

【遺稿】

Interrogating “Comprehensive Development:”
The Colonial-Wartime Background to Japan’s Development Cooperation

Aaron Stephen Moore
Associate Professor, Arizona State University

In Memoriam: History Professor Aaron Moore (1972-2019)

by Jin Sato, Professor of The University of Tokyo

Dr. Aaron Moore (Arizona State University), the author of this paper, passed away in September 2019. He did not have the time to complete the revision himself, but the final touches have been offered by his dear colleagues and friends, Profs. Hiromi Mizuno (University of Minnesota) and Ian Miller (Harvard University) at the request of his bereaved family. Professor Moore was an outstanding historian of modern Japan who focused on the intersection of technology, history, and geo-political power. With his excellent command of the Japanese language, he delved into the unexplored archives of the Japanese consulting company, Nippon Koei, during his fellowship in the Institute for Advanced Studies on Asia at the University of Tokyo in 2018. We publish this paper to remember his work and celebrate Dr. Aaron Moore's contribution to the scholarship on Japan's development trajectory across Asia.

アーロン・ムーア博士(1972-2019) への追悼文

ムーアさんと最初に出会ったのは、かれこれ10年近く前の全米アジア研究学会(AAS)の時であった。日本の近現代の対アジア政策についてのパネルで一緒した。興味関心が近かったのも、翌朝、ホテルで朝食をともにした。会議のときはすべて英語であったが、朝食では流暢な日本語で話かけてきたので本当に驚いた。新世代の日本研究者の到来を感じた。2013年に上梓された彼の単著 *Constructing East Asia: Technology, Ideology, and Empire in Japan's Wartime Era, 1931-1945* (Stanford University Press) は、日本研究の枠を超えて、歴史学の業績として高い評価を得た。インフラを中心とする人工物とテクノロジーを介した日本のアジア関与と、その思想的源流を歴史的に明らかにすることは彼のライフワークであった。個人的には、日本語の拙著『持たざる国の資源論』(東京大学出版会、2011年)を英語の学術誌 *International Journal of Asian Studies* 誌上で書評をしてくれた恩を、今でも忘れることができない。

本バックグラウンドペーパーもその一部である、「日本の開発協力の歴史」を研究していて気付くことの一つは、いくつかの重要テーマの空白を外国人の日本研究者が埋めてきたということである。筆者が知っている範囲でいえば、日本の経済協力行政に関する政治学的研究は米国人の独壇場である。ムーアさんが晩年取り組んだ久保田豊のダム建設をめぐる研究も、戦前と戦後の見事な連続性を見せつつ、コンサルタントという、これまで学術的な光が当たってこなかったアクターを表舞台に登場させた点で、日本人研究者の間隙をついた。2018年度には筆者の職場である東京大学東洋文化研究所で訪問研究員として受け入れ、2018年6月の国際開発学会での発表もお願いし、今回のJICA緒方研究所のバックグラウンドペーパーも手掛けてくれたムーアさんは、まさにわれわれの仲間である。

ムーアさんは2019年9月にこの世を去った。このペーパーは、ムーアさんが最後に取り組んだ仕事の一つである。人知れず病魔と闘っていたムーアさんに、このバックグラウンドペーパーを完成に至らせる時間は残されていなかった。しかし、私たちは彼が残した珠玉の仕事を繰り返し読み、彼がやりたかったであろう研究を想像し、引き継ぐことができる。彼の命は残された書き物に宿り、その火に薪をくべる仕事は私たちに託された。ムーアさん、ありがとう。ムーアさんの仕事が私たちの「歴史研究」の血肉となって生き続けるところを天国から見守っててください。

合掌 佐藤仁
東京大学東洋文化研究所教授
JICA 緒方研究所客員研究員

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Associate Professor, Arizona State University

Shifting the Narrative of Japanese Development Cooperation

Histories of Japan’s Overseas Development Aid (ODA) usually begin in 1954, after Japan regained its sovereignty and transformed itself into a democracy and global economic power. Yet contrary to this “economic miracle” success narrative that begins in the post-war, the history of Japan’s development cooperation actually begins much earlier. The technical knowledge, development conceptions, and networks of experts and bureaucrats from the earlier colonial-wartime era (colonial: 1895-1945, wartime: 1931-1945) played a major role in shaping the nature of Japan’s ODA. This background paper analyzes one particular mode of development formulated in the colonial-wartime era that greatly influenced the formation of Japanese ODA paradigms—what became known as “comprehensive development” (*sōgō kaihatsu* 総合開発)—in the post-war. Comprehensive development meant the close coordination of flood control, electricity production, agricultural development, urban planning, and transportation improvement, primarily through the construction of multi-purpose dams and other related infrastructure as a means to rapidly and efficiently promote industrialization and national development. While some emphasize the role of the Tennessee Valley Authority (TVA) idea of river basin development in shaping post-war Japanese conceptions of comprehensive development, as this background paper will show, comprehensive development’s colonial-wartime roots were rather diverse and in turn shaped post-war comprehensive development towards more of an emphasis on heavy industrial and related infrastructure investment as a means to jump-start high-speed economic growth.¹

Japanese-style ODA is often seen as emerging out of the economic doctrine of “developmentalism,” which has been credited for engendering Japan’s “economic miracle” and the subsequent economic successes of East Asian economies such as South Korea, Taiwan, and Hong Kong. Characterized by a strong state industrial policy that guides capitalist investment into strategic areas such as infrastructure development, export promotion, and domestic market expansion for the purpose of high-speed economic growth, Japanese developmentalism constituted a third way between socialist command and capitalist free market forms of

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¹ For example, several of the essays in Machimura Takashi, ed., *Kaihatsu no kūkan, kaihatsu no jikan: Sakuma damu to chiiki shakai no han seiki* (Tokyo: Tokyo daigaku shuppankai, 2006); Satō Jin, “*Motazaru kuni*” no shigenron: *Jizoku kanō na kokudo wo meguru mō hitotsu no chi* (Tokyo: Tokyo daigaku shuppankai, 2011); Eric Dinmore, “Concrete Results? The TVA and the Appeal of Large Dams in Occupation-Era Japan,” *Journal of Japanese Studies* 39, no. 1 (Winter 2013): 1-38.

economic development. For developing countries in particular, the “Japanese model” served as a compelling path to follow and the Japanese government in turn provided ODA loans, grants, and credits to large-scale infrastructure and heavy industrial projects in the developing world. In international development circles, the Japanese, and later, the “East Asian model” garnered much attention since East Asian nations performed much better economically than other parts of the world such as Africa and Latin America, which received similar amounts of development aid.

As part of its developmentalist industrial policy, from the 1950s, the Japanese government aggressively adopted and promoted the framework of “comprehensive development,” which emphasized closely coordinated infrastructure and heavy industrial investment, both at home and abroad. For example, “comprehensive national land development plans” (*sōgō kokudo kaihatsu keikaku* 総合国土開発計画) centered around dam construction and heavy industrial infrastructure development began regionally during the 1950s and then nationally from 1963 as part of Prime Minister Ikeda Hayato’s Income Doubling Plan. In tandem with Japan’s immense economic success during the 1960s, the Japanese government also promoted comprehensive development abroad and directed a large portion of ODA loans and grants to large-scale infrastructure and heavy industrial projects throughout Asia and the developing world. In contrast to approaches that emphasized agricultural development or “basic needs” that the US took, Japan promoted its own developmentalist model of achieving economic self-sufficiency through industrial development, infrastructure investment, and export-led economic growth, which was shaped by the historical and political context of Asia.²

I analyze this pervasive mode of development by focusing on Japan’s leading development consultant—Kubota Yutaka. Development consultants are important to analyze since they were at the front lines of Japanese ODA practice. They not only supervised the planning, design, and construction of many ODA projects, but also recommended projects to the Japanese government for funding. Kubota’s overseas developmental career began in 1926 as an engineer who built dams in colonial Korea for the subsidiary of Noguchi Jun’s heavy chemical *zaibatsu* conglomerate, Japan Nitrogenous Fertilizer Company (*Nicchitsu* 日窒) and the Korea Nitrogenous Fertilizer Company (*Chōchitsu* 朝窒). In the post-war, Kubota founded Japan’s largest consultancy, Nippon Kōei, which specialized in planning and supervising comprehensive infrastructure projects throughout the world. Kubota and other Nippon Kōei engineers had long and distinguished careers as developers of hydropower and other infrastructure in colonial Korea, and Kubota led study teams on hydropower and natural resource development in China, Taiwan, Indochina, and the East Indies for the Japanese military. This colonial experience not only provided technical expertise, but also shaped Nippon Kōei’s post-war paradigm of comprehensive development.³ Thus, using the example of Nippon Kōei and the broader history of planning discourse before 1945, a closer analysis of how this influential paradigm was formed during the wartime era will help us understand the ideologies, politics, and power dynamics involved in shaping the developmental frameworks of Japanese ODA in the post-war. These wartime-colonial dynamics

² For a discussion of this context, including the conflation of war reparations and ODA in the 1950s and 1960s, see Hiromi Mizuno, Aaron S. Moore, and John DiMoia, eds, *Engineering Asia: Technology, Colonial Development, and the Cold War Order* (London: Bloomsbury Publishing, 2018).

³ Aaron S. Moore, “From ‘Constructing’ to ‘Developing’ Asia: Japanese Engineer and the Formation of the Postcolonial, Cold War Discourse of Development in Asia,” in *Engineering Asia*, 85-112.

have been erased in the post-war “economic miracle” narrative, which celebrated Japanese developmentalism as a *de novo* product miraculously born of the US-dominated post-1945 moment, and a model for the developing world to follow. Understanding the wartime-colonial dynamics involved in the post-war, post-colonial formation of Japan’s development system in Cold War Asia can contribute to more nuanced studies of Japanese aid’s effectiveness since these dynamics directly pertain to issues of inequality, human rights, and democracy that affect the development process.

Kubota Yutaka, *Zaibatsu* Engineers, and the Formation of Japanese Developmental Expertise

Nippon Kōei’s approach to overseas development, which it began marketing to newly independent, post-colonial regimes in Southeast Asia from the early 1950s, had its roots in Kubota’s twenty-year history of building dams and hydropower stations for Chōchitsu and Korea’s Governor-General. Kubota pioneered an approach of building large-scale inter-basin diversion (*ryūiki henkō-shiki* 流域変更式) dams that provided cheap and abundant electrical power in order to lure heavy industrial investment. This comprehensive, future-oriented, large-scale approach differed from competing models, which focused on the construction of smaller-scale power stations more in tune with existing electricity demand and Korea’s agricultural/light industrial economy, and then gradually adding electricity and industrial infrastructure in an incremental manner.⁴ In 1924, Kubota and Morita Kazuo, a hydropower engineer who graduated from Tokyo Imperial University’s Electrical Engineering Department with a long career of building dams for electrical power and railroad companies, carefully examined some 50000:1 scale maps of Korea and noticed the hydropower potential of two Yalu River tributaries in Korea’s northeast—the Pujōn and Changjin Rivers. Requiring an electricity demand plan to acquire the water-use rights from the Governor-General of Korea, they approached Noguchi Jun, a fellow Tokyo Imperial University Electrical Engineering graduate and Chisso’s founder, with their ideas. Their plan was to divert the western flows of both rivers eastwards by means of diversion tunnels through the mountains towards various steep drop-offs where a series of power stations would be built, and then finally guided into the Japan Sea. This series of power stations would enable the development of an electro-chemical industry in Hūngnam on northern Korea’s eastern coast. Noguchi was intrigued by their plans and wagered his company’s future on this ambitious idea to expand his chemical fertilizer business to Korea. The Chōsen Hydropower Company (*Chōsen Suiden Kabushiki Kaisha* 朝鮮水電株式会社) was established in 1926, followed by Chōchitsu in 1927. Kubota became Chōchitsu’s chief engineer for hydropower development.⁵

With the completion of Pujōn River Dam in 1929, a concrete gravity diversion dam providing 200,000 kilowatts of cheap electricity for Chōchitsu’s newly constructed chemical complex at Hūngnam, Chōchitsu pursued dual development of hydropower dams and chemical factory expansion.⁶ Pujōn was equivalent in

⁴ Inter-basin diversion dams divert a river’s flow from one watershed or river system to another by means of tunnels, siphons, or waterways into a large reservoir whereby the water is then regulated and stored for hydropower, irrigation, flood control, and water provision to agriculture and industry.

⁵ Nagatsuka Riichi, *Kubota Yutaka* (Tokyo: Denki jōhōsha, 1966), 100-118.

⁶ Kan Chae-on, *Chōsen ni okeru Nicchitsu kontserun* (Tokyo: Fuji shuppan, 1985), 145. For an overview of Nicchitsu’s development in Korea see *Ibid.*, 81-107.

scale to Japan's largest dam at the time, Komaki Dam in Toyama Prefecture, and it produced around four times more electricity than Japan's largest power station (45,000 kw) at Shimokotori Dam, also in Toyama.⁷ By the late 1930s, Hŭngnam became the third largest chemical complex in the world with the completion of Changjin River Dam (330,000 kw) in 1938 and the beginning of Hŏch'ŏn River Dam's (335,000 kw) construction in 1936.⁸ Starting with Changjin River Dam, which also transmitted electricity to Pyongyang and Keijŏ (Seoul), the Governor-General mandated that a large percentage of the electricity from these dams be allotted for public use such as urban electrification and industrial development. Sup'ung (*Suihŏ* 水豊) Dam (700,000 kw), a concrete gravity reservoir dam completed in 1942, was the second largest dam in the world after Grand Coulee Dam in the US. By then, Kubota was a Chŏchitsu managing director, as well as a director of a number of its subsidiaries such as the Chŏsen Power Transmission Company (*Chŏsen Sŏden* 朝鮮送電), and in 1943 he became president of Chŏsen Electricity (*Chŏsen Dengyŏ* 朝鮮電業), which consolidated all of colonial Korea's power companies for total war mobilization. By the war's end, the average output per power station in Korea was 100,000 kilowatts versus 62,000 kilowatts in Japan and Korea had six concrete gravity dams of over 400,000 square meters (with five more under construction) whereas Japan only had one dam of that size, Miura Dam in Nagano.⁹ Chisso engineers constructed power stations in Korea that produced a total of 4 million kilowatts, which nearly matched Japan's total capacity.¹⁰ In sum, under the leadership of Kubota and Noguchi's Nicchitsu conglomerate, Japanese engineers and bureaucrats in Korea were able to develop world-class skills in large-scale dam construction, power development, and regional planning, which they then brought home after the war. Many of them later became Nippon Kŏei consultants.

The Historical Formation of "Comprehensive Development" in Pre-War Japan

What became known in Japan as "comprehensive development" after the war broadly meant transforming the physical environment into an efficient, optimal system whereby each part somehow contributed to other parts of the whole in mutually reinforcing ways. Japan's early post-war "Comprehensive National Land Planning" projects usually centered around the construction of multi-purpose dams or dams not just for one purpose such as power production or water supply but for multiple, interrelated purposes that included flood control, irrigation and land reclamation, transportation improvement, and so on.¹¹ America's Tennessee Valley

⁷ Hirose Teizō, "Gunju keiki to denryoku kensetsu kōji," in *Doboku: Sangyō no shakaishi 12*, ed. Tamaoki Motoi (Tokyo: Nihon keizai hyōronsha, 1993), 155.

⁸ Chisso expanded its profile from chemical fertilizer manufacturing to other areas such as the production of caustic soda, aluminum, magnesium, carbides, gunpowder, oils and fats, metals processing, and even liquefied gas and artificial gemstones. By 1942, its subsidiaries owned thirty-six percent of Korea's industrial fixed capital and were establishing factories throughout East Asia. Cho Kab-je, "Ch'ongdokpu gogwan dŭl ūi kŭdwi," *Wŏlgan Chosŏn* (August 1984).

⁹ Hirose, "Gunju keiki to denryoku kensetsu kōji," 156.

¹⁰ Fukai Junichi, *Minamata-byō no seiji keizaigaku: Sangyōshi-teki haikai to gyōsei sekinin* (Tokyo: Keisō shobō, 1999), 79-80.

¹¹ Multi-purpose dams were first constructed in the early twentieth century United States to meet growing demand for electrical power and the competing needs of irrigation (overseen by the Reclamation Bureau) and improved navigation (overseen by the Army Corps of Engineers) for the development of the West. Roosevelt Dam (1911) on the Salt River in Arizona and Wilson Dam (1925) on the Tennessee River in Alabama, named after two US presidents who helped

Authority (TVA), established in 1933, represented the most influential model of this type of comprehensive development, which focused on the river-basin as the fundamental unit of development. Christopher Sneddon notes:

The TVA created the ideal of *modern* river basin development, wherein storing water and producing hydroelectricity... would set in motion a set of highly integrated economic activities (e.g., agricultural production, resource extraction, industrial activities) to produce economic growth and higher employment levels for a specific region and its inhabitants, all coordinated via a highly centralized yet ultimately democratic authority.¹²

The TVA's form of comprehensive river basin development represented the coalescence of several ideological, political, and technological strands dating from the nineteenth and twentieth centuries—utopian visions of “conquering nature” made possible by advances in science and technology, culminating in early twentieth century “high modernism;”¹³ the construction of multi-purpose dams such as Hoover Dam in 1935 that envisioned rivers as “vast, untapped engines of economic growth and industrialization;”¹⁴ the emergence of the concept of basin-wide development and harnessing the entire flow of a drainage basin; and the beginning of comprehensive regional development projects through massive state investment.¹⁵ These trends also made their way to Japan in the early twentieth century. While scholars agree that comprehensive development planning in Japan was greatly influenced by the TVA paradigm during and immediately after the US Occupation, they often ignore the vast experience in planning and river development that Japanese engineers had already acquired domestically and within Japan's empire, which American TVA conceptions later fed into.¹⁶

institutionalize the concept of river basin-planning and the comprehensive use of “water resources,” were the first multi-purpose dams in the US. These dams laid the basis for America's first world-class multi-purpose dam projects—Hoover Dam (1935) on the Nevada-Arizona Border for the Colorado River and Bonneville Dam (1934) on the Washington-Oregon border for the Columbia River. The construction of Roosevelt and Hoover Dams required the Reclamation Bureau and the Army Corps of Engineers to survey larger regions, which enabled engineers to think beyond just irrigation and navigation towards other uses for dams such as power production and flood control. Studies arising from the Wilson Dam's construction and the US government's desire to develop the Tennessee Valley region led to the Army Corps of Engineer 308 Reports in 1926, which initiated national river basin surveys for multi-purpose dam construction. These surveys laid the basis for what would become the epitome of comprehensive river basin planning and multipurpose dam construction, the Tennessee Valley Authority, during the 1930s. David P. Billington, Donald C. Jackson, Martin V. Melosi, *The History of Large Federal Dams: Planning, Design, and Construction in the Era of Big Dams* (Denver: U.S. Dept. of the Interior, Bureau of Reclamation, 2005), Kindle Version. Location 2193 to 3029.

¹² Christopher Sneddon, *Concrete Revolution: Large Dams, Cold War Geopolitics, and the US Bureau of Reclamation* (University of Chicago Press, 2015), 55.

¹³ James Scott describes high modernism as the ideology behind “monotonic schemes of centralized rationality” such as large dams that “straitjacketed” the human and natural worlds. He defines “high modernism” as a strong “self-confidence about scientific and technical progress, the expansion of production, the growing satisfaction of human needs, the mastery of nature...,” and, above all, the rational design of social order commensurate with the scientific understanding of natural laws.” James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 1999), 4. As for the impact of the TVA model beyond the US, especially in Asia, see for example Nick Cullather, *The Hungry World: America's Cold War Battle against Poverty in Asia* (Boston: Harvard University Press, 2013).

¹⁴ Sneddon, *Concrete Revolution*, 18.

¹⁵ François Molle, “River-Basin Planning and Management: The Social Life of a Concept,” *Geoforum* 40 (2009): 489.

¹⁶ Christopher Sneddon credits the Bureau of Reclamation's numerous international projects for spreading the idea of the river basin as the basic unit of development around the world. See Sneddon, *Concrete Revolution*. David Ekbladh shows how the TVA model became an essential part of the US “liberal internationalist” development paradigm and

Electricity was first used in Japan in 1878, ten years after the Meiji Restoration that overthrew the feudal Tokugawa order. Power companies were established all over the country primarily for urban lighting and streetcars. Electrical power development began in earnest during World War I when Japan enjoyed an industrial boom and the development of long-distance transmission lines enabled the construction of hydropower dams. As hydropower began to catch up to coal power, Japan shifted from a “coal first, hydro second” to a “hydro first, coal second” policy of national energy development due to its favorable topographical and meteorological conditions for hydropower.¹⁷ As demand for electricity, particularly from Japan's growing industrial sector, required larger scale dams, civil engineers began to build successively higher concrete dams like Shizugawa Dam (1924), Oi Dam (1925), Komaki Dam (1930), and Soyama Dam (1935). In the process, they improved their civil engineering skills, particularly in areas such as concrete structural engineering and earthquake resistance. Monobe Nagaho, a civil engineer, hydrologist, and Tokyo University professor who worked at the Home Affairs Ministry's Civil Engineering Research Institute, first introduced the concept of multi-purpose dams to Japan or what he then called “river control planning” (*kasen tōsei keikaku* 河川統制計画) in 1926 in response to increasing demand for irrigation, flood control, and electric power projects. However, conflicts between the Ministry of Home Affairs, the Ministry of Communications, and the Ministry of Agriculture and Forestry on jurisdiction over flood control, electricity production, and irrigation matters delayed the launch of the necessary comprehensive river development studies. The financial crisis of 1927 and the Great Depression also put a break on dam construction until the early 1930s. Comprehensive river studies began at the prefectural level in 1934 and the Ministry of Home Affairs first received a budget for these studies in 1937. By then, Japan had shifted towards a more heavy-industrial economy as it militarized and expanded into Manchuria and northern China during the 1930s. This increased demand for electricity and water provision for growing cities and heavy industry thereby creating additional demand for comprehensive river development studies that would rationalize water distribution for multiple purposes.¹⁸

modernization theory during the Cold War and how US policymakers actively promoted it to the developing world. See David Ekbladh, *The Great American Mission: Modernization and the Construction of an American World Order* (Princeton, NJ: Princeton University Press, 2011) and Nick Cullather, “Damming Afghanistan: Modernization in a Buffer State,” *The Journal of American History* 89, no.2 (September 2002), 512-537. Eric Dinmore analyzes how postwar Japanese economic planners embraced the TVA model of dam and hydrosphere development, which the US Occupation introduced, as the best way to rebuild the country. Eric Dinmore, “Concrete Results?: The TVA and the Appeal of Large Dams in Occupation-Era Japan,” *The Journal of Japanese Studies* 39, no.1 (Winter 2013), 1-38, and Dinmore, “High-Growth Hydrosphere: Sakuma Dam and the Socionatural Dimensions of ‘Comprehensive Development’ Planning in Post-1945 Japan,” in *Environment and Society in the Japanese Islands: From Prehistory to the Present*, eds. Bruce L. Batten and Philip C. Brown (Corvallis: Oregon State University Press, 2015), 114-138. While Dinmore confirms some of the conclusions of Sneddon and Ekbladh, he also shows how the TVA model was translated specifically into the Japanese context of “national land planning” (*kokudo keikaku*); however, he does not deeply examine the vast legacy of dam construction and planning during the pre-war and wartime eras, particularly in Japan's empire, that also laid the basis for post-war Japanese comprehensive development at home and abroad.

¹⁷ Japan is a mountainous country, which creates rivers with rapids and steep drop-offs that are ideal for dam construction. Annual precipitation in Japan is also significantly higher than the global average.

¹⁸ Matsuura Shigeki, “Senzen no kasui tōsei jigō to sono shakai-teki haikai,” *Dai gokai Nihon dobokushi kenkyū happyōkai ronbunshū* 5 (1985), 188.

Colonial Expansion, Total War Mobilization and the Conceptualization of “Comprehensive Development”

Comprehensive land and water resource development, however, really began in earnest after the creation of Manchukuo in 1932. As Japan shifted towards a total war economy, engineers were increasingly mobilized to build and expand roads, ports, railways, factories, communications and electricity infrastructure, cities, mines, and river control projects under the banner of “constructing East Asia” (*tōa kensetsu* 「東亜建設」).¹⁹ Comprehensive development took on several different forms of coordinating multiple and often competing objectives such as urban planning, river control, irrigation, industrial development, and port, railway, and road expansion for the overall purpose of transforming natural resource-rich Manchukuo into a heavy industrial engine for the “New East Asian Order” (subsequently, the “Greater East Asia Co-Prosperity Sphere”).²⁰ Korea in turn became the frontline “logistical base” (*heitan kichi* 兵站基地) for Manchurian development and Japan’s further advance into China. Korea provided the manpower, capital, and technology for Manchurian development, and Korea itself shifted towards a more industrial economy as a result. Thus, after 1932 Japan’s empire developed into an enormous engineering enterprise, creating a fertile environment for the emergence of comprehensive development.

The Manchukuo Special Industrial Department Investigative Bureau led by Shiina Etsusaburō conducted the basic investigations (including river studies) for what became the Five-Year Manchukuo Industrial Plan of 1937. The Five-Year Plan aimed to develop electrical power resources, largely from hydropower development, for the establishment of regionally integrated heavy industrial centers linked to coastal urban areas that developed Manchukuo’s abundant mineral resources. As part of the plan, the Hydropower Construction Bureau was established with the explicit mission of “comprehensive river-use planning,” and began the construction of Fengman Multi-Purpose (*Hōman* 豐滿) Dam in 1937.²¹ While not fully completed, the dam began production in 1943 and was designed for irrigation, flood control, transportation improvement, and the industrial development of northern Manchukuo.²² In preparation for Fengman’s construction, Manchukuo engineers specifically visited Grand Coulee and Hoover Dams in 1937 as they were being completed in order to observe the latest mechanized construction techniques.²³ Kubota was also invited by Manchukuo’s economic bureaucrats to advise on Fengman, which was one of the centerpieces of their Five-Year Industrial

¹⁹ Engineers were an integral part of Japanese imperial expansion from the early twentieth century, beginning in Taiwan, Korea, and the Kwantung Peninsula; however, Japan’s establishment of Manchukuo and expansion into China intensified the mobilization of engineers across the empire. Aaron S. Moore, *Constructing East Asia: Technology, Ideology, and Empire in Japan’s Wartime Era, 1931-1945* (Stanford, CA: Stanford University Press, 2013). On communications, see Daqing Yang, *Technology of Empire: Telecommunications and Japanese Expansion in Asia, 1883-1945* (Cambridge: Harvard University Asia Center, 2011). On the South Manchuria Railway, see Yoshihisa Tak Matsusaka, *The Making of Japanese Manchuria, 1904-1932* (Cambridge: Harvard University Press, 2003).

²⁰ For example, river improvement projects such as the Liao River Improvement Project comprehensively coordinated flood control with transportation, agriculture, and industrial requirements. Urban planning in Beijing coordinated the preservation of the old city with the construction of a new one, which incorporated industrial, military, transportation, and wider regional development concerns. The Dadong Port Coastal Industrial Urban Zone combined port construction with modernist urban development, heavy industrial investment, and improved transportation infrastructure using electrical power from nearby Sup’ung (*Suihō*) Dam. Moore, *Constructing East Asia*, 102-149.

²¹ Naoki Rintarō, “Manshū no suiryoku denki jigyō,” *Suiri to doboku* 10, no. 11 (1938): 4.

²² *Ibid.*

²³ Kuga Tokubei, *Beikoku ni okeru kōentei shisatsu hōkokusho* (Tokyo: Denki kasen shinpōsha, 1937).

Plan. Kubota utilized this opportunity to propose to Manchukuo's leaders his most ambitious dam project yet—Sup'ung Dam.²⁴

Sup'ung Dam, built by Kubota and Chōchitsu engineers in cooperation with Manchukuo engineers, represented one of the heights of comprehensive development during the wartime era. It was constructed on the Yalu River between Korea and Manchukuo, and began transmitting electricity to both sides in 1941. The dam was expected to become this frontier region's "load center" for heavy industrial development.²⁵ It not only produced electricity for Japan's wartime chemical industries in Korea and Manchukuo but it was also coordinated with the construction of large ports on both sides of the river, a coastal industrial city south of Andong, new railway lines connecting to Manchukuo's natural resource sites, and regional river improvement projects.²⁶ Japanese officials declared that Sup'ung along with six other future dams on the Yalu would usher in the "Yalu River Era of Developing Asia" and even lead to more industrial "load centers" on China's Yellow and Yangtze Rivers.²⁷ Kubota elaborated this conception further while conducting comprehensive surveys for hydropower and industrial development in China, Hainan Island, Indochina, and the Dutch East Indies.²⁸ These studies occurred in parallel with the introduction of "national land planning" (*kokudo keikaku* 国土計画) among Home Ministry and Ministry of Commerce and Industry engineers in Japan and across the empire. Colonial engineers launched studies and plans to organize industrial sites, natural resource centers, rural and urban populations, and transportation/communications networks into integrated regional wholes.²⁹ Thus, comprehensive development became a pillar of Japan's pan-Asianist ideologies of "constructing Asia," liberating the continent from Western imperialism, and ushering in an era of Asian co-prosperity.

It was in this context of ongoing efforts at the comprehensive development of land and rivers, particularly within Japan's East Asian empire, that Japanese engineers became acquainted with TVA river basin planning conceptions during the 1930s. They were members of the World Power Conference (established in 1924) as well as its sub-commission, the International Commission on Large Dams (ICOLD, established in 1933), and Home Affairs Ministry engineers had been going abroad since the 1920s to acquire the latest information on

²⁴ Nagatsuka, *Kubota Yutaka*, 194-195.

²⁵ Harada Seiji, *Chōsen Manshū Ōryokukō Suiryoku hatsuden kabushiki gaisha Suihō hatsudensho kōji taikan: Sekai ichi denryoku kagaku no dendō* (Amagasaki: Doken bunkasha, 1942), 135.

²⁶ This was the Dadong Coastal Industrial Region plan. See Moore, *Constructing East Asia*, 135-148.

²⁷ Kodaira Keima, ed. *Shingishū shōkō yōran shōwa jūshichi nenkan* Repr., Seoul: Keijin bunkasha, 1990 (1942), 130. For example, Honma Norio, who led the construction of Fengman Multi-Purpose Dam in Manchukuo, stated that "total development of national land, total utilization of rivers through comprehensive technology" was a priority of the Manchukuo state. Honma Norio, "Manshūkoku suiryoku denki jigyo ni tsuite," *Kōgyō kokusaku* 2 (August 1939): 31. Unbon and Ūiju dams were begun on the Yalu River, but not completed due to the war's end—North Korea completed them in cooperation with the People's Republic of China.

²⁸ The Shilu Iron Mine project on Hainan Island, consisting of a port, railway facilities, a small hydropower station, and the mines was completed in the early 1940s and began exporting high quality iron ore to Japan in 1943. Kōno Tsukasa, *Kainantō sekiroku tetsuzan kaihatsushi* (Tokyo: Sekiroku tetsuzan kaihatsushi kankōkai, 1974). Construction began on a dam project for the development of an aluminum industry in Sumatra towards the end of the war. One of Kubota's immediate goals in the post-war was to win a contract from the Indonesian government to complete this project for his new development consultancy; his dream came true with the completion of Asahan Dam in 1983. Kubota Yutaka, *Sumatora denryoku kaihatsu narabini migi denryoku ni sokuō suru kōgyō ricchi chōsahyō*. Tokyo: 1943. Accessed at jacar.go.jp on August 22, 2015

²⁹ Daqing Yang, "Japanese Colonial Infrastructure in Northeast Asia: Realities, Fantasies, Legacies," in *Korea at the Center: Dynamics of Regionalism in Northeast Asia*, eds., Charles K. Armstrong, Gilbert Rozman, Samuel S. Kim, and Stephen Kotkin (Armonk, NY: M.E. Sharpe, 2006), 99-104

dam construction. In 1936, the US hosted the Second ICOLD Congress, which highlighted America's world-class achievements in multi-purpose dam construction such as Hoover Dam and Grand Coulee Dam, as well as the TVA dam projects in particular. Many Japanese delegates participated in this Washington D.C meeting and submitted essays on dam construction methods, design methods for penstocks, gates, turbines, and power stations, and new types of machinery for concrete laying and digging, thereby showing the advanced level of Japanese dam engineering to the world.³⁰ Japanese engineers were most impressed by the TVA's construction of dams to promote what they then translated as "comprehensive industrial development" (*sōgō-teki sangyō kaihatsu* 総合的産業開発) at Muscle Shoals, which included plans that coordinated river transportation, irrigation, urban and industrial water provision, the logging and fisheries industries, flood control, and social welfare as well. The TVA's plans to develop nitrate and aluminum production capacity for military purposes, while not neglecting other strategic uses of water, was especially attractive to Japanese government engineers pursuing similar strategic projects in Japan and its empire for total war mobilization.³¹

Yang Daqing notes that "national land planning" (and by extension, comprehensive development) was Japan's response to German *Raumordnung* ("spatial order") programs for checking the growth of large cities, distributing industrial zones, and protecting rural areas.³² National land planning, however, was integrated with what became labeled in 1940 as the "Advanced National Defense State" (*kōdo kokubō kokka* 高度国防国家)—transforming Japan and its empire into an autarkic, economically integrated, and rationally planned sphere for total war. This manifested itself in the 1937 Five-Year Manchukuo Industrial Plan discussed earlier, which divided Manchukuo into three regional heavy industrial/resource extraction zones centered on large dam development and transportation network integration—Sup'ung Dam for southern Manchuria to power the industrial zones of Dalian, Anshan, Fengtian, and Andong; Fengman Dam for northern Manchuria to power the large cities of Xinjing, Harbin, and Jilin; and Jingpo Lake (*Kyōhakuko* 鏡泊湖) Dam for eastern Manchuria.³³ National land planning emerged in other colonial contexts as well, such as Korea, and in 1940, the Konoe Fumimaro cabinet passed the "Outline of Economic Reconstruction of Japan, Manchukuo, and China" and the "Outline of National Spatial Planning," which formalized and expanded rational planning and distribution of industries, urban and rural centers, transportation, communications, and electricity networks, and natural resource centers to the entire Japanese empire.³⁴

What American TVA promoters preached and what many bureaucrats and engineers around the world were attracted to about the TVA was its balanced, multi-purpose approach to regional economic development. Japanese engineers and planners, however, incorporated TVA conceptions into existing national land planning efforts with the emphasis primarily being the construction of an advanced national defense state and a "New East Asian Order" in the empire. Thus, colonial and domestic comprehensive development efforts almost always had a military-industrial component to them and were geared more towards promoting rapid heavy industrial and natural resource development. The Tohoku Development and Promotion Plan perhaps most closely resembled the TVA. Beginning in 1936, this plan established industrial enterprises and factories to

³⁰ Hirose, "Gunju keiki to denryoku kensetsu kōji," 139-140.

³¹ Matsuura, "Senzen no kasui tōsei jigyo," 193, 194.

³² Yang, "Japanese Colonial Infrastructure," 100

³³ Sunaga Noritake, "Manshū ni okeru denryoku jigyo," *Rikkyō keizaigaku kenkyū* 59, no. 2 (2005): 97–98.

³⁴ Yang, "Japanese Colonial Infrastructure," 100-101.

develop strategic raw materials and an electrochemical industry in one of Japan's poorest regions. Modeled after the TVA, the Tohoku Development and Electrical Power Company (*Tōhoku Shinkō Denryoku Kabushiki Gaisha* 東北振興電力株式会社) unified the region's power grid and built eleven hydroelectric power stations to provide electricity to the Tohoku Industrial Promotion Company (*Tōhoku Kōgyō Kabushiki Gaisha* 東北興行株式会社) for the establishment of various industrial enterprises.³⁵ Forty-six enterprises ranging from vegetable oil pressing to aluminum refining were established.³⁶ Tase Dam was an example of one multi-purpose dam project that combined flood control, irrigation, water provision, and electricity production for the upper Kitakami River in Iwate Prefecture. The dam's main purpose, however, was to provide electricity for the Navy's planned artificial gas production complex and ultimately a coastal heavy industrial center in Ōfunato, Iwate that would utilize regional coal reserves transported by ship from Hokkaido for the war effort.

In fact, the construction of "comprehensive coastal industrial regions" (*sōgō rinkai kōgyō chitai* 総合臨海工業地帯) linked to large-scale dam construction became a distinguishing feature of wartime and especially post-war comprehensive development. These coastal regions centered around the development of high-capacity ports were linked to heavy chemical and industrial factories, increased urbanization, and expansive transportation connections to natural and agricultural resources. One of the first to be planned and partially developed was the Dadonggang (*Daitōkō* 大東港) Coastal Industrial Region along the mouth of the Yalu River near Andong in Manchukuo and Sinūiju in Korea. The region utilized Sup'ung Dam's electricity for port construction on both sides of the river and the development of heavy industrial zones, urban planning projects, and new transportation links.³⁷ Projects like Dadonggang and Ōfunato became the embryo of Japan's post-war development of coastal industrial regions all along the Pacific Ocean as part of its comprehensive national land development plans. Thus, in the end, while comprehensive development plans may have abstractly resembled TVA conceptions, it was more the case that TVA conceptions were incorporated into Japanese national land planning projects that favored heavy industrial development, urbanization, and militarization instead. TVA projects did indeed have heavy industrial components to them; however, they were usually centered on rural "comprehensive regional development" rather than, for example, "comprehensive coastal industrial zone" development.³⁸ This integrated linkage of heavy industrialized port cities and natural resource and agricultural resource with dam development distinguished Japanese "comprehensive development" from TVA conceptions.³⁹

Interestingly, US Occupation officials committed to the New Deal-TVA paradigm could not recognize the distinctiveness of the post-war Japanese terminology of "comprehensive development" (総合開発), often viewed as a direct translation of TVA vocabulary. Instead of "comprehensive," American officials

³⁵ Dinmore, "High-Growth Hydrosphere," 118

³⁶ Dinmore, "Concrete Results?," 12

³⁷ For more, see Moore, *Constructing East Asia*, 135-148; Koshizawa Akira, "Daitōkō no keikaku to kensetsu (1937-1945)—Manshū ni okeru mikan no dai kibo kaihatsu purojekuto," *Nihon dobokushi kenkyū happyō ronbunshū* 6 (1986): 223-234.

³⁸ The literature on the TVA is extensive. For a sample, see North Callahan, *TVA: Bridge over Troubled Waters* (New Haven: A.S. Barnes and Co., 1980) and Arthur E Morgan, *The Making of the TVA* (Amherst, NY: Prometheus Books, 1974).

³⁹ Post-war economists and proponents of the TVA model such as Tsuru Shigeto and Wada Koroku (translator of Lilienthal's *Democracy on the March*) erased this pre-1945 history of comprehensive development, thereby contributing to the narrative of post-war Japanese development as entirely new and progressive.

inconsistently translated *sōgō* as “multi-purpose,” “overall,” and “coordinated.”⁴⁰ In Japan, “comprehensive development” emerged as a flexible concept that in the post-war came to mean the state’s development of coordinated economic, cultural, and political policies to shape the physical environment into an organic system that promoted industrialization, economic growth, social welfare, and conservation.⁴¹ Hence, American planners, who emerged out of a context more hostile to state control and who always faced forces arguing for private initiative and state rights at home, were somewhat unfamiliar with Japanese statist planning discourse. However, the “comprehensive development” concept in Japan originated in “national land planning” and colonial infrastructure development in the context of total war mobilization and imperial expansion before 1945, and emerged once again in the post-war as a concept that emphasized state mobilization of the nation for heavy industrialization and high-speed economic growth rather than “balanced” regional and national development.⁴²

Kubota’s “Comprehensive Development” and Post-War Japanese Economic Cooperation

Kubota originally started planning and constructing dams in the 1920s purely for the provision of electricity to Nicchitsu’s enormous nitrogen fertilizer complex at Hamhŭng. However, his projects were also designed to enable the construction of an extensive chemical industry in and around Hamhŭng that not only produced fertilizer but also other carbide products, gunpowder, aluminum, metals, and synthetic oils.⁴³ With the beginning of the Changjin River Dam’s construction in 1933, Kubota began working with the Korea Governor-General’s regional and national economic plans, which required a percentage of Changjin’s electricity for use in industrial development projects throughout Korea.⁴⁴ In this case, transmission lines were built from Changjin’s power stations to Pyongyang and Keijō. Irrigation and flood control in the region were taken into consideration as well, however, these were not the central objectives. In this way, Kubota’s subsequent dam construction projects, which were different from TVA projects, were “comprehensive” in the sense of planning regional heavy industrial development (such as the Yalu River region around Sup’ung Dam discussed earlier) or regions that linked urban centers, heavy industrial factories, ports, railway and road networks, natural resource centers, and large-scale agriculture into strategically integrated wholes along the lines of existing efforts at “national land planning” and building the “advanced national defense state” in Japan and its colonies. Thus, as a result of this specific wartime experience, the “comprehensive development” plans Kubota promoted after the war to newly independent nations in Asia were also heavily geared towards heavy industrial,

⁴⁰ Kawakami Yukio, *Kokudo keikaku no henshen: Kōritsu to kōhei no keikaku shisō* (Tokyo: Kajima shuppankai, 2008), 44-45.

⁴¹ *Ibid.*, 2.

⁴² This is not to say that supporters of local and more balanced development were completely absent within the Japanese planning tradition. For example, Kawakami analyzes the history of Japanese “comprehensive national land planning” (*sōgō kokudo keikaku*) in terms of what he sees as a productive clash between more local conceptions grounded in “balance” and statist models rooted in “efficiency.” See *Ibid.* Post-war TVA proponents in Japan were likely strong supporters of “balance.” For more on these localist counter-traditions, also see Sato, “*Motazaru kuni*” *no shigenron*.

⁴³ Kubota Yutaka, “Chukyō ga neratta Suihō damu to wa,” *Mainichi shinpō* 6, no. 2 (Feb. 1951), 105.

⁴⁴ Kan, *Chōsen ni okeru Nicchitsu kontserun*, 157, 162, 165.

large-scale infrastructure, and natural resource development and quite conducive to what became known in the post-war Japan and around the world as high-speed economic growth or Japan's "economic miracle".

Speed, efficiency, and economy were the other components of Kubota's comprehensive development framework that he had learned from his long career in colonial Korea and Japan's wartime empire. This was all the more impressive considering the size and scale of his dams at the time. Kubota always selected river sites where the topography would do much of the work (e.g. rapid, steep drop-offs, narrow river sections). He also considered speed of construction, efficiency of materials delivery, ability to begin electricity production before the project's completion, and total construction cost versus rate of future revenue, among other factors. While this was common for all dam engineers, Chisso's precarious capital situation in the 1920s as a relatively new and upcoming enterprise required him to conceive projects that would immediately generate higher returns for its expensive chemical fertilizer factories. Colonial authorities and the powerful military services also made demands for immediate results and cost effectiveness, especially as Japan shifted towards total war footing in the 1930s and materials and money became increasingly scarce while energy requirements increased exponentially. Thus, Kubota's post-war emphasis on speed, efficiency, and economy in promoting rapid heavy industrial development in developing nations arose directly out of total war mobilization and wartime national land planning. These military-heavy industrial roots proved useful in attracting newly emerging developmental dictatorships in Asia where military leaders often took power.

Kubota used this wartime experience to distinguish his proposals from those of Western consultants. In his first post-war development proposal to Burma's new government in 1953, Kubota analyzed maps produced by an American consultant and seized on a site in Burma's east as the most promising since it could utilize the area's natural environment, thereby decreasing costs and enabling quick construction. Based on his experiences with Nichitsu in colonial Korea, he also provided rough forecasts of future fertilizer production after completion of the initial stage of power production, arguing that not only would there be savings from less imported fertilizer but increased rice production and therefore, more national revenue as well. Cheap electricity also meant savings from imported fuel and would enable further investment into exploiting Burma's rich natural resources. Invoking his record in Korea, he offered to "design any chemical plants...as well as any metallurgical plants such as aluminum, magnesium, titanium etc., which can consume surplus electricity" and utilize the region's rich mineral resources.⁴⁵ In the final proposal, he suggested cutting the American-proposed construction times by beginning partial power production midway through the building process, which would immediately generate revenue and save on interest payments and fuel imports. This was a technique he had also employed in colonial Korea.⁴⁶ In sum, for Kubota, a power plant was never thought of in isolation but was conceived in relation to "the country's future energy consumption and its conditions for developing industries to utilize that energy."⁴⁷ In contrast to wasteful, ill-fitting Western plans, he maintained, comprehensive projects should be grounded in the nation's specific economic and environmental conditions,

⁴⁵ Kubota Yutaka, "Tentative Ideas on Hydro-Electric Projects for Burma." November 3, 1953. Reel No. E'0217. Diplomatic Archives of the Ministry of Foreign Affairs, Tokyo, Japan.

⁴⁶ Kubota Yutaka, "Final Estimation for Design, Survey and Supervision." December 10, 1953. In Ibid.

⁴⁷ Kubota Yutaka and Yamaguchi Hitoaki, *Ajia kaihatsu no kiban o kizuku: kaigai konsarutanto* (Tokyo: Ajia keizai kenkyūjo, 1967).

mapped out in detail and planned for the long term. With appropriate planning, they could be efficient, quick, and cheap to construct, and stimulate growth throughout the economy.⁴⁸

The Post-War Re-constitution of Colonial-Wartime Development

The Japanese government put its stamp of approval upon Kubota's conception of comprehensive development when it incorporated the Balu Chaung project into a reparations treaty with Burma in 1954 as its centerpiece. Subsequent reparations treaties with the Philippines, Indonesia, and South Vietnam replicated Kubota's infrastructure-heavy, comprehensive planning approach, which in turn brought major profits to Japan's machine and construction industries and helped to establish its economic footholds in Southeast Asia. For example, Kubota used his colonial-wartime network of businessmen and bureaucrats from to help win an investigation contract for the Da Nhim hydropower project, a site he originally inspected during the wartime era and wanted to develop in the post-war. Similar to the case of Burma, Da Nhim power station and dam was then incorporated into a reparations treaty with South Vietnam, which earmarked a majority of the grants and loans to the multi-purpose project and tied them to contracts with Japanese companies such as Nippon Kōei, Kajima Construction, Hitachi, Toshiba, and other heavy machinery, plant, and construction companies. Throughout the lobbying process, Kubota appealed to President Ngo Dinh Diem's desire for rapid economic growth by proposing a comprehensive development project that would promote electricity production, the construction of a heavy industrial zone along the coast at Cam Ranh Bay, flood control in central Vietnam, and irrigation of the arid coastal plains area nearby. As evidence, he provided Diem with materials on his extensive record in colonial Korea of building dams such as Sup'ung dam and the heavy chemical complex at Hungnam.⁴⁹ Despite the fact that the countries receiving reparations were primarily agricultural, their leaders as well as many other leaders of the developing world were very attracted to the types of heavy industrial-focused comprehensive development projects Kubota offered.

While Japanese overseas development cooperation has since diversified towards forms of aid such as "human security," and the final Comprehensive National Land Plan in Japan itself was passed in 1998, infrastructure-centered aid projects tied to state planning still constitutes a significant portion of Japanese aid activity. Understanding the colonial-wartime background to comprehensive development highlights key aspects of this influential Japanese ODA framework such as the emphasis on heavy industrialization over agricultural and human development, the requirement for strong state-directed planning, and a commitment to massive infrastructure investment as the key to rapid, efficient development. Over the years, such colonial-wartime aspects have at times lent themselves to projects causing environmental destruction, massive

⁴⁸ For example, Sakaida Masanobu, Nippon Kōei's geologist at Balu Chaung who had worked at the Lake Toba hydropower project in Sumatra during the war, stated that in contrast to half-hearted American development programs such as the export of surplus agricultural products, Japan would transfer technology in a way that closely fit the country's specific conditions, utilizing her own experience of up and down industrial development from the Meiji era in order to help developing nations escape backwardness and thereby work together for Asian development. Sakaida Masanobu, "Hatsuden kōji wo tsūjite Biruma no jijō," *Keizai kyōryoku*, no. 41 (June 1960), 17.

⁴⁹ Nippon Kōei, "Introduction to Nippon Kōei" in *Tài liệu giới thiệu về Hãng Nippon Koei (Không rõ thời gian) Bộ Công chánh và Giao thông (1948-1966)*. Vietnam National Archives II, File Number 7123.

government corruption, the violation of basic human rights involving the forced transfer of large numbers of people from their homelands, and the privileging of state over local requirements. While some have criticized Japanese development cooperation for ignoring human rights, environmental, and basic human needs issues, others have claimed that Japan's infrastructure-oriented approach to development laid the groundwork for dynamic growth and the lifting of millions out of poverty throughout Asia.⁵⁰ As China succeeds Japan in offering similar big-budget, large-scale infrastructure project aid—most notably, dams—to the developing world, the problems associated with “comprehensive development” such as balancing local with national needs remain particularly relevant.

⁵⁰ For the critical view, see for example Sumi Kazuo, *ODA enjo no genjitsu* (Tokyo: Iwanami shoten, 1989). For the positive evaluation, see for example Koizumi Hajime, *Kaihatsu wa jigyō toshite toraeyō—Kubota Yutaka ni manabu kaihatsu kyōryoku no arikata* (Tokyo: Kaihatsu seisaku kenkyū kikō, 2008). Environmental and human rights assessments are now standard parts of Japanese ODA projects and Japanese ODA policy as a whole.

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JICA Ogata Sadako Research Institute for Peace and Development (JICA Ogata Research Institute)
10-5 Ichigaya Honmura-cho, Shinjuku-ku, Tokyo 162-8433 JAPAN