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Julianna Colonna

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# Bringing up the underground for the energy transition

COLONNA, Julianna (UPPA) – colonna.julianna@gmail.com

Supervisors: CHAILLEUX, Sébastien (Science Po Bordeaux) and BLEICHER, Alena (Harz University of Applied Science)

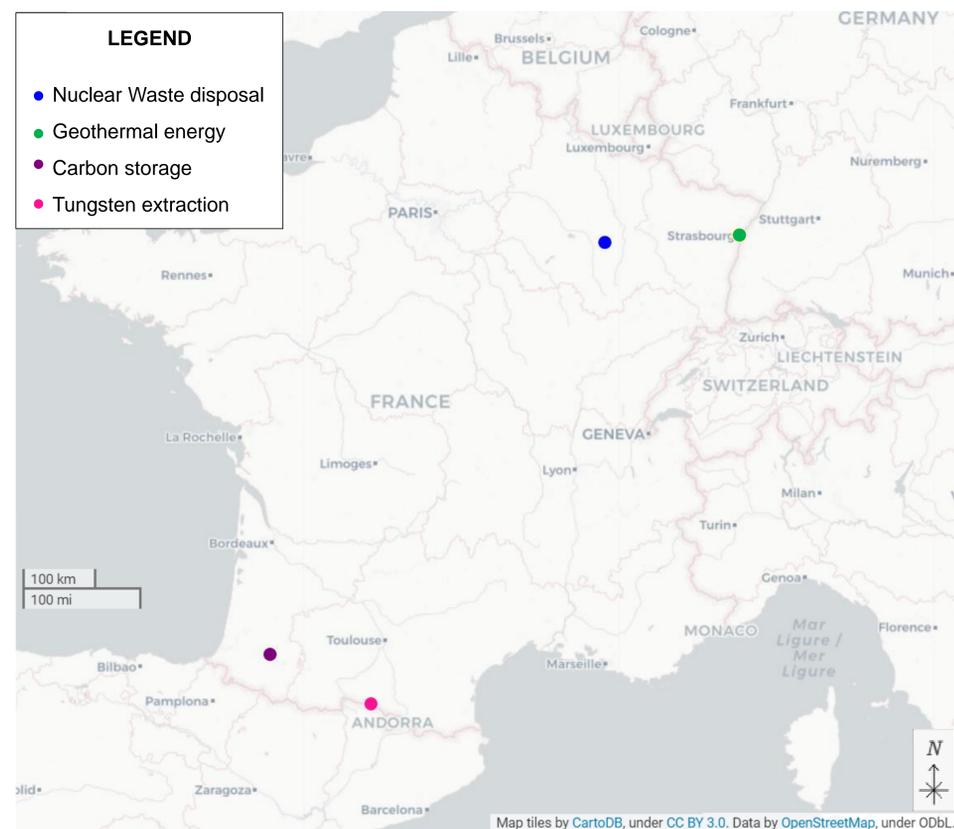
## Introduction

This poster aims to present an exploratory comparison between four case studies from a PhD in progress. This research uses symmetrically<sup>1</sup> the concepts of **knowledges<sup>2</sup> and nonknowledges<sup>3 4</sup>** to analyse controversial projects of underground exploration in the context of the climate change. The hypothesis is that both concepts may be helpful to explain how **controversies<sup>5 6</sup>** evolve.

The problematic is constructed from the **underground**, which is a source of efficient but also **high carbon fuels** – a problem in a climate change context. Many consider that the solution to this problem relies on the underground as well, because energy **transition policies**, created from an ecological modernisation logic<sup>7</sup>, rely one way or another on the subsurface. All principal low carbon energies, or carbon storage, require something from the underground.

*Bringing up the underground* refers to the debate on the surface about the unseen and unreachable that underlies us, another way to talk about **politicization**. It is understood that politicization happens when “actors produce and broadcast a new qualification for an object (...) They do so by producing new resources such as knowledge, discourses, or alliances”<sup>8</sup>.

In this moment, four cases are presented in the table below with their general characteristics and aspects related to knowledge and nonknowledge production, transformation and rejection – which will be analysed from a **Science, Technology and Society<sup>9 10 11 12 13</sup>** approach (STS). The location of each case study is exhibited in the map on the right.



Case studies location

	Nuclear waste disposal	Geothermal energy	Carbon storage	Tungsten extraction
Location (Town, Department, Region)	Bure Meuse Grand-Est	Around Strasbourg Bas-Rhin Grand-Est	Lacq Pyrénées-Atlantiques Nouvelle-Aquitaine	Couffens Ariège Occitanie
French/Global relevance	France is one of the few countries which is developing this alternative in the world. “Solution” for France principal energy source.	Local importance of developing cleaner energy. Strasbourg is known for its high levels of air pollution.	Technology proposed by IPCC but not sufficiently developed	Opportunity to explore tungsten in French territory (metal is in the EU Regulation on Conflict Minerals)
Stage	Until 23 October 2021: public enquiry for a possible declaration of public utility	Vendenheim: prefectural decree stopped definitively, in Dec. 2020. Hurtigheim, Eckbolsheim and Illkirch-Graffenstaden: interrupted to be reviewed	Storage finished in 2013	Interrupted
Local opposition	Strong opposition. Failed to stop the project. Nine opponents were prosecuted and two arrested	Not developed as the others. More important during the public enquiry in 2015. French-German opposition. Interruption is related to seismicity and not to opposition.	Local opposition present (only community without local elected representatives). Failed to stop the storage.	Strong local opposition (community and local elected representatives). Achieved to stop exploitation. French-Spanish opposition.
Some organizations involved	Andra France Nature Environnement Cedra and Eodra	Fonroche Géothermie ES (Électricité de Strasbourg)	Total Coteaux Jurançon Environnement INERIS, BRGM	Variscan Group Stop Mine Salau
STS aspects to explore	Scientific research for security which “produces irremediably new uncertainties” <sup>14</sup>	Scientific project (Univ. Strasbourg and Lorraine) about geothermic energy and society – role of public enquiries, medias <sup>15</sup>	At the beginning, French law was not completely prepared for this underground exploitation and applied research allowed its creation	Two regional courts annulled the government's decision to grant a research permit

Exploratory table with proposed case studies

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