Overview of environmental regulations

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Aim work package 4

Find the best strategy to harmonize and empower the existing environmental regulations, adapting life cycle thinking, also engaging the decision makers in order to facilitate the change.
Tasks

Task 4.1: Decision-making process mapping (VITO)
List relevant regulations → process mapping of GEOENVI case studies

Task 4.2: Formulation of recommendations on environmental regulations (CNR)
  a) Ranking energy policy and environmental regulations influencing geothermal and RES (CNR)
  b) Towards better regulation of the environmental impact of geothermal (EGEC)
     Working paper on recommendations for European harmonization

Task 4.3: Strategy for engagement and adoption of the recommendations (VITO)
Three national workshops:
  1) informing, 2) barriers and solutions, 3) reflect on solutions / actions
Decision-making process mapping

Goal

- Gain a better overview of similarities and differences among national level geothermal environmental regulatory practice
- For 6 national case study countries: Belgium, France, Iceland, Italy, Hungary, and Turkey
- Provide the basis for the formulation of recommendations on environmental regulations
Decision-making process mapping

Content Deliverable 4.1

- 6 country reports and comparative analysis
- Overview
  - General data on deep geothermal
  - Institutional context
  - Policies and policy visions
- Regulation mapping
  - Definition, classification, and resource ownership
  - Licensing and authorizations
  - 11 specific environmental impacts and risks

Available soon!
### Environmental impacts vs. policy themes

- Environmental impacts and risks covered under various environmental policy themes

<table>
<thead>
<tr>
<th>Environmental Impact</th>
<th>Water quality</th>
<th>Air quality</th>
<th>Waste</th>
<th>Noise and vibration</th>
<th>Landscape</th>
<th>Soil quality</th>
<th>Radioactivity</th>
<th>Pressure</th>
<th>Equipment</th>
<th>Liability</th>
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</thead>
<tbody>
<tr>
<td>Surface disturbance (vibration, noise, visual, land occupation, dust)</td>
<td>X</td>
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<td>Degassing</td>
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<td>Ground surface deformation</td>
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<td>Seismicity</td>
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<td>Interconnection of aquifers and disturbance of non-targeted aquifers</td>
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<td>Reservoir physical and chemical modifications</td>
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<td>Effects of surface operations</td>
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<td>Waste production from surface operations</td>
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<td>Leaks due to surface installations and operations</td>
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<td>X</td>
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<tr>
<td>Liquid/solid effusion and waste</td>
<td>X</td>
<td>X</td>
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<td>Radioactivity</td>
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International and EU directives

- Example EU directives
National contexts differ regarding:

- History of development
- Installed capacities (heating, power)
- Main policy visions
- Support schemes
- Etc.
Mapping national level environmental regulations

Overview tables

- Example of noise

<table>
<thead>
<tr>
<th>Country</th>
<th>Regulation</th>
<th>Scope</th>
<th>Thresholds</th>
<th>Mitigation &amp; monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>VLAREM II Section 2.2.1: Environmental quality norms and target values for noise in open air. Section 4.5: Noise pollution control Annex 4.5.1 Measuring methods and conditions for background noise.</td>
<td>Regional (Flanders) Environmental quality norms and target values for noise in open air. General guidelines (Section 2.2.1) and specifications / additional requirements for high risk activities (Section 4.5)</td>
<td>General threshold values given in Annex 2.2.1 for 10 land use categories and three time periods (day / evening / night), see (accessed Dec. 2019): <a href="https://travemize.arns.vla.be/minj">https://travemize.arns.vla.be/minj</a>. regiroda?word=10005 For example, residential area Day (45dB), Evening (40 dB), Night (35 dB)</td>
<td>Section 4.5: Requirements for using Best Available Techniques for minimizing noise pollution. Monitoring original background noise. Further specification of thresholds for 'specific noise' (i.e. the noise specific to the project/activity...) and 'fluctuating sound' (e.g. occasional peaks) for high risk activities. Requirements for monitoring method (Annex 4.5.1)</td>
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<tr>
<td>Order of the Walloon Government of 4 July 2002 fixing the general conditions of exploitation related to the environmental permit</td>
<td>Regional (Walloon) Noise</td>
<td>The threshold values are given according to three time frames per day (7-19h), transition period (6-7 &amp; 19-22h), and night (22-6h), and different zones Day: bw 55 and 60 dB, Transition: bw 45 and 55 dB, Night bw 40 and 50 dB.</td>
<td>Exceptions can be granted according to specific rules. Monitoring measures are loosened in Section 3 of the Order.</td>
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<td>France</td>
<td>Ministerial decree N°2008-1099 Relative to neighborhood noise abatement</td>
<td>National Noise</td>
<td>Yes, and global noise emergence is limited to 5 dB(A) (day), and 3 dB(A) (night).</td>
<td>Monitored throughout the daytime (7h – 22h), during night (22h – 7h) time.</td>
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<td></td>
<td>The French Public Health Code</td>
<td>National</td>
<td>&lt;=30 dB</td>
<td>Fines a spectral emergence in a civilian octave band (article R. 1334-34)</td>
</tr>
</tbody>
</table>
Some observations – classification and permitting

- Definitions and rules for ownership are largely similar, but that classifications of different types of geothermal resources vary significantly.
- The number of authorities involved in permitting that differs among countries.
- Environmental Impact Assessment is present in each country, but the way it is incorporated in the overall permitting procedure differs.
Observations – coverage of environmental impacts and risks

- Challenging to gain a full overview covering different levels (EU, national, regional, local)
- In some cases, lack of national level regulation related to the lack of particular impact or risk
- Environmental impacts and risks appear generally well covered by:
  - Specific legislations and guidelines
  - Including thresholds for mitigation measures where appropriate
  - Covered in Environmental Impacts Assessments and permitting processes
  - Good practice among project developers and operators
- Questions remain
Outlook

- To what extent are national legislations consistent with EU legislation? On what aspects would harmonization be required?
- Are regulations sufficient for mitigating the impact at hand, or possibly too strictly applied? What are main regulatory gaps?
- How are legislations applied in practice? Which informal aspects come into play?
- Which elements of national regulations and guidelines can be considered best practices that can be shared among countries?
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