

Press release

Leaving the oil in the subsoil in the Amazon? Interdisciplinary scientific research and geographical criteria of GIScience for unburnable carbon

The international scientific debate on climate change and fossil fuels has been increasingly confirmed for some years now the need to "turn the tide" and to implement transition and alternative policies to non-renewable energy resources. In one of the first studies published in *Nature*, it is estimated that to keep the temperature from increasing by 2 °C, more than 80% of coal, 50% of gas and 30% of oil reserves must remain "unburnable", underground. Although the "hard" climatic sciences have quantified the amount of carbon that can not be used (unburnable carbon), criteria for choosing specifically which reserves must remain underground have not been addressed yet.

The research group in GIScience "Territories of ecological and cultural diversity" (ICEA Department, University of Padua) - active for over 15 years in geographical, remote and field research on the socio-environmental impacts of fossil energy production in Western Amazonia - concluded part of the research work in January 2019 with a scientific publication in the international journal *Applied Geography*, entitled:

"Oil production, biodiversity conservation and indigenous territories: Towards geographical criteria for unburnable carbon areas in the Amazon rainforest".

The work is part of the "[Yasunisation of the Earth: Towards a World Atlas of Unable Carbon. Cartography and GIS tools to implement inclusive spatial policies at global and local scale for climate, biodiversity protection and human rights enforcement](#)" research line". The objectives of the research line are 1) mapping the spatial relations between onshore hydrocarbon exploration and extraction activities and areas of high ecological and cultural diversity; 2) identifying areas where it would be advisable to leave hydrocarbons underground (unburnable carbon), on the basis of different geographical criteria.

The published article is the first geographical analysis, on the whole Amazonian Biome, of the overlaps between fossil energy exploration and production and areas for the biodiversity conservation and the protection of the rights of indigenous peoples, including those in "voluntary isolation". In addition to the spatial analysis of oil blocks, this work presents the first overall estimate of other fundamental elements to calculate the ecological footprint of oil production in these sensitive territories: lines for 2D and 3D seismic exploration, pipelines and gas and oil wells.

The article first of all highlights the state of the art on the unburnable carbon researches, actually mainly based on the distribution of hydrocarbon reserves and on the economic, technological and geological criteria. The study, on the other hand, focuses on the importance and value of what is on the surface, both in terms of ecological and cultural diversity. It also draws attention to the critical issues of the availability and accessibility of spatial data on onshore hydrocarbons operations, often fragmentary or "jealously protected" by the fossil energy corporations.

The main highlights of the study are:

- an area double of UK size is covered by hydrocarbon blocks in the Amazon study area;
- 67% of Ecuadorian Amazon, 35% of Bolivian and Colombian Amazon is covered by oil & gas blocks;
- 2,784 oil and gas wells and 461,786 km of seismic are calculated in the study area;
- In Peru about 24% of indigenous territories are overlapped by oil & gas blocks;
- Overlaps show the urgent need of geographical criteria defining unburnable carbon areas.

Oil production, biodiversity conservation and indigenous territories: Towards geographical criteria for unburnable carbon areas in the Amazon rainforest

Codato, D., Eugenio, S., Diantini, A., Ferrarese, F., Gianoli, F., & Marchi, M. De. (2019). Oil production, biodiversity conservation and indigenous territories: Towards geographical criteria for unburnable carbon areas in the Amazon rainforest. *Applied Geography*, 102 (December 2018), 28–38. <https://doi.org/10.1016/j.apgeog.2018.12.001>

The article can be downloaded free of charge until February 5, 2019, from the link:

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