

Resourcing Future Generations:



THIRD OPEN CALL FOR PROPOSALS



Applications are invited for a Third Open Call. The First Open Call closed on 31 May 2016 attracting 11 applications seeking \$63.6k. Six totalling \$18.3k were funded. The Second Call closed on 31 January 2017; 21 proposals seeking \$74.9k were received. Six totalling \$20.25k were funded. In comparison to the First Call when three applications came from Africa, four from Australia, three from Europe and one from North America, the Second Call had wider geographical coverage with four applications from South-east Asia, eight from Africa, four from Europe, one from South America and one from North America. Details of awards made are at Table 1.

Table 1: Awards made under First and Second Open Calls

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|---------------------------|--|--|----------|
| Qiuming Cheng & others | China University Beijing & York University, Canada | Quantitative assessment and prediction of deeply buried mineral resources in covered regions | \$2.0k |
| Kedia Chi & others | University of Buea, Cameroon | Capacity building for stakeholders in artisanal gold mines, Eastern Cameroon | \$3.7k |
| Judith Kinnaird & others | University of Witwatersrand, South Africa | Germanium for Society – now and in the future | \$3.4k |
| Gavin Mudd & Simon Jowitt | Monash University, Melbourne, Australia | Validating New Methods for Global Resource Estimates of Critical Metals | \$3.0k |
| Andrea Rielli | Monash University, Melbourne, Australia | Metasomatic alteration of the sub-arc mantle: implication for arc metallogeny and the redox state of the Earth | \$3.1k |
| Isobel Yeo | GEOMAR, Kiel, Germany | Acoustic properties of ferromanganese crusts and substrates as a tool for e-tech exploration | \$3.1k |
| Nicholas Arndt | Grenoble Alpes, France | Public perception of the minerals industry | \$3.0k |
| Maria Amelia Enriquez | University of Para, Brazil | Mining royalties - challenges and opportunities to achieve Sustainable Development Goals and intergenerational equity in the peripheral mining regions | \$3.0k |
| Damien Giurco | Institute for Sustainable Futures, University of Technology, Sydney, Australia | Global projection of lead-zinc supply from known resources | \$2.75k |
| Raymond Kudzawu-D'Pherdd | Accra Mining Network, Ghana | AMN capacity building master class in sustainable and responsible small-scale mining | \$4.4k |
| Laura Sinclair | Cornell University, USA | Mineralogical examination of leached tails for the development of copper in situ leaching | \$3.13k |
| Margreth Tadie | Stellenbosch Univeristy, South Africa | Impacts of cation-substitution on the geometallurgy of sulphide minerals | \$4.021k |

REMIT OF THE THIRD CALL

Applications are invited for

- Novel work on an aspect of RFG¹, which develops an ongoing piece of work or an already separately funded research grant;
- Organising and running a workshop to promote RFG or an RFG theme.

All awards must start by 1 October 2018. The work must be completed and outcomes reported in writing by 31 August 2019. Grants will average \$3000, though exceptionally a larger sum may be awarded.

Application procedure

Applications must describe the work proposed and how it will advance one of the three themes of RFG

- Balancing resource supply and demand in the 21st century;
- The challenge of mineral supply: accessing new resources from the Earth;
- Building additional capacity to facilitate responsible development in less developed nations.

Applications would be welcome relating to

- **The dependency of mineral development on energy and/or water** (for discussion of the energy-minerals nexus see Nickless et al, 2015, <http://iugs.org/uploads/RFG%20Report-sm.pdf>, p 12 and pp 43-50);
- **So-called Development Minerals such as sand & gravel, dimension stone, clays and cement.**

The work must be capable of completion within 6 months of the agreed start of the award. Applications are to be submitted electronically as a word document stating:

- i. The name, position and host institution /body of the principal investigator together with the names and affiliation of any co-workers;

- ii. The title of the project together with a brief description of the proposed work (no more than 200 words);
- iii. The work proposed (in no more than 2000 words) including the research question to be addressed (if appropriate), the technical approach to be adopted, why it is important and timely, a project management plan, foreseen outcomes and the benefits arising to RFG;
- iv. How the research finding will be disseminated (meetings and publications), outreach and possible socio-economic relevance (max 200 words);
- v. Details of funds sought with an outline budget and how it links to any related existing research grant or other existing funding support.

Submissions should be completed in single-spaced typescript of minimum font size 11 Arial or another sans serif typeface of equivalent size, with margins of at least 2cm. References must also be presented in a minimum font size of 11 point. Arial Narrow and Calibri are not allowable font sizes as they are smaller and any proposal which has used either of these font types within their submissions will be rejected. Applicants referring to websites should note that the Awards Panel may not chose to use them.

Assessment procedure

The main assessment criteria will be the scientific and technological excellence of the proposal, its relevance to RFG, together with considerations of novelty. Applications will be assessed by an Awards Panel comprising recognised experts, assisted, if necessary, by written external peer review. Principal investigators may be invited to respond to reviewers' comments.

Call Timetable

| | |
|------------------------|------------------------------|
| Call opens | Mid-June 2018 |
| Deadline for proposals | Noon (UTC) 30 September 2018 |
| Assessment panel | October 2018 |
| Grants awarded | November 2018 |
| Grants start | 1 December 2018 |
| Report submitted | 31 May 2019 |

Contact details

Grant applications and questions of clarification should be sent to edmund@geolsoc.org.uk. Applicants will be informed as soon as possible of the funding decision.

Background

The ubiquitous use of metal and mineral resources in technology and infrastructure have underpinned the dramatic improvements of living standards for many over the past 50 years. Demand has increased dramatically and the range of materials used has broadened to the extent that some metals are regarded as critical to sustain certain technologies (Figure 1). It has been estimated that to continue to improve the lot of the world's poorest by eradicating poverty and disease by 2030 as envisaged by the United Nations Sustainable Development Goals (UN (2015) Transforming our world: the 2030 Agenda for Sustainable Development A/RES/70/1

<https://www.un.org/sustainabledevelopment/sustainable-development-goals/>), while simultaneously reducing the level of atmospheric carbon dioxide as envisaged by the Paris Agreement (FCCC/CP/2015/L.9/Rev.1, <http://unfccc.int/resource/docs/2015/cop21/eng/109r01.pdf>) will double or triple the demand for metals and minerals by 2040, illustrating the prescience of IUGS² which in 2013 established a new initiative, Resourcing Future Generations, a contribution by the geoscience community to the resolution of this societal challenge.

The RFG initiative includes a diverse group of geoscientists, economists, environmental and social scientists drawn from a range of institutions with diverse private and/or public experience in exploration, mining, processing, environmental protection and sustainable development. RFG aspires to be a fundamental service to humanity, not to vested interests in resource development.

Bids are now invited for a third round of small top-up grants to take forward discrete pieces of work in support of RFG. The invitation is open to all, in industry and academe, regardless of discipline.

RFG publications published or submitted for publication in peer reviewed journals papers as at end 2017 are at Table 2.

Table 2: RFG publications published or submitted for publication in peer reviewed journals papers as at end 2017

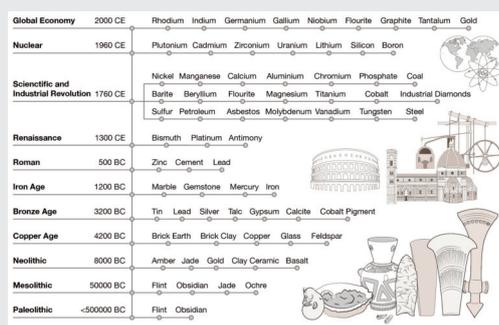
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| Lambert, I., Durrheim, R., Godoy, M., Kota, M., Leahy, P., Ludden, J., Nickless, E., Oberhänsli, R., Anjian, W., Williams, N. Resourcing Future Generations: A proposed new IUGS initiative. June 2013. Episodes. Vol. 36/2, pp 82-86. http://www.episodes.org/index.php/epi/article/view/57474/44844 |
| Resourcing Future Generations: A Global Effort to Meet the World's Future Needs Head-On. October 2013. http://iugs.org/uploads/RFG.pdf |
| Nickless, E., Bloodworth, A., Meinert, L., Giurco, D., Mohr, S., Littleboy, A. Resourcing Future Generations White Paper: Mineral Resources and Future Supply. International Union of Geological Sciences. 2014, 30pp. http://iugs.org/uploads/Consultation%20Paper%202014_Oct_12_AL_EN_DG%20FINAL.swf |
| Nickless, E., Ali, S., Arndt, N., Brown, G., Demetriades, A., Durrheim, R., Enriquez M.A., Giurco, D., Kinnaird, J., Littleboy, A., Masotti, F., Meinert, L., Nyanganyura, D., Oberhänsli, R., Salem, J., Schneider, G., Yakovleva, N. Resourcing Future Generations: A global effort to meet the World's future needs head-on. International Union of Geological Sciences. 2015, 77pp. http://iugs.org/uploads/RFG%20Report-sm.pdf |
| Materials for a low-carbon energy future: Resourcing Future Generations. December 2015. http://www.geolsoc.org.uk/~media/Files/RFG%20Policy%20Statement.pdf?la=en |
| First Open Call for proposals. April 2016. http://iugs.org/uploads/RFG%20Call%20for%20Proposals%202016.pdf |
| Second Open Call for proposals. September 2016. http://iugs.org/uploads/29942%20Second%20Open%20Call%20for%20Proposals%20proof.pdf |
| Ali, S.1., Giurco, D., Arndt, N., Nickless, E., Brown, G., Demetriades, A., Durrheim, R., Enriquez M.A., Kinnaird, J., Littleboy, A., Meinert, L.O., Oberhänsli, R., Salem, J., Schodde, R., Schneider, G., Vidal, O. Yakovleva, N. Sustainable Mineral Sourcing Requires International Action. March 2017. Nature Perspectives. |
| Nickless, E. 2016. Resourcing Future Generations: a global effort to meet the world's future needs head-on. European Geologist Journal. Vol 42, p 48-52. |
| Nickless, E. 2016. Resourcing Future Generations. Submission on behalf of IUGS/NASIC to the Church of England - Extractive industry investment consultation. |
| Nickless, E. 2017. Resourcing Future Generations – a contribution by the Earth science community. Special issue publication on "Mineral Resources of the Future", Natural Resources Research, Springer. DOI: 10.1007/s11053-017-9331-x |
| Ali, S. Giurco, D., Arndt, N. 2017. Sustainable Development requires global mineral governance. The Conversation. https://theconversation.com/time-for-a-global-agreement-on-minerals-to-fuel-the-clean-energy-transition-87186 |
| Nickless, E. How do we overcome barriers to mining? Submitted. Contribution to the International Resource Panel resource governance report |

Footnotes

1 Resourcing Future Generations was launched in February 2013. Background is at <http://iugs.org/index.php?page=resourcing-the-future-initiative>

2 The International Union of Geological Sciences (<http://www.iugs.org>) is one of five geosciences-related scientific unions within International Science Council <https://www.icsu.org/current/press/worlds-leading-bodies-of-social-and-natural-sciences-to-merge-in-2018-becoming-international-science-council>. IUGS aims to promote development of the Earth sciences through the support of broad-based scientific studies relevant to the entire Earth system; to apply the results of these and other studies to preserve Earth's natural environment, using natural resources wisely and improving the prosperity of nations and the quality of human life, and to strengthen public awareness of geology and advance geological education in the widest sense.

Figure 1:



Critical mineral commodities through western civilisation (after Roland Oberhänsli, 2013, personal communication).