Water, climate change, and large-scale mining in Sonora, Mexico: Emerging challenges for rural water security

IWRA Webinar “The Global Water Security Challenge”

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Hermosillo, Mexico

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Mining in Sonora

- Mining: 17% of the state’s GDP
- Sonora: 1st producer of gold and copper in MX (and the only producer of molybdenum, graphite, and wollastonite)
- Approx. 42 active mines in Sonora
- Processing installed capacity is 200,000 tons/day
- Mining land concessions covered 29% of the state up to 2017
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Water and Mining in Sonora

The NGO “CartoCrítica” and Heinrich-Böll analyzed data from REPDA in 2014, and found that...

- 1,036 water right titles in hands of 230 mining corporations
- 437 million cubic meters of water per year
- Enough to satisfy the average demand of 3.3 million Mexicans
- Sonora was the major single user with 107 Mm$^3$/year
- Underestimations are a big issue
- Lack of metering and surveillance in the countryside
Water Security in the Spotlight

How large-scale mining activities interact with other rural livelihoods?

How climate change would affect rural large-scale mining, and what do mines and communities are doing to adapt?

How the adaptation strategies by this global-market sector would pose new challenges for local rural livelihoods through water security impacts?
Exploring Interactions: An example

Active mines and land concessioned for mining

Surface waters’ status

<table>
<thead>
<tr>
<th>Status of banning</th>
<th>Area under mining concessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undetermined</td>
<td>8.4%</td>
</tr>
<tr>
<td>No banning decree</td>
<td>19.8%</td>
</tr>
<tr>
<td>Active banning decree</td>
<td>27.8%</td>
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</tbody>
</table>

One third of the total area of watersheds with water extraction banning decrees is concessioned for mining exploration and extraction.
Exploring Interactions

- Active mines and land concessioned for mining
  - Surface waters’ status
  - Aquifers’ status
  - Social property of lands
  - Vulnerability and drought mapping
  - Natural Protected Areas
Take-Home Messages

• Lack of coherence between management frames indicate institutional mismatches or gaps and can foster social conflicts.

• Single-sector analyses are insufficient: shift focus to systemic views.

• Mining can alter significantly water quantity and quality in a context of global change, but we can’t change what we are not measuring systematically.
THANK YOU!

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