Chapter 14

Engaging communities in resource development initiatives in Timor-Leste

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Introduction

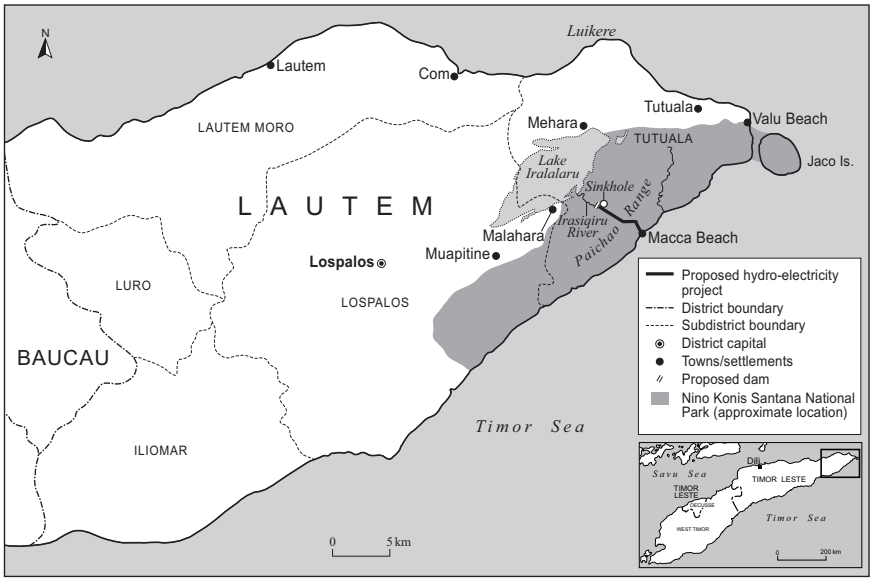

Figure 14.1 Timor-Leste, Lautem District and case study location

With its population and landscape still deeply scarred by a tumultuous colonial history, Timor-Leste is a post-conflict state struggling with enormous development challenges. Yet today, by combining the benefits of national development planning with state funds accruing from the sale of offshore oil and gas reserves, its leaders envisage the nation as being on the cusp of transition from a largely subsistence economy to a prosperous capitalist state. In light of Timor-Leste's turbulent history and present-day circumstances, this chapter explores the manner in which Timorese communities have been able to engage in the resource development process since the country achieved independence in 2002. We examine a proposed

large-scale resource development scheme in the district of Lautem in the country's far east to establish, in a place-based context, the complex relationship between incoming tropes of modernity and extant customary knowledge and resource use. In light of these complexities, we argue for more holistic and effective consultation processes, as well as procedural consistency, in relation to the socio-ecological assessment of large projects in Timor-Leste.

In a difficult post-independence economic era, development hopes in the Lautem region have been kept alive by the anticipation of two significant projects – the country's first national park, and a proposed hydroelectricity scheme in the Iralalaru Lake catchment area (Figure 14.1). Particularly through the hydroelectricity project, the national and district governments and many local peoples hope that the formal economy will begin its return to Lautem. At the same time, what also looms large in this district is a vibrant customary sector built on complicated processes of exchange and resource governance (see McWilliam 2011; Palmer 2010). Infusing this dynamic field of local economic relations and resource geographies are complex examples of place-based knowledge, capacity and skills, many of which are overlooked by the alluring overlay of modernist discourses of development that claim to overcome poverty and ignorance. Yet it is this very intersection of divergent approaches to resources which must be critically addressed if development endeavours are to benefit and include local peoples as active decision makers. With these things in mind, this chapter points to critical gaps in efforts to encourage sustainable resource management, particularly when local ways of knowing and interacting with the world are given only minimal recognition in the development process.

Historical context

Timor-Leste constitutes the eastern part of the island of Timor in the Indonesian archipelago. After 24 years of Indonesian rule, it regained its independence on 20 May 2002. Portuguese and Tetum are its official languages, and at least 16 other local languages are spoken across its 13 administrative districts. Timor-Leste has a current population of just over 1 million.

The occupation of the country by Indonesia following centuries of Portuguese colonial rule disrupted Timorese land uses and lifestyles through ongoing military surveillance and conflict (CAVR 2006). The Timorese suffered human rights abuses and a widespread loss of life and property during and after their guerrilla campaign against Indonesia (CAVR 2006; Tanter *et al.* 2006; Nevins 2005). Hence the newly-independent Timor-Leste faces complex challenges as it attempts to rebuild itself as a modern nation state (Fox 2001; Hill and Saldanha 2001; Philpott 2006). Since 1999, the independent government of Timor-Leste, together with two United

Nations (UN) peacekeeping and state-building missions (1999–2002; 2006–present), have continued to struggle with an enormous task in terms of development and reconstruction. The country is the poorest in Asia; poverty estimates indicate that 49.9 per cent of East Timorese live on less than US$1 a day (Directorate of National Statistics 2007).

Across the country there exists only a weak and battered capitalist sector, which was already of relatively meagre size in Indonesian times, and entered further decline post-independence. Timor-Leste lacks major revenue-earning opportunities aside from offshore oil and gas sales, and has thus received ongoing bilateral and non-governmental support. Hence the formal economy, which has been artificially inflated in the nation's capital by the influx of international aid and peacekeeping monies (see Moxham 2008), struggles to find liquidity in outer regions. Yet symbolically at least, this economy has begun to permeate other parts of Timor-Leste, accompanied by a discourse of development (Escobar 1995; cf. Shepherd 2004; McGregor 2007) that replaces the economic vacuum left by the departure of the Indonesians. This discourse encourages people (as in colonial times) to see themselves as underdeveloped and in need of capacity-building. As in other developing states, a developmental 'project culture' has emerged in the management of people and place in Timor-Leste, obscuring alternative processes and priorities (Shepherd 2009; Cupples *et al.* 2007).

While such a large-scale intervention from a range of different countries and organizations has been recognized as an important means of helping the Timorese to restore the conditions of normal life, the resulting influx of multiple cultures and knowledge, skills and administrative models has become a source of confusion. This has created immense difficulties for the implementation of aid and reconstruction programmes during the transitional period before independence, and critics have linked the frustrations of this period and the failure to consolidate the international intervention in Timor-Leste to subsequent political crises that culminated in the UN's present multi-lateral peacekeeping and state-building mission.

Development initiatives by the Timorese State (2002–present)

In newly-independent Timor-Leste, the traditional development dichotomy of local versus national interests loses its saliency. Historically, while the Timorese struggle for independence was characterized and imbued by assertions of a common 'national' purpose, it was also instilled with a quiet but fervent recognition of the heterogeneity of Timorese social, cultural and geographical environs. Today, the *Constitution of the Democratic Republic of Timor-Leste* (*Timorese Constitution*) (2002) contains the following objectives, among others:

d) To guarantee the development of the economy and the progress of science and technology;
e) To promote the building of a society based on social justice, by establishing the material and spiritual welfare of citizens;
f) *To protect the environment and preserve natural resources;*
g) *To assert and value the personality and the cultural heritage of the Timor-Leste people;*
h) To promote the harmonious and integrated development of the sectors and regions and fair distribution of national product.

(Part 1, section 6, emphasis added)

In order to achieve these objectives, the state will often assert its right to act decisively for the people and the nation. However, some of what ultimately transpires as a 'rush for development' stems too from the aspirations of an impatient population, who, having struggled for liberation for so long, have high expectations of improved livelihood pathways. One unfortunate outcome of these circumstances is the adoption by the country's leaders of a 'fast track' approach to economic development, often without proper planning and safeguards to mitigate against social, cultural, political, economic and environmental risks.

For example, in 2009 the Government of Timor-Leste decided to construct four heavy oil power stations to address the national need for electricity. Initially it was suggested that the construction of a 180 MW heavy oil power station complex required the investment of about US$400 million, but due to major project design changes and operational delays, this budget has since doubled (La'o Hamutuk 2011). The ambition of the Timor-Leste Government was to provide electricity for the people as quickly as possible in an economically viable manner. In this respect, however, the budgetary planning process only took into account the construction of the heavy oil power station and the establishment of country transmission lines. It did not examine the broader cost of such a project by doing either an environmental impact assessment or a social impact assessment. Only later, following pressure from civil society and the opposition, the President of the Republic decreed that the project (which was by then under way) must be subjected to ongoing independent social, economic and environmental assessment. Yet while external consultants were contracted to oversee this process, civil society groups reported an ongoing deterioration in social, economic and environmental processes and outcomes (see La'o Hamutuk 2011).

Faced with the need to create jobs and reduce unemployment in the agriculture sector, the government also has plans to develop a complex of sugar cane plantations for biofuel generation. It has declared that this project will create more than 10,000 jobs (Secretariat of State for the Council of Ministers 2008: 2). While the type of work, remuneration and length of employment are not specified, a memorandum of understanding has been

signed by an Indonesian company and the Timorese Minister of Agriculture. There has been no documentation released pertaining to a social or environmental impact assessment of the project (see La'o Hamutuk 2008a). Civil society actors are concerned about the impact of this proposal on long-term food security, particularly as such initiatives involve scarce arable land.

Another related example is the *Jatropha curcas* biofuels project – a joint Timorese–Australian venture which was formally approved by the government in 2008. This project proposes the development of *Jatropha curcas* plantations on about 40,000–60,000 hectares of land, and is touted to create jobs and foster economic growth. Yet the project was launched without any clear planning and was poorly explained to farmers, who were often rushed into planting the biofuel crop on existing food crop lands – again without a social and environmental impact assessment (La'o Hamutuk 2008b). By the end of 2006, some farmers who had been planting *Jatropha curcas* decided to remove the plants, as it was becoming clear that they had no emerging market within Timor, and the foreign company had never returned to proceed with the processing factory promised at the beginning of the project. However, with additional state involvement, a similar project has now been negotiated with a new foreign company. Once again, no social or environmental planning has been carried out.

In contrast to the above examples, the proposed hydroelectricity development scheme in Lautem has been subjected to a relatively rigorous social and environmental impact assessment process. Despite this, a number of critical concerns relating to local social and environmental issues remain. While it appears that immediate government support for the project has been superseded by a focus on the development of heavy oil power stations, we believe that it is important to document our concerns about this proposal. First, the Lautem experience may be relevant to resource development projects elsewhere in the country, and secondly, the status of the project is still unclear, with ongoing campaigns seeking to characterize it as a 'clean green' alternative to the heavy oil electricity generation project. It is our contention that the planning and environmental assessment processes undertaken for the purposes of the Lautem project have so far failed to fully engage with the objectives stated in the *Timorese Constitution* – namely, economic development which protects the environment and preserves natural resources as well as asserting and valuing the personality and cultural heritage of the Timor-Leste people.

The Iralalaru hydroelectricity proposal and its development impacts

Timor has a well-established need for a permanent and cost-effective nationwide electricity supply. It was estimated in 2004 that just 28 per cent of its population had access to electricity (EPANZ 2008a: 13). Since then,

this has risen to 36.7 per cent with 87.7 per cent in urban areas, but reliability remains low (Anonim 2010). Electricity in major population centres is currently supplied by diesel plants, which are mostly inadequate and in a state of disrepair. The proposed Iralalaru hydroelectricity project would, its proponents assert, deliver reliable, 24-hour electricity to more places across Timor-Leste, and thus help reduce rural poverty (EPANZ 2008a: 4). Three places were originally selected by the Norwegian proponents as possible sites for a hydropower project in Timor-Leste. In the end, Iralalaru was selected because of its 'obvious capacity of generating electricity at low cost' (Adeler *et al.* 2003). It is to have a designed installed capacity of around 28 MW (HydroTimor 2011a).

The Lake Iralalaru area in the Lautem district is located within the last remaining tropical dry forest area within Timor-Leste (see Figure 14.1). The area has high conservation status, incorporating the heavily forested Paitchao Mountain Range, which forms part of the Nino Konis Santana National Park. The project will use groundwater inflows from the Irasiqiru River, and, to a lesser extent, water stored in Lake Iralalaru (see Figure 14.1).[1] This water currently flows from the lake and other groundwater in-flows into a blind valley before disappearing down a karstic sinkhole (known in the literature as the Mainina sinkhole). The project seeks to capture river water upstream of this sinkhole via a weir and divert it through a 2.4 kilometre underground tunnel beneath the Paitchao Range, emerging at a 2.2 kilometre-long penstock and underground powerhouse that discharges directly into the Timor Sea (EPANZ 2007: V). It is estimated that the project will take two to three years to construct (EPANZ 2008b: 4, 21) at an expected cost of US$100 million, with an additional US$34 million for the construction of the transmission line to Dili (HydroTimor 2011a).[2]

Since the inception of this hydropower proposal, the view of the lead Timorese environmental organization, the Haburas Foundation, has been that the project's value is uncertain. On the one hand, if constructed in accordance with environmental standards that fulfil environmental and socio-cultural as well as economic and technical requirements, the project could be classified as 'clean green' energy. On the other hand, if it is constructed without comprehensive socio-cultural and environmental studies, it cannot be classified as such, even though it would produce energy from a renewable energy source.

As Aditjondro (2003) notes, outside investors or governments often focus on the 'largest portrait' of the utilization of a river for irrigation, hydropower or transportation – a 'national interest' view which is very different from that of the indigenous people who have been interacting with the water source for a much longer time. At the same time, government interventions and investor proposals which 'sell' this 'largest portrait' of resource use often create in the local population a perception of the inevitability of the development. In the circumstances of 'imminent development', some local

people will then decide to maximize their short-term interests in an area. In the present case study, this has involved some local land users acting quickly to extrapolate the maximum benefit from the area while they still can (for example, through illegal logging in poorly patrolled areas). Others have decided to carve (sometimes literally) their stake in the local environment by opening up new swidden fields in previously unused forested areas. Their aim is to extract compensation from the state and/or the project proponent for forced eviction or negative impact on extant livelihood practices.

In response to its concerns about the project's environmental credentials and the unsustainable socioeconomic processes to which it has already contributed, the Haburas Foundation, in cooperation with the Australian Conservation Foundation, has developed a three-pronged advocacy strategy. This has included community awareness raising, advocacy and campaigning at the national level and a community development strategy.[3] This third element of the strategy was included on the basis of findings suggesting that poverty places a community in a weak bargaining position when dealing with foreign investors, driving such a community to accept development options regardless of their potential for environmental degradation. From 2002, Haburas began engaging local people in programmes of participatory environmental impact assessment, and later in a number of alternative economic development projects, including the successful development of a community tourism enterprise in the Nino Konis Santana National Park (see Figure 14.1).

A sacred landscape

In the course of its community engagement, the Haburas Foundation has documented a range of local concerns about the proposed Iralalaru project. The area of the lake and forested area is an important resource for local people with cultural and religious, as well as economic and ecological, values (Lopes *et al.* 2006). One respondent described the extent to which the forested areas housed economically and culturally valuable trees, numbering over 100 species. The forest was also identified as an important area for hunting animals including birds, deer, bats and snakes, while it is noted that Iralalaru Lake and the Irasiqiru River contain the culturally revered crocodiles (*poicholor*), as well as many species of fish. Different respondents also emphasized the area's cultural and religious value. The following narrative demonstrates clearly the deep connection felt by current generations with the lake area, which is believed to have formerly been a village called Lo:

> Once upon a time, in a village called Lo there lived a prosperous community. One couple in the village were particularly fortunate to have a beautiful daughter as their only child. Each day the girl's father would travel away from the house to tend the family fields around Paitchao Mountain Range. The girl and her mother would stay at home. Here the

girl would attend to her chores, help with the cooking and weave some beautiful *tais* (cloth). One day as she finished the weaving of a *tais*, a giant python called Lorosa appeared suddenly behind her and attacked the young girl. Struck with grief and fear the mother, who witnessed the attack, ran to the family fields to call for help from the girl's father.

In a fit of anger the father ran from the hills of Paitchao down to Lo village, bringing with him a long spade, which is called '*hitu*' in the Fataluku language. When he arrived home, he found a tragic picture: his daughter was already inside the stomach of that giant python. So angry was he at losing his daughter that he lashed out and cut the python into slices with his spade.

Lorosa was also an only child, the only son of a couple of giant pythons which lived in a cave around Lo village. When after many days their son did not appear back at the cave the parents of Lorosa began searching for him. Soon they discovered that their only son had being killed by man in Lo village. Struck by grief and anger, the parents of Lorosa decided to kill all the men in Lo village in revenge. To do this they enlisted the support of the water spirits inhabiting the Caravei and Ou springs, which lay in the hills south of Lospalos. That night, Caravei and Ou springs joined together and travelled as one to the Muapitine village where they formed a new water source called Caravei Ho'orana. This spring still exists there today. In that same moment, the Lo village was flooded with water, the flood submerging the entire village. While many of the village people escaped to live in other villages such as Mehara, Tutuala and Poros, many others disappeared beneath the flood waters, an area now known as Lake Iralalaru.

Until today, many of the community around Iralalaru Lake believe that their ancestors still live in Iralalaru. This historical understanding means that community members will always carry out traditional rituals in order to 'offer their gifts' to the life giving powers of the ancestors.

During the time of the big flood, Lorosa's parents also had trouble finding a way out of the flood. They asked for help from some large rats who dug a hole for them to escape through. This hole is now called Lonina [the sinkhole where the river water disappears in the last part of Irasiqiru River]. This water then reappears again in southern part of Paitchao mountain in an area called Main'ina and this will be the base for hydropower station.

(Translation from VERDE 2004: 2–3)[4]

There are many versions of this creation story, but all demonstrate the abiding connection between people, place and ancestors in the region. The stories also show that Iralalaru Lake is traditionally understood as being vitally connected to other water sources in the area. As a result, many people worry about the impacts to these water sources from any changes to the lake

or river outflow. While acknowledging that the country needs electricity, local peoples also want a guarantee that the project will not adversely affect their livelihoods or spiritual welfare.

As a result of its community engagement, Haburas also found that these widely held concerns are not frequently voiced in public, as people are reluctant to directly contradict those perceived to be in authority, or to speak openly about matters of a sacred and dangerous nature. Rather, they express their concerns through cryptic comments such as 'the project can go ahead if they [the government/proponent] are clever enough'[5] before adding their fears that even if it does proceed, there is a real risk that people will become sick or die as a result. These comments emanate from a worldview that locates an omnipresent power in the landscape itself, and dictates that a range of prohibitions and practices must be observed in relation to the use of that landscape. Breaching these prohibitions or failing to seek the necessary permissions from the ancestral powers will, it is believed, lead to illness, misfortune or death on the part of both those in breach and those responsible for the custodianship of the area. Given the sense of inevitability attached to the project, by 2005 (see Anonim, 2005) it was reported that some local people had started the process of permission-seeking, sacrificing animals to appease the spirits of the land (*mua ocawa*) and gain their favour in relation to the proposed activities. However, local commentators emphasized that there was no guarantee that such offerings would work, as there was every possibility that the *mua ocawa* would not react favourably. As a result, many were concerned about the impact of this project on the environment and the people – expressing the view that it urgently required greater consultation and community participation (cf. Peterson 2006).

Environmental concerns and engaging with local knowledge

Environmental concerns and local people's understanding of the connections between the region's springs and its complicated hydrological processes are areas that urgently need greater community involvement. As noted above, various proposals for the development of a hydroelectricity project have all been presented to local peoples as a *fait accompli*, albeit one which has more recently been subjected to scientific risk assessment. Yet beyond assessments which tick off the 'culture box' (Jackson 2006), local peoples' environmental knowledge and understandings of the range of risks associated with such endeavours seem not to have been taken seriously. This is despite the fact that many scientific questions in relation to such matters remain unanswered. The history of these concerns throughout the life of various proposals for hydroelectricity development in the region is documented below.

The first plan for a hydro-electric power station utilizing the discharge from Iralalaru Lake was prepared in 1975 on behalf of the Timor-Japanese Association (White *et al.* 2006: 4).[6] As far as the hydropower scheme was

concerned, the 'plan envisaged the building of a dam on the Irasiquero River to raise the level of the river and Iralalaru Lake about 3.7 m. [*sic*]' (White *et al.* 2006: 4). This plan was superseded in 1985 by a proposal from an Indonesian company, which was followed in 1989 by another proposal by Italian, Swiss and Indonesian consultants (White *et al.* 2006: 4–5). None of these projects ever materialized. One reason for this was the difficulty of assessing and planning for the construction of the project in the area's complex and dynamic karstic environment (White *et al.* 2006: 5).[7] Despite these ongoing concerns, the project was revived again in 2003, following an agreement between then-Timorese Prime Minister Mari Alkatiri and the Norwegian government for joint cooperation on a hydropower facility (Asia Development Bank 2004).[8] Since then, the Norwegian Water Resources and Energy Directorate (NVE), on behalf of the Norwegian Agency for Development Cooperation (NORAD), has developed a viability study and an environmental impact assessment (EIA) for this project.

To complete their viability study and the EIA, the NVE contracted a range of institutions and individuals to prepare expert reports. These consultants subsequently produced reports on the area's flora and vegetation; birds, land mammals and reptiles; bats; aquatic ecosystems; hydrobiology and marine environment; site verification and sociology; and land acquisition and compensation. Significantly, while design concerns relating to the project's construction in a limestone karst environment were raised as early as the late 1980s (White *et al.* 2006: 5), there was no expert consultant report which examined the region's complex hydrogeology.

In 2006, the Haburas Foundation and the Australian Conservation Foundation co-sponsored their own expert report into the environmental risks of this development. The subsequent report by White *et al.* concluded that the '[u]nderstanding of the relationship between the lake and the watertable is inadequate, as are streamflow records, with consequent implications for sustainable power generation from the scheme' (2006: 2). White *et al.* found that the absence of a detailed karst study by the proponents 'leaves considerable risks in both constructional and environmental areas' (2006: 8). In particular, there is a 'lack of clarity as to the fate of water disappearing into the Mainina Sinkhole' (White *et al.* 2006: 26). They wrote that '[i]t seems remarkable that any environmental assessment of this project did not rate the answering of this question as a top priority' (White *et al.* 2006: 34), also stating that the absence of a water budget for the project constituted a serious deficiency.

By 2007, when the final proponent and consultant reports on the project were being finalized and submitted to the government, the draft proponent's report contained the following admissions:

> The fate of the water that enters the Mainina sinkhole has been a constant issue and despite a further tracer study and matching of water

> quality data the overall outcome has been confusing since the tracer rather surprisingly appeared in springs above Com [on the north coast, see Figure 14.1]. …Water that enters the sinkhole will have several uses; domestic water and irrigation, and water for aquatic systems including stygofauna, wildlife and water dependent vegetation that fringes springs and streams. It is not known what the effect of the diversion will be and as a precautionary mitigation measure a low release gate is to be included at the base of the weir which will be able to release up to 1 m^3/s as an environmental flow.
>
> (2007: vii)

The report states that due to the aforementioned confusion of the tracer study results, a further study was conducted by Norconsult JV in January 2006. Subsequent to this, the proponents released a promotional video which stated that this 2006 study indicated that the 2004 sampling was indeed contaminated, and hence that the appearance of the tracer on the north coast was a sampling artefact (HydroTimor 2011b). The 2006 tests, which used an artificial medium for absorbing the fluorescent dye tracer (rather than the charcoal-based one which may have contaminated the previous findings), found that the Mainina sinkhole water does not emerge at any springs around the Iralalaru Lake area. However, apart from finding that the water does not go to some or all of the springs indicated in previous tests, the proponents still could not state with any certainty where the water actually does go once it enters the sinkhole. As White *et al.* noted:

> These conflicting results [of the first and second tests] are totally inconclusive and one could not even begin to assess the environmental impact of diverting this water if one did not know exactly where it went, conceivably to a number of discharge points, and equally conceivably to different places, or at least at different rates, at different stages of flow.
>
> (2006: 34)

Given this ongoing uncertainty, the proponents now advocate the adoption of a precautionary principle in relation to water diversion, determining to maintain an on-average environmental flow at a rate of 1 cubic metre per second through the sinkhole. Without the intervention of a weir, the flow into the Mainina sinkhole is identified as being 10 cubic metres per second in the wet season and 4 cubic metres per second in the extended dry season. The lack of certainty on how this reduced flow will affect the local hydrology is a particular cause for concern, especially in the dry season when water is not available locally from other sources. An environmental flow of 1 cubic metre per second or less may seriously jeopardize any local reliance on this water. It has been documented, for instance, that some local village and agricultural garden areas rely on water from springs at the edge of the

Paitchao range, and hunters and fishers on intermittent visits to the southern coast are known to rely on springs in that area (White *et al.* 2006; cf. McWilliam 2006: 25–6). Given the significant financial investment required by such a project, it is questionable whether the commitment to it would be reversible once it became operational. Hence the question of how much precautionary 'slack' the project has in terms of manipulating water flows and maintaining its economic viability is a critical one.[9]

The proponent's expert study on the cultural and socio-economic implications of the project on local Lautem communities was conducted by anthropologist Andrew McWilliam. While concluding that '[t]here are no major cultural or social impediments to the hydro-power development in its current design parameters' (McWilliam 2006: 29), the study did not in any detail address local knowledge of the region's hydrology, or local responses to scientific concerns about the unknown effect of diverting the water flowing into the Mainina sinkhole. The study did, however, carry out an evaluation of the use of community wells and springs in the area that may be affected by the project, stating that:

> Human settlements are only dependent on a minority of the water sources examined in the tracer sampling tests. Nevertheless all have significance as resources for local people and the livestock and fauna that rely on the water sources for sustenance at different times [eg when hunting or travelling]. Any lowering of water source yields through increased capture of water for hydro purposes would not be supported by local populations. (McWilliam 2006: 26)

On this point, the study concludes that '[t]he plan to repeat the tracer sampling tests, due to concerns over the precision of the earlier survey should provide a more accurate assessment of the impact' (McWilliam 2006: 26). However, as we have seen from the above discussion, these further tests have failed to answer with any certainty critical questions about where the water passing through the Mainina sinkhole will go, and it remains to be seen whether water diversions away from the sinkhole will lead to any lowering of water source yields at associated springs.

Of additional concern was a fact also noted by McWilliam (2006: 28) – that local peoples have a low understanding of the nature and extent of the proposed project. Yet other risks identified with the project are consistent with local cultural concerns about the use of resources in the region. For example, in relation to the potential mixing of salt and freshwater species as a result of them moving up and down the underground tunnel, the draft final proponent's report states that:

> A further study has been recommended to evaluate the post-impoundment situation. The Irasiqiru is an isolated system and has no natural

> connection to the sea. Translocation of marine and freshwater organisms has been evaluated and this will commence with a risk analysis of the ability of organisms to persist after passing through the penstocks and turbines. Based on this an assessment will be made whether to proceed with the installation of electro pulsators at the intake and tailrace so as to ensure the separation of the systems.
>
> (2007: 116)

While seeming confident about steps which will be taken to 'ensure the separation of the systems' and ameliorate any risks, the report fails to address the question of whether these issues have been fully explained to local peoples. We raise this question because there are well-known cultural concerns on the part of local peoples regarding the danger of mixing fresh and salt water elements. These concerns are documented to some extent in the expert sociological report:

> One of the concerns raised by a number of local residents is the impact of releasing freshwater from Iralalaru directly into the sea at Maca beach [*sic*]. This concern is related to the customary beliefs surrounding the separation of the lake waters from the sea and the practice of utilising the distinction to effect changes in weather patterns. Inadvertent mixing of the products or implements of salt and freshwater are thought to bring sanctions upon the perpetrator usually in the form of illness or misfortune.
>
> (2006: 23)

In a range of circumstances, there are thought to be dire local consequences of the mixing of salt and freshwater elements, and local peoples who have recently returned from an extended coastal visit may even refrain from washing their salty skin in the river water for exactly these reasons.

The divergent understandings but partial synergies between local and scientific concerns relating to such issues suggest that there remains much unexplored potential for collaborative research that takes seriously, for example, local narratives and knowledge about the complex connections between karstic resources in the region. Any serious engagement with such issues would require a participatory research action plan that takes full account of local peoples' particular understandings of the ancestral and physical connections between different springs and water bodies in the landscape (see Palmer forthcoming).

Conclusion

On their website, the proponents of the Iralalaru project optimistically state that:

> The local community is satisfied … The Mainina sinkhole, sacred by traditional belief, will not be touched – water is diverted upstream. The groundwater and the springs in the area will *most likely* not be affected – negative effects will be mitigated. The lake will not be regulated, no dams will be built, the river will not be affected before the intake pond, no crocodiles or endangered birds will be threatened, and no significant adverse consequences will be experienced by other species. Environmental change will occur in the cities, and global [*sic*]: Clean hydroelectric power will replace polluting, oil-based generators. Everybody wins. Pleasing, isn't it? [emphasis added].
>
> (HydroTimor 2011c)

Yet our analysis would suggest that should this project go ahead, it is far from certain whether everybody would win. In fact, those with the most at risk will be local peoples whose economic, religious and cultural sustenance is drawn from the very resource which is at stake. As noted at the chapter's outset, it appears that the Timorese government has decided not to proceed with the project at this stage.[10] While this outcome might be welcome given its uncertain environmental risks, for local peoples the decision is also a further setback to their forever-promised dreams of 'development'. While local clans have already invested significant resources in ritual activities designed to smooth the project's path, they have also poured much of their energies into concerns about the impacts of the development, and the sharing of any resulting financial benefits between individuals and communities. Yet as with previous proposals for a hydro development in the lake area, it appears that this project too has (at least for now) vanished from the development agenda, leaving local peoples once again with dashed hopes. There exists an alternative worthy of consideration – a mini-hydro scheme that would generate enough electricity for local needs using a 'run of the river' system without requiring any diversion of water away from the Mainina sinkhole. Yet without potential for a direct national benefit, such a scaled-back scheme would test the government and the proponent's commitment to local development. Ultimately, in the absence of serious and sustained engagement with local knowledge, concerns and aspirations, the potential in this case and others for a productive outcome from sustainable development thinking remains at once emergent and unrealized. Given the economic poverty and socio-ecological complexity which continues to characterize everyday life in Lautem and across Timor-Leste, it is essential that future large-scale projects are the subject of holistic and participatory social and environmental impact assessments which prioritize people and places rather than products.

Notes

1 The 'project' has three components: a hydropower project at Iralalaru Lake, a 158 kilometer, 132 kV transmission line and a major load centre in Dili (EPANZ 2008a: 4).
2 The cost projected until the release of the EIA report in 2008 has been US$3 million, with an environmental management component of US$840,000 (EPANZ 2008a: 6). The proponent estimates that the total cost for environmental measures will be US$1,634,630, including US$794,630 for land compensation and resettlement (EPANZ 2008a: 6).
3 In order to have a popular view on the Iralalaru project, Haburas Foundation also sought an assessment from a group of local activists (Lopes *et al.* 2006).
4 Note that the name of the sinkhole in this narrative differs from the name commonly given to it in the project-related literature.
5 This comment was obtained during a field interview at Lake Iralalaru in March 2008.
6 This was a comprehensive regional development plan that, in addition to the hydropower, project planned to exploit phosphate and manganese and develop fisheries, agriculture, salt processing and tourism projects.
7 Another possible reason relates to local security concerns: the armed Falintil resistance movement was well organized in that region during the 1980s, potentially deterring some proponents.
8 Around the same time, the Asian Development Bank and Norwegian Energy Department produced the Timor-Leste energy sector policy (Asia Development Bank 2004), which described many issues facing Timor-Leste's energy sector, identifying potential resources with which the nation could achieve a sustainable energy sector. As a tropical island nation, Timor-Leste was identified as having potential for solar energy, wind power and hydropower.
9 In addition to not knowing where the water goes, there are also scientific concerns about the stability of tunnelling underground through the dynamic karstic geomorphology. As White *et al.* (2006: 37) note 'the permanent lowering of water levels could be the trigger which destabilizes the system'. The State Secretary of Energy Policy and Rural Electrification, Mr Avelino Coelho, has recently stated that the hydrological and climate change effects due to El Nino may cause the power capacity to be down to 12–14 MW. As a result of this and also the importance of the area from ecological and historical point of view, the government has postponed this project until clear conclusions can be drawn about the relationships between water dynamics and climate influences and other factors (Mr Avelino, personal communication, September 2011).
10 In addition to the replacement heavy oil projects, it has cited financial uncertainties, including the economic viability of the Iralalaru project in the dry season, as its main concerns.

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