Right Balance of Hydro power

What is the issue?

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The 'World Conference on Environment-2017', held in New Delhi. Here India's commitment to the Paris Climate Change Agreement was reiterated and stated that the country will have 225 Gigawatts (GW) of renewable and clean energy sources by 2022.

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Hydroelectric Projects:

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- It is stated that 16 of the 43 hydropower projects **currently under construction** are stalled for various reasons.
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- The CAG, in its report tabled in March 2017, found that the standard procedures including for environmental impact assessments and public hearings have been bypassed.
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- Tapping hydropower is considered a key priority area in view of India's growing energy requirement.
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- It is noteworthy that **India became a net exporter of electricity** for the first time between April 2016 and February 2017, exporting around 5,585 million units to Nepal, Bangladesh and Myanmar.
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- However, every stakeholder needs to contemplate the impact that hydropower dams would have on the environment, and also the potential impact of climate change on dams.
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Do reservoirs emit Greenhouse Gas?

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- According to the World Energy Council, the Hydropower is the leading renewable source for electricity generation globally, supplying **71% of all renewable electricity.**
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- Reaching 1,064 GW of installed capacity in 2016, it **generated 16.4% of the world's electricity** from all sources.
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- China tops the world's hydropower capacity with 319 GW, followed by the United States with 102 GW. **India stands fourth** with 52 GW.
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- Though hydropower is a clean source of energy, yet it can have a serious negative impact on the climate.
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- Although studies on the status of GHG emission from reservoirs is ongoing, an earlier study discovered that **significant amounts of carbon dioxide, nitrous oxide and methane are emitted from reservoirs, turbines and spillways,** and that methane alone accounts for 104 million metric tonnes of all these emissions annually.
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- Mostly, methane is generated by the decomposition of vegetation and soil submerged by the reservoirs.
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- It also found that hydropower dams located in tropical regions generate more methane than those located in temperate zones.
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- Another extensive study found that more than **80% of methane emissions come from water storage reservoirs** created by dams, contributing almost three times more to global warming compared to carbon dioxide.
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Climate Change and Vulnerability of Hydropower:

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- Water is constantly replenished by a process of hydrological cycle in the atmosphere, but this cycle could get altered due to climate change.
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- Floods, droughts, changes in temperature, precipitation and melting glaciers are all symptoms of climate change.

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- Since the amount of electricity a hydropower plant can produce directly depends on the availability of water resources, lower the river discharge, lesser the power generation.
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- Major rivers like the Indus, Ganga and Brahmaputra are fed by snow and glacier melt. But the retreat of glaciers in the Himalayas is likely to alter the pattern of river flow, resulting in the disruption of hydropower production.
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- A 1% reduction in the flow can reduce electricity output by roughly 3%.
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- Moreover, one cannot ignore **the economic risks** of investing in a hydropower project under the prevailing conditions of climate change.
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What should be done?

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- The social impact of large dams by way of population displacement and loss of income from farming and livestock should also not be overlooked.
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- Minister of State Goyal had rightly observed that “it is time that human beings understand that climate change is a challenge caused by humans, and ultimately it is humans who can address it.”
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- While hydropower projects are critical for economic growth and development, **it is equally important to fully assess its potential social and environmental impact in the long-term.**
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- The challenge lies in finding the right balance between the need for rapid development and the necessity of protecting the environment.
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Source: IDSA

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