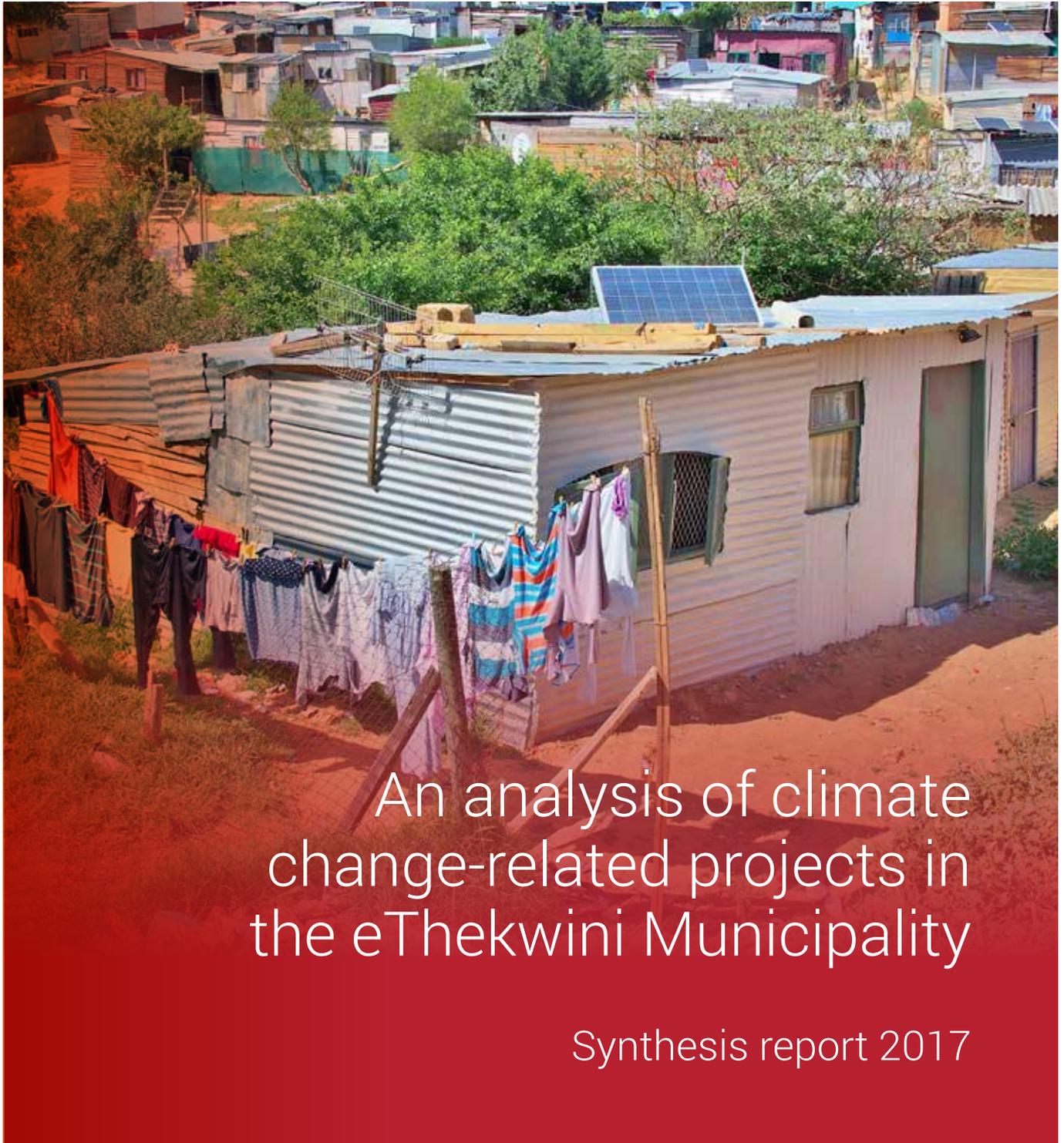




PSPPD

PROGRAMME TO
SUPPORT PRO-POOR
POLICY DEVELOPMENT



An analysis of climate change-related projects in the eThekweni Municipality

Synthesis report 2017



planning, monitoring
& evaluation

Department:
Planning, Monitoring and Evaluation
REPUBLIC OF SOUTH AFRICA



PSPPD

PROGRAMME TO
SUPPORT PRO-POOR
POLICY DEVELOPMENT



UNIVERSITY OF
KWAZULU-NATAL
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YAKWAZULU-NATALI





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Preface

This synthesis report is a summary of research reports which used a common data set of research materials, interview transcripts, pictures, documents, and grey literature. The research project was led by Prof Sarah Bracking, SARChI Chair in Applied Poverty Reduction Assessment at the University of KwaZulu-Natal, with Dr Mvuselelo Ngcoya and Ms Kathleen Diga as co-investigators and Dr Andrew Okem as senior researcher. A number of research assistants also contributed to this project, namely: Stephen Olivier (coordinator), Siyabonga Ntombela, Phindile Ngubane, Mandy Lombo, Smanga Mkhwanazi, Ntando Ninela, Nokubonga Shezi, Ayanda Tshabalala and Bahle Mazeka. The overall methodology referred to in this report was collectively pursued and is thus also referred to in forthcoming papers.

The Programme to Support Pro-Poor Policy Development (PSPPD)

The Programme to Support Pro-poor Policy Development (PSPPD) is a research and capacity-building programme located within the Department of Planning, Monitoring and Evaluation (DPME). The PSPPD is part of the larger National Development Policy Support Programme (NDPSP), the overarching Programme between the South African government and the European Union.

The core purpose of the PSPPD is to improve evidence-based policy-making (EBPM) and implementation on poverty and inequality at national and provincial levels through a variety of learning and capacity development tools, such as research, capacity building, training events, conferences and workshops, and study tours.

The PSPPD aims to improve evidence-based policy initiatives which transform the conventional relationship between policy-making and the use of social science evidence – making evidence an integral part of the decision-making around policies in policy development and implementation. The PSPPD also contributes to the building of an evidence base and sharing of knowledge through its partnerships with a range of organisations, academia, think tanks and the public sector.



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DISCLAIMER

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**CLIMATE
CHANGE**

Acronyms

ANC	African National Congress
CEBA	Community Ecosystem-Based Adaptation
COP	Conference of the Parties
DAC	Durban Adaptation Charter
DCCS	Durban Climate Change Strategy
DPME	Department of Planning, Monitoring and Evaluation
DST-NRF	Department of Science and Technology and National Research Foundation
IDP	Integrated Development Plan
IPCC	Intergovernmental Panel on Climate Change
M&E	Monitoring and evaluation



MCA	Multi criteria analysis
MCPP	Municipal Climate Protection Programme
NDC	Nationally determined contribution
NGO	Non-governmental organisation
PRP	Poverty reduction potential
PSPPD	Programme to Support Pro-Poor Policy Development
SARChI	South African Research Chairs Initiative
UKZN	University of KwaZulu-Natal
UNFCCC	United Nations Framework Convention on Climate Change



1. Introduction

This synthesis report provides details of how the eThekweni Municipality has pioneered the inclusion of socio-economic considerations into its work on conservation and ecology in respect of climate change. It has effectively transitioned some of its environmental policy from a conventional conservation approach towards a strategy inclusive of socio-economic human development. Given South Africa's context of poverty, unemployment and inequality, a municipality's climate change programme would need to consider priority elements which reduce the vulnerability of the poor to climate change and simultaneously prioritise mechanisms which allow for an improved quality of life. Recent policy reforms suggest that governments are necessitated to move towards the implementation of local climate change initiatives, policies and strategies which reflect the socio-economic context of a rapidly changing environment most affecting cities.

However, these adaptive interventions implemented by government have not been systematically evaluated, nor has a set of criteria been established to monitor socio-economic changes or local community involvement (Lombo et al., 2016). Nevertheless, an exploratory look at a reforestation project in eThekweni Municipality suggests that some initial socio-economic and community indicators and data were being collected and monitored (Diga et al., 2016), although there is little evidence of a systematic review of regional climate change initiatives and their response to include poverty reduction co-benefits (ibid). This research was therefore undertaken in order to provide an evaluation technology for the governance of climate change programmes. Even with adaptive capacity, the secondary impacts on household's welfare, such as their food consumption, nutrition, health, and education, are not well understood (Amjath-Babu et al., 2016), and thus, the study carried out a review of South Africa's most committed municipality in relation to climate change.

This synthesis report contains some suggestions on how government departments can contribute towards improving the design of climate change projects to optimise their contribution to poverty reduction as a 'co-benefit' to their climate adaptation contribution. A set of socio-economic criteria was studied to better interrogate the current understanding of the term "poverty reduction co-benefits", the results of which will be useful for a municipality interested in a transition towards low-carbon, climate-appropriate development. The research investigated whether poverty reduction co-benefits were being considered within a local municipality's climate change projects, and was guided by two broad objectives, namely to:

1. Evaluate the relationship of climate change adaptation and poverty reduction policy co-benefits through case study assessment within a KwaZulu-Natal municipality South Africa; and
2. Develop a measurement instrument which can evaluate climate finance initiatives with poverty co-benefits.

Broadly, the research identified and tested socio-economic indicators which could help determine if a project legitimately takes on board poverty reduction within a multi-dimensional approach. The research focused on the boundaries of climate change adaptation projects and their current framing of the issues of poverty reduction co-benefits and local participation, and research findings were based on the document analysis and empirical field work done on 104 climate change-related projects within eThekweni Municipality. The primary purpose of this undertaking was to assess the poverty reduction co-benefits of climate change-related projects at a micro level. The document review comprises the interrogation of over 180 document sources to ascertain the socio-economic benefits of climate change projects for its respective local communities (Diga, 2017), while the remaining part of the report reveals the findings of the in-depth field work responses to poverty reduction in purposively selected climate change and agro-ecology projects within eThekweni Municipality. The final section details emerging findings and consequential policy recommendations. Overall, the research suggests an approach to improve the understanding of community resilience and well-being in the context of future ecological and biodiversity threats.

2. Climate policy in eThekweni and South Africa

eThekweni metropolitan municipality has implemented a Municipal Climate Protection Programme (MCP) since 2004. It is located within the municipality's Integrated Development Plan (IDP), whereby staff have mapped their role in helping citizens confront climate change (eThekweni Municipality, 2010). The programme has evolved to include the development of innovative initiatives which try to incorporate both human elements and natural restoration, together with an improved response to future climate change hazards (Roberts et al., 2016).

The programme also has in place the Durban Climate Change Strategy, guiding the selection of climate change projects in 10 areas: water, sea level rise, biodiversity, food security, health, energy, waste and pollution, transport, economic development, and knowledge generation and understanding. Within these 10 themes, the strategy also states the city's awareness of poor communities being most at risk and affected by climate change in the city. In addition, the policy environment is shaped by a need for alignment to more recent national policy, through the Disaster Management Amendment Act (2015), which provides the first mandate for local municipalities to pursue climate change adaptation as a means to combat risks and disasters.

Furthermore, South Africa has ratified the Paris Agreement (Republic of South Africa, 2016) and has produced a statement of nationally determined contributions (NDCs) (Republic of South Africa, 2015). The NDC document suggests integration of sub-national policy frameworks which enable climate change adaptation programmes, sub-national policy development, and budget re-prioritisation for institutional capability and adaptation planning at the sub-national level (Republic of South Africa, 2016). The seminal Durban Adaptation Charter (DAC) is also supportive of ensuring sub-national entities are recognised in their provision of climate adaptation work. The DAC is an internationally signed agreement by cities and municipalities pledging to strengthen their work towards climate adaptation within their locales, which emerged from the 17th session of the Conference of the Parties (COP 17) to the United Nations Framework Convention on Climate Change (UNFCCC), which took place in Durban in 2011. Today's local policy environment is thus conducive to the inclusion of poverty reduction co-benefits and local community criteria when identifying climate change adaptation projects.

3. Research methodology

The research used an applied case study method to evaluate climate change-related programmes and their socio-economic benefits in the eThekweni Municipality. The researchers first engaged collaboratively with the municipality to create an updated list of climate change projects within the city, up to 1 February 2016 (Diga, 2017) (see Table 1).

The climate change-related projects (104 in total) were then analysed in line with the attributes identified through a comprehensive literature review (see Lombo, Ntombela, Okem and Bracking, 2016). A Google form was designed to allow for the analysis and collaborative entry of projects' information and the document analysis was implemented by the research team. Project documents were obtained online from sources such as websites (mainly that of eThekweni Municipality), newspaper articles, and from requesting documents as physical copies from the municipality if not already in the public domain. These were subjected to document analysis using keywords such as; 'climate change', 'communities', 'employment', 'income', 'assets', and so forth, to deduce valuable information about the projects and their avowed intent; what they were seeking to achieve. To centralise the information, folders for each project were created on Google Drive and all project-related documents were saved in these folders.

Table 1: eThekweni Municipality list of climate change-related projects (as of 1 Feb 2016)

1	Greening Moses Mabhida Stadium
2	Greening of Training Stadia for the 2010 FIFA World Cup
3	COP17/CMP7 Event Greening Programme
4	Green Guidelines
5	COP17/CMP7 Durban Responsible Accommodation Campaign
6	Buffelsdraai Landfill Site Community Reforestation Project
7	Inanda Mountain Community Reforestation
8	Paradise Valley Reforestation project
9	Durban Metropolitan Open Space System (D'MOSS): Planning and Implementation
10	EThekweni Municipality Systematic Conservation Plan
11	Non-User Conservation Servitudes (NUCS)
12	Working for Ecosystems
13	Working on Fire project
14	Invasive Alien Plant (IAP) Control Programme
15	Sihlanzimvelo Stream Cleaning Programme
16	Design Floodline Planning
17	Sea Level rise mapping
18	Durban Central Beachfront Dune Rehabilitation
19	Sliding Scale of Tariffs
20	Non-Revenue Water Reduction - Water Pressure Management Programme
21	Community-based Adaptation (CAPS) to Climate Change in Durban
22	Luganda School Water Harvesting and Micro Agricultural Water Management Technology
23	Durban Green Corridor
24	Wind Resource Map for eThekweni Municipality
25	Municipal Adaptation Plans Cost-Benefit Analysis
26	Integrated Assessment Tool for Climate Change Adaptation
27	Low Carbon Durban Research Project
28	Disaster Operation Centre
29	Establishment of eThekweni Municipality's Energy Office
30	Establishment of eThekweni Municipality's Climate Protection Branch
31	Durban Botanic Gardens: A Climate Change and Biodiversity Awareness Centre of Excellence
32	The integrated rapid public transport network (IRPTN)
33	Electric Bikes Pilot
34	Non-motorised Transport Green Circuit and Key Buildings
35	Priority Zone Facilities Management

36	Green Roof Pilot Project
37	EThekweni Water & Sanitation (EWS) Customer Service Centre
38	South Durban Basin Biodiversity and Greening Programme
39	COP17/CMP7 Concentrated Photovoltaic (CPV) Solar Project
40	Wonderbag™ Residential Cooking Efficiency Programme
41	Community Renewable Energy projects
42	Low Cost Solar Water Heaters
43	Shisa Solar Program
44	KwaDabeka Hostel Hot Water Pilot
45	Energy Efficiency Demand Side Management (EEDSM)
46	2010 eThekweni Municipal Greenhouse Gas Inventory
47	KwaZulu-Natal Sustainable Energy Forum (KSEF)
48	Towards a Sustainable Pit Latrine Management Strategy Through LaDePa
49	Decentralised Wastewater Treatment (DEWATS)
50	The Durban Water Recycling project
51	Durban Landfill Gas-to-Electricity Project
52	Mariannhill Landfill Conservancy
53	Domestic Orange Bag Recycling Programme
54	Durban Climate Change Partnership (DCCP)
55	Durban Industry Climate Change Partnership Project (DICPPP)
56	Staff Bicycle Programme
57	Residential Energy Efficiency Programme
58	Solar Map (Reunion Partnership)
59	Wind Repowering
60	Ocean Current Energy Demonstration Project
61	The GEOSUN project
62	Fluid Bed Reactor
63	Mini Hydros
64	Western Aqueduct Hydro
65	WWTW methane to Electricity
66	Online Energy Efficiency Course
67	South Durban Basin Recycling Pilot Project
68	Durban Solar Cities
69	Solar City Framework
70	Development of the Durban Climate Change Strategy
71	Durban Adaptation Charter

72	The Durban Community Ecosystem Based Adaptation (CEBA)
73	KwaXimba Photovoice Project
74	Municipal Adaptation Plan for Climate Change
75	Sustainable Horizons Project (formerly Safe Operating Space)
76	The 100 Resilient Cities Programme
77	The Biodiversity Stewardship Programme
78	The Disaster Management Advisory Forum
79	the eThekweni Municipality - UKZN Durban Research Action Partnership (DRAP)
80	The Umhlangane Catchment Rehabilitation
81	uMngeni Ecological Infrastructure Programme (UEIP)
82	Northdene Agro-ecology Centre
83	Newlands Mashu Dewats - Evaluation for Waste Water Treatment and Reuse for Urban Horticulture
84	Inchanga
85	Scorpio Place in Mariannridge
86	Mariannhill Monastery Research Farm
87	Umbumbulu Agri-Hub
88	The Metis Project
89	Flood Early Warning System
90	Sister city programme
91	Promoting Sanitation & Nutrient Recovery through Urine Separation
92	Nutrient recovery from Wastewater Treatment Works
93	Black Soldier Flies for the processing of Urine Diversion Toilet Sludge
94	Rainwater Harvesting
95	water reuse for potable water
96	Grey Water Reuse – Agritubes
97	Grey Water Reuse – Community Gardens
98	Reuse of Treated Wastewater for Agriculture
99	Permitting to Promote Industrial Wastewater Reuse /Recycling
100	Reinvent the Toilet Challenge: Data Acquisition and Field Support
101	Biodiesel from Microalgae
102	Co-digestion of sewage sludge and industrial concentrates
103	Improved Energy Efficiency at Water and Wastewater Infrastructure
104	Aquaponics

Source: (Diga, 2017), through UKZN/eThekweni Municipality collaboration

The projects' poverty reduction terminology was then analysed based on nine poverty reduction indicators (see table six below), giving each project a score out of nine with regard to its poverty reduction potential, and aggregated into four groups using the ratings below:

1. 0 = No poverty reduction potential
2. 1-3 = Low poverty reduction potential
3. 4-6 = Moderate poverty reduction potential
4. 7-9 = High poverty reduction potential

The researchers also looked at whether projects had avowed poverty reduction intent as contained in project plans. The avowed intent was usually taken from the project's research objectives, goals or mission statements. By comparing projects' avowed poverty reduction intent with reports of subsequent implementation in terms of poverty reduction, a matrix was developed which reflected matches/mismatches. The analysis produced the following possible scenarios:

1. Intended to reduce poverty and currently doing so (positive match)
2. Did not intend to reduce poverty and is currently not reducing poverty (negative match)
3. Intended to reduce poverty but little evidence of effects in practice (negative mismatch)
4. Did not intend to reduce poverty but nonetheless is having a noticeable poverty reduction benefit in practise (positive mismatch)

4. Findings from document analysis

Definitions: adaptation vs mitigation

Part of the analysis was to establish how eThekwini Municipality understood and used the definitions of climate change, climate change adaptation, and mitigation. Through the Durban Climate Change Strategy (DCCS), the municipality states its adoption of the Intergovernmental Panel on Climate Change (IPCC) definition to climate change adaptation and mitigation (IPCC, 2013). However, the challenges of concepts of additionality and global inconsistencies of climate change definitions provide the community with a lack of clarity when trying to define a project and when trying to ensure that affected vulnerable communities are protected from deeper levels of poverty (Okem, 2017a). The emerging finding based on the climate change list development and document review suggested that there is a lack of a set of objective criteria used in designating projects as climate change projects.

More specifically, there is little explicit objectivity demonstrated in deciding whether a project provides climate change mitigation or climate change adaptation contributions (or indeed both simultaneously, which in the international convention is termed a 'mixed' project), despite the municipality having identified 104 projects as climate change-related projects. Rather, to complete this work, the distinctions which were finally used in field case study selection were based on face-to-face collaboration, using the combined intrinsic knowledge of eThekwini Municipality staff specialising in climate change and University of KwaZulu-Natal (UKZN) researchers. Through this collaborative work, over half (57.7% n=60) of the projects were identified as having climate change adaptation as their primary objective, while a little less than half were designated as having climate change mitigation (42.3% n=44) as their primary objective.¹ Of the 104 project documents analysed, only 19.4% (N=25) were found to have been subject to monitoring and evaluation (M&E).

Poverty reduction

Table 2 shows results from the document analysis. The first column indicates that only 17.3% (N=18) of the 104 projects have avowed poverty reduction intent. The table also shows that around half of the projects had zero poverty reduction potential, as measured by the research team's own developed protocol of what that would mean, while the other half had low to high poverty reduction potential. The good news here is that the vast majority of mismatches were of the 'positive' kind, that is, where the project planners had not specifically planned, or accounted, for poverty reduction, but where it was in evidence regardless.

The document analysis points to the fact that the greatest poverty reduction attribute indicated within the projects was the provision of employment opportunities for both skilled and unskilled labour. In projects that required prior technical training, there was some form of employment security and better benefits. Most people who worked in technical projects were employed on a permanent basis or long-term contract, and when trained were able to seek further work outside or after the project was finished. While many projects also, or singularly, provided employment to semi-skilled or unskilled labour, thus reducing poverty, it was, however, also noted that in these lower skill categories there was not a guarantee of employment security. Thus, the most ubiquitous complaint by participants in the unskilled categories was with regard to the lack of sustainability of the employment, alongside their being pleased that there was at least temporary employment.

¹ It is noted that during the review of the 104 projects, some projects were defined as having a secondary focus of climate change adaptation or climate change mitigation.

Table 2: Results of document analysis

Avowed intent	High PRP*	Moderate PRP	Low PRP	No PRP	Negative match	Positive match	Mismatch
18	2	14	36	52	51	18	35

*Poverty reduction potential. N=104

Table 3: Poverty reduction themes

	Frequency	Percentage
Income/financial wealth for the poor or for poor communities	19	18.3
Improvements and/or access to jobs or entrepreneurship opportunities for the poor or for poor communities	32	30.8
Improvements and/or access to utilities or public services for the poor or for poor communities	15	14.4
Improvements and/or access to education/skills/training for the poor or for poor communities	28	26.9
Improvements and/or access to health (incl. environmental health) among the poor or within poor communities	15	14.4
Improvements and/or access to assets for the poor or for poor communities	7	6.7
Improvements and/or access to natural capital for the poor or for poor communities	14	13.5
Improvements and/or access to social capital for the poor or for poor communities	6	5.8

Table 3 presents an overview of the poverty reduction themes in relation to projects analysed, and shows that most of the projects have low poverty reduction potential (as already noted in Table 2) with “Improvements and/or access to jobs or entrepreneurship opportunities for the poor or for poor communities” being the most cited (30.8%) for those that did. Having low poverty reduction potential is not, in itself, a critique of the municipality and it also cannot be inferred from this that there is a counter-factual possibility that these projects could easily incorporate poverty reduction. Quite simply, some projects, such as engineering interventions that change water pressure in sewers, for example, or interventions to ensure disaster planning, do not lend themselves to poverty reduction: they either involve no employment, or they are not directly material. Therefore, in the fieldwork stage for the research which followed the document analysis, the focus was geared to the mismatches, where there was an unexploited possibility of a poverty reduction co-benefit that was not planned for or intended.

Education and training

After direct employment, education and training emerged as a leading socio-economic aspect of climate change projects due to their contribution to the sustainability of a person’s benefit. Some of the projects required that participants passed specialist training interventions in areas such as alien species management, indigenous species identification, seeds harvesting, and fire management training (involving climbing and rope skills).

The training attained through engagement in these projects can play a critical role in improving the employability of local communities and indeed, in subsequent interviews, there was evidence of persons migrating from the projects into outside employment. However, one finding from the document analysis shows that only 26.9% of the projects provided education and training for poor communities. There was also little evidence of succession planning for more skilled roles in projects, which had been mostly carried out by managers and permanent employees of the executing consultancies and non-governmental organisations (NGOs). With regard to education, training, and sustainability of employment benefits, it is recommended to therefore mainstream certain tasks in-house, in the permanent workforce of the municipality, rather than manage climate change interventions using mostly executing NGOs. While certain skills might not be represented in the workforce, outsourcing, by definition, does not provide for them in the future, except in the few identified cases of people moving from projects into the department. For the unskilled workforce, mainstreaming into the Department of Public Works, or Department of Water, Sanitation and Solid Waste was hotly sought after by participants, since it would formalise their positions and provide for benefits.

Health benefits

Health issues were not given much attention in most of the project documents. Little was said about occupational health and safety measures or precautions taken for those employed in climate change projects, despite some of the projects having the potential for serious occupational hazards.

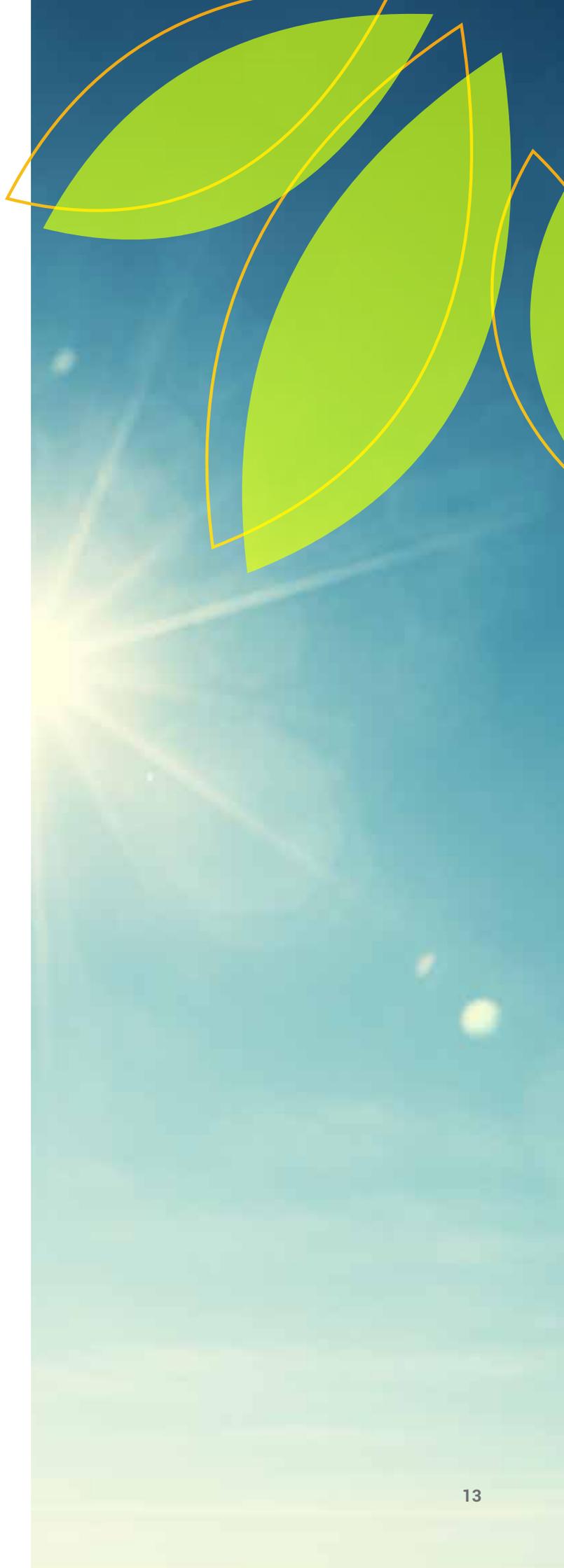
Although health issues were highlighted in some project documents, budget allocation was a key barrier to the provision of protective clothing. In later fieldwork, it was observed that there was high variability in whether groups of workers had protective clothing or not. For example, in stream cleaning cooperatives, some clearly had boots and overalls, essential where snake bites are a risk, whereas others appeared to have nothing, a point attributable to whether the cooperative was managed well or badly. Besides potential health benefits to those directly involved in climate change projects (emerging from increased income, for example), few explicitly planned for these, and even fewer planned for indirect health benefits to the wider community: only 14.4% of the projects noted improvements and/or access to health (including environmental health) among the poor or within poor communities as a benefit of implementing the project.

Access to natural capital/ resources

During the document analysis, it became apparent that most of the projects do not create/improve access to natural capital, conceived as water, land, green or recreational space, and wild and farmed foods. Only 13.5% of the 104 projects have created improved access to natural capital for the poor. This, however, does not imply that the projects prevent local communities from accessing natural resources, such as forests or rivers for hunting and fishing, only that there is a lack of overt intention to increase poor communities' access to such resources.

Social relations/capital

A powerful tool in the fight against poverty is the role of social networks and social capital, where reciprocity and relationship can give the poor access to resources. Social relations facilitate a symbiotic relationship capable of allowing the flow of ideas and resources in resource-poor communities. Most of the climate change projects documents fail to capture the existence of social relations among project participants and local communities. Only 5.8% (n=6) of project documents noted that they aimed to improve/facilitate social capital accumulation in local communities. This gives an impression that projects are not contributing to social capital, or at least are not intending to do so. However, the social implications of many of the interventions are quite strong and palpable, as was subsequently observed during fieldwork, such that this lacunae in project planning represents both a risk and a lost opportunity. For example, it was found that in the stream cleaning cooperatives, participants were being selected by local ward committees of the African National Congress (ANC) in consultation with community outreach personnel communicating between the wards, the municipality, the implementing NGO, and the community.



While this can be viewed as working through existing networks of social and political capital, there is also a risk of nepotism and corruption, and the evidence of 'stand-in' workers found in the field confirms an abuse here: this is where the person given the job then sells it to another or keeps a proportion of the salary while not themselves working. This benefit accrues to the politically connected. This particular stream cleaning project was implemented in both Umlazi and KwaMashu, accommodating the particular group structure of a cooperative with ward committee involvement, but was demonstrating very varied social effects, thus changing social capital relationships in place. Overall, the project appeared to work much better in KwaMashu, where the job allocation appeared to have been fairer and the supervisor was particularly energetic and committed. As a consequence, the cooperatives were more engaged and hard working. Moving forward, it is recommended that the department pay more direct evaluative attention to the social and political context of projects in order to ensure enhanced poverty reduction.

Local/community participation in climate change projects

Another finding from the document analysis relates to the extent to which local communities are involved in decision-making in relation to the projects analysed. Table 4 shows most of the projects perform poorly in relation to how they engage local communities. This is evident in the fact that only 16.3% (n=21) projects assessed the needs of communities and identified the means to address these needs. Indeed, only 18 projects (14%) were identified as having an inclusive structure to engage communities. The implication of this is that projects might be irrelevant to local communities and could result in local rejection of such projects. Of important concern is that gender issues are reflected in only 3.1% (n=4) projects. Additionally, 7 (5.4%) projects were reported to have had adverse effects.

Table 4: Local/community participation

	Frequency	Percentage
Income/ financial wealth for the poor or for poor communities	19	18.3
Improvements and/or access to jobs or entrepreneurship opportunities for the poor or for poor communities	32	30.8
Improvements and/or access to utilities or public services for the poor or for poor communities	15	14.4
Improvements and/or access to education/skills/training for the poor or for poor communities	28	26.9
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Improvements and/or access to social capital for the poor or for poor communities	6	5.8

5. The empirical findings of the research: 13 visited projects

The empirical component of the research investigated 13 purposively selected climate change-related projects in eThekweni Municipality to determine their poverty reduction potentials or the lack thereof (Okem, 2017b). The study builds on the document analysis of the poverty reduction co-benefits of the 104 climate change-related projects in the municipality. Using a qualitative research approach, municipal staff and project beneficiaries were interviewed to gain insights into the co-benefits of these projects. The study was guided by the multi criteria analysis (MCA) generating a poverty reduction potential (PRP) index. The MCA was used to assess climate change-related projects on the basis of nine outcome criteria (PRP). The PRP of the projects was then re-assessed based on the analysis of the interviews.

Table 5 compares the PRP of the projects from the empirical research and the document analysis using the coding of:

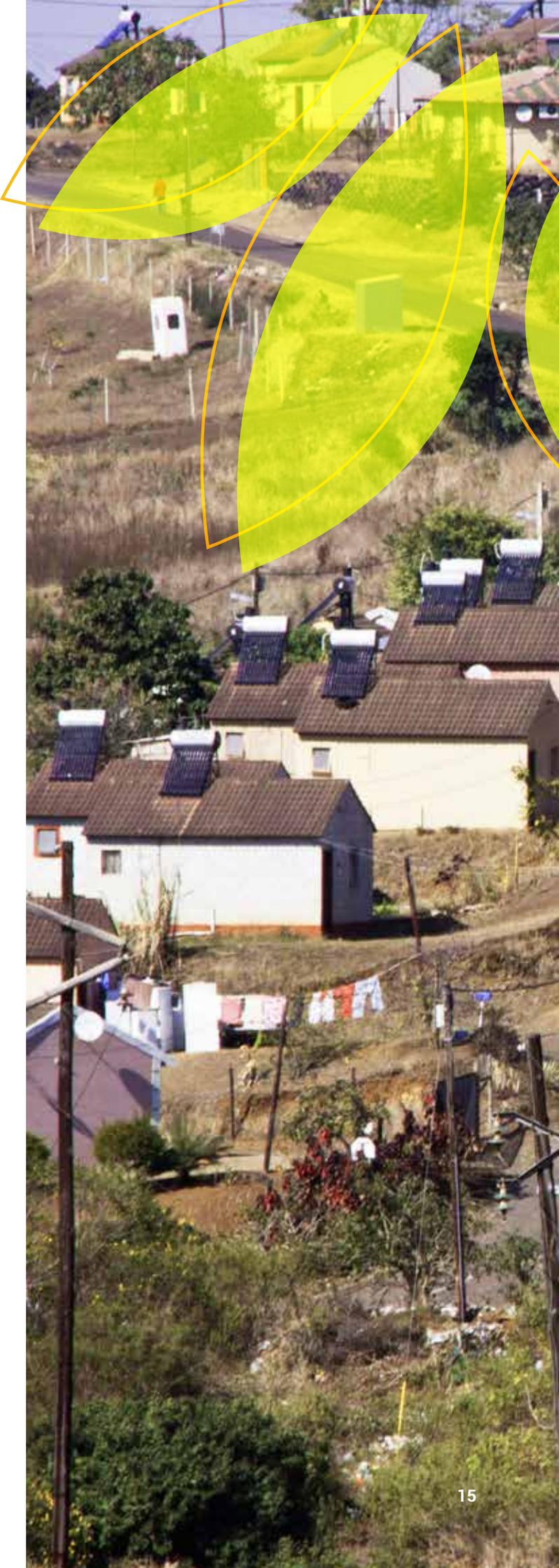
1. Intended to reduce poverty and currently doing so (positive match)
2. Did not intend to reduce poverty and is currently not reducing poverty (negative match)
3. Intended to reduce poverty but little evidence of effects in practice (negative mismatch)
4. Did not intend to reduce poverty but nonetheless is having a noticeable poverty reduction benefit in practise (positive mismatch)

The table shows that of the initially selected projects after the document review, four had a negative match, eight had mismatches, and two had a positive match. Of the mismatches, six were positive and two negative, meaning that in six cases an initial low prediction of poverty reduction potential was raised by the evidence gained from fieldwork. Thus, when comparing the PRP score of the projects from document analysis to fieldwork visit, the table shows a positive difference for most of the projects, with the exception of projects 2 and 10. This finding shows that project-related documents may not provide all the information required for accessing the PRP of climate change-related projects.

The outcome of the analysis is presented in Table 6. In sum, six of the projects initially assessed for their PRP in the document review improved their rating based on the empirical investigation. The cells shaded green show that the listed PRP was cited/mentioned in the transcript to have that item while those that have no mention of the item are left blank. The table shows that access to jobs was true for all the projects followed by access to income/financial wealth for poor communities. Improvement and access to social capital were cited by only three projects, while improvement and access to public utilities and health were not cited as benefits of any of the projects investigated. In addition, no respondents cited any other dimension of poverty reduction besides those identified by the research team prior to implementing the research.

Findings of the study show that all the projects assessed have poverty reduction co-benefits (although this varied across projects) and are important sources of livelihood for project beneficiaries. Some of the projects have improved local communities' access to and appreciation of nature. One respondent noted that "there are a lot of positive impacts from the project. There's a free flow in the rivers, the houses around the rivers aren't flooded anymore and there's a cleaner environment free from alien plants" (FGD5 Sihlanzimvelo, 2016). The same respondent added that "the rivers were dirty previously; the children would play there and be sick most of the time. With the rivers being cleaned, the children do not have any sicknesses related to dirty water" (FGD5 Sihlanzimvelo, 2016).

Another critical finding is that some projects provide accredited training to their participants which they have leveraged to access employment beyond the climate change projects. Specialised training has given some of the beneficiaries the opportunity to seek employment beyond the climate change project. An expert interviewee noted this point, stating that there "are the workers doing high landscape duties, they are employable beyond Working on Fire. The workers have been given different opportunities like branching off to greener pastures. Some of them now work in ships. The programme focuses on 50:50 and employs youth preferably" (Expert interview, Working on Fire, 2016).



Besides the above benefits, beneficiaries also cited acquiring various kinds of assets as a result of being involved in the projects. These assets included a television, cell phone, fridge, beds, and radio. Others reported being able to renovate/extend their houses. One respondent (who is now a contractor) reported building a five-bedroom house through the money earned from the project.

Although the improvement of assets, jobs and entrepreneurship opportunities had some profound benefits as mentioned above, there are also concerns about contractual issues with a preference for permanency and a greater involvement of the municipality in the management of projects.

Some have been part of the project for about 10 years, while others have been involved for only two months. The nature of employment differs across projects with the majority of participants being employed on a temporary basis. Linked to this is the dissatisfaction with the current salaries by most project beneficiaries. For those employed, the amount of money earned varies across projects with some reporting that their earnings are as much as R142 per day, while others earn the pittance of only R60 per day. The difference in salary is linked to the skills level as well as the funding model of respective projects. The insufficient work gear (which could expose workers to health risks) was another concern raised by beneficiaries.

Table 5: Poverty reduction potential: Document analysis vs empirical study

	Projects	Match/Mismatch*	Document analysis	Empirical research
			Poverty reduction potential**	Poverty reduction potential**
1	Residential Energy Efficiency Programme	+MM	N	M
2	Newlands Mashu Dewats – Evaluation for Waste Water Treatment and Reuse for Urban Horticulture	-MM	M	L
3	Sihlanzimvelo Stream Cleaning Programme	+MM	L	M
4	Paradise Valley Reforestation Project	+M	M	M
5	The Umhlangane Catchment Rehabilitation Programme	+MM	N	L
6	Durban Green Corridor	+MM	L	M
7	Invasive Alien Plant (IAP) Control Programme	+M	M	M
8	Working on Fire	+MM	L	M
9	Scorpio Place	+MM	N	L
10	Ubumbulu Agri-Hub	-MM	H	L
11	Inkululeko Garden	-M	L	L
12	Sibukeni Project	-M	L	L
13	Sphikeleni	-M	L	L

* -M = Negative match, +M Positive match, -MM = Negative mismatch, +MM = Positive mismatch

** N = No PRP, L = Low PRP, M = Moderate PRP, H = High PRP

Table 6: Poverty reduction co-benefits of projects

	Durban Green	Paradise Valley	Green Street Retrofit	Working on Fire	Umhlangane Catchment	Newlands Mashu	Sibukeni	Sibukeni	Mbumbulu	Sphikeleni	Sihlangezwe
Income/financial wealth for the poor communities											
Improvements and access to jobs/entrepreneurship opportunities											
Improvement and access to utilities or public services											
Improvements and access to education/skills/training											
Improvements and access to health											
Improvements and access to assets											
Improvements and access to natural capital											
Improvements and access to social capital											
Other											

Source: (Okem, 2017b)

6. The agro-ecological projects and climate change adaptation

As part of the overall research programme, there was a connected, but independent, research project under the leadership of Dr Ngcoya. This food systems literature review found that the DCCS included an intention to plan around food security, and that current urban agriculture support in eThekweni Municipality revolves around organic and sustainable agricultural initiatives (Shezi & Ngcoya, 2016). However, the link between the municipality's urban agriculture initiatives and climate change has yet to be well understood. The team of researchers visited and interviewed farmers at the agro-ecological hub sites within eThekweni to better understand the lived experience of climate change. They have a separate paper on this (Ngcoya, 2017), which finds that understanding climate must be a 'more-than-climate' journey.

The research paper suggests that what many experts may see as opaqueness or lack of understanding of climate change by small-scale farmers, can be re-read as the farmers' simple yet profound understanding of climatic variations as occurring in an already complex and multisectoral environment.

In other words, it is "more than climate". The 'more-than-climate' nature of the lived experience of farmers suggests that government interventions cannot isolate climate change issues from the normal struggles that small-scale farmers in eThekweni face. Because the area is faced with acute socio-economic challenges, these also have to be addressed if the most vulnerable among the city's population are to be effectively targeted. In an example, the researchers probed one representative to share her understanding of what causes climate change. Her answer: God! God? When asked again, she nodded, nonchalantly. This was interpreted not to mean a fatalistic or millennial misgiving about climate change, but as a suggestion that the causes of climate change, for her, have historical embeddedness in spheres far beyond her control.

A multisectoral approach has to take into account not just the agricultural vulnerabilities of the farming communities, but also structural socio-economic conditions and environmental factors. For example, simply advising farmers to use organic manure when they have no land, lack housing, experience poor health, and have poor quality road infrastructures, misses the intrinsic linkages between climate change and structurally produced vulnerability.

The researchers also found that farmers were strategically engaging with different types of knowledge: the formal, which basically dominates in climate change discourse; the local and contextual, often referred to as indigenous; and the universalising tropes of policy discourse. One of the study's key questions was to determine whether farmers' own experiences and views of climatic changes percolate up to the authorities and experts.

Table 7: List of farmer organisations involved in the study

Project	Location	Land size	Members	Crops cultivated
Sinethemba Project	Thafeni (eZingonyameni)	< 3 ha	6	Carrots, onions, spinach, beetroot, potatoes, tomatoes and cabbage
Intandokazi Garden	Hammersdale	2.5 ha	17	Spinach, carrot, cabbage, onion, beetroot and bitternut
Isiphikeleli Farmers Cooperative	Hammersdale	3 ha	1 female 4 male	Maize, butternut, cabbage and potatoes
Phansi Kwentaba Cooperative	Waterloo	< 3 ha	6 female 1 male	Tomato, onions, spinach, carrot, potatoes and amadumbe
Zamafuthi Project	Mkhizwane (Inchanga)	< 3 ha	24 female 2 male	Spinach, carrots, cabbages, beetroots and potatoes
Intuthuko Yomphakathi Project	Klaarwater	1.8 ha	4 female 4 male	Cabbage, spinach, tomatoes, beetroot, carrots, green beans, amaDumbe, potatoes, butternut, chillies and pumpkin
Igjijima Garden	Klaarwater	3 ha	5 female 2 male	Carrots, beetroot, spinach, cabbage, onions and maize

Desktop checker for climate change socio-economic and community participation elements

CLIMATE CHANGE PROJECT PROTOCOL: SOCIO-ECONOMIC AND COMMUNITY ELEMENTS

In your current climate change project or in the development of a new climate change project, have you and your team considered including the following socio-economic elements?

Checklist: Poverty reduction attributes		Y	N
1	Income/financial wealth for the poor or for poor communities		
2	Improvements and/or access to jobs or entrepreneurship opportunities for the poor or for poor communities		
3	Improvements and/or access to utilities or public services for the poor or for poor communities		
4	Improvements and/or access to education/skills/training for the poor or for poor communities		
5	Improvements and/or access to health (including environmental health) among the poor or within poor communities		
6	Improvements and/or access to assets for the poor or for poor communities		
7	Improvements and/or access to natural capital for the poor or for poor communities		
8	Improvements and/or access to social capital for the poor or for poor communities		

Checklist: Local/community participation in a climate change project		Y	N
1	The project assesses the needs of the affected communities and the means to address them within the project		
2	The project has effective means or seeks to build communication with communities		
3	The project accepts local community as stakeholders and equal partners or seeks to build that relationship within the project		
4	The project seeks to identify, use or adapt local knowledge, tools and methodologies to meet development needs of community		
5	The project creates strategic intelligence with the local community		
6	The project has plans for sustainability after the project ends		
7	The project takes gender issues into consideration		
8	The project has mechanisms of transparent public inclusive and/or multi-stakeholder participation throughout the period		

Consider this conversation:

Smanga: The people who train you, are they open to take your suggestions?

Farmer: We don't stand up for that, we only just listen to them. But you can see that they won't listen to you because they have formal education and they don't want the informal education that we grew up with. They will say it is old fashioned knowledge.

It is highly problematic that there are these transmission barriers that only allow knowledge and information to flow in one direction. All the farmers interviewed expressed great enthusiasm to this idea and to agro-ecological farming altogether. However, this enthusiasm about *ukutshala ngemvelo* (as they put it, or agri-ecological farming) did not derive from its link to climate change or from training by the experts. They liked it because it is the *indlela yokhokho* (ancestral way) and it felt right to them. Although there have been valiant attempts to educate farmers about climate change, experts do not reciprocate by trying to understand the language and experiences of climate change from the farmers' perspective.

7. The desk checker protocol

As a synthesis of the whole research, the team has developed a protocol, or a fast checker desktop tool, which reproduces the objective criteria for checking whether or not a project has articulated or included simultaneously a contribution to climate change adaptation and poverty reduction. The tool is validated by the qualitative evidence contained in interview transcripts of beneficiaries who themselves cite these aspects, except in the case of health. Nevertheless, health has been added in regardless, as the joint myopia of planners and citizens on the possible contribution of climate change projects to health must be investigated further, next to and compared with a growing literature from elsewhere that connects the two. This tool could be useful for those interested in designing a climate change-related project or monitoring the changes of a project to ensure consideration of the socio-economic elements or local participation of vulnerable communities.

8. Conclusion, implications and recommendations

It is noteworthy that of the 104 projects classified as 'climate change projects' in eThekweni Municipality, over 50% are adaptation projects, which is significant as this is a departure from the international norm, where a majority of internationally-funded projects are in climate change mitigation. Climate adaptation projects weigh in strongly for their poverty reduction potential as they are more likely to involve people at a local scale. While some mitigation projects, such as sulphur extraction chimneys at factories or insulation cladding of buildings, might involve some employment, they are essentially infrastructure and engineering interventions. Thus, while mitigation is not renowned for its work in providing socio-economic change to communities, eThekweni Municipality provides some unique perspectives of how locally-developed mitigation can involve vulnerable communities, such as is its Treepreneur tree planting and reforestation project at Buffelsdraai (Diga et al., 2016). Findings from the list development and document analysis indicate that although the municipality is committing significant resources to climate change, it has yet to develop the definition and objective criteria with which to delimit a project of socio-economic change across its climate change adaptation and mitigation project portfolio. Furthermore, the document analysis indicated, and subsequent fieldwork proved, that there are socio-economic outcomes within its climate change project portfolio – especially in employment opportunities and education/training – that are unaccounted for or 'unclaimed' at the municipal level. The field research showed that some of these poverty reduction efforts are under-reported in the publicly available project documentation, which suggests that the benefits of spending on climate change projects are under-accounted for in budgetary decisions. Nevertheless, the research further suggests that many of the climate change projects have little engagement with local communities and, unsurprisingly, that this has detrimental effects on sustainability.

For example, field visits to a 2011 project which provided a 'green retro-fit' of a street in an informal settlement in Cato Manor showed sustainability issues in a number of areas: the urban gardening had been abandoned, with persons stating that they were too busy 'chasing' money through waged labour to maintain the gardens; most of the solar panels had fallen out of use or were broken; and some of the pipework had been reused to make illegal sewer outlets to a nearby stream. But there were also two very satisfied persons interviewed, whose solar panels were still working and saving them money as they did not need to buy electricity. This project was launched during COP17, was visited by delegates, and had an initial positive effect of showing that the application of innovative clean technology could really help the poor to adapt to and mitigate climate change.

However, its decline for most equally illustrates that a demonstration effect is lost if plans are not in place for maintenance of the assets. In addition, it is a sad street in that a visitor can only wonder that, even if proved to work, the urban poor still live in shacks and houses that have risks of fire, flood, mudslide and collapse, and are generally energy dirty and powered by paraffin or electricity produced by coal-fired stations.

This programme was not financed at scale in this area, and there is an additional moral hazard that it may have raised the expectations of participants and neighbours that they were going to benefit, but subsequently were abandoned. Indeed, the counterfactual finding from this research emerges here as a null hypothesis: that there is little or no funding in the portfolio of projects for adaptation measures for the poor at scale, such as soil terracing to prevent storm run-off, mudslides and loss of life; solar or wind power; the provision of stronger building materials for shacks; water harvesting, and so on.

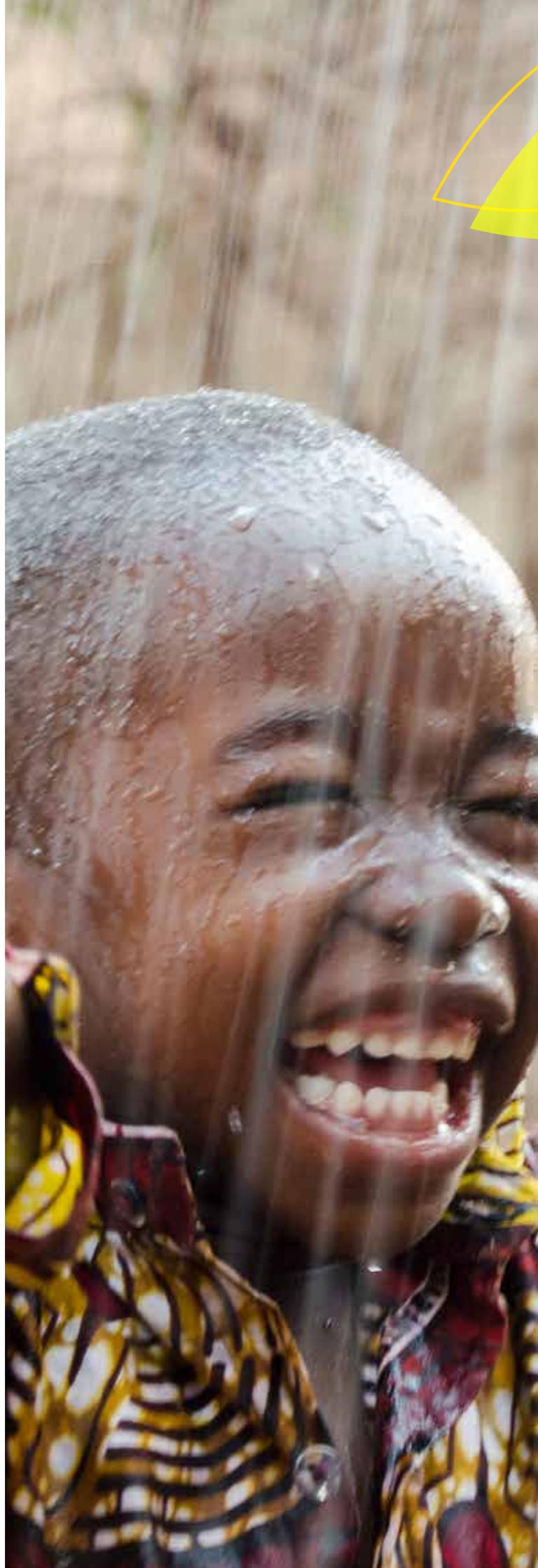
However, while these findings point to some weaknesses in structures of community engagement, poverty reduction, and community indicators within climate change projects in eThekweni Municipality, it is also important to note two caveats to this finding. First, there is evidence from fieldwork that, in practise, communications can be much better on the ground than can be expected from the planning process. For example, the agrohub farms clearly had beneficial community engagements facilitated by both municipal workers and the Fruits and Trees NGO, despite them not being fully reported on the project templates. Although most of the food grown was failing to reach commercial markets due to lack of linkage (which was the problem the project had an avowed intent to solve), an informal arrangement had nonetheless become codified where in one farm in Hammarsdale, excess crops were provided to a local school feeding programme, thus enhancing the health and nutritional status of local children. Observed weaknesses in community engagement could therefore be equally attributed to poor articulation within the municipality's reporting templates. Based on the research, the following recommendations are made:

Project identification:

- Municipalities interested in climate change should start by identifying current projects which could be related to climate change or have the potential to provide assistance in adapting to forthcoming climate changes, as well as preparing for sub-national policy mandates.

Frameworks, and evaluative criteria:

- All climate change projects should be underpinned by a sound M&E plan.
- Municipalities and other sub-national/national government structures interested in the Community Ecosystem-Based Adaptation (CEBA) approach to tackling climate change should consider the development of a list or framework of objectively verifiable indicators for climate change and poverty reduction co-benefits within their programming.





This is further recommended because many projects have great potential for also reducing poverty, and this is currently under-appreciated.

- There is also a need to emphasise the multiple dimension of poverty reduction in project design beyond job creation.
- The use of the protocol, or simple checklist of indicators that have been developed as one of the outcomes of this research, can work as a desk check to ensure that poverty reduction will be enhanced as multi-dimensional alongside the climate change response.
- Local participation attributes or criteria should be incorporated as a critical component of climate change projects. In light of the benefits of the climate change projects, moving beyond a project-based approach to institutionalising climate change in order to provide permanent employment is suggested. The projects could also potentially contribute to poverty reduction if scaled to provincial and national levels.

Ongoing learning and collaboration:

- Ongoing discussion between government, academia, and practitioners around understanding concepts of poverty, its complexities, and practical action would add value to climate change work. In planning for, implementing, monitoring, and reporting on climate change projects – and throughout the project cycle – municipal officials can then quite easily and beneficially incorporate concern for poverty with a well-founded expectation of great social benefit.

Given the importance of the national and municipal priority of poverty alleviation and job creation, it would be beneficial for projects to articulate their inclusion of the socio-economic elements more explicitly in their aims and objectives. By doing so, it improves the design of climate change projects, which become aligned to national development priorities and which are then more likely to produce poverty reduction co-benefits.

Overall, the climate change work of the eThekweni Municipality enjoyed a high appreciation rate from communities and had many unaccounted for socio-economic benefits. Because of the scale of expected climate change and the adverse effects that it will cause for the most vulnerable, it is time for government to roll out M&E tools for climate change spending to enhance efficiency and socio-economic co-benefits. Moving forward, it must also become a mainstreamed concern of all functional departments, particularly but not exclusively departments concerned with energy, water, sanitation, infrastructure, and public works. Momentum has been produced by a valiant and dedicated workforce in the eThekweni Municipality, originally focused on biodiversity and conservation, who have opened up their briefs to include people and poverty. However, for scale to be achieved, projects must be turned into permanent programmes owned and mainstreamed within a cluster of functional departments and enjoying a rapid upscaling of finance from the budgetary allocation.

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