

They'll be dammed: the sustainability implications of the Sarawak Corridor of Renewable Energy (SCORE) in Malaysia

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Abstract This article examines the Sarawak Corridor of Renewable Energy in Malaysia, or SCORE, a US \$105 billion infrastructure development plan in Sarawak on the island of Borneo, from a sustainability standpoint. SCORE aims to build 20,000 megawatts of hydroelectric dams along a 320 km corridor comprising more than 70,000 km² by 2030. The article begins by explaining social science methods utilized for its research interviews and site visits. It then argues that sustainability consists of seven principles articulated in international law: prudence, equity, responsibility, precaution, justice, governance, and compatibility. Next, the paper introduces readers to SCORE before assessing it according to these seven sustainability criteria. The paper finds that SCORE erodes environmental prudence by emitting millions of tons of carbon dioxide and feeding industries that will pollute the land and water. It worsens intergenerational equity by exacerbating poverty and consolidating wealth for corporations and politicians. It degrades responsibility by intensifying tropical deforestation and flaunts precaution by downplaying and ignoring risks to water quality and availability. It is unjust, imposing dams on communities and forcibly relocating thousands of indigenous people, mitigates good governance by condoning bribes and kickbacks along with the violent suppression of dissent, and is incompatible with Malaysia's own energy policy targets and international standards.

Keywords International law · Sarawak Corridor of Renewable Energy (SCORE) · Hydroelectricity · Malaysia · Sustainability

Introduction

This article examines the sustainability implications of the Sarawak Corridor of Renewable Energy in Malaysia, or SCORE, a US \$105 billion infrastructure development plan on the island of Borneo. The SCORE master plan calls for 20,000 megawatts (MW) of hydroelectric dams by 2030 along a 320 km corridor comprising more than 70,000 km² to provide electricity to energy-guzzling industries. If completed, SCORE would be the most capital-intensive and ambitious development project ever undertaken in Southeast Asia.

This article begins by explaining its social science research methods including research interviews and site visits. It then argues that sustainability consists of seven principles articulated in international law: prudence, equity, responsibility, precaution, justice, governance, and compatibility. Next, the paper introduces readers to SCORE before utilizing the sustainability criteria to assess it, finding that it fails to meet any of them.

Assessing SCORE in this manner brings three benefits. First is its ability to inform Malaysian policy. SCORE is part of the Ninth Malaysia Plan (2006–2010) and the Tenth Malaysia Plan (2011–2015), as well as the National Mission and the Third Industrial Master Plan (RECODA 2007). Revealing the sustainability aspects of SCORE offers much needed insight into Malaysian energy policy and infrastructure planning. Second is its connection to current debates about sustainable development and hydroelectric dams. Every year about 4 million people are

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displaced by activities relating to large dams, and about 80 million have been forcibly relocated or resettled from the construction of 300 large dams in the past 50 years (Mamit 2010; Jehom 2008; Khagram 2005). This article highlights the tensions and consequences between promoting energy development and building large-scale energy infrastructure with those of community livelihood and respect for the natural environment. Third, and most broadly, is the article's focus on sustainability. Traditionally defined as balancing the needs of the present with those of the future, we present a broader framework—connected to soft principles in international law—that includes intergenerational equity along with elements such as precaution, responsibility, justice, and governance. This broader conception of sustainability is more attuned to the contemporary challenges involved with just and equitable economic development, and is elemental if the true impacts of projects like SCORE are to be crystallized, and perhaps avoided, in the future.

Research and theoretical methods

To explore sustainability and SCORE, we relied primarily on original data collected through research interviews, site visits and field research, supplemented with an academic literature review.

The authors conducted 85 semi-structured, open-ended, grounded interviews with participants from 37 institutions involved with SCORE over the course of March 2010 to July 2010. Those interviewed were selected to ensure a representative sample of stakeholders including:

- Engineering and construction firms such as Alstom Hydro, Sarawak Hydro, and Snowy Mountains Engineering Corporation;
- Government ministries at the federal level, including the Board of the National Economic Advisory Council, Economic Planning Unit at the Prime Minister's Department, the Public Private Partnership Unit at the Prime Minister's Department, the Ministry of Energy, Green Technology and Water, and the Ministry of Natural Resources and the Environment;
- Regulatory agencies at the state level, including the State Planning Unit of the Sarawak State Government, Sarawak Rivers Board, Natural Resources and Environment Board Sarawak, and the Regional Corridor Development Authority;
- Energy companies and electric utilities, including Petronas, Sime Darby, Tenaga Nasional Berhad, Sarawak Energy Berhad, and Syarikat SESCO Berhad (formerly the Sarawak Electricity Supply Corporation);
- Human rights organizations including the Bar Council of Malaysia, Human Rights Commission of

Malaysia (SUHAKAM), and Suara Rakyat Malaysia (SUARAM);

- Research institutes and civil society organizations, including the Centre for Environment, Technology, and Development Malaysia, Friends of the Earth, International Rivers Network, University Malaysia Sarawak, and World Wildlife Fund International.

Interviews lasted 30–120 min with an average time of 70 min. Most discussions were captured with a digital audio recorder and the authors did not have any known conflicts of interest with any of the interviewees or involving the project itself. Responses were then transcribed and coded.

Although the authors would normally reference these interviews explicitly, we have not done so here at the request of participants. We thus present direct quotes from those interviews below without attribution. Nonetheless, the “Appendix” does provide the complete list of the institutions we visited. Participants were always asked four questions: “what are the primary sustainability challenges facing Malaysia?,” “how will SCORE improve national or local sustainability?,” “what are some of the sustainability challenges facing SCORE?,” and “what general lessons can we take away from SCORE?” Participants were not prompted for responses and were permitted to answer as long as they wished. Though the judgments below could be interpreted as slanted and non-representative, our stakeholders came out strongly against the project, even those we interviewed within companies and institutions one would expect to be “for it.”

The authors selected open-ended, semi-structured and grounded interviews for a variety of reasons. One was so that the authors could develop additional lines of inquiry as the interview progressed. Another was that few peer reviewed studies existed on SCORE and energy use in Sarawak, requiring us to collect even basic data. A semi-structured research interview format enabled us to ask experts involved with each case study a set of standard inquiries but then allowed the conversation to build and deviate to explore new directions and areas. We relied on qualitative methods because many of the variables of interest to us, such as the ongoing energy policy challenges facing Sarawak and the non-monetary costs and benefits from SCORE itself, are difficult to measure, and cannot be described with numerical analysis. Some of our interviews were with community leaders who were illiterate, making textual collection of data through tools like surveys or questionnaires impossible.

Furthermore, the research was “grounded” in the sense that we commenced our project without any preconceived notions about how respondents should answer questions. To gain the perspective of operators and construction firms,

the authors visited three dams, a 108 MW facility operating near Batang Ai as well as two dams under construction: the 2,400 MW Bakun Hydroelectric Project and the 944 MW Murum Hydroelectric Project (see Figs. 1, 2, 3). To gain the perspective of community stakeholders, we spoke with community leaders, tribal elders and ordinary villagers from ten longhouses in Sarawak. We had the advantage of simultaneous translation into local tribal languages and dialects as well as the national Malaysian language, *Bahasa Melayu*, for the duration of our visits.

We present the information collected from our interviews in a narrative, case study format. Though this style make strike some readers as unstructured or complicated, we rely primarily on a narrative presentation of data because narratives, or storylines, are an elemental part of understanding human behavior. Narratives, or in our case “narrative analysis,” documents the “raw” world as it is

experienced by its subjects, and it is most appropriate for capturing what actual energy users or consumers believe (Czarniawska 2004). Such an inductive, narrative, case study approach has been used widely in the fields of public policy, sociology, and political science (Burke and Onwuegbuzie 2004; Baxter and Jack 2008; Booth et al. 2008; Flyvbjerg 2001; George and Bennett 2004).

Because of the interests involved with economic growth and development, defining sustainability is tricky. Though the concept is multidimensional and certainly contested, sustainability has historically meant balancing two sets of concerns: the present with the future, and energy consumption and economic growth with ecological integrity (Brown and Sovacool 2007). Theorists often describe sustainability in two forms: “weak” and “strong.”

The idea of “weak” sustainability—rooted in neoclassical economic theory—assumes that manufactured and

Fig. 1 The Batang Ai hydroelectric facility near Sri Aman



Fig. 2 The Bakun hydroelectric facility (under construction)



Fig. 3 The Murum hydroelectric facility (under construction)



natural capital are close substitutes so that environmental damage can be measured in monetary units. An optimal strategy for attaining sustainability, then, focuses on finding the best way to allocate such resources (Rennings 1997). Pearce and Atkinson (1993), for instance, suggest that environmental damage can be calculated economically through concepts such as capital, interest, savings and depreciation. Similarly, Hueting and Bosch (1991) suggest that water, soil, forest, air and other natural resources should be assigned monetary value so that society can better assess what would be needed to reach a sustainable level of consumption.

The idea of “strong” sustainability recognizes that environmental problems expand beyond mere questions of allocation to include notions of distribution, justice, and scale. Resources should be distributed justly, and their distribution and consumption must achieve a state where economic activity does not compromise global ecological carrying capacity. The most important task of economic policy, following the logic of the strong model, is to ensure that the economic system does not grow to a size that endangers the global ecological system (Brown and Sovacool 2007). Popular measurements and indices for “strong” sustainability include the notions of eco-capacity (ensuring that economic growth and development do not compromise the integrity of ecosystems), eco-intensity (measuring the material intensity or eco-efficiency of products), and eco-space (measuring the spatial and land impacts of a given technology) (Buitenkamp et al. 1993; Opschoor 1995; Swanson et al. 2004).

International law has drawn from both weak and strong notions of sustainability to elucidate seven common

principles or norms of sustainability depicted in Table 1. Beginning with the Stockholm Declaration on the Human Environment endorsed by the international community in 1972, the 1980 World Conservation Strategy, and (most famously) the 1987 Brundtland report, these ideas have become normalized in domestic statutes and regulations around the world (Orellana 2009; Segger 2009).

Environmental *prudence* refers to the duty of states to ensure the sustainable use of natural resources. It means that states have sovereign rights over their natural resources, that they have a duty not to deplete them too rapidly, and that they do not cause undue damage to the environment of other states beyond their jurisdiction. Prudence was eloquently summed up by Hawken (1994, p. 112) when he wrote that it involves achieving a state where “the demands placed upon the environment by people and commerce can be met without reducing the capacity of the environment to provide for future generations. It can also be expressed in the simple terms of an economic golden rule for the restorative economy: Leave the world better than you found it, take no more than you need, try not to harm life or the environment, make amends if you do.”

Equity and the eradication of poverty have intergenerational and intragenerational aspects. It refers to the right of future generations to enjoy a fair level of common patrimony, as well as the right of all people within the current generation to have fair access to the entitlement of the Earth’s resources (Speth 2008; Dobson 1999).

Common but differentiated *responsibility* encompasses states protecting or restoring the natural or social environment in proportion to their historical damage to it. It also touches on capacity, implying that those that have the

Table 1 Seven criteria of sustainability^a

Norm	Explanation
Prudence	States have sovereignty over their natural resources; resources should not be depleted too quickly; resource extraction should not damage the environment of other states
Equity	Intergenerational equity involves the right of future generations to enjoy a good life; intragenerational equity the right of all people within the current generation to have fair access to resources
Responsibility	All nations have a responsibility to protect the environment in proportion to historical damage to it; those nations with the most capacity have the responsibility to prevent, reduce, or control environmental threats
Precaution	Do nothing in the face of serious or irreversible environmental or social damage; in the lack of scientific certainty, error on the side of caution
Justice	All people should have access to high quality information about development, the opportunity to participate in decision-making processes, and fair and neutral access to remedies of redress
Governance	Countries should have democratic and transparent forms of decision making, effective measures to reduce corruption, and respect for due process and human rights
Compatibility	Domestic laws or projects should not conflict with national and global social, economic, and environmental objectives

^a Source: Segger (2009)

ability to prevent, reduce, or control a threat should be those most responsible for addressing it (Prouty 2009; Matthew 2007). Responsibility is most prominent in current discussions about climate change, with the Global Commons Institute (1990) and others arguing for a contraction and convergence strategy where rich countries “contract” by lowering per capita emissions and poor countries “converge” by raising per capita emissions.

Precaution is best exemplified in the precautionary principle, predicated on two key elements (Raffensperger and Tickner 1999; Thornton 2001; Ricci et al. 2003):

1. A need to anticipate harm before it occurs. Within this element lies an implicit reversal of the onus of proof: under the precautionary principle it is the responsibility of possible polluters to establish that their proposed project is unlikely to result in significant harm.
2. The establishment of an obligation when a risk of significant harm exists, to prevent or minimize such harm even when the absence of scientific certainty makes it difficult to predict the likelihood and magnitude of the harm.

The principle was introduced internationally in 1984 at the First International Convention on Protection of the North Sea. It has also been slowly assimilating into various facets of European and North American policy.

Justice involves participation in the policymaking process and access to high quality information about economic growth and government policies that affect people. It also necessitates effective access to judicial and administrative remedies and forms of redress. More specifically, the principle suggests that communities must be involved in deciding about projects that will affect them; they must be given fair and informed consent; environmental and social impact assessments must involve genuine community

consultation; and neutral arbitration should be available to handle grievances.

Good *governance* centers on democratic and transparent decision making processes and financial accounting, as well as effective measures to reduce corruption and respect for due process. Some, such as the World Bank Group, have formally defined good governance as the creation, protection, and enforcement of property rights as well as the provision of regulation that works with the market to promote competition. It may also include adherence to liberalization and a macroeconomic policy that displays a strong preference for the private provision of infrastructure and the absence of the corruption that can subvert the goals of policy and undermine legitimacy of markets and the institutions that support them (Wolfowitz 2006).

Compatibility involves integration with national and global statutes regarding social, economic, and environmental objectives. Projects must not violate internationally accepted norms relating to human rights or climate change, and must also be compatible with national laws and regulations.

The remainder of the study introduces readers to SCORE and then qualitatively evaluates it according to these criteria, using quotes from the research interviews as well as relevant findings from the academic literature.

Evaluating the sustainability of SCORE

The SCORE would build no less than 12 hydroelectric dams connected to industrial facilities along the coast of Borneo. The Corridor would extend for some 320 km from Tanjung Manis to Samalaju, covering an area of 70,709 km²—more than half the size of the state. The Master Plan calls RM334 billion (US \$105 billion) worth of investment by 2030 with

the goal of expanding the Sarawak economy by a factor of five, increasing the number of jobs in the state by a factor of 2.5, and doubling the population to 4.6 million (RECODA 2007). The foundation of the project is hydroelectric dams, needed to attract investments from ten key industries (such as oil and petrochemicals or steel and aluminum) to take advantage of surplus hydroelectric capacity. One of these dams, the 108 MW Batang Ai, is already operational, two others are currently in construction: the 2,400 MW Bakun Dam (completed in 2011) and the 944 MW Murum Dam (to be completed in 2013). Figure 4 shows the location of Borneo and the Bakun Dam in Southeast Asia; Fig. 5 a map of where some of first proposed 7,000 MW of hydroelectric facilities would be located.

Once all 12 dams are completed, Mukah would supposedly become a central administrative area, and a hub for training and education. Tanjung Manis would become a regional food processing center, specifically a hub for Halal foods, a major port city and source for palm oil and timber. Samalaju would host heavy industries and port facilities. Seventy percent of financing for SCORE would come from the private sector (private investors and global private equity funds) with 10% from government linked companies and 20% from a mix of federal and state funds.

Yet the remainder of the section explains how SCORE fails to satisfy even a single criterion related to sustainability.

The criterion of *prudence* supposes that states should not cause undue damage to the environment or produce any trans-boundary negative externalities, yet SCORE would result in greenhouse gas emissions that contribute to global climate change and the release of noxious pollutants associated with aluminum smelting. Although hydroelectric dams do not release greenhouse gases directly when they

produce electricity, since they combust no fuel, they emit greenhouse gases indirectly from their reservoirs and in connection with flooding. In SCORE specifically, all of the proposed reservoir areas are home to swiddens, *temuda* (swidden fallows), gardens, fruit trees, and areas of primary forest that will be flooded hundreds of meters above sea level. This biomass will be converted into carbon dioxide, methane, and nitrous oxide through decomposition, microbial methanogenesis, and denitrification. One respondent noted that methane emissions will be “higher than ordinary dams” because of the tropical climate in Borneo, with the higher temperatures leading to more heat, more vegetation, and more decay. Choy (2005a, b) projected that with a dam surface area of 710 km², the Bakun Dam alone will have a warming affect of 2.84 million kWh a day, contributing to global warming and also affecting atmospheric pollution and hydrological conditions in the region. Figure 6 shows the reservoir area for Murum, which will also flood thousands of hectares of rainforest. All in all, one respondent calculated that the dam will release about 10.1 million tons of carbon. That amount could go up if extra flooding occurs, as more vegetation will be inundated.

Not to be dismissed are also the downstream industrial impacts associated with SCORE. As this respondent explained:

The investment responses for SCORE have not been fantastic. So now planners are starting to close their eyes to environmental degradation. They don't care who they attract...as long as they can get someone to use all of this energy.

Another clarified that “SCORE is not really about energy, more about promoting industrialization and attracting investment in heavy industries” and that “Sarawak is not

Fig. 4 Location of the Bakun Dam in Sarawak, Malaysia

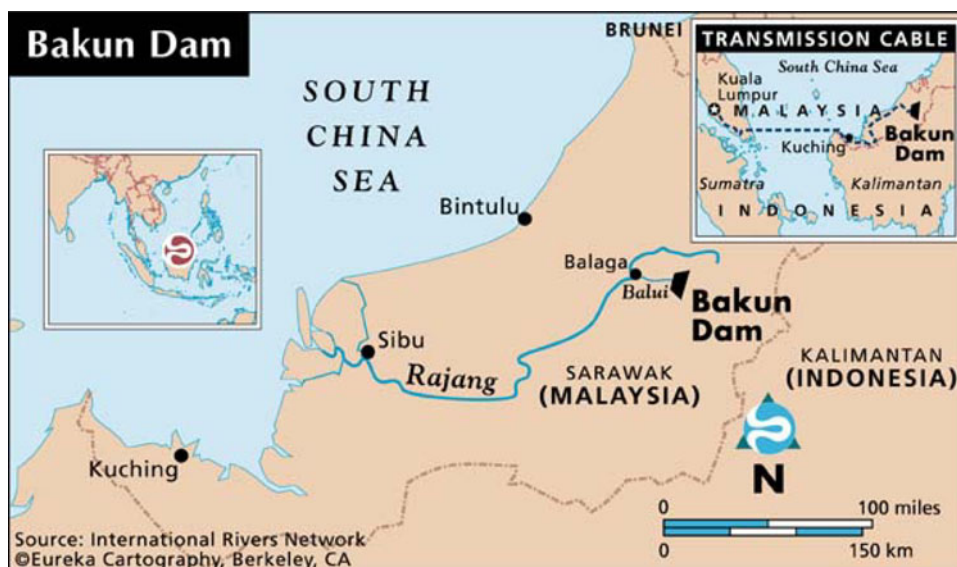


Fig. 5 Map of proposed Sarawak Corridor of Renewable Energy (SCORE) infrastructure

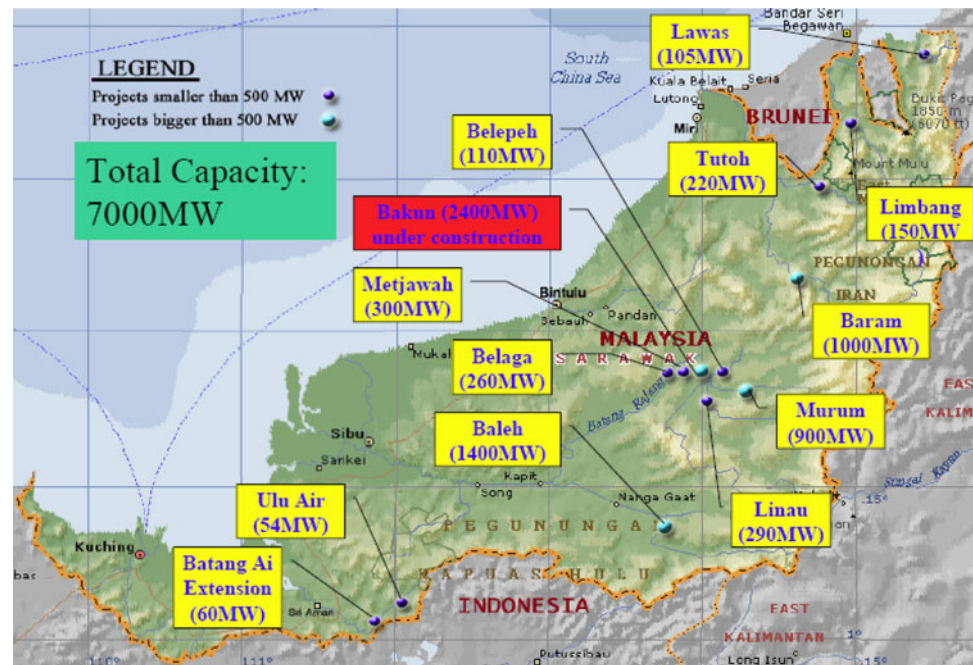


Fig. 6 The backside of the soon-to-be-flooded Murum reservoir



interested in light processing industries, they are interested in big industrial users.” There is nothing wrong with industrialization per se, but in Sarawak it is occurring at the detriment of local communities and the environment.

All of the electricity from Bakun, for example, is expected to supply two massive aluminum smelters owned by Rio Tinto/CMS and GIIG/Aluminum Corporation of China Limited. Together these facilities would produce as much as 1.5 million tons of aluminum per year. Yet Choy (2005b) has calculated that such production will emit voluminous amounts of hydrogen fluoride, silicon tetrafluoride, and solid particles, which are detrimental to human health. Table 2 shows that these releases could

become substantial. As one participant commented, “when taken together, the methane emissions from the reservoir and HFC-23 emissions from aluminum could double the carbon footprint of Sarawak.”

The criterion of *equity* suggests that projects should eradicate poverty and provide local economic benefits, but participants critiqued SCORE for benefitting only politicians and multinational corporations. As one community leader criticized:

Not a single kilowatt-hour of electricity from Bakun (or other proposed dams under SCORE) will actually go to benefit the local people. It is all promised to

Table 2 Emissions and waste for proposed aluminum smelter plants in Sarawak

Waste description	Waste per ton of product	Waste per 1.5 million tons annual production (tons)
Red mud (containing oxides of alumina silicon, iron, titanium, sodium, calcium, and other elements)	2 tons	3,000,000
Particulates	20–80 kg	30,000–120,000
Hydrogen fluoride	6–12 kg	9,000–18,000
Fluoride particulates	6–10 kg	9,000–15,000
Mixed solid waste	40–60 kg	60,000–90,000

industrial uses. Not even communities along the transmission network from Bakun to Bintulu will get electricity.

Yet another commented that “SCORE is supposed to be a growth engine for industry, it won’t help the poor, it has no real jobs for them and no skills adoption. The amount of jobs created for locals will be practically zero.” Others stated that SCORE will have “no positive effect on poverty alleviation” and that “it is not really concerned with benefiting communities, it’s more concerned with building infrastructure.”

As this participant went on to forcefully elaborate:

SCORE is a total insult to the concept of local sustainable development. It’s really mega-bucks rather than renewable megawatts. All of the bucks are flowing into one family, the Taib family, and companies close to him such as Sarawak Energy Berhad, Cahaya Mata Sarawak, and Rio Tinto. The project is reeking with corruption. A few elites in Sarawak will benefit but no one else will. It will not produce real and lasting jobs, it will sell electricity artificially cheap for over 20 years, it will do nothing for local communities, for [those in Sarawak], for longhouses, or for poverty.

Such allegations of corruption and profiteering on behalf of the Taib family have been confirmed by independent assessments, including the Malaysian Anti-Corruption Commission, Swiss Financial Market Supervisory Authority (where he allegedly keeps much of his money), Friends of the Earth, Human Rights Watch, the US and UK governments, and the Japan Network on Human Rights (Japanese NGO Coalition 2007; Bruno Manser Fund 2011; Borneo Project 2011). Still other respondents remarked that SCORE “won’t even offer local jobs, most will be filled by immigrants, and we’re not talking about a large number of jobs, at most 200 for a single smelter,” and that “SCORE is about cheap electricity, royalties, and revenue, but there is no broader social benefit.”

The criterion of *responsibility* entails protecting or restoring the environment in proportion to historical damage to it (as well as responding to environmental threats within the capacity of the government), yet SCORE actually accelerates deforestation and land degradation. Each dam will require the clearing of thousands of hectares of land for their reservoir and catchment areas. Bakun alone will have a catchment area of 1.5 million ha and a reservoir area, completely logged, of 70,000 ha (Choy 2005a). Bakun will destroy 50 million m³ of biomass and habitats needed to sustain rare and endangered fish species, 32 protected bird species, 6 protected mammals, and more than 1,600 protected plants including herons, eagles, woodpeckers, silvered leaf monkeys, Bornean gibbons, langurs, and flying squirrels. Indirectly, one respondent argued that SCORE will result in “access roads built to the dam that have opened up entire forests” to “accelerate logging in nearby areas.”

The criterion of *precaution* implores policymakers to do nothing if their actions could produce serious or irreversible environmental or social damage. Yet SCORE could result in serious social and environmental impacts related to the quality and availability of water and fish. The dams from SCORE will alter hydrology, water quality, and river flows in Sarawak. The environmental impact assessments (EIAs) published by Ekran Berhad itself (1995a, b, c, d, e) for the Bakun Dam admit that the project will influence water quality negatively through changes in the concentration of dissolved oxygen, nutrient loads, and suspended sediments, and that tidal encroachment could aggravate bank erosion. The EIAs, moreover, have been attacked by Williams et al. (1995, 1996) and Mamit (2010) for being too conservative, for underestimating:

- Serious deterioration of water quality in the reservoir and in the river downstream;
- Significant adverse impacts on water levels, and salt water intrusion in rivers downstream;
- A substantial risk of the introduction and spread of waterborne diseases;
- A remote but tangible risk of catastrophic downstream flooding due to dam failure;
- Inundation of socially and economically important plant species, including 1,230 species used for medicines, food, fiber and other social uses and an estimated RM 22 billion (US \$7 billion) in annual forest products revenues.

Figure 7 shows two members of the Penan ethnic group looking over the Murum River, which they will be unable to use for transport or hunting while the dam impounds water.

For example, reservoirs like those at Bakun and Murum trap sediment and most of the nutrients normally flowing through the river. This will alter downstream habitats

Fig. 7 Penan villagers overlook the Murum River



because sediments are no longer able to provide organic and inorganic nutrients, and also change the acidification of the reservoir water. An additional problem is that tropical environments are prone to the proliferation of algae near the surfaces of nutrient-rich reservoirs, dramatically depleting the oxygen level of the water in concert with the decomposition of vegetation and soils. The rapid water fluctuations resulting from the operation of spillways would also increase riverbank erosion downstream, wash away trees, and prevent the spawning of fish. Conversely, reservoirs will negatively influence the population of freshwater fish such as *empurau* which become disoriented in slow moving waters, and fish living near the dam would be susceptible to pulverization from passing through the turbines or super-saturation and excess nitrogen from the water around concrete faces. An independent study from the United Nations Development Program warned that SCORE, if fully developed, could damage water quality and water levels, produce industrialization and population growth that will contaminate water and stress water supplies, and result in other adverse environmental impacts such as sedimentation and siltation (Ping et al. 2008).

The criterion of *justice* states that people should have the opportunity to participate in decision-making processes, and have effective access to remedies to resolve grievances. Yet, in Sarawak, planners have refused to recognize the methods that indigenous communities use to establish native customary land tenure. Making matters worse, state planners in Sarawak changed the land code during the middle of the Bakun project to further limit indigenous people's rights and grievance mechanisms. As one respondent put it:

The Sarawak indigenous peoples, especially the Penan, do not cultivate land, are not sedentary, and are not going to change. Yet the land code in Sarawak

places the onus on the communities to establish a claim and accrue evidence that they own the land, which is quite unusual compared to standards in other Malaysian states and other countries.

Another respondent went on to explain:

There are really five ways in which the state government in Sarawak uses the law and land codes to oppress indigenous rights and push through projects like SCORE. The first is by setting unfair standards for indigenous land tenure. They won't recognize community maps or ancestral claims so that they can claim the land belongs to the state. The second is by foreclosing access to forging ground by encroaching on where indigenous communities live. The third is by failing to give indigenous peoples identity cards so that they cannot vote. The fourth is by giving unfair compensation for relocation and resettlement, sometimes just a couple of pigs for relocating an entire village, or giving people 'land' but of a lesser quality than the type of land lost, i.e., not as good, in swampy areas, infertile, or with limited or difficult access to plots. The fifth is by making it criminal to oppose projects, by jailing protestors and opponents of the state. This can be easily achieved by placing police in certain villages, or by creating ongoing threats. There are even cases of rape. The sad thing is that, Bakun Dam included, I cannot think of a single project, energy wise in Sarawak that has not committed these types of impacts or grievances.

An investigation from the Malaysian Social Security Appellate Board substantiated some of these points and noted that about 35,000 people in Sarawak still lacked birth certificates and identity cards, essentially curtailing their ability to vote and participate in the political process

(Gumis 2009). Other sources have confirmed cases of targeted rape involving young Penan girls (Sarawak Indigenous Community News 2011; Toh 2011; Malaysiakini 2008; New Straits Times 2008).

Key decisions to proceed with projects like Bakun and Murum also occurred without the consent of affected communities, even though Bakun Dam necessitated the forceful removal of 10,000 indigenous people and Murum will require the resettlement of 3,400 people. One respondent claimed that “resettlement occurred before the EIAs were even completed” and that “reports were really done just to rubber stamp the project.” As one respondent critiqued, “if planners in Sarawak produce an EIA they don’t like, they will just close their eyes and ignore it.” Another commented that “Public comments on the EIAs in Sarawak are completely voluntary, up to the project developers. They are done when convenient and ignored when not.” More than forty NGOs banded together to oppose the project, including the Wildlife Fund for Nature Malaysia and International Rivers Network. One scathing assessment even concluded that the EIAs for Bakun amounted to an “empty gesture to pacify environmentalists with promises of environmental protection until it is too late and the damage is done” (Moses 2009: 7).

The criterion of good *governance* states that projects should respect due process and reduce corruption, but participants expressed grave concerns about the political and institutional implications of SCORE. One participant noted that the Bakun project was basically “the right hand of the government giving to the left hand,” with “the first contract awarded without a competitive tender process to Ekran Berhad, run by Ting Pek King, one of Prime Minister Mahathir’s cronies, then after Ekran logs the entire catchment area and makes their money they say they no longer want it and the government bails them out, then looks for a viable company to take charge, and they dump it on Sime Darby.” The current Chief Minister of Sarawak, said another respondent, may have received millions of dollars in kickbacks and bribes.

Claims of corruption, moreover, are not limited to mere financial indiscretion. The Sarawak police have been accused of “sanctioning violence” against those that have tried to oppose the project. As one previous study noted:

The political authority in Malaysia has used all its power to suppress open opposition to the Bakun Dam project. Police and armed forces have been used to apply coercive power in the name of maintaining public order. In April 1996, protestors gathered at the Ekran Berhad office in Kuala Lumpur to deliver a memorandum condemning the Bakun project. Police used tear gas and batons to disperse the crowd. Police

forces also used highhanded tactics to foil protest at the dam site. The government has regularly denounced the opponents of the project as unpatriotic and irresponsible, and even ‘extremists’ (Swain and Chee 2004, p. 105).

One participant interviewed during our own field research put it even more bluntly:

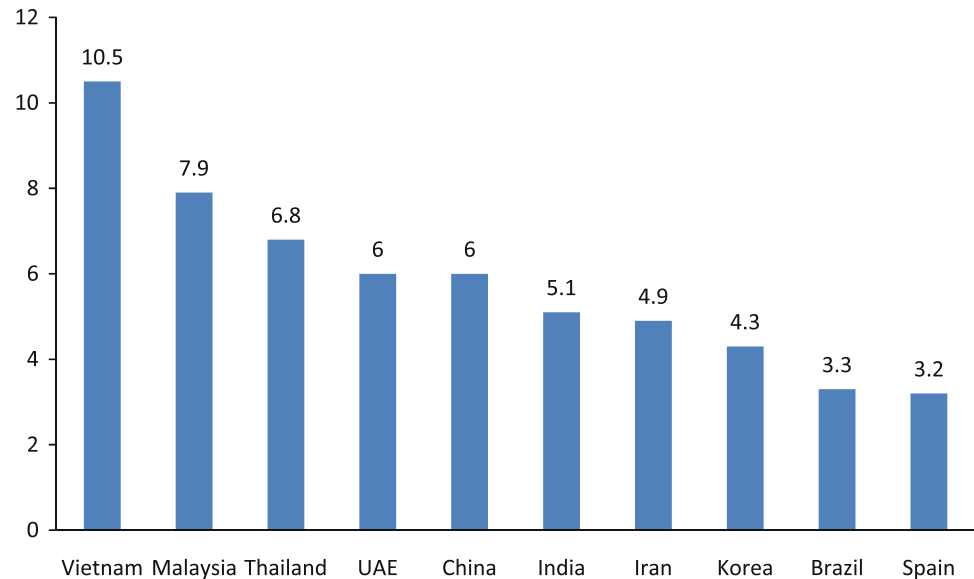
I and members of my community have tried to oppose Bakun, and also other government linked companies from logging or building palm oil plantations on our land. But company officials have done things like hire thugs to put our village leaders into a burlap sack and drag them behind a car, or beat them half to death. We don’t oppose the government or the companies linked to it here anymore.

Another explained that “indigenous people are not represented in the Sarawak political system, <1% of government positions are actually filled by those of *Orang Asal* descent despite the fact that, if you include the Iban, they make up about half of the population.” Yet another remarked that “the utter lack of political accountability in Sarawak creates a self replicating political system that is almost entirely immune to change.”

The criterion of *compatibility* urges projects to meet national and international laws and standards, yet SCORE violates the Equator Principles, Malaysia’s own greenhouse gas targets, and accepted standards for EIAs. The Equator Principles call on project financiers and governments to commit to a rigorous set of guidelines on how they plan for infrastructure projects, disclose information, consult with communities, and mitigate social and environmental risks (Committee on the Equator Principles 2006). Yet one respondent stated that the planners behind SCORE “knew they would not meet the Equator Principles so they simply ignored them.”

Malaysia is also committed to cutting down greenhouse gas intensity by 40% between 2005 and 2020 (Koh and Lim 2010). The commitment stems largely from the fact that Malaysia is the second fastest growing emitter of greenhouse gases in the world with an annual growth rate per year of 7.9%, *excluding* changes in land use, numbers presented in Fig. 8 (Khazanah Nasional 2010). Yet, as iterated above, SCORE could end up adding significantly to the country’s greenhouse gas emissions. At least three studies (Williams et al. 1995, 1996; Mamit 2010) have also questioned the legitimacy of parts of the EIAs, including critiques related to reliance on inadequate data, poor or incomplete hydrological analysis, and predictions of sediment delivery incorrect by more than one order of magnitude, as well as flawed projections about the effect on biodiversity and displaced communities.

Fig. 8 Average annual growth rates (percent) in carbon dioxide emissions for the top ten countries, 1990–2006



Conclusion

Under the prevailing model of development in Sarawak—one obsessed with economic growth—SCORE is an exemplary project: it rapidly transforms the hinterlands of Borneo into usable energy production sites to be utilized for industrialization and manufacturing. Yet under a holistic conception of sustainability that involves respect for the environment, fighting poverty, restoring degraded landscapes, exercising caution, participation of local communities, minimizing corruption, and consistency with norms and regulations, SCORE is an unequivocal failure. As Table 3 summarizes, SCORE erodes environmental prudence by emitting millions of tons of carbon dioxide and feeding industries that will pollute the land and water. It worsens intergenerational equity by exacerbating poverty and consolidating wealth for corporations and politicians. It degrades responsibility by intensifying tropical deforestation and flaunts precaution by downplaying and ignoring risks to water quality and availability. It is unjust, imposing dams on communities and forcibly relocating thousands of indigenous people, mitigates good governance by condoning bribes and kickbacks along with the violent suppression of dissent, and is incompatible with Malaysia's own energy policy targets and international standards.

There are practical and pragmatic ways that planners in Malaysia, and elsewhere, can incorporate our seven sustainability criteria into development plans such as SCORE. For example, they could have promoted smaller run-of-river microhydro units without reservoirs with a much lower carbon footprint, that are simpler to operate, can be made domestically, and are less capital intensive than their larger counterparts. They could have ensured that the electricity from such units was put towards only low-carbon enterprises

Table 3 Sustainability evaluation of SCORE

Sustainability dimension	Evaluation
Prudence	Emits prodigious amounts of greenhouse gases that contribute to global climate change and releases noxious pollutants associated with aluminum smelting
Equity	Benefits politicians and multinational corporations but does not address poverty, improve community livelihood, or offer meaningful employment opportunities
Responsibility	Accelerates tropical deforestation and land degradation
Precaution	Deteriorates water availability and quality and impinges on the vitality of indigenous communities
Justice	Imposes dams on communities without prior consultation and refuses to recognize native customary land tenure
Governance	Solidifies corruption, nepotism, and even state-sponsored violence within the government of Sarawak
Compatibility	Violates the Equator Principles, Malaysia's own greenhouse gas targets, and accepted standards for environmental impact assessments

and also provided electricity directly to communities that needed it. They could have created a fund for tree planting and community livelihood that utilized some of the revenues from SCORE to offset deforestation, and train and educate villagers. They could have mandated comprehensive and independent EIAs which took into account the effect of SCORE on water quality and availability. They could have ensured that community representatives and members of civil society had a meaningful, and active, role in the design and implementation of SCORE. They could have promoted

measures of transparency and accountability so that the revenues from SCORE were properly tracked and independently audited. They could have harmonized SCORE with Malaysia's broader national push towards cleaner forms of energy supply and the minimization of environmental degradation.

The point is not that Sarawak should avoid developing its economy and improving the lives of its residents, but that capital-intensive development corridors like SCORE will work only when they are calibrated to distribute development benefits equally, equitably, and justly. Instead of promoting the type of growth that those in Sarawak may need, SCORE threatens to destroy pristine habitats and extinguish ancient cultures. One critic of SCORE went so far as to call it a "takeaway" strategy of development and "internal colonization." As they explained:

Under any normal, good, and rational plan for development, if an ethnic group wanted a concrete school building, the government would build it for them. If they want 20 acres of land for farming, a kind government would give it to them. Instead, SCORE takes it all away, gives it to companies, gives the people nothing...People are nothing more than mosquitoes. It's really political oligarchy, a sort of internal colonization that destroys peoples land and livelihoods. SCORE in that respect is creating a monster, taking peoples land, and giving it to companies.

SCORE might have produced optimal or at least justifiable results if it was intended to enrich local livelihoods, if government planners in Sarawak were held accountable for corruption and violence, if indigenous claims on land were recognized and respected, and environmental and social impact assessments carefully conducted. Yet in world where SCORE does none of these things, its narrow approach to development could very well erode all of the dimensions of sustainability that have come to matter for those on the ground in Sarawak as well as on the international stage.

Appendix: List of institutions interviewed

Alstom Hydro
 Bar Council of Malaysia
 Borneo Resources Institute Malaysia
 Centre for Environment, Technology, and Development Malaysia
 Centre for Orang Asli Concerns Malaysia
 Economic Planning Unit, Prime Minister's Department
 Friends of the Earth
 Global Environment Facility
 Human Rights Commission of Malaysia (SUHAKAM)

Institute of Strategic and International Studies Malaysia
 International Rivers Network
 Ministry of Energy, Green Technology and Water
 Ministry of Natural Resources and the Environment
 Ministry of Tourism
 National Economic Advisory Council, Malaysia
 Natural Resources and Environment Board Sarawak
 OSK Research
 Partners of Community Organizations
 Petronas
 Public Private Partnership Unit, Prime Minister's Department
 Regional Corridor Development Authority (RECODA)
 Sarawak Energy Berhad
 Sarawak Hidro Sdn Bhd
 Sarawak Iban Dayak Association
 Sarawak Rivers Board
 Sarawak State Government
 Sime Darby
 Snowy Mountains Engineering Corporation
 State Planning Unit, Sarawak State Government
 Suara Rakyat Malaysia (SUARAM)
 Syarikat Sesco Berhad (Sarawak Electricity Supply Corporation)
 Tenaga Nasional Berhad
 The Borneo Project
 Third World Network
 United Nations Development Program Malaysia
 Universiti Malaysia Sarawak
 World Wildlife Fund International

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