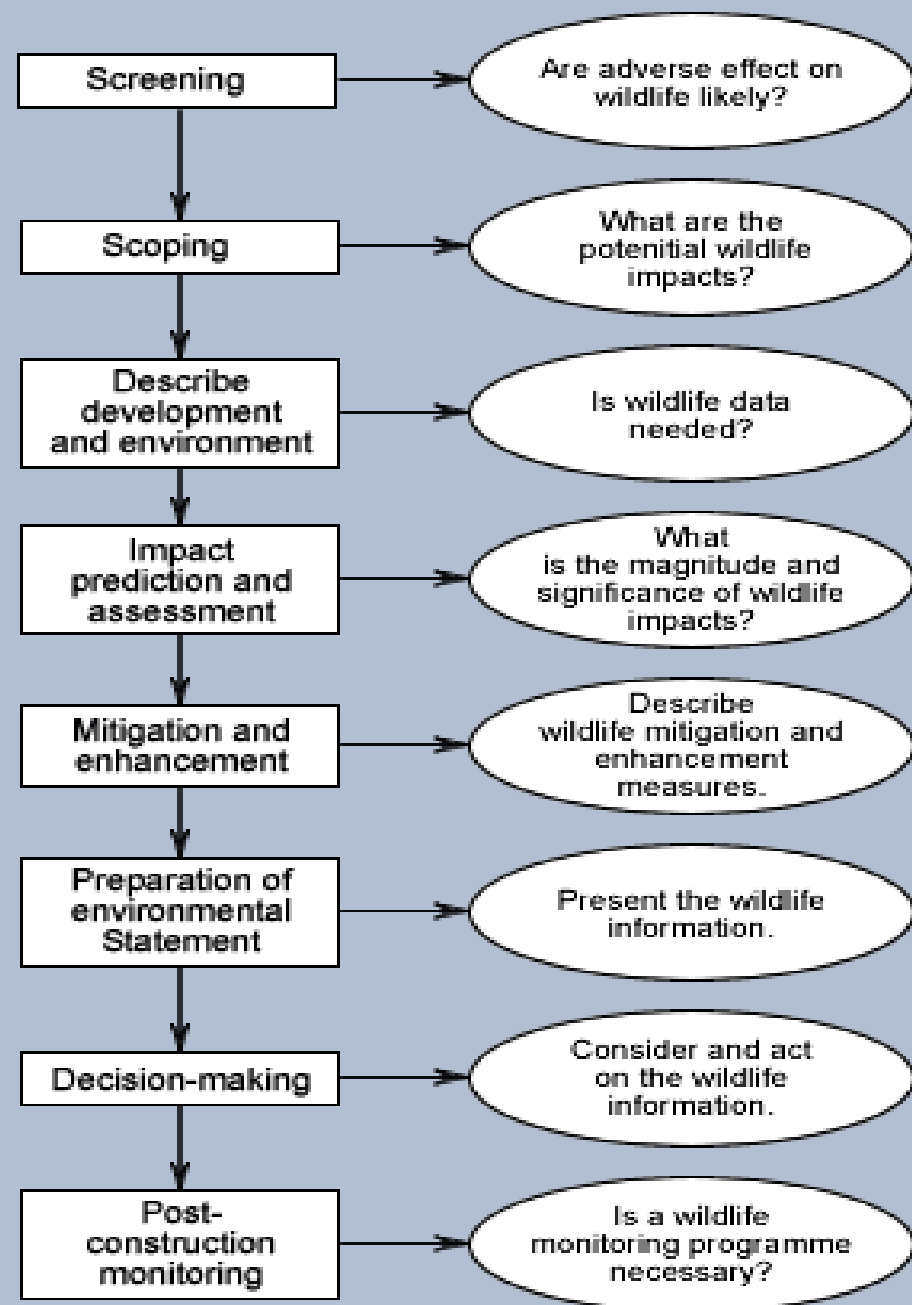
PROCESS 2

- **Mitigation measures** Described briefly under this section are the concept and objectives, types and interesting points, of mitigation measures.
- **Public consultation and participation** Public participation is a necessary component of the EIA. "Who are the public?", "How to involve them?", and "What are the benefits/disbenefits?" The answers can be found under this section.
- **Environmental monitoring** As one of the most important aspects of EIA, "Environmental Monitoring" is defined here along with explanations on monitoring principles, types and institutional aspects.
- **Environmental auditing** You will find under this section, the various types of Environmental Auditing and when it should be carried out during the EIA.

THE EIA PROCESSES IN SEQUENCES OF APPLICATION. (UNEP, 2012)



ECOLOGICAL CONSIDERATIONS PROCESS



MITIGATION OR COMPENSATION

- Finding somewhere else to build (worst case scenario).
- Translocation of species or habitat.
- Assimilating the needs of the species in the construction design.



PROTECTED SPECIES

Species:

Bats

Badgers

Barn Owls

Water Voles

Great Crested Newts

Dormice

Sand lizards

Otters

Possible Locations:

Old buildings, tunnels, trees.*

Woodland.

Farm buildings.*

Watercourses, ditches, dykes.

Around ponds.*

In or near deciduous woodland (S).*

Heathlands and sand dunes (S).*

Around larger waterways UK.*

*** European Protected Species –
Licence may be required.**



EXAMPLES OF ASSIMILATING NEEDS:

- Temporary exclusion and mitigating works e.g. ditches for water voles.
- Incorporating into design, e.g. bats and barn owls in buildings.
- Planning a project to incorporate species by protecting runs, conserving hydrology, tunnels and greenways, e.g. badgers.

EIA REGULATIONS 2002

- Covers the use uncultivated land and semi-natural areas.
- Predominantly aimed projects for changing the use of the land into intensive agricultural use although they define a project as “the execution of construction works or of other installations or schemes or other interventions in the natural surroundings or landscape.....”

EFFECTS OF EIA REGS 2002

- At present only for development that forms part of an intensive agricultural scheme e.g. a grain silo.
- If development is near to or within land subject to an environmental designation e.g. SSSI, National Park, AONB, etc then there may be a requirement for an environmental statement under existing EIA 1999 Regs.
- What happens if environmental issues are breached?
 - E.g. Pembroke Power station 2012:
 - <http://www.bbc.co.uk/news/uk-wales-south-west-wales-20660152>



TERMS

Ecological Impact Assessment:

- Increasingly an essential part of EIA.
- Where ecological considerations will outweigh any other.
- Will cover all species and habitats present detailing their overall importance or scarcity locally, nationally and internationally.

TERMS CONTINUED

Land Quality Assessment

- Used in urban construction field.
- Complete package of landscape assessment from soil quality through to land and contamination issues (inc ecological).
- Not only to support planning application but will also provide a baseline assessment to form land management plan or strategy.

Benefits	Flaws
Provides systematic methods of impact assessment	Time-consuming
Estimates the cost/benefit trade-off of alternative actions	Costly
Facilitates the public participation	Little public participation in actual implementation
•Provides an effective mechanism for coordination	Unavailability for reliable data (<i>mostly in developing countries</i>)
•environmental integration	
•negotiations	
•feed back	
Top-level decision making	Too focused on scientific analysis (<i>sometimes</i>)
Triggers an institutional building	Poor presentation of EIA report (<i>bulky volumes, scientific explanation, difficult to understand</i>)
Achieve a balance between the impact of developmental and environmental concern	Compliance monitoring after EIA is seldom carried out



ROYAL FERN PROPOSAL

- The development proposal is for an 18 hole golf course with associated infrastructure, lodges and executive housing

(Soltys and Brewster, 2007)

EXTENT VIEW FROM THE FOX AND HOUND LLANGYFELACH



THE PLAN

ROUGH SKETCH OF DEVELOPMENT AREA: ADAPTED FROM FIG 1: SITE CONTEXT AND DEVELOPMENT PLAN (SOLTYS AND BREWSTER, 2007)



CONTEXT

Unitary Development Plan

- The Royal Fern Golf Course Development is mentioned in the Unitary Development Plan (UDP) for Swansea. The purposes of the UDP are to:
'...promote sustainable development, protect the environment, facilitate regeneration and support community planning by ensuring that sufficient land is available for all development needs (for housing, industry, etc) and that the allocations are well located in terms of environmental, social and economic aspirations.' (City and County of Swansea, 2008a)

CONTEXT

Wales Spatial Plan

- Penllergaer , a village adjoining the site, is identified in Wales Spatial Plan as one of ten key settlements chosen to play a crucial role in city region success (Welsh Assembly Government, 2008) .
- In terms of sustainable communities Wales Spatial Plan reports that:
'Our future depends on the vitality of our communities as attractive places to live and work. We need to reduce inequalities between communities whilst retaining their character and distinctiveness.' (Welsh Assembly Government, 2008)

AIM AND OBJECTIVES

Aim

- The aim of this assignment is to assess how the theory behind environmental impact assessments can be applied to the environmental impact assessment of the Royal Fern Golf Course.

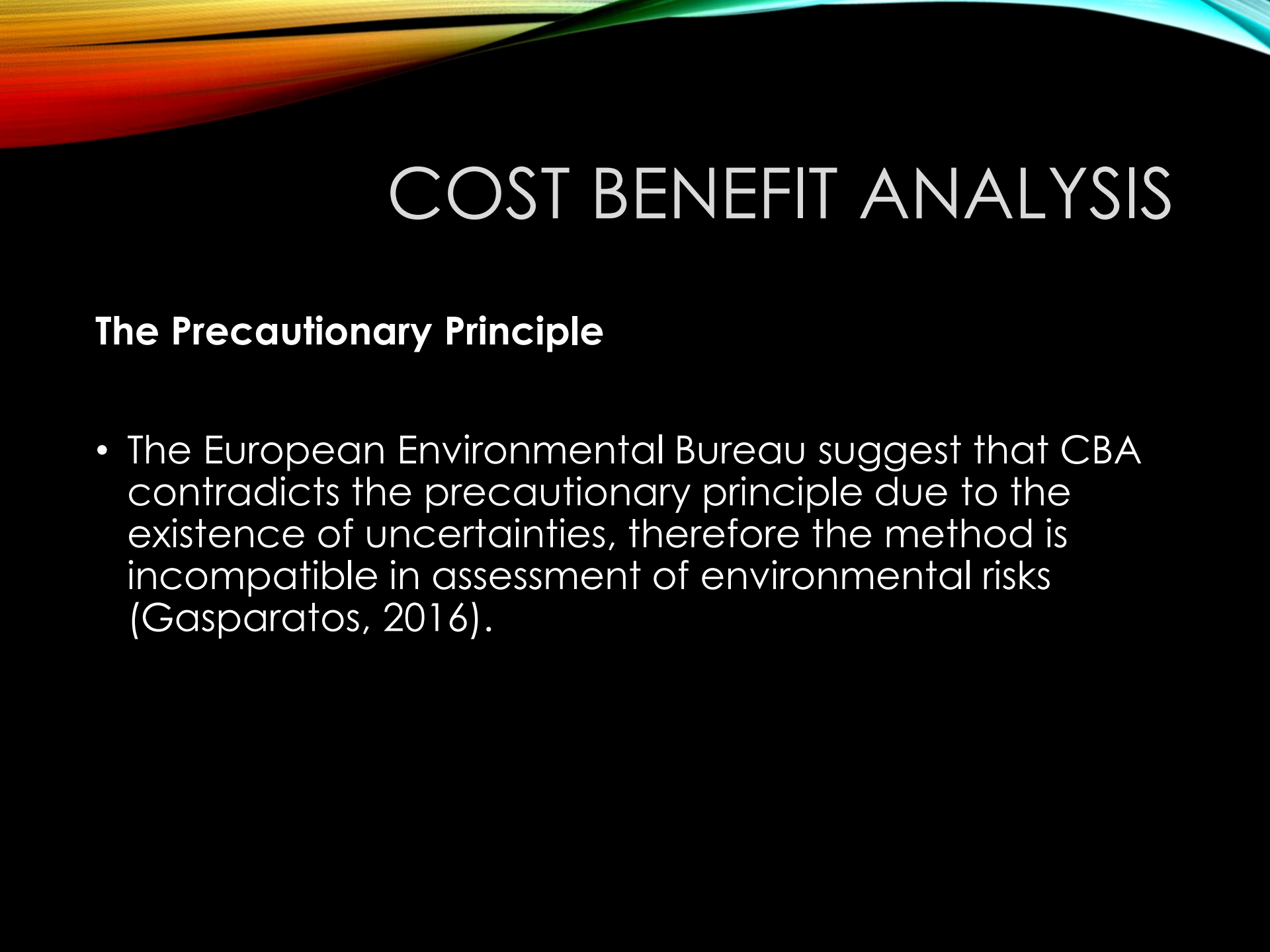
Objectives

- Assess the environmental impact assessment of the Royal Fern Golf Course proposal in relation to theory
- Reach conclusions regarding the appropriateness of this environmental impact assessment in meeting the theoretical basis for its requirement.

COST BENEFIT ANALYSIS

Equity and Social Justice

- Gasparatos (2016) argues that cost benefit analysis (CBA) is used at an early stage in planning a project in order to assess the feasibility and consider alternatives.
- The project for the greatest welfare gain will be most acceptable. However, he argues that this system is based on economics, issues of equity and justice are not addressed (Gasparatos, 2016).



COST BENEFIT ANALYSIS

The Precautionary Principle

- The European Environmental Bureau suggest that CBA contradicts the precautionary principle due to the existence of uncertainties, therefore the method is incompatible in assessment of environmental risks (Gasparatos, 2016).



NON TECHNICAL SUMMARY

Public Participation

- The Welsh Office guidance for environmental impact assessments dictates that a non technical summary must be provided that will allow members of the general public to comment fully, the summary is required to be written in plain English (Welsh Office, 2015).

NON TECHNICAL SUMMARY

Public Participation

- The description of the lower valley having been:
'...left unmanaged and poorly used.'
(Soltys Brewster Consulting ,2007)
may suggest that this is a negative factor
- This habitat may provide ideal conditions for some species, the Marsh Fritillary for example was sited in the phase 2 ecological survey and Rodwell in Stewart (2004) reports that they require unimproved damp grassland.

NON TECHNICAL SUMMARY

Public Participation

- Recognition of the need for cross funding the golf course with housing is given in the Southern Lliw Valley Local Plan and that both must be developed together to ensure success.
- This could be interpreted as meaning that the housing element, an 'enabling' development is also a part of local development plans and is reliant on success of the golf course.

(Soltys Brewster Consulting ,2007)

NON TECHNICAL SUMMARY

Public Participation

- The summary of the withdrawn application in gives a figure of 95 dwellings, yet the 2008 summary application gave an estimate of 135 dwellings. The Unitary Development plan further obscures the true number through alteration of policy to include for this development an allowance of an 'enabling development' (City and County of Swansea, n.da, 2008)
- No mention is made in the summary of planning permission for an application in 2004 having been refused by the National Assembly in 2006

NON TECHNICAL SUMMARY

Agricultural Land

- The Unitary Development Plan Post Enquiry Modifications (2008) policy EC13 reports that it will not be permissible for the best agricultural land to be lost and that grade 1, 2 and 3a land should be conserved (City and County of Swansea, 2015).
- Although no mention is made in the summary, the main body of the statement reports that agricultural land of grade 3 will be used (Soltys Brewster Consulting ,2007)

NON TECHNICAL SUMMARY

Social Acceptance

- Issues surrounding this development have been raised by members of the general public. Comments made in a local paper include:

'This is typical! bulldozing two working farms and a number of historical sites to build another bloody golf course and unaffordable housing in the area.' (Rees in Evening Post, 2008a)

- No mention of public opposition was stated in the summary



NON TECHNICAL SUMMARY

Theoretical Application

- Where theory dictates that the summary should enable public participation through accessibility, loaded terms and omission of facts may suggest use of a non technical summary for a persuasive tool.



PROCEDURE

Environmental Statement

- It is reported in the Environmental Statement that note was taken of good practice through bodies such as the Institute of Environmental Assessment.
- There is no set prescription for assessment (Soltys and Brewster, 2007) lack of which may allow for inconsistency between assessments.

CONSERVATION

SSSI

- The survey highlighted the issue of damage to the SSSI due to hydrological changes or nutrient enrichment reducing the sites biological interest.
- All possible precautionary measures are recommended to be taken in order to ensure no pollutant or disturbance is cause during any phase of development
(Stewart, 2004).

CONSERVATION

- Stream





CONSERVATION

Contradiction

- ES - nutrient enrichment in the SSSI area: increase in the area of rough grassland around it will result in net impact being minor or even moderately positive.
- Run off will arise and that where executive houses are built, this will exceed 'Greenfield Conditions'
(Soltys and Brewster, 2007).



CONSERVATION

Hedgerows and Woodland

- It is proposed that 34.6% of woodland will be removed.
- Concern raised over the time for restoration of habitats and the need for further ecological study regarding habitat fragmentation or disturbance

(Surgess, 2003)

CONSERVATION

Alien Species

- Both Rhododendron and Japanese Knotweed (*Fallopia japonica*) have been identified on site (Surgess, 2003)
- Eradication or control of alien species may be essential, it is argued that Japanese knotweed alone as an invasive, non native species can out compete native species and alter habitats (Child *et al* 2000; 2017).



CONSERVATION

- **Committed to Green**

- A study by Tanner (2005) investigating nine courses and nine adjacent habitats concluded that:

'...golf courses of any age can enhance the local biodiversity of an area by providing a greater variety of habitats than intensively managed agricultural areas.'
(Tanner, 2005)

CONSERVATION

Committed to Green

- A handbook '*Committed to Green Handbook for Golf Courses*' has been produced to provide a framework in which golf courses should operate in order to address sustainability issues (Stubbs, 1997).
- Use of chemicals and fertiliser will follow the official guidelines of the handbook along with COSHH and Pesticide regulations. (Soltys and Brewster, 2007)



CONSERVATION

Committed to Green

- In correspondence with the Countryside council for Wales it was reported that mitigation methods were considered adequate.
- The SSSI area was to be adequately fenced and correctly grazed, the water regime not upset and there should be no nutrient enrichment (NRW, 2017).



HYDROLOGY AND SOIL

Hydrological Impact, Pollution and Nutrient Enrichment

- Nutrient enrichment and pollutants can alter ecosystems impacting sensitive species. Erosion may arise due to removal of trees
- In terms of the precautionary principle, aspects of unknown consequences prevent calculable outcome of mitigation measures

VISUAL IMPACT

FOX AND HOUND, LLANGYFELACH



LANDSCAPE AND VISUAL IMPACT

- Little affect on views such as from Penllegear Business park



TOURISM AND RECREATION

- **Sports Council Wales**
- The non technical summary states that:

'The Sports Council for Wales have highlighted the need for a "pay and play" golf course in Swansea.' Soltys Brewster Consulting (2007)

TOURISM AND RECREATION

- Sports Council for Wales (2014) gives Swansea as a priority area for an 18 hole pay and play course but also recognises that one third of courses in Wales are pay and play.
- Alternatives to this development could involve provision at existing courses (Sports Council Wales, 2014).



SOCIAL PROSPECTS

Employment prospects and Agricultural Decline

- The project has the potential to create 240 - 245 full and part time jobs (Soltys and Brewster, 2007).
- Agricultural loss and tourism increase may alter the social fabric of this area.
- Yakovleva *et al* (2011) argues that the food production and consumption system is directly related to issues identified on the sustainability debate.



TRAFFIC AND TRANSPORT

Noise and Pollution

- This development has been criticised for the potential increase in car use. Where development increases transportation, sustainability is questionable in terms of pollution, resources use and the need for energy (City and County of Swansea, 2017).

SUSTAINABLE DEVELOPMENT

Significant Impact

- Areas of potential significant impact were given in the scoping report as geology, hydrology and drainage, ecology and nature conservation and landscape and visual impact (Soltys Brewster Consulting, 2007).
- Duinker *et al* in Wood (2012) suggest that the most critical element of environmental impact assessment is the determination of the significance of environmental impacts and that it is globally one of the least understood aspects.

POLICY

- Organisations, public and private, have their own norms and objectives, regulations, standards, social interaction which leads to organisational culture (Van Borgestede, 2006)
- Illustration of organisational culture may be from the rewording of the unitary development plan to involve an enabling development due to objection put forth on behalf of the developer (City and County of Swansea, 2017) This may be due to interaction and negotiation within organisations.



POLICY

- Goals of sustainability are subject to heterogeneous perceptions and the values of individuals (Newig, 2007).
- Restriction of building on the green wedge due to the request for a 'call in' to the Welsh Assembly Government illustrate individualistic effect in efforts towards goals of sustainability (National Assembly for Wales, 2015).



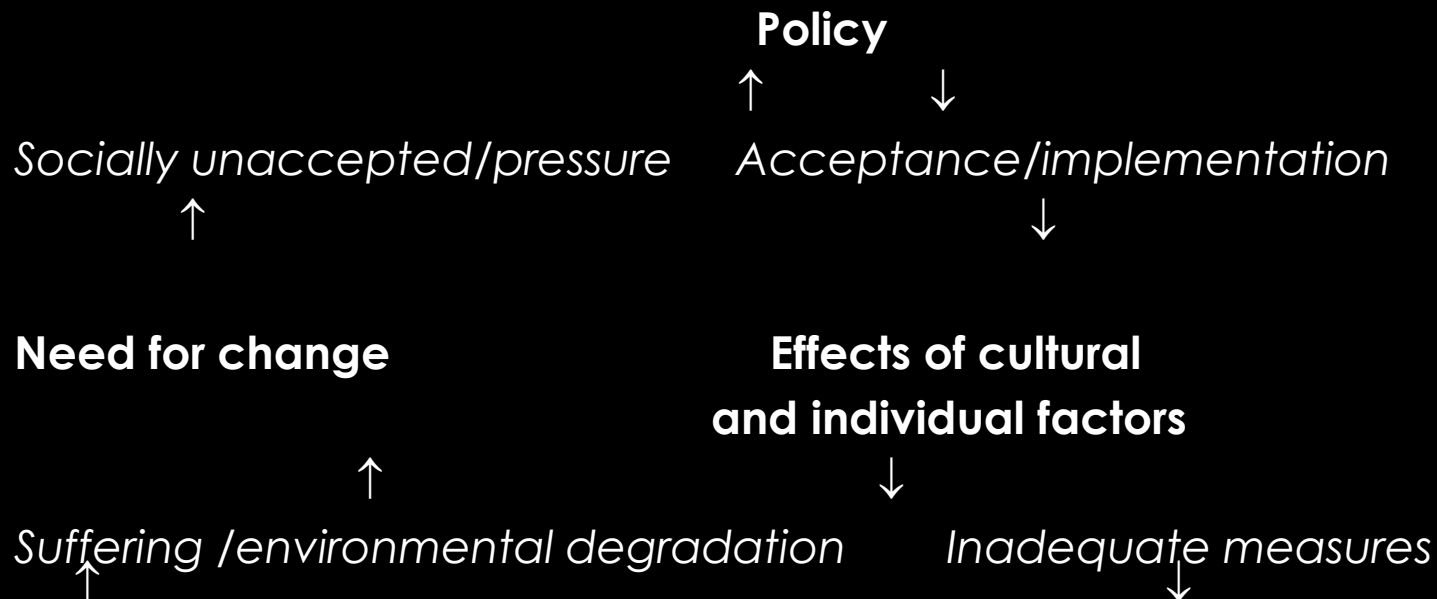
CONCLUSION

Temporal and Spatial Context

- In this place in time the developer seeks to discover if this project fits with policy - the product of factors such as SEAs.
- At all stages from the idea to the submission of the EIA, methods used, subjective viewpoint, cultural and other factors will affect judgement and outcome along the way.

CONCLUSION

Cycle of Environmental Policy Formation



Negative impact of human behaviour



CONCLUSION

Governance

- A study in Nature reports that biodiversity loss occurs faster in countries that are poorly governed (Christensen, 2004)
- Use of methods for evaluation based on baseline conditions may result in gradual decline (Wood, 2008)



CONCLUSIONS

- An evaluation system based on requirements of an environment rather than the magnitude to which environmental decline is acceptable may be a better system in terms of sustainable development

RECOMMENDATIONS

Systems and Uncertainty

- In order to minimise scope for accumulate uncertainty, systems such as the assets threat and solvability model could be employed.
- This system is reported to improve transparency and accountability in terms of decision making
(Hajkowicz, 2006)



RECOMMENDATIONS

- Use of a systematic approach through an independent body
- Use of an independent body to address
 - Persuasive nature in non technical summary
 - Openness – public concern issues
 - Completion – inclusion of issues raised in appendices



RECOMMENDATIONS

- Further strategic environmental assessment may prove useful in terms of governance, prevention of exploitative practice and protection of economic and environmental stability.

CONSTRUCTION DESIGN: SEMINAR

- how can we design a house to reduce environmental impact? 8 mins
- What do you think?
- What other design features would you include?
- How is this example different to what can be done in the UK?
- Why?

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