Jun 20th, 3:10 PM - 3:30 PM

The concept of the Icelandic Master Plan for Nature Protection and Energy Utilization and an integrated process based ecosystem approach to evaluating river basins

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Presenter Information
Skúli Skúlason, Ása L. Aradóttir, Birna Lárusdóttir, Gísli Már Gíslason, Kristján Jónasson, Sólborg U. Pálsdóttir, Sólveig K. Pétursdóttir, Tómas G. Gunnarsson, Þorvaldur Þórdarson, and Þorvarður Árnason

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http://www.ramma.is/english

Fish-Passage Oregon 19-21 June 2017
Energy production and use in Iceland

From the National Energy Authority

Hydro power plants in Iceland
Master Plan for Nature Protection and Energy utilization

• First phase – Master Plan 1 completed in 2003
• Second phase – Master Plan 2 completed in 2011
• Third phase – Master Plan 3 completed in 2016/17
• Legislation in 2013
• Based largely on the Norwegian “Master plan for water resources” 1984
• A form of strategic environmental assessment (SEA)
The process

Act 48/2011 on conservation and energy use

Power-plant projects proposed by industry

Evaluation by Master Plan Steering committee and Expert groups
- Estimation of values and impact
- Ranking of proposals
- Public auditing (two times)

Proposal to Alþingi = Master Plan
Every four years
Steering committee

• Is responsible to guarantee that "... the utilization of geographical areas where there are power plant options is based on long-term views and on a comprehensive assessment of interests ... having sustainable development as a guide"

• Work is based on expert evaluations and consultation with stakeholders and the public

• Areas and power-plant options are ranked

• Propose categories for areas and power plant options: (1) conserve – (2) on hold – (3) use (for EIA)

• Conservation category is fundamental
6 persons' Steering committee combines results of Expert Groups and classify areas and power plant ideas into conserve, on hold or use categories.

4 Expert-Groups
Evaluate and rank power-plant options for given values

EG 1
geology, biota, landscape, wilderness and cultural heritage

EG 2
recreation, agriculture, land use, tourism

EG 3
regional and social consequences

EG 4
defined energy alternatives, capacity, technical and economical evaluation
Impact areas of power plant proposals in the 3rd cycle
### Values

<table>
<thead>
<tr>
<th>Classes</th>
<th>subclasses</th>
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<tbody>
<tr>
<td>Geology &amp; hydrology</td>
<td>bedrock, unconsolidated sediments &amp; processes, subterranean water (incl. groundwater &amp; geothermal), rivers &amp; lakes</td>
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<tr>
<td>Species</td>
<td>vascular plants, birds, freshwater fish, freshwater invertebrates, thermophilic microbes</td>
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<tr>
<td>Ecosystems and soils</td>
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<td>Landscape &amp; wilderness</td>
<td>wilderness, landscape</td>
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<td>Cultural heritage</td>
<td>archaeological, historical, legends, superstitions</td>
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<table>
<thead>
<tr>
<th>Attributes</th>
<th>richness, diversity</th>
<th>rarity</th>
<th>size, completeness</th>
<th>fragmentation disturbance</th>
<th>international responsibility</th>
<th>information &amp; symbolic value</th>
<th>visual value</th>
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Scale 1, 4, 8, 13 and 20. Relative estimates based on best information and expert knowledge.
Scores are weighted, and total scores calculated.
Assess values

- Calculate total value for each area, weighted by importance

1. Rank areas by total value and special considerations

Assess impact

- Calculate total (weighted) impact of each alternative

2. Ranking of energy alternatives from worst to best

- total value
- total impact of development
- uncertainty and risk
- special considerations

separately for each class (geological, biological, landscape, cultural)
What reflects the value of an area?

- Estimations of diversity are fundamental, e.g. in conservation acts and management plans worldwide.
- Biological diversity refers to diversity among organisms from diverse origins, including ecosystems and their combinations: this applies to diversity within species, among species and ecosystems (Rio 1992).
- Geological diversity has been approached similarly; from rock forms to tectonic, volcanic and erosion processes.
- Cultural diversity is important e.g. in UN declarations of human development – without diversity there are no choices.
- Geological diversity is reflected in biological and cultural diversity.
What reflects value of an area?

• Concepts of diversity have strong conceptual/philosophical foundation, relating to the organization of the world and our perception of it
• A dynamic view of diversity is growing; seeing patterns, but also relations and processes
• Iceland is unique when it comes to nature’s diversity – e.g. volcanism and geographic isolation, that stimulate dynamic processes, e.g. in terms of evolution of life, geological formations, landscape and culture
Geographic isolation, tectonism and volcanism characterize Icelandic nature.

103,000 km²

Lakes and rivers 1,400 km² (1.4%)
Concluding remarks

• The Icelandic Master Plan has had major positive effects on land use for power plants
• It is a major leadership task
• Its methodology needs constant attention; e.g. now more sophistication in how value of area is assessed
• More knowledge of nature is needed
• Tourism is an important player; broader assessment of area values should be considered
• Public an political views of nature are changing, e.g. now majority for the highlands as a national park
Thank you!

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