Multilevel assessment of a large-scale program for poverty alleviation and wetland conservation: lessons from South Africa

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Abstract

The implementation of large-scale programs for environment and development presents two main challenges: the tensions between both goals and the disconnect across policy levels. To contribute to overcoming these challenges, we assess a national multi-partnership program for poverty alleviation and wetland restoration in South Africa: *Working for Wetlands*. We analyse this innovative polycentric program at the macro and micro levels. At the national level, we assess the policy development and implementation model. At the local level, we analyse its impact on livelihoods and on opinions about development and the environment at a specific location. We use data from in-depth interviews across scales, household surveys (n=47) and focus group discussions. The strengths of this program can inform more effective design of further large-scale environment and development policies. However, critical issues originated at the national scale are likely to hinder the permanence of improvements at the micro level.

Keywords

environmental policy, wetland restoration, livelihoods, perspectives, multi-scale policy evaluation, development

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1 Introduction

Polycentric models of governance are increasingly relevant in environmental policy, and government-led multilevel programs can have a key role in such models (Jordan and Huitema 2014). In large-scale multilevel programs, the goal of environmental conservation is often combined with poverty alleviation into a win-win policy that aims to address these two major global challenges for sustainable development (UN 2015). However, planning and implementing these programs requires innovative approaches to overcome two fundamental difficulties: achieving the two goals of conservation and development simultaneously, and ensuring policy integration across levels (Cash et al. 2006).

The complexity of achieving environment and human development goals is epitomised in the payments for ecosystem services literature, particularly in the fairness-versus-efficiency debate (Pascual et al. 2010). For example, environmentally vulnerable sites may not necessarily overlap with the poorest communities. As a result, policy resources and targeting in practice tend to focus more either on poverty alleviation or on environmental conservation. However, in spite of much discussion about potentially negative interactions between both goals, combining them has several benefits. Fundamentally, enhancing development may be critical for long-term environmental conservation (Leimona et al. 2015).

The path from the conceptualisation of a large-scale program to its actual effects on the ground goes through numerous geographical and socio-institutional layers. This complexity often curtails effectiveness, as demonstrated by the extensive literature on integrated conservation and development projects (see e.g. Brown, 2003; Minang and Noordwijk, 2013). Arguably, policymakers or project managers are embedded in dynamics that differ importantly from those of local actors. This separation can result in differing understandings of problems, needs and solutions (Adger et al. 2001), and the long-term effectiveness of a program may be at risk if it fails to incorporate the specifics of local realities (Binns, Nel, and Hill 1997). In this

situation, the capacity of the program to adapt to local conditions is weak, potentially hampering the permanence of its impacts.

These challenges are exemplified by two such large-scalees in middle-income countries that are rich in natural resources: the Payments for Hydrological Services in Mexico (Alix-Garcia et al. 2009) and the Sloping Land Conversion Program in China (Wang and Maclaren 2012; Cao 2011). Both programs were criticised because the targeting of locations were often inappropriate from an environmental point of view. In both cases, the authors argued that inadequate targeting occurred because the projects were not initially designed for the large scales that they adopted later on; throughout the implementation and rescaling processes, the targeting criteria were relaxed and became too malleable to various institutional forces.

In order to provide new insight about how to overcome these two key difficulties—achieving environment and development goals and integrating policy levels effectively—we evaluate the impact of a national multi-partnership program for poverty alleviation and wetland restoration in South Africa: *Working for Wetlands* (WfW hereafter). Even though this program has run for almost 15 years, no assessment has been published in the academic literature. A few studies discussed *Working for Water*, a larger program to eliminate invasive species that preceded WfW (e.g. Turpie et al., 2008). A similar model to that of WfW has been applied to other national programs in this country (e.g. *Working with Fire*), and the lessons learnt from these multi-partnership innovative experiences can be helpful not only in South Africa, but also in other countries that develop large-scale environment and poverty alleviation policies (such as Payments for Hydrological services in Mexico or the Sloping Land Conversion Program in China). Such large-scale programs include policies within the realm of payments for ecosystem services as well as policies with a mix of instruments. These programs share fundamental requirements of scalability, adaptability to local conditions and efficient flows of capital across the governance structure.

In 2008 WfW had 40 projects throughout South Africa, targeting 91 wetlands and providing direct employment to almost 2,000 people (SANBI 2008). It evolved from joint efforts among different national departments and NGOs to address the severe environmental degradation experienced in almost half of the wetlands across the country (Dini 2004). In parallel, unemployment became a major concern in South Africa in recent decades (Kingdon and Knight 2007). Jointly, water scarcity, ecosystem

degradation and unemployment are common concerns also in other large and resource-rich middle-income economies.

This evaluation of WfW is focused on the link between the policy process at the macro level and the impacts at the micro level. At the macro level, we assess three critical aspects: the institutional development of the program, how the initial concept is reflected on the implementation, and the adaptability of the program to a local context. At the micro level, we assess the impact of the program on livelihoods and opinions at a specific location. We explore whether the benefits are likely to remain. Policy appraisals tend to focus on evaluating current policy outcomes, but rarely explore their long-term impacts (Grosjean and Kontoleon 2009) and therefore may omit important caveats that can hinder long-lasting effectiveness. We then discuss key areas for improvement, as well as highlight pivotal factors of success that can be transferred to other contexts.

2 Conceptual framework and methods

To guide this analysis of the institutional and implementation processes and of the impacts of the program, we develop a conceptual framework, adapted from a classic framework of the public policy process (Figure 1). The framework we propose begins with conceptualisation (or agenda setting). An exploration of solutions and feasibility ensue, which result in defining the program characteristics. The process of implementation then is followed by an evaluation of the impact.

Figure 1: Conceptual framework of the policy process at the macro and the micro scales

In this framework, each component of the process is predominantly located at the macro or at the micro scales. The implementation connects both scales, and the policy outcomes or impacts are experienced on the ground in various areas, namely: environmental, socio-economic and opinions (the latter is relevant for the continuation of a program in the long term). Once the local impacts are realised, the policy process continues (in theory) with a reassessment of whether the problem persists, evolves or is observed again after a period, in which case the policy may have to be reconceived.

The assessment of the policy at the macro and the micro scales in this study conforms to the framework above. In order to obtain data to assess each of the steps, this study combines in-depth interviews to key informants across levels and program reports for the macro scale, household surveys and focus group discussions for the micro scale, as explained below. Most of the primary data was collected in 2007. Further expert consultation was conducted in 2013.

2.1 Macro level data

At the national scale, we reconstruct the history and initial goals of the program. We narrate the institutional development of the program, including problem conceptualisation, identification of solutions, gathering of resources to ensure feasibility, policy design and process for implementation.

In order to build this account, we conducted face-to-face in-depth interviews with eight experts involved in the management of the program. The selection of informants for the interviews aimed to cover all levels of the program: national, provincial and local. The sampling approach to select the interviewees was a combination of purposive and snowball. We contacted the manager of WfW in the location under study, who named further individuals involved in this specific project at different scales. We contacted the planning manager of WfW nationally, who named three further experts. The experts interviewed included two implementers of WfW at the local level and the manager of the natural reserve where restoration was being conducted in the case selected, a wetland expert at the provincial level, an NGO program manager (both largely involved in the development of the program nationally), the provincial coordinator of WfW, and two managers of WfW at the national level.

We recorded and transcribed the interviews, and coded them qualitatively to identify main topics regarding the process, program strengths and weaknesses, and recommendations. We complemented these data with secondary information which included reports about program strategy and principles, and monitoring, auditing and procedural documentation.

2.2 Micro level data

At the local scale, we analyse the micro level impacts of the WfW project in Seekoeivlei, a wetland in South Africa's Free State in the upper Orange river basin. WfW began to restore this wetland in 2003, employing workers from a township nearby (Zamani). This location is representative of the social history and current socio-economic dynamics of the townships in the region and of the environmental history of many other wetlands in the country (see description below).

We focus the analysis on the differences in livelihoods and employability of beneficiaries and on their opinions about development needs and the environment. As a proxy to understand the changes induced by WfW, the employees of the restoration program (*workers* of WfW) are compared to a control group (*non-workers* of WfW). We collected data that operationalises a range of socio-economic variables in a standard manner as well as opinions relevant to environment and development in the area, and included open-ended questions.

We randomly selected 22 WfW workers from 46 total employees and administered an in-person questionnaire. All respondents had been working in WfW for at least two years. A control group of 25 non-workers of similar age and gender balance also completed the questionnaire. The latter were selected through multi-cluster random sampling of houses over the aerial photograph of the township under study. A local research assistant helped with language interpretation (Zulu and Sesotho). We tested the questionnaire with the research assistant and revised as necessary. In addition, three ex-workers, two contractors and a number of individuals from wealthier backgrounds (living outside the township) also responded to the questionnaire. We excluded their responses from the statistical analysis and interpreted them qualitatively.

The questionnaire included demographics, economic information, as well as opinions about the use of water, wetlands and development. In order to explore the potential for socio-economic sustainability of the livelihood benefits of the project, we included an open-ended question about the types of jobs in which respondents could be employed. We produced descriptive statistics from the survey data for workers and non-workers (using R Core Team, 2015 v2.15.2), and conducted statistical tests for the differences between both groups for all variables. We coded the open-ended questions and calculated the frequencies of each concept.

After conducting the surveys, we organised two focus group discussions with women and men working in WfW in order to obtain more detailed information, and to understand how core issues were discussed within a group and whether gender differences existed. We invited all workers surveyed to the focus group discussions, and each of the groups had at least 10 participants. We recorded, translated and transcribed the focus group discussions, and analysed them using qualitative coding to identify messages around main topics.

3 Working for Wetlands

In South Africa, water is increasingly scarce (Lange, Mungatana, and Hassan 2007) and this scarcity affects the poorest sectors of society (Sullivan et al. 2003). South African wetlands are predominantly related to the fluvial network (Sieben et al. 2011) and therefore play a major role in water supply by providing water purification, flood control, habitat for biodiversity and other ecosystem services and goods (UNESCO 1971; Sieben et al. 2011). However, these ecosystems used to be considered 'valueless wastelands' (Krech, McNeill, and Merchant 2004) and they were often drained for agricultural, infrastructure or other development projects (Dini 2004).

3.1 Policy conceptualisation and institutional design

With the aim of addressing the environmental degradation problem in South African wetlands, WfW originated from separate efforts at government and NGO levels (see timeline in Figure 2). In 1991 a nationwide wetland restoration program, the *Rennies Wetland Project*, begun by initiative of the Wildlife and Environment Society of South Africa, WWF-SA, and three corporate funders (Lindley 2003). The project trained many volunteers on wetland assessment techniques across the country, surveyed over 40,000 ha of wetlands, developed restoration plans for many of them, and raised awareness among landowners and government agencies to undertake sustainable wetland management (interviewee, p.c.). In order to engage partners to fund restoration projects, the program emphasised the relevance of wetlands for water purification, provision of water supply and management of water flow. These developments marked the identification of the problem and the feasibility assessment of the policy process (Figure 1).

Figure 2: Timeline of the national policy process of Working for Wetlands

After defining the problem and conducting preparatory work, the policy design for WfW adapted the model already in place of *Working for Water*. The South African government initiated *Working for Water* in 1995 with the aim of controlling invasive alien plants and to provide employment (Turpie, Marais, and Blignaut 2008). This program was a partnership between the Department of Water Affairs (DWAF), the Department of Environmental Affairs and Tourism (DEAT), and the Department of Agriculture.

WfW was initially designed as a component of *Working for Water*. The *Rennies Wetland Project* (later renamed *Mondi Wetlands Project*) raised awareness and lobbied to include a wetland section within *Working for Water*, in order to rehabilitate wetlands at a national scale (interviewee, p.c.). Wetland restorations within *Working for Water* would increase the efficiency of water management with a relatively small amount of investment, while promoting employment.

Continuing with the stage of policy design, in 2000 the wetland section was reorganised for size and strategic reasons and to give it a more robust structure. It was then renamed WfW. This separation would ensure the long-term provision of funding for the project (interviewee, p.c.). DWAF provided initial funding of R20 million in 2000-2001 (approximately €1.5 million; interviewee, p.c.). Inter-ministerial cooperation was catalysed for cooperative governance of WfW among the DWAF, DEAT and Department of Agriculture. In 2003, the program moved to DEAT in a subsidiary initiative called *DEAT/Working for Water-Wetland Restoration Partnership*,

implemented by *Working for Water*, and the budget raised to R40 million annually (approx. €3 million; interviewee, p.c.).

In 2003 the Department of Labour created the *Expanded Public Works Program* (EPWP) for poverty alleviation. This was based on the *National Public Works Program* created in the mid 1990s (Frye 2006; McCord 2004; Phillips 2004a; Phillips 2004b) and it is a comprehensive framework to create employment via labour-intensive government projects. The Department of Labour funds projects that operate under the EPWP framework, which are managed by other programs such as *Working for Water* and WfW.

In 2004 the newly created South African National Biodiversity Institute (SANBI), a statutory body and agency of DEAT, became the host for managing WfW. SANBI had more managerial freedom than governmental institutions and would arguably improve financial efficiency (interviewee, p.c.). Also in 2004, WWF-SA together with Mondi Wetlands Project commissioned a qualitative assessment of the impact of WfW on livelihoods in three locations (Nkoko and Macun 2005). In 2006-2007 WfW had an annual budget of R66 million (approx. €5 million), which raised to almost R80 million in 2011-2012 (approx. €6 million; SANBI, 2012a).

3.2 Management and implementation

WfW employs at SANBI between ten and twelve management staff that are responsible for management at the national scale, while other positions are externalised through contracts. Funding for WfW is provided by Treasury to DEAT, which then passes it on to SANBI.¹ The WfW guidelines based on EPWP requirements limit the percentage of the budget spent on administration and professional fees to 14%. These guidelines require that a minimum of 42% is spent on wages and the rest on material, community facilitation, training and logistics (SANBI 2012b).

In practice, the criteria for targeting wetlands for restoration are variable, though alternative targeting based on environmental conditions has been proposed (Sieben et al. 2011). Locations can be suggested via wetland forums organised across the country or by initiative of the provincial coordinators or other stakeholders (interviewee, p.c.). Once a location is chosen, a contracted engineering firm elaborates a

¹ This is a program funded by the state, based on the principle of reinvesting collected taxes into projects for social benefit that address problems that may not otherwise be solved by the market. It is not, *a priori*, a market mechanism such as payments for ecosystem services.

Restoration Plan in cooperation with provincial government experts. SANBI makes an open call and selects the company or the public entity that will implement the project. The implementing agency is encouraged to employ one or more locally-based emerging contractors that lead teams of workers. The latter are selected via a call organised by the local authority (interviewee, p.c.). The environmental impact of the proposed restoration is assessed ex-ante in an *Environmental Management Plan*. Prior to the restoration, a legal agreement is signed between landowners and SANBI to safeguard the restoration work.²

At the time of the interviews, an auditing of the environmental performance of restoration structures at the national level was being carried out by an external auditor. However, the environmental performance of each restoration project was not being quantitatively monitored, arguably due to the lack of resources to carry out these tasks (interviewee, p.c.). Improvements are reportedly visible (Dini, 2004, interviewees, p.c.) and in 2008, the Water Research Commission published a report that showed improvements in the ecosystems of the six cases that the study analysed (interviewee, p.c.).

WfW aims to give an opportunity for unemployed people (particularly marginalised and vulnerable groups) to enter the labour market by providing income, training and qualifications. Workers could be employed during a maximum of 24 months in a period of five years, although this restriction was eliminated in 2010. The selection of workers intends to follow EPWP guidelines and nears the established targets of 60% women, 20% under 35, and 2% disabled among the beneficiaries, of which at least 80% need to be living in the local area (Dini 2004; South African Department of Labour 2002; SANBI 2012b). For each 22 days of work, workers receive two days of training covering technical skills, first aid, health, safety, environmental awareness or business skills (SANBI 2012b). There is a core training provided to all workers and further training needs are agreed between the national training manager at SANBI and implementers at each location.

2 During the implementation of a project, implementers submit monthly *Project Progress Reports* and provincial coordinators produce *Inspection Reports* about the progress and working conditions. Implementers may have more than one project and they gather all the *Project Progress Reports* into a *Cluster Report* every two months, which is conditional for payment (interviewee, p.c.). In addition, yearly or at the end of a project, an external auditor makes a *Regularity Audit* with a check-list provided by SANBI. There is also an internal code of practice (*Basic Management Practices*).

4 The program in Seekoeivlei

4.1 Case study description

The Upper Orange river basin provides water to Gauteng province, where Johannesburg agglomerates the main industrial centre in Southern Africa (Sullivan and Fisher 2011). The wetland of Seekoeivlei is considered important for the regional and national economy for its water supply function in the context of this basin. Seekoeivlei is located in a rural area next to the town of Memel and the township of Zamani in Free State (Figure 3). It is a marshland composed of about 220 small seasonally-flooded oxbow lakes formed in the meanders of the Klip River (Tooth et al. 2002) and it is the largest wetland on the Highveld (Collins 2004). The wetland is known for its exceptional bird biodiversity and other natural values (Brett 2002; Eckhardt et al. 1993; du Preez and Marneweck 1996). It attracts nature-based tourism as well as environmental education activities. The wetland is also one of the 21 wetlands declared Ramsar sites from over 114,000 wetlands mapped in South Africa (SANBI, National Wetlands Inventory).

Figure 3: Location map of Seekoeivlei Nature Reserve in Free State. Sources: SANBI, Ramsar, OSM.

The population in Memel is of approximately 468 inhabitants, predominantly white, and 5,011 in Zamani (Statistics South Africa 2001), which has a much greater density (See Figure 3). Zamani grew a lot after 1994, when the introduction of the minimum wage nationally triggered massive migration of farm labourers to townships, because farmers would no longer employ as many labourers as they used to. There is no relevant industry in the area and tourism and farms provide most employment. Overall, the most frequent livelihood strategies in the township are, according to our data, on farms, domestic work, and casual or part-time jobs. Many households depend on migration remittances or only on child grants or pensions, a situation also found elsewhere in Free State during the nineties (Murray 2000) and more widely in South African rural households in subsequent decades (Møller and Radloff 2013). Unemployment remains a major problem (Banerjee et al. 2008).

During the last century, this wetland was degraded due to overgrazing, drainage channels to gain agricultural land, packed sand-bags to divert the original course of the river, invasive alien vegetation, inappropriate establishment of foot and livestock paths, and off-road vehicle tracks and roads (interviewee, p.c.). Those changes eroded the capacity of the wetland to store water and its quality as habitat for biodiversity.

In 1978, *Free State Conservation* protected 378 ha of the wetland (FSC 1985), and between 1991 and 1994 it bought further land. The Resource Conservation Sub-directorate of the provincial Department of Agriculture made the first restoration attempt in 1993 by building some structures to prevent reduction in the water level and further damage (Pienaar 1993). In 1996, the Free State Conservation agency received funding for restoration from the government water utility in Gauteng Province (FSC, 1996; and M. de Fontaine, p.c.). However structures started to fail early (interviewee, p.c.).

In 1997 by initiative of the Free State Department of Environmental Affairs, Seekoeivlei was declared a Ramsar site (Ramsar Convention Secretariat 2013). This is the only Ramsar wetland in Free State, where more than 23,000 wetlands have been inventoried. Currently, the Nature Reserve extends over 4,455 ha, covering 2,800 ha of wetland area (FS-DTEEA 2005) and the Free State Department of Tourism, Environmental and Economic Affairs funds and manages it.

In April 2003 WfW started a new project to raise the water level and reduce the speed of water flow using concrete and gabion structures (SANBI, DEAT, and LRI 2006). The local municipality made a public call for workers. In principle, the selection was based on the guidelines explained above and among those in most need of employment. However, how this was done in practice remains unclear from the interviews; reportedly, employees of WfW had been selected at random among all the unemployed attendants in a public call made by the municipality. In 2007, the project employed 46 workers in Zamani, arguably the largest employer in the township. The annual budget was almost R1.5 million for 2008-09 (approx. €100,000; SANBI, 2009). According to the manager of the Nature Reserve, the wetland environment improved after the intervention of WfW: the water level increased and some wetland vegetation recovered. Nonetheless, no systematic quantitative monitoring of the ecological state of

the wetland had been done. In 2011, the second phase of the wetland restoration plan was published (SANBI 2010; SANBI 2011).

4.2 Impact on livelihoods

The socio-economic characteristics and opinions of the workers surveyed as well as those of the control group (non-workers) are compared below. The main differences are found in demography and in the opinion questions. Table 1 shows the socio-economic results. The interpretation of the results is complemented with qualitative explanations collected through the open-ended questions.

Table 1: Demography and wealth statistics

Variable	Categories	Workers (n = 22)	Non-workers (n = 25)	p.value
People in the household, from which: ^a		7.55	5.88	.04**
Children below 2 years ^a		0.64	0.44	.52
Children below 16 ^a		3.27	2.40	.10*
Aged 16 - 25 ^a		1.32	0.96	.11
Aged above 25 ^a		2.95	2.52	.46
Highest level of studies in the household ^b	<i>Primary</i>	1	0	.61
	<i>Secondary</i>	20	21	
	<i>Tertiary</i>	1	2	
	<i>Others</i>	0	2	
Range of income ^b	<i>< R500</i>	3	6	.46
	<i>R500-1000</i>	12	13	
	<i>R1000-1500</i>	6	3	
	<i>>R1500</i>	1	3	
Property of the house ^b	<i>Government</i>	1	3	.65
	<i>Informal</i>	3	2	
	<i>Owned</i>	18	20	
Wealth index based on owned goods ^c		5.46	6.79	.10

Note: Non-parametric tests are applied for robustness (Mann-Whitney-Wilcoxon for continuous variables, Fisher's exact test for categorical variables). Significance: ** $p < .05$, * $p < .1$.

^a Number of individuals per household and Mann-Whitney-Wilcoxon test.

^b Count of responses and Fisher's exact test.

^c The wealth index is based on the number of goods in the household amongs the following: bicycle, motor vehicle, washing machine, cooker, television, radio, land-line and cellphone, fridge, power supply, gardening tools, DVD, Hi-Fi, microwave, freezer, and photo camera. Goods are weighted by the Consumer Price Index of South Africa of 2008 (Statistics South Africa 2009).

WfW encouraged some differences in livelihood assets, most notably in human capital. The two aspects of human capital considered quantitatively are the size of the family and education level. Families are significantly larger among workers, who have

345 more children below 15. Workers have on average more children below two years (born
346 within the duration of the program in Seekoeivlei) although this difference is not
347 significant.

348 As expected, workers improved their skills and got experience, according to
349 the open-ended responses. They mentioned having paid education for children and
350 certificates for other members of the family. Some of them also expressed an increase in
351 self-esteem for they are now contributing to the welfare of the household.

352 Regarding income, the average level among workers and non-workers is similar,
353 although the latter have more observations in the two extreme categories, showing more
354 spread. WfW arguably ensures a minimum level of income during the period in which
355 people are in the program, which brings workers up from the poorest categories. Workers
356 use their income principally for immediate consumption such as bills, food and clothes.
357 Most workers said having bought furniture, but they made no major enhancements, and
358 they have fewer durable goods in their household than non-workers, according to the
359 wealth index. In contrast, contractors have a visibly higher purchasing capacity and they
360 reported important expenses such as expanding the house.

361 There are remarkable differences between workers and non-workers regarding
362 their opinion on water management policies and participation (Table 2). Workers have a
363 stronger position in favour of the local management of water (question F).

Table 2: Opinion about wetlands, water, development and participation

Question	Categories	Workers (n = 22)	Non- workers (n = 25)	p.value
A. Do you benefit from the wetland as a tourism attraction? (n = 42)	A lot	6	3	.00***
	A bit	6	0	
	No	9	18	
B. Dams or wetlands are very important for your livelihood (n = 38)	Strongly disagree	1	3	.04**
	Disagree	0	6	
	Neutral	0	1	
	Agree	1	6	
	Strongly agree	11	9	
C. Dams or wetlands are less important for us now than before (n = 42)	Strongly disagree	12	5	.01**
	Disagree	7	7	
	Neutral	1	2	
	Agree	0	6	
	Strongly agree	0	2	
D. The protection of Seekoeivlei has improved your access to it (n = 43)	Strongly disagree	0	0	.03**
	Disagree	6	5	
	Neutral	0	6	
	Agree	15	10	
	Strongly agree	1	0	
E. The conservation policy in Seekoeivlei has taken into account your needs and opinion (n = 30)	Strongly disagree	1	1	.72
	Disagree	3	4	
	Neutral	0	1	
	Agree	1	7	
	Strongly agree	8	4	
F. The use and conservation of water is better managed at a local level (n = 45)	Strongly disagree	1	1	.06*
	Disagree	2	4	
	Neutral	0	0	
	Agree	5	12	
	Strongly agree	14	6	
G. What do you think is most important for the development or survival of the community? (n = 47)	Jobs	13	9	.02**
	Quality housing	3	1	
	Others	2	4	
	Toilets	1	1	
	Health centre	1	0	
	Food access and quality improvement	1	0	
	Electricity	1	0	
	Water access and quality improvement	0	2	
	Streets	0	1	
	Housing	0	7	

Note: Original questions were in Zulu. Count of responses and p-values for Fisher's exact test are reported. Significance: *** $p < .01$, ** $p < .05$, * $p < .1$

In terms of the likelihood of using the new skills for future jobs, workers do not envision an enhancement of their livelihood strategies derived from the newly-acquired skills. According to the program training premises, workers should be able to work in erosion control in the region in the future. Indeed, they feel confident about their

knowledge to solve erosion problems. However, when talking about potential future occupation they refer to jobs related with their employment prior to WfW. Also, the four ex-workers interviewed were unemployed during the course of this fieldwork and, except for the contractors, workers do not know how to use these skills to seek further employment. In addition, while erosion is severe in the area, landowning farmers do not perceive this as an urgent problem, thus there is no explicit demand for restoration skills. This combination of a lack of skills awareness and of demand for these skills implies that the positive impact of WfW in the livelihood strategies of workers other than contractors might not sustain beyond the period of employment within the program.

4.3 Perceptions about development and environment

We analysed and compared opinions about development and environment in a broad sense of how people define them (Figure 4), and in a specific sense about the development needs of their community and about their relation with the wetland (Table 2 above).

Figure 4: The frequency of concepts in the definition of development and environment

Note: Frequencies within each group of respondents are shown. Each respondent could mention more than one concept and each mention is counted.

Among the concepts used to define development, workers stress more strongly that development is linked to employment generation. This was corroborated in the focus group discussions, where development was predominantly defined as job creation. About their community, respondents value most the low level of crime and insist on the severity of the lack of employment as the main problem to address (question G in Table 2). However, according to the open-ended responses there is little precision about how employment is to be achieved; the word ‘job opportunity’ is used like a black box, meaning any task that will give money in return of work.

One of the capacity-enhancement goals of the program is environmental education. Although the variability of answers and concepts related to the environment is lower than that of development (Figure 4), workers in general have a deeper awareness of environmental issues. Workers articulate a more complex discourse, with a higher frequency of holistic views and of ‘*Others*’, a category that includes action phrases like ‘*We need to preserve*’. Workers feel that they have more knowledge about environmental issues than before, and they also feel having a better knowledge of the environment in Seekoeivlei in comparison to other residents in the township. When talking about the environment, workers highlight water conservation and soil erosion. This latter observation may be a consequence of the macro-scale strategy in WfW, of emphasizing water rather than biodiversity (see above), which directly influenced the environmental training provided.

Workers also agree more strongly that wetlands are important for their livelihood and that they are more relevant now than before (questions B and C in Table 2). They perceive that wetlands are important because they provide and purify water, although they believe that this hydrological function is important as a source of life for animals and plants, but not necessarily for their own livelihood. Their perception about the ecosystem is thus alienated from their quotidian life, leaving out the important pillar (in environmental awareness) of connecting nature with one's basic needs.

The perception of the link between livelihoods and wetlands is higher for wealthy families outside the township who benefit from the tourism it attracts, according to the few interviews conducted among these households. Despite that a higher proportion of workers than non-workers responded having benefits from the wetland as a tourism attraction (question A in Table 2), people in the township generally

perceive the reserve as a luxury only for tourists and would not usually use or visit nearby wetlands.

It follows that non-workers have little knowledge of what a wetland is and some acknowledge the need for participation and education to appreciate what is in Seekoeivlei. This was confirmed by a few responses that reveal important misunderstandings about what is in the reserve, what it is for and who can access it. The higher environmental awareness of workers is thus an effect of the program that is consistent with its goals.

5 Assessment of the program

The implementation of the program is consistent with its basic principles and with the initial objectives of each of the initiatives that converged into it (development and restoration). Particular features of the policy process are clearly reflected on the ground (e.g. the emphasis on water instead of biodiversity), the program is achieving some positive impacts in the socio-economic dimension (e.g. less people in the lowest income category and some additional education, also in the wider household) and, reportedly, in the environmental dimension. The project has attained some specific livelihoods goals: it created working days, provided wage, well-being and skills. Development is thus provided as job creation and skills training, and environmental awareness is increased. The results however, give indication that the continuation of employment after WfW may be uncertain. The following are the main positive aspects of WfW, which can provide lessons for other programs, as well as the main caveats.

5.1 Strengths

Throughout the policy process narrated above we identify four key success strategies: a) emphasizing water rather than other less-known ecosystem benefits; b) efforts in awareness raising, media coverage and lobbying; c) labour-intensive restoration measures to increase the amount of employment provided and d) specific institutional moves.

First, from the beginning, the water management function of wetlands was emphasized as their main value, instead of less-known ecosystem services. This decision helped to get more institutions involved, to strengthen their motivation and, ultimately, to secure resources. Water management can grab the attention of decision makers and stakeholders more effectively than, for example, biodiversity, because they

can relate water to direct uses of a market economy and to episodes of drought and floods. This positive umbrella effect of the concept of water was also identified in the *Working for Water* program (Turpie, Marais, and Blignaut 2008).

Second, in the years prior to WfW, the non-governmental organisations that catalysed it made a thorough effort to inventory degraded wetlands, to increase human capacity for wetland monitoring and to track and promote in the media the representation of the project and of the topic of wetland conservation. Joint efforts in awareness raising, media coverage and lobbying, together with intense floods in 2000, contributed to increase the presence and relevance of wetlands in the public opinion and among academics and professionals (interviewee, p.c.). In sum, there was a significant investment at the conceptualisation and feasibility stages, before resources for the program were secured.

Third, every individual restoration plan was designed to be labour intensive. This feature linked the wetland restoration target with creation of employment, which had a strong influence in tapping into funding from EPWP. Unemployment is acute in South Africa and thereby investing the same budget to solve two concerns simultaneously was attractive for more potential funders. Additionally, the use of labour-intensive methods enabled more environmentally-friendly procedures, for it avoided heavy intervention on the land (Dini 2004).

Finally, specific institutional moves explained above helped to overcome hurdles along the policy process, namely: appointing full-time wetland provincial experts and co-governing the program among multiple institutions. The establishment of full-time experts within government staff introduced wetlands further into the political agenda. In addition, having multiple hosting departments ensured that major decisions would not depend on a single institution only, and this helped secure the continuation of WfW at stages when it became at risk due to political conjunctures. Later and reportedly, hosting the program within a subsidiary institution allowed higher efficiency in financial management, although there are contrasting perspectives among interviewees with respect to this last remark.

5.2 Weaknesses

WfW is a complex program that deals with many different actors and processes across levels, and it is inherently difficult to implement sound principles on the ground.

We identified the following limitations in order of severity: intermittence of the works, lack of a local or regional market for the skills acquired, lack of financial capacity for particular tasks (particularly for environmental monitoring) and complexity of the learning process with landowners. These critical issues may hinder the local socio-economic and environmental improvements from being sustained in the long term. They are explained below, ordered according to the policy process of the conceptual framework.

Lack of a local or regional market for the skills acquired

An important challenge of the program is to increase worker capacities in a way that is meaningful and useful for future employment. Experts interviewed argued that there was a lack of emphasis in life skills (in contrast to technical skills) and of awareness of employees about their transferable skills. In employees' opinion, training is helpful although it is short and sometimes redundant, and they would like to go more in-depth on some subjects.

Another key challenge is the need for a coherent coordination between the skills provided and local market demands, and this is reflective of a lack of connection between policy scales. For example, workers often did not link the skills they had learnt with plausible future jobs. Even when workers were aware of their capacities, in the current local market there might not be a niche for these skills.

Both limitations may hamper the socio-economic sustainability of employment after the project finishes. This constraint has been identified by some participants, by several of the interviewees, and also by other research about the EPWP (Frye 2006) and about agricultural development programmes in South Africa (Jacobson 2013). It is also one of the most complex difficulties to overcome in comparison to more precisely identified limitations such as budget delays.

A preliminary analysis of the labour market and an awareness-raising strategy among landowners to increase the demand to solve erosion problems could improve the likelihood for the employment promoted by WfW to continue beyond the program. Such an ex-ante socio-economic assessment could be integrated at the planning stage of each project, in parallel to the existing environmental assessment.

Complexity of the learning process with landowners

Some experts identify an insufficient engagement process with landowners as a serious threat to the environmental sustainability of restoration works. The risk entailed

is that the positive outcomes could be reverted if wetland management returns to pre-restoration practices after the project terminates. This risk is particularly high in cases of private property in which the wetland is not restored by those who damaged it. In these cases, the long-term environmental sustainability of the project benefits does not depend on the livelihoods of those participating in the program, but rather on landowner behaviour.

In addition to the legal agreement signed between landowners and SANBI, a social learning process is necessary to help building landowners' capacity and interest to manage wetlands in a sustainable manner after the restoration (interviewees, p.c.). In 2013, a few pilot projects of such engagement and knowledge co-production were being implemented (interviewee, p.c.).

Intermittence of funding flows

The movement of funds between departments has suffered delays leading to the works being paused frequently. Government financial management is perceived as inefficient and this shortcoming was repeatedly reported by both workers and experts. According to some workers, pauses in funding flows drive them into debt during the months in which they are not working, which may undermine their economic situation (informal small and short-term loans for regular expenses in the township were observed to have 25% of interest). The unreliability of funding also leads to less efficient restoration works and higher funding needs; structures that are left half built during long periods may start deteriorating and require additional work to be completed (interviewee, p.c.).

Lack of financial capacity for particular tasks

Some experts identify further actions as necessary for adequate implementation. For example, at the time of the interviews there was no systematic monitoring of the environmental impact of projects, neither within WfW nor at the provincial level in the case of Seekoeivlei and Free State. To improve this issue, a requirement of a minimum of three years of environmental monitoring was introduced late in 2012 (interviewee, p.c.).

Experts identify the lack of funding for further staff as one important reason for not implementing such standardised monitoring systems. Arguably, more management staff may be needed at the national level, but this is limited by EPWP principles, which require that most budget for wages is used in generating employment among the lowest

income groups of society. This rule may create trade-offs and tensions (interviewee, p.c.) between maximising the creation of employment and adequately planning, monitoring and evaluating restoration projects.

6 Conclusion

This paper assesses WfW, an innovative and multi-partnership wetland restoration and poverty alleviation program in South Africa. This is an example of a polycentric model of governance with the participation of private, public and non-profit agents across levels. The study examines the links between the large-scale policymaking and its impacts on the ground, and highlights how specific (positive and negative) features of the macro level are reflected on local impacts. This integrated approach for program assessment enables a more comprehensive appraisal of the factors hindering and favouring success and continuation. It also provides lessons for strengthening the design of further large-scale environment and development programs.

The WfW program emerged from the convergence of separate efforts that aimed to address different problems of social concern. Its policy process involved NGOs, private funders and government agencies of different nature. This multiple origin reinforces its foundational solidity and social legitimacy. The case study suggests that the program has achieved socio-economic and environmental targets, at least temporally (the latter observed only qualitatively).

The consistency between goals and implementation is a virtue of this program that contrasts with findings of evaluations of national-scale conservation and development programs in other large middle-income and megadiverse countries, such as Mexico and China (reported in Cao 2011; Alix-Garcia et al. 2009). A distortion of the initial goals (restoring wetlands and creating employment) was not the case with WfW, although experts identified the need to establish a more systematic way of prioritising wetlands (such as that proposed by Sieben et al. 2011). These two programs also differ from WfW in that their contribution to livelihoods were primarily in the form of financial transfers. In contrast, WfW provides wages (payment in exchange for labour) and also training, which is highly valued by workers as suggested by our results.

Nevertheless, the permanence of these impacts in the long term is uncertain. Socio-economic improvements are unlikely to be sustained after WfW because of the current lack of market demand for the skills provided and the lack of self-awareness of

workers about the connection between the acquired skills and specific jobs. In terms of environmental improvements, monitoring is necessary to evaluate the environmental sustainability of restoration works and, in the case of restoration in private or communal lands, environmental sustainability may only be achieved with the long-term involvement of their stewards.

Areas for improvement directly draw from the limitations identified above: ensuring consistent and continuous financial flow, integrating a pre-assessment of local socio-economic needs, enhancing the participation and awareness of landowners, and securing resources for environmental monitoring, plausibly by training workers themselves in monitoring techniques.

The question of environmental policy integration (Lafferty and Hovden 2016) deserves a further remark. In the formulation process of the initiatives that led to WfW, environment and development goals were conceptualised as two isolated goals that were juxtaposed together rather than integrated: environmental restoration and employment. This separation is reflected on the ground in two facets: the uncertainty about permanence of the employment generated, and the perception of nature as alienated from livelihoods.

For example, the intervention of WfW in Seekoeivlei is informed by the environmental particularities of the area but not by its socio-economic characteristics. Consequently, the skills provided might not match current demands of the local labour market.

Also, while environmental awareness increased, workers hardly connect the concepts of water and wetlands with their basic needs; they talk about the importance of conserving water for animals, and about wildlife mainly as an attraction for tourism—the income from which benefits mostly the white community. This lack of connection contributes to a partial view of nature as something beautiful ‘out there’. In case of major personal or communal trade-offs between the environment and other priorities, this alienated view may result in the environment being relegated to a secondary priority. In other words, the environmental policy integration across policy domains (Jordan and Lenschow 2010) is not fully achieved.

To help overcome the perception of nature as something non-essential for real needs, a more integrative training could emphasize how nature and livelihoods are interlinked. For example, by illustrating the connection between conserving water in

Seekoeivlei and the industry that this water enables downstream in Johannesburg, where many people in the township might be considering to migrate for jobs. The program can also maximize its awareness achievements so far, by promoting some employees as communicators for raising environmental awareness within their communities.

This study is limited, however, by the following caveats. The sample of workers surveyed is representative of only a single location and thus its extrapolation to other locations can only be exploratory. In this study, we excluded private landowners targeted in other projects of WfW, who may help better understand the likelihood of sustaining the environmental benefits. Our approach also leaves aside more systemic macroeconomic and policy matters that affect unemployment in South Africa, and thus suggests solutions only within the local system. Finally, we argued that more knowledge about environmental impacts and ecosystem interconnectedness would encourage pro-environmental behaviour. However, increased knowledge and information are but one component of a more holistic model of behavioural change (Zabala 2015).

Importantly, the success factors of this program can be useful in other contexts. Two parallel strategies identified at the conceptualisation stage attracted funding: a framing strategy that uses umbrella concepts to match the program with the interest of a broad range of potential funders, and combining goals of social relevance. At the policy design stage, two other approaches enhanced institutional and funding support: diversifying the range of decision-making agencies that support the program in order to minimise the risk of shut-down, and tracking and boosting media and public opinion on the importance of wetlands and their rehabilitation. In addition, at the implementation stage a systematic and effective reporting system eases transparent integration of efforts across levels.

Our analysis of the policy process and its impacts on the ground provides an example of how to link policy appraisal across levels in order to understand the macro level causes of local impacts. It is essential that case-by-case implementation of an environment and development program conducts appropriate *ex ante* assessment of local needs, not just in the environmental domain, but also in the social and economic domains. This research highlights the importance of having a long-term approach and an integrated conceptualisation at the macro level if large-scale policies are to be successful and sustained at the micro level.

Acknowledgements

This research was funded by the Basque Department of Research, the NeWater project (6th EU framework program), and St. Cross College, University of Oxford. The authors are grateful to Kate van Niekerk and Thamsanqa Ledula for the help provided in the field, and to Adam Kessler, John Dini, and David Lindley for very valuable comments on an earlier draft.

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