

Peer Review Report

Review Report on A Sustainable Extractive Industry Requires Educated Responsible Geoscientists

Perspective, Earth Sci. Syst. Soc.

Reviewer: Daniel Smith

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EVALUATION

Q 1 Please summarize the findings and viewpoint reported.

A perspective piece that argues that the geoscientists of the near future need to be better trained in a range of skills and disciplines around socio-economic factors, ethics, community relations, and the human facets of sustainable development.

The manuscript draws from a series of workshops, with some support from earlier literature.

Q 2 Please highlight the limitations and strengths.

There is insufficient evidence base for some of the points made – namely being that most geoscientists take up careers in the resources sector, and that there is little-to-no environmental-social-governance content in degrees. I am assuming a global view of higher education and geo-industry is taken; a one-size-fits-all approach to the perspective is perhaps not appropriate. For example, UK higher education benchmarking (QAA) and accreditation (Geol Soc) have requirements around sustainability, and revisions in place considerably strengthen aspects around decolonising the curriculum and socio-economic aspects.

Reporting a few selected countries as case studies would be far more illustrative.

There are some sections in which the diversity of a student's taught course is conflated with the diversity of the student body.

There are some barriers to the uptake of more socio-economic training described, but little to no suggestions of solutions.

I have number of issues regarding the ethics of using community groups for student training, and especially artisanal miners. The collection of data from communities (in the UK at least) is subject to considerable security and ethics considerations. The presumed expert authority of universities means that outreach activities and community engagement has real weight; teachers and their students cannot treat real communities as sandpits in which to learn how to communicate and engage better, because mistakes made have real implications.

The final discussion is overwhelmingly similar to the 2021 IUGS publication, and needs to be rewritten.

There is a more substantial body of literature that could be reviewed and considered – Geol Sco Spec Pub 508; Metzger and Curren 2018; Peppoloni and Capua 2016... These publications can add value here through tighter definitions of what aspects might be included in a future geoscience programme, and how they might be delivered.

Q 3 Please comment on the reported results and data interpretation. If there are any objective errors or fundamental flaws, you should please detail your concerns.

Qualitative data only.

I suspect that the rather global and thus necessarily reductive view will trigger a number of response from academics pointing out how their courses do not fit the mould described here. Ideally, the discussion should be limited in scope to the countries that participated in the workshops.

More robust data collection (through the form of surveys) and an assessment of higher education benchmarks and accreditation (where in place) would better support the arguments. These would need supporting with questionnaires too, as they don't fully describe or prescribe the curriculum of a geoscience programme (just the minimum content).

Q 4 Check List

Is the English language of sufficient quality?

Yes.

Is the quality of the figures and tables satisfactory?

Not Applicable.

Does the reference list cover the relevant literature adequately and in an unbiased manner?

No.

If the manuscript includes original data, are the applied methods accurate and comprehensively described?

Not Applicable.

Are the statistical methods valid and correctly applied? (e.g. sample size, choice of test)

Not Applicable.

Are the data underlying the study available in either the article, supplement, or deposited in a repository?

No.

Does the study adhere to ethical standards including ethics committee approval and consent procedure?

Yes.

Q 5 Please provide your detailed review report to the editor and authors (including any comments on the Q4 Check List):

I've made detailed comments directly onto the PDF to raise concerns on specific statements and sections. I would prefer to see a more forward look – how and what we add to the geoscience curriculum – to differentiate this from the very similar IUGS 2021 article by the same author. The criticisms of the current state of HE need more data and specificity to support and evidence them. There needs to be a better justification as to why geoscientists need not just be aware of socio-economic factors, but develop to become practitioners in data collection, community engagement etc.

QUALITY ASSESSMENT

Q 6 Originality



Q 7 Rigor



Q 8 Significance to the field



Q 9 Interest to a general audience



Q 10 Quality of the writing



Q 11 Overall quality of the study

REVISION LEVEL

Q 12 What is the level of revision required based on your comments:

Substantial revisions.