

# Common Resources and Public Lands in the Taming of the Kurobe River, 1920-1970

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## Abstract:

The completion in 1963 of Japan's 186-meter Kurobe No. 4 Dam served for many as occasion to celebrate the culmination of a decades-long process of taming the unruly Kurobe River of Toyama Prefecture for the greater public good. As mainstream accounts from this time of rapid economic growth construed it, the dam not only allowed electric utility companies to exploit the full hydroelectric potential of the Kurobe watershed, but it also promised a future of mass tourism in an alpine river valley that only mountaineers dared enter before the mid-twentieth century. Today, Kurobe No. 4 is one of Japan's largest energy projects and a tourist draw that lures one million visitors annually to the heart of Chūbu Sangaku National Park.

Behind this transformation of the Kurobe Valley into an “envirotechnical” system and popular destination lay a history of contending visions for water use that emerged after the area's earliest hydroelectric development in the 1920s. Debates revolved around fundamental questions relevant to studies of the commons: Whose, and what kind of, resource was the river? Who stood to benefit from the channeling of river water through dams toward national economic growth? Was the natural scenery of the upper Kurobe Valley a common cultural resource demanding state protection and the creation of national parkland? If so, how strict would such protection need to be? Finally, how would downstream valley residents, who used the river for irrigation, make their voice heard while outside interests maneuvered to dam it or cordon it off inside “public” national parkland? This paper will provide some of the first research in English on these mid-century debates, and it will reveal the complex negotiations required as planners and developers attempted to harness the Kurobe and repurpose it to serve the modern nation-state.

**Key Words:** Japan, Kurobe Dam, hydroelectric development, national park, public land

This paper examines the construction of Kurobe Number Four (Kuroyon) Dam in its historical context, emphasizing how the dam factored into modernization visions in early post-World War II Japan. Kuroyon today is Japan's tallest and most famous “multipurpose” dam project, and it stands as an important site to engineers, energy companies, state officials, tourists, and others. Its storied construction from 1956 to 1963 pushed the limits of Japanese civil engineering technology, entailed year-round operations in forbidding mountainous terrain, and claimed many lives. Once completed, its owner-operators in the Kansai Electric Power Company hailed it as a crucial component of Japan's power grid that would rationalize flows of

electricity during periods of peak consumer demand—thereby liberating Japanese from the brownouts of a backward past. Officials have lauded the dam as an example of successful “comprehensive development,” a planned form of resource development that is supposed to account for and satisfy the needs of all those whom the project affects. Kuroyon has also become a fixture of popular culture, and it receives a stream of visitors each year keen on viewing the massive dam during warmer months, when it is possible for crowds of tourists to travel deep inside the alpine landscapes of Chūbu Sangaku (Central Japanese Alps) National Park in Toyama and Nagano Prefectures. Despite growing public opposition to large dam projects since the 1990s, the story of Kuroyon to most Japanese is still one about early postwar society and technology banding together to tame the unruly Kurobe River, make it more predictable, and use its power to generate a better tomorrow.

Over the fifty years since its construction, Kurobe Number Four Dam has received increasing historical attention. Much of this attention has centered on human interest stories, especially those of the workers involved in the two-year construction of an access route for heavy construction machinery that tunneled through a mountain to the dam site. This “Kanden (Kansai Electric) Tunnel” bored through geological fracture zones, and it was one of the most hazardous portions of the Kuroyon project. The journalist Kimoto Shōji’s popular 1964 novel, *Kurobe no taiyō* (*The Kurobe Sun*) immortalized this episode of the project, and it inspired an even more popular 1968 film adaptation produced by and starring Mifune Toshirō and Ishihara Yūjirō. More recently, a 2009 two-part miniseries “reboot” of *Kurobe no taiyō* aired on the Fuji Television network and featured a cast of contemporary celebrities retelling the Kanden Tunnel legend to mark Fuji’s fiftieth anniversary. Along with *Kurobe no taiyō* and its adaptations, an episode of the sentimental, nostalgic documentary series *Project X* about Kuroyon aired on the public NHK network in 2000 and similarly focused on biographies of workers battling the elements to energize economic growth for the nation.<sup>1</sup> Less well-known but similarly proud accounts of the Kuroyon project come from corporate histories, which predictably focus attention on companies’ decisive roles in realizing the project.<sup>2</sup> Such approaches provide valuable information on project specifics but do not adequately examine the larger developmentalist context that informed the project’s planners and builders. Nor do they consider debates surrounding the impacts of power development along the Kurobe River.

Here I examine Kuroyon from a different angle, one that narrates the events leading to its construction within a larger history of early postwar developmentalism and competing visions of national and regional “modernization.” Analysis of this discursive history makes clear that a broad swathe of middle twentieth-century Japanese society supported some kind of development of the Kurobe River Gorge in the name of “progress” and economic vitalization. Domestic and overseas commentators at the time widely perceived Japan to be “underdeveloped,” after all, and in need of major infrastructural projects that would promote a rise to “first world” standards. Less clear, however, is what specific interest groups desired in the “modern” development of the

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<sup>1</sup> Kimoto Shōji, *Kurobe no taiyō: Nihonjin no kiroku* (Mainichi Shinbunsha, 1964); *Chikadō no taiyō made (Kurobe no taiyō)*, directed by Kumai Kei (Tohō Studios, 1968); *Kurobe no taiyō* (Fuji Television, 2009); *Purojekuto X: chōsensha-tachi – Gentō: Kuroyon damu ni idomu* (Nihon Hōsō Kyōkai, 6/27/2000).

<sup>2</sup> Corporate histories considered in this study include Kansai Denryoku (Kansai Electric) ed., *Kansai Denryoku gojūnenishi* (Osaka: Kansai Denryoku KK, 2002) and Hazami Gumi (Hazama Construction) ed., *Hazama Gumi hyakunenishi*, Vol. 2 (Tokyo: Hazama Gumi KK, 1989).

Kurobe River. Although a majority of discussants supported the proposed construction of Kuroyon, they emphasized different aspects of the hydroelectric project when articulating their notions of progress. A significant minority also opposed the dam and instead argued for state protections against hydraulic intervention. The dam site lay within a national park, which meant that its construction also provoked questions about how progressive it was to inundate world-class scenery in the name of stable electricity supplies. All parties involved in discussions about the future of the Kurobe River viewed the waterway as a precious “resource,” but they had difficulty agreeing on whose, or what kind of, resource it was. These spatial and temporal dimensions of the Kuroyon project illustrate how large dams were contentious matters even in supposedly consensus-driven Japan—just like everywhere else in the world.

### **Contending Developmental Visions for the Kurobe River Gorge before 1945**

Before World War II, participants in discussions about development in the Kurobe River Gorge agreed that it was a special place and precious resource, but they had trouble agreeing on what made it so special. Similarly, they all desired “progress” for the Kurobe region, but they articulated conflicting definitions of what that meant. The discussions were in many respects attempts to reconcile the atypical geography of the region with the very typical desire among developers to master nature for what they defined as the greater social good. Examination of how these conflicting interests evolved prior to 1945 reveals that electric power developers over time had to accommodate interest groups at the local, regional, and national levels before proceeding with construction. The negotiations among these groups illustrate the heterogeneity of modernizing visions in the region during the middle twentieth century.

Kuroyon is distinct from many other large dams in Japan, in that it lies within the extraordinary Kurobe-Tateyama region of Toyama Prefecture, part of Chūbu Sangaku National Park since 1934. Its setting within this remarkably scenic alpine landscape is in part what makes it the major tourist attraction it is today. Before Japan’s industrial revolution in the late nineteenth and early twentieth centuries, the region had been known primarily to religious pilgrims visiting Tateyama, one of Japan’s “three great sacred mountains.” Pilgrimage groups accessed the mountain by footpath and bypassed the Kurobe River Gorge altogether, despite its geographic proximity. Well into the twentieth century, most humans limited their usage of the Kurobe River to its lower reaches for transportation and irrigation water. The gorge was virtually impenetrable to preindustrial technologies because of its sheer walls, rapidly cascading river, and harsh alpine climate. Unlike many other watersheds during the early modern Tokugawa Shogunate (1600-1868), humans never established a timber industry in Kurobe, and the only local inhabitants who regularly entered the gorge were small groups of hot springs (*onsen*) users beginning in the middle nineteenth century. After Japan’s 1868 Meiji Restoration, the first humans to travel and write widely about the gorge were members of cosmopolitan European-style mountaineering societies, which proliferated in Japan after the 1890s and attempted to educate Japanese audiences about their empire’s alpine heritage. The published works of mountaineering authors like Yanagita Kunio and Kanmuri Matsujirō in the early twentieth century introduced readers across the country to the noteworthy features of the Kurobe

River Gorge, its flora and fauna, and its cascading waters. Japanese entrepreneurs paid particular attention to passages describing the Kurobe River's rapid flow.<sup>3</sup>

The first hydraulic development of the Kurobe River began during Japan's heavy industrialization in the 1920s and 1930s. Electric companies seeking to meet rising power demand, primarily from manufacturers and industries with military applications, turned their attention to Japan's rivers and until the late 1950s pursued a strategy of "hydro first, thermal second." This slogan meant the electric power industry would rely on hydroelectricity as its chief means of generation and use coal-fired thermal power plants to meet periods of peak demand, which in that pre-air conditioned era meant when river water levels dropped during dry seasons in the autumn and winter. Electric power magnates coveted rights to the Kurobe River for hydroelectric development, because they saw it as naturally ideal for their purposes. Over a short 86-kilometer course, the river plunged nearly 3,000 km from its source, and its position near the Sea of Japan coast meant it received copious rain and snowfall each year. The gorge along the river's upper reaches also provided a natural channel that made it one of Japan's most rapidly flowing.<sup>4</sup> By 1920, the Tōyō Aluminum Company secured development rights from the Japanese government and drew up the first official electric power development plan, which even at this early date anticipated the Kuroyon project by calling for four dams along the Kurobe River. The company's plans did not stop at power development, however; it also hoped to use hydroelectricity to power Japan's first aluminum refinery, it planned a railroad to provide access to the dam sites, and it purchased two hot springs along the proposed rail route out of long-term interest in promoting tourism. Already tourist development had become a side interest for power companies moving into Kurobe-Tateyama.<sup>5</sup>

In 1922, Osaka-based Nihon Electric Power acquired the Kurobe River rights from then financially-troubled Tōyō Aluminum, updated the 1920 electric development plan, and proceeded quickly to construct the four proposed dams. Between 1927 and 1940, three of the four dams saw completion: the 50,700 KW Kurobe Number One (Yanagawara) Dam in 1927, the 72,000 KW Kurobe Number Two (Koyadaira) Dam in 1937, and the 81,000 KW Kurobe Number Three (Sennindani) Dam in 1940. By 1937, a supply railroad, the forerunner to today's narrow-gauge Kurobe Gorge Railroad, extended 21 kilometers into the gorge from the hot springs town of Unazuki to the then-remote outpost of Keyakidaira near the site of the Number Three Dam. Only the interruption of war with the Allied Powers and its labor and material requisitions halted construction of Kuroyon. In 1941, when Nippon Electric amalgamated into the government's wartime electric power monopoly, Nippon Hassōden, the company had successfully initiated the transformation of the Kurobe River into an "envirotechnical system,"

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<sup>3</sup> Murakushi Nisaburō, "Chūbu sangaku kokuritsu kōen no seitei," Part 1, *Keizai shirin*, December 2002, 50-51. On the wider phenomenon of European-style mountaineering in Japan, see Karen Wigen, "Discovering the Japanese Alps: Meiji Mountaineering and the Quest for Geographical Enlightenment," *The Journal of Japanese Studies* 31:1 (Winter 2005), 1-26.

<sup>4</sup> Kansai Denryoku, 388.

<sup>5</sup> Murakushi (2002), 53-55.

one where dams diverted and channeled river flows and where construction processes required human management of forests, rock formations, and other elements of the natural landscape.<sup>6</sup>

Yet the go-fast development approach of Nippon Electric did not simply run roughshod over local inhabitants of Kurobe-Tateyama and Toyama Prefecture. The dam projects provoked divisions in public opinion over the nature of Kurobe-Tateyama's modernization that persisted through the war and into the years of the Kuroyon project. The earliest local resistance came from a group of twenty-six agricultural villages downstream from the Number One Dam that depended on Kurobe water for irrigation. Construction on the supply railroad and at the dam site in Yanagawara between 1923 and 1927 released debris and silt from crushed rocks into the water, creating the Kurobe's first industrial pollution incident. Eventually, the Toyama prefectural government investigated the case, and Nippon Electric offered to pay the villagers ¥250,000 in compensations for damages. By 1929, the village resistance movement grew into a formal Kurobe Gorge Conservation League, which voiced commitment to preserving the natural scenery of the gorge. The growth of this resistance shocked Nippon Electric, and it moved more cautiously with its subsequent dam projects.<sup>7</sup>

Beyond this movement, local and prefectural opinions varied along a spectrum regarding the hydroelectric development of the Kurobe River. Some argued vociferously on the side of Nippon Electric, such as local mountaineer Yoshizawa Shōsaku. Yoshizawa in a 1930 article for the journal *Kokuritsu kōen* (*National Parks*) believed that scenic and hot springs tourism was the future for his region, and that formerly remote portions of the Kurobe River Gorge needed to be opened to mass tourism through railroads, flood control, and hydroelectric power stations. Degradation of the landscape was a necessary evil in the name of modernizing the region and acquainting Japanese and overseas visitors with the Kurobe-Tateyama region.<sup>8</sup> Groups like the Kurobe Gorge Conservation League argued more for a conservationist approach that would harmonize landscape protection and power development. They were not against all development and saw potential value in rural electrification and the supply railroad as future means of bringing tourists to their region, but they feared degradation of the gorge more than Yoshizawa. A prefectural-level investigative committee on scenic and natural monuments also cautioned against Nippon Electric's aggressive pursuit of hydroelectric development. Based on the German-inspired 1919 Law for the Preservation of Historic, Scenic, and Natural Monuments, the committee believed that the Kurobe River Gorge was a cultural property and that the "modern" thing to do was to protect it against encroachment by declaring it a national monument.<sup>9</sup>

Governmental bodies also divided on the wisdom of hydroelectric development along the Kurobe River. At the prefectural level, the Toyama assembly debated throughout the 1920s and into the 1930s on whether to regulate the pace of dam and railway construction, and the governor in 1927 went so far as to petition the national Ministry of Home Affairs to protect the gorge

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<sup>6</sup> Murakushi (2002), 53-56. On the nature and construction of envirotechnical systems, see Sara B. Pritchard, *Confluence: The Nature of Technology and the Remaking of the Rhône* (Cambridge, MA: Harvard University Press, 2011).

<sup>7</sup> Murakushi (2002), 58-60.

<sup>8</sup> Yoshizawa Shōsaku, "Kurobe keikoku no keishō to suiden kōji mondai," *Kokuritsu kōen* 2:1 (Jan. 1930), 20-21; Murakushi, 70-71.

<sup>9</sup> Murakushi (2002), 68-69; Thomas Havens, *Parkscapes: Green Spaces in Modern Japan* (Honolulu: University of Hawaii Press, 2009),

under the 1919 Monuments Law. Other elements of the prefectural administration, notably the Public Works Bureau and the Electricity Bureau, sided with Nippon Electric and business interests based in Toyama City and other commercial centers.<sup>10</sup>

The national government also displayed ambivalence about power development in these interwar years, and the bureaucratic ministries particularly clashed along fault lines of administrative interest. The Ministry of Telecommunications and Transportation, which oversaw electric power distribution and railroads until 1949, adamantly backed hydroelectric damming along the Kurobe River Gorge. The intensification of war on the Asian continent seemed to bolster its case, as military production required unprecedented amounts of electricity. Meanwhile, the Ministry of Forests and Fisheries cautioned against what unregulated development would do to the gorge's forests and soil, and the Ministry of Education in charge of enforcing the Monuments Law ardently opposed unregulated dam construction in the 1930s.<sup>11</sup> The Ministry of Home Affairs, Japan's most powerful ministry until its dissolution in 1947, entered into the debates especially as the country's system of national parks came into being in the early 1930s. The 1931 National Parks Law provided for the establishment of Japan's first six national parks in 1934, one of which was Chūbu Sangaku. Landscape preservation in the Kurobe River Gorge, as well as the larger Kurobe-Tateyama region, fell under the jurisdiction of the Ministry of Home Affairs. As *volkisch* notions of "Yamato" identity took hold in Japanese society during the 1930s, officials in the Ministry's Hygiene Bureau strove to limit "bourgeois" industrial development in national parklands, preferring instead to reserve such spaces as spiritual training grounds for youth groups to build physique and character. Although the Kurobe River Gorge still proved too hazardous for regular youth group visits, neighboring Tateyama saw much use as a development center for "human resources" in the early 1940s.<sup>12</sup> In many respects, then, the national government mirrored arguments at the local and prefectural levels about power development and to what extent Nippon Electric's style of modernization benefited or degraded the Kurobe-Tateyama region.

The most dogged advocates for preservation of the gorge were members of the Tokyo-based National Parks Association, a quasi-official policy group formed in 1927 that brought together elite-level naturalists, geographers, writers, tourism promoters, and others who drew inspiration from the United States National Parks System. Members like the outspoken landscape architect Tamura Tsuyoshi, who also served in the Hygiene Bureau of the Ministry of Home Affairs, desired national parks as means of preserving landscapes of exceptional natural beauty for the promotion of healthy physiques and tourism-based economic development.<sup>13</sup> The group played an important part in publicizing national parks and securing Imperial Diet approval for the National Parks Law in 1931. It also scored limited victories against Nippon Electric in the 1930s during the planning stages of the Kurobe Number Two and Number Three Dams. Since the late 1920s, Tamura and other Association members had been sponsoring critical investigations and conferences about the "Kurobe landscape problem," but after the Kurobe River Gorge gained protected status as national parkland in 1934, they managed to force

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<sup>10</sup> Murakushi (2002), 62, 72-74.

<sup>11</sup> Murakushi (2002), 76.

<sup>12</sup> Fujino Yutaka, *Kyōsei sareta kenkō—Nihon fashizumu ka no seimei toshintai* (Tokyo: Furukawa Hirobumi Kan, 2000), 138-142, 156-161.

<sup>13</sup> Havens, 66, 71.

revisions of the company's construction plans. Nippon Electric agreed to regulations on construction debris, downstream relocations of the dam sites away from key scenic spots in the gorge, reductions in river water use for power generation, and periodic releases of water during dry months to maintain the gorge's scenic appeal. Although the Number Two and Three Dams still went up, electric power developers had to make concessions to the National Parks Association and other groups with alternative visions for the Kurobe River Gorge's future.<sup>14</sup>

By the time of Japan's entry into World War II, the lines of division had been drawn among competing interests in the Kurobe-Tateyama region. Dam construction in the Kurobe region slowed to a trickle after 1941, albeit more because of material and labor shortages than because of the National Parks Association's limited successes. The state-backed Nippon Hassōden, which absorbed Nippon Electric, only managed to complete two small dams on a branch of the Kurobe in 1942 and just after the war in 1948.<sup>15</sup> Yet most of the major interest groups survived the war years and returned to struggle over the Kuroyon project in the 1950s. Despite the tremendous momentum that would build up behind large dam construction in early postwar Japan, Kuroyon invited controversy that revisited themes from pre-1945 debates.

### **Large Dams as Multipurpose Modernization after 1945**

Although conceptual planning for Kuroyon stretched back to Tōyō Aluminum's plans in the 1920s, project leaders began designing and building it in earnest during the early post-World War II years, a defining moment in the history of Japanese developmentalist thought. This intellectual context requires explanation, since it crucially informed supporters and opponents of Kuroyon as much as the historical record of pre-1945 power development in the Kurobe River Gorge did. The spirit of high modernism and a desire for socioeconomic progress pervaded discourse in 1950s and 1960s Japan as it rebuilt from traumatic defeat and worked toward a postwar reinvention. Large dams like Kuroyon became integral features of this reconstruction.

Many policy commentators and intellectuals immediately after 1945 "embraced defeat," to borrow John Dower's phrase, as an opportunity to cure what they saw as chronic ailments afflicting Japanese society and culture. As they diagnosed pathologies behind the disastrous wartime experience, they pointed less often to ill-considered aggression or the mounting costs of an overstretched empire than to the "backwardness" of their fellow Japanese and the "underdevelopment" of the national landscape. One prominent line of reasoning argued that Japan as a small archipelagic nation suffered from a dearth of natural resources and a mushrooming population. It was a "have-not" country that failed to mobilize the material resources necessary to stand up to better-endowed "haves" like the United States, the British Empire, and the Soviet Union. Moreover, Japan's population faced Malthusian pressures and languished at a chronically depressed standard of living. Such low living standards arrested the development of Japanese as rational individuals and had left them susceptible to seductive, spiritualist arguments for military expansion. Although wartime leaders sought fixes for Japan's resource vulnerabilities and demographic situation in the conquest of continental Asia, their

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<sup>14</sup> Murakushi (2002), 83-84.

<sup>15</sup> Kansai Denryoku, 388.

counterparts after defeat and loss of empire focused their attention on the domestic landscape. As they saw it, the emergent Japan of the postwar years would necessarily have to exploit natural resources more efficaciously and manage the use of land and water carefully to maintain society in peacetime. Such an approach would be crucial in promoting strong economic growth, boosting living standards, and in the long term, achieving international recognition as a “first-rate country” caught up to the developed industrial world.<sup>16</sup>

To counter the backwardness and underdevelopment of old, technocrats and technicians alike hoped to engineer a “cultural” nation grounded firmly in science and high technology. As they saw it, technological inputs into Japan’s landscape and population would deliver better material and human resources for national economic growth. Accordingly, much of postwar Japanese history revolved around technological achievements. Science education and technical literacy had been important components of prewar society, but they received renewed attention after 1945. Entrepreneurs and established Japanese corporations strove to break into export markets with high-technology manufactures like transistor radios and economy cars. Social bureaucrats urged domestic consumers and homemakers to purchase electric household appliances in the name of better hygienic practices and modern living.<sup>17</sup> The opening of the Japan Atomic Energy Research Institute at Tōkaimura in 1956, as well as the surging popularity of Osamu Tezuka’s *Astro Boy* (lit. “Mighty Atom,” *Tetsuwan Atomu*) manga, directed public attention toward the possibilities of “atoms for peace” just a decade after the Hiroshima and Nagasaki bombings. At Japan’s great postwar coming-out party, the 1964 Tokyo Olympics, athletes competed inside futuristic Westernized facilities while tourism promoters directed visitors to ride monorails and bullet trains as they rediscovered Japan. Technonationalist definitions of progress, which equated technological achievement with national grandeur, recast Japan’s peacetime national identity after World War II.<sup>18</sup>

Though not as infamous as its nuclear power industry or as spectacular as its first Olympic games, Japan’s large “multipurpose” dams stand as some of the most ubiquitous monuments to this early postwar technonationalist spirit. Such dams began appearing mostly after 1945, and by the late 1990s, they blocked and diverted water from 97 percent of major rivers at an annual operating cost of ¥200 billion.<sup>19</sup> The World Commission on Dams in 2000 estimated that Japan had constructed 2,675 of the world’s 47,655 large dams, or 5.6 per cent—a

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<sup>16</sup> Recent works detailing these arguments include Eric G. Dinmore, “A Small Island Nation Poor in Resources: Natural and Human Resource Anxieties in Trans-World War II Japan” (Ph.D. diss., Princeton University, 2006); Scott O’Bryan *The Growth Idea: Purpose and Prosperity in Postwar Japan* (Honolulu: University of Hawaii Press, 2009); and Satō Jin, “*Motazaru kuni*” *no shigenron--jizoku kanō na kokudo o meguru mō hitotsu no chi* (Tokyo: Tokyo University Press, 2011). On Japan’s “embracing defeat” after World War II, see John Dower, *Embracing Defeat: Japan in the Wake of World War II* (New York: Norton, 1999).

<sup>17</sup> On the veneration of science in early twentieth-century Japan, see Hiromi Mizuno, *Science for the Empire: Scientific Nationalism in Modern Japan* (Stanford, CA: Stanford University Press, 2009.) On “modern living” campaigns, see Sheldon Garon, *Molding Japanese Minds: The State in Everyday Life* (Princeton: Princeton University Press, 1998), Chapter 5. Also see the final two chapters of Andrew Gordon, *Fabricating Consumers: The Sewing Machine in Modern Japan* (Berkeley, CA: University of California Press, 2011).

<sup>18</sup> This definition of “technonationalism” comes from Gabrielle Hecht’s pathbreaking work, *The Radiance of France: Nuclear Power and National Identity after World War II* (Cambridge, MA: MIT Press, 2000).

<sup>19</sup> Alex Kerr, *Dogs and Demons: Tales from the Dark Side of Japan* (New York: Hill and Wang, 2002), 26. Also see Alex Kerr, *Inu to oni – shirarezaru Nihon no shōzō* (Tokyo: Kōdansha, 2002).



strikingly large share for a country around the size of Germany or California. Only China, the United States, and India had built more.<sup>20</sup>

These prolific “multipurpose” dam projects factored crucially into national policy during their high tide in the late 1950s through the 1970s, and although dam construction has ebbed since the 1990s, many projects planned in the early postwar decades are still underway. The dams bore the “multipurpose” label, because they were designed to perform several functions at once and satisfy multiple interest groups. In the late 1940s, Japan experienced a series of damaging floods exacerbated by wartime deforestation and resultant soil erosion, and the public demanded greater flood control measures. Beyond this immediate problem, backers of large dams also justified their necessity with a number of modernizing goals, including provision of water for irrigation and industrial applications, improved river transport, promotion of rural development, and, of course, hydroelectric generation. Socioeconomic progress out of backwardness, as they saw it, came from higher living standards and gross national product, which in turn required unprecedented levels of energy consumption. In the early years of postwar reconstruction, Japan suffered from frequent electricity shortages, which lent a sense of urgency behind calls for large dam construction.<sup>21</sup> Moreover, those who continued to perceive Japan as a have-not country after 1945 re-branded and commodified river water as one of the country’s few abundant “resources” and forcefully promoted hydroelectricity to offset dependence on imported energy.

The key concept underpinning postwar optimism about the socioeconomic benefits of large dam construction was “comprehensive development” (*sōgō kaihatsu*), an idea that originated in interwar Europe and North America but established itself firmly in Japan by the 1930s. Its intellectual roots lay in British industrial location policy, German spatial plans, Soviet five-year plans, and American New Deal programs like the Tennessee Valley Authority. As might be inferred from these policy models, “comprehensive development” referred to a style of resource exploitation and management where state agents would plan and oversee development from a supposedly detached, scientific perspective and with the best interests of national economic production and total war preparation in mind.<sup>22</sup>

Self-styled “renovationist” bureaucrats in the 1930s and 1940s saw this planning approach as a rapid means of building heavy industry and military might that circumvented the interests of profiteering private capitalists. Japanese technicians, industrialists, and construction firms in Manchuria especially worked to implement comprehensive development under the aegis of military planners and renovationist administrators like Kishi Nobusuke, who went on to become prime minister during the early years of the Kuroyon project. Manchuria functioned as a colonial laboratory for all manner of experiments in state-guided economic planning, and comprehensive development there often took concrete form in large-scale public works

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<sup>20</sup> World Commission on Dams, ed., *Dams and Development: A New Framework for Decision-making* (London: Earthscan Publications, 2000), 370. Even before the Three Gorges Dam, this report estimated that China far surpassed all other large dam builders with about half of the world’s total.

<sup>21</sup> Gotō Kunio, “The National Land Comprehensive Development Act,” in *A Social History of Science and Technology in Contemporary Japan, Volume 3: High Economic Growth Period 1960-1969*, ed. Nakayama Shigeru, Gotō Kunio, and Yoshioka Hitoshi (Melbourne: Trans Pacific Press, 2006), 339.

<sup>22</sup> See Matsui Haruo, *Nihon shigen seisaku* (Tokyo: Chikura Shobō, 1938).

projects.<sup>23</sup> Perhaps the most famous product of wartime comprehensive development experimentation was the Suihō (now Sup'ung) Dam on the Yalu River between Manchuria and Korea, which when completed in 1941 stood as the largest in Asia and the second largest in the world. Comprehensive development saw less rigorous application on the home front, only really appearing in the form of civil defense preparations as the war turned against Japan. Yet the idea had lodged itself firmly in the minds of Japanese policy intellectuals by 1945, and it predisposed many of them to big infrastructural projects in the postwar years.<sup>24</sup>

In the late 1940s, Japanese commentators on natural resource policies voiced renewed enthusiasm for comprehensive development models, and particularly the Tennessee Valley Authority. The everyday presence of Americans in Japan during the Allied Occupation (1945-1952) directed public attention toward the TVA and its professed efforts to reconcile the goals of technocratic development with the grass-roots desires of local residents. Officials in the Natural Resources Section (NRS) under the Supreme Commander of the Allied Powers, General Douglas MacArthur, actively promoted the TVA as part of President Harold S Truman's "Point Four" Program of technical assistance to developing countries. American resource economists in the NRS like Edward A. Ackerman publicized the TVA model as a democratic alternative to "totalitarian" Soviet-style projects and as Japan's only real hope for escaping poverty and potential communist revolution. Yet even without the American presence, many Japanese since before the war had been eager to fulfill their country's "hydroelectric potential," and the loss of overseas territories and uncertainty over fossil fuel supplies after 1945 reinforced their zeal to build large dams. Japanese progressives attached to the Occupation-era government's powerful Economic Stabilization Board (ESB) particularly shared Edward Ackerman's TVA enthusiasm, and they hoped for implementation of similar infrastructural projects scaled down to Japanese geographical conditions. The Harvard-trained economist and onetime ESB member Tsuru Shigeto established a TVA Research and Discussion Group, which by 1949 drew up a series of comprehensive development plans and spearheaded the official translation of TVA Chairman David Lilienthal's propagandic *TVA: Democracy on the March*. By the end of the 1940s, an influential network of Japanese and American TVA boosters had risen to national prominence, and they placed high hopes in the power of properly channeled river water to effect transformative socioeconomic modernization.<sup>25</sup>

In the decade that followed, the TVA model entered into national legislation, paving the way toward large-scale infrastructural projects in Japan's watersheds. The National Diet passed the Law on Comprehensive National Land Development during the height of Japanese enthusiasm for the TVA in 1950, and it compelled state officials to guide resource development at the newly-coined "special area" level alongside familiar national, prefectural, and regional levels that had featured in comprehensive development proposals since the war. This idea was the brainchild of Economic Stabilization Board members, many of whom had taken part in designing the TVA Research and Discussion Group's watershed development planning. As a consequence, "special area" from the outset connoted comprehensive planning centered on

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<sup>23</sup> Louise Young, *Japan's Total Empire* (Berkeley, CA: University of California Press, 1998), especially Part III.

<sup>24</sup> Mikuriya Takashi, *Seisaku no sōgō to kenryoku—Nihon seiji no senzen to sengo* (Tokyo: Tokyo Daigaku Shuppansha, 1996), 222-226, 229-236.

<sup>25</sup> See Eric G. Dinmore, "Concrete Results? The TVA and the Appeal of Large Dams in Occupation-era Japan," *The Journal of Japanese Studies*, 39:1 (Winter 2013), 1-38; Satō, 83-93.

multipurpose dam projects. Specific comprehensive development plans based on the law that emerged in ensuing years assigned priority to “special areas” over other levels of development, and large dams became the centerpiece of 1950s land and water-use planning.<sup>26</sup>

This emphasis on “special areas” came about for three main reasons. First, Japan’s provision of supplies and logistical support to United Nations forces in the Korean War (1950-1953) had spurred an economic recovery that lifted the country out of its immediate postwar devastation. The recovery removed much of the urgency that had been behind calls for state-guided technocratic development plans at the national level.<sup>27</sup> Second, after Prime Minister Yoshida Shigeru’s dissolution of the ESB in 1952, no government body had sufficient political authority to coordinate all four levels of planning as designated in the Law on Comprehensive National Land Development. Partly as an outgrowth of this political situation, no national-level development plan even appeared in Japan until 1962. Finally, many of the Diet members who originally voted for the 1950 law did so to use “special area” planning as a means of funneling pork and dam construction jobs to their home districts. They evinced little of the TVA boosters’ enthusiasm for comprehensive development beyond its use as a generator of local and regional economic stimulus.<sup>28</sup>

The Kuroyon site was never itself designated as a “special area” under the 1950 law, because its location within Chūbu Sangaku National Park gave it a distinct legal status. Yet the Kuroyon project took shape at a time when the Japanese government had clearly shown great interest in replumbing the national hydrosphere in the name of postwar technonationalist reinvention. By December 1951, the Ministry of Construction and the Construction Committee of the Diet had completed negotiations with local authorities and designated nineteen “special areas” for development, which accounted for one-third of all Japanese territory. Thirteen of the nineteen areas accounted for roughly two-thirds of the country’s undeveloped hydroelectric potential.<sup>29</sup> Thus the government backed hydraulic engineering in a large majority of Japan’s watersheds during the 1950s, and it gave its blessing to private-sector interests to develop Kurobe and most other major watersheds outside the “special areas.” The directors of the Kuroyon project in the Kansai Electric Power Company operated within an extraordinarily favorable historical context, as the TVA-inspired Law on Comprehensive National Land Development became a legal basis for pouring concrete over the national landscape.

### **Kuroyon’s Reconfiguration and “Modernization” of the Kurobe River Gorge**

The Kuroyon project arose from a thirty-year history of hydroelectric and infrastructural development in the Kurobe River Gorge, and it had immediate inspiration in the widespread appeal of large multipurpose dams and comprehensive development as technological cures for the socioeconomic ills of early postwar Japan. Despite these familiar contexts, the immense scale and expense of Kuroyon still stunned most observers at the time of its construction, and the wholesale commercialization and tourist development that took place in its wake indelibly

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<sup>26</sup> Gotō, 337.

<sup>27</sup> Gotō, 337.

<sup>28</sup> Mikuriya, 233.

<sup>29</sup> Okada Tomohiro, *Nihon shihonshugi to nōson kaihatsu* (Kyoto: Hōritsu Bunkasha, 1989), 271-272.

reconfigured the geography and nature of the Kurobe-Tateyama region. Kuroyon symbolized an ultimate victory for the developmentalist vision of electric power companies and their government backers over the preservationist visions of certain local resident groups and the National Parks Association. Though not part of any “special area” comprehensive development plan, Kuroyon became a famous monument to early postwar technonationalism. Its backers touted the efficacy of multipurpose dams as a means of bringing disparate elements of Japanese society together under the banner of harnessing nature for economic growth.

In 1951, one year after the Law on Comprehensive National Land Development helped generate a wave of large dam projects throughout Japan, the Kansai Electric Power Company (KEPCO) zealously began planning the Kuroyon project. The newly-incorporated company was one of nine regional companies that emerged after U.S. Occupation officials induced a break-up of the Nippon Hassōden monopoly. KEPCO inherited many of the former operations of Nippon Hassōden in the Osaka-Kyoto-Kobe region of western Honshu, and it also secured Hassōden’s development rights to the Kurobe River in 1952. A rival Hokuriku Electric Power Company was headquartered in Toyama City, far closer to the Kurobe River than Osaka-based KEPCO, and many in Toyama Prefecture resented that a firm from outside the region had been awarded development rights. Yet the Kuroyon project since its inception in the 1920s had always been tied to the idea of supplying increased power to the industrial belt surrounding Osaka, and blackouts there during the Occupation era and the Korean War-era economic boom galvanized project leaders to move forward with construction.<sup>30</sup> The Japanese electric power industry by the early 1950s had already begun a shift toward relying on imported Persian Gulf oil as its primary fuel for power generation, but KEPCO and other providers still saw large hydroelectric projects as vitally necessary means of maintain stable supplies to customers during periods of peak demand. KEPCO planners had high hopes for hydroelectricity from the Kurobe River to play this important supporting role, but they were concerned that none of the existing dams on the river had reservoirs necessary for regulating water flow. The dams relied on cascading water to spin turbines for generation, but water levels usually dropped forty percent during dry autumn and winter months. KEPCO designed Kuroyon’s enormous dam wall and reservoir as a means of ending permanently the “problem” of seasonal water level fluctuations and providing predictable, standardized amounts of power throughout the year.<sup>31</sup>

Soon after plans for construction became public knowledge, KEPCO planners had to negotiate with opposition groups that could trace their roots to the 1920s and 1930s. The difficulties dam builders encountered in finding labor and material supplies during World War II had drastically slowed the pace of dam construction, and as a result, most interwar debates on hydroelectric development were put on hold. However, KEPCO’s fervor for Kuroyon in the 1950s revived the opposition groups, and the project did not move forward until 1956. One center of resistance came from a group of 2,000 farmers along the downstream portions of the Kurobe River, who organized out of fear that Kuroyon and its large reservoir would lower water temperatures by taking in sub-surface water for power generation and then releasing it into the main river. Colder temperatures would render river water unusable for wet-rice agriculture and

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<sup>30</sup> Murakushi Nisaburō, “Chūbu sangaku kokuritsu kōen nai no kurobe daiyon hatsudensho kensetsu keikaku to hantai undō—sengo kōki no kokuritsu kōen seido no seibi, kakuju (4),” *Keizai shirin*, March 2009, 291-293.

<sup>31</sup> Kansai Denryoku, 388; Toyama-ken, ed., *Toyama kenshi—tsūshi hen*, Vol. 7 (Toyama-shi: Toyama-ken, 1983), 428-430.

hamper food production. Farmers also feared that the alluvial soils on which they relied for greater soil fertility would wind up trapped in the reservoir. This farmers' movement remained active until 1955, when KEPCO in negotiations mediated by Toyama Prefecture agreed to place Kuroyon's intake gate closer to warmer surface layers of the reservoir and to underwrite regular deliveries of alluvial soil to downstream Toyama farmers for ten years. In the end, KEPCO and the Toyama government managed to buy the assent of farming communities to Kuroyon's reconfiguration of the Kurobe River.<sup>32</sup>

Another center of resistance, and one more bitterly opposed to Kuroyon than the farmers' group, was Tamura Tsuyoshi's National Parks Association and allied conservationists like Ishigami Koshirō and the mountaineer Kanmuri Matsujirō. Ishigami and Kanmuri co-authored a position paper in 1955 that explained reasons for their hard-set opposition to the Kuroyon project. They argued that the Kurobe River Gorge was a world-class place of scenic beauty, the core of Chūbu Sangaku National Park, and the site of Japan's biggest rapids. It truly deserved government protection as national parkland, and the proposed reservoir behind the Kuroyon Dam would horrifically violate this protected space by inundating globally significant portions of the gorge. The authors even questioned why KEPCO and its backers in the prefectural and national government saw such value in large dam projects at a time when advanced societies around the world were shifting their focus to nuclear power plants.<sup>33</sup>

In light of the wrangling over Nippon Electric's Kurobe Number Two and Number Three Dams in the 1930s, KEPCO project planners had to take this high-placed opposition seriously. KEPCO worked in compliance with the National Parks Law and applied for construction permission to the Welfare Ministry, which had inherited oversight of the national parks system from the defunct Ministry of Home Affairs in December 1955. The Welfare Ministry granted permission in June 1956, under fourteen conditions based in part on ideas from National Parks Association members. These conditions included pledges to leave the left bank of the river untouched, build structures on the right bank that would allow for scenic views of the "unspoiled" left bank, and release more water through Kuroyon during the warmer months of June through October to maintain the appearance of a fast flowing river. Additionally, KEPCO pledged to construct Kuroyon's power stations underground and out of public view, create facilities for Chūbu Sangaku National Park alongside Kuroyon, ensure against all dumping of construction wastes, and grant public use of all supply railroads or other access routes after the completion of the project. Clearly, the conditions that the Welfare Ministry laid out were premised on the prospect of large-scale tourism in the Kurobe-Tateyama region. By agreeing to these conditions, KEPCO made accommodations to bolster Kurobe River Gorge tourism and defuse arguments that Kuroyon would destroy Chūbu Sangaku's world-class scenery. By 1956, the National Parks Association officially dropped its steadfast opposition to Kuroyon.<sup>34</sup>

Thus by the time KEPCO launched the Kuroyon project, it had managed to co-opt its opponents by agreeing to build an infrastructure for mass tourism alongside its hydroelectric facilities. Doing so made Kuroyon a "multipurpose" project that appealed to local boosters eager

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<sup>32</sup> Kansai Denryoku, 391; Murakushi (2009), 291-292.

<sup>33</sup> Murakushi (2009), 302-303.

<sup>34</sup> Murakushi (2009), 313-318, 354-355; Kansai Denryoku, 390. An additional reason for the underground power station was to shield it from the rockslides, heavy snowfalls, and avalanches that regularly occurred in the area.

to attract business and tourist money and met moderate conservationists halfway by providing unprecedented access to deep interior regions of Chūbu Sangaku National Park. Apart from the farmers' group, no other grass-roots resistance in the region ever attempted to halt the Kuroyon project; the allure of tourist-centered economic development proved too strong. What is more, the Kuroyon site lay in the middle of state-owned national parkland remote from human settlements. KEPCO never had to wrestle with knotty issues of compensating local residents for lost livelihood or inundated personal property—often a major, if not the main, reason for grass-roots anti-dam movements.<sup>35</sup>

The changed political climate of early postwar Japan also aided KEPCO's cause. Policymakers during the 1950s operated in an environment where their country had been defeated in war and stripped of its offensive military capability. The way forward, as the mainstream conservative politicians who governed the country saw it, was to become a major player in global politics through high economic growth. As a consequence, most politicians in office in 1950s Japan prioritized developmentalist policy areas like “comprehensive development” and the construction of electric power stations over seemingly secondary concerns like scenic preservation. Thus although certain governmental bodies, such as the Ministry of Education or the Hygiene Bureau, had been important centers of opposition to unregulated damming of the Kurobe River Gorge before 1945, virtually no one in the early postwar government opposed the Kuroyon project. Electric power development had become the central concern for most Japanese policymakers in determining land and water use, even if it meant the inundation of national parkland.

The conclusion to this long story came in 1963: a gargantuan concrete arch that after a seven-year construction process stood as Japan's tallest dam and the world's fourth-largest. Its wall loomed 186 meters over and stretched 495 meters across the Kurobe River Gorge, its subterranean power station generated a maximum of 335 megawatts, and its enormous “Lake Kurobe” held back almost 200 million cubic meters of water. By halting and diverting what had once been one of Japan's most turbulent river systems, Kuroyon completed the process begun in the 1930s of converting the Kurobe to an envirotechnical system tasked with providing hydroelectricity, fresh water, and touristic enjoyment to human communities.

The details of Kuroyon's construction are outside the scope of this study and have been documented painstakingly in other sources, yet it is worth mentioning some particular points to convey the immense scale of the project.<sup>36</sup> The dam entailed ten million workers' worth of labor and the combined expertise of five major construction firms that contracted with KEPCO. Kumagai Gumi had the unenviable task of boring the access tunnel for two years through fracture zones to the project site, as documented in *Kurobe no taiyō*. Hazama Gumi, which had a long career in dam construction including the wartime Suihō project in Manchuria, took on construction of the concrete arch. While building the arch, Hazama workers delighted in reporting to the global construction industry in July 1960 that they set a new world speed record for pouring concrete into formwork at 8,653 cubic meters in one day. Other firms handled aggregate preparation and transportation, equipment for the power station, and diversion channel

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<sup>35</sup> Kansai Denryoku, 390.

<sup>36</sup> See particularly the *Hazama gumi hyakunenshi*, Vol. 2, 220-244 for details and high-quality images of the dam's construction.

construction, among many other tasks. All of these operations far exceeded planned budgets in terms of both time and money, and the final ¥53.1 billion (\$142.5 million) price tag required a ¥13.3 billion (\$37 million) loan from a very accommodating World Bank to cover costs.<sup>37</sup>

After Kuroyon's completion in 1963, KEPCO followed through on pledges to establish infrastructure for a vibrant tourist industry in the Kurobe-Tateyama region, and its sprawling dam network up and down the Kurobe watershed became part of the "Tateyama-Kurobe Alpine Route" through Chūbu Sangaku National Park. Since the early days of Tōyō Aluminum's business operations in the the Kurobe River Gorge in the 1920s plans for tourism development had accompanied those for electric power development. Yet after World War II, Toyama Prefecture first formalized this connection when it drew up a prefectural-level comprehensive development plan in 1952 that called for the construction of tourist infrastructure for travel to Tateyama. Such infrastructure required electric power that could only be provided to the area after the construction of Kuroyon.<sup>38</sup> Later in the decade, in 1959, Toyama governor Yoshida Minoru declared that he had a "mountain dream" ("*yama no yume*") to create a tourist course connecting the three major attractions of Kurobe Dam, Tateyama, and Arimine peak, as well as a number of smaller-scale sites like hot springs. The prefectural government in 1960 drew up a formal "KTA Plan," and it joined KEPCO, Hokuriku Electric Power, and the Tateyama Kaihatsu Railroad in forming the KTA Company, which oversaw execution of the plan. KEPCO donated its Kurobe access routes to the KTA Plan in 1964, and construction on ropeways, cable cars, and other expensive modes of transportation began in the following year. After five more years of construction, as well as extensions of existing roads and railways, the entire Tateyama-Kurobe Alpine Route opened to the public with great fanfare in 1970.<sup>39</sup> It has since drawn in nearly one million visitors from Japan and Asia each year. The envirotechnical system of the Kurobe-Tateyama region has become even more "comprehensive" in scope, having incorporated this utterly commercialized thoroughfare.

In this paper, I have considered the policy discussions building up to the Kuroyon project in an effort to sketch a more complex narrative of how it emerged among competing visions of progress for the Kurobe-Tateyama region and Japan. While most available accounts of Kuroyon, such as *Kurobe no taiyō*, have celebrated how Japanese society agreed on the necessity of large dams to bring modernization, I have examined how Kuroyon grew out of a messier story that began when electric power magnates in the 1920s pursued a go-fast approach to power development along the Kurobe River and encountered opposition at the local and national levels. The often rancorous debates that occurred before World War II showcased progressive arguments in favor of greater corporate accountability for the damages large dams could inflict on local societies and landscapes. They also pitted advocates for preserving the Kurobe River Gorge as an essential part of Japanese and global heritage against advocates for developing hydroelectricity as a means of supporting greater industrial and military might. The experience of defeat in 1945 heightened early postwar concerns about Japan's resource vulnerabilities and its technological backwardness. During the Occupation years, the TVA-inspired comprehensive

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<sup>37</sup> Hazama Gumi, 222, 233-237.

<sup>38</sup> Murakushi (2009), 336.

<sup>39</sup> Toyama-ken, 821-823.

development model seemed to offer a means of building up domestically-available sources of electric power and modernizing Japan through the application of technology to economically underdeveloped rural regions. This fervor for large dam construction as socioeconomic policy crucially affected KEPCO's planning for the Kuroyon project in the 1950s. It predisposed most policymaking authorities positively toward the dam, which smoothed the path toward government approval in 1956. KEPCO also managed to co-opt its main opposition in the National Parks Association by adjusting its construction plans to accord better with the "comprehensive development" ideal. By assenting to the construction of tourist infrastructure in Chūbu Sangaku National Park, it won over many park boosters and virtually everyone in the Kurobe-Tateyama region. Indeed, the dam project truly became multipurpose in its attempts to please several human audiences all at once, albeit at the cost of flooding the landscape, removing alluvial flows from the river valley, and permanently altering water temperatures and habitats for nonhuman residents of the gorge.