

PERSPECTIVE

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Hydropower Development in Sarawak: Sensitivities over Sustainability and China's Involvement

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The Bakun Hydroelectric Dam in Sarawak. Picture: IEEE Curtin Malaysia Student Branch, <https://www.facebook.com/IEEE.CurtinMalaysia/photos/a.558865270846311/5054565917942868/>.

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EXECUTIVE SUMMARY

- China has become the most significant foreign partner in Sarawak's hydropower development, as its extensive knowledge and experience in this domain dovetails with Sarawak's ambitious programme to develop hydropower for its own needs and for export to the region.
- The construction of large dams has inevitably attracted controversy and protests over its negative impact, particularly in the dislocation of local communities and endangerment of wildlife and the natural environment. China's track record in this field and Sarawak's earlier dam construction projects had raised questions over their commitment to address such sensitivities and meet mandatory requirements for ecological sustainability. In this context, both Sarawak and China have stepped up their game to alleviate these concerns.
- Sarawak Energy, the key stakeholder in Sarawak's dam projects, has committed to attaining the international Hydropower Sustainability Council (HSC)'s performance standards and certification. Providing a roadmap towards achieving this goal and increasing the disclosure of performance metrics will help to enhance the sustainability claims of the company to regulators, investors and consumers in Malaysia and the region.
- Likewise, China has declared ambitious goals and enunciated policies towards improving sustainability performance. However, this must be followed through with rigorous implementation and regulatory enforcement on the reporting of environmental sustainability measures and metrics, in order to reverse the image of China as a sustainability laggard, especially in its investments and construction of dams outside the country.

INTRODUCTION

In 2008, Malaysia launched five corridors of development, including the Sarawak Corridor of Renewable Energy (SCORE). SCORE differs fundamentally from the other Malaysian economic corridor projects in its predominant emphasis on hydropower, aiming as it does to use the state's vast network of rivers as a source of energy. Sarawak, unlike Peninsular Malaysia, also has topographic features and rainfall that enhance its hydropower resources. Hydropower is also chosen because it is a renewable form of energy, with low emissions.

Hydropower is used for driving economic development especially in energy-intensive industries such as food, pulp and paper, basic chemicals, refining, iron and steel, nonferrous metals, and nonmetallic minerals.¹ It has two main advantages: low cost, making it a competitive source of renewable electricity,² and flexibility in that its supply can be adjusted to demand. However, the construction of dams affects the ecosystem of rivers and forests, and displaces communities and wildlife in these habitats. Dams in tropical forests have another disadvantage in that methane is produced from anaerobic decay of the massive amount of plant materials flooded by the reservoir. It is therefore not surprising that the construction of large dams are often heavily criticised for its negative impact on the environment.

China is the largest hydroelectric power-generating country in the world. It also has the largest dam in the world, namely the Three Gorges dam, and half of all the large dams worldwide. Chinese leaders and hydropower State Owned Enterprises (SOEs) continue to uphold and promote hydropower as a source of clean energy for China and the world.³ Negative concerns are deemed as technical issues that can be solved by the state.

Given the saturation in China's home market, external markets for hydropower and dam construction have become crucial, making hydropower projects an important component of China's Belt and Road Initiatives (BRI).⁴ In fact, the energy sector constitutes the largest sector in Chinese BRI engagement in 2013-2021.⁵ In particular, China's engagement in green energy and hydropower amounted to USD10 billion in 2021. The trend also shows a decrease in investment and an increase in construction projects.

Chinese investors have already invested in a majority of the hydropower projects in Laos, Cambodia and Myanmar.⁶ Between 2006 and 2011, China was responsible for more than USD6.1 billion to finance the addition of 2729 MW of hydro capacity in the three countries.

There are currently three large hydropower dams operating in Sarawak, and a fourth is being built. As much as 67.9% of the total installed capacity in the state's electricity supply was sourced from hydropower in 2018 (latest year available).⁷ Sarawak's hydropower ambitions

also make the state a natural attraction for China to be involved in dam development there, be it in terms of investments or construction.

CHINA'S INVOLVEMENT IN SARAWAK

Twelve hydropower projects were planned for the period 2008-2020 to meet the power demand for SCORE, as well as Sabah and Peninsular Malaysia.⁸ Out of these, three are up and running while a fourth is being constructed.

Japan was engaged in the construction of the first dam, the Batang Ai dam which was commissioned in 1984 (Table 1). China is involved in the three subsequent dams, including Baleh dam that is currently being constructed. The Chinese SOEs involved are Sinohydro, Three Gorges, Gezhouba and Yellow River Engineering Consulting.

Bakun dam, the first project with China's involvement predates the launch of the BRI initiative in 2013, and offers interesting insights on mega dam construction in Sarawak. It is, by far, the most controversial as its completion spanned over five decades.⁹ Although it was first mooted in the 1960s, numerous challenges dogged the construction of this dam, from technical, economic, political, legal and regulatory, to social issues. It should also be noted that the Bakun project, as a federal project, initially aimed to supply electricity to Peninsular Malaysia by undersea cables across the South China Sea, but this idea was subsequently abandoned due to the costs involved and the possibility of leakages.¹⁰

Although initiated by Australia, pressures from green and human rights groups over the inevitable relocation of the longhouse communities as well as massive cost over-runs led to the withdrawal of Australian interests from the project. The Chinese then took over the project, with Sinohydro which is part of PowerChina,¹¹ managing to bring it to completion.¹² Sinohydro was established as a state-owned (SOE) hydropower project contractor in the 1950s, and has participated in the construction of China's large and medium-scale hydropower projects. It established a joint-venture (30% Sinohydro and 70% Sime) with Sime Engineering Berhad, which is part of Sime Darby, a government-linked company (GLC), for the Bakun project, building the dam as part of an Engineering Procurement Construction (EPC) / turnkey contract.¹³ The project was funded by federal and state agencies including EXIM bank, China's official export credit agency that funded most of China's overseas dams.¹⁴ The official cost is RM7.4 billion. Subsequently, Sarawak Energy, the state-owned investment holding company of Sarawak that generates, transmits, distributes and sells electricity acquired Sarawak Hidro, the owner and operator of Bakun Hydroelectric Plant from the federal government at RM2.5 billion, in 2017.¹⁵ RM2.5 billion is reportedly the original cost of the dam.¹⁶

Work on a second dam, the smaller Murum Dam, was started in 2008, and its first generator was commissioned in December 2014. The Murum dam is the second hydroelectric project (HEP) to be developed by Sarawak Energy (SE) after the Batang Ai HEP in the 1980s. The main EPC (Engineer, Procure, Construct) contractor is Three Gorges Development Company (M) Sdn. Bhd. and Yangtze Three Gorges Technology & Economy Development Co. Ltd.¹⁷ Three Gorges built China’s largest hydro dam – the 22,500MW Three Gorges dam, and has extensive dam-building experience. SE apparently issued RM3 billion Islamic bonds to fund the dam.¹⁸

Two dams were subsequently slated for development, namely the Baram and Baleh dams. Baram dam was however called off by the former Chief Minister of Sarawak, the late Datuk Patinggi Tan Sri Datuk Amar Adenan Satem, in March 2016, following massive protests by affected communities.

Baleh dam, like the Murum dam is being developed under SE, and it is slated for commissioning in 2026. SE is moving towards exporting electricity, first to Sabah, and then to the regional market. It is reportedly funding Baleh dam through its own internal funds while RM5.5 billion is obtained from sukuk financing.¹⁹ The main civil works contract has been awarded to a joint venture formed by China Gezhouba Group Company Ltd and local firm Untang Jaya Sdn Bhd.²⁰ The former is a large state-owned development company which has built and financed dams in over 30 countries in Asia and Africa.²¹ Yellow River Engineering Consulting Ltd, has provided designs for more than 10 concrete-face rock-filled dams worldwide. Untang Jaya, is a local Dayak Iban contractor from the Baleh/Kapit area, that was established in 2000, and holds 30% of the joint venture.²²

Table 1. Large Hydropower Dams in Sarawak

Dams (starting date and completion date)	Capacity	China’s involvement	Financing	Estimated Costs (RM)
Batang Ai* (1982-1984)	108 MW	None	Multiple federal funds and loans, including from EXIM bank	93 million*
Bakun** (1986 - 2011)	2400 MW	Sinohydro Corporation China	Federal and state government	7.4 billion **

			and loans from EXIM bank	
Murum*** (2008-2014)	900 MW	Three Gorges Dam Company (Malaysia) https://www.business-humanrights.org/en/latest-news/sarawak-energy-fact-sheet-murum-dam/	Sarawak Energy, using Islamic bonds	2.98 billion***
Baleh**** (2018-2026)	1285 MW	Sinohydro Corporation China Gezhouba Group Company (CGGC); Yellow River Engineering Consulting Company was engaged as a design consultant by CGGC.	Sarawak Energy; internal funding and sukuk bonds	8 billion****

Sources: *: <https://www.power-technology.com/marketdata/batang-ai-malaysia>, <https://www.adb.org/sites/default/files/evaluation-document/35473/files/ss-36.pdf>, page 28 converted at exchange rate then from <https://data.worldbank.org/indicator/PA.NUS.FCRF?locations=MY> /; **: https://www.jstage.jst.go.jp/article/seas/5/3/5_373/pdf-char/en, and <https://www.malaymail.com/news/malaysia/2013/10/02/a-g-report-mismanagement-cost-bakun-dam-operator-extra-rm1.3b/535411> ; ***: <https://www.sarawakenergy.com/what-we-do/power-generation>, <https://www.malaymail.com/news/malaysia/2016/05/18/murum-dam-cost-rose-by-rm530m-federal-audit-shows/1122545> ; ****: <https://www.nsenergybusiness.com/projects/baleh-hydroelectric-power-project/> ; <https://www.malaymail.com/news/malaysia/2021/10/05/nothing-to-worry-about-baleh-dams-cofferdams-seepage-says-sarawak-energy/2011037#:~:text=The%201%2C285%2Dmegawatt%20Baleh%20dam,renewable%20energy%20for%20the%20state>.

GOVERNANCE

Environmental and social issues are the most common problems encountered in the development of hydropower, especially by large dams. Environmental Impact Assessment

(EIA) is a common project-specific tool used to assess the positive and negative environmental, economic and social impacts of a project. When properly conducted, an EIA can help minimise adverse environmental effects by identifying the risks, and reducing conflicts through community participation. It is therefore used to help decision makers make informed decisions.

In Malaysia, the use of Environment Impact Assessment (EIA) became a mandatory legislative requirement in 1988. The Batang Ai dam, however, was constructed before the mandatory requirement, before any EIA needed to be conducted as a legal requirement.²³ But even after the requirement became mandatory, construction on the Bakun dam, for example, was started in 1994 before an EIA had been conducted (Table 2).²⁴ In fact, in September that year, an earth-breaking ceremony for the BHP was officiated by Mahathir Mohamad, the Prime Minister at that time, before the project had received Cabinet approval and the EIA was approved. The EIA report was completed only after the ceremony and received Cabinet approval in March 1995. Likewise, the Murum project was contracted out before the EIA report was finalised.²⁵

There has however been an improvement in terms of adherence to the mandatory EIA requirements after the Murum dam. The Social and Economic Impact Assessment (SEIA) for Baleh dam was conducted and submitted to the Natural Resources and Environment Board (NERB) for approval before construction work started. It was reported in December 2015 that the SEIA report was made available for public viewing at various district and government offices in Sarawak. It was also made available for external review by stakeholders such as government agencies and NGOs, as part of the stakeholder review process, around Sept 2014. Public viewing is reportedly possible at NERB’s office, if permission is granted. But the report has not been uploaded at either NERB nor Sarawak Energy’s web-site, nor at Malaysian Administrative Modernisation and Management Planning Unit (MAMPU)’s open data portal.

Table 2. EIA Reporting in Big Dam Developments with China Involvement

Dam	Year	EIA Issues
Bakun Dam	1986	<ul style="list-style-type: none"> ● EIA was conducted after the construction of the dam started ● Lack of public participation ● EIA report is not available for public viewing
Murum Dam	2008	<ul style="list-style-type: none"> ● EIA was conducted after the construction of the dam started ● Lack of public participation

		<ul style="list-style-type: none"> ● EIA report is not available for public viewing
Baleh Dam	2018	<ul style="list-style-type: none"> ● Social and Environmental Impact Assessment (SEIA) was conducted from 2012-2014 by Chemsain.com ● Sarawak Energy received approval of the SEIA report from Natural Resources and Environment Board (NERB), Sarawak on 13 March 2015. ● Available to the public for viewing at the NERB office, with permission

Source: Maisarah Makmor, Hafez Salleh, Nikmatul Adha Nordin, 2020,²⁶ and updated by author for Baleh dam.

MANAGING FUTURE DEVELOPMENTS

Bakun dam has become an example of poor governance in large dam building, or the case study in numerous studies documenting that phenomenon. These studies typically lay the blame for the adverse effects on the environment and the displacement of indigenous communities and wild life on the Chinese company (Sinohydro), while neglecting the fact that the Malaysian partner holds 70% of the equity and local governance and local stakeholders have a role to play in the governance of the project.

Governance of any project, especially large-scale and expensive projects, requires both source countries of investors and builders as well as host countries to play complementary roles. Host economies need to have political willingness and capacity to maintain, implement and enforce stringent environmental laws and regulations.²⁷ Regardless of whether it is an FDI or a construction project, weak local requirements open the door for minimal safeguards from dam builders. This is especially the case where short-term contracts are concerned, such as engineering, procurement and construction (EPC) contracts which do not incentivise contractors to deal with long-term social and environmental problems.²⁸

Malaysia as a host economy

Continued emphasis on hydropower for powering economic development in Sarawak will require continuous improvements in the governance of dam-building. Sarawak Energy (SE) as a vertically integrated electric utility company which is 100% owned by the state of Sarawak, is a key stakeholder in the development of sustainable energy in Malaysia.

SE became a member of the International Hydropower Association (IHA) in 2010. It is also one of the early adopters of the guidelines in IHA's Hydropower Sustainability Assessment Protocol (HSAP). According to SE, it is currently adopting the HSAP for the ongoing 1,285MW Baleh Hydroelectric Project. This is a significant shift as it seeks to embed sustainability best practices into the project's development and operation.

As sustainability issues increase in importance, SE has also started producing sustainability reports to "provide clarity on what sustainability means to us and how we measure our corporate sustainability performance to safeguard the commercial viability of our business while creating value to our stakeholders".²⁹ Five of these reports (2014-2018) are available for download from their website.

In September 2021, the Hydropower Sustainability Council (HSC) launched an Environmental, Social and Governance (ESG) performance standard to enhance transparency in the industry and give investors more confidence in backing new projects.³⁰ This move is not surprising, given that ESG-reporting requirements for companies and mandatory disclosures by financial service firms are expanding rapidly. Moreover, the World Bank has reported that enhanced ESG disclosure plays a role in reducing information asymmetries, thereby improving investment efficiency, which, in turn, can have significant consequences on the real economy.³¹

Given SE's commitment to the HSAP, targeting the HSC's ESG performance standard and certificate is a natural progression on its sustainability journey. Going forward, a roadmap towards the attainment of this certificate will further enhance the ESG standing of the company. In particular, such a roadmap should include clear targets for the scores of each dimension in this instrument, as well as an implementation programme. Second, in view of the increasing demand for disclosures, it is important that the targets, progress and milestones achieved, including short falls in outstanding metrics and plans to overcome these shortfalls, need to be enumerated in the sustainability reports in order to align commitments with disclosures. This, in turn, will enhance the sustainability claims the company makes to regulators, investors, and consumers in Malaysia and to the region as well, in view of its regional ambitions to be an energy exporter.³² Many international leading companies have in fact improved public disclosure in line with their commitments to transparency and accountability.

Beyond disclosure, extending due diligence on contractors and suppliers is equally important in keeping with the trend to incorporate ESG best practices into the entire supply chain of a project. This would include the contracts awarded for the different components of the project. In this regard, the ESG rating of China's major hydropower companies need to be considered, besides experience and costing, in the selection of contractors and sub-contractors as well.

China as a source of hydropower investors and contractors

The environmental risks associated with large-scale BRI infrastructure projects, including the construction of large dams, gave rise to many negative reports on such projects. China's "Green Investment Principles for the Belt and Road" (GIP), launched in November 2018, is an attempt to address sustainability issues in BRI projects. As of June 2021, the GIP expanded its membership to 39 signatories and 11 supporters from 14 countries and regions around the world.³³ The signatories have jointly agreed to ensure that BRI's investment and operations are environmentally friendly, climate resilient and socially inclusive. As finance plays a key role in BRI projects, the green principles agreed upon by major bankers are meant to incentivise the use of sustainable principles in investment decision-making as well as in daily operational procedures. The seven principles included in the GIP are: (i) embedding sustainability into corporate governance, (ii) understanding ESG risks, (iii) disclosing environmental information, (iv) enhancing communication with stakeholders, (v) utilising green financial instruments, (vi) adopting green supply chain management, and (vii) building capacity through collective action.

China continues to press on with new and updated guidelines. For example, in September 2021, Beijing issued the "Green Development Guidelines for Overseas Investment and Cooperation".³⁴ Significantly, companies are encouraged to adhere to international norms when local standards are inadequate, to engage with host country environmental protection organisations, and to focus on non-fossil energy technologies. Environmental impact assessments and due diligence based on international standards are other promoted measures.

But since all these policy statements are merely guidelines, they are toothless without enforced implementation by China's own regulatory bodies. Effectiveness still depends on the commitment from the joint stakeholders, namely the host economies and China, to adhere to these guidelines in the negotiation and implementation phases of BRI-related projects. Thus, it is not surprising that China is deemed as a sustainability laggard. Certainly, this image is supported by the MSCI median ESG score³⁵ that aims to ascertain the ESG performance of countries. In 2021, China was ranked 47 out of 50 countries measured. The UK was ranked first, followed by Australia, Japan and the US.³⁶

At the firm level, regulatory requirements are needed to push companies towards sustainability reporting. For example, China's first mandatory ESG information reporting scheme was proposed by the Ministry of Ecology and Environment (MEE) in October 2021.³⁷ The proposed measures require relevant companies to disclose a variety of environment-related information. When implemented, this would shift China towards establishing a nationwide mandatory environmental disclosure system by 2025. Global trends further indicates that ESG reporting is shifting beyond mere narratives towards common ESG metrics for reporting purposes.³⁸

CONCLUSION

China's involvement in hydropower development is driven by push and pull factors. Push factors include China's belief that hydropower is a source of clean energy that can be harnessed for development and for the export of the country's capacity and knowledge in dam building. Sarawak's green energy ambitions focussing on hydropower production for itself and for export, dovetails nicely with China's outward strategies.

Although the construction of large dams is littered with environmental sustainability issues, there are increasing signs of improvements with greater adherence towards regulatory compliance in the current construction of the Baleh dam. This is also boosted by Sarawak Energy, the key stakeholder in the green energy ambitions of Sarawak, and its adoption of IHA's Hydropower Sustainability Assessment Protocol (HSAP) for the development of Baleh dam.

While China has been heavily criticised for the negative environmental impact of its large dam constructions, these projects really do require both the host and source countries to work together.

For Sarawak Energy as a key stakeholder in dam development, targeting the HSC's ESG performance standard and certificate is a natural progression along its sustainability journey. Providing a roadmap towards the achievement of this standard as well as improving transparency through increasing disclosures of the metrics on this roadmap will enhance the sustainability claims made by the company to regulators, investors and consumers in Malaysia and ultimately in the region as well. This is very important in view of Sarawak's ambitions to be an energy exporter.

Likewise, China has put forth many policies and ambitious goals towards improving sustainability performance. Implementation is key and regulatory enforcement on enhanced disclosures and reporting of environmental sustainability measures and metrics will definitely reverse the image of China as a sustainability laggard, especially in its investments and construction of dams outside the country.

ENDNOTES

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- ²¹ Op.cit. International Rivers, 2008.
- ²² <https://www.pressreader.com/malaysia/the-borneo-post/20160919/281938837383284>

²³ <https://www.adb.org/sites/default/files/evaluation-document/35473/files/ss-36.pdf>. According to the ADB 1999, “The Batang Ai Project was approved in 1981 before environmental guidelines were developed in ADB and the relevant agencies were established in Malaysia. Therefore, its preparation did not include an environmental mitigation plan.”

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³³ <https://greenfdc.org/green-investment-principle-gip-belt-and-road-initiative/>

³⁴ <https://chinadialogue.net/en/business/what-chinas-new-guidelines-on-green-development-mean-for-the-belt-and-road/>

³⁵ MSCI Inc. is the world’s largest provider of ESG Indexes. See <https://www.msci.com/our-solutions/indexes/esg-indexes>

³⁶ <https://www.euromoney.com/article/297g1ykzy4xbli3gtf7cw/esg/chinas-weak-esg-data-undermines-xis-bold-pledges>

³⁷ <https://www.fitchratings.com/research/corporate-finance/proposed-rules-may-strengthen-chinas-esg-disclosure-28-10-2021>

³⁸

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