ENAC / PROJET DE MASTER 2020-2021 SECTION DE GÉNIE CIVIL



Applying the IHA Hydropower Sustainability ESG Gap Analysis Tool (HESG) to the Planning and Implementation Phases. Case study in Equatorial Africa.

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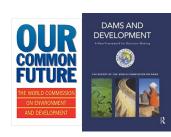
¹ Platform of Hydraulic Constructions (LCH) EPFL / ² International Hydropower Association

The Hydropower Sustainability ESG Gap Analysis tool:

The International Hydropower Association (London, UK) with has developed various stakeholders hydropower the Hydropower Sustainability sector, Environmental, Social and Governance (ESG) Gap Analysis tool (HESG), an assessment tool that aims to assess sustainability performance define and hydropower projects and facilities.



Hydropower projects can be assessed with the HESG at three stages that are Preparation, Implementation and Operation according to twelve environmental, social and governance sustainability topics deriving from the groundbreaking Brundtland and World Commission on Dams reports, and up to Level 3 which refers to international **good practice**. The objective is to foster sustainability in the hydropower sector through the establishment of an Environmental and Social Action Plan destined to projects for which significant gaps were identified.



	Significant gaps	Action(s)	Responsibility	Indicator of achievement	Timeframe		
Section					<12 menths	12-24 months	>34 months
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The Dibwangui hydropower project HESG assessment:

The on-site assessment of this 15 MW hydropower project located in Southern Gabon was conducted between 30 September - 8 October 2019. The project, whose aim is to foster economic development in the region, is being developed by Eranove and the Gabonese Strategic Investment Fund (FGIS). One gap was identified in the Infrastructure safety topic, and an independent dam safety study will be conducted and finalised by March 2022 to bridge this gap.



eranove



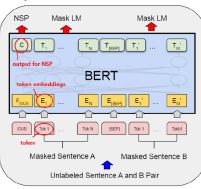




Comparison of the HESG and the IFC Performance Standards:

The IFC Performance Standards (PS) help clients identify social and environmental issues that may arise during project development in order to avoid, mitigate and better manage associated risks and impacts.





Pre-training

Using the BERT model, developed for Natural Language Processing and Machine Learning, and a sentence cosine similarity Python code, HESG and IFC PS requirements were compared. Results show that the HESG is 85.55% similar to the IFC PS.

	Sentence Similarity HESG - IFC comparison results	Mean	Standard Deviation
1	Environmental and Social Assessment and Management	86.98%	1.69%
2	Labour and Working Conditions	85.03%	2.23%
3	Water Quality and Sediments		
4	Community Impacts and Infrastructure Safety	84.88%	1.82%
5	Resettlement	86.04%	1.18%
6	Biodiversity and Invasive Species	86.80%	2.07%
7	Indigenous Peoples	85.25%	2.43%
8	Cultural Heritage	84.94%	1.99%
9	Governance and Procurement	83.75%	1.38%
10	Communications and Consultation	84.30%	4.57%
11	Hydrological Resource	85.16%	0.00%
12	Climate Change Mitigation and Resilience	87.96%	0.39%
	Final result	85.55%	1.80%

Future developments of the HESG:

The assessment tool of the Hydropower Sustainability Standard, which will be launched during the September 2021 World Hydropower Congress is based on the HESG and its sustainability topics, with the added layer of international best practice. It will certify hydropower projects and facilities. The HESG is also part of the Climate Bonds Initiative (CBI) hydropower criteria to issue climate bonds to said projects.







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