Dear Prime Minister,

ENERGY SECURITY THROUGH PUMPED STORAGE HYDROPOWER

Following my letter of August 2023, I welcome the UK Government’s decision to promote the development of long duration electricity storage through a cap and floor scheme.

The United Kingdom’s has almost 7GW of shovel-ready pumped storage hydropower (PSH) projects with over 135GW of storage capacity. If they were all built it would increase the UK’s energy storage five fold.

Pumped storage is absolutely critical to an efficient, least cost transition to zero emission energy. In the future most the UK’s primary generation will be from wind and solar. The only zero emission continuous generation will be from nuclear power.

While the costs of wind and solar continue to decline, they are intermittent and so need to be firming. Gas peakers can do this job, but they are costly and obviously are not zero emission. Chemical batteries are effective for short time periods, but not for the long durations (8 hours plus) required to support renewables. Pumped hydro assets are, unlike batteries, almost entirely sourced from within the United Kingdom. The electro mechanical components will last fifty or sixty years and the civils (the bulk of the cost) can last centuries if properly maintained.

I had to confront these issues very directly myself in 2016 when there was a state wide electricity blackout in South Australia, where renewables (mostly wind) had expanded very rapidly with little thought being given to firming.

As a consequence my government put storage, and pumped hydro, on the agenda and commenced work on Snowy Hydro 2.0 which will be when completed the largest pumped storage project in the world – 2.2GW of capacity and 350 GWh of storage.

Pumped storage is playing a big role in the Australian energy transition as it is around the world, Queensland for example is developing two very large pumped storage projects which, collectively, are almost as big as Snowy 2.0.

Since leaving office I have remained very involved in this industry both as President of the IHA and as a developer of several large pumped storage projects in New South Wales where the private sector is taking the lead as opposed to the state government.

Governments must plan ahead for their electricity storage. Moore's law does not apply to digging holes, regrettably, and wind and solar can be rolled out more quickly than large civil works like pumped hydro. So it is important for Governments to ensure storage projects are underway as soon as possible.

Most electricity markets are designed to pay for generation – megawatt hours delivered – and so there are not generally obvious financial incentives to build the long duration storage that a reliable renewable energy system requires. Added to that the upfront costs of pumped storage are high – as with all large civil works. So if the government is not going to build these projects themselves, then it must provide the right framework to enable a rapid deployment of pumped storage. Without that, there is a real risk that decarbonisation will stall, just as it needs to accelerate.

advancing sustainable hydropower

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So I welcome the UK's leadership in delivering a policy mechanism that will address this. To get the most from the policy, I recommend that your government:

- **Delivers the scheme quickly, so that the first application window opens by early 2025, and is focused on mature projects.** This will get the projects that are shovel-ready up and running and boost investor confidence.
- **Guarantees additional application windows will be held.**
- **Introduces soft targets for long duration energy storage** to instil investor confidence.
- **Considers long-term contract visibility alongside comprehensive reform of the electricity market, including a Capacity Market (CM),** to ensure better remuneration for grid services for current and future PSH projects.

Taken all together these policies would also provide a blueprint for other countries that are considering how to ensure a reliable and affordable decarbonised electricity grid. You can count on the International Hydropower Association as a strong ally in this critical work.

Yours sincerely,

[Signature]

Hon. Malcolm Turnbull AC  
IHA President

[Handwritten date]

cc. Rt Hon Claire Coutinho, Secretary of State for Energy Security and Net Zero  
cc. Rt Hon Graham Stuart, Minister of State for Climate