

BHP

Tailings Challenge



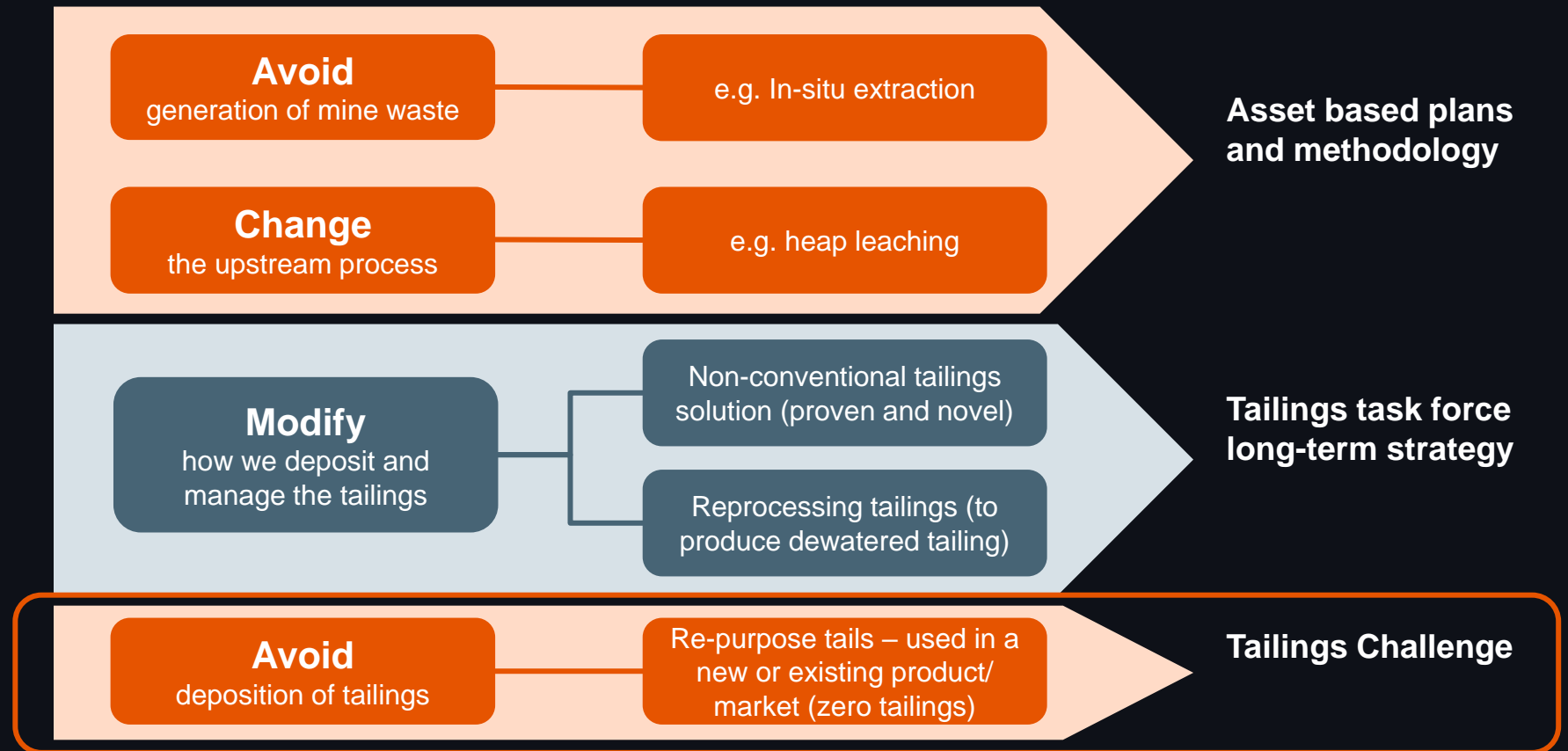
The Challenge: Tailings risk mitigation

Our strategy needs to preserve our license to operate by minimizing our catastrophic risk exposure, enabled by technology and innovation initiative

Our goal

Reducing catastrophic risk tailings exposure by accelerating technology for safer and more sustainable tailings management.

Harnessing benefits including water recovery, reduced land disturbance and reduced closure costs.



Fall in love with the problem



ABOUT THE CHALLENGE



"BHP Tailings Challenge" seeks to identify and implement sustainable economy models able to create marketable solutions using fresh copper mining tailings as raw material. To this end, it seeks to identify a combination of technology and business acumen able use sustainable economy to help the industry reduce its impact on the environment and on communities.

To this end, **BHP will contribute U\$10M** in grants to ignite the tailings repurposing industry

WHO ARE WE LOOKING FOR



The most innovative companies, startups, consortia, research centers and universities to help transform fresh tailings and create innovative business models

REPURPOSING COPPER TAILINGS

To succeed
teams will
need to

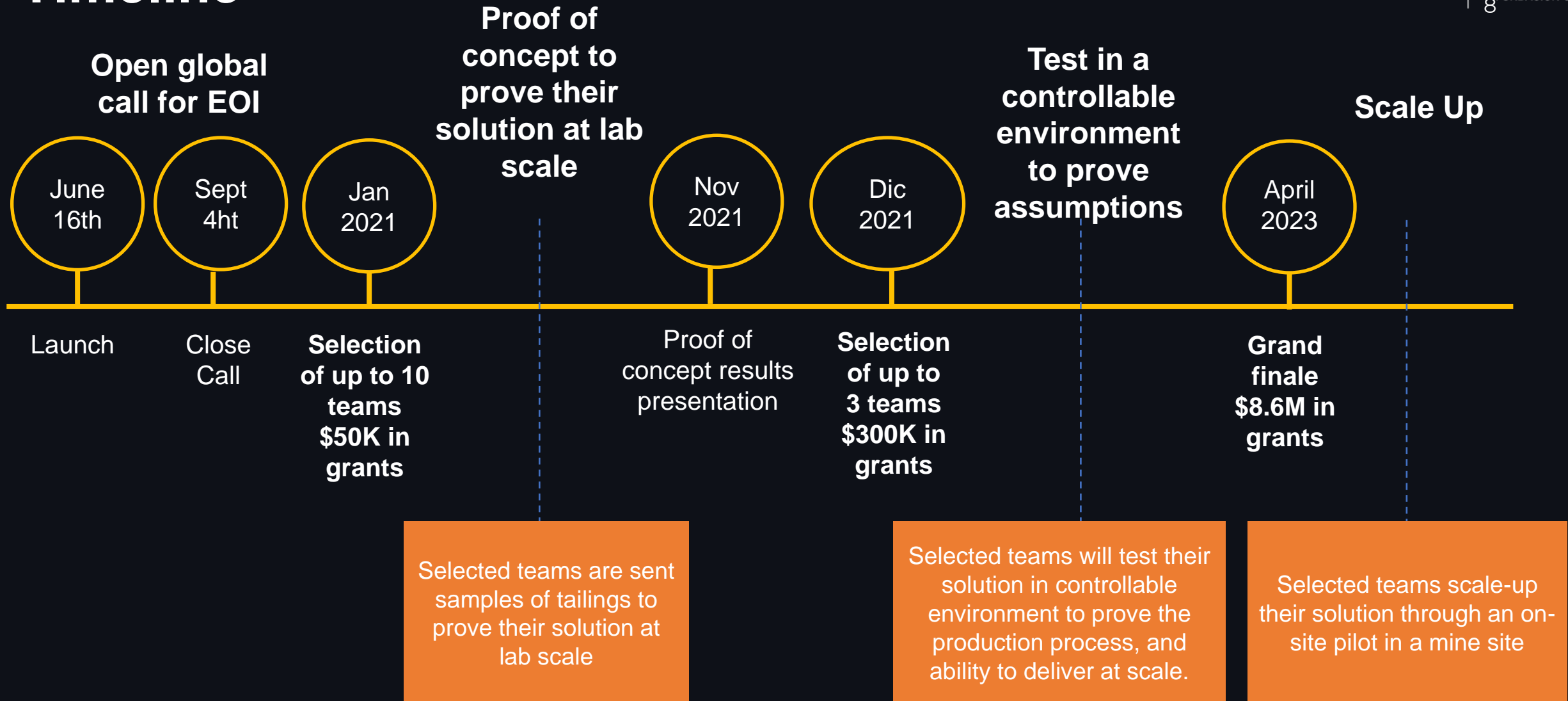
- Provide a comprehensive solution covering from tailings discharge to end client
- Stabilize elements most commonly present in copper tailings
- Propose the new product/material/solution to be created out of tailings
- Show that they can solve the issue of logistics (considering that tailings are in remote locations)
- Propose attractive business models
- Avoid environmental and social impacts

REPURPOSING COPPER TAILINGS

Teams will need to demonstrate, throughout the process

- Strong technological or scientific basis
- Execution capabilities
- Fast scaling strategy for early stage technologies
- Clear value proposition
- Business experience

Timeline



TIMELINE

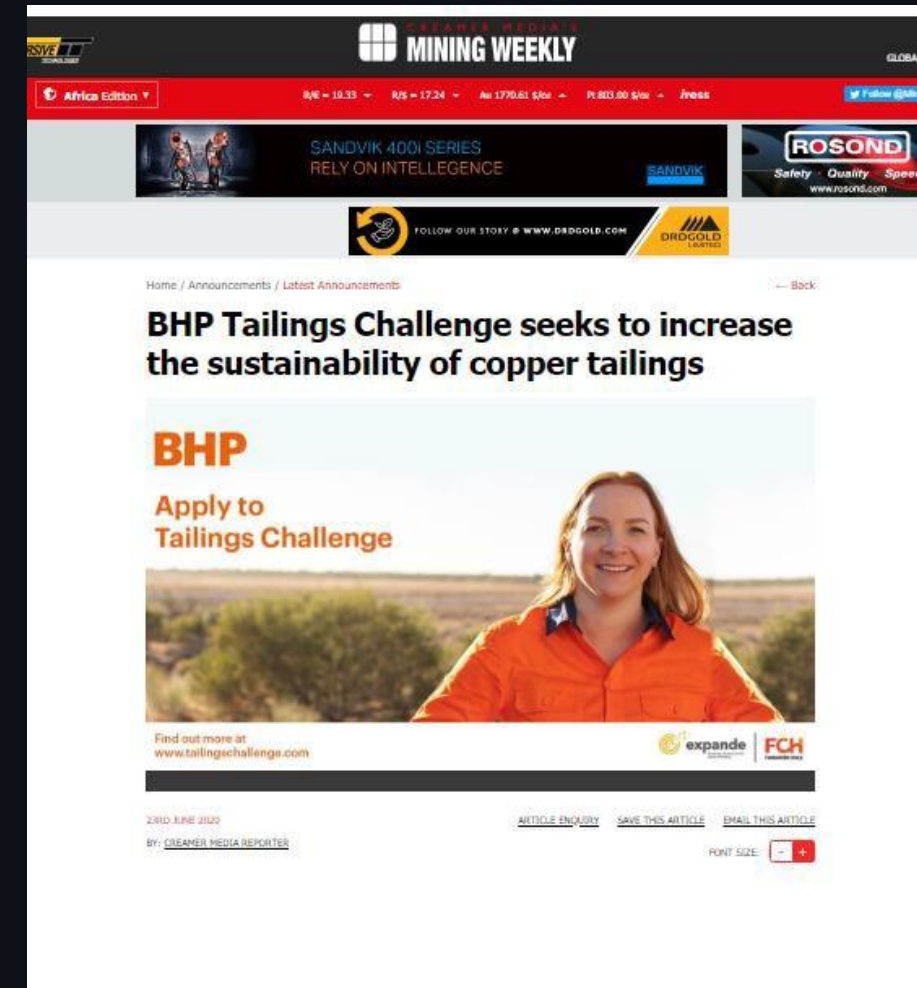


- Have a comprehensive approach to the overall challenge
- Focus on technology – we don't want to leave out any good idea
- Eligible technologies from TRL 2 onwards
- Fast scaling strategy for early stage technologies
- High level market assessment and business model
- All intellectual property generated by the participants will remain in their ownership
- Opportunity to participate in BHP Tailings Challenge Community to identify potential partners

Open Call Results

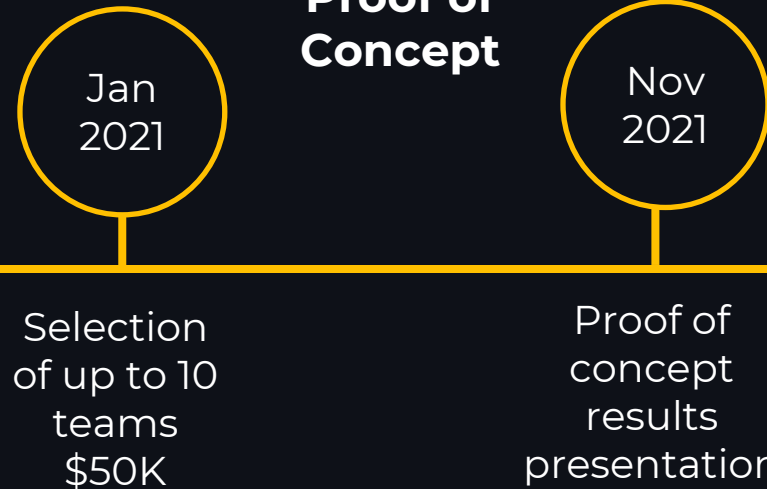
- **20 webinars**
- **+7.000 participants**
- **153 of applications**
- **19 countries**
- **95 registrations in the Tailings Community**

Benchmark: U\$ 10 M 2020 ANA Avatar X-Prize; 99 applications from 19 countries



TIMELINE

Proof of Concept



- Selected teams are will receive a sample of tailings to prove their solution at a lab scale
- Six months stage starting upon reception of tailings sample
- Teams will be allowed to grow over the process . Merging teams could also be considered.
- We will use the BHP Tailings Challenge Community to encourage matches with the aim of strengthening the proposals
- Promising technical results are expected to justify advancing to the on-site test
- A clear business model will also be evaluated
- Monthly follow-up with Expande and representatives from BHP and Antamina

Active Collaboration



Teams can grow during the Proof-of-Concept stage

- Strengthen technical proposals
- Additional value propositions
- Reduce uncertainty
- Advance business model
- Commercialization capabilities
- Local partners
- Investors

Look ahead: Proof of concept stage

What is next?

- Each proponent will receive US\$ 50k grant to support their work in this stage
- Samples of fresh tailings from one of our operations will be sent to their facilities to conduct the analysis
- During the next 6 months BHP technical advisors and Expande team will assist proponents following-up their progress
- An assessment will be done, selecting up to 3 teams to progress to the next stage, receiving US\$ 300k grant each one

What is expected at the end of this stage?

- **Prove at lab-scale the hypothesis**

Develop and run a testing protocol to ratify what kind of product can be produced, the ability to stabilize or immobilize heavy metals and sulphates, and the identification of potential residuals of the process.

- **Develop the Business Case**

Progress in the assessment of the economic valuation for the project, as well as proposed business model to test the feasibility for commercializing the product.

- **Feasibility Study**

Develop the engineering for the project with sufficient scope to feed a bankable feasibility study in later stages.

TIMELINE



- Selected teams will demonstrate their solution is technically and commercially viable in a controlled environment
- The scaling stage seeks to pilot on-site a profitable fresh tailing repurposing business
- \$8.6M grant aimed to become seed funding to establish commercial entity that will repurpose tailings
- Exclusivity will not be required

Venture Capital



Expande will actively connect the VCs and participants

- Sharing of information
- Introductions
- Private presentations
- Road show



We also established the “**BHP Tailings Challenge Community**” as a public collaboration space where participants can upload information about their company and/or solution. The goal of the community is to provide a showcase where members can meet and identify potential partners in an organic manner. Will remain open during the Proof of Concept Stage.

BHP TAILINGS COMMUNITY

101 companies

Multinationals, SMEs, startups, research centers, universities

+15 countries

Australia, Brazil, Canada, Chile, Ireland, Perú, South Africa, Sweden, UK, USA

The BHP Tailings Community in figures

Participant focus

Tailings management, reprocessing, environment, tailings transformation, re-mining, commercialization, chemical transformation, leadership, etc

Looking for partners in

Implementation, commercialization, innovation, leadership, funding, networking, metal recovery, research, repurposing, etc



expande

Impulsando soluciones para
la minería del futuro

www.tailingschallenge.com