



Contributing to sustainable and geoethical use of the subsurface

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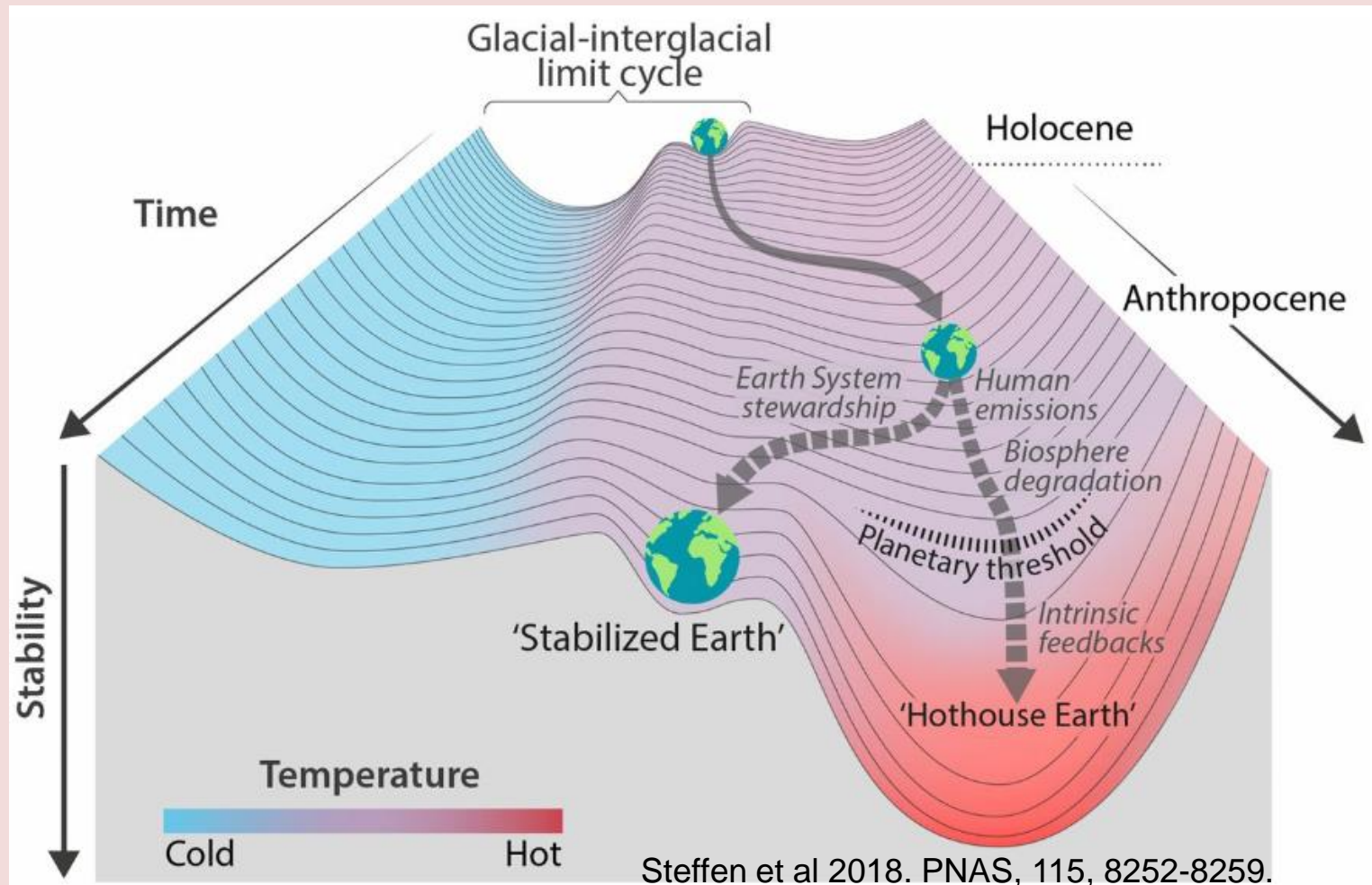
**EGU 2019: Session EOS5.2 – Friday 12.10.2019
Austria Center Vienna**



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 731166



'TIPPING POINTS' AND THE HOTHOUSE EARTH



"Collective human action is required to steer the Earth System away from a potential threshold and stabilize it in a habitable interglacial-like state".
Steffen et al., 2018.



Ethics, sustainability and geoethics



Geoethics – “*Geoethics consists of research and reflection on the values which underpin **appropriate behaviours and practices**, wherever human activities interact with **the Earth system**-...*” (IAPG website)

Sustainable development – “*is development that meets the needs of the present without compromising the ability of future generations to meet their own needs*” (Brundtland et al. 1987, Our Common Future)-

Ethics – “*the discipline concerned with what is morally good and bad, right and wrong..*” (Enc. Brit.) - **ethical** – doing the morally right thing



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of ten environmental concerns closely related to exploitation of subsurface resources





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However, the current
exploitation is not
sustainable

depend on

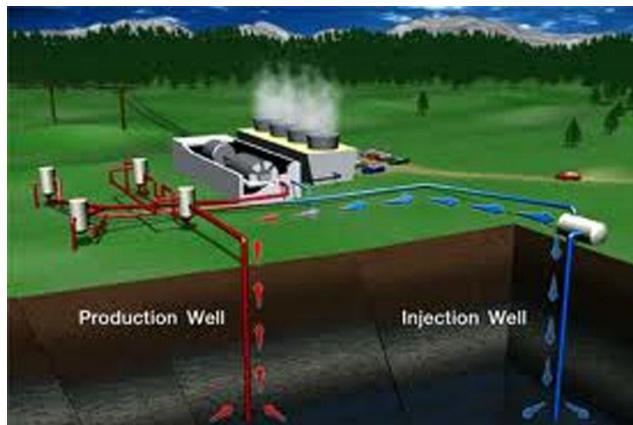


Subsurface resources relevant for 13 of the 17 SDGs

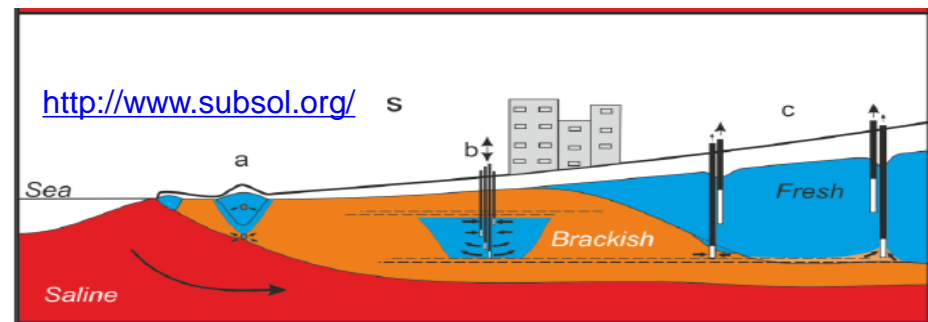


The subsurface provides important solutions for climate change mitigation and adaptation and raw materials for developing the solutions

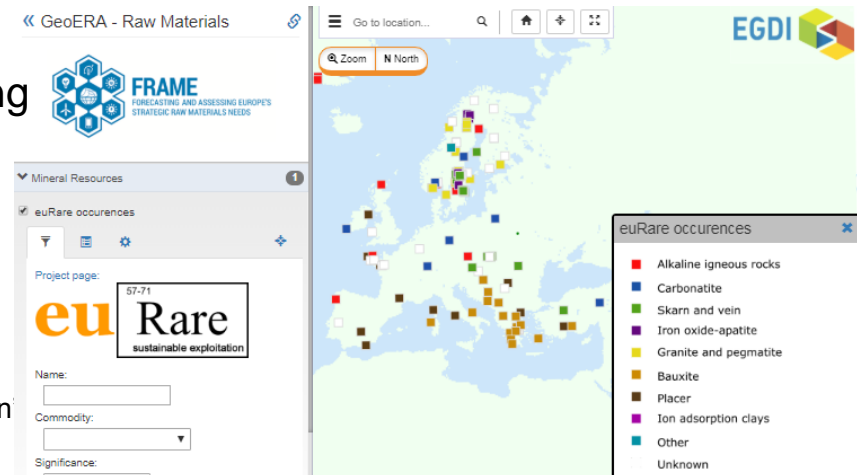
Green and renewable subsurface energy



Subsurface water solutions: water recycling, managed aquifer recharge, adaptation strategies e.g.

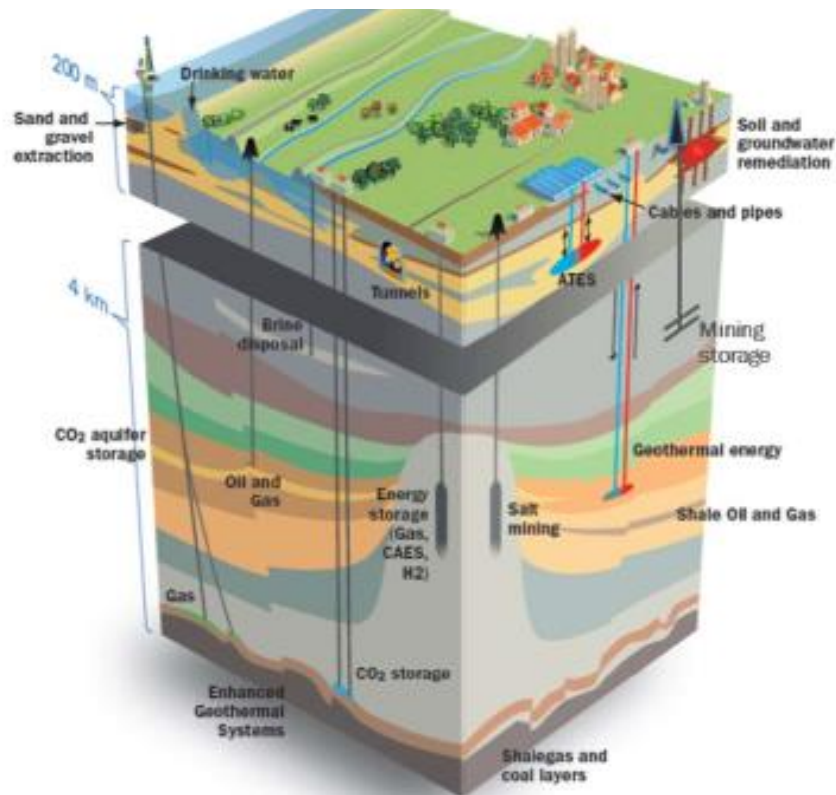


Raw materials for developing solutions and infrastructure



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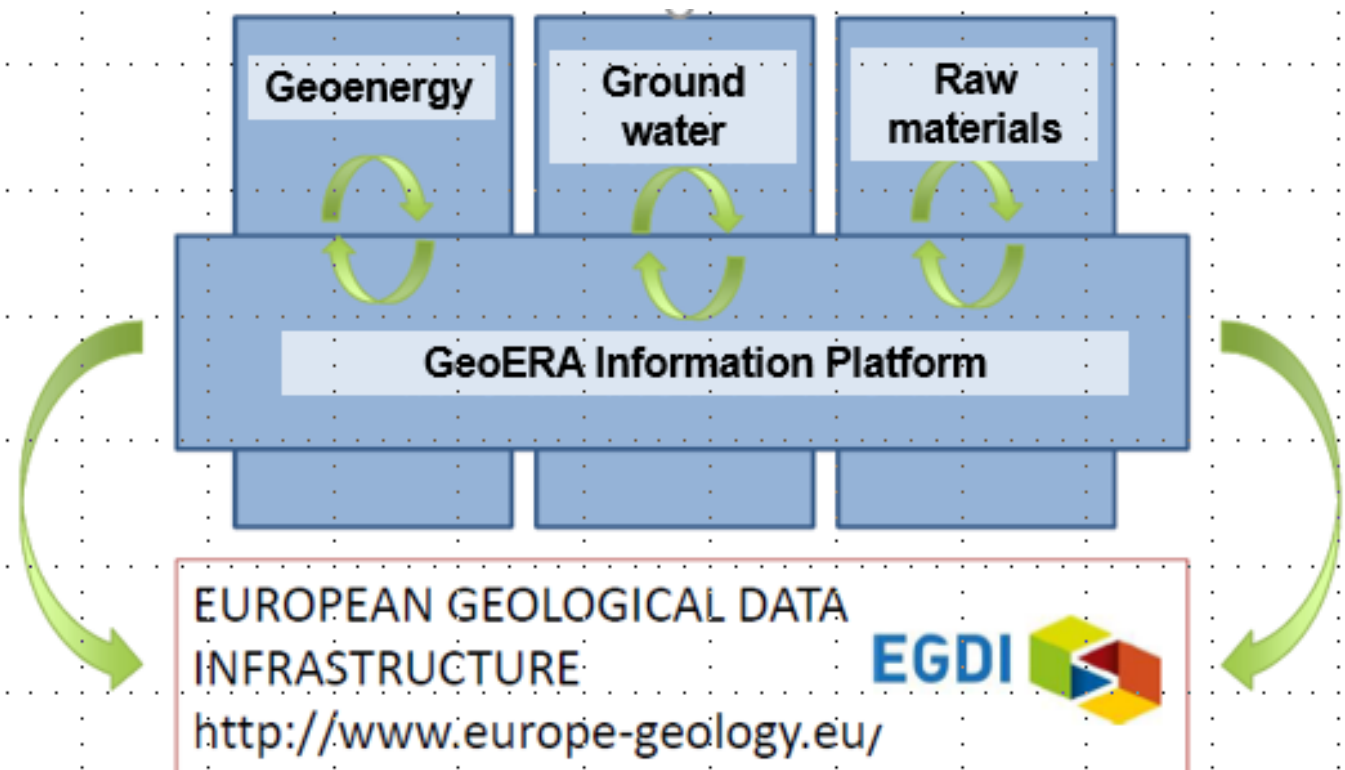
Subsurface resources improve living standards and provide resources and options to cope with societal challenges



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Spatial planning and e.g. efficient solutions for climate change mitigation and adaptation require reliable subsurface information and data



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Sustainable development and geoethical use of subsurface resources require an *easy and FAIR* access to subsurface information and data*

*FAIR = Findable, Accessible, Interoperable and Reusable

<https://www.go-fair.org/fair-principles/>

Wilkinson et al., 2016. The FAIR Guiding Principles for scientific data management and stewardship. Sci Data 3, 160018.



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Visit the 15 GeoERA projects developing the information platform / EGDl at:

<https://geoera.eu>

And our poster about the four groundwater projects at **EGU: X4.375**

GeoERA Information Platform project: GIP-P

Geoenergy projects:

3DGEO-EU
GARAH
GeoConnect^{3D}
HIKE
HotLime
MUSE

Groundwater projects:

HOVER
RESOURCE
TACTIC
VoGERA

Raw materials projects:

FRAME
EuroLithos
MINDeSEA
Mintell4EU



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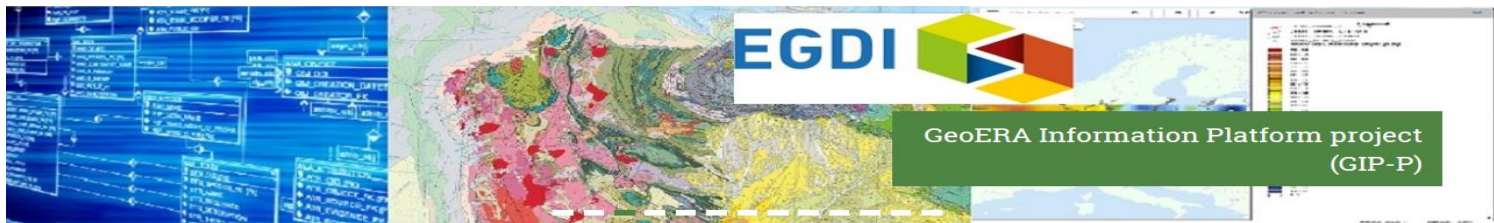


IT IS TIME TO TAKE RESPONSIBILITY

HELP US BUILD THE EUROPEAN SUBSURFACE INFORMATION
PLATFORM (EGDI) FOR SUSTAINABLE DEVELOPMENT AND
GEOETHICAL EXPLOITATION OF SUBSURFACE RESOURCES

THANK YOU FOR YOUR ATTENTION 😊

<http://www.europe-geology.eu/>



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