



PERISA Case Study **4** Infrastructure

Lesotho Highlands: Water Woes or Win–Wins?

By Lesley Wentworth

The Lesotho Highlands Water Project (LHWP) has been acknowledged as a feat of engineering excellence; the real achievement being to use gravity tunnels and dams to divert the river from its natural flow (towards Aliwal North in the Eastern Cape) 570 km to the Gauteng province. In addition, hydroelectricity is to be generated for Lesotho end-users. The bi-national project between Lesotho and South Africa was contracted in 1986, before South Africa's transition to democracy. With this potentially ominous beginning to the LHWP, it has not been without incident.

However, in May 2013 the ZAR 12 billion Phase II of the project was signed by the two governments. Negotiations on energy supply to Lesotho, as well as the governance and configuration of the project, seem to have been concluded successfully, despite earlier controversies between the two countries.

Transboundary infrastructure projects are often

viewed as pathways to peace, regional co-operation and stable growth. However, there is a presumed national self-interest in any regional negotiation and in the agreement forged between contracting parties – be these member states of a regional economic community and their agencies, and/or project sponsors. With negotiation comes compromise, and often ground and

indeed principles are conceded. Invariably, trade-offs can be significant.

The Orange river is known as the Senqu as it courses through Lesotho, where it originates in the mountainous highlands. Lesotho ‘owns’ its headwaters and currently transfers water to South Africa at a maximum capacity of 70 cubic metres per second (70 m³/s), for use in the water-stressed industrial hub of Gauteng. The LHWP is one of the largest water transfer schemes in the world. The trade-off in diverting its water to South Africa – through a gravity drop – is that Lesotho can power an underground hydroelectric station at Muela, reducing Lesotho’s dependence on South Africa for its energy needs.¹ The project costs related to the hydroelectric component are estimated at about 5%.²

In addition, the LHWP has resulted in the development of important infrastructure for Lesotho, including hundreds of kilometres of paved roads and communications infrastructure between villages. Lesotho reportedly receives ZAR 35–45 million each year from the South African government. Yet there have been controversies over bribery charges that have dated back to 1994.³ Twelve multinational corporations were investigated, a chief executive officer of the overseeing authority was fired; and recently there have been allegations of embezzlement of royalties against the former minister of natural resources.⁴ Corruption risk is considerable in multimillion-dollar projects such as the LHWP, making an appropriate and robust governance framework vital.

HISTORY OF THE LHWP

Engineering studies and negotiations for the LHWP date back at least to the 1950s and have taken over 30 years to conclude. The first survey examining water potential from Lesotho was ordered in the 1950s by the British High Commissioner to Lesotho. During the

1980s Lesotho, under Premier Chief Leabua Jonathan, established diplomatic relations with the Soviet Bloc and Communist China; and was considered a serious threat by Pretoria’s nationalist apartheid government.

A feasibility report in 1979 concluded that a flow of 35 m³/s could be transferred to South Africa with a phased construction of five reservoirs – at Oxbow, Pelaneng, Soai, Polihali and Taung – on the Malibamat’so and Senqu (Orange) rivers, along with approximately 102 km of tunnels to transfer water to South Africa. The generation of hydroelectric power in Lesotho was considered integral to the project. The main objectives of the feasibility study were as follows:

- Selecting the optimal scheme layout that would be acceptable to both governments.
- Demonstrating that the project would be technically, socially, legally, environmentally, economically and financially viable.
- Carrying out studies, designs and costing that would be used for purposes of preparation of tender designs and associated investigations.⁵

The feasibility study established the economic viability of the project to deliver about 70m³/s of water from the highlands of Lesotho to the Vaal river system by the year 2020. The project was to be developed in a number of phases. As envisioned at the time, the project was found to be the cheapest option compared with other competing schemes under consideration in South Africa. The study confirmed that there were no technical, social, environmental, legal, economic or financial considerations that cast doubt on the project’s viability, or its ability to provide considerable benefits for both countries.

Hydroelectric power was to be generated in Lesotho, which offered the country the chance of substantial independence in the supply of electricity – for which it had been solely dependent on South Africa. An independent three-member international panel of engineering experts was engaged by Lesotho from January 1984 to February 1986 to review the feasibility study work. The treaty governing the LHWP

1 Trondalen J, *Conflict Prevention and Peace Dividends through Cooperation on Transboundary Water Management in SADC: Achieving Peace Dividends through the Prevention of Water Conflicts*. Geneva: Compass Foundation, 2011.

2 Klaphake A & W Scheumann, 2006.

3 Hilyard N, 2002.

4 Tlali C, 2012; Ntaote B, 2013.

5 LHDA (Lesotho Highlands Development Authority), ‘Overview of the LHWP’, <http://www.lhwp.org.ls/overview/overview.htm>.

Figure 1: LHWP: Katse Dam

Source: Photograph courtesy of Agathe Maupin.

was eventually signed in 1986 between the apartheid government of South Africa and the new military government of Lesotho (directly after a coup that was purportedly orchestrated by South Africa).

The 1986 LHWP Treaty established the Joint Permanent Technical Commission (JPTC) to represent Lesotho and South Africa in the implementation and operation of the LHWP. It also committed both countries to the implementation of Phase 1A and 1B of the project and provided the options for development of additional phases in the future. Under the Protocol VI of the 1986 Treaty, which was signed in 1999, the JPTC was established, comprised of two delegations, each with three representatives from each country, with one representative from each delegation permanently based in Maseru.

In Phase 1A (completed in 1998), the Katse dam was erected, at 185 m high; and the Muela hydropower station (MHS), situated in the northern Butha-Buthe District, was constructed. In Phase 1B (which began in March 2004), the Mohale dam was inaugurated by King Letsie III and then president, Thabo Mbeki.

In Phase 1A, about 27 000 people in the area were adversely affected by the construction. In Phase 1B, 325 households were forced to move because of the dam. In this respect, the LHWP has not only had economic and ecological effects on the environment (for example, the Maloti minnow fish species has become endangered), but also social and cultural impacts on the people who have had to be resettled. Many left behind traditions

and indigenous knowledge; and there is little evidence that even the households benefiting from one-off monetary compensation are better off than prior to the resettlement – many having lost livelihoods and access to natural resources in rural villages.

Phases 1A and 1B of the project, implemented between 1987 and 2008, included the development of roads, power lines, engineering stations and administrative facilities, as well as dams and tunnels. Phase 1A (estimated at ZAR 20 billion) included the Katse dam on the Malibamatso river, the highest dam in Africa at 180 m above sea level; a 45 km transfer tunnel to the MHS; and a further 37 km delivery tunnel to the Ash river in South Africa. Phase 1B includes the Mohale dam (145 m above sea level) and the Mohale reservoir located on the Senqunyane river. A 32 km tunnel connects the Mohale reservoir to the Katse reservoir, and a barrier was constructed at Matsoku near Muela on the Matsoku river, from which a 5.6 km transfer tunnel runs to the Katse reservoir. The 72 MW hydropower station at Muela connects with the Southern African Power Pool and supplies some of Lesotho's electricity needs without producing any greenhouse gases.

The project also includes environmental protection measures, compensation and resettlement, construction supervision, technical assistance, road maintenance, improved border-crossing facilities, and studies to prepare the next phase (II) of the scheme. An important element of the project is the creation of a development fund for channelling project revenues (royalties and other project-related payments) to development-oriented programmes.⁶

International financial institutions in the project

The World Bank approved a loan of \$110 million in September 1991 for Lesotho to finance the first phase of the project. Other donors include the African Development Bank (AfDB), the European Development Fund, the European Investment Bank, the UN Development Programme, and the Development Bank of Southern Africa.

The private financiers included Dresdener Bank, Kreditanstalt für Wiederaufbau (KfW) Bankengruppe,

⁶ Trans Caledon Tunnel Authority website, <http://www.tcta.co.za/Projects/Pages/LesothoHighlands.aspx>.

Figure 1: Major financiers of the LHDP

Phase 1 of the project involved 25 different facilities	
Co-ordinated by seven leading banks in six different currencies	<ul style="list-style-type: none"> • Five multilateral agencies • Five government aid programmes • Five South African banks provided the bulk of the commercial loans and export credits
Commercial Banks	<ul style="list-style-type: none"> • France: Banque Nationale de Paris (loaned \$19.7 million) and Credit Lyonnais (loaned \$17 million) • Germany: Dresdner Bank (\$15.8 million) and KfW (unknown) • UK: Hill Samuel (\$14.5 million)
Development Banks	<ul style="list-style-type: none"> • The World Bank loaned \$150 million to the project • UK's Commonwealth Development Corporation loaned \$36 million
Export Credits	<ul style="list-style-type: none"> • \$118 million from Germany's Hermes • \$82 million from UK's Export Credit Guarantee Department • \$104 million from France's Compagnie Française d'Assurance pour le Commerce Extérieur (COFACE) • \$107 million from Italy's Servizi Assicurativi del Commercio Estero (SACE)
German, French and British development agencies provided bilateral aid; however, Norway's NORAD rejected an application by Kvaerner Energy for \$9.4 million credit support for participation in construction of the Muela dam.	

Source: Compiled from sources including Pottinger L, International Rivers Network, <http://www.thecornerhouse.org.uk/sites/thecornerhouse.org.uk/files/Trojan.pdf>; Hilyard N, <http://www.thecornerhouse.org.uk/resource/lesotho-highland-water-development-project-what-went-wrong>; Lang *et al.*, *Dams Incorporated*, February 2000, http://www2.naturskyddsforeningen.se/upload/Foreningsdokument/Rapporter/rapport_internationellt_damsincorporated.pdf.

Credit Lyonnais, Hill Samuel, and Banque Nationale de Paris. The international construction consortium consisted of companies from Italy, France, Germany, the UK and South Africa.

ANALYSIS

As a small, poor landlocked country, Lesotho has little to sell or trade. In addition, since it is surrounded by South Africa, all Lesotho's imports and exports have to originate in, terminate in, or transit through South Africa. At the time of the initial negotiation of the LHWP agreement in the 1950s, Lesotho had an abundance of water, which was identified as an opportunity for export to South Africa's industrial hub around Johannesburg. The LHWP represents a significant opportunity to diversify Lesotho's economy away from its heavy dependence on Southern African Customs Union revenues – estimated by the AfDB to have fluctuated between 30% and 60% of total revenues for Lesotho over recent years.

Concerns raised by the project

The LHWP was also worthwhile to Lesotho in enabling it to gain access to hydroelectric power. This meant the end of exclusive reliance on South African parastatal, Eskom, with the Muela hydroelectric power plant coming online in 1999. It is expected that output may be increased to 110 MW from 88 MW (with electricity being exported) if Phase II of the LHWP (approved by the South African Cabinet in 2011) is completed.

However, there is a current concern that Lesotho is exporting itself into water scarcity, as a result of recurrent droughts and overgrazing of already limited grazing land. Lesotho's food security is at risk, with as much as 10% of arable land being flooded through accidents or sabotage during construction of the LHWP. With the thousands of Basotho farmers already having lost grazing land and agricultural fields,⁷ it is unclear whether there will be the forethought to negotiate access

7 UN World Food Programme, 'Lesotho', <http://www.wfp.org/countries/lesotho>.

to South Africa's underutilised arable land in subsequent phases of the project.

The effects of climate change and recent droughts have made the potential impact of the LHWP difficult to predict.⁸ Even with advances in modelling and mitigation programmes to measure ecological impacts on rivers, it is difficult to forecast the eventual effect of the significantly reduced flows on downstream areas.

Initially the financial advisers for the LHWP, Chartered West LB – to avoid being marked with 'sanctions-busting' against the South African apartheid government – set up a London-based trust fund through which South African payments could be made. Lesotho was listed as the nominal lender; although South Africa has remained responsible for the repayments throughout.⁹ The World Bank came under scrutiny for its support of the project with full knowledge of this manoeuvre.

As discussed, the project was first considered over 60 years ago, and the treaty negotiations and project consultations date back over 20 years. At the time the World Bank put its support behind the project, there was an abundant supply of water from Lesotho. The recent droughts and water shortages (associated with climate change) were not foreseen. Since then, however, the water shortages and drastically reduced river flows have taken their toll on communities formerly reliant on the river for their livelihood. A World Bank technical report commissioned in 1999 anticipated that if water exports continue as stipulated in the 1986 treaty, the communities' livelihoods would be severely disrupted – particularly in the event of additional disturbances.¹⁰

The electricity produced at the Muela hydro power station has proven too expensive for the average Lesotho citizen. The majority of the country still remains reliant

on candles, paraffin and the traditional firewood, which only adds to the stripping of the environment. No further exploration into alternative forms of renewable energy was conducted for Lesotho.

Despite many reports about the progressive compensation measurement processes, many downstream communities are yet to receive compensation for their forced relocation or the loss of their land and associated assets. Still, the World Bank went on to finance the Phase 1B of the project and has now declared the compensation, resettlement, environmental and social action plans inadequate. The project has not – as is required by World Bank standards – left communities in at least the same condition they were in before the project. There have also been widely publicised instances of corruption resulting in the removal of the first Lesotho Highlands Development Authority (LHDA) chief executive, and the investigation and banning of several multinational corporations from World Bank-funded projects. Lahmeyer International GmbH (Germany) and Acres International (Canada) were two of the companies sanctioned by the World Bank for fraud and corrupt activities.

Pressure points, blockages and compromises

There is little doubt that the South African demand for water in its Gauteng province is the cause for the momentum of this project. The Treaty of 1986 provided the LHDA with final oversight responsibility for implementation, supervision and maintenance of the LHWP. The LHDA is governed by a board of directors but the day-to-day running of its affairs is in the hands of its chief executive. The South African parastatal counterpart to the LHDA is the Trans-Caledon Tunnel Authority, which is responsible for the components of the projects located in South Africa.

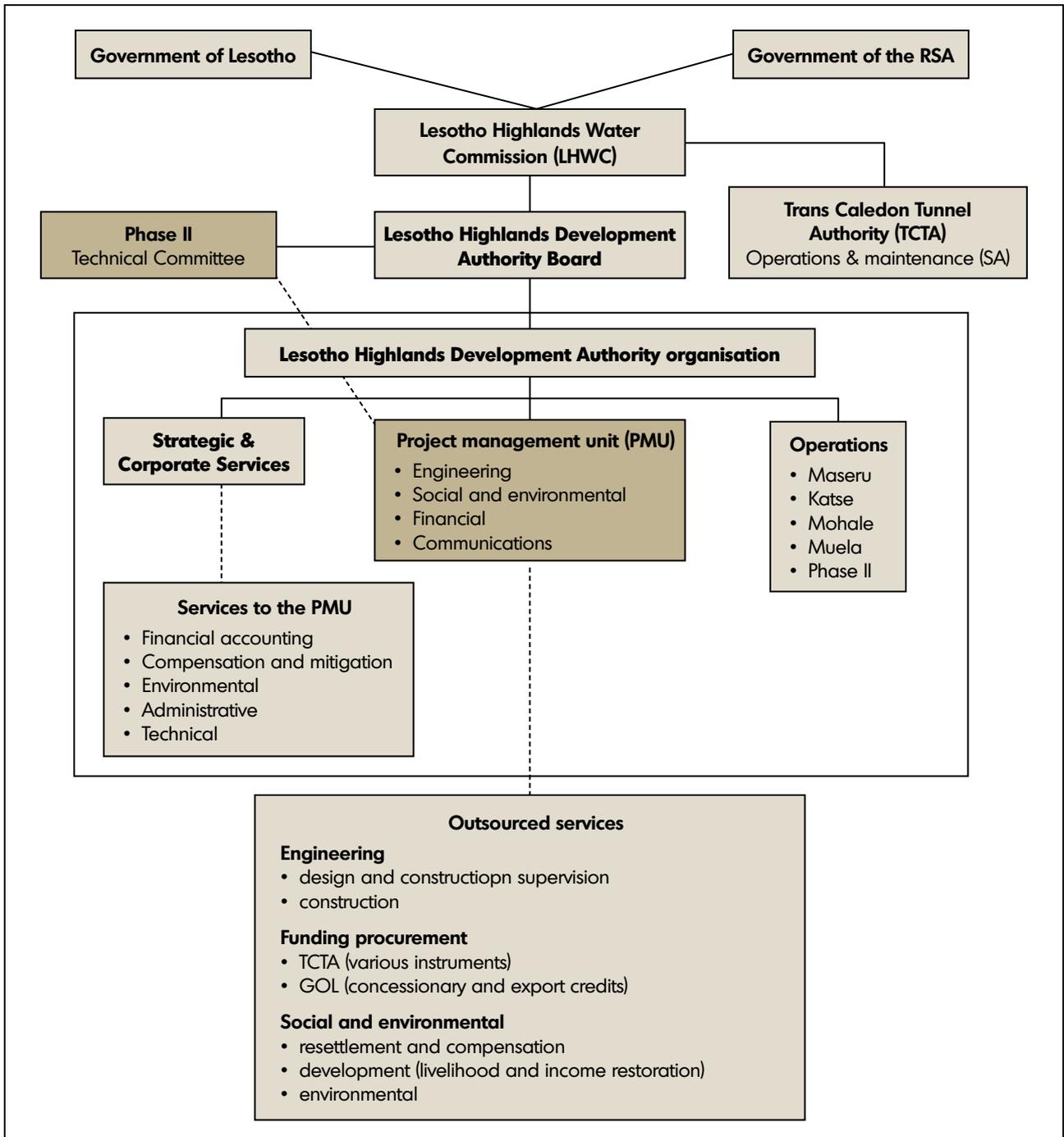
In the 1990s a dispute arose between the two countries regarding Article 10(3) of the 1986 Treaty, in terms of whether tax chargeable in Lesotho constituted a cost that should be borne by South Africa. Lesotho considered this a legitimate charge to South Africa, while South Africa opposed this interpretation. Protocol V of the treaty, which was signed in 1996, embodied a compromise solution in which Lesotho agreed to lower the tax rate for contractors and consultants working on the project; and South Africa agreed to pay this lower rate.

8 Herbertson PW & EL Tate, *Tools for Water Use and Demand Management in South Africa*. Geneva: World Meteorological Organisation, 2001.

9 Hildyard N, 'The Lesotho Highland Water Development Project', Presentation to Chatham House Conference, 'Corruption in Southern Africa: Sources and Solutions', London 10 July 2000.

10 Horta K, 'The World Bank's Decade for Africa: A New Dawn for Development Aid?', *Yale Journal of International Affairs*, Winter/Spring, 2006, pp. 4–23, <http://yalejournal.org/wp-content/uploads/2011/01/061201horta.pdf>.

Figure 2: LHWP organisational structure



Source: South Africa, Parliamentary Monitoring Group, Select Committee on Land and Environmental Affairs, Presentation of the LHWP, 23 October 2012, d2zmx6mlqh7g3a.cloudfront.net/cdn/farfuture/.../121023ratification.ppt (restricted access).

After the end of apartheid, the ANC-led government began to lobby for renegotiation of the terms of the 1986 Treaty, arguing that this had been set up by the apartheid

government, which did not speak for the majority of South Africans. Eventually at South Africa's insistence, Protocol VI, which focused on the governance of the

project, was signed in June 1999 as an addendum to the treaty to give the JPTC overall responsibility for the project.

Official claims were that the project was not only intended for resource- and manufacturing-heavy industrial centres, but pertinently to meet the water needs of South Africa's poor black communities. However, the continuing inadequacy of water and sanitation supply in urban townships in Gauteng and rising costs of water services cast doubt on the latter assertion.

On 16 May 2013 officials from both countries agreed in principle on the terms of Phase II of the project, involving the construction of the Polihali dam, additional tunnels and a pumping plant. This will cost the South African government about ZAR 9.2 billion. Tenders are yet to be issued; however, completion is already earmarked for August 2020. This schedule is viewed by many as unrealistic.

CONCLUSION

At the onset of the LHWP, few questions were raised about the environmental and social impact of the project. In both countries, the political setting was repressive and the terms negotiated had to be accepted by the affected people.

With political change in both countries, communities, and national and international non-governmental organisations began to question the project's impact. The technical aspects of engineering were exceptional; however, impact assessments were not concluded comprehensively with full knowledge of future droughts, which affected the availability of the water sourced from Lesotho. In addition, the resettlement of the communities displaced by the project should have been more carefully and fully considered, and compensation policies more carefully planned and implemented.

South Africa requires water, in particular the Gauteng province, as the industrial nucleus of the country. Lesotho currently has water that it has been exporting, but lacks arable land on which it can cultivate food for its population. South Africa has arable land. Through appropriate negotiation, it would make sense for the two countries to improve the development effectiveness of this and related projects. This is

obviously a fraught subject across the globe with water being a precious, scarce resource and with so many communities dependent on agriculture. Given South Africa's sensitivities around nationalisation of resources, this discussion will probably not find favour in many quarters in the country. The modalities of such a negotiation are difficult to conceive for both negotiating sides. Clearly however, the two countries' welfares are interdependent and this is worth some additional thought.

Moreover, knowing that infrastructure projects of this nature are long term, a level of adaptive management planning needs to be built in to make allowances for changing conditions. South Africa is not currently set up to be a water-conserving society, which is ultimately required given the water scarcity it faces. It is imperative that water and sanitation infrastructure be upgraded to the extent required to minimise losses through leakage. Also, new technologies should be focused on domestic conservation and recycling.

Benefit-sharing in a cross-border context is complex, as the countries engaged need to balance their own needs with regional partners and their respective commitments to regional integration. The costs in this bilateral benefit-sharing project are certainly not shared equally, and indeed some of the anticipated benefits are still not conclusive.

REFERENCES

- Ensor L, 'SA, Lesotho reach agreement on new water project' *Business Day Live*, 17 May 2013, <http://www.bdlive.co.za/national/2013/05/17/sa-lesotho-reach-agreement-on-new-water-project>.
- Hilyard N, 'The Lesotho Highland Water Development Project – What went wrong? (Or, rather: What went right? For whom?)', The Corner House, 2002, <http://www.thecornerhouse.org.uk/resource/lesotho-highland-water-development-project-what-went-wrong#index-03-00-00-00>.
- Hoag C & L Pottinger, 'Lesotho water project needs scrutiny', *Business Day*, 4 October 2011, <http://www.bdlive.co.za/articles/2011/10/04/colin-hoag-and-lori-pottinger-lesotho-water-project-needs-scrutiny>.
- Horta K, 'The World Bank's decade for Africa: A new dawn for development aid?', *Yale Journal of International Affairs*, Winter/Spring 2006, pp. 4–23, <http://yalejournal.org/wp-content/uploads/2011/01/061201horta.pdf>.

CASE STUDY 4: LESOTHO HIGHLANDS: WATER WOES OR WIN-WINS?

Keketso L, 'The mixed blessings of the Lesotho Highlands Water Project: An assessment based on local perspectives', *Mountain Research and Development*, 23, 1, 2003, pp. 7–10.

Klaphake A & W Scheumann, 'Understanding transboundary water cooperation: Evidence from Africa', Working Paper on Management in Environmental Planning, 014/2006. Technical University of Berlin: Berlin, 2006, http://www.bahnssysteme.tu-berlin.de/fileadmin/a0731/uploads/publikationen/workingpapers/WP_14_2006_Klaphake_Scheuman_Transboundary_Wat_.pdf.

Lang C *et al.*, *Dams Incorporated: The Record of Twelve European Dam Building Companies*. Dorset: The CornerHouse, 2000, http://www2.naturskyddsforeningen.se/upload/Foreningsdokument/Rapporter/rapport_internationellt_damsincorporated.pdf.

Ntaote B, 'Thabane order Moleleki's arrest', *Public Eye*, 15 March 2013.

Pottinger L, 'Lesotho Highlands Water Project: What Went Wrong?', *International Rivers*, 31 October 2005, <http://www.internationalrivers.org/resources/lesotho-highlands-water-project-what-went-wrong-4060>.

Tlali C, 'Water deal irks Lesotho's new rulers', *Mail & Guardian*, 7 December 2012.

ABOUT THE AUTHOR

Lesley Wentworth is programme manager for the Economic Diplomacy programme at the South African Institute of International Affairs. Her areas of research include foreign direct investment and public–private partnerships in emerging markets and developing regions.

South African Institute of International Affairs

Jan Smuts House, East Campus,
University of the Witwatersrand,
Braamfontein 2017, Johannesburg, South Africa
Tel +27 (0)11 339 2021
Fax +27 (0)11 339 2154
info@saiia.org.za • www.saiia.org.za

European Centre for Development Policy Management

Onze Lieve Vrouweplein 21,
6211 HE Maastricht, The Netherlands
Tel +31 (0)43 3502 900
Fax +31 (0)43 3502 902
info@ecdpm.org • www.ecdpm.org

THIS PROJECT IS
SUPPORTED BY

