

IGRAC's comment to the Draft UNFC Supplemental Specifications for Groundwater Resources

Foreword

A public consultation is being held until 31st December 2023 about the document “Draft United Nations Framework Classification for Resources Supplemental Specifications for Groundwater Resources”. What follows is the comment from IGRAC. IGRAC is the global groundwater data and information center. It works under the auspices of the World Meteorological Organization (WMO) and is a UNESCO Category II Centre. It is financially supported by the Government of the Netherlands.

Background

The United Nations Framework Classification for Resources (UNFC) is an initiative of the UNECE Sustainable Energy Division for countries and practitioners to enhance resource management and enable better-informed decisions. UNFC aims to provide clear and consistent specifications, guidelines and best practices for all energy and mineral sectors, encompassing the holistic management of all socio-economical, technological and uncertainty aspects of energy and mineral projects. It is intended as a unique tool for harmonizing policy framework, government oversight, industry business process and efficient capital allocation¹. However, as each resource is different, Supplemental Specifications have been developed for oil and gas, renewable energy (wind, solar, bioenergy, geothermal), nuclear energy, minerals, injection projects for the geological storage of CO₂, and the anthropogenic resources such as secondary resources recycled from residues and wastes². The UNECE Sustainable Energy Division also decided to include groundwater in the UNFC, and Supplemental Specifications for Groundwater Resources have been drafted by a dedicated working group³.

Comment

The draft Supplemental Specifications for Groundwater Resources contains a few statements that should be reformulated, regarding for instance the quality and the renewability of deep groundwater (p. 5) and the definition of groundwater sources (p. 8). Moreover, the classification of groundwater projects according to the three axes is difficult to understand even for groundwater specialists. It hardly relates to existing practices in the field of groundwater management, such as hydrogeological feasibility studies, groundwater accounting or environmental impact assessments (EIA). Yet, our main comment is not on the document itself but on the inclusion of groundwater within the UNFC, which is problematic for at least two main reasons.

First, groundwater is intrinsically different from mineral and energy resources, and it is inappropriate to address its sustainability along the same lines as oil, gas, etc. Groundwater does play a key role in

¹ <https://unece.org/sustainable-energy/sustainable-resource-management/united-nations-framework-classification>

² <https://unece.org/sustainable-energy/sustainable-resource-management/applications>

³ <https://unece.org/draft-unfc-supplemental-specifications-groundwater-resources>

energy production⁴ and in the mining sector⁵, for example in the production of geothermal energy, biofuels, shale gas, in-situ leaching (ISL) of uranium, underground nuclear waste disposal repositories, etc. and it is necessary to take into consideration this groundwater-dimension when addressing the sustainability of mineral extraction and energy production projects. Yet, there is no reason to include groundwater *per se* in the UNFC. Even though the technique of groundwater abstraction through pumping wells shows similarity with the extractive industry, groundwater is of a fundamentally different nature. It is part of the water cycle, just like rivers and lakes, to which it is intimately connected (and which are not included in the UNFC). Groundwater also supports numerous wetlands and ecosystems. Microbiologists even suggest that groundwater itself is a keystone ecosystem (Saccò et al. 2023⁶). While groundwater does support economic activities such as agriculture and industry, access to (ground)water is first and foremost a human right and a foundational part of our natural environment.

Secondly, the sustainability of groundwater abstraction can not be evaluated at the project level. As a common pool resource, groundwater has to be managed at the aquifer level, taking into consideration all the various uses (*projects*), interactions with surface water, climate variability and change, and interventions that can affect groundwater recharge, such as land use change or Managed Aquifer Recharge (MAR). Addressing groundwater sustainability at the project level therefore goes against the efforts to develop holistic, aquifer-based management strategies (that subsequently translate into regulations guiding the development of individual groundwater projects). In fact, the four-quadrant framework used in the document to assess the Environmental, Social, and Economic Viability of groundwater projects (pp. 11 & 12) is meant to be used at the aquifer system level. Moreover, as many studies before have made clear, the sustainability of groundwater abstraction cannot be reduced to the (challenging) estimation of a “safe yield”. Sustainability is not only a question of pumping rates or volumes, the location and the time of pumping are equally important to take into consideration⁷.

For these two reasons, we recommended to remove groundwater resources from the UNFC. We acknowledge the efforts made by the authors of the Supplemental Specifications for Groundwater Resources to distinguish groundwater from mineral and energy resources, but it does not cancel the impression that groundwater does not belong to this initiative. It is simply not a resource to be extracted and managed like mineral and energy resources, at the project level. Casting groundwater in this framework is in fact inappropriate and might be counterproductive for the sake of sustainable groundwater management.

⁴ <https://iah.org/wp-content/uploads/2015/11/IAH-Energy-Generation-Groundwater-Nov-2015.pdf>

⁵ https://iah.org/wp-content/uploads/2018/12/IAH_SOS_MiningEnterprisesGroundwater.pdf

⁶ Saccò, M., Mammola, S., Altermatt, F., Alther, R., Bolpagni, R., Brancelj, A., Brankovits, D., Fišer, C., Gerovasileiou, V., Griebler, C., Guareschi, S., Hose, G. C., Korb, K., Lictévout, E., Malard, F., Martínez, A., Niemiller, M. L., Robertson, A., Tanalgo, K. C. ... Reinecke, R. (2023). Groundwater is a hidden global keystone ecosystem. *Global Change Biology*, 30, e17066. <https://doi.org/10.1111/gcb.17066>

⁷ See for instance Bredehoeft JD. The water budget myth revisited: why hydrogeologists model. *Ground Water*. 2002 Jul-Aug;40(4):340-5. doi: 10.1111/j.1745-6584.2002.tb02511.x.