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Nature & Resources Costing over $1 billion, the Karahnjukar hydroelectric dam in Iceland is a hugely controversial project. Mark Lynas journeyed to the blasting face, hoping to work out for himself whether this industrial elephant is green or brilliant-white.

Damned nation

I had only been in Iceland three days and it was all going wrong. I was there to investigate the massive Karahnjukar aluminium smelter project, a huge hydroelectric dam currently being built in a remote area of the country’s eastern highlands. Highly controversial during its planning stages, Karahnjukar triggered national demonstrations, international email and fax campaigns and even a hunger strike by the singer Björk’s mother. Having previously watched dam projects destroy natural landscapes and human societies in places like India and Brazil, it already seemed pretty clear to me that big dams were generally bad things. Yet I found myself sitting in the office of Mr Thorsteinn Hilmarsson, press officer for the Icelandic national power company Landvirkjun, being convinced that Karahnjukar was actually beneficial. “A lot of the debate has been ‘either-or’,” he was saying, “as if either you use rivers for energy-intensive industry or you leave nature unspoilt and have tourism.” But in Iceland, Hilmarsson pointed out, the construction of roads – a by-product of energy development – was helping promote tourism.

And how, he asked, do tourists get to the country, anyway? “They come by plane, and planes are made with aluminium.” You could either have this smelted with coal in somewhere like Australia, he went on, which would result in 10 times more greenhouse gas emissions, or you could manufacture it with clean hydro power in Iceland. Using renewable power instead of coal to fuel aluminium smelters would lead to an overall drop in world carbon emissions (a fact recognised through the so-called ‘Icelandic clause’ of the Kyoto agreement on climate changes. This goal – together with the promotion of economic growth in remote areas of Iceland that are facing depopulation as people move to Reykjavik in search of jobs – underlie the government’s policy of developing energy-intensive industry. As Hilmarsson explained it, Karahnjukar seemed to make perfect sense.}
The immense scale of the project was only clear from a lookout point high up on the other side of the valley. The bulldozers looked like yellow ants labouring away in the distance.

Stop making sense
A few days later I was several hundred kilometres northwest of Reykjavik, bumping along a dirt track towards the dam site itself in a jeep belonging to Sigfus St Arnalds. With infectious enthusiasm St Arnalds — an engineer by training and now handling the on-site PR for the project — was outlining some of Karahnjukar’s vital statistics. The biggest reservoir, Halti, will reach 57 square kilometres in area and be formed by the highest rockfill dam in Europe — a massive rampart reaching 198 metres in height. Seven smaller dams will complete the project. Together, the dams will funnel water through 16 underground tunnels to a powerhouse buried 400 metres below, deep within a mountain.

With a generating capacity of 4,400 gigawatt hours per year, the resulting electricity will power a new aluminium smelter that will be constructed and run by the US company Alcoa at Reydarfjordur on Iceland’s east coast. The whole thing will cost over $1 billion.

To say the landscape was bleak would be an understatement. Located just 20 kilometres north of Europe’s largest glacier Vatnajokull, a freezing wind blew across the high plateaus and low cloud hugged the grey hills. Much of Iceland’s interior is heavily desertsed — a legacy of centuries of overgrazing, thin volcanic soils, low temperatures and strong winds — and there appeared to be little vegetation to speak of across much of the proposed reservoir area. A few forlorn patches of green broke up the sand and gravel flats, but overall the impression was pretty unpromising. Wilderness it may have been, I thought, but of what value? Nor would the Karahnjukar project result in any displacement of people — a frequent problem with big dams elsewhere; for obvious reasons, no one lives anywhere near the place.

“T’rav’r don’t have many wild animals here,” St Arnalds was saying. “We imported reindeer 250 years ago from Norway, and they now run wild in east Iceland. Karahnjukar will affect a third of the stock, and reindeer that calve in the area will have to move to other valleys.”

Other than that, it was thought that 660 nesting sites for pink-footed geese would also be submerged, but overall the geese numbers are rising and around 50,000 currently nest in Iceland as a whole. (They are even plentiful enough for hunting to be allowed.) Nor would there be much impact on fish: the huge glacial rivers affected by the Karahnjukar project are too muddy and cold to support significant aquatic ecosystems at present. In fact, I was informed, the biggest of these rivers, the Jokulsar l’a Dal, might even find itself supporting a new salmon population in clearer water from lower tributaries once the dirty main flow was diverted into a neighbouring valley.

Moving mountains
I was astonished by the sheer scale of what was happening. Huge yellow bulldozers — over a dozen of them on each side of a gaping canyon — were plying up and down the hillsides, scoping black earth off the bedrock and then pushing it over the edge into the raging torrent of the Jokulsar l’a Dal river. Diggers and earthmovers were also labouring away — almost to the summit of Karahnjukar mountain itself, and had already scooped a huge triangular scar from the flanks of the peak. Roads criss-crossed the whole area, and lines of lorries and trucks roared up and down among clouds of dust. We travelled down one of the new roads into the canyon itself, our engine noise almost drowned out by the roaring of the water, and then switched on our headlights as we entered a dark tunnel.

The tunnel floor was covered with running water and a layer of brown mud, and the air was thick with diesel smoke from the
Americans throw away enough aluminium every three months to rebuild the US's entire commercial airline fleet.
its colour will get darker, and the water temperature will drop by half a degree, thus undermining the aquatic ecosystem and reducing the food supply for fish and ducks. Taking into account all these wider impacts, the project would in total affect 3,600 square kilometres of territory – nearly 3 per cent of Iceland’s entire landmass.

It’s hardly surprising, then, that the country’s planning agency originally turned the Karahnjukar project down only to find itself overridden by Iceland’s environment minister, who gave it the go-ahead on political grounds after ordering some minor changes. What’s more, Karahnjukar’s supposed benefits in terms of global warming also turn out to be largely non-existent. As the construction organisation the International Rivers Network (IRN) points out, last year Alcoa actually closed three US-based aluminium smelters (two of which were driven by hydropower) due to cost considerations and over-capacity. The electrolytic processes involved in aluminium smelting also lead to emissions of greenhouse gases – greenhouse gases that are thousands of times more powerful in trapping the sun’s heat than carbon dioxide.

The truth is, Alcoa is moving to Iceland because the energy there is cheaper. If Alcoa were really concerned about climate impacts it could go for more recycling, suggests the IRN’s policy director Peter Bosshard, who is also the author of the recent report Karahnjukar: a project on the ice. Bosshard calculates that achieving a higher recycling rate for the 100 billion dollars in cash Alcoa produces every year could generate more aluminium than several new smelters like the one planned in Iceland. ‘It is crazy to start destroying huge tracts of wilderness just for cheaper aluminium,’ he states.

A monstrous environmental folly

Indeed, if one looks at the whole aluminium issue holistically, as Landsvirkjun press officer Thorstein Helmarsson insists, more pitfalls quickly become apparent. Helmarsson pointed out that aluminium is vital for the planes that transport tourists to Iceland. Yet the mining campaign group Project Underground has calculated that Americans throw away enough aluminium every three months to rebuild the US’s entire commercial air fleet. Moreover, recycling aluminium uses only 5 per cent of the energy it takes to extract new metal from bauxite. None of the bauxite for the smelter will be mined in Iceland, so it will have to be shipped from overseas – causing extra fossil fuel emissions in the process. Nor is bauxite mining environmentally benign where it does take place; communities near mines in the Brazilian state of Para have complained about contamination from toxic red sludge, while in Suriname villagers petitioned the country’s president in protest against the destruction and contamination of their lands by the company Stanco itself a subsidiary of Alcoa (see box, right).

The principal political justification for Karahnjukar is the creation of jobs in the eastern Icelandic region. The floods constitute one of Iceland’s remotest and least-developed areas: the local population declined by 10 per cent during the 1990s. But with a price tag of $1.4 billion for the hydropower scheme alone, and another $1.1 billion for Alcoa’s smelter, the Karahnjukar project is a hugely expensive way to create employment. Even if the Icelandic government is correct in estimating that Karahnjukar will create 1,000 permanent jobs in the region, this still adds up to a price tag of $2.5m per job – easily enough for each worker to retire in luxury and the wilderness to be left untouched. Indeed, it’s doubtful whether high-income Icelanders will even want to work in an industrial smelter. A large proportion of the construction jobs on the dam site have so far been filled by foreign labourers.

And the figures don’t seem to add up either. The project’s profitability was originally estimated on the basis of a high aluminium price. Yet prices globally continue to fall because of over-supply. One Icelandic economist has calculated that rather than being profitable the scheme will instead lose around $25m a year. In essence, the government of Iceland may find itself using taxpayers’ money to indirectly subsidise aluminium production by a foreign multinational while destroying its own backyard in the process.

So why go ahead at all? As the now-defunct World Commission on Dams pointed out, narrow vested interests – among builders, government bureaucrats and national power companies – often play a key part in advancing big dam projects. But over and above that, the issue is systemic. Capitalist economies cannot function without continual growth in both material consumption and corporate profits – and there is very little of either in just recycling old Coke cans. The dam will be built: The monster must be fed.