RISCS PROJECT ANNUAL MEETING

Presentation for PAB
Perspectives on WP5 guidelines

M.R.Haines, IEAGHG, Thessaloniki, Nov 2010
Guideline structure

- Overall scope
- Order of sections
- Structure for impact assessment (Environment)
- Coverage of:
  - Risk Assessment (Safety)
  - Leak quantification (Commercial)
Scope and Order

• Currently has a lot of background on CCS
• Covers:
  – Impacts
  – Leakage scenarios
  – Remediation/mitigation
• Suggestions
  – Condense background – move parts to back.
  – Re-order chapters
    • Leakage scenarios, impacts, mitigation
• Include section outlining EIA process
Release scenarios

Identify release type

Marine

Land

EIA

RA (Safety)

Measure ($)

EIA probably the most complex area to deal with.
Key stages in EIA

Figure 3.1: Best Practice Environmental Assessment Framework

**Stage**

- Screening
- Scoping
- Analysis of Alternative Options
- Project Description

**Description**

- **Screening**: Screen to determine whether or not the project requires an EIA. Consultation with interested parties, governments or authorities as required.

- **Scoping**: The aim of the scoping process is to determine the items and issues to be addressed in the EIA (terms of reference). The developers should outline the methods to be used in the course of the EIA. Interested and affected parties should be given the opportunity to comment on the scope of the EIA.

- **Analysis of Alternative Options**: Developers should include a description of the alternatives to the proposed project. The description should include an assessment of the potential impacts and potential mitigation. The option of not progressing the proposed activities should be considered.

- **Project Description**: The developer should include a comprehensive description of the project in the EIA. The description should cover the lifecycle of the project (i.e. construction, operation, maintenance, decommissioning). It should include an overview of: size, location, timetable of the project, proposed land use, nature and quantity of construction materials, description by type and quantity of the expected residues and emissions (noise; water; air; soil pollution; vibration; light; heat etc).

Extract from IEAGHG report 2007/1
**Key stages in EIA**

- **Env. Baseline Review**: The objective of the baseline review is to describe the state of the environment as it is prior to commencement of project operations. The review should describe the flora & fauna; water (aquifers; water courses; shore lines; existing discharges); soil (geology; geomorphology; including seismic characteristics); air (quality; climatic factors); architectural, historic and cultural heritage.

- **Legislative Review**: Developers should include in the documentation an outline of the policy, legal and administrative framework within which the EIA is prepared. It should include all relevant legislation at a local, state/territory, regional, national and international level that could affect the proposal. Also, development of a CCS site should not conflict with other legislation.

- **Impact Prediction**: The impacts identified in the preceding stage should be quantified via qualitative, quantitative and semi-quantitative techniques. Developers should consider frequency, duration, magnitude, risk etc.

- **Impact Significance**: In determining the significance of activities, developers should consider the size of the project; location (near SSSI's); and the nature of the effects. Impacts should be screened and prioritised accordingly.

- **Impact Mitigation**: Developers should provide a description of the measures which will be taken to avoid; reduce; or remedy significant adverse effects. The description should include an overview of the predicted or expected cost effectiveness of the measures; the statutory or policy basis of the measures; cost of mitigation.

---

Extract from IEAGHG report 2007/1
IA structure

• Identifying receptors should be a key
• However first step is identifying leak scenarios
• Second step should be identifying “usages” which might be affected
• Then the likely receptors become obvious
EIA initial work flow

Identify release type

Release scenarios
- Marine
- Land

Identify receptors
- Fish
- Humans
- ecosystem
- Nematodes
- Bacteria

Identify uses
- Farming
- Housing
- Nature reserve
- Water supply

Identify release type
Role of “environments”

• Not fully clear
• Is an additional sorting factor
• May modify receptor response
• Suggest if retained it is next step in process
Find impact data

Release scenarios

Marine

Land

Identify release type

Generic uses

Farming

Housing

Nature reserve

Water supply

Identify Uses

Receptors

Fish

Humans

ecosystem

Nematodes

Bacteria

Identify receptors

Climatic regions

Shallow sea

Cold land

Deep sea

Temperate land

Warm land

Identify environment

Assessments

Significance

Impact data

Assess impacts

Research centres

Literature

Find impact data
Receptor definition guidance

• Level of detail?
• High level may be insufficient
• Species v ecosystems? – Both needed
• Suggest hierarchical listings
• Suggest link to “usages”
Links to impact information

• Critical for EIA development to have sources of impact data.
• Guidance should point to data sources
• Should include literature as well as research centres
• May be easier to deliver in electronic form
• Uncertain of “environment” definition value
• Should include Littoral environments
## RECEPTORS HIERARCHY

### TOP LEVEL DEFINITION

<table>
<thead>
<tr>
<th>Research centres</th>
<th>ASGARD</th>
<th>Florina</th>
<th>Grimsrud Farm</th>
<th>San Vittorio, Latera</th>
<th>Panarea</th>
<th>Montmiral</th>
<th>S North Sea Dutch Coast</th>
<th>English Channel</th>
<th>Norwegian fjord</th>
<th>Gulf of Trieste</th>
<th>Definitive Literature</th>
<th>Safety data sheet</th>
</tr>
</thead>
</table>

### 2ND LEVEL DEFINITION

<table>
<thead>
<tr>
<th>Research centres</th>
<th>ASGARD</th>
<th>Florina</th>
<th>Grimsrud Farm</th>
<th>San Vittorio, Latera</th>
<th>Panarea</th>
<th>Montmiral</th>
<th>S North Sea Dutch Coast</th>
<th>English Channel</th>
<th>Norwegian fjord</th>
<th>Gulf of Trieste</th>
<th>Definitive Literature</th>
<th>Safety data sheet</th>
</tr>
</thead>
</table>

### 3RD LEVEL DEFINITION

<table>
<thead>
<tr>
<th>Research centres</th>
<th>ASGARD</th>
<th>Florina</th>
<th>Grimsrud Farm</th>
<th>San Vittorio, Latera</th>
<th>Panarea</th>
<th>Montmiral</th>
<th>S North Sea Dutch Coast</th>
<th>English Channel</th>
<th>Norwegian fjord</th>
<th>Gulf of Trieste</th>
<th>Definitive Literature</th>
<th>Safety data sheet</th>
</tr>
</thead>
</table>

### Data sources

- Burrowing
- Surface dwelling
- Deep sea
- Estuarine
- River
- Sea bottom
- Marine mammals
- Shellfish
- Nematodes
- Invertebrates
- Plankton
- Bacteria
Conclusions

• A good start has been made
• Structure needs more careful mapping
• Consider reality of practical EIA preparation
• Address how to update impact information
Thankyou for your attention