Social License and Environmental Protection: When Compliance with Regulations is not Enough

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* Presently at the Waste Technology Section of the NEFW/IAEA
Presentation Outline

• Background
  – The fundamental question
    • Answering the fundamental question;
  – What is Social License?
  – Regulation x Social License

• Our Case Study
  – Background
  – Study area
    • Unit of Uranium Concentration (URA)
  – Regulatory Framework
  – Environmental Impact Assessment
  – Denouncements
    • Analyzing the “contamination” in the Juazeiro community;
    • Consequence of the denouncements;
    • Public hearing;
  – What is missing?
  – Understanding the situation of Caetité
    • Failure to respect Social License to Operate (SLO)

• Conclusions;
• Suggestions;
The fundamental question

→ Is it possible for the uranium mining industry to operate without gaining the Social License?
Experience shows that independently of the size of a particular mining operation several projects have been stopped or delayed due to strong opposition of local communities and Non-Governmental Organizations (NGO’s).

It has been recognized that without the so called “Social License” businesses can be seriously affected, even if the operation holds the necessary legal licenses (environmental, nuclear, etc).

Social License → What is Social License ???
What is Social License?

• As an abstract idea it has no consensus on definition or application;

• It depends on the point of view on which this concept is being examined (Government, Industry, NGO’s, etc.);


  – “a comprehensive and thoroughly documented process to have local stakeholders and other vested interests identified and to have their values and beliefs taken into account in the environmental impact assessment of the proposed project…” Richard Shepard, 2008 (President and CEO of Applied Ecosystem Services, Inc.);

Unwritten acceptance of an industry by society which allows it to operate
Regulation x Social License

• Traditionally, the corporations see compliance with the legal requirements, as synonym of observance of social obligations
  – Legal obligations are not the sole measure of societal expectations;
• Sometimes, the conditions demanded by the “social licensers” may be more restrictive than those imposed by regulation
  – Regulatory approval does not equal societal approval → beyond legal compliance;
• Regulation represent minimal societal expectations;
• Compliance with regulations is the minimal demand of society
The study case: The situation of the only uranium production center in operation in Brazil (URA)

Where the compliance with the legislation and the consequent environmental protection is not enough to guarantee that

The local community feels safe

URA operates without problems
Objectives

• Analysis of the socio-environmental aspects involved in gaining the Social License to Operate the URA,
• Discussion of the different mechanisms to bring more confidence to the population on the safety of the operations of this installation
Study area

Unit of Uranium Concentration (URA)

Main Characteristics:

- Located at a U-District that extends over 1,200 km² (34 anomalies dispersed in the area);
- The district hosts about 60,000 people;
- Main economic activities comprise poorly developed farming and cattle breeding;
- The surface drainage is marked by intermittent streamlets;
- Water (surface and groundwater) is used to human consumption, irrigation and cattle watering.
Regulatory Framework

Brazil follows Internationally Accepted Safety Standards

→ Coherent with the recommendations of the International Commission on Radiological Protection (ICRP)
→ Consistent with the Basic Safety Standards of the International Atomic Energy Agency (IAEA)
→ For sure one of the most strictly regulated uranium operations in the world
Organizations involved in the Licensing Process of URA

NUCLEAR LICENSING
- Brazilian Nuclear Energy Commission (CNEN)

ENVIRONMENTAL LICENSING
- Brazilian Institute of Environment (IBAMA)
- INGA (Bahia State Water Management Institute)
- IMA (Bahia State Environmental Institute)

others:
- Federal Public Prosecution (FPP)
Environmental Licensing Process (IBAMA)

Regulator

Term of Reference

Preparation of the Public Hearing

Public Hearing (Regulatory authorities, operator and stakeholders)

Society

Participation of the Society

Operator

Description of the Operation

Environmental Impact Statement (EIS)

Elaboration Reports (EIS) (send of the documentation)

Attendance the Requirements

Previous license (PL)

License of Installation (LI)

License of Operation (LO)

Environmental Basic Plan

Reports of the Environmental Programs and Mitigation Actions

Implementation (renewal)
These steps are supported by 7 specific standards.
URA
Environmental Impact Assessment

• Monitoring Program
• Dose assessment
Area of Influence – Monitoring Program

- Diabase dikes
- URA’s boundary
- Waste deposit
- Open Pit
- Tailing Ponds
- Liqueur Tanks
- Crushing and Heap leaching area
- Industrial Plant

5km
10km
15km

URA’s boundary

S.TIMÔTEO

MANAÚ
The monitoring program conducted by INB

Summary of the Pre-operational Environmental Monitoring Program (1989 - 1999)

<table>
<thead>
<tr>
<th>Environmental compartment</th>
<th>Nº of the Sampling Stations</th>
<th>Nº of Samples</th>
<th>Analyzed fractions</th>
<th>Total Nº of Analyses</th>
<th>Parameters</th>
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<tr>
<td>Gamma measures</td>
<td>21</td>
<td>1226</td>
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<td>1226</td>
<td>Gamma Rate</td>
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<td>TLD measurements</td>
<td>11</td>
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<td>54</td>
<td>Dose</td>
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<td>Aerosol</td>
<td>5</td>
<td>50</td>
<td>-</td>
<td>350</td>
<td>Gross alpha, gross beta, U-nat, Ra-226, Pb-210, Th-nat and Ra-228</td>
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<td>Radon (air)</td>
<td>11</td>
<td>82</td>
<td>-</td>
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<td>Radon concentration</td>
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<td>Precipitation</td>
<td>5</td>
<td>37</td>
<td>-</td>
<td>185</td>
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<td>Milk</td>
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<td>12</td>
<td>ash and fresh</td>
<td>120</td>
<td>U-nat, Ra-226, Pb-210, Th-nat and Ra-228</td>
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<td>Grass</td>
<td>3</td>
<td>10</td>
<td>ash and fresh</td>
<td>100</td>
<td>U-nat, Ra-226, Pb-210, Th-nat and Ra-228</td>
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<td>Palm</td>
<td>4</td>
<td>7</td>
<td>ash and fresh</td>
<td>70</td>
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<td>23</td>
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<td>230</td>
<td>U-nat, Ra-226, Pb-210, Th-nat and Ra-228</td>
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<td>26</td>
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<td>260</td>
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<td>7</td>
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<td>Surface water</td>
<td>15</td>
<td>2163</td>
<td>part and sol</td>
<td>25956</td>
<td>U-nat, Ra-226, Pb-210, Th-nat, Ra-228 and K-40</td>
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<td>Sediment</td>
<td>15</td>
<td>110</td>
<td>leach 1, leach 2 and total (U-nat and Th-nat)</td>
<td>990</td>
<td>U-nat, Ra-226, Pb-210, Th-nat and Ra-228</td>
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<td>Soil</td>
<td>6</td>
<td>48</td>
<td>each 1, leach 2 and total</td>
<td>720</td>
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<td>Groundwater</td>
<td>8</td>
<td>73</td>
<td>part and sol</td>
<td>730</td>
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<td>Groundwater</td>
<td>24</td>
<td>44</td>
<td>total</td>
<td>1432</td>
<td>Bacteriological analysis and Physical-chemical Parameters</td>
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<td>Total POEMP</td>
<td>147</td>
<td>4020</td>
<td>-</td>
<td>31623</td>
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Source: INB
<table>
<thead>
<tr>
<th>Environmental compartment</th>
<th>Number of samples</th>
<th>Kerma rate</th>
<th>Rn conc.</th>
<th>Radionuclides activities</th>
<th>Conc. of stable elements</th>
<th>Physical-chemical parameters</th>
<th>Frequency</th>
<th>Total number of Determinations by year</th>
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<tr>
<td>Gamma radiation</td>
<td>26</td>
<td>(a)</td>
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<tr>
<td>Radon in the air</td>
<td>26</td>
<td>(b)</td>
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<tr>
<td>Aerosol</td>
<td>7</td>
<td>(c)</td>
<td></td>
<td></td>
<td></td>
<td>pH</td>
<td>every three month</td>
<td>104</td>
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<tr>
<td>Precipitation</td>
<td>7</td>
<td>(c)</td>
<td></td>
<td>pH</td>
<td></td>
<td></td>
<td>every three month</td>
<td>104</td>
</tr>
<tr>
<td>Groundwater</td>
<td>11</td>
<td>(c)</td>
<td>(d)</td>
<td>pH</td>
<td>(d) for only 2 points</td>
<td></td>
<td>Monthly</td>
<td>1128</td>
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<td>Groundwater</td>
<td>36</td>
<td>(c)</td>
<td>(d)</td>
<td>pH</td>
<td>(d) for only 2 points</td>
<td></td>
<td>Monthly</td>
<td>2808</td>
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<td>Well (hydrogeological studies)</td>
<td>47 (however only 23 wells possess water)</td>
<td>(c)</td>
<td>(d)</td>
<td>pH and conductivity</td>
<td>(d) for about 15 with enough volume</td>
<td>pH and conductivity</td>
<td>monthly, if there is water</td>
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<td>Agricultural products</td>
<td>14</td>
<td>(c)</td>
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<td></td>
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<td>Annual</td>
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<td>Associated soil</td>
<td>14</td>
<td>(c)</td>
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<td></td>
<td>Annual</td>
<td>70</td>
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<tr>
<td>Raw and Leached ore</td>
<td>2</td>
<td>(c)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>each pile (about 6 by year)</td>
<td>60</td>
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<td>Surface water</td>
<td>12</td>
<td>(c)</td>
<td></td>
<td>pH</td>
<td></td>
<td></td>
<td>every four month, if there is water</td>
<td>216</td>
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<tr>
<td>Pluvial waters (Mine and the Plant)</td>
<td>13</td>
<td>(c)</td>
<td>(d)</td>
<td>pH and conductivity</td>
<td>(d) for only 8 points</td>
<td>pH and conductivity</td>
<td>Depends on the rainfall</td>
<td>1218</td>
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<td>Efluents from the Plant</td>
<td>6</td>
<td>(c)</td>
<td></td>
<td>pH and conductivity</td>
<td>only Cl⁻</td>
<td>pH and conductivity</td>
<td>Monthly</td>
<td>576</td>
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<td>Liqueur and processed water</td>
<td>2</td>
<td>(c)</td>
<td></td>
<td>pH</td>
<td>only Cl⁻</td>
<td>pH</td>
<td>Monthly</td>
<td>168</td>
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<tr>
<td><strong>Total Annual</strong></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>113336</strong></td>
</tr>
</tbody>
</table>

Source: INB
The monitoring program developed so far demonstrated **NO** alteration (increase) in the radionuclide concentrations in the different monitored environmental media.
Dose Assessment

- Open pit
- Crushing and Heap leaching area
- Waste deposit
- Rn Exhalation
- Aerosols

Impact Atmosphere
0,09mSv/y

- Open pit
- Waste deposit
- Industrial Plant
(pluvial drainage)
- Effluents
- Infiltration

Surface Water
non continuous discharge (only in times of great floods)

- Open pit
- Waste deposit
- Tailing ponds
- Liqueur tanks
- Industrial Plant
- Groundwater
without exposure pathways

Aquatic impact
0,29mSv/y

URA is working in compliance with the limits established by the Nuclear Regulatory Authority (CNEN)
However the local community still feels insecure !!!!
Denunciations

Ciclo do perigo
IMPACTOS DA PRODUÇÃO DE COMBUSTÍVEL NUCLEAR NO BRASIL
Denuncie: Contaminação da água por urânio em Caetité, Bahia

Cycle of the danger
IMPACT OF THE PRODUCTION OF NUCLEAR FUEL IN BRAZIL
Denounce: Contamination of the water by Uranium in Caetité, Bahia

Denouncements

IMPACT OF THE PRODUCTION OF NUCLEAR FUEL IN BRAZIL

Denounce: Contamination of the water by Uranium in Caetité, Bahia

According to the researcher, the population of Caetité is subject to radiological risks much higher than other populations from other areas in Brazil and in the World, and those circumstances can take to serious problems of health as the cancer occurrence.

Radioactive ore is also found in human teeth

The history of small Tauana, 4 years and 9 months of age, it touches and at the same time it scares about 300 inhabitants of the Villa of Juazeiro...

Tauana was born without the left arm and she has this side of the atrophic body. The family and residents of the place fear that the congenital anomaly is associated to a supposed contamination of the water table by the Caetité/Lagoa Real Uraniferous province.

... groundwater contamination of the Juazeiro Community
Analyzing the “contamination” in the Juazeiro community

→ The Juazeiro community is localized in another sub-watershed;

→ The high uranium concentrations observed in Juazeiro community (located in an U province) are linked to geochemical process of uranium dissolution from the rocks and cannot be attributed to the mining and milling operations → Natural process;

→ From the radiation safety point of view the doses associated with these uranium concentrations are not relevant. On the other hand, if the chemical toxicity of U is taken into account, some observed values will be above of Brazilian standards (0.015 mg/L of U).
Consequence of the denouncements

Society:
• Stigmatization of the people that live close to the Uranium facility (URA);
• Psychological impact on the local community;
• The local products (milk, watermelon, etc.) were severely affected in terms of their acceptance by neighbor communities causing heavy socio-economical impacts.

Regulators:
• Bahia state environmental and water management institutes (IMA/INGA) → based on one sampling campaign in nov-2008, well-67 (supplied 5 families) in the Juazeiro community was closed → reinforcing the panic generated in the community → new results showed that the U concentration dropped at acceptable levels (jan/2009).

Federal Public Prosecution (FPP)
• The FPP accepts the accusations done by Greenpeace → Public hearing
Public hearing

• Roundtable composed by: FPP, IBAMA, CNEN, INB, Federal Deputy, Priest, NGOs (Greenpeace and Movimento Paulo Jackson);
• Approximate duration: 6 hours;
• Participation about 1.000 people in the Auditorium of the radio station of Caetité;

• FFP didn't allow any presentation done by the regulatory authorities and operator to clarify the population about the groundwater contamination in Juazeiro community and its relationship with the operation of URA. It just allowed the participants' of the round table to answers the questions posed by the population

• FFP determines the accomplishment of an independent audit
  ➔ In December/2008 - Equip with 5 auditors visited the URA
What is missing?

- **Despite** the robust environmental monitoring program conducted by the operator did not demonstrate any contamination of the environmental;
- **Despite** the doses associated to the operation being of no relevance;
- **Despite** the monitoring and characterization data show that the high concentrations of uranium in the Juazeiro community are not related with the operation of URA;
- **Despite** the Regulatory Authorities (Environmental and Nuclear) confirm that URA doesn’t promote any significant environmental impacts in the area (using independent assessment)

The local community do not feel confident about the operation of this U production center (URA)
Understanding the situation of Caetité

Operator → Community ← Regulators

• In general, governmental institutions are perceived as non-reliable (a world-wide phenomena);

• In general those who oppose mining operations often do so not because the community inherently reject the activity. Rather they reject their traditional exclusion from the benefits of that activity → Economic benefits

• Considering that the government frequently lacks in providing appropriate conditions for those communities, locals tend to press INB, rather than the government, to seek that wealth generated by the mine be invested in improving their lives; (Role of Company x Role of the State);

• Once the population doesn't verify the existence of those local benefits, resentment rises in the community → risk of conflict over the loss of what the community considers to be their entitlement
Failure to respect Social License to Operate (SLO)

- Lack of Communication;
- **Over-regulation** → Unnecessary increase of the complexity of the process → Less flexibility → More cost
- **Lack of transparency breeds mistrust**;
- Failure to anticipate and respond to societal expectations;
- “Judicialization” → If the community is not allowed to participate in the process, it will seek access through the courts;
Conclusions (1/2)

• The risks from the environmental issues associated with the URA are known; they are legislated, defined, quantifiable and hence manageable → despite the apparent guarantees, the local community doesn't feel comfortable with the operation of URA → Although this installation is over-regulated;

• In addition to the distrust on the operator, there is also fear that the controls exerted by the Regulatory Authorities are not enough;

• The operator, as well as the regulators doesn't possess a systematic and institutional program of communication with the community;

• The lack of understanding the sources of social risks prevents the implementation of an appropriate management strategy to gain the social license;
Conclusions (2/2)

- The public hearings (as specified in the licensing process) have not been enough to guarantee the real involvement of the stakeholders in the development of the operation of URA;
- Gaining the Social License may not be resolved by the efforts of the INB alone; it is quite necessary the involvement of the regulators (CNEN, IBAMA, IMA and INGA) – Regulators and operators should be partners with the ethical limits taken into account;
- Gaining a Social License does not mean an universal acceptance by the society;
- Addressing the risks of community opposition before the project begins is likely to be much more successful and cost-effective than responding to community opposition later on.
Recommendations (1/2)

• External verification by IAEA (Independent and qualified audit):
  – Get support to demonstrate that:
    • URA is operating accordingly to internationally accepted safety standards,
    • The regulatory authorities are effective in this control, as to guarantee the safety of the populations that lives close to the installation
    • A UPSAT (Uranium Production Appraisal Team) mission was already requested by INB

• Commitment of the high hierarchies of the company, regulatory authorities and governmental institutions in promoting the implementation of a program to effectively involve the relevant stakeholders;

• Coordination of actions among the different regulatory authorities (CNEN, IBAMA, INGA e IMA)
  – creation of a forum of regulators for debates of the critical situations
Recommendations (2/2)

• Implementation of politics of social responsibility (without assistencialism or paternalism)
  – support technical lectures on uranium mining in local schools
  – The INB shall install some wells and a system of water treatment that will be made available to local communities
  – Support programs developed by Casa Anísio Teixeira public library:
    • Better quality of education for rural teachers,
    • Digital insertion and Internet access to students from Caetité and neighboring communities, etc.)
  – Improve local Infra-structure:
    • Turn it out that the movement of population around the uranium mining and processing plant is made easier.
    • INB should also act for the conservation of vicinal roads.