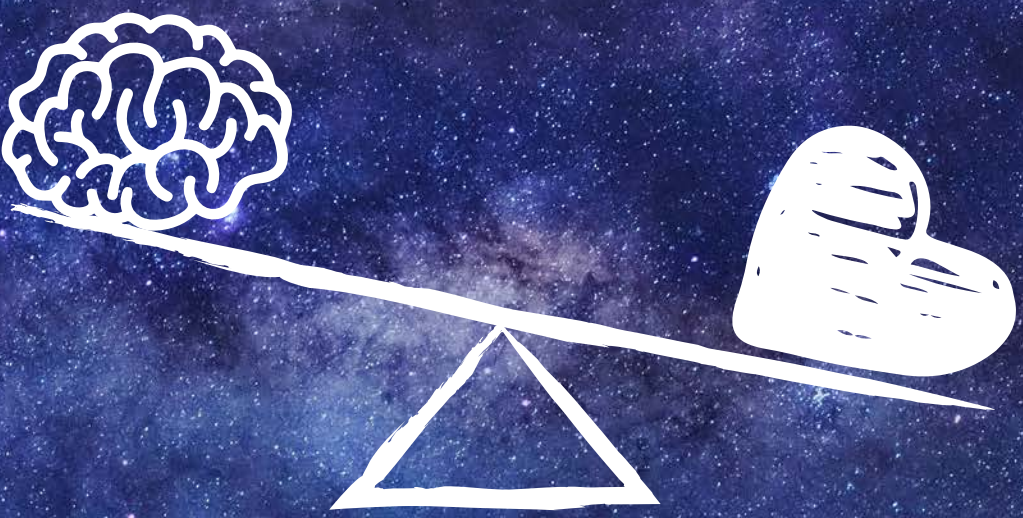
AOSIS

Center for Local Economic Development:
Topics in Local Development Book Series

Volume 2

# Promoting sustainable local economic development initiatives

## CASE STUDIES



Edited by Marius Venter

Centre for Local Economic Development:
Topics in Local Development
Volume 2

# Promoting sustainable local economic development initiatives

## CASE STUDIES

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**Marius Venter**

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The publisher (AOSIS) endorses the South African 'National Scholarly Book Publishers Forum Best Practice for Peer Review of Scholarly Books'. The manuscript underwent an evaluation to compare the level of originality with other published works and was subjected to rigorous two-step peer-review before publication, with the identities of the reviewers not revealed to the editor(s) or author(s). The reviewers were independent of the publisher, editor(s), and author(s). The publisher shared feedback on the similarity report and the reviewers' inputs with the manuscript's editor(s) or author(s) to improve the manuscript. Where the reviewers recommended revision and improvements, the editor(s) or author(s) responded adequately to such recommendations. The reviewers commented positively on the scholarly merits of the manuscript and recommended that the book be published.

## Research justification

Various international scholars and associates of the Centre for Local Economic Development (CENLED), incorporating the PASCAL (Place, Social Capital and Learning Regions) International Observatory (Africa hub) in the School of Economics at the University of Johannesburg, have contributed chapters to this scholarly book.

It is generally believed that municipalities are the footsoldiers of local economic development (LED). In South Africa and internationally, there have been vigorous debates on how best to promote local and regional economic development to fight poverty. But why has this debate gained such momentum in recent years? The increased focus on LED initiatives is, to a large extent, the result of these commitments to grow the South African economy through LED initiatives. Internationally, the focus on sustainable development goals (SDGs) and the increasingly rapid flow of large quantities of information, with distance no longer acting as a barrier to trade, has shifted the focus of global markets from a national perspective to a more differentiated regional perspective, and the local focus on the potential and competitive advantages of territories to implement LED initiatives. LED's popularity as an approach to economic development also coincides with the global trend of decentralising power from national to local government. Decentralisation is often a function of democratisation processes and follows the desire to allow broader participation of citizens in the design and control of political processes. Furthermore, the failure of existing industrial policies in numerous developing countries to create competitive and dynamic industries has contributed to the popularity of innovative LED concepts and initiatives. The LED case studies in this book, written by scholars for scholars, offer a non-traditional, interdisciplinary mix of interpretations and approaches which can shed new light on how to overcome multiple interrelated obstacles such as low skill levels, lack of an entrepreneurial culture, inappropriate or weak support mechanisms, enabling regulatory environments, or a lack of access to financial and business development services. The book showcases LED initiatives to improve an area's locational factors by tapping into the comparative and competitive advantages of regions, the potential of natural resources, as well as the leadership and willingness for change of actors in the private and public sectors.

The book is timely because of the major impact of coronavirus disease 2019 (COVID-19) on local economies. This book within the CENLED series covers various LED cases, national and international, focusing on arts and culture, youth development, small- and micro-enterprises, the green economy, the circular economy, the importance of the informal sector and resettlement. It unlocks the potential of a substantial agenda for researchers at universities to support innovative attempts to find new ways to achieve just, sustainable LED initiatives and to build global consciousness and empathy in progressing towards a sustainable world. The distinctive contribution of this book to the production of a local developmental body of knowledge lies in the synergetic relationships between these case studies. The aim is to allow LED professionals globally to work towards approaches and initiatives that have wider significance for communities worldwide. The chapter contributors used the necessary research methodologies applicable to this field of specialisation to strengthen each chapter. AOSIS ensured through the editorial processes that all chapters were subjected to an authentication process to curb plagiarism and replication. The target audience is academic specialists in the field.

**Marius Venter,** Centre for Local Economic Development (CENLED)/PASCAL International Observatory (Africa), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa.

# Contents

# Abbreviations and acronyms, box, figures and tables appearing in the text and notes

## List of abbreviations and acronyms

| | |
|---|---|
| ACE | Adult and Community Communication |
| ACT | Arts and Culture Trust |
| ADF | Augmented Dickey-Fuller Test |
| AIDC | Automotive Industrial Development Centre |
| ANC | African National Congress |
| ANTA | Australian National Training Authority |
| AQA | The South African National Environment Management Air Quality Act (AQA) 39 of 2004 |
| ARDL | Autoregressive Distributed Lag |
| B-BBEE | Broad-based Black Economic Empowerment |
| BBP | Building Blocks Programme |
| BRICS | Brazil, Russia, India, China and South Africa |
| CBD | Central Business District |
| CENLED | Centre for Local Economic Development |
| CEO | Chief Executive Officer |
| CoCT | City of Cape Town |
| COGTA | Department of Cooperative Governance and Traditional Affairs |
| COVID-19 | coronavirus disease 2019 |
| DAC | Department of Arts and Culture |
| DOLS | Dynamic Ordinary Least Squares |
| DTI | Department of Trade and Industry |
| EAC | Environment and Culture |
| EDCSA | Economic Development Council of South Africa |
| EDES | Enabling Developmental Environment Scale |
| EDHE | Entrepreneurship Development in Higher Education |
| EFA | Exploratory Factor Analysis |
| EIQ | Entrepreneurial Intentions Questionnaire |
| EIU | Economic Intelligence Unit |
| ESE | Entrepreneurial Self-Efficacy |
| EU | European Union |

| | |
|---|---|
| FMOL | Fully Modified Ordinary Least Square |
| GDP | Gross Domestic Product |
| GDPC | Gross Domestic Product Per Capita |
| GEAR | Growth, Employment and Redistribution Policy |
| GHG | Greenhouse Gases |
| GINI | Gini Coefficient Index |
| GIS | Geographic Information System |
| GLR | Gwydir Learning Region |
| GODR | Government-organised Distant Resettlement |
| GTCOC | Golden Triangle Chamber of Commerce |
| GVA | Gross Value Added |
| ICT | Information and Communication Technology |
| IKS | Indigenous Knowledge Systems |
| IPAP | Industrial Policy Action Plan |
| IRR | Impoverishment, Risks and Reconstruction Model |
| IUDF | Integrated Urban Development Framework |
| LDA | Latent Dirichlet allocation |
| LED | Local Economic Development |
| LM | Local Municipality |
| NDP | National Development Plan |
| NFLED | National Framework for Local Economic Development |
| NGM | National Gender Machinery |
| NGO | Non-governmental Organisation |
| NLP | Natural Language Processing |
| NQF | National Qualifications Framework |
| NRF | National Research Foundation |
| NSW | New South Wales |
| NWU | North-West University |
| OECD | Organisation for Economic Co-operation and Development |
| OPHI | Oxford Poverty and Human Development Initiative |
| PASCAL | Place, Social Capital, and Learning Regions |
| R&D | Research and development |
| RDP | Reconstruction and Development Programme |
| REED | Rural Economic and Enterprise Development |
| REIPPPP | Renewable Energy Independent Power Producer Procurement Programme |
| SALGA | South African Local Government Association |
| s.d. | Standard Deviation |

| | |
|---|---|
| SDGs | Sustainable Development Goals |
| SDM | Sekhukhune District Municipality |
| SME | Small and Medium Enterprises |
| SMME | Small-, Medium- and Micro-Enterprises |
| SPSS | Statistical Package for Social Sciences |
| SSE | Small Scale Enterprises |
| SWOT | Strengths, Weaknesses, Opportunities and Threats |
| TAFE | Technical and Further Education |
| TEH | Township Enterprise Hub |
| TER | Township Economy Revitalisation |
| THE | Township Enterprise Hub |
| TGD | Three Gorges Dam |
| TGP | Three Gorges Project |
| TLC | The Living Classroom |
| TRESSIND | The Tress Index |
| UAE | United Arab Emirates |
| UN | United Nations |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| US | United States |
| USA | United States of America |
| USAID | US Agency for International Development |
| VADER | Valence Aware Dictionary and Sentiment Reasoner |
| VAR | Vector Autoregression |
| WaSTE | Water, Science, Technology and Economics Initiative |
| WEH | Winterveld Enterprise Hub |

## Box list



## List of figures

## List of tables

# Notes on contributors

**Peter Baur**
Centre for Local Economic Development (CENLED)/PASCAL International Observatory (Africa), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa
Email: peterb@uj.ac.za
ORCID: https://orcid.org/0000-0002-9202-2826

Peter Baur is an associate professor at the School of Economics, University of Johannesburg. He holds a Doctoral Degree in Economics from the same University. He has lectured internationally and across South Africa for many different universities. His community engagement has spanned both the private and public sectors. His field of research includes cultural, financial, behavioural and development economics. He is a long-serving member of CENLED. He sat on an advisory board for the Department of Cooperative Governance and Traditional Affairs, as well as sitting on the research board for the Gauteng Department of Economic Development. He acts as an economic advisor for members of the City Council and is a research fellow for PASCAL (Place, Social Capital, and Learning Regions) International Observatory. He has published in several international journals and has been featured in both the local and international media, where he is often called upon for commentary and economic analysis. He heads the International Research Unit in Arts and Culture at the School of Economics, a research division for the Arts and Cultural Trust, which is an international cross-disciplinary, inter-university research unit. He publishes extensively in the field of financial economics within the arts and cultural sector.

**Tsakani V. Khosa**
Centre for Local Economic Development (CENLED), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa
Email: vanessa.khosa@yahoo.co.za
ORCID: https://orcid.org/0000-0002-0802-0116

Tsakani V. Khosa earned her Master's degree in Local Economic Development from the University of Johannesburg. Her thesis, titled 'Empowering female-owned businesses trading at the Tshakhuma Fresh Produce Market in Limpopo', investigated the potential to empower female entrepreneurs at the Tshakhuma Fresh Produce Market in Limpopo. She also holds a Bachelor of Economics degree from the University of the Western Cape. Vanessa also co-founded Green Platinum Farms, an organic farm situated in Limpopo, South Africa, where she serves as the managing director. In addition, she serves as a director of Farm FM International – a specialised radio station producing content on agriculture, wildlife, nutrition, pharmaceuticals and agribusiness. Prior to farming, Khosa coordinated the activities of the African Union for

Housing Finance, which has a footprint in 17 countries across Africa. She also served as a project manager for a consulting firm focused on the automotive industry. Vanessa brings to her position a well-established background in economic impact assessments, social-economic evaluation and rural development. She is a visionary who believes that public-private partnerships bringing together global stakeholders are vital for creating sustainable development and, in turn, impacting economic growth. She has established a reputation for developing and maintaining excellent business rapport and credibility with clients and key stakeholders.

**Chika Chitambala**
Centre for Local Economic Development (CENLED), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa
Email: chikachitambala@yahoo.com
ORCID: https://orcid.org/0000-0002-6842-5182

Chika Chitambala is a seasoned development economist with proven multi-sectoral strategy development and public policy experience of nine years. She is well versed in the management consulting realm and has worked on various economic advisory and impact assessment projects within the public and private sectors. As a development economist, her ability to translate development concepts into impact outcomes has been channelled through a strong research capability, coupled with strong analytical and interpretive skills that are translated into the design of strategic programme interventions for implementation. Her academic and professional choices to date have been part of an explorative journey – a process of contextualisation – which she continues to invest in with her most recent attainment of a Master's in Local Economic Development. She has successfully led multi-million-rand development initiatives in the public, private and international non-governmental organisation sectors. Her current role as a senior development impact advisor within the infrastructure development sector further contributes to her knowledge as a professional in terms of applying methods that are intentional about reducing the capital leakages often associated with large-scale infrastructure spending. She is achieving this through building a competitive and sustainable local economic base and translating these infrastructure investments and projects into social and economic value for the locality.

**Marius Venter**
Centre for Local Economic Development (CENLED)/PASCAL International Observatory (Africa), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa
Email: mventer@uj.ac.za
ORCID: https://orcid.org/0000-0003-2810-5149

Marius Venter is the founder and director of the CENLED, based at the University of Johannesburg since 2008. The Centre's focal area is LED through

entrepreneurship in local communities across South Africa. Venter served as the deputy chairperson of the Small Enterprise Development Agency. He has been the driving force in establishing a professional network of academics and practitioners in these fields in all South African universities, leading to the establishment of the professional body, the Economic Development Council of South Africa, which he chairs. Venter has more than 30 years of hands-on experience in small business development and entrepreneurial activities, mainly in the local government sphere. Lastly, he serves as the director PASCAL International Observatory (Africa), a global alliance that works in collaboration with city and regional leaders to balance economic growth, social inclusion and environmental sustainability. He is a visiting professor at the Philippines Normal University.

**Elana Swanepoel**
Centre for Local Economic Development (CENLED)/PASCAL International Observatory (Africa), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa
Email: elanaswanepoel3@gmail.com
ORCID: https://orcid.org/0000-0002-3238-4876

Elana Swanepoel has been a collaborator for CENLED and an associate of the PASCAL International Observatory (Africa) for the past five years. She has worked in the business environment for 30 years with both public and private companies, large corporates and small businesses, including 10 years of business-to-business research. Thereafter, she joined academia as a lecturer and manager of disciplines relating to entrepreneurship, small business management, and organisational behaviour and renewal. After obtaining a doctorate and being promoted to professor, she was appointed as a consultant and advisor to assist master's and doctoral candidates, focusing on research capacity development and the acceleration of the completion of master's and doctoral degrees of the permanent staff members in the College of Economic and Management Sciences at the University of South Africa. She has published extensively and assisted MCom LED students in getting their work published.

**Seutame O. Maimele**
Centre for Local Economic Development (CENLED), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa
Email: seutameoupa@gmail.com
ORCID: https://orcid.org/0000-0003-2200-5809

Seutame O. Maimele is a LED researcher. His principal research interest lies in understanding the township economy of South Africa by analysing informal rural economies and how Indigenous Knowledge Systems (IKS) can be used for developing local economies. He is also interested in analysing the sustainable development of rural economies, with particular emphasis on the just transitions of rural economies amid decarbonising. Seutame's interests are underpinned

by a strong sense of community engagement and collective participation. He is currently pursuing his MCom in Local Economic Development at the University of Johannesburg.

**Naiefa Rashied**
Centre for Local Economic Development (CENLED), School of Economics,
College of Business and Economics, University of Johannesburg,
Johannesburg, South Africa
Email: naiefar@gmail.com; naiefar@uj.ac.za
ORCID: https://orcid.org/0000-0002-6328-1861

Naiefa Rashied is a researcher in the sub-field of Development Economics, with a particular focus on health, IKS, decolonisation and LED. She supervised Seutame O. Maimele for his Master of Commerce in Local Economic Development at the University of Johannesburg. Raised in Durban, Naiefa witnessed the harshness of life in the informal settlements of the KwaZulu-Natal province of South Africa, which inspired her research into township economies. Naiefa is currently pursuing a PhD in Economics at the University of Johannesburg. She is a member of the Kettil Bruun Society and INEBRIA – international scholarly societies aimed at investigating various social, epidemiological and cross-cultural alcohol issues globally. Her most recent publication explores the socio-economic determinants of alcohol consumption in South Africa.

**Maxwell T. Eastcott-Layton**
Gwydir Shire Council,
Bingara, Australia;
PASCAL International Observatory (Australia),
Melbourne, Australia
Email: meastcott@gwydir.nsw.gov.au
ORCID: https://orcid.org/0000-0002-0363-0644

Maxwell T. Eastcott-Layton is the General Manager of Gwydir Shire Council, having been previously the General Manager of Bingara Shire Council immediately prior to the 2004 amalgamation of Bingara, Yallaroi and part of Barraba Shires to form Gwydir. Eastcott-Layton has gained extensive experience across a range of local government areas over the last 40-plus years. His practical management experience is complemented by a Bachelor of Business degree and Masters' degrees in Sustainable Management and Philosophy.

**Leone Wheeler**
School of Global, Urban and Social Studies,
College of Design and Social Context, RMIT University,
Melbourne, Australia;
PASCAL International Observatory (Australia),
Melbourne, Australia
Email: leone.wheeler@rmit.edu.au
ORCID: https://orcid.org/0000-0001-8749-9702

Leone Wheeler is an associate of the School of Global, Urban and Social Studies, RMIT University, a board member of PASCAL International

Observatory, and the honorary CEO of the Australian Learning Community Network (ALCN) – a not-for-profit organisation and a national network of leading-edge practitioners building sustainable communities using learning as the key element. She has published on learning city developments in Australia and the Middle East, as well as on school-community learning partnerships for sustainability. She has had previous careers as a researcher, academic and business educator in the secondary and tertiary sectors in Qatar, Australia and New Zealand, and as a small business owner.

**Matshepo Kanye**
Centre for Local Economic Development (CENLED), School of Economics,
College of Business and Economics, University of Johannesburg,
Johannesburg, South Africa
Email: matshepo.kanye@gmail.com
ORCID: https://orcid.org/0000-0002-3531-5526

Matshepo Kanye is a Strategy and Policy Analyst in the Economic Intelligence Unit (EIU) in the Office of the Executive Mayor, City of Tshwane. The EIU is a research-orientated specialised unit that facilitates evidence-based policy decision-making within the city. This is supported by the development of robust and rigorous research. Prior to joining the City of Tshwane, she worked in the Human Capital consulting space as a project coordinator and researcher. Her main responsibilities included conducting research on labour economic issues and economic viability analysis on sub-Saharan African countries to advise clients on the feasibility of business expansion into these territories. She has a Bachelor of Economics Honours degree from Rhodes University and is currently pursuing a Master's degree in Local Economic Development from the University of Johannesburg. Kanye is passionate about Development Economics and its application in policies and strategies, as well as in supporting businesses and entrepreneurs in contributing to the growth of the economy in a positive way.

**Natanya Meyer**
DHET-NRF SARChI in Entrepreneurship Education,
Department of Business Management,
College of Business and Economics, University of Johannesburg,
Johannesburg, South Africa
Email: natanyam@uj.ac.za
ORCID: https://orcid.org/0000-0003-3296-7374

Natanya Meyer commenced her career as a lecturer in 2012. She completed her BCom and Honours degrees in Economics and Risk Management, her Master's degree in Development and Management, and thereafter her PhD in Entrepreneurship at North-West University. In 2020 she joined the University of Johannesburg as part of the SARChI in Entrepreneurship Education. Prior to joining academia, she owned and managed three successful businesses, highlighting her passion for entrepreneurship. She

has been involved in the development of entrepreneurial student societies and served as an executive member of the Golden Triangle Chamber of Commerce and the Chair of the community of practice for entrepreneurship research in the Entrepreneurship Development in Higher Education initiative launched by the Department of Higher Education in 2017. She holds a Y2 rating from the National Research Foundation (NRF). Meyer has published more than 60 peer-reviewed articles in national and international journals, as well as conference proceedings as a sole and co-author. Her research focuses on entrepreneurial and economics-related topics focusing on females, youth and the enabling environment. She is an editor, guest editor, editorial board member and reviewer for several national and international journals.

**Daniel F. Meyer**
School of Public Management, Governance and Public Policy (SPMGP),
College of Business and Economics, University of Johannesburg,
Johannesburg, South Africa
Email: dfmeyer@uj.ac.za
ORCID: https://orcid.org/0000-0001-6715-7545

Daniel F. Meyer is a professor in the College of Business and Economics at the University of Johannesburg, South Africa. He is an NRF-rated researcher. Daniel is a development economist and a specialist in regional and local economic development analysis and policy development. He has developed various innovative measurement tools, indexes and scales to analyse regional economies. He also has a research focus on macroeconomics and the linkages with good governance. He has authored more than 115 internationally peer-reviewed research papers since 2015 and has also presented more than 60 international conference papers, including several keynote addresses. His research is multi-disciplinary through the combination of development economics, business, public management and governance. He has established a large international network of research partners across the globe, with a strong focus on the Visegrad group of countries. He has also successfully completed and delivered more than 40 regional development strategies for local governments and provincial governments and is involved in various community development projects in the communities where he lives. During his academic career, he has received several awards, including most inspiring lecturer in 2012; Vice-Chancellor's award for community engagement via the Vaal LED warrior initiative in 2016; media person of the year in 2016; and most productive senior researcher on the North-West University (NWU) Vaal campus in 2016, 2017 and 2018; most productive senior researcher in the NWU Faculty of Economic and Management Sciences in 2019; and runner-up most

productive senior researcher in 2020 at NWU. His motto in life is 'give more than you take'.

**Chané de Bruyn**
Centre for Local Economic Development (CENLED),
College of Business and Economics, University of Johannesburg,
Johannesburg, South Africa
Email: chanedb@uj.ac.za
ORCID: https://orcid.org/0000-0001-6841-4953

Chané de Bruyn is a postdoctoral research fellow in the College of Business and Economics at the University of Johannesburg, South Africa. After working as a data analyst in the corporate world, she decided to pursue her passion for research in LED. She holds a Master's degree and PhD in Economics, with published international peer-reviewed research papers and an international conference paper. Her research focus includes all aspects of LED.

**Lizl Steynberg**
Department of Technical Economics and Management, School of Economics and Management,
Hebei University of Technology,
Tianjin, China;
Department of Management and Entrepreneurship, Faculty of Management Sciences,
Tshwane University of Technology,
Pretoria, South Africa
Email: steynbergl@tut.ac.za
ORCID: https://orcid.org/0000-0003-2597-9406

Lizl Steynberg started her post-secondary career at NWU in Potchefstroom, South Africa, where she obtained her Bachelor of Arts (BA) degree in 1993, BA Hons degree in 1995 and MA degree with distinction in 1998. She started her academic degree at NWU in 1994 as a researcher, and in 2001 she joined Tshwane University of Technology in Pretoria, South Africa. She has taught 14 undergraduate and three postgraduate courses. Besides her local teaching commitments, she has supervised over 12 postgraduate students, presented more than 40 conference papers, published 14 academic articles, contributed to five scholarly books, and continues to enjoy the privileges of research writing and lecturing at a national and international level. Her main research interests are the internationalisation of higher education and research methodology. She has collaborated actively with researchers in several other disciplines of entrepreneurship, small business management and LED. During her academic career, she received the TUT Vice-Chancellor Achievement Award in 2003, research awards from 2003 to 2008, and an Outstanding Teaching Award in 2015. She is also an associate of the South Africa-China Transport Co-Operation Center, Southern Africa-China Science, Engineering and Technology, and Education Association, CENLED and PASCAL International Observatory (Africa).

**Shimei Jiang**
Department of Technical Economics and Management, School of Economics and Management, Hebei University of Technology,
Tianjin, China
Email: jiangshim@163.com
ORCID: https://orcid.org/0000-0003-2564-5756

Shimei Jiang was born in Yiyang, Hunan Province of the People's Republic of China. In addition to teaching Business Administration, she is a professor in the School of Economics and Management at Hebei University of Technology, a flagship university with a 211 Double First-Class rating. Through her various academic positions, her diverse academic profile is illustrated, including doctoral supervisor, Doctor of Management at Zhejiang University, visiting scholar at Portland State University's Department of Engineering and Technology Management, visiting scholar at Tsinghua University's School of Economics and Management, and Deputy Director of Management Case Research and Development Center at Hebei University of Technology. Jiang is the course leader for Enterprise Research Methods and thesis writing on the Hebei University of Technology MBA programme. Her other areas of teaching responsibility include innovation management and project management. In addition to human resource management of science and technology, her current research interests revolve around open innovation, innovation management and enterprise innovation ecosystems. Several of her research projects have been acclaimed, notably the General Project of the National Self-Funded Fund, the Special Project of Scientific and Technological Personnel Training jointly sponsored by the Academy of Engineering and the Ministry of Education, and the Social Science Fund Project of Hebei Province. Her pioneering accomplishments include research on domestic management case studies and academic case study development. In addition, she has published extensively in SSCI, A-class, and other core journals. Jiang has authored nearly 20 case studies for China Europe Business School, China Business Administration Case Library of Tsinghua University and China Management Case Library of MBA Teaching Committee. In addition, the MBA Teaching Committee honoured her with the Award for Top 100 Cases in Management seven times, four of them as the first author. Also, Jiang has worked as an innovation management consultant for companies such as CIMC, Huawei, Three Gorges Group and Inspur Group.

**Jan P. Grundling**
Centre for Local Economic Development (CENLED)/PASCAL International Observatory (Africa), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa
Email: grundlingjp@tut.ac.za
ORCID: https://orcid.org/0000-0002-0106-4597

Jan P. Grundling obtained his BCom degree in Industrial Psychology in 1979 from Stellenbosch University. In 1982, he completed his BCom Honours, and

his MCom degree in Industrial Psychology at the University of South Africa in 1986. He obtained his PhD in Organisational Leadership from TUT in 2017. In 1980, he started his career with the South African Defence Force as the Head of the Department of Industrial Psychology at the Military Academy in Saldanha. In 1987, he was promoted to Senior Officer at Military Intelligence in Pretoria. From 1988 to 1994, he joined the Armaments Corporation of South Africa as Training Manager in Pretoria, and in 2001 he joined TUT. At TUT, he was the Director of the Centre of Entrepreneurship (2001–2012), Organisation Director for the Joint African Masters on Comparative Local Development (2003–2012), and a researcher and senior lecturer in the Faculty of Management Sciences, as well as a research fellow at Chang'an University in Xi'an, People's Republic of China, and the University of Johannesburg. He has published more than 110 conference papers and 42 journal articles and hosted and participated in 20 national- and university-level scientific research projects nationally and abroad. Additionally, he has published more than ten academic books, served as a reviewer for more than ten academic journals and supervised more than 40 postgraduate students. His main research fields include linear programming, optimisation and control, industrial statistics and entrepreneurship. He has received more than 11 awards for his contribution to industry and academia.

**Yuan Li**
Department of Technical Economics and Management, School of Economics and Management, Hebei University of Technology,
Tianjin, China
Email: yuan.li@hebut.edu.cn
ORCID: https://orcid.org/0000-0003-2669-4971

Yuan Li obtained her PhD in a joint programme of the University of New South Wales, Sydney, Australia, and Hebei University of Technology, Tianjin, People's Republic of China, in 2012, fully sponsored by the China Sponsorship Council Postgraduate Program. She started her academic career in the School of Economics and Management, Hebei University of Technology. Currently, she is an associate professor, and besides her research and supervising duties she is teaching Organisational Behaviour, Management Communication, Compensation Management, IT Performance and Research Methodology at the pre- and postgraduate levels. As a respected academic, she has published more than 10 A-ranked articles in national and international journals, presented various conference papers and won two best paper awards. Her current research interests include positive organisation behaviour, team creative behaviour, and information and communication technology adoption behaviour. Yuan Li has received various honours for her contribution to academia, including the 2nd Prize in the National Higher Education Teaching Competition of the College for Young Teachers in China in 2016, the Provincial Labour Medal in Tianjin, China in 2015, and the 1st Prize for the Provincial Higher Education

Teaching Competition of College Young Teachers in Tianjin, China in 2014. She has also participated in and managed more than ten research projects for the National Natural Science Foundation of China, Social Science Foundation of Hebei Province, Hebei Educational Reform Grant of Hebei Province, Online Education Research Grant of the Ministry of Education of the People's Republic of China, China Postdoctoral Science Foundation, National Natural Science Foundation of China, Natural Science Foundation of Hebei Province, and National Soft Science Research Plan of China.

# Preface

**Marius Venter**
Centre for Local Economic Development (CENLED)/PASCAL International Observatory (Africa), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa

This book forms part of a series of books by the Centre for Local Economic Development (CENLED), based at the University of Johannesburg. CENLED provides leadership and excellence in local economic and human settlement development. CENLED also promotes research in the fields of local economic and human settlement development, endorses local economic and human settlement development as distinct, recognised and self-governing professions, builds partnerships with communities, and aims to contribute to South Africa's and Africa's economic well-being.

CENLED also houses the PASCAL (Place, Social Capital, and Learning Regions) International Observatory (Africa). The PASCAL International Observatory helps decision-makers design and implement balanced regional development strategies that contribute to economic development, social equity and environmental sustainability. PASCAL was founded in 2002 to extend the pathfinding work on learning regions and cities inaugurated by the Organization for Economic Co-operation and Development (OECD), which illustrated the benefits of appropriate strategies for public governance.

PASCAL is a global alliance of decision-makers, academic entrepreneurs, researchers, policy analysts and practitioners drawn from government, higher education, non-governmental organisations (NGOs) and the private sector. PASCAL mobilises and joins the knowledge held by universities, regions and partner organisations to benefit society. PASCAL reflects the values, commitments and skills of regionally engaged trans-disciplinary experts who see the importance of place, social cohesion and lifelong learning. PASCAL is forward-looking, preparing to address global and local problems for which existing knowledge is inadequate. This is an ethical commitment to a just world.

Local economic development (LED) means to think global and act local. This means acting at the community level and fostering economic, social, spatial and cultural growth. No single definition incorporates all the different strands of LED. Typically, LED can be described in terms of objectives. These are mostly described as the creation of jobs and wealth and the improvement of the quality of lives. It can be depicted as a process that influences the

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growth and restructuring of a local economy to enhance the economic well-being of a community.

In this book, case studies were selected because of their diverse nature and lessons learnt. The case studies are also applicable nationally and internationally. Case study research is recognised for the contribution it makes across a broad range of social science fields, in the case of this book in the sphere of LED. According to Yin (2014, p. 3), 'The distinctive need for case study research arises out of the desire to understand complex social phenomena'.

The objective of this book is to illustrate how case study research in LED contributes to the emancipation of LED and sustainable LED projects. It is anticipated that the lessons learnt from the case studies captured in this book will enthuse, provoke and support scholars and academics in LED and related fields both nationally and internationally, whether working in urban or rural settings, to expand the general knowledge of the development of the discipline. Creating an awareness of the possibilities of future research specialisation in these fields and increasing the successful execution of LED projects, locally and globally.

The book is arranged into ten chapters. The main themes of the chapters are sustainable LED with a focus on:

- empowerment
- gender inequality
- informal trading
- the green economy
- lifelong learning
- economic diversification
- creating an enabling environment
- the new focus on arts and culture, the circular economy, and the new concept of 'resettlement'.

There are four sections. The first section consists of Chapters 1, 2, 3 and 4 and examines case studies on empowerment. The second section consists of Chapters 5, 6 and 7 and introduces concepts like lifelong learning, the circular economy, the green economy, and Sustainable Development Goals (SDGs). The third section (ch. 8 and 9) considers econometric case studies and discusses the importance of diversification, stakeholders, good governance and an enabling environment, while the fourth section consists of Chapter 10 introducing new thinking on resettlement.

All these case studies are intended for different contexts, not only for a single country such as South Africa, but also for countries with different cultural and political backgrounds.

Chapter 1, by Peter Baur, investigates the role of skills development in the arts and culture sector of South Africa, and reducing gender inequality,

as a mechanism to improve local economic development (LED). The chapter explores the value of the arts and culture industry, the role of gender inequality, and its contribution to the South African economy. The author concludes that a structured skills development programme may overcome the inequalities that exist within the local arts and culture sector. Secondly, the arts and culture sector adds value to the economy on many different levels and is a key pin underlying sustainable LED.

Chapter 2, by Tsakani V. Khosa, investigates how women entrepreneurs at the Tshakhuma Fresh Produce Market informal market in Limpopo could be empowered. The main findings indicate that the informal traders experience a lack of business skills that limit the growth potential of their businesses, exclusion from informal and formal business networks, infrastructure challenges, supply issues and a lack of access to finance. Finally, family commitments sometimes prevent them from reaching the business's full potential. The author concluded that the LED unit of the Makhado municipality, in collaboration with the tribal authority and other stakeholders, established a committee to find new ways to fast-track the empowerment of these women entrepreneurs and repair and maintain the infrastructure.

Chapter 3, by Chika Chitambala, Marius Venter and Elana Swanepoel, explores the case of a skills development and training programme that is offered to empower informal automotive artisans and unemployed community members at the Winterveld Enterprise Hub (WEH) north of Pretoria, Gauteng province, South Africa. The WEH is managed by the Automotive Industrial Development Centre. In impoverished areas, business incubators such as the WEH, underpinned by the Township Enterprise Hub model, are often utilised as mechanisms to empower community members and emerging entrepreneurs with the necessary skills to participate fully in the mainstream economy. The authors concluded that apart from the technical skills training, specific training needs should address the areas in which the respondents did not yet feel empowered. Secondly, training should develop their skill to identify a product or service to sell. Thirdly, available resources for starting a business, sources of support and communication, and networking skills should be assisted with and upskilled in order for trainees to either start a business or secure employment.

Chapter 4, by Seutame O. Maimele and Naiefa Rashied, discusses how unemployment remains problematic in South Africa, having more than doubled since 1994. To respond to high levels of unemployment, unemployed South Africans tend to create informal self-employment, which has led to flourishing rural economies. This chapter discusses the extent to which indigenous products, such as home-brewed alcohol, contribute to the local economy, particularly job creation, with specific reference to the Sekhukhune District Municipality, one of South Africa's most rural and poorest municipalities.

Lessons learnt suggest that the home-brewed alcohol industry in Sekhukhune employs between three and nine people on average, mainly women, who are custodians of the home-brewing knowledge. Secondly, home-brewing provided an income source for participants who previously had no source of income. Thirdly, the chapter illustrates the kinds of government support needed by home-brewers to not only expand their businesses but also mitigate some of the financial and other concerns emerging in the home-brewed alcohol sub-industry.

Chapter 5, by Max Eastcott and Leone Wheeler, studies and maps how lifelong learning has driven inclusive economic development in Gwydir Shire, from the formation of the Gwydir Learning Region (GLR) in 2003 until the current time. The Gwydir Shire is in north-west New South Wales (NSW), Australia, and covers an area of 9 122 $km^2$, with a population of 5 258. Gwydir Learning Region was formed in 2003 as a partnership framework of key stakeholders from across several sectors to address key challenges such as lower levels (than the NSW state average) of household income and of educational attainment. Lessons learnt include ensuring that every individual has a learning pathway and is provided with the opportunity to become a positive contributor within the community. Secondly, learning through collaboration enhances social, economic, cultural and environmental conditions on a sustainable, inclusive basis.

Chapter 6, by Matshepo Kanye and Elana Swanepoel, explores how since 2014, in support of the international Sustainable Development Goals (SDGs) and South Africa's National Development Plan (NDP), the City of Tshwane has been making a concerted effort to mainstream sustainable principles in municipal business operations, including the city's LED. In this chapter, the authors describe how the City of Tshwane has committed itself to a sustainable growth path in the wake of climate change and dwindling natural resources. The city subscribes to the principles of sustainable development along with its components, namely, economy, society and environment. Two projects are described and then compared: the Tshwane Food and Energy Centre and the Bronkhorstspruit Bio2Watt Biogas Project. The authors concluded that it seems that the Bio2Watt Biogas Project is more successful than the Tshwane Food and Energy Centre. Lessons learnt included the following:

1. prior testing is needed
2. select collaboration partners carefully to ensure the sustainability of the project
3. the Bio2Watt project was managed and monitored by a private company with commercial interests
4. involve all possible stakeholders and ensure they all benefit
5. management continuity is needed to ensure the success of the project.

Chapter 7, by Elana Swanepoel and Seutame O. Maimele, explores several issues related to wastewater in Cape Town that need to be addressed.

These range from human health, water scarcity, the environment and ecosystem to the economy, and climate change. The authors conclude that Cape Town's water, science, technology and economic action plan focuses on only three needs: (1) water pollution, (2) rapid urbanisation and (3) water scarcity, as these are critical economic issues and are fundamental to LED. They recommended that for the WaSTE action plan to generate a long-term sustainable solution to the Black River wastewater crisis, partnerships should be formed with the surrounding research and development institutions to undertake the necessary research to find solutions to minimise waste, save ocean life, the environment and people, and to create inclusive employment opportunities for the residents of Cape Town.

Chapter 8, by Natanya Meyer and Daniel F. Meyer, explores how over the last decade local government in South Africa has gradually deteriorated regarding management and service delivery, which leads to a lack of an enabling environment. This chapter aims to assess – from a business perspective – the quality of the enabling environment in Midvaal and Emfuleni, two of the municipal areas in the Vaal Triangle region in South Africa. The authors concluded that owners of small and medium-sized businesses from Midvaal and Emfuleni rated the enabling environment as insufficient and lacking. Secondly, the creation of an enabling environment should be led by the applicable local government in the region to benefit local businesses and local communities. Thirdly, good governance is needed. Good governance relates to institutional capacity in management and administration and includes formal and informal structures within government institutions. It encompasses the ability to coordinate and assist with the implementation of policies, projects and action plans, and includes public involvement, institutional development, transparency in decision-making processes and accountability.

Chapter 9, by Daniel F. Meyer and Chané de Bruyn, explores how the COVID-19 pandemic and requisite shock on the economy have led to both demand and supply systems being negatively affected. A generally accepted regional and local economic principle is that to survive external shocks, a diverse local economy – which is well-spread across all nine main economic sectors – could be more resilient than more sectorally concentrated and specialisation economies. The objective of this chapter is to describe the analysis to determine the relationship between sectoral economic diversification and economic growth and development in the leading economic region in South Africa, the Gauteng province, with all its municipal areas. The conclusion from the results indicated a positive relationship between economic diversification and economic development in the study region. The lesson learnt is that LED would achieve higher growth rates if more focused economic diversification policies were formulated and implemented in developing regions.

In Chapter 10, by Lizl Steynberg, Shimei Jiang, Jan P. Grundling and Yuan Li, each year, development-induced resettlement impoverishes local populations and has a significant influence on the lives, livelihoods and culture of tens of millions of people. Between 1995 and 2010, China's Three Gorges Dam (TGD) on the Yangtze River, one of the world's largest and most expensive hydropower projects, displaced nearly one million people, making it the world's largest involuntary resettlement project. This chapter examines the TGD resettlement in China's Hubei Province as a case study focusing on the impacted community (resettlers) and the economic and social development aspects rather than the project's larger consequences. The case study is intended for different contexts, not only for a single country such as China but also for countries with different cultural and political backgrounds. The authors concluded that although people will always suffer some loss or inconvenience, resettlement can bring about positive change, at least if the resettlement process is successful and benefit-sharing mechanisms are in place. Secondly, project developers should be encouraged to alter their mindset from reducing the direct resettlement cost of the project to increasing awareness and commitment, lowering the project's immediate cost of resettlement and moving toward a greater awareness of and commitment to shared value for resettlement to be a development opportunity (Hidalgo, Peterson & Smith 2014; Porter & Kramer 2011; Wilson & Kuszewski 2011). Thirdly, involuntary resettlement may also have a beneficial influence if it is carefully planned, but this takes time. Fourthly, the benefits of successful resettlement are usually realised by the second generation of the displaced community, who make greater use of the available resources. Lastly, the new settlement might result in improved infrastructure and reduce future vulnerability to natural disasters.

Chapter 1

# Overcoming gender inequality through skills development within the arts and culture sector of South Africa

**Peter Baur**
Centre for Local Economic Development (CENLED)/PASCAL International Observatory (Africa), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa

## Abstract

This chapter explores the role of skills development in the arts and culture sector of South Africa to reduce gender inequality as a tool to improve local economic development (LED). The chapter examines the importance of the arts and culture industry, its contribution to the South African economy and the role of gender inequality within the arts and culture sector. Existing studies show the traditional cultural sectors contributed significantly to job creation during the 2020 and 2021 coronavirus disease 2019 (COVID-19) crisis. This is

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a concern in itself, as the arts and culture sector is considerably under-supported, and much of the sector falls into the informal economy. Empowering women in arts and culture in the informal sector may improve development objectives in LED. This study examines feedback from the participants within the arts and culture sector who completed a skills development programme. Developed by the Arts and Culture Trust, the programme builds capacity in micro-business to mid-level organisations, focusing on a range of skills-development initiatives. It was found that the programme added value. From a gender perspective, it was found that women faced greater challenges than men. The women identified a focus on youth, local culture and community development initiatives as strong points of the programme, thus indicating the importance of gender equality as a key factor contributing toward the objectives of local economic development.

# Introduction

Amartya Sen (2008) mentions that:

> Culture is who we are; shapes our identity; is a means of fostering respect and tolerance among people; is a way to create jobs and improve people's lives; is a way to include others and understand them; helps preserve our heritage and make sense of our future; empowers people. (n.p.)

This is why, they argue, culture 'works for development' (Kabunda 2014, p. 10).

The core construct of culture is developed from combined sets of distinctive features intrinsic within a society or grouping of individuals – spiritually, materially, intellectually and emotionally. It is the way of life, giving us the capacity to coexist within a set of value systems, traditions and beliefs (Efremova et al. 2018). A cultural economy is one in which the norms of expression are used to identify, foster and promote tolerance among people through acceptance, inclusivity and the preservation of heritage.

A 'cultural economy' is made up of a set of interrelated areas. These are the performing arts, including music, dance, theatre and opera. Visual art includes sculptures and paintings or abstract art objects. Cultural heritage features monuments, museums, historical buildings or historical sites. The cultural industries comprise a wide variety of small industries that publish literature in culture and art, a wide range of movie industries, local or folk music, recordings and other forms of media (Heilbrun & Gray 2001). The social aspect of cultural activity forms the basis of constructing fundamentals that symbolise human and sustainable development challenges through the constructs of creativity (Kabunda 2014).

Horkheimer and Adorno (2002) linked cultural industries with the creation or reproduction of cultural products and the mass distribution of cultural works. The cultural industries have incorporated technological progress with

the evolving pace of mass media and the complex processes of evolving production and distribution (Noerr 2002). The United Nations Educational, Scientific and Cultural Organization (UNESCO) has defined the cultural industries as being within the creative sector with the objective of producing or reproducing, promoting, distributing or commercialising artistic goods and services within the cultural sphere (UNESCO 2007). The term 'cultural industries' is often used interchangeably with the concept of 'creative industries'. The difference between the two terms lies in the 'cultural industries' emphasising heritage, traditions and creativity. According to UNESCO (2017), 'creative industries' embody creative talent and innovation and the innovation of goods and services.

A large part of the art market falls in the informal sector, which has led to the South African arts and culture sector being greatly overlooked in terms of government grants or direct spending compared to other countries. The expenditure on art-related products (from cultural goods to entertainment) by households is significantly high compared to even the European Union (EU) zone, with the average South African household spending 4.7% of their income on cultural goods (Hadisi & Snowball 2017), while households in the EU Zone spent only an average of 3.0% in 2015 (Eurostat 2022).

The Arts and Culture Trust (ACT) is an independent non-profit organisation working on the funding and growth of the arts. Its principal goal is to source funding for individual arts and culture enterprises, thus sustainably forwarding innovative and sustainable projects. Through these structured development initiatives, financial support is provided for all forms of arts, including festivals, community arts initiatives, management, education and administration within the arts and cultural sector (ACT 2021b). Skill development within the arts and culture sector recognises that societies and regions may be culturally different and that focusing on a human relations approach to LED may help to develop the political, economic and social norms. This could include reducing inequalities that exist within regions (Stuhr 1994). The ACT 'Building Blocks Programme' (BBP) is a skills development initiative for micro-businesses to mid-level organisations structured within 'masterclasses' developing digital skills, marketing, governance, monitoring and evaluation, and asset-based community development within the arts.

The importance of developing capacity-building within a multicultural environment is necessary to achieve the goals of LED. Multiculturalism in art education can be similar to fundamental social renovation through forms of curriculum design, teaching methods, content, goals and objectives (Stuhr 2006). Knowledge, skills and creativity are fundamental constructs that have given nations a competitive edge. Development of the cultural industries pioneers the migration toward a knowledge-based economy (McAndrew 2019). Through this programme, the ACT aims to increase the capacity and

sustainability of South African arts and culture organisations and practitioners, micro- and mid-level creative enterprises, and entrepreneurial artists (ACT 2021a).

Designed as a capacity-building initiative, the programme focuses on local micro-businesses and mid-level organisations within local communities, as well as a range of skill development initiatives.

A total of 45 participants provided feedback, and the analysis explores outcomes derived from the training. It was found that the programme added value from the very core of LED. Furthermore, from a gender perspective, it was found that women derived a higher value from the programme than men. According to the International Labour Office (ILO 2010), it is essential to obtain the participation of women in a LED process. This will reduce the discriminatory attitudes and will challenge the mainstream power structures. The LED-focused process may strengthen female participation in industry by giving them broader access to financial support and skill development. Targeted interventions at the local level should provide outcomes that are in line with macroeconomic fundamentals. The female respondents identified youth initiatives and project development as key benefits of the programme, thus further contributing toward LED objectives.

## Background

The arts and culture sector has a beneficial influence on the broad economy. The sector enhances the national cultural identity and its attraction. It also further promotes communities as value-driven centres for tourism, investment and spending. Art fairs, cultural programmes and the art market in general have a direct impact on their audiences and participants through the influence of political, social and community-based assets, which further attract investment and other creative talents through which tourism may be encouraged (McAndrew 2019).

Globally, the formal art market creates approximately 3 million highly specialised jobs (McAndrew 2019). The economic impact of the art market is significantly larger in proportion to its revenues. Because of the multiplier effect, sales within the art market have a wide and measurable economic impact. The market for fine art is braced by a number of upstream and downstream support services and interlinked industries that provide income, create jobs and are a source of tax. Most of the industries related to the art market are highly specialised, niche industries in their own right that would not exist without the art market. Each of these industries further supports a large range of highly skilled jobs (McAndrew 2019).

In LED terms, arts and culture is without a doubt one of the most important sectors in South Africa. Approximately 4.2% of all jobs in South Africa fall

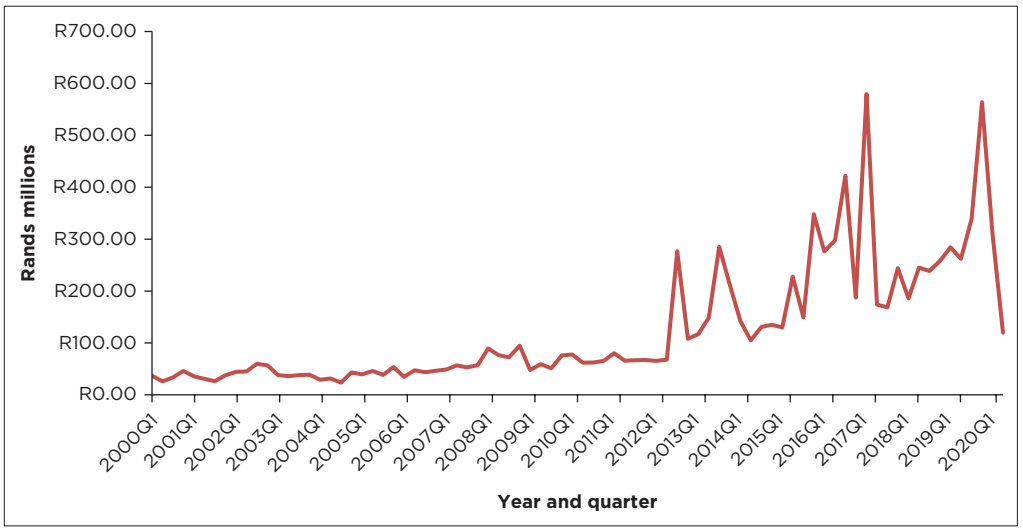
within the culture sector. In 2015, this sector accounted for 7.0% of the country's total employment (Hadisi & Snowball 2017) and contributed to approximately 0.4% of the nation's total gross domestic product (GDP) (Statistics South Africa 2019).

Household spending on arts and culture is significant, and arts and culture plays a leading role in making people's lives richer and finer. Arts and culture represents creative wealth, and it is an increasingly essential part of the process of sustainable economic development (Kabunda 2014). Yet, despite this, 22.1% of those associated with arts and culture businesses are either unregistered or fall into the informal sector (Hadisi & Snowball 2017). The informal sector, especially those within the rural areas, comprises a large spectrum of associated support industries to the arts and culture sector and creates many job opportunities (comprising approximately 3.6% of total employment) on a national level (Hadisi & Snowball 2017).

Tourism provides sustainable economic opportunities for people working in the arts and culture sector (Baur 2018). Many of these cultural communities are situated geographically far from modern infrastructure and do not benefit from industrialisation in the same way. This is in line with other studies showing that large economic events stimulate the arts sector (Baur 2019). Furthermore, tourism facilitates cultural trade between regions, and the value tourists place on real and authentic experiences or products derived from the cultural industries can be linked to poorer communities or rural households (Baur 2014). There is a relationship between the export of 'art' and 'tourism' (Wang et al. 2011) which is affected by the political and social environment (McAndrew 2019). In 2018, South Africa's cultural goods exports were valued at $446.5 million (South African Cultural Observatory 2020) (see Figure 1.1).

From Figure 1.1, it can be seen that there has been an exceptionally large growth in the trade of art from South Africa. Predominant trading partners receiving cultural goods from South Africa are the North American Free Trade Area (33.2%), followed by the rest of Africa (23%), the so-called BRICS (Brazil, Russia, India, China and South Africa) countries (22.1%, mostly China), and the EU (15%, mostly the UK, Italy and Germany). COVID-19 has had a significant impact on the exports of cultural goods. Goods – such as published products, music, films, crafts and design products – have played an important role (UNESCO 2017). The correlation between spending initiated through tourism and output within the recreation, culture and sporting activities is marginally low (Baur & Venter 2019). Estimated tourist spend was derived from World Bank indicators and international tourist receipts as a percentage of total exports.

Binge and Boshoff (2016) noted that contemporary African art has surged in popularity, especially with the rise of social media, the internet and electronic trading. The South African art market in particular has grown remarkably, both




*Source*: Data derived from Quantec (2020).

**FIGURE 1.1:** Export of artwork from South Africa in South African Rand between 2000 and 2020.

in terms of the number of transactions and total turnover. Yet, according to a report compiled by Pownall (2017), African art makes up less than 1% of the global art market. This is despite African artists being responsible for a great deal of global art traded through auctions. South African art makes up a large share of the recognised contemporary art which is produced locally and traded internationally (Pownall 2017).

The Department of Arts and Culture (DAC) contributes to sustainable LED through job creation via the emerging arts, culture and heritage sectors of South Africa. The Department aims to generate a sustainable business environment through social cohesion and fostering a democratic social climate through inclusive growth, development and township renewal. This is achievable by creating opportunities in the arts and cultural environment (DAC 2019a).

Arts and culture plays a significant role in promoting diversity, developing cohesion and forwarding reconciliation and development through the restoration of various aspects of heritage to address challenges communities face today (DAC 2019a). The environment and culture sector is made up of several core programmes that reflect the common mandates of the departments by innovating institutions to create jobs and community participation, utilise Indigenous Knowledge and manage natural resources sustainably (DAC 2004).

The DAC supports the arts and culture sector by providing funding, developing strong management capacity and furthering networks. LED strategies through public-private partnerships facilitate cultural development

as a means of urban development and regeneration (DAC 2019a). This initiative contributes toward sustainable LED through the drive for innovation to reduce the impact of unemployment.

The structural problem of unemployment in South Africa is associated with low production through disinvestment in innovation. The nature and extent of low production through disinvestment are reflected in the economy through the 'trade-off' that is experienced through changes in unemployment and income inequality. Income inequality is perhaps most noticeable between races, genders and education levels (Tregenna & Tsela 2008).

As an important tool of LED, the arts and culture space provides a platform to promote economic growth, fostering an environment of political and economic freedom through the development of sustainable innovation. The improvement of an environment conducive to intellectual and innovative capacity-building creates opportunities (Junusbekova 2016) and induces change.

Montané et al. (2019) point out that skills development makes training accessible for all, leading to economic freedom. This in turn leads to increased diversity and supports capacity development to support the evolving needs and priorities associated with an increasingly non-homogeneous artist base (Montané et al. 2019).

The United Nations Conference on Trade and Development noted that, because of the financial implications of COVID-19, unemployment is expected to soar, with more than 200 million full-time workers around the world expected to lose their jobs. In addition, market uncertainty resulting from this pandemic will cost the global economy in excess of $1 trillion (UN 2020). COVID-19 has also affected how artists and performers experience the arts and culture sector.

To curb the spread of COVID-19, many cultural programmes were either suspended or forced into the informal sector. While many in the arts and culture sector could continue, artists, especially those reliant on the physical presence of audiences, were forced to innovate to continue during this period (Baur 2020a) effectively.

## The impact of COVID-19 on skill development within the arts and culture sector

The effects of the COVID-19 pandemic on the South African labour market became apparent via an increase in unemployment levels, further exposing the stark social and economic differences between the rich and the poor living within the country. During 2020, the government enacted a national lockdown,

forcing the total closure of many institutions within the cultural sector. This negatively impacted many sectors of the economy, possibly even productivity in the long run, while diminishing economic opportunities (Mhlanga & Moloi 2020).

By late December 2020, the impact of COVID-19 had already exceeded expectations and rapidly surged across local, regional and international economies. According to the World Trade Organization (WTO 2020), COVID-19 had a negative impact on international production and trade, escalating unemployment and changing household expenditure patterns. It also had an impact on arts and culture (WTO 2020). Especially significant is the impact of COVID-19 on disadvantaged and vulnerable performers and artists who were clearly disproportionally affected (Farnell, Matijevic & Schmidt 2021) by forced closures within the arts and culture sector. These closures undermined the ability of many to earn an income, forcing some to stay at home, and this brought with it an increase in gender-based violence against women and girls (UNESCO 2020). Furthermore, the loss of income following the close of many businesses has left the majority of the country's population with growing uncertainty within an already strained economic environment (Muvunyi 2020).

The impact of COVID-19 on South African artists was worsened by the overarching impact of food insecurity, resulting in increased cases of reported depression, anxiety and stress, particularly among women and young parents who experienced lower measurable developmental outcomes (Shepherd & Mohohlwane 2021). COVID-19 further inflated the challenges faced by artists from under-represented groups, low-income artists, women, members of minority groups, artists living in remote areas and artists living with special needs (Mitchell 2021).

The market for art can appear both intimidating and overwhelming, and insecurity among people living within the arts and culture sector is apparent (Christie 2014). Insecurity, in particular, can have a negative effect on willingness to become more involved within the sector. This could be compounded if the artist is a foreigner or a member of a minority community. South Africa's disruptions to the arts and culture industry and the uncertainty brought about by COVID-19 have exacerbated existing socio-economic inequalities and societal pressures (Shepherd & Mohohlwane 2021). The Centre for Risk Analysis (CRA 2020) reported that during the third quarter of 2020, the economy of South Africa was under intense pressure because of the increasing levels of unemployment brought about by COVID-19.

## Sustainability in arts and culture

Key target priorities of the EU include teaching and learning, research, community engagement, the social dimension of higher education,

internationalisation, university governance and the financial impact of COVID-19 on institutions of higher education (Farnell et al. 2021). Salmi (2018) mentions that the framework proposed through the priority of a 'social dimension of higher education' plays a large role in promoting social interconnections, aiding the reduction of inequality by raising the level of knowledge, skills and competencies in society.

The United Nations (UN) Sustainable Development Goals (SDGs) emphasise high-quality skills development that is inclusive and equitable and aim to promote lifelong learning opportunities for all (Montané et al. 2019). Social division along the lines of race, gender and ethnicity spans geographic, religious, financial and political boundaries (Loury 1999) and is a product of poor institutional dogma.

Many artists and performers from minority groups are unaware of the resources available to them (Budge 2006). To achieve equality, there should be access to skills development, capacity-building and training, which should alleviate inequality. Montané et al. (2019) point out that capacity-building and training may further deepen 'democratisation' by making skill development available to everyone. This creates diversity within an increasingly non-homogeneous artist base (Montané et al. 2019).

## Methodology

Short survey-type questions were issued to 45 respondents involved in the BBP, and their answers were analysed.

The text analysis followed the approach used by Khan et al. (2021) using data extraction, pre-processing and topic identification. The participating artists were asked to give a short description of the project they aimed to develop using the BBP.

A concern in this analysis is that many of the respondents are not home language English speakers, yet the survey was written and analysed in English; this may have skewed the results or their interpretation. While this is noted, the method of analysis is still used in this study to estimate the emotions expressed by the respondents within the sample (Lexalytics 2020).

A sentiment score was established using the Valence Aware Dictionary and Sentiment Reasoner (VADER) approach. The VADER Sentiment Scores function uses the VADER sentiment lexicon and modifier word lists. Language analysis is central to detecting a reliable sentiment score from the analysis. This is on account of the significant differences in lexicons, syntax and semantics among languages (Antonakaki, Fragopoulou & Ioannidis 2021). Survey data were imported and cleaned, stemming, word tokenisation and data normalisation were applied, and data filtering was applied to the

information imported into the software. Normalisation of the collected text converted the 'slang' into commonly used terms. The words were tokenised to assign roles to words within sentences by identifying adverbs, nouns, suffixes, verbs and adjectives (Khan et al. 2021).

Sentiment data were further analysed using correlation criteria, factor analysis and a latent Dirichlet allocation (LDA) model – a 'topic model' that explores underlying topics in a collection of documents and infers word probabilities to the words within the documents in order to extract individual topics. Topic modelling refers to the extraction of abstract topics from the collection of participant responses during data collection. Sharma and Sharma (2020) explored an automated sentiment analysis system that predicts public emotions using machine learning algorithms. Additional accuracy is gained by using machine learning to determine topic bundles (Sharma & Sharma 2020).

According to Nguyen (2022), LDA is a viable clustering algorithm suitable for bundling topics from collections of text data. The foundation of sentiment analysis rests on natural language processing (NLP) and machine learning algorithms to automatically determine the emotional tone behind online conversations (Korolov 2021). Lists of words and expressions (lexicons) captured in the survey were collected and imported into the model and processed using NLP techniques developed in computational linguistics.

Latent Dirichlet allocation methodology, of course, comes with its fair share of criticism. The most often cited concern is that the assignment of text data into topics may not appear to be sensible. Often, the topics themselves are extremely challenging to describe in a semantically meaningful way, and they may appear to be just an arbitrary list of words (Kulshrestha 2019). The sentiment analysis used within this study applies a rule-based system to identify subjectivity, polarity or the subject of an opinion. The subjective output results, including the level of satisfaction, the degree of commitment, the level of integration and the extent of self-esteem, appear to indicate very mixed results and remain inconclusive or ambiguous, challenging the methodological concerns used within these types of studies (Collings, Swanson & Watkins 2014). Rodger and Tremblay (2003) further support this sentiment by arguing that the methodological challenges faced within this type of research may have serious implications for the findings and reporting within the literature.

## Sample distribution

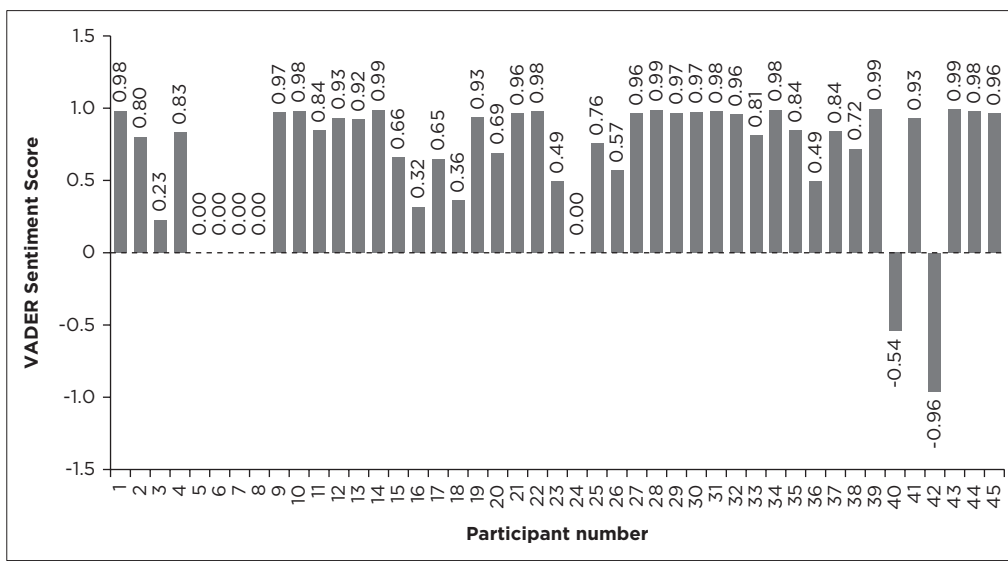
The sample distribution focuses on the following key areas: gender, age, disability, province, discipline and years active.

Of the respondents in this survey, 58% were men and 42% were women, with the majority being between the age of 25 and 34 years and the second

largest group being between the age of 35 and 45 years. Seven per cent reported a disability. Distribution among the disciplines included literature (2%), visual arts (27%), performing arts (29%), music (20%) and other (22%). Fifty-six per cent said they are self-affiliated, while 44% were affiliated with an arts organisation. Forty-two per cent of the respondents had been in the field for 1–4 years, 11% from 5 to 10 years, 4% from 11 to 15 years and 11% for 15 years or more.

## Sentiment analysis

The first cluster analysed in this survey refers specifically to the request for 'a short description of the project you aim to develop using the BBP'. This question explores the respondents' sentiments by examining the opportunities identified in the training process. A lexicon approach was used to develop a sentiment analysis per response within this sample. The VADER lexicon is a rule-based sentiment analysis tool that is specifically attuned to sentiments expressed in the survey. The idea here is that the score has both polarities (positive and negative), with a maximum of one, either way. This score reflects how much of a positive or negative emotion exists within the text, and the size of the score expresses the level of intensity of that emotion. The average VADER Sentiment Score for participants in this study was 0.660. This is a strong positive indicator as per the response given by the survey participants (see Figure 1.2).



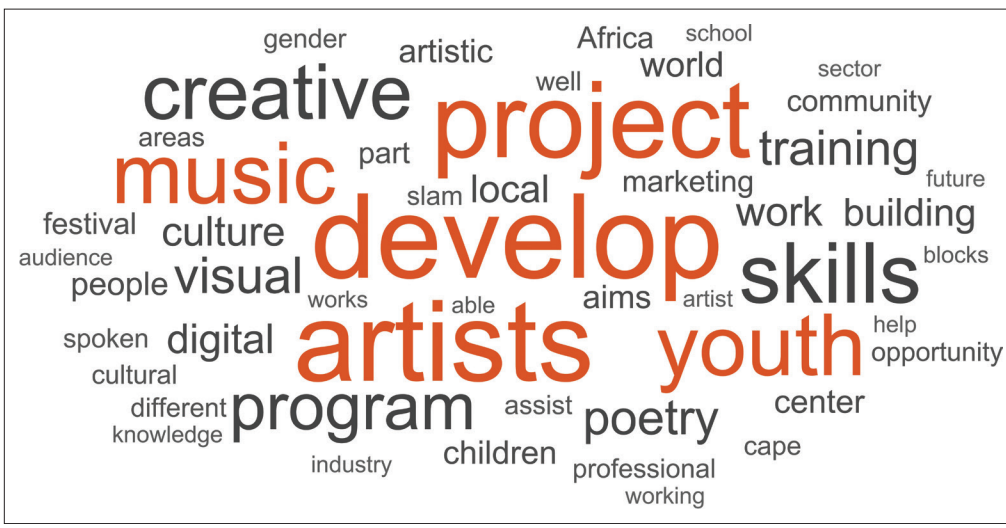

*Source*: Compiled by the author from survey data.

**FIGURE 1.2:** Sentiment scores per respondent.

The larger portion of the sample showed a positive sentiment, with only two of the respondents expressing a negative sentiment. Overall, from the analysis, it appears that the skills development programme has been positively assimilated by the respondents.

Figure 1.3 uses a 'word-cloud' to visually represent the number of specific words used within the text, indicating relative frequency. Word clouds (also known as text or tag clouds) are a collection or cluster of words depicted in different sizes. The five words uttered most by the respondents were 'develop', 'artists', 'project', 'music', 'youth' and 'skills'. Training in arts and culture seems to focus specifically on skills development in focus, project development and management. This could imply that the programme was effective and that the level of confidence when considering the strong sentiment score is appropriate. It is interesting that while the largest share of the respondents (>88%) were over 25 years old, one of the key responses focused on youth development. This is in line with another study conducted by Baur and Venter (2019), which explores the arts and culture sector of the Expanded Public Works Programme. Their study strongly highlights the significance of youth development within the arts and culture sector.

This study applied supervised machine learning to the collection of data to 'cluster' words into either a positive or negative sentiment. 'Clustering' is the process of organising a set of data into groups (Campbell 2005) so that those concepts within the respective groups are clustered using similarity, differentiating them from concepts that may belong to a different cluster (Martinez & Martinez 2005).

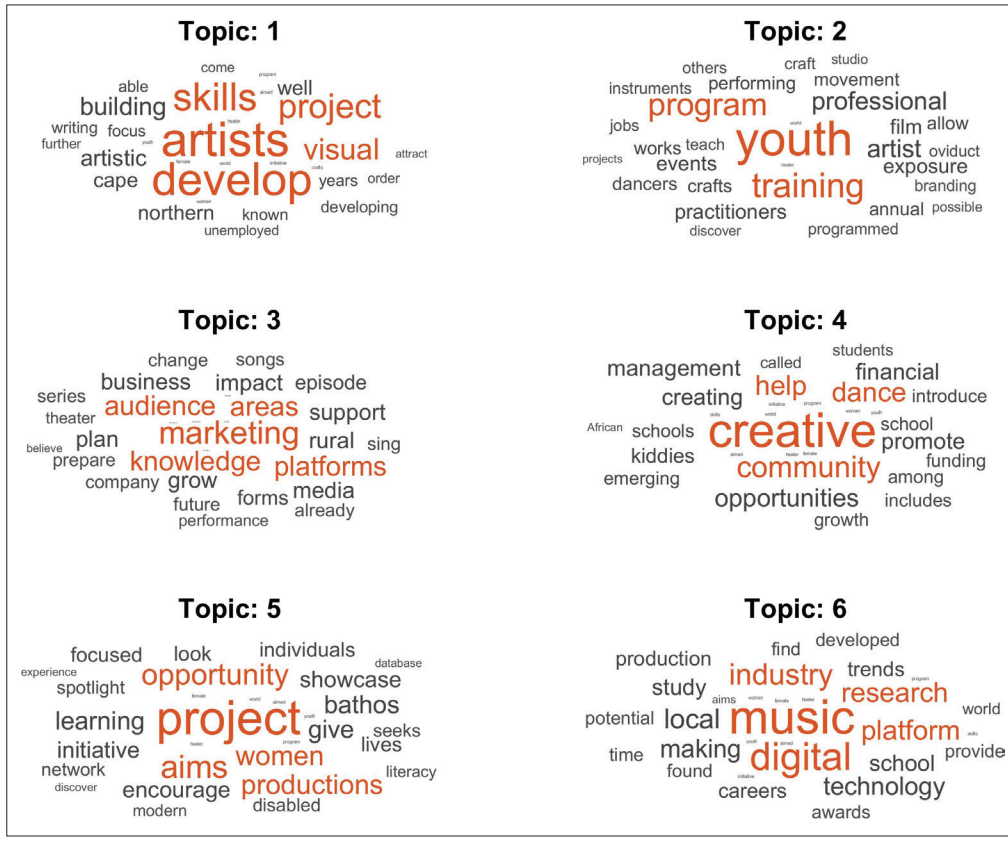



*Source*: Compiled by the author from survey data.

**FIGURE 1.3:** Word-cloud, tokenised response by the respondents.

The results generated in this analysis revealed several topics that determine the motivation underlying the survey responses. Sixteen individual topics were identified using machine learning, and six topics displaying the greatest probability in order of highest to lowest are presented here as word clouds.

As presented in Figure 1.4, Topic 1 refers to the concept of skill development, orientated towards developing the artist's skills and ability to manage projects and becoming more visible in their communities. Topic 2 focused on youth, training and personal development, thus creating a deeper sense of professionalism. This topic also seems to recognise the importance of skill development for youth-orientated programmes. Topic 3 refers to artist marketing – this is about creating a platform for artists to represent themselves and providing them with the knowledge to market their skills and creative products. Topic 4 speaks of working within the local economy by highlighting the importance of local communities and community promotion within the creative space. This topic identified by the respondents draws a clear link



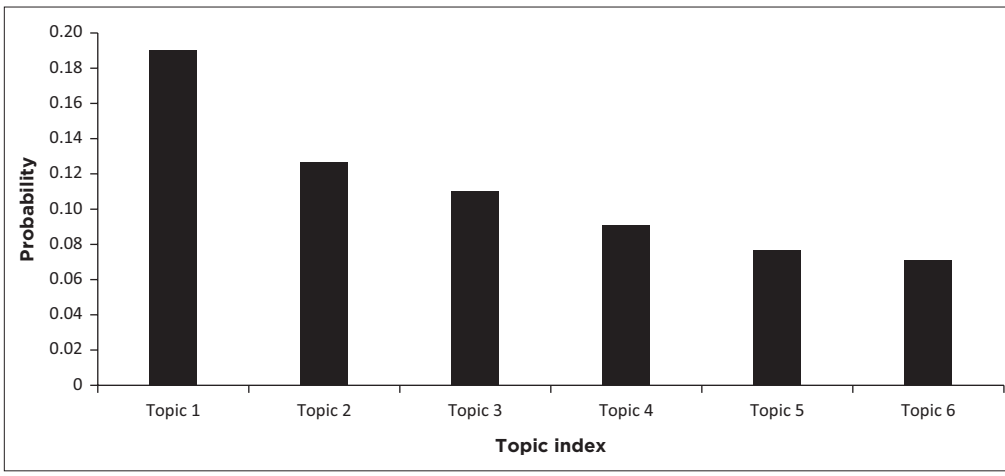

*Source*: Compiled by the author from survey data.

**FIGURE 1.4:** Topic identification using supervised machine learning.

between the objectives of LED and the creative industries. Topic 5 speaks of project development towards gender equality and empowerment through greater equality within the arts and culture sector. Topic 6 focuses on the individuals within their respective creative industries and the importance of furthering research and developing studies within the creative industries.

Interestingly, when examining Figure 1.5, Topic 1 indicated the highest probability of being highlighted by the respondents. This topic highlights the importance of capacity-building and skills development within the respondent environment. Topic 1 draws a clear distinction between itself and Topics 2 and 3, which respondents also indicated as important, while Topics 4, 5 and 6 were almost of equal importance to the respondents.

An investigation of the arts and culture sector of the Expanded Public Works Programme in another study (Baur 2020a) shows a positive correlation between training (skill development) and work opportunities, especially for youth and women. The study also shows that funding made available to train youth and women was a significant driver of economic development objectives. In the same study, capacity-building appeared to have a significant positive impact on wage growth in respect of men but not in respect of women. However, wage growth in respect of both men and women appeared to slow down the longer they had been employed. In other words, according to this case study and others, training and skills development create job opportunities, while other economic factors such as sectoral wage increases achieved the opposite. However, it is also noted that skills development seems to slow down over longer periods of employment (Baur 2020).




*Source*: Compiled by the author from survey data.

**FIGURE 1.5:** Probability of topics identified within the respondents' feedback.

# Findings

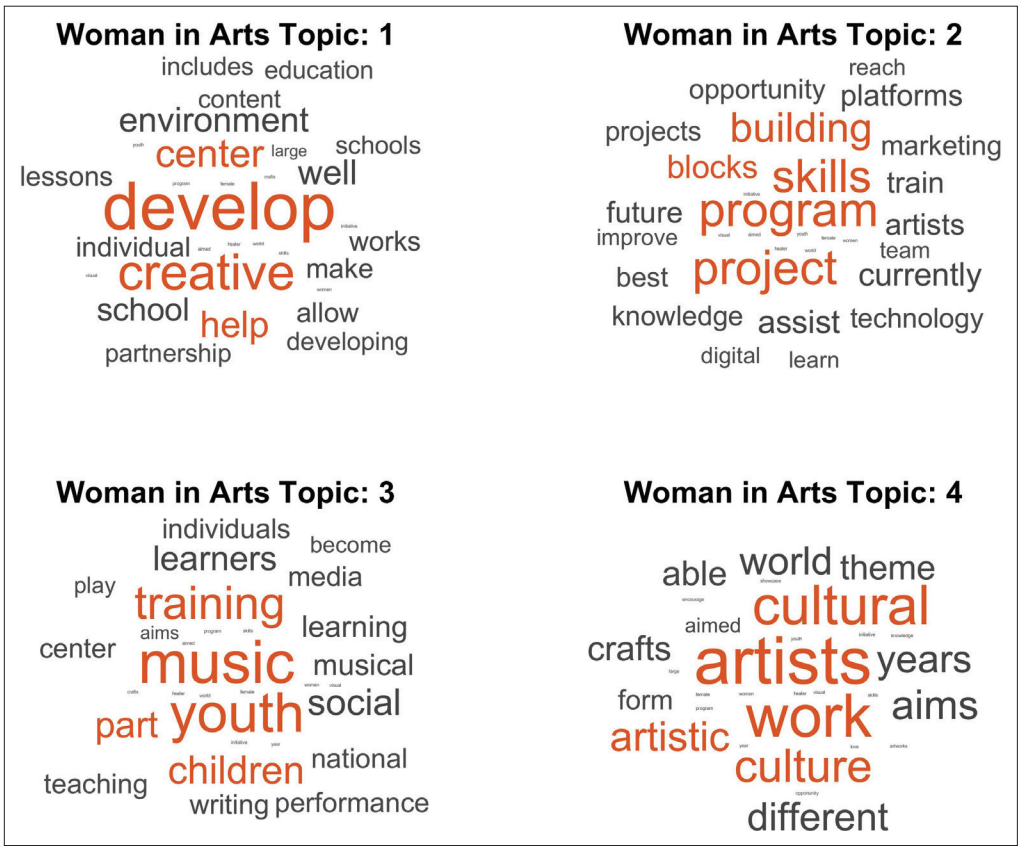
## Empowerment of women

In this analysis, the role of gender and the inequality that exists within the arts and culture sector was afforded an additional look. McAndrew (2019) estimates that women accounted for between 35% and 40% of world wealth in 2018 despite comprising 50% of the population, yet, in the United Kingdom, at least 69% of purchasers of fine art are women (McAndrew 2019).

Various reasons have been given for gender inequality within the arts and culture sector. Entrenched gender biases at the company level are perceived to pose cultural barriers to women entering fields such as technology and engineering (McAndrew 2019). According to Cameron, Goetzmann and Nozari (2019), gender imbalance in art and culture is a great concern. Data gathered from museums, biennales, news and criticism about the art market indicate continuous inequality between male and female artists in terms of exhibitions, success and recognition. Female artists make up only about 30% of artists represented in galleries (Cameron et al. 2019).

A sentiment comparison between men and women showed that men scored a higher sentiment (0.766) than women (0.584). In terms of the role of women within arts and culture, it was interesting to see the difference in topics identified by the female respondents. Only 19 respondents from the entire sample group were women; the largest portion of the sample was between 25 and 45 years. Of this group, 42% had fewer than five years' experience in the field. The majority of respondents (32%) were from visual arts, followed by the performing arts (26%), music (11%) and literature (5%). Of the 26 men, 27% were in music, 23% in visual arts and 31% in performing arts. Most of the respondents older than 25 years were men, and, like the female respondents, 42% were in the field for less than five years. Because of the low number of respondents, the LDA analysis was done using unsupervised machine learning (see Figure 1.6 and Figure 1.7).

As Figure 1.6 shows, in Topic 1, women feel the priority focus should be on creativity, school development, environmental issues and individual quality. As per Topic 2, the focus should be on building bigger and better projects and skills and acquiring knowledge on marketing and business. Topic 3 impressed that the focus should be on training youth and giving learners better support. Topic 4 touched on the role of culture and artists and the work of artists within their communities. This indicates that women identified a strong sentiment of nurturing. Figure 1.7 shows that the word clouds looked quite a bit different for men in arts in culture.



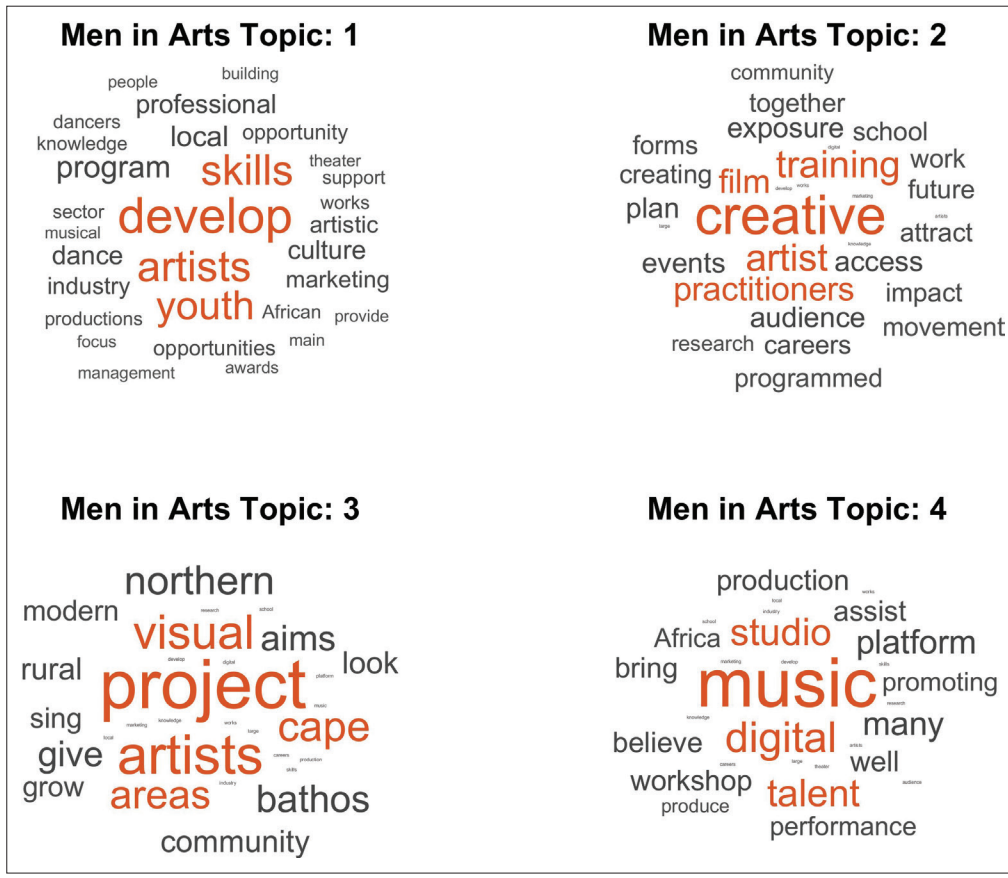

*Source*: Compiled by the author from survey data.

**FIGURE 1.6:** Topic identification using supervised machine learning for women respondents.

For the men, Topic 1 brought up a focus on project development, compared to the focus on community, partnerships and centre development structures it brought up for women, indicating that more support was still needed. Topic 2 for men focused on training and developing creative talent, while for women, the focus was on project and programme development. Topic 3 for men was on projects relating to artists within a specific area or region, highlighting the importance of LED, while for women, it focused on youth training and skills. Topic 4 for men touched on professional development, yet for women, the focus was on the artist's role within the local community and protecting and enhancing local cultural values.

## Gender equality and local economic development

Reducing inequality would require alternative value frameworks away from 'male-centric' schemata. This does not inherently devalue the characteristics of




*Source:* Compiled by author from survey data.

**FIGURE 1.7:** Topic identification using supervised machine learning for men respondents.

the art based on association with women. However, the research on the process of undervaluation or stereotyping has shown that women earn less, and there is a negative bias towards women's designated wages (McLeod 2019).

Productive employment opportunities and access to finance for women provide social protection and, importantly, promote and value them (Bradshaw, Castellino & Diop 2015). The relationship between improving gender equality through capacity-building and skill development is a key factor underlying sustainability within LED. Women with skills show a propensity to spend more on education and are more likely to have fewer children within their family, resulting in a positive long-term outcome with increased productivity gains and lower levels of population growth (Bradshaw et al. 2015).

The high levels of inequality in South Africa put the country among the top three most unequal countries in the world. Unfortunately, the overwhelming

majority of those are women. Furthermore, women experience higher levels of unemployment and earn lower salaries, often within the most vulnerable sectors. Households that are headed by women are more likely to experience higher levels of poverty than other households within South Africa (DOL 2016). According to the DAC (2019b), building capabilities and removing participation barriers through an inclusive society helps to reduce inequality.

Modern society still experiences challenges to women's rights in the workplace because of culturally motivated expectations. Economic fundamentalism, policies and practices sometimes deny women their rights as workers and to work. Gender equality can be achieved by applying a social reconstruction approach to development (Stuhr 1994), while the abuse of power and control generally fuels inequality. With weak institutions, fewer development options are available, commonly littered with misuse (Kabunda 2014). The social reconstruction approach challenges social and structural inequality to promote the goal of social and cultural diversity. While political culture is important for bringing change, women continue to have a limited voice at the local and national levels, and women are not able to participate fully in formal systems of power (Stuhr 1994).

This reconstructionist approach educates individuals to become critical thinkers capable of examining their own experiences and the social divisions within society and helps them find a place within the economy (Stuhr 1994). Furthermore, reduced inequality is a prerequisite for sustainable approaches to equitable development, growth and integration – by lowering crime rates and building trust and social cohesion, inequality will be reduced. Subsequently, stability will be increased, additional investment will be attracted and strong government institutions will be supported. Reducing inequality is also critical to understanding and eradicating poverty. Reduced gender inequality can improve regional and national competitiveness beyond the labour market (Ivins 2019).

Seen from a human development view, the increase in access to resources for women may help overcome gender bias by enriching people's lives. Cultural activities are increasingly noted as drivers of economic development. The art exhibition directly affects social progress and economic growth through trade in artworks. The arts and culture sector contributes to development through tourism, deepening social inclusion, building on cultural democracy and changing perspectives, which may help reshape behaviour and move away from collective bias (Kabunda 2014).

To achieve the goals of sustainable LED, sound governance should be considered within a robust economic structure, and reducing gender inequality through arts and culture will have a positive outcome. Programmes such as the Expanded Public Works Programme could continue to drive development initiatives to empower poorer communities. In an earlier study, Baur (2020)

suggested that the goals of sustainable LED are achievable through facilitating further innovation and providing support structures within the cultural sector through skill transfer and business facilitation. Continued support for the Expanded Public Works Programme should be maintained while promoting investment initiatives in the economy.

## Conclusion

This chapter focused on overcoming gender inequality through skills development within the South African arts and culture sector. A case study was conducted on a capacity-building programme hosted by the ACT. The BBP is a training initiative that brings a range of skills to the creative industry.

The survey data show that the benefits of the skills development programme are extremely noteworthy. It could also be seen that there are differences in both expectations and outcomes between the genders. It appears that, in South Africa, women in arts and culture face larger challenges than men.

The way to overcome the inequality within the local arts and culture sector is through skills transfer. There are many reasons for the inequality that exists in the local and international arts sector. Reducing the gap (by transferring skills and supporting institutions) will add greatly to the sustainability of LED within the sector.

The arts and culture sector adds value to the economy on many different levels; provides a social, economic and political framework; creates income for households; protects cultural norms; and provides a voice for those who are not heard in their communities or beyond. Arts and culture is a pivotal pin underlying LED, bringing sustainability to the forefront of economic development.

Chapter 2

# Empowering women-owned businesses trading at the Tshakhuma Fresh Produce Market in Limpopo

**Tsakani V. Khosa**
Centre for Local Economic Development (CENLED), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa

## Abstract

The narrow LED research project on which the chapter is based investigated, through mixed methods research, how female entrepreneurs at the Tshakhuma Fresh Produce Market in Limpopo could be empowered. The main findings relate to the respondents experiencing a lack of business skills that limit the growth potential of their businesses, exclusion from informal and formal networks, infrastructure challenges, supply issues and lack of access to finance. Finally, family commitments sometimes prevent them from reaching their full potential in business. It is recommended that the LED unit of the Makhado municipality, in collaboration with the tribal authority and other stakeholders, establishes a committee to find new ways to fast-track the empowerment of these female entrepreneurs.

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# Introduction

The main aim of the LED research project on which this chapter is based was to investigate how female entrepreneurs at the Tshakhuma Fresh Produce Market in Limpopo can be empowered.

A study by the Department of Trade and Industry (2011) revealed that the challenges preventing female entrepreneurs from running successful enterprises:

> [/]nclude (but are not limited to) lower levels of education and financial literacy, socio-cultural constraints, lower income levels, lack of tangible assets or collateral, time and mobility constraints, inter-role conflicts from juggling domestic and professional roles and lack of market exposure. (p. 15)

A similar study conducted by Ewoh (2014, p. 3) identifies factors such as 'religions/cultures, family responsibilities, education/experience, lack of role models in entrepreneurship, gendering of entrepreneurship, weak social status, competing demands on time and access to finance and technology' that prevent women from growing successful businesses.

Local economic development can be defined as (Department of Cooperative Governance and Traditional Affairs [COGTA] 2017):

> The process by which public, business, and non-governmental sector partners work collectively to create better conditions for economic growth and employment generation with the objective of building up the economic capacity of a local area to improve its economic future and the quality of life for all. (p. 11)

According to Swinburn, Goga and Murphy (2006):

> LED occurs when a community consciously decides to improve the economy of the area where they live, by obtaining all stakeholders such as the public, private and non-governmental sector in that specific area to work together using their local assets in a manner that it creates decent jobs which will improve local living conditions ensuring a sustainable economic future. (p. 1)

Local economic development envisions '[i]nnovative, competitive, sustainable, inclusive local economies that maximise local opportunities, address local needs, and contribute to national development objectives' (Department of Cooperative Governance and Traditional Affairs 2017, p. 5). The introduction of LED within local spaces has found countenance within legislation such as the Constitution and strategies such as the Growth, Employment and Redistribution Plan, Reconstruction and Development Programme (RDP), National Spatial Development Perspectives, Regional Industrial Development Strategy, National Development Plan (NDP) 2030 and the South African Local Government Association Strategic Framework 2017–2022. The development of these policies resulted in the establishment of the 2006–2011 and 2013–2018 National Framework for Local Economic Development (NFLED) in South Africa. The NFLED is a strategic guide that plans, coordinates and provides a

common perception and notion of what LED is within South African societies. The NFLED is grounded in ten cross-cutting principles, one of which aims to prioritise marginalised women and youths from previously disadvantaged backgrounds. The NFLED has seven objectives that range from enriching the way local economies function and creating an enabling environment for communities to access economic resources to taking a strategic approach to solving problems and developing communities.

The NFLED is guided by five core LED pillars that include:

1. economic governance
2. developing skilful, inclusive learning economies
3. strengthening diverse local economies
4. strengthening innovative systems
5. enterprise development and support.

This study is grounded in LED pillars two, four and five of the NFLED: developing learning, innovative and skilful local economies, enterprise development and support, and economic governance and infrastructure.

The first NFLED 2006–2011 was introduced at the municipal level across South Africa to minimise the number of unskilled people through LED-funded projects with the aim of erasing poverty and unemployment. Unfortunately, according to Venter (2014), this appears to be a myth as municipalities have struggled for years to fulfil this directive.

Over the past two decades, the world has experienced a significant rise in informal sector activities. This rise came about as a response to unemployment. Although unemployment is a problem that has negatively affected all segments of the African continent, its effects are particularly visible in women and the youth. Before the emergence of democracy in South Africa, women were subjected to the demoralising effects of inequality and poverty. In fact, in all segments in Africa, 'gender gaps in employment are high, with women dominating informal sector employment and vulnerable work due to insufficient access to employment opportunities and inadequate educational opportunities' (Trusteeship Council Chamber 2016, p. 1).

According to Ganescu (2014), South Africa's education system has not been able to make entrepreneurship a priority so that people would be motivated to make it a career. This has resulted in a significant number of people venturing into entrepreneurship because of circumstances related to unemployment. Thus, critical entrepreneurial competencies such as risk-taking and independent thinking are lacking. The effect of this is that most people, particularly women, are not empowered with the necessary skills to run successful businesses. For communities and organisations to effectively participate in the global society, capacity-building is required, both at the individual and community level (Turton 1996). At the individual level it involves

the knowledge and ability to make informed decisions, and at the community level it involves the development of organisational, technical, and developmental resources. The way entrepreneurs are recognised and supported by their country moulds the economy's future and provides direction to how the entrepreneurship culture should be (Khumalo & Mutobola 2014).

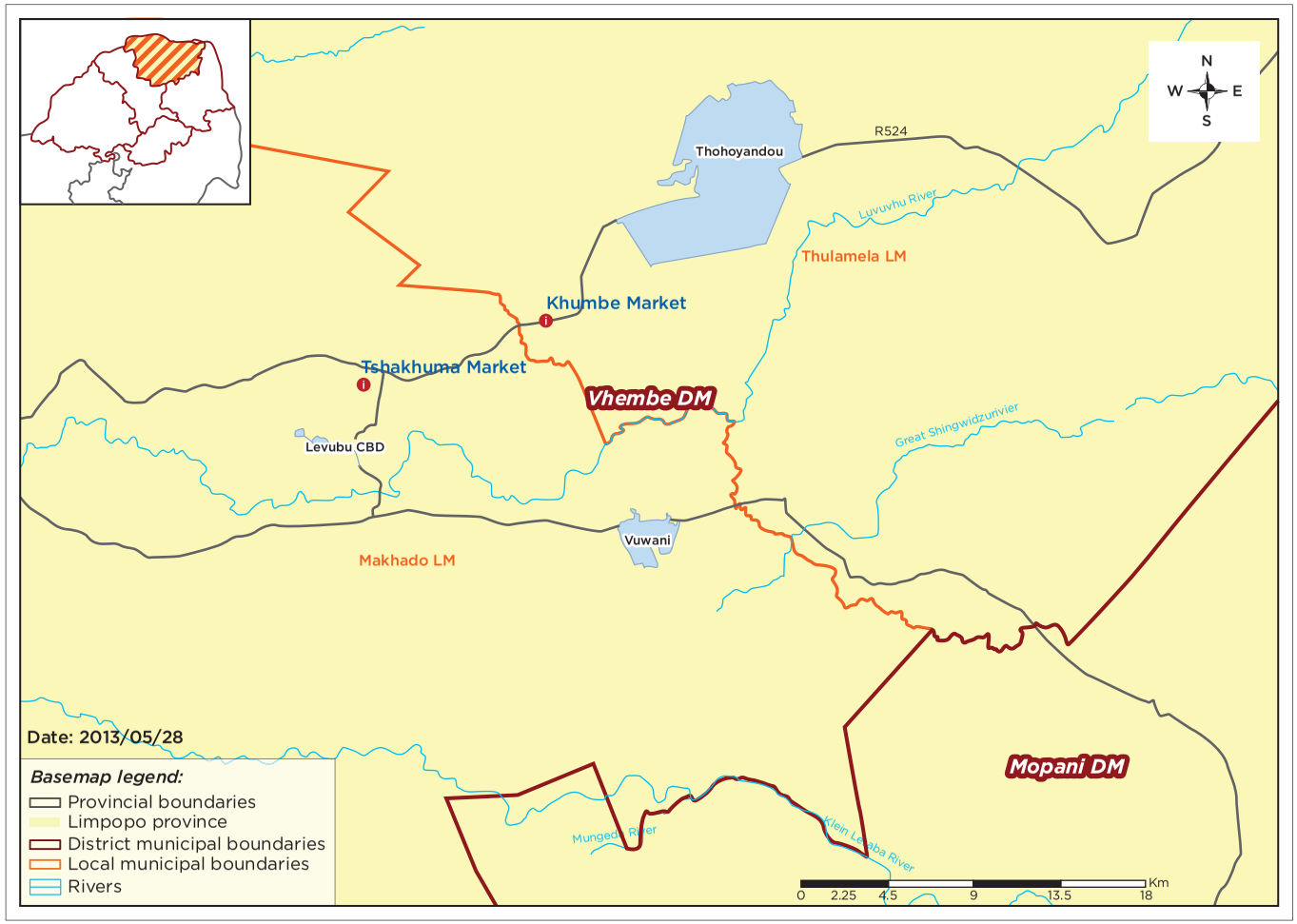
The concept of economic empowerment of women is one that bears great significance in the entrepreneurship environment, as most women in the business environment are marginalised. According to the Department of Trade and Industry (DTI 2011), we know little about economic empowerment initiatives among women in rural areas. This is significant because most women in South Africa live in rural areas: Witbooi and Ukpere estimate that '40 per cent of women live in villages, 28 per cent live in cities and [32 per cent] in towns' (Witbooi & Ukpere 2011, p. 5651).

## Community profile

The Tshakhuma Fresh Produce Market is located within the Makhado local municipality. It has the second largest population of the four municipalities within the greater Vhembe District Municipality in Limpopo Province; its total population was estimated to be 497,237 in 2016 (Statistics South Africa 2016). The Tshakhuma Fresh Produce Market is an informal market that operates 24 h a day, seven days a week, and has been in operation for more than 40 years (Magwalivha 2017). The village of Tshakhuma falls under the municipality of Makhado in the Vhembe District, which was amalgamated with the Thulamela municipality. The stalls of the market are situated along the left- and right-hand side of Levubu Road, as shown in Figure 2.1.

The route where the market is positioned accommodates residents and people travelling to and from neighbouring countries, such as Zimbabwe and Mozambique.

The Tshakhuma Fresh Produce Market sells a range of subtropical fruits endogenous to the Venda region, depending on seasonal availability and supply. Some of these fruits include mangoes, paw-paws, pecan and macadamia nuts, litchis, naartjies, oranges, wild berries and avocados. The prices range from R20 to R50 and are not displayed on the stalls. In addition, sellers are not allowed to discount prices unless the fruits are close to spoiling. This is because they sell the exact same items and are thus discouraged from discounting their prices in order to afford each person a fair opportunity to sell their produce. Although vegetables are found at the market, they are sold on a much smaller scale. The entrepreneurs buy their stock from a range of sources located nearby, which include hawkers and both commercial and smallholder farmers. There are also those who grow some of the produce at home.




*Source*: Dagada et al. (2015).

**FIGURE 2.1:** Map of Tshakhuma.

Currently, the fresh produce market comprises about 400 (women only) entrepreneurs on both sides of the road. These entrepreneurs take turns selling both during the day and at night. Only women under the Tshakhuma tribunal authority are allowed to sell at the market; both men and women who are not originally from Tshakhuma are not allowed to sell at the market. A committee was elected by the women selling at the market to ensure its smooth running. This committee is responsible for handling issues relating to pricing and business fairness.

## Literature review

The Women's Charter of 1954 is testimony to the fact that women have been fighting for relevance and equality in a democratic society. The Bill of Rights in the South African Constitution recognises women as equal to men. Chapter 2, Section 9.1 to 9.4 of the Constitution (Republic of South Africa 1996) specifies that:

> [*T*]he state may not unfairly discriminate directly or indirectly against anyone on one or more grounds, including race, gender, sex, pregnancy, marital status, ethnic or social origin, colour, sexual orientation, age, disability, religion, conscience, belief, culture, language, and birth. (ch. 2, ss. 9.1–9.4)

Section 11 addresses femicide and domestic violence, which extends not only to children and married women but also to people in same-sex relationships and unmarried people. This is supported by the Women's Charter for Effective Equality of 1994, which continues to strengthen the role women play in a developing country.

Developed as a driver for black economic participation in the mainstream economy, the *National Empowerment Fund Act* 105 of 1998 focuses on growing female small-, medium- and micro-enterprises and creating a culture of investments and savings. This focus is guided by and stipulated in the *National Treasury Preferential Procurement Policy Framework Act* 5 of 2000, which specifies how preference should be given to previously disadvantaged groups (which includes women) in procurement processes. *The Black Economic Empowerment Act 53 of 2003* created a way to include women in the mainstream economy by assisting them with managing their enterprises and increasing their access to skills training and infrastructure. In support, the broad-based black economic empowerment (B-BBEE) Codes of Good Practice (2007) were drafted with the objective of assisting both the public and private sectors in implementing the B-BBEE objectives.

The National Policy Framework for Women's Empowerment and Gender Equality (Office on the Status of Women [OSW] 2000, p. 11) was introduced as a further intervention strategy. This policy assumes that 'most people are women living in peri-urban and rural areas', and for this reason takes a 'basic

needs' approach by suggesting 'specific interventions to meet the practical and strategic needs of women [...] in order to ensure [their] empowerment [...] as a step towards gender equality'. The policy led to the formulation of the National Gender Machinery, which was in effect from 2003 to 2005, and focused on the structural arrangements involved in empowering women.

Parliament and labour laws have made some progress in passing legislation meant to bring positive structural changes for women. Legislation has aimed to reform and transform the economy, while at the same time repairing the scars of apartheid on women. Examples of these are:

- The Skills Development Act of 1999
- The Choice of Termination of Pregnancy Act of 1997
- The Prevention and Prevention of Trafficking in Persons Act 7 of 2013
- The Labour Relations Act of 1996
- The Domestic Violence Act and the Maintenance Act of 1998
- Customary Law Act of 1998
- The Protection from Harassment Act 17 of 2011
- The Employment Equity Act of 1998
- Customary Marriages Recognition Act of 1998
- The Further Education and Training Colleges Act 16 of 2006

Various spheres of government have provided guiding documents to implement LED and its strategies. The Constitution, being the overarching legislative and policy document, plays an influential role in how local authorities should manage local development. Section 152 of the Constitution stipulates that a municipality must make use of its capacity, administratively and financially, to ensure social and economic development is prioritised and to encourage involvement in local government matters and service delivery.

According to the World Bank (2018), LED can be used by all tiers of government, the private sector, and non-governmental organisations (NGOs) to create an enabling environment for growth to improve the living standards of people. Akah (2008) defines LED as joint efforts – sharing resources and skills – that improve the economic position of a community. The aim of LED is to improve the quality of life for all (Christensen & Gazley 2008).

The NFLED 2013–2018 is a strategic document aiming to facilitate a better understanding of LED and provide strategic direction in respect of LED in South Africa through interactive action between government, private entities, research institutions, NGOs and consultants working in the LED space. The NFLED provides guidelines on what should be done to stimulate and improve LED while at the same time strengthening the growth of sustainable local economies. As a 'strategic coordination and implementation guide, the National Framework is a living policy document that draws together current global and national thinking and practices regarding LED' (NFLED 2013, p. 20).

According to the Department of Cooperative Governance and Traditional Affairs (COGTA 2017), the NFLED is grounded in ten cross-cutting principles that aim to advance integrated sustainable development through community-based collaborative partnerships between the private sector and the state. These principles recognise marginalised dwellings – which include those found in townships, informal rural settlements and peri-urban areas – and the marginalised people living within these communities, such as youths and women.

Local economic development should be supported by policies such as the Industrial Policy Action Plan and the NDP. Having an economic base that is differentiated leads to job and wealth creation and redistribution, thus leaving the country competitive at the local and global levels. Special priority needs to be provided to support the informal economy (Moshweu 2017).

The National Planning Commission conceptualised the NDP to improve the economic climate and growth in South Africa. One of the aims of the NDP is to decrease inequality and poverty by 2030, in addition to improving education and equally distributing wealth (NFLED 2013). The NDP is driven by a commitment to maximising the use of scarce resources. 'The aim is to reduce unemployment to 6 per cent by creating more than 5 million jobs by tackling issues such as education' (News24 2013, n.p.). Local economic development contributes to the NDP's vision, as 'small business development (small-, medium- and micro-enterprises) should anchor local economies' (NFLED 2013, p. 21).

Designed to promote industrialisation, the Industrial Policy Action Plan runs over three years and follows the National Industrial Policy Framework that was released in 2007. The NFLED strives to expand production beyond traditional commodities and diversify value-adding sectors, with a special emphasis on those providing services (NFLED 2013):

> The Industrial Policy Action Plan has a three-fold purpose: to promote labour-absorbing industrialisation; to broaden participation and economic transformation; and to raise competitiveness with manufacturing as the key anchor for dynamiting employment and growing the economy (p. 23).

Local economic development adds value to the Industrial Policy Action Plan through its investment in skills development and its continuous efforts to strengthen the government's business labour engagements (Koma 2012, p. 126).

Women entrepreneurship, as a concept, has gained significant attention over the years. As a suitable solution to overcoming structural unemployment (Sindhu 2009):

> [*E*]ntrepreneurship plays an eminent function of creating an avenue for employability for rural communities, providing self-employment for those who have established businesses of their own and enhancing the economic status of the rural sector as well. (p. 3)

Entrepreneurship is seen as critical for economic development. It also provides a different approach to stimulating economic growth in a developing country. Sindhu (2009) further argues that, in the modern world, entrepreneurship provides a new approach to combating poverty while growing incomes. In the Middle Ages, the term 'entrepreneurship' described people managing large production projects. According to Sindhu (2009), this included not taking risks but rather managing projects with available resources. Today, entrepreneurship is identified as 'an individual's creative capacity, independently or within an organisation, to identify an opportunity and to pursue it to produce new value or economic success' (Schulze 2015, p. 11).

Because of our current democratic state, women can now venture into entrepreneurship as well, and today, greater numbers of women are choosing to have their own businesses. Compared to men, women are more likely to spend their income to eradicate poverty in the household (Restrepo 2015). Employment creation initiatives should be targeted at women, as this is an effective way to improve household welfare (Hussain, Bhuiyan & Bakar 2014). The Organisation for Economic Co-operation and Development (OECD) (2004) argues that entrepreneurship among women needs to be studied separately from the generalised concept. This is because it does not just concern the role of entrepreneurship but also includes the position women hold in society. It is for this reason that we need to have a clear understanding of what entrepreneurship among women means. Lad (2017, p. 301) argues that it concerns 'women or a group of women who initiate, organize and operate a business enterprise'.

The Department of Trade and Industry (2011) identifies entrepreneurship among women as their ability to take part in and fully contribute to economic development and growth. This is an extensive concept that includes a variety of socio-economic strategies that are widely integrated. Ewoh (2014) identifies a female entrepreneur as a business owner tasked with the responsibility of running a business enterprise or managing herself in such a way that she assumes full responsibility for and control of that business. Women entrepreneurship, according to the OECD (2004), comprises business enterprises fully owned and controlled by women. This means that (Ewoh 2014):

> [*T*]he woman has about 100% of the start-up capital and its economic interests at the same time she is ready to bear all risk that is associated with the running of business activities. (p. 15)

De Vita, Mari and Poggesi (2013) understand women entrepreneurship as a means for women to acquire business ownership and to grow socially and economically through business development.

Numerous studies show that women entrepreneurs in developing countries experience a variety of challenges that compromise their ability to compete and operate in local markets (Joshi & Kumari 2015). In South Africa, these

substantial challenges inhibiting the growth of entrepreneurship among women range from social and financial factors to challenges in terms of management, skills and human resources. 'Women experience greater obstacles in accessing credit, training, networks, and information, as well as legal and policy constraints' (Niethammer 2013, p. 1). In addition to the income and economy-stimulating activities women perform, they also play other roles within the community. Women are breadwinners, unpaid caretakers in the family and community service providers (Uwantege & Mbabazi 2015). Although they contribute substantially to socio-economic development, women still experience challenges that prevent them from realising their full developmental potential. Ewoh (2014, p. 30) notes that compared to businesses run by men, the challenges women face result in poor business performance and even a high failure rate.

There seems to be a lack of initiatives and structures targeted at supporting entrepreneurship among women, and very little information is known about the few initiatives that do exist (Gwija, Eke & Iwu 2014). In most instances, it is difficult for women from disadvantaged backgrounds to access start-up capital. According to Cant and Wild (2013), location is a critical factor that constrains the growth of entrepreneurship. Not knowing the target market can also be the demise of a business.

Because women generally experience more challenges than men in business, barriers to their entry are high and their chances of success quite low. Compared to men, women have been discriminated against, marginalised and excluded from skills development and have not been exposed to different industries. In fact, women head only a quarter of businesses globally (Oyelola et al. 2013). There are more men than women in the formal sector, where work is remunerated and supported by national policies (Wekwete 2014). The OECD notes that women have lower income expectations than men, and they tend not to operate in as many senior positions as men. Those who overcome these obstacles and succeed tend to operate in specific industries: 'The industries (primarily retail, education, and other service industries) chosen by women are often perceived as being less critical to economic development and growth than high technology and manufacturing' (OECD 2004, p. 5) chosen by men.

Although there are initiatives in South Africa supporting the development of women, entrepreneurs are still struggling to penetrate larger market segments or even establish themselves. Despite support from the private sector and government, many small-, medium- and micro-enterprises – the typical environment for women entrepreneurs – still fail to be sustainable (Turton & Herrington 2014). It was only when the country achieved independence that the systems of affirmative action and national strategies were devised to redress past inequalities. From this point onwards, issues that affect women – such as empowerment and equality – started becoming a priority. The inclusion of women in business also became a priority (Yadav & Unni 2016):

> [*B*]ecause it was realised in the past decade that women are a critical but untapped source of economic growth; the government, non-governmental and international communities have devised several initiatives to economically empower them. (p. 7)

The notion of empowerment is directly linked to the concept of capacity-building. Capacity-building provides substance to empowerment (Turton 1996). It is a continuous cycle of action, analysis, and reflection focused on organisations, content, education and training, and empowerment only begins to happen as people improve their capacity to act both as a collective and as individuals to bring about positive change. Capacity-building positively impacts the development of women in society.

With the changing roles of women in society, it has become critical for women to be empowered to even out the inequalities of the past. According to Segale (1999), when women are not empowered, they experience economic, social and political challenges. Non-empowered women do not have a career, very little or no education and limited skills; they have typically lost hope in life (Segale 1999). Empowerment is 'the process by which those who have been denied the ability to make strategic life choices acquire such an ability' (Leder 2015, p. 3). Economic empowerment is defined as (Uwantege & Mbabazi 2015):

> [*T*]he capacity of women and men to participate in, contribute to and benefit from growth processes in ways which recognise the value of their contributions, respect their dignity and make it possible to negotiate a fairer distribution of the benefits of growth. (p. 85)

For South Africa, empowerment is a way to integrate women into established markets while at the same time eradicating poverty, and it was only through affirmative action that most inequalities constraining women started to be addressed. It is for this reason that empowerment has been a key priority for the ANC (1990) since the dawn of democracy in the country. This developmental process can happen through capacity-building. Empowerment creates an enabling environment for women to gain access to opportunities and economic resources such as finance, skills development, jobs and assets. It is only after women are trained and supported that they gain the necessary skills to venture into any industry and prosper (Yadav & Unni 2016). Initiatives that encourage and inspire businesswomen need to be attended to, with a particular focus on education and building confidence (Nešporková & Dvořáčková 2015). In order for women to have stronger rights and greater control over their lives, it is critical that they are properly supported (Uwantege & Mbabazi 2015). In this way, they can positively influence society.

It was not until the late 1990s that capacity-building came to be understood as a requirement for development in Africa (Olowu & Soko 2002). Capacity-building is described as efforts, often by the government, to place people into the right type of positions in appropriate areas within an economy (Ikupolati, Medubi & Obafunmi 2017). Capacity is the societal, organisational and

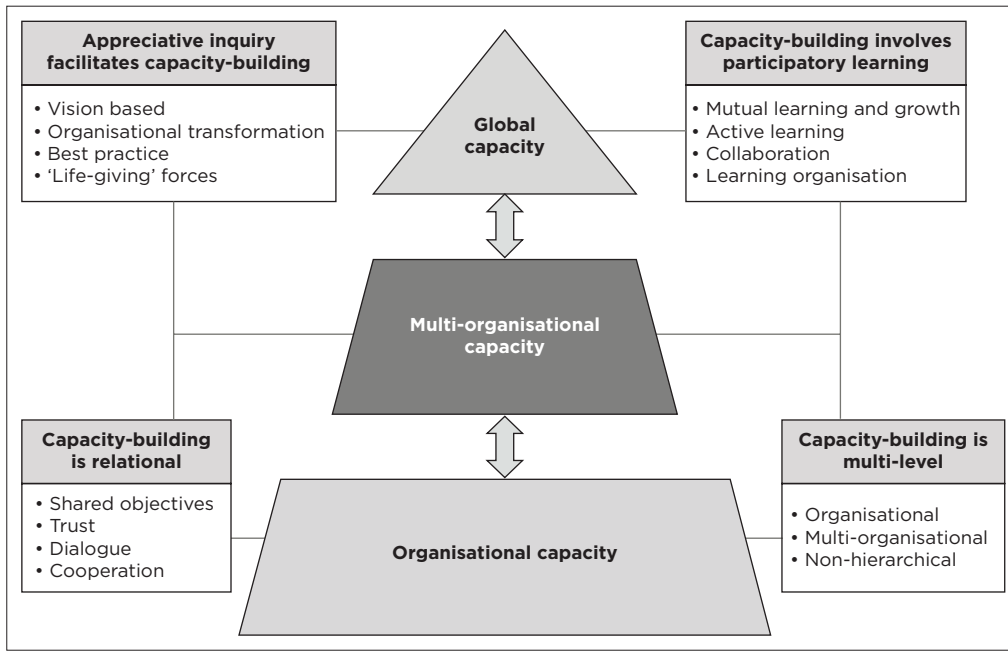
individual ability to execute functions and develop and achieve goals while at the same time being able to solve problems (Joshi & Kumari 2015). Capacity-building supports activities that reform and facilitate strategies, experience and knowledge sharing to create networks that break boundaries between the village and the home. It involves creating, using and maintaining this capacity in order to be self-reliant and reduce poverty while improving lives (Joshi & Kumari 2015).

According to the Department of Trade and Industry (2011), the capacity-building framework recognises sub-groups that should be prioritised, including women from disadvantaged backgrounds. Prioritising these disadvantaged groups transforms gender relations in the economy and in society, builds strength and ability, and puts women in a position to take charge of their lives. In this way, women can take part in the country's long-term economic growth. For economic growth to take place over the long term in South Africa, it is critical to increase entrepreneurship among women. Their capacity should be strengthened to enable them to achieve their place within society, in the marketplace and in their families (Joshi & Kumari 2015).

There are two types of capacity-building: gender-neutral and gender-ameliorative training (Joshi & Kumari 2015). The former 'aims at strengthening skills of women in areas defined by the gender-based division of labour, with a view to increasing productivity and income of poor households' (Joshi & Kumari 2015, p. 344). Specifically aiming to equip women for their daily activities, gender-ameliorative training focuses on micro-enterprises and aims to improve women's position within the marketplace and within their families. Both types of training are critical for women entrepreneurs.

The framework for capacity-building provides basic principles and presents steps for formulation, monitoring and evaluation. According to Stavros (1998), this kind of framework offers a visual display of the strategies and conceptual nature of capacity-building. By definition, 'capacity is the ability or potential to mobilise resources and achieve objectives' (Stavros 1998, p. 26). This means that capacity-building can be used to develop potential and transform it into reality. Capacity is an outside-explicit intervention that an individual or organisation can use to improve performance and sustainability to achieve a set mission (James 1994). For Stavros (1998), capacity-building does not follow a certain hierarchy or sequence. This means that it can be taken from any level of the capacity-building process, as shown in Figure 2.2. However, she notes there are capacities at some levels that may need to be strengthened first to lead to the next level.

According to Stavros (1998), a capacity-building framework enables individuals and organisations to uncover and understand bigger goals and objectives, enabling them to position themselves to attain these goals




*Source*: Adapted from Stavros (1998, p. 28).
**FIGURE 2.2:** Capacity-building framework.

and objectives. She suggests that a framework helps identify core capabilities that exist in each stage of capacity-building. In this way, the focus can be on improving operational efficiency.

According to the framework, capacity should be evaluated at different levels – individual, organisational and environmental – to draw similarities and differences between them.

The individual level is an essential component of capacity-building. At this level, activities are designed to build core competencies (Johnson 2011). Through formal and informal education and training, individual capacity-building increases knowledge, skills and awareness. It also considers values and ensures health.

At the organisational level, capacity-building determines how individual capacities can be used and strengthened. Needs are first assessed, and outcomes are based on limitations. It involves both intellectual and physical resources (Johnson 2011). Partnerships and networks are formed, and business expertise is exchanged.

The environmental level includes both formal and informal institutions – such as policies, laws, cultures, norms and customs – and various dimensions

of the environment – such as economic, technological and social factors – that pertain to both organisations and individuals. Capacity-building on the environmental level involves strengthening both local and national governments and institutions to implement necessary activities for the betterment of society (Matachi 2006, p. 30).

Just like all other intervention strategies, capacity-building requires monitoring and impact evaluation.

## Methodology

A descriptive research strategy and mixed methods were used to conduct this study. With a population size of 400 women entrepreneurs at a confidence level of 95% and a margin of error of 5%, a sample size of 50 respondents is statistically representative (Onyiuke 2005). According to Elfil and Negida (2017), people with similar traits make up a population. They further note that sample size should be measured as representative of the targeted population, without substitution and with the least amount of error possible.

This study made use of the convenient sampling method, with subjects chosen according to their accessibility and their availability. A sample size of 50 women was chosen from a total of 400 available; thus, 12.5% were surveyed. The sampling unit of this study focused specifically on women entrepreneurs between the ages of 18 and 65 who had a stall at Tshakhuma for at least a year and who were residing in the Tshakhuma village.

A structured questionnaire comprising 19 questions was used, and the women entrepreneurs were surveyed face-to-face in 2017.

Care was taken not to lead the respondents to a particular answer while elaborating on the questions. A cover letter explaining the objective of the research was distributed and discussed with the respondents. The questionnaire was divided into three sections: Section A aimed to identify the respondents' demographic factors; Section B interrogated their business dynamics, such as the amount of time dedicated to the business, the rationale for starting the business and the obstacles experienced in the business; and Section C looked at women entrepreneurs and their need for empowerment.

Observations were also drawn from photographic evidence, which provided an idea of respondents' circumstances. Photographic evidence is important when giving a report of situations. Busch (2015) notes that photographs offer permanently recorded physical evidence of an event. Physical evidence enables monitoring and evaluation of changes in an environment or of infrastructure.

# Results and discussion

## Demographic factors

### Age

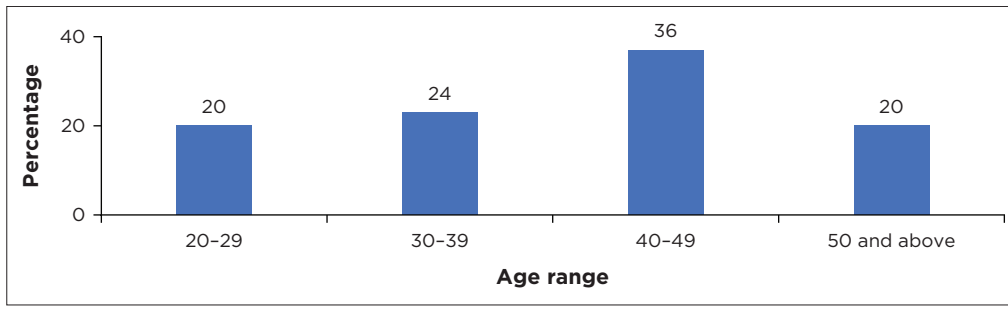
The age distribution of respondents is represented in Figure 2.3, which shows that 20% (10) of respondents were between the ages of 20 and 29, 24% (12) between 30 and 39, 36% (18) between 40 and 49, and 20% (10) were 50 and older.

### Education

Twenty respondents completed schooling up to Grade 9, while only 15 completed matric (Grade 12) and a further 15 received no schooling. All the respondents indicated that they had not received any form of entrepreneurship training. Tshivenda is the primary language spoken in Tshakhuma, and 24% (12) of the respondents indicated that gaining additional language skills might be a critical factor that could be beneficial to grow their businesses. There are insufficient specialised business development organisations for rural entrepreneurs, and in most cases, those available are not affordable and usually do not cater to their specific needs (Khan 2015). Technical and entrepreneurial training must take place in an unconventional setup.

### Household dynamics

Twenty-three (46%) of the respondents indicated that they were not married, while 27 (54%) were married. This is important because married women could have additional household responsibilities that might have an impact on their businesses. All the women stated that they had children. Most had more than one child, which suggests a greater burden of people they must support.




*Source*: Tshakhuma Fresh Produce Market survey conducted by the author.

**FIGURE 2.3:** Age of respondents.

*Source*: Photograph taken by Tsakani V. Khosa at Tshakhuma Fruit and Vegetable Market in Tshakhuma, Limpopo, on 30 June 2018. Published with permission granted by Tsakani V. Khosa. The stall owner, Mrs Masindi Neluvhola, gave appropriate permission for her photo and her business premises to be photographed and published for the purposes of this study.

**FIGURE 2.4:** One of the entrepreneurs in her fruit stall.

Of the respondents, 76% (38) indicated that they received help at home, with that help being financial, with household chores or in childcare duties. Twelve of the respondents (24%) did not receive help at home. This is similar to observations by Bula (2012) that women working as entrepreneurs in the informal sector are generally assisted by their children, who often sell products. She also found that the responsibilities women bear as entrepreneurs conflict with their roles within the household. This also applies to the women operating at the Tshakhuma Fresh Produce Market, all of whom indicated that combining work and family life was a barrier to running their businesses. Those who did not have help at home seemed particularly challenged.

Although all the respondents were self-employed, 22% (11) indicated that they were previously formally employed, either by family or friends, and that the experience they gained assisted them in establishing their own businesses.

Most of the respondents (66%) indicated that they were previously employed by the businesses originally belonging to their mothers. These respondents stated that they took over the business from their mothers because the latter were at an advance age or ill, or they became unemployed. These findings suggest that these women ventured into entrepreneurship

because of push factors, which often include joblessness and insufficient income (Henning & Akoob 2017). The respondents indicated that the market is something they grew up with, and it was always understood as a place to earn a living.

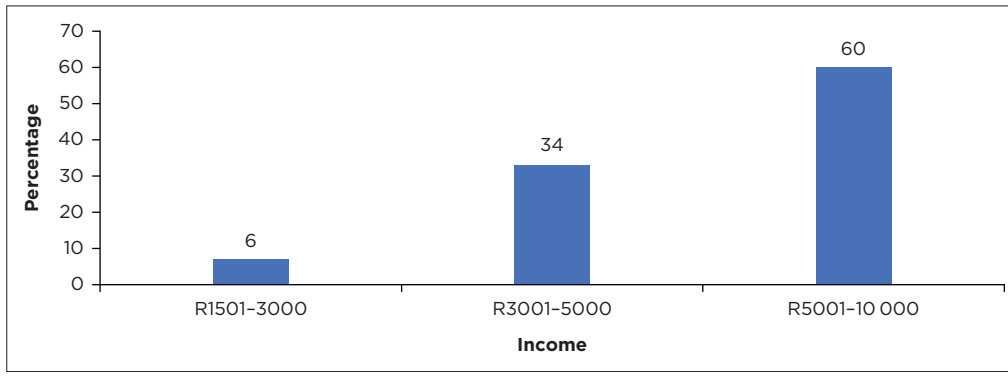
Informal markets play an important role in contributing to the growth of communities that, in turn, contributes to economic growth (Dagada et al. 2015).

## Income

Figure 2.5 shows that 60% (30) of the respondents were able to generate an income of at least R10 000 during the harvest season (December to February), as this is the peak time for fruit sold at the market. Seventeen women (34%) indicated that they were able to generate an income of at least R5 000 during these three months; however, 6% (3) of the respondents only generated an income of R3 000 or less during the harvest season. The respondents expressed that when the harvest is over (roughly from April to August), they generate much less income. The respondents claimed that their main customers were commuters (taxi, bus and car). Personal networks are critical sources for informal traders to make quick sales, compared to formal business networks (Khan 2015); in this study, it is confirmed because of the rural setting.

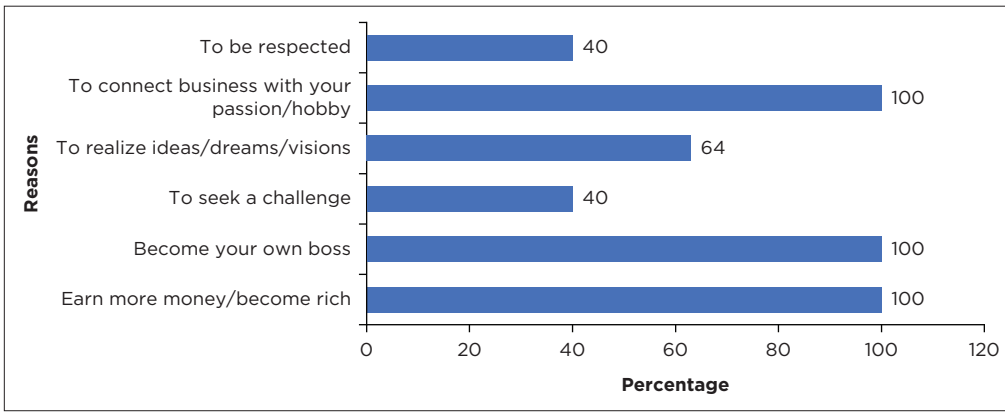
## Business

Figure 2.6 indicates additional reasons why the respondents started their own businesses. Of the respondents, 14% (7) sought a challenge, while 64% (32) wanted to realise their ideas, dreams and visions. Five of the respondents (10%) started their businesses to be respected in the community. Other reasons included a lack of other skills, lack of education, to gain independence and to become wealthy. They all indicated that they wanted to connect their




*Source*: Tshakhuma Fresh Produce Market survey conducted by the author.

**FIGURE 2.5:** Income generation during the harvest season.




*Source*: Tshakhuma Fresh Produce Market survey conducted by the author.
**FIGURE 2.6:** Reason to start a business.

business with their passion and hobbies, and in addition, they were all motivated by the incentive of being their own boss.

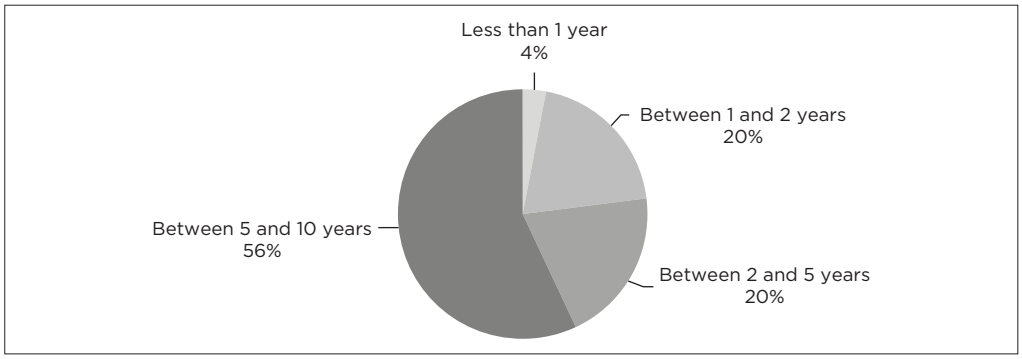
## Number of years running a business

The Tshakhuma Fresh Produce Market has been in existence for a long time. Most of the respondents grew up with the market, and it was their only source of income – this confirmed the findings of Mathagu (2017).

Figure 2.7 shows that 56% (28) of the women had been operating in the fresh produce market for about ten years, 20% (10) for about five years and 20% (10) for about two years. Even those who had been at the market for a long time (roughly ten years) indicated that they had not been able to expand their businesses in any way. They were still operating their business in the same fashion with similar stock levels as the 3% who had been in business for a little more than a year.

The market's infrastructure has not changed much over the years, and this might have limited growth opportunities. This is in line with the findings of Lekhanya and Visser (2016, p. 69), who state that many entrepreneurs in rural areas are restricted from establishing or expanding businesses in rural areas because of the unavailability of primary amenities.

Infrastructure or lack thereof is a critical factor constraining the respondents. Figure 2.8 and Figure 2.9 show dilapidated roofs and a lack of infrastructure to protect the sellers and the produce. In the rainy season, the produce is exposed to the rain, which results in it spoiling. When it is windy, the produce gets blown away, and hygiene is compromised.




*Source:* Tshakhuma Fresh Produce Market survey conducted by the author.

**FIGURE 2.7:** Number of years having a fruit stall.

*Source*: Photograph taken by Tsakani V. Khosa at Tshakhuma Fruit and Vegetable Market in Tshakhuma, Limpopo, on 30 June 2018. Published with permission granted by Tsakani V. Khosa. The stall's owner gave appropriate permission to be photographed and for the photograph to be published for the purposes of this study.

**FIGURE 2.8:** The lack of infrastructure.

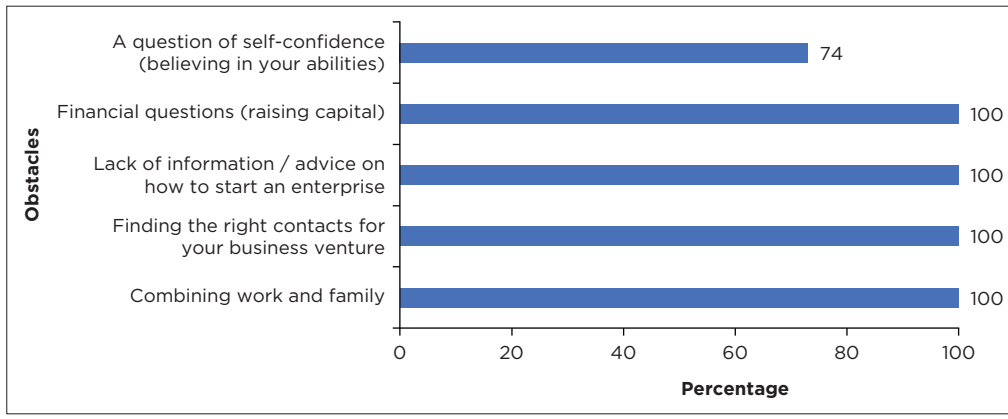
Some traders sell their produce on pavements because of the unavailability of stalls (Figure 2.10). Entry into the market is difficult – most stalls have been handed down from generation to generation, thus creating no space for new entrants.

*Source*: Photograph taken by Tsakani V. Khosa at Tshakhuma Fruit and Vegetable Market in Tshakhuma, Limpopo, on 30 June 2018. Published with permission granted by Tsakani V. Khosa. The stall's owner gave appropriate permission to be photographed and for the photograph to be published for the purposes of this study.

**FIGURE 2.9:** The lack of infrastructure.

*Source*: Photograph taken by Tsakani V. Khosa at Tshakhuma Fruit and Vegetable Market in Tshakhuma, Limpopo, on 30 June 2018. Published with permission granted by Tsakani V. Khosa. The stall's owner gave appropriate permission to be photographed and for the photograph to be published for the purposes of this study.

**FIGURE 2.10:** Lack of access to stalls.




*Source*: Tshakhuma Fresh Produce Market survey conducted by the author.

**FIGURE 2.11:** Obstacles to starting a fresh produce business.

## Obstacles and barriers

Figure 2.11 shows the obstacles the respondents experienced when they started or took over their businesses. Thirteen of the respondents (26%) believed in themselves and in their abilities, but 74% (37) indicated that self-belief/confidence was a challenge that constrained them. The respondents stated that some of the barriers they experience include combining work and family life, finding the right contacts for their business, raising financial capital, and their inability to receive any form of information on being an entrepreneur or starting and growing their business.

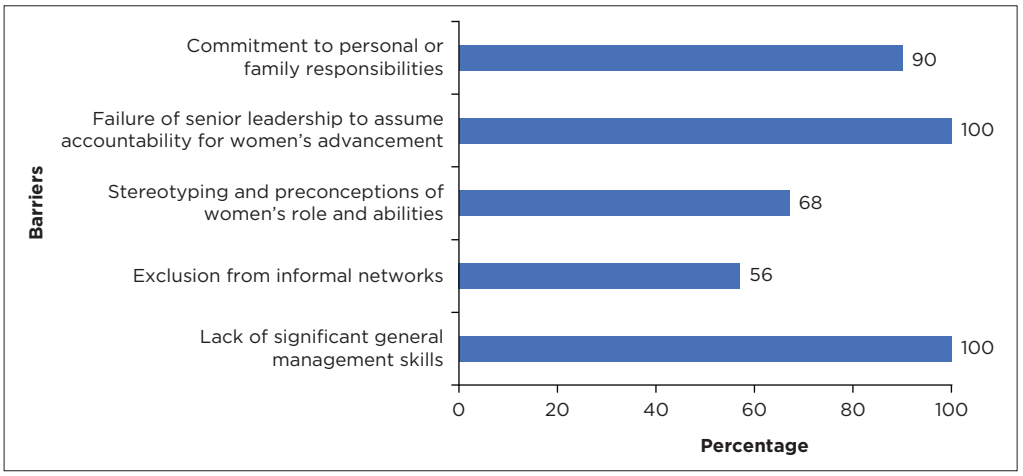
In terms of infrastructure, the respondents indicated that there was a shortage of stalls, coupled with inadequate maintenance of infrastructure, and this resulted in produce being damaged by rain, wind, sun and more. The market area is open, which makes it unsecured. Ablution and sanitation facilities are inadequate, as is waste management. Fruit is not readily available, and the costs of transporting produce from farms to the market are high.

Of these barriers, the women identified the lack of business training, advice and the necessary infrastructure as the most significant they needed to overcome to run their businesses successfully. They all indicated that if they could be empowered with business skills, they would be successful.

This corresponds with what Dube (2016) found, namely, that starting a fresh produce business is a difficult and complex activity, as there are constraints that prevent the business from breaking even. Other challenges identified were the difficulty for new entrants to access finance and a lease (long-term exclusive lease agreements were common) and the inability to invest in advertising and marketing.

*Source*: Photograph taken by Tsakani V. Khosa at Tshakhuma Fruit and Vegetable Market in Tshakhuma, Limpopo, on 30 June 2018. Published with permission granted by Tsakani V. Khosa. The stall owners gave appropriate permission to be photographed and for the photograph to be published for the purposes of this study.

**FIGURE 2.12:** Lack of available fruit.




*Source*: Tshakhuma Fresh Produce Market survey conducted by the author.

**FIGURE 2.13:** Barriers women experience in business.

Figure 2.12 shows that some traders experienced a shortage of stock. Not having access to finances put them at a disadvantage because it meant they could not buy enough stock.

As Figure 2.13 shows, 90% (45) of the women indicated that their commitment to family and personal relationships were critical barriers preventing them from growing their businesses. Thirty-four of the respondents

(68%) believed that stereotypes and preconceptions of the role and abilities of women within the community were restricting factors. Although the respondents spent a significant amount of time in the market, they were still expected to manage household chores and childcare. In addition, they all indicated that government and senior leadership had not properly addressed the advancement of women and the challenges that relate to their family responsibilities.

They perceived that there were not enough avenues available to support women entrepreneurs, especially in rural areas. The respondents indicated that they lacked access to training in general management skills and were excluded from internal networks. This is especially a challenge in the fresh produce market, as it was built as a network structure for women belonging to the Tshakhuma tribal authority; they have no links to other surrounding businesses, thus limiting their ability to learn from and network with other businesses.

The markets in Tshakhuma had no links with local stores and supermarkets, and although there were farms nearby the traders had to purchase produce in bulk in order to afford it and pay for transportation to get the produce to markets.


*Source*: Photograph taken by Tsakani V. Khosa at Tshakhuma Fruit and Vegetable Market in Tshakhuma, Limpopo, on 30 June 2018. Published with permission granted by Tsakani V. Khosa.

**FIGURE 2.14:** Lack of links with surrounding businesses.

*Source*: Photograph taken by Tsakani V. Khosa at Tshakhuma Fruit and Vegetable Market in Tshakhuma, Limpopo, on 30 June 2018. Published with permission granted by Tsakani V. Khosa. The stall's owner gave appropriate permission to be photographed and for the photograph to be published for the purposes of this study.

**FIGURE 2.15:** Lack of links with surrounding businesses.

The lack of surrounding links with businesses resulted in the majority of the respondents not being able to grow their businesses. They had been operating in the same way for years, yet their businesses had not grown.

## Conclusion

This research project aimed to investigate the circumstances under which women trade at the Tshakhuma Fresh Produce Market in Limpopo and identify possible interventions to empower them from an LED perspective. Local economic development initiatives are critical tools that can be used to capacitate rural entrepreneurs operating in the informal sector to combat poverty and unemployment.

Flowing from the findings of the study, the following recommendations were proposed to the Makhado municipal LED office:

- A working committee consisting of LED officials, tribal leaders, councillors, the local business chamber and traders should be established to investigate solutions to the challenges experienced by the Tshakhuma traders.
- A need was identified for suitable capacity-building initiatives, such as business skills training, to be conceptualised and implemented to empower the women trading at the Tshakhuma Fresh Produce Market.

- Capacity-building initiatives should happen over a long period of time and incorporate the UN's SDGs for the achievement of gender equality through the empowerment of women and girls.
- Funds should be made available to construct new stalls and ensure the upkeep and maintenance of the market.

## Acknowledgements

This chapter is based on a reworking (more than 50%) of the author's MCom thesis, 'Empowering female-owned businesses trading at the Tshakhuma Fresh Produce Market in Limpopo with business skills', towards the degree of MCom Local Economic Development (CW) in the Centre for Local Economic Development (CENLED), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa, with supervisors Prof. M. Venter and Dr M. Pretorius.

Chapter 3

# Empowerment of automotive artisans and the unemployed: A case of the Winterveld Enterprise Hub

**Chika Chitambala**
Centre for Local Economic Development (CENLED), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa

**Marius Venter**
Centre for Local Economic Development (CENLED)/PASCAL International Observatory (Africa), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa

**Elana Swanepoel**
Centre for Local Economic Development (CENLED)/PASCAL International Observatory (Africa), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa

## Abstract

At the Winterveld Enterprise Hub (WEH), north of Pretoria, Gauteng province, South Africa, a skills development and training programme is offered to empower informal automotive artisans and unemployed community members.

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The WEH is managed by the Automotive Industrial Development Centre (AIDC). In impoverished areas, business incubators such as the WEH, underpinned by the Township Enterprise Hub model, are often utilised as mechanisms to empower community members and emerging entrepreneurs with the necessary skills to participate fully in the mainstream economy. Despite the importance of incubation hubs, no research has been conducted to determine the effectiveness of the WEH programme. The main aim of the research was to determine whether the local skills training programme offered by the WEH empowered informal automotive artisans and the unemployed community members who had received training. Adopting a descriptive-evaluative research design, a quantitative survey was conducted. The questions relevant to the entrepreneurial self-efficacy construct in the validated Entrepreneurial Intentions Questionnaire of Liñán and Chen were used, with minor adaptations to the South African context. It was completed by 103 respondents who had received training at the WEH.

The findings reveal that although some trainees had secured jobs, more than half were still unemployed, and only ten owned a business. They tended to be 'fairly sure' and 'very sure' of their abilities relating to the 12 self-efficacy items. The respondents who owned businesses exhibited higher levels of self-efficacy than those without businesses on most of the items. In particular, the informal automotive artisans perceived themselves as more empowered to grow their businesses than the respondents who did not own a business. It is recommended that apart from the technical skills training, specific training needs should address the areas in which the respondents did not yet feel empowered. Training should develop their skill to identify a product or service to sell, available resources for starting a business, sources of support and communication and networking skills in order to assist and upskill the trainee in either starting a business or securing employment.

## Introduction

Given the crucial role of small businesses, the government has prioritised the growth of this sector as part of its economic development agenda (Tembe 2018). The South African government has developed frameworks and skills development interventions to empower local entrepreneurs in rural areas and townships with entrepreneurial skills to bolster LED (Masutha & Rogerson 2014). According to Masutha (2013), the increased importance of enterprise development as a driver for economic development has led to the establishment of business incubators to empower young emerging entrepreneurs in the small, medium and micro-enterprise (SMME) sector with skills to participate fully in the mainstream economy.

The Gauteng government, in support of the goals of the National Development Plan (NDP) (Gauteng Provincial Government 2016), developed

a Township Economy Revitalisation (TER) strategy. The TER focuses on crafting initiatives and programmes that can assist in creating sustainable township economies that contribute to the region's GDP. The TER identified the Township Enterprise Hub model as a vehicle to empower marginalised individuals in township areas by linking them with like-minded professionals in their various crafts (Gauteng province Economic Development 2014).

Enterprise hubs have become a fast-growing phenomenon around the world, including South Africa (Lose & Tengeh 2015). Most of the research on the topic focuses on the societal impact that hubs have on developing and seeding new business ventures (Akanle & Omotayo 2017; Khuzwayo 2015; Salem 2014). The results mostly indicate that hubs can be used as development drivers to fuel economic development and job creation (Rouwmaat, Reid & Kurik 2003).

## Winterveld Enterprise Hub Model

Years after democracy, the community of Winterveld continues to feel marginalised by the provincial and local government, owing to failed attempts to find effective development interventions (AIDC 2014). It was decided to locate the first township automotive enterprise hub in Winterveld, located 40 km northwest of the Pretoria city centre and close to the towns of Mabopane and Soshanguve (South African Cities Network 2015). It is 20 km north of Rosslyn industrial area. According to the City of Tshwane Regional Integrated Development Plan (2018), the northern part where the WEH is located has limited economic activity and few formal employment opportunities.

In 2014, the AIDC, in partnership with the Gauteng Provincial Government, launched the WEH as an SMME community support centre to develop the skills of informal automotive artisans and train unemployed community members. According to the AIDC (2015), the objective of the hub is to create decent jobs by establishing a self-sustainable model for existing businesses to grow their client base and income stream. In addition, it aims to stimulate new businesses to emerge in the automotive services sector. The current WEH model is an onsite/offsite 'hub and spoke' business enterprise model, which operates as an automotive-body repair skills development and training centre for informal automotive artisans and unemployed community members (AIDC 2015). These artisans are provided with access to the AIDC's master artisans, as well as state-of-the-art auto-body repair and spray-painting equipment. The training is a combination of workplace-based learning in spray-painting and body repair and business mentoring, equipping trainees with technical, financial management and business acumen and promoting human capability development.

The WEH provides a 6-week introductory workplace-based learning programme on panel beating and spray-painting. Using the Manufacturing,

Engineering and Related Services Sector Education and Training Authority's (merSETA's) learning material, learners are provided with a National Qualifications Framework (NQF) Level 2 qualification. According to the WEH, these interventions aim to create job opportunities for upskilled individuals to be absorbed as staff by informal small businesses located in the hub, where possible, or to seek employment in the automotive sector (AIDC 2014). In the 2017/18 financial year, eight informal businesses were trained, but only six were retained in the WEH because the project lacked capacity, while 104 unemployed community members were trained during this period (AIDC 2018).

## Problem statement and research objective

Economically, Winterveld is heavily reliant on the community services sector, which, according to the South African Cities Network (2015), contributed an estimated 38% to the region's gross value added (GVA) in 2013. Moreover, according to the 2001 Census, Winterveld has the highest number of people with no education (Stats SA 2011).

The AIDC's skills training programme at the WEH is currently the only automotive incubation programme run by the AIDC with no technical admission requirement, premised on economic inclusiveness and empowerment through capacity-building. Capacity-building focuses on changing behaviour, knowledge and skills to become more capable (Gloria 2012). However, not all forms of empowerment interventions result in a positive impact on economic growth and development (Ligthelm 2013).

The extent to which WEH trainees have been empowered has not been researched. Therefore, the primary objective of this research was to determine whether the WEH skills training programme empowered informal automotive artisans and unemployed community members in Winterveld to start or grow a business or obtain employment.

# Empowerment and self-efficacy

Empowerment strengthens a person's belief in their self-efficacy (Gergis 1999) and experiencing the self as a capable person (Gutiérrez 1991). Zimmerman (1995) provides a conceptual framework for understanding whether the skills development programme offered by the WEH would allow participants to exert control and influence over decisions that affect their lives. For Zimmerman (1995), empowerment has three interrelated components, namely, (1) intrapersonal, (2) interactional and (3) behavioural. Evaluating the Youth Empowerment Solution programmes in the USA, Zimmerman et al. (2018, p. 20) argued that 'the intrapersonal component includes beliefs regarding control and confidence that one can make a difference' (e.g. perceived leadership ability and self-esteem). Zimmerman et al. (2018) also added that:

> [*T*]he interactional component includes a critical awareness of forces that shape one's life and an understanding of the resources and actions needed to create situations that are more aligned with one's goals (e.g. resource analysis and instrumental support). (p. 20)

Lastly, the behavioural component refers to the actions taken by an individual to make desired changes in their environment.

In summary, a person is considered empowered when they feel an enhancement in their ability to influence and control external circumstances, such as their immediate socio-economic environment and resources for starting a business. These three empowerment components relate to attributes that determine human behaviour, such as an individual's attitude, self-efficacy, social capital and perceived behavioural control, which in turn are constructs determining entrepreneurial intent.

Empowerment is therefore an intangible outcome depicted in people's attitudes and behaviour as they become more independent in their decision-making and ability to apply their skills in a real-life context.

## Relationship between empowerment and self-efficacy

Self-efficacy is grounded in the social cognitive theory (Bandura 1977) which explains human behaviour as a 'product of interplay of intrapersonal influences, the behaviour individuals engage in, and the environmental forces that impinge them' (Pihie & Bagheri 2013, p. 387). Bandura (1977) defined 'self-efficacy' as people's beliefs about their capabilities to perform at a required level while controlling circumstances that affect their lives. Thus, self-efficacy determines the way people think, inspire themselves and act. The stronger the sense of self-efficacy, the greater the likelihood of human achievement and personal well-being (Bandura 1977). Self-efficacy beliefs critically influence individuals' selection of an action despite the presence of alternatives, the amount of effort they expend to execute the action, their perseverance in the face of difficulties and their success in performing their action (Bandura 1997; Dwyer & Cummings 2001).

## Relationship between self-efficacy and starting or growing a business

Starting or growing a business is an integral part of entrepreneurship, which is defined as a set of behaviours possessed by an individual and employed to manage available resources for value creation purposes (Grigorea, Mainescu & Tomaa 2014). Empirical research has highlighted self-efficacy as the strongest personal factor that influences students' entrepreneurial intentions (Pihie & Bagheri 2013).

## Measuring self-efficacy

To measure entrepreneurial intent, Liñán and Chen (2009) identified four relevant constructs, including self-efficacy. The authors developed an Entrepreneurial Intentions Questionnaire (EIQ) consisting of the following constructs: Attitude towards becoming an entrepreneur (six questions), Perceived behavioural control (five questions), Social capital (13 questions), and Entrepreneurial self-efficacy (ESE) (12 questions). Their scale for measuring self-efficacy was used in the research on which this chapter is based.

# Methodology

The research on which this chapter is based adopted an evaluative-descriptive approach to collect data by means of a quantitative survey using a structured questionnaire (Saunders, Lewis & Thornhill 2016). The unit of analysis (population) included two groups that benefited from the WEH's skills development programmes: eight informal automotive artisans, of which six operated within the facility, and 104 unemployed community members trained by the WEH between 2017 and 2018. Because the target population was small and accessible, all cases were included. Of the potential 112 respondents, 103 respondents completed the questionnaires. At the time of data collection, 93 respondents who received training at the WEH still did not own a business while ten respondents owned some form of business.

The Liñán and Chen (2009) validated EIQ was used, with slight adaptations to the South African context. Only one of the EIQ's four constructs – namely, ESE – was used. The 12 questions of this construct are measured on a five-point Likert scale. To contribute to construct validity, the questionnaire was piloted in another similar community. The phrasing of some questions was adjusted to increase the target population's ease of understanding and comprehension. Access to the WEH was granted by the AIDC chief executive officer (CEO). All potential respondents were invited to the WEH, where they completed the questionnaire in the presence of one researcher. To determine the internal consistency of the ESE construct, Cronbach's alpha coefficient was calculated and delivered a value of $\alpha = 0.76$. According to Hair et al. (2006), a Cronbach's alpha coefficient of 0.70 and higher is considered to be adequate.

The data were analysed using Statistical Package for Social Sciences (SPSS) version 24. Descriptive statistics were employed to describe and compare variables numerically (Saunders, Lewis & Thornhill 2009). Ethical clearance was granted by the School of Economics at the University of Johannesburg.

# Results

Of the 103 respondents, 90% were between 18 and 35 years of age, implying that the training focused on the youth. Regarding gender, more males (59%) received training than females (41%), which could be attributed to the physical nature of work in the automotive sector. Before training at the WEH, 72% of the respondents were unemployed, 8% were employed, and 10% owned their own businesses. After the WEH training, 64% of the respondents were still unemployed at the time of data collection, while 22% had some employment in the form of contract, part-time or permanent employment. Since the WEH training, two trainees had started their own businesses, while 7% of the respondents were growing their businesses. The 6% of respondents who indicated '*other*' were in school or part of a learnership programme at the time of data collection.

## Comparison of those who owned a business to those who did not

Of the respondents, 93 still did not own a business after the WEH training, whereas the remaining 10 owned some form of business. The key biographic difference in the two respondent groups is regarding age; 96% of those without a business fell within the youth category, while those with businesses tended to be 36 years of age and older. All ten small business owners were male.

## Entrepreneurial self-efficacy

Entrepreneurial self-efficacy, as a construct, was measured with 12 items on a 5-point Likert scale, ranging from 1 (*not so sure*) to 5 (*very sure*). The answers provided by respondents (WEH trainees) were rooted in their perception of their ability to perform business-related tasks. On all 12 self-efficacy items, more than 60% of the respondents perceived their confidence level as either 'fairly sure' or 'very sure' (Table 3.1). They scored the highest on items 11, 10 and 8. Of the 103 respondents, 56% indicated that they were 'very sure' when asked to evaluate their ability to handle challenges (F11), while 52% were 'very sure' about their ability to handle day-to-day problems (F10) and contact and share information with others (F6).

When the scores for 'very sure' and 'fairly sure' are combined, the percentages indicate that most of the respondents were sure about their abilities on these three items, particularly Item 6: 84% (F11), 82% (F10), and 91% (F6). The ability to contact and share information with others is integral to networking, which is critical for starting or growing a business or obtaining employment. Despite this level of confidence, most respondents had not

started a business nor obtained employment. However, other factors may be determinants of this, such as economic stagnation.

Although 44% of the respondents were 'very sure' of their ability to 'develop and maintain good relationships with people who can provide money for my business' (F8), they were less confident (36%) of their ability to get others to believe in their vision and plans to start or grow a business (F5).

The respondents seem to be 'very sure' of their ability to design a product or service that will satisfy customer needs and wants (38%; F3). They are, however, unsure about generating a new idea for a product or service (34%; F1), and even less sure (30%; F2) about identifying the need for a new product or service (Table 3.1). For starting or growing a business, being able to identify the need for a new product or service – and being able to deliver such – is essential. According to Bandura (1986), it can be argued that individuals choose to undertake tasks in which they are confident, comfortable and have perceived competence. Hence, individuals place significant weight on their perceptions of capability in relation to competencies.

From the results, the one ESE item with the highest percentage (39%) of respondents who stated that they were a 'little sure' (17%) or did not know (22%) is related to the statement, 'Identify potential sources of funding for investment in my business' (F9). This lack of resource knowledge may indicate a lack of awareness of the government's entrepreneurial support measures. Such knowledge is critical, especially for entrepreneurs with little or no capital to start or grow a business.

**TABLE 3.1:** Respondents' perceptions of entrepreneurial self-efficacy.

| Item code | Items | Percentage (%) (*n* = 103) | | | | | Total % |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | |
| F1 | Generate a new idea for a product or service. | 6.8 | 25.2 | 7.8 | 26.2 | 34.0 | 100 |
| F2 | Identify the need for a new product or service. | 8.7 | 17.5 | 4.9 | 38.8 | 30.1 | 100 |
| F3 | Design a product or service that will satisfy customer needs and wants. | 3.9 | 12.6 | 10.7 | 35.0 | 37.9 | 100 |
| F4 | Plan how much money I need to start or grow my business. | 5.9 | 14.7 | 7.8 | 35.3 | 36.3 | 100 |
| F5 | Get others to believe in my vision and plans to start or grow my business. | 4.9 | 9.7 | 9.7 | 39.8 | 35.9 | 100 |
| F6 | Make contact and share information with others. | 1.9 | 5.8 | 1.0 | 39.8 | 51.5 | 100 |
| F7 | Develop relationships with people who have access to money that I need for my business. | 9.8 | 9.8 | 10.8 | 36.3 | 33.3 | 100 |
| F8 | Develop and maintain good relationships with people who can provide money for my business. | 6.8 | 8.7 | 10.7 | 30.1 | 43.7 | 100 |
| F9 | Identify potential sources of funding for investment in my business. | 8.7 | 16.5 | 22.3 | 28.2 | 24.3 | 100 |
| F10 | Handle day-to-day problems well. | 3.9 | 8.7 | 4.9 | 31.1 | 51.5 | 100 |
| F11 | Handle challenges. | 3.9 | 7.8 | 3.9 | 28.4 | 55.9 | 100 |
| F12 | Make decisions when I don't have all the information. | 7.8 | 12.6 | 5.8 | 40.8 | 33.0 | 100 |

*Note*: 1 = Not at all sure; 2 = A little sure; 3 = I don't know; 4 = Fairly sure; 5 = Very sure.

## Comparison of entrepreneurial self-efficacy for the two groups

For the two groups, those who did not own a business ($n$ = 93) and those who did ($n$ = 10), from the means and standard deviations (s.d.), comparisons can be made (Table 3.2). From the results, both research groups are reasonably sure about their ability regarding the 12 ESE items, as all the means scored above 3. For those who did not own a business, the means ranged between 3.34 and 4.31, while for those who owned a business, the means ranged between 3.70 and 4.60. On average, those who owned a business displayed a higher level of ESE.

The items with the highest mean scores were different for the two groups. Those without businesses had the highest mean score for 'ability to make contact with and share information with others' (mean = 4.31; F6), while for those who owned a business, the highest mean score was for 'design a product or service that will satisfy customer needs and wants' (mean = 4.6; F3). Those who already owned a business were more confident in their ability to provide customer satisfaction than those who did not own a business.

The biggest differences in means for the two groups are on items F9 (0.86; 'Identify potential sources of funding/money for investment in my business'), F3 (0.77; 'Design a product or service that will satisfy customer needs

**TABLE 3.2:** Comparison of entrepreneurial self-efficacy by the research group.

| Item code | Items | No business | | Own a business | | Diff. |
|---|---|---|---|---|---|---|
| | | Mean | s.d. | Mean | s.d. | |
| F1 | Generate a new idea for a product or service. | 3.48 | 1.36 | 4.20 | 1.23 | 0.72 |
| F2 | Identify the need for a new product or service. | 3.58 | 1.33 | 4.20 | 1.03 | 0.62 |
| F3 | Design a product or service that will satisfy customer needs and wants. | 3.83 | 1.17 | 4.60 | 0.70 | 0.77 |
| F4 | Plan how much money I need to start or grow my business. | 3.82 | 1.21 | 3.80 | 1.55 | –0.02 |
| F5 | Get others to believe in my vision and plans to start or grow my business. | 3.91 | 1.10 | 4.00 | 1.49 | 0.09 |
| F6 | Make contact and share information with others. | 4.31 | 0.94 | 4.50 | 0.53 | 0.19 |
| F7 | Develop relationships with people who have access to money that I need for my business. | 3.72 | 1.29 | 3.90 | 1.37 | 0.18 |
| F8 | Develop and maintain good relationships with people who can provide money for my business. | 3.94 | 1.23 | 4.10 | 1.29 | 0.16 |
| F9 | Identify potential sources of funding for investment in my business. | 3.34 | 1.27 | 4.20 | 0.92 | 0.86 |
| F10 | Handle day-to-day problems well. | 4.20 | 1.09 | 3.90 | 1.37 | –0.30 |
| F11 | Handle challenges. | 4.30 | 1.05 | 3.70 | 1.49 | –0.60 |
| F12 | Make decisions when I don't have all the information. | 3.74 | 1.25 | 4.20 | 1.23 | 0.46 |
| | **Total** | **3.85** | **1.19** | **4.11** | **1.18** | |

Key: s.d., standard deviation; diff., difference between the means.

and wants') and F1 (0.71; 'Generate a new idea for a product or service'), respectively. It seems that those who owned a business had gained more confidence from having had such experiences in establishing a business.

The respondents without a business were more confident in their ability to handle challenges (their highest mean score = 4.30; F11) and day-to-day problems (mean = 4.20; F10) than those with a business, who scored their lowest mean for F11 (mean = 3.70) and third lowest for F10 (mean = 3.90). This can be attributed to the fact that respondents without a business had little or no idea of the types of challenges involved in running a business and overestimated their ability to deal with challenges.

The overall mean and SD generated for this construct were 3.85 and 1.19, respectively, thus signifying those individuals trained at the WEH but with no business of their own perceived themselves as quite capable of performing certain business-related tasks. The overall mean and SD for the SMMEs were 4.11 and 1.18, respectively. It follows that the respondents with a business were more confident in their ability to perform business-related tasks than those without a business.

However, in the research project on which this chapter is based, these instabilities can be attributed to poor comprehension levels of the research population group linked to the low education levels in the Winterveld area.

## Conclusion

The research project on which this chapter is based included 103 respondents above the age of 18 years who were trained at the WEH either as unemployed community members or owners of existing informal panel beating and spray-painting enterprises. Post-training, 93 respondents still did not own a business, whereas the remaining 10 owned some form of business.

The biographic profile of the respondents in terms of age is similar to the national age profile, where the youth demographic group constitutes close to a third of the country's total population (Stats SA 2019). The results reveal that young people made up 90% of the total sample. Furthermore, in terms of the two research groups, 96% of those with no businesses fell within the youth age category. This is of concern, as StatsSA (2019) pointed out that the youth remain the most vulnerable group in the labour market. Prior to receiving training at the WEH, 72% of the respondents were unemployed, and this percentage dropped by 8% to 64%. Although upskilling for employment is one of the objectives of the WEH, it has marginally achieved this objective. Of the ten respondents who owned some form of business either prior to or after the WEH training, only 54% stated that they were growing their current business.

Regarding ESE, from the findings, it follows that most respondents tended to be 'fairly sure' or 'very sure' about the 12 items of self-efficacy that constituted this construct, albeit to varying extents. It seems, therefore, they have been empowered to some degree to start or grow a business. However, the respondents who owned a business exhibited higher levels of self-efficacy than those without a business on most of the items. The literature supports that those individuals with higher levels of ESE may have strong intentions for an entrepreneurial career (Hackett & Betz 1981).

Although both groups were confident in their ability to network, the group without a business had less confidence in their ability to develop and innovate business-related ideas. In addition, the latter group was less aware of existing sources of funding that could be utilised to assist them in starting a business.

From the results of the ESE scale, the unemployed community members that trained at the WEH seem to have been partially empowered but not sufficiently to start a business. The informal automotive artisans appear to have benefited more from the training at the WEH and perceive themselves to be more empowered to grow their businesses.

For a skills development and training programme to have a positive impact on an individual's perceived ability to perform tasks related to starting or growing a business, not only should technical skills be included but also skills related to how to establish and grow a business. Specific training needs should be addressed, such as identifying a product or service to sell, available resources for starting a business, sources of support and communication, and networking skills to assist and upskill the trainee in starting a business or securing employment.

To create education and awareness around these initiatives, the WEH can serve a dual function by also operating as an information centre for the youth in the community to access information related to starting or growing a business.

A limitation of this study is that the level of empowerment tested by means of the ESE was conducted after the training at the WEH. There was no data available on the level of ESE prior to the commencement of the training. Nevertheless, the results provide some insights.

Future research could attempt to test the same respondents in terms of ESE, a year or more after the first assessment to determine whether the training had a lasting impact. Alternatively, a pre- and post-test research strategy for comparative purposes could be adopted, testing trainees prior to and after training at the WEH.

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Chapter 4

# Leveraging Indigenous Knowledge for local economic development: The case of home-brewed alcohol in the Sekhukhune District Municipality

**Seutame O. Maimele**
Centre for Local Economic Development (CENLED), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa

**Naiefa Rashied**
Centre for Local Economic Development (CENLED), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa

## Abstract

Unemployment remains problematic in South Africa, more than doubling since 1994. To respond to high levels of unemployment, unemployed South Africans tend to create informal self-employment, which has led to flourishing

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rural economies. The South African government has recognised the need for municipal-led interventions to support rural economies as a vehicle for economic growth. Sekhukhune District Municipality (SDM), one of South Africa's most rural and poorest municipalities, reports an unemployment rate considerably higher than the national unemployment rate. Residents of Sekhukhune value indigenous forms of healing and recreation. Moreover, the municipality is home to *Sclerocarya birrea* (generally known as the marula fruit), sorghum and millet, commonly ploughed and used to make home-brewed alcoholic beverages and herbal remedies, among other products. Few studies document the extent to which indigenous products, such as home-brewed alcohol, contribute to the local economy, particularly through job creation. Therefore, this chapter aims to explore the job creation and business characteristics of informal home-brewers. These business characteristics include the number of employees, income generated, output produced, sales and business challenges. The chapter adopts a pragmatic approach through a mixed-method, survey-based research design. A total of 53 informal home-brewed alcohol producers were interviewed using a pre-designed and piloted questionnaire. Findings suggest that the home-brewed alcohol industry in Sekhukhune employs between three and nine people on average, mainly women, who are custodians of home-brewing knowledge. In addition, home-brewing provided an income source for participants who previously had no source of income. In line with the national framework for LED, this chapter illustrates the kinds of government support needed by home-brewers to expand their businesses and mitigate some of the financial and other concerns emerging in the home-brewed alcohol sub-industry.

## Introduction

The unemployment rate in South Africa has more than doubled annually, increasing from just 13% in 1994 to over 29% in 2020 (Statistics South Africa 2020). To cope with unemployment, it is common for South Africans to participate in the informal economy as a means to create sustainable livelihoods in the absence of a formal wage or salary.

Prior to the COVID-19 pandemic, the informal economy was on an employment growth path, accounting for more than 25% of employment creation in South Africa (Köhler et al. 2021). Between 2013 and 2020, the informal sector in South Africa employed more than 2.6 million South Africans (Statistics South Africa 2021a). This contributed to the employment of more than 12% of the South African labour force (Charman et al. 2017; Statistics South Africa 2021a). However, the growth of the informal economy declined substantially to 1% in 2019 and 2020 because of the COVID-19 pandemic lockdown (Statistics South Africa 2021a).

Similar to the national trend, SDM experienced severe unemployment since 1994. Over 95,000 people in SDM became unemployed between 1994 and 2020 (Statistics South Africa 2021a). This labour market strain was exacerbated by the rising labour force population of more than 149,000 in the same period and a growing population of over 127,000 economically inactive people, also between 1994 and 2020 (Statistics South Africa 2021b, 2021c).

Since 1994, 8% of the labour force population in SDM moved from formal to informal employment, adding over 20 000 people to the informal sector and amounting to 38 000 people in 2020 (Statistics South Africa 2021a).

Despite the rise in unemployment and increase in informal employment, SDM experienced some infrastructure improvements over the last five years. For example, over 87% of households were provided with electricity, 11% were provided with piped water inside their dwellings and 41% were provided with piped water in their yards (Department of Cooperative Governance and Traditional Affairs 2018).

However, despite these improvements, SDM faces a multitude of socio-economic setbacks. These include low levels of matric attainment and high rates of teenage pregnancy. The proportion of the population without a matric has increased by 50% since 1994, while pregnancy rates among teenagers increased by 20% (Statistics South Africa 2021d). The municipality also faces huge infrastructural backlogs, with most roads in the municipality destroyed by storms. In 2019, only 27 km of road was tarred (Motseo 2021).

Amid the socio-economic challenges in SDM, many residents turn to informal entrepreneurship to generate sustainable livelihoods. Certain informal entrepreneurship in South Africa is often entrenched in Indigenous Knowledge Systems (IKS). Indigenous Knowledge Systems (IKS) are defined as ways of knowing, seeing and thinking that have been passed down from generation to generation (Magara 2015; Masekoameng & Molotja 2016; Moyo, Ngulube & Kazembe 2016). These knowledge systems are traditional, unique and local, representing the distinctive skills of people in a particular area (Buthelezi & Hughes 2014; Makgopa & Frangton 2016; Moyo et al. 2016). Indigenous Knowledge presents an opportunity to develop and revitalise local economies while empowering disadvantaged segments of the population, particularly women and youth in rural economies (Teffo 2019). However, the role of IKS in local economies is seldom explored in the literature.

Thus, the aim of this chapter is to assess the contribution of indigenously produced alcohol, termed home-brewed alcohol, to the local economy, particularly for job creation. The chapter will explore job creation and other business characteristics such as the number of employees, income generated, output produced, sales and business challenges. The second section examines key themes in the IKS literature, accounting for endogenous knowledge

systems and IKS in Africa and South Africa. The section ends by discussing the potential for IKS to enrich LED in South Africa. The third section outlines the chapter methodology and ethical protocols, while fourth section interprets and discusses the results. The fifth section concludes the chapter with respect to South Africa's LED framework, explains the study limitations and offers recommendations.

# Literature review

## The rise of indigenous and endogenous knowledge systems

Indigenous Knowledge Systems garnered societal interest in the 1970s and appeared in scholarly literature by the 1980s, in part as 'African knowledge systems' (Le Roux 2003; Velthuizen 2019). Indigenous Knowledge Systems gained momentum as a result of the UN sub-commission on the prevention of discrimination and protection of minorities (Le Roux 2003). In addition, growth in IKS literature can be attributed to unsuccessful models prevalent in the Global North that ignore IKS and an increasing realisation that Indigenous Knowledge has a role to play in catalysing development and industrialisation (Kaya 2004; Masipa & Jideani 2014).

In practice, IKS have shown to have economic benefits. Indigenous Knowledge Systems' revitalisation programmes in Africa and Southeast Asia have been used to create informally coordinated markets which benefit agricultural livestock and pharmaceutical industries by improving productivity, supporting sustainable development through measures mitigating climate change and creating jobs for the local economy (Masipa & Jideani 2014; Olatokun & Ayanbode 2008; Teffo 2019). Indigenous Knowledge Systems also helped boost the tourism, arts, crafts and alcohol industries by supporting small to medium enterprises to create jobs for communities (Rogerson 2019; Rozani & Goduka 2017). However, some argue that IKS are only implementable in developing traditional societies, as there is resistance to technology and technology transfer in many indigenous societies (Castiano 2005; Nel 2006). While this may be true in some instances, successful blends of Indigenous Knowledge and technology exist in China and India, specifically in the agricultural and medical industries (Teffo 2019). The blended model in China and India within the agricultural and medical industries has simplified the scientific processes to advance human development, food security and improving standards, leading to increased productivity in the agricultural and medical industries (Teffo 2019). This blend is termed endogenous knowledge systems and tends to use Indigenous Knowledge and other relevant Western knowledge to formulate holistic development solutions (Velthuizen 2019).

## Indigenous Knowledge Systems in Africa and South Africa

Indigenous Knowledge Systems have been embedded in African societies for centuries. More recently, African countries underpin their development policies with Indigenous Knowledge, which is linked to the economic opportunities brought about by the African Continental Free Trade Area (Teffo 2019). For example, in Zimbabwe, Indigenous Knowledge has been the number one source of rural economic development in terms of generating income and creating jobs through economic development systems such as *Zunde raMambo*. Used to solve the issue of food security in Zimbabwe, *Zunde raMambo* sees local community members come together to offer free labour to plough, weed and harvest a community field (Masipa & Jideani 2014; Tenson & Joel 2020). Similarly, in Uganda, Indigenous Knowledge is incorporated into science and technology in many higher learning institutions to find innovative and scientific solutions for food security, health and environmental protection. These institutions include Mbarara University of Science and Technology and Makerere University (Magara 2015; Nyiira 2003). The Mbarara University of Science and Technology has the Africa Centre of Excellence for Pharm-Biotechnology and Traditional Medicine (Pharm-Bio Technology and Traditional Medicine Centre 2021), which develops healthcare professionals, products and services that transform societies, including exploring the use of traditional medicine in the region. Likewise, Makerere University (in collaboration with other regional universities) introduced an agricultural sharing project intending to document and disseminate indigenous agricultural knowledge, promote sustainable food security and improve livelihoods within rural communities (Nkwasibwe et al. 2015). In Ethiopia, Indigenous Knowledge has been used to create awareness of biodiversity and conservation (Teffo 2019). In Mali, the Jatropha plant is used to produce oil and fuel (Olatokun & Ayanbode 2008). Traditional beer in Burundi, Nigeria, Cameroon and many other African countries contributed immensely to sustaining local economies (Lues et al. 2009). In Ghana, rural women make bath soap using naturally available ingredients (Olatokun & Ayanbode 2008).

South Africa has made considerable progress in terms of legislating, protecting and promoting IKS. The Department of Trade and Industry, Intergovernmental Committee on Intellectual Property and Genetic Resources, Traditional Knowledge and Folklore of the World Intellectual Property Organisation are but some of the organisations that have contributed to promoting IKS in South Africa (Masipa & Jideani 2014; Masoga 2005; Mosimege 2004). The first IKS national dialogue in 1998 yielded positive results, producing over 253 projects funded by the NRF since 2000 at a cost of R30m (Loubser 2005; Masoga 2005; Mosimege 2004). After the adoption

of the IKS policy in South Africa, Indigenous Knowledge research boomed, except in relation to economic development (Gila 2004). The merger between home and school knowledge underpinned curriculum development with respect to IKS (Buthelezi & Hughes 2014; Loubser 2005). Moreover, the South African public have grown optimistic regarding Indigenous Knowledge because of its versatility and principles of economic inclusion (Buthelezi & Hughes 2014).

## Indigenous Knowledge Systems and local economic development in South Africa

The newly adopted 2018–2028 NFLED presents many opportunities to integrate science, technology and innovation, particularly in marginalised localities. However, while Indigenous Knowledge has been recognised by the Department of Science and Technology, with immense progress across various organisations (as outlined in the preceding sub-section), the newly adopted NFLED does not explicitly recognise IKS – despite the definition of LED and vision of the NFLED, including aspects of Indigenous Knowledge. However, the NFLED does reflect the importance and potential of local knowledge and resources (Department of Cooperative Governance and Traditional Affairs 2018):

> LED will seek to create competitive, sustainable, diverse, innovation-driven and inclusive local economies that […] address local needs, and contribute to South Africa's national development objectives, including sustainable ways of *utilising local resources* and expand learning capabilities […] with LED being characterised by *knowledge transfer and competence building*; employment generation. (p. 14)

There are two barriers to Indigenous Knowledge integration into the current NFLED. The first is stakeholder failure to acknowledge the voice of the people (who are the primary holders of Indigenous Knowledge) and failure to include the people in economic decision-making, both of which could be used to boost local economies (Buthelezi & Hughes 2014). The second barrier is that the NFLED focuses on technology and innovation, with which rural economies cannot keep up. Indigenous Knowledge holders are still operating in the traditional economy because of a lack of resources and infrastructure. Moreover, some Indigenous Knowledge holders do not see merit in the capitalist rationale for technological advancement, especially if the economic benefits do not filter down to the local economies that may promote or develop it (Tharakan 2017). As such, it is recommended that IKS feature in future national frameworks for LED as a transversal pillar. This will encourage the leveraging of respective Indigenous Knowledge-related developments likely to grow a particular local economy.

# Methodology

## Research design

The study employed a mixed-method, survey-based design. Firstly, a questionnaire was designed using relevant literature (Masipa 2010; Masipa & Jideani 2014) and the NFLED. Subsequently, the questionnaire was piloted in SDM and modified for clarity and reliability. Thereafter, the questionnaire was administered to home-brewers in their native language of Sepedi, one of South Africa's official languages.

## Research setting

This research was conducted in SDM, Limpopo Province, South Africa. This geographical region was selected because of its poor socio-economic performance, as outlined in the preceding sections, which includes high unemployment rates, low levels of literacy and high levels of teenage pregnancy. Moreover, there is limited understanding of IKS in the region despite an abundance of Indigenous Knowledge uptake.

## Data collection

This study collected qualitative and quantitative data using a pre-designed and piloted questionnaire. Seko, Bain and Maponya (2021) argue that the importance of collecting qualitative data for Indigenous Knowledge research is mainly to understand the 'why' concerning the purpose of the research. As such, qualitative data were collected systematically through a well-structured and piloted questionnaire to understand the home-brewed alcohol processes and business challenges of the Indigenous Knowledge-driven home-brewing of alcohol. A pre-designed and piloted questionnaire was also used to gather business information from home-brewers. Categorical questions related to employment, income, production and sales were included in the questionnaire.

## Data analysis

Data were analysed in two ways. Firstly, qualitative data were interpreted using inductive thematic analysis to summarise and understand the business challenges of home-brewers. Secondly, each categorical variable contained in the quantitative data was analysed using descriptive interpretation. An inductive approach entails analysing the data line by line from the participants' experiences and assigning thematic codes (Azungah 2018).

Descriptive interpretation refers to the quantitative analysis of data using standard software. The inductive approach was applied using Atlas.ti and descriptive interpretation took place after the data were processed in Microsoft Excel.

## Ethical protocol

This chapter complied with all the ethical requirements outlined by the University of Johannesburg. The chapter received ethical clearance from the University of Johannesburg's School of Economics Research Ethics Chair on 24 September 2021 (ethical clearance code 21SECO041).

# Findings

## Demographic characteristics

A total sample of 53 home-brewers in SDM were interviewed. Women dominated the sample, constituting 87% of the total participants. Women aged 56–65 years constituted the highest age group (28%), while 8% of the men were aged 16–35 years. Many of the participants received no schooling (34%) and only 17% obtained Grade 12. Only 6% of the participants attained tertiary qualifications.

In SDM, there are various types of home-brewed alcohol. Moreover, business practices vary among the different types of home-brew. As indicated in Figure 4.1, most of the sampled participants produce and sell sorghum beer[1] independently (51%), while 11% produce and sell as a family, and only 2% produce and sell as a group. For marula beer,[2] 9% and 2% of the sampled participants produce and sell individually and as families, respectively. For millet beer,[3] there is a mixture of business ownership and shared knowledge, with 9% of the sampled participants producing and selling as individuals, while 7% and 4% produce and sell as a family and group, respectively. While pineapple beer[4] constitutes a small portion of the sample, most participants operate as individuals (4%) and only 2% as families.

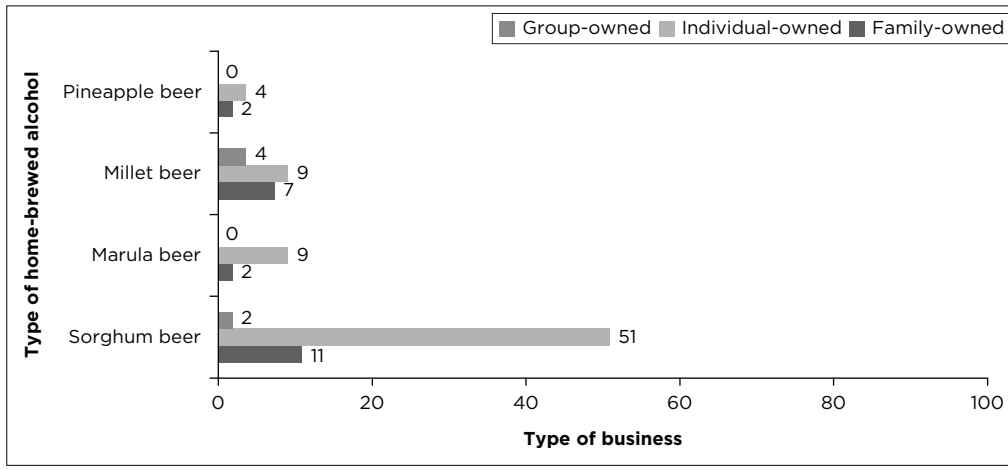
1. Sorghum beer is a traditional alcoholic beverage made from sorghum and maize, which takes an average of 7 days to brew.

2. Marula beer is also a traditional alcoholic beverage made from marula (*Sclerocarya birrea*), which takes an average of 4 days to brew.

3. Millet beer is a spirit-like home-brewed alcoholic beverage made mainly from sorghum and sugar, which takes an average of 5 days to brew.

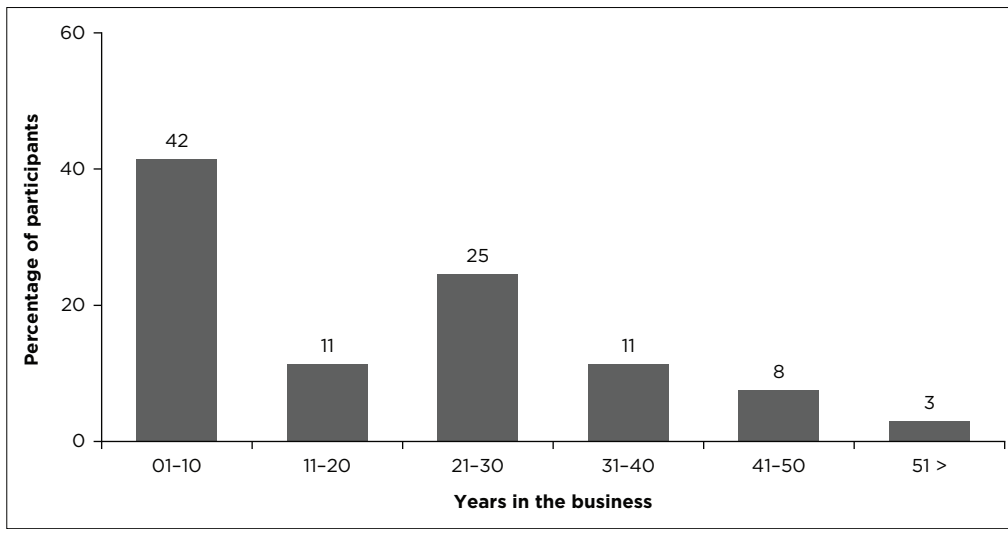
4. Pineapple beer is a home-brewed alcoholic beverage made from brown bread, oats, pineapples, sugar and yeast as main ingredients and takes an average of 1 day to brew.

As seen from Figure 4.2, most participants from the sampled home-brewers have been in the home-brewing industry for ten years or fewer (42%), while 25% of the sampled participants have been in the home-brewing industry for between 21 and 30 years.




*Source*: Authors' own calculations using raw data.

**FIGURE 4.1:** Type of business by home-brewed alcohol.




*Source*: Authors' own calculations using raw data.

**FIGURE 4.2:** Home-brewers: Number of years in business.

## Employment creation

Three phases of home-brewing are captured in the questionnaire: pre-brewing, brewing and selling. Pre-brewing activities include getting wood and water; grinding ingredients, such as maize and sorghum; storing the maize, sorghum and marula for a few days through indigenous processes; and applying indigenous fermentation techniques to make a beverage. Selling activities include entering the market and selling the products to consumers.

Collectively, the sampled home-brewers employ 388 people across the various phases of home-brewing. Sorghum beer home-brewers employ 274 people, marula beer home-brewers 40 people, millet beer home-brewers 64 people and pineapple home-brewers ten people.

Prior to home-brewing, between 82% and 100% of the home-brewers sampled had no income. However, as indicated in Table 4.1, the various phases of home-brewing employ a considerable number of people per phase. Sorghum beer home-brewers employ the highest number of people, followed by millet beer, marula beer and pineapple beer.

**TABLE 4.1:** Labour characteristics – employment by home-brewing phase (weekly).

| Labour characteristics | Phases | Categories | Sorghum beer | | Marula beer | | Millet beer | | Pineapple beer | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | *n* | %[5] | *n* | % | *n* | % | *n* | % |
| 1. Employed | **Phase 1 – Pre-brewing** | Employed | 137 | 50 | 9 | 22 | 26 | 41 | 3 | 30 |
| | | Participants | 35 | - | 4 | - | 11 | - | 3 | - |
| | | Mean (employed/ participants) | 4 | - | 2 | - | 2 | - | 1 | - |
| | **Phase 2 – Brewing** | Employed | 80 | 29 | 24 | 60 | 23 | 36 | 4 | 40 |
| | | Participants | 35 | - | 4 | - | 11 | - | 3 | - |
| | | Mean (employed/ participants) | 2 | - | 6 | - | 2 | - | 1 | - |
| | **Phase 3 – Selling** | Employed | 57 | 21 | 7 | 18 | 15 | 23 | 3 | 30 |
| | | Participants | 35 | - | 4 | - | 11 | - | 3 | - |
| | | Mean (employed/ participants) | 2 | - | 2 | - | 1 | - | 1 | - |
| | | **Total employed** | **274** | - | **40** | - | **64** | - | **10** | - |
| | **Regularly employed to assist across all phases** | Employed | 72 | **-** | 6 | **-** | 14 | **-** | 3 | **-** |
| | | Participants | 35 | - | 4 | - | 11 | - | 3 | - |
| | | Mean (employed/ participants) | 2 | - | 2 | - | 1 | - | 1 | - |
| | | Regularly (employed/ total employed) | 26.3% | - | 15.0% | - | 21.9% | - | 30.0% | - |
| | | **Grand mean** | **6** | - | **9** | - | **5** | - | **3** | - |
| 2. Employment status prior to home-brewing | | Employee | 1 | 3 | 1 | 25 | 1 | 9 | 1 | 33 |
| | | No income | 33 | 94 | 4 | 100 | 9 | 82 | 3 | 100 |
| | | Self-employed | 1 | 3 | - | - | 1 | 9 | - | - |

*Source*: Authors' own calculations using raw data.

5. Percentages calculated as (employed/total employed)*100.

## Output

In terms of production, the sampled home-brewers produce between 45l and 99l of alcohol per week, depending on the type of alcohol produced. As seen in Table 4.2, sampled sorghum beer home-brewers can produce an average of 99l per week, while marula beer home-brewers can produce 80l. Sampled millet and pineapple beer home-brewers can produce 46l and 45l a week on average, respectively.

## Sales and income generated

In terms of output, sorghum beer is the most produced, followed by millet beer, marula beer and pineapple beer. In terms of price, millet beer is the most expensive per litre, making it the least purchased in the sample. Sorghum beer is the cheapest across all sampled home-brewers at R12 per litre and is available throughout the year.

In terms of output, sorghum beer is the most produced in the sample, followed by millet beer, marula beer and pineapple beer. Subsequently, the average total output per brewer is the highest for sorghum beer, followed by marula beer, millet beer and pineapple beer. Regarding sales, pineapple beer home-brewers have the highest daily consumers in the sample, followed by sorghum, marula and millet beers. The average daily income per home brewer is highest for millet beer, followed by marula, sorghum and pineapple beers.

## Business challenges

Qualitative data were thematically coded, and the results are presented in Table 4.3. The primary concern among sampled home-brewers relates to market challenges, as 67%–91% of sampled home-brewers expressed concerns over their declining customer base. Interestingly, most sampled home-brewers

**TABLE 4.2:** Output and consumption.

| Variables | Categories | Sorghum beer | Marula beer | Millet beer | Pineapple beer |
|---|---|---|---|---|---|
| 1. Output (litres per week) | Total output | 3 465 | 320 | 502 | 135 |
| | Respondent home-brewers | 35 | 4 | 11 | 3 |
| | Average output per brewer | 99 | 80 | 46 | 45 |
| 2. Sales | Average daily consumers per home brewer | 13 | 13 | 11 | 27 |
| | Average total daily consumption (litres) per home brewer | 28 | 36 | 17 | 22 |
| | Unit price per litre | R12 | R13 | R32 | R13 |
| Averages | Daily income per home brewer | R336 | R468 | R544 | R286 |
| | Weekly income per home brewer | R2 352 | R3 276 | R3 808 | R2 002 |
| | Monthly income per home brewer | R10 080 | R14 040 | R16 320 | R8 580 |

*Source*: Authors' own calculations using raw data.

**TABLE 4.3:** Business challenges.

| Business variables | Characteristics | Sorghum beer | | Marula beer | | Millet beer | | Pineapple beer | |
|---|---|---|---|---|---|---|---|---|---|
| | | *n* | %[6] | *n* | % | *n* | % | *n* | % |
| 1. Challenges | Debt | 1 | 3 | - | - | 1 | 9 | - | - |
| | Drought | 2 | 6 | - | - | - | - | - | - |
| | Fights | 1 | 3 | - | - | 1 | 9 | 1 | 33 |
| | Financial challenges | 9 | 26 | - | - | 2 | 18 | 1 | 33 |
| | Health challenges | 1 | 3 | - | - | - | - | - | - |
| | Legal challenges | 1 | 3 | - | - | 3 | 27 | - | - |
| | Maize | 3 | 9 | - | - | 1 | 9 | - | - |
| | Market challenges | 7 | 20 | - | - | 3 | 27 | 1 | 33 |
| | No challenges | 5 | 14 | 1 | 25 | 1 | 9 | - | - |
| | Operational challenges | 3 | 9 | - | - | 1 | 9 | - | - |
| | Place to work | 2 | 6 | 1 | 25 | - | - | - | - |
| | Ploughing | 1 | 3 | - | - | - | - | - | - |
| | Processing | 1 | 3 | - | - | - | - | - | - |
| | Seasons | 1 | 3 | 2 | 50 | - | - | - | - |
| | Social challenges | 2 | 6 | - | - | - | - | 1 | 33 |
| | Sorghum | 3 | 9 | - | - | 3 | 27 | - | - |
| | Stock | 1 | 3 | - | - | - | - | - | - |
| | Water | 6 | 17 | - | - | 1 | 9 | - | - |
| | Wood | 6 | 17 | - | - | - | - | - | - |
| 2. Opportunities | Access to local ingredients | - | - | - | - | 1 | 9 | - | - |
| | Financial opportunities | 8 | 23 | 1 | 25 | - | - | 1 | 33 |
| | Market opportunities | 24 | 69 | 3 | 75 | 10 | 91 | 2 | 67 |
| | Operational opportunities | 4 | 11 | - | - | - | - | - | - |
| | Social opportunities | 3 | 9 | - | - | 2 | 18 | - | - |
| 3. How the municipality can help | Legalise | 1 | 3 | - | - | 2 | 18 | - | - |
| | Give us money to create the jobs | 11 | 31 | - | - | 3 | 27 | 2 | 67 |
| | Training people | 1 | 3 | - | - | - | - | - | - |
| | Other | 22 | 63 | 4 | 100 | 6 | 55 | 1 | 33 |

*Source*: Authors' own calculations using raw data.
*Note*: 'Other' includes access to production inputs, including access to maize, sorghum and sugar; access to water and electricity; having wood to make a fire; having a place of work; and access to a grinding machine.

find it difficult to source ingredients to produce any of the mentioned home-brewed alcohol types. These include not getting sorghum to produce sorghum beer (9%) or millet beer (27%), or maize to produce sorghum beer (9%) or millet beer (9%). Similarly, other challenges include poor access to water and wood, business debt and bad debt. Some of the sampled sorghum beer participants also mentioned issues related to farming, ploughing and drought, which subsequently affect sorghum yield. Pineapple beer home-brewers would like the municipality to assist with job creation, whereas marula beer

6. Percentages calculated as (responses per category/number of participants per category)*100.

home-brewers would appreciate designated places of work for brewing. Sorghum beer home-brewers requested funding for ingredients, while millet home-brewers requested assistance with wood and market legislation. The following respondent statements are useful summaries of the kinds of support requested:

> 'Because wood is quite expensive now to make fire, the municipality must buy us sorghum, maize and pots and deliver us water.' (Participant 4, male, 29 years old)

> 'We are hardworking, when it is marula season. We go to the rivers to get the marulas, but we do not have transport to take us to and from the marula trees. Even now, we are still waiting for the municipality to build us a firm they promised to process the beer, and if the municipality can build the firm, we will appreciate that.' (Participant 21, female, 53 years old)

## Conclusion

Informal home-brewers create informal employment opportunities, particularly for women. In SDM, sample home-brewers are custodians of Indigenous Knowledge related to home-brewed alcohol. Despite its success at creating informal employment and empowering women, home-brewers experience financial and operational challenges. Participants suggested ways in which the municipality can assist them with business growth and operational challenges. Among the participants in this study, Indigenous Knowledge is shown to have economic benefits, particularly relating to job creation. As such, it is recommended that IKS feature in future national frameworks for LED as a transversal pillar. This will encourage the leveraging of Indigenous Knowledge to further develop a particular local economy.

This study is not without its limitations. The first limitation is that many home-brewers refused to participate in this study, which made it difficult to capture a wide variety and a large number of home-brewers. It is common knowledge in the community that unhealthy substances which may not be suitable for human consumption are used in certain beers. This may be why some home-brewers refused to participate in the study. This also brings to light possible health issues related to home-brewed alcohol, which need to be investigated further. The second limitation is that interviews took place outside of marula season, which is likely to have affected the number of marula home-brewers interviewed. Most participants were selling sorghum beer at the time of the interviews, making it difficult to collect comparable data on the home-brewing of other kinds of beer. The third limitation is that we do not know how much profit home-brewers make, as no data on expenses were collected. Lastly, we do not know if employees were unique to each home brewer. For example, one person could have the skills to perform the same function for many home-brewers part-time.

The primary recommendation from this chapter is that while Indigenous Knowledge is implicitly included in NFLED, it should be integrated into the framework more explicitly. This will help local economies navigate the economic benefits of Indigenous Knowledge initiatives as part of local economic revival. Moreover, SDM, and municipalities in general, should consider the voice of small business owners in developing municipal integrated development plans and funding strategies so that small businesses may eventually become formal, tax-paying entities that benefit from financial and other services. Lastly, more research is needed into Indigenous Knowledge as a tool to better leverage community-specific knowledge.

Chapter 5

# A lifelong learning approach drives economic development in Gwydir Shire

**Maxwell T. Eastcott-Layton**[a,b]
[a]Gwydir Shire Council,
Bingara, Australia
[b]PASCAL International Observatory (Australia),
Melbourne, Australia

**Leone Wheeler**[a,b]
[a]School of Global, Urban and Social Studies,
College of Design and Social Context, RMIT University,
Melbourne, Australia
[b]PASCAL International Observatory (Australia),
Melbourne, Australia

## Abstract

The purpose of the chapter is to apply the six core policy pillars for local economies to map how lifelong learning has driven inclusive economic development in Gwydir Shire, from the formation of the Gwydir Learning Region (GLR) in 2003 until the present.

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The Gwydir Shire is in north-west New South Wales (NSW), Australia, covers an area of 9 122 km$^2$ and has a population of 5 258. The region was formed in 2003 as a partnership framework of key stakeholders from several sectors to address key challenges such as lower household income levels (than the NSW state average) and educational attainment.

An important goal is to ensure that every individual has a learning pathway and is provided with the opportunity to become a positive contributor within the Gwydir community. Learning through collaboration enhances social, economic, cultural and environmental conditions on a sustainable, inclusive basis within the Shire.

# Introduction

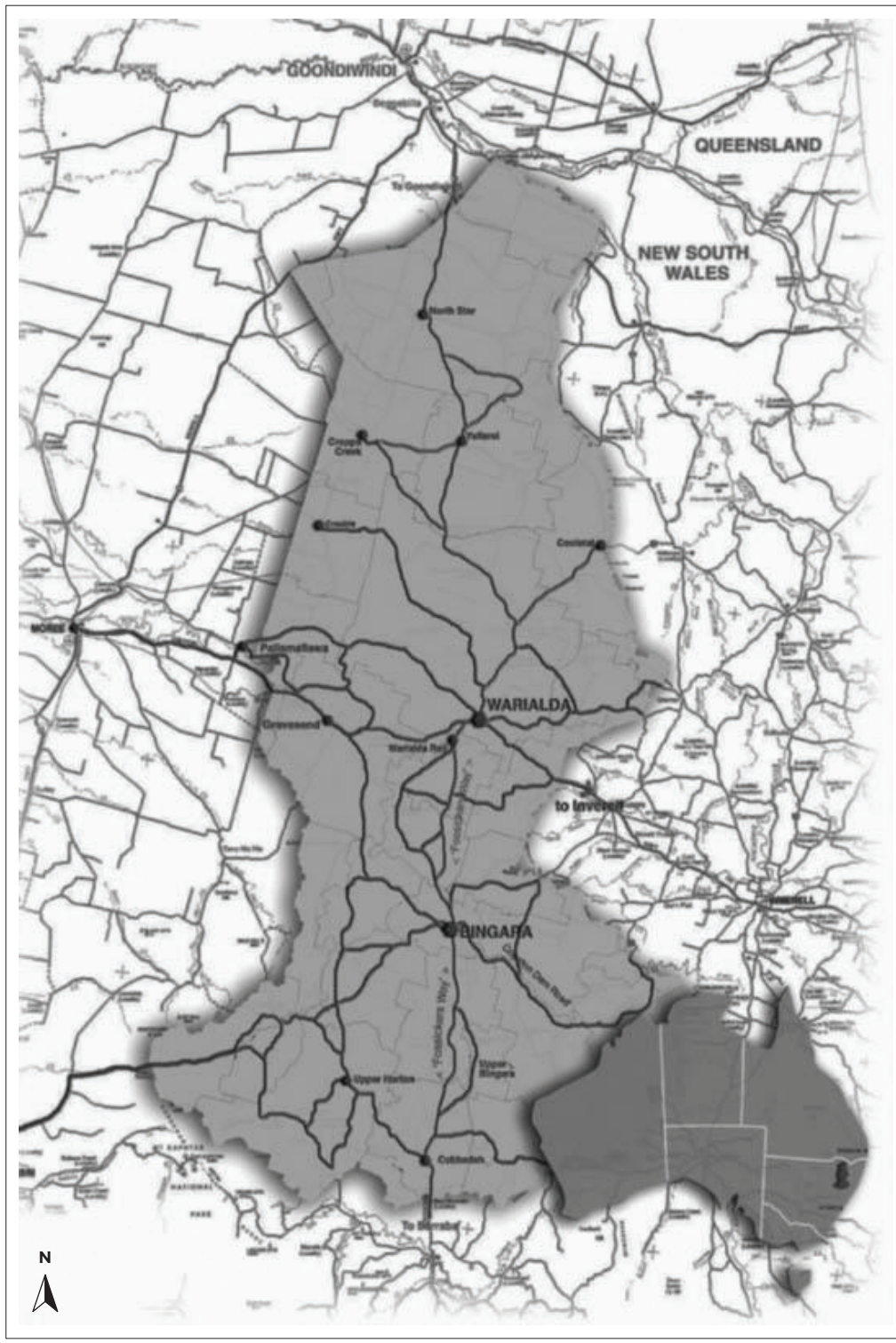
The South African Framework for LED is an approach to strategic planning, coordination and implementation of LED. It utilises six core policy pillars for local economies and recommends a 'local government-led process, a multi-stakeholder driven process and an outcomes-based approach' based on partnerships (Department of Cooperative Governance and Traditional Affairs 2018, p. 14). This chapter highlights a case study of one rural local government area in NSW, Australia, known as Gwydir Shire and how it sets about establishing the GLR as a collaborative vehicle for inclusive and sustainable economic development, underpinned by the provision of access to lifelong learning opportunities for all residents.

## Gwydir Shire Council and the creation of the Gwydir Learning Region

'Some organisations see things as they are and ask, why? Gwydir dreams things that never were and asks, why not?' (adapted Shaw 1949).

Gwydir Shire is in north-west NSW, Australia, and covers an area of 9122 km$^2$. It consists of a small number of towns and villages including Warialda, Bingara, Graves End, North Star, Croppa Creek, Coolatai, Cobbadah and Upper Horton (see Figure 5.1). According to the Australian Bureau of Statistics Census (2016), Gwydir Shire has a population of 5258.[7] Of these, 50.6% are men and 49.4% are women. Aboriginal and Torres Strait Islander people make up 5.7% of the population. Most inhabitants were born in Australia (96.5%) – higher than for NSW (72.4%) – and the most common ancestries were Australian (36.6%), English (32.5%), Scottish (8.1%), Irish (7.6%) and German (3.1%).

7. Australian Bureau of Statistics (ABS) (2016).




*Source*: Gwydir Shire Council Archives.

**FIGURE 5.1:** Gwydir Shire.

Gwydir Shire is a designated 'remote rural community' with a low socio-economic base. The 'key challenges are low levels of household income and very low levels of educational attainment', particularly when compared to NSW. There is a strong belief that to address low levels of household income, educational attainment needs to be addressed. To improve this situation, post-school workers should be encouraged to undertake additional training, and additional vocational options for young people should be introduced (Wheeler, Wong & Wong 2013, p. 27). Initially, to address these issues, in 2002 the Bingara Shire Council brought together the former shires of Barraba and Yallaroi and formed the Cunningham Learning Region.

The idea that learning is a driver of change was already well established. For example, within the former Yallaroi and Bingara shires, there was an established and highly effective Warialda and Bingara industry and education links committee, which Tony Vinson (2002) describes as:

> A unique organisation consisting of teachers, parents, students and community members from two towns 40 kilometres apart. The Committee oversees and facilitates the delivery of vocational education at Warialda High School. The high school has received state and national recognition for its vocational program during 2000 and 2001. Currently 40% of the senior school is involved in part-time traineeships. The school aims to have its graduates achieve the dual accreditation of an HSC and an industry-recognised qualification. Over the past three years the school has enjoyed a one hundred per cent success rate in having graduates gain university entrance, or technical and further education (TAFE) continuance or full-time employment. (p. 112)

The former Bingara Shire simply took the committee to a higher level of cooperation across the shires of Barraba, Yallaroi and Bingara, including wide collaboration from the Shire council, the New England TAFE college and various universities.

Vinson (2002) outlined how the operation of the Warialda-Bingara high schools model could be used as a template for community education centre pilot projects across NSW. Vinson (2002, p. 115) further recommended that 'four community education centres' create 'pilot projects for a period of three years', and that these be managed across two government areas and by a range of stakeholders – utilising the GLR framework. While this recommendation does not appear to have been acted upon by the then NSW state government Department of Education and Training, it was a driver for the eventual creation of the GLR.

As noted, the motivation for the Shire to continue as the GLR – after the 2004 amalgamation of Bingara, Yallaroi and 40% of Barraba to form the Gwydir Shire Council – was driven by the generally low level of past educational achievement in the area and to assist in breaking the poverty trap that this created. The Council clearly recognised that education improves everybody's chances.

From its very beginning in 2004, Gwydir Shire Council embraced learning as a keystone to ensure the success of its residents. Gwydir Shire's adopted vision is to be the recognised leader in Local Government through continuous learning and sustainability.

The GLR committee adopted the following objectives:

- Improve participation and achievement in education and training.
- Provide better links between schools, universities, TAFE, businesses and communities.
- Expand opportunities for training and learning all through life.
- Identify skill deficiencies within the local area and facilitate the training of local people to address the identified need.
- Create a sustainable, vibrant community with a future through regeneration.
- Create a management structure that will support the organisation in pursuing its vision.
- Encourage each member of the community to participate fully in the learning community.
- Enhance the existing education and training provision within communities.
- Ensure the region's future employment training needs are met through competent planning.

The idea that learning in all its forms is the foundation for a successful life – and can improve life chances – is well documented in the literature (Ruhose, Thomsen & Weilage 2019; Schueler & Loveder 2020; Schuller & Desjardins 2011). Indeed, the broader role of education and lifelong learning is to understand, adapt to and shape change (Schuller & Watson 2009). 'For communities, it translates into having some control over rapid changes or challenges in a range of areas', including inclusive, cultural, social, economic and environmental development (Wheeler et al. 2013, p. 10).

## The learning community movement in Australia and internationally

The development of GLR coincided with a plethora of learning community and learning city developments in Australia from about 1998 onwards (Kearns 2005; Longworth 2006; Wheeler & Tabbagh 2020). There were ten Victorian learning town projects funded by the Victorian state government in 2000, and another ten national learning communities funded in 2001 by the former Australian national training authority (Global Learning Services 2001; Wheeler & Tabbagh 2020; Wheeler & Wong 2006).

Internationally, the terms 'learning cities', 'learning communities' and 'learning regions' are now in common use and are models within a larger notion of a learning society (Longworth & Osborne 2010). In fact, the broader concept of learning societies is not new and can be traced back to ancient

Greece in the West and Confucius in the East (Longworth & Osborne 2010; Yiannouka 2020). There has been a re-emergence in the latter part of the 20th century based on changing ideas of learning that go beyond the conventional distinctions between formal and continuing education to embrace lifelong learning and learning throughout life (Longworth & Osborne 2010).

As noted in Wheeler and Tabbagh (2020), the formation of the UNESCO global network of learning cities in 2013 by the UNESCO Institute for Lifelong Learning has driven the modern learning city movement and identified key actions and commitments. These include, but are not limited to (UNESCO Institute for Lifelong Learning 2013, 2017):

- empowering individuals and promoting social cohesion
- enhancing economic development and cultural prosperity
- promoting sustainable development
- promoting inclusive learning in the education system
- revitalising learning in families and communities
- facilitating learning in and for the workforce
- extending the use of modern learning technologies
- enhancing quality in learning; fostering a culture of learning throughout life
- strengthening political will and commitment
- improving governance and participation of all stakeholders
- promoting inclusive, healthy, and green cities.

The commitments to action adopted by the learning cities movement are also very appropriate to rural areas, 'including exploring the potential of the Learning Region concept in fostering innovative forms of partnership in rural and regional areas' (Kearns 2015, p. 165). As Maclean and Wheeler (2021, p. 18) note, 'citizens in rural areas should have access to inclusive, high-quality learning opportunities that meet their future needs'.

The principles and values identified as key features of learning cities (UNESCO Institute for Lifelong Learning 2015) are also applicable to those people living in rural and remote areas, in disadvantaged and poor neighbourhoods and communities, as well as in small towns and villages under the umbrella of a 'learning society'.

The primary purpose of this chapter is to evaluate and outline common characteristics exhibited within the GLR and the six core pillars for local economies. However, as the GLR is underpinned by learning as a driver for change, the foundational principles and building blocks of learning – as outlined by UNESCO's key features of learning cities in Table 5.1 – support the way GLR achieves LED.

The South African framework and UNESCO's key features of learning cities call for action that links to the UN's SDGs. Learning cities and learning

**TABLE 5.1:** Alignment of the South African framework of local economic development with the United National Educational, Scientific and Cultural Organisation's key features of learning cities.

| Six pillars of local economic development | UNESCO key features of learning cities (UNESCO 2015) |
|---|---|
| Economic governance and infrastructure | **Foundations**<br>• Strong political will and commitment, governance and participation of all stakeholders and the mobilisation and utilisation of resources. |
| Building diverse and innovation-driven local economies<br>Developing inclusive local economies<br>Learning and skilful economies<br>Enterprise development and support<br>Local innovation systems | **Building blocks**<br>• inclusive learning in the education system<br>• revitalised learning in families and communities<br>• effective learning for and in the workplace<br>• enhanced quality and excellence in learning<br>• extended use of modern learning technologies<br>• a vibrant culture of learning throughout life |

*Source*: Adapted from Department of Cooperative Governance and Traditional Affairs (2018, pp. 42–55) and UNESCO Institute of Lifelong Learning (2015, p. 11).
*Key*: UNESCO, United National Educational, Scientific and Cultural Organization.

communities align most closely with SDG 4 (ensuring equitable quality education and promoting lifelong learning opportunities for all) and also align with SDG 11 (making cities and human settlements inclusive, safe, resilient and sustainable). The South African framework highlights the importance of the following UN SDGs (United Nations, n.d.):

- Ending poverty (SDG 1).
- Ending hunger utilising sustainable agriculture (SDG 2).
- Achieving gender equality (SDG 5).
- Sustained, inclusive and sustainable economic growth, full and productive employment, and decent work (SDG 8).
- Building resilient infrastructure, promoting inclusive and sustainable industrialisation, and fostering innovation (SDG 9).

These goals are also vital to the development of GLR.

## Economic governance and infrastructure

The overall leadership for the economic governance of the GLR is the local government, namely, Gwydir Shire. However, the GLR cannot function without key partnerships between local government, education, business and community stakeholders in the north-west area of NSW (Mitchell 2006). The partnership has evolved over time, and although its organisational structure has changed, the focus on improving educational, social and economic outcomes for the residents of the community remains part of its core values. As Mitchell (2006, p. 6) writes, 'The Gwydir Learning Region (GLR) has

strongly positive goals in an area confronting the decline of rural populations and where the income level is lower than in most of the state'.

The achievements of the GLR were recognised when it was awarded the 2006 NSW training initiative award and represented NSW at the national training awards in South Australia.

The then Gwydir Shire mayor, Councillor Mark Coulton, accepted the award on behalf of all the participants in the GLR, namely, the Gwydir Shire Council, New England Institute of TAFE, Bingara Central School, Warialda High School, Adult Learning and the University of New England.

The following is an extract from the press release issued in September 2006 by Gwydir Shire Council (Eastcott 2006):

> The Gwydir Learning Region is a very successful partnership between Gwydir Shire Council and local business, communities and students in conjunction with all the local educational providers. [...] Councillor Coulton stated and added 'We all work together to improve the education and living standards of the residents of Gwydir Shire'. (p. 1)

An extensive evaluation by Mitchell (2006) reinforces the importance of collaboration:

> The Gwydir Learning Region is based on the shared goals and visions of a collaborative partnership of stakeholders from education, local council, business and the local community, in a rural area of NSW contending with economic downturn and social deprivation.
>
> The Gwydir Learning Region is, at a surface level, an example of what public and private organisations and committed individuals can achieve through goodwill, passion and determination in an economically depressed, socially disadvantaged and remote area of NSW. (p. 3)

Further (Mitchell 2006):

> From the point of view of education, the Gwydir Learning Region represents new levels of cooperation between schools and TAFE and Adult and Community Education (ACE), new ways of relating learning to local businesses and communities and new ways of implementing personalised learning – an approach to learning which involves the provision of targeted attention for each student. (p.3)

Mitchell (2006) also emphasises the importance of governance by local government:

> From the point of view of local government, the Gwydir Learning Region demonstrates the importance and value of Council involvement in new partnerships and Council involvement with the social infrastructure of rural and remote communities, where those communities want to build social capital and create their own positive options for the future. (p. 3)

There are many examples where the mobilisation and utilisation of key resources for improving the educational and social outcomes for the residents of the community are evident. These have been undertaken with Gwydir Shire

in consultation with GLR. Examples include the coordination of three trade training centres that focus on employment opportunities in the area – automotive, hospitality and agriculture. There have also been exchanges between city and rural organisations to enhance social learning opportunities, such as in sports and music. New sustainable economic development opportunities – such as Gwydir Shire Council's circular economy – are covered in more detail later in this chapter.

## Diverse and innovation-driven local economies

Diversification of the local economy to realise long-term sustainable growth cannot be achieved by a local authority on its own. Gwydir Shire Council is a relatively small local government authority that endeavours to achieve its broader policy objectives through cooperative effort and working with its strategic regional partners. Gwydir Shire actively works within the Namoi unlimited joint organisation (consisting of the local government areas of Tamworth, Gunnedah, Walcha and Liverpool Plains), New England joint organisation (consisting of the local government areas of Narrabri, Moree Plains, Inverell, Uralla, Armidale, Glen Innes-Severn and Tenterfield) and a Border Rivers Regional Council that includes local government areas within both NSW and Queensland.

The Allan Report (Allan, Darlison & Gibbs 2006, p. 12) refers to councils falling into one of three categories: minimalist, maximalist or optimalist.

The optimalist council is defined as (Allan et al. 2006):

> Councils are champions of their areas and as such should take a leadership role in harnessing public, NGO and private resources to promote particular outcomes rather than attempt to fund and operate local initiatives on their own. Because of funding constraints, an 'optimalist' approach may allow a 'minimalist' resourced council to exercise maximum leverage. (p. 12)

Gwydir Shire Council aims to be an optimalist council and works very hard at developing partnerships to achieve the best outcomes for its residents.

## Inclusive local economies

From a lifelong learning perspective, creating an integrated rural economy that values and empowers women, youth and people living with disabilities starts with the fulfilment of the human potential of all residents. It is this 'human capital development' that then becomes a 'resource for building social capital'. Indeed, it is what lies beyond the definitions that count, that is, 'the action and activities, the strategies and policies', 'the leadership, and the empowerment' (Longworth 2006, p. 24).

Within the GLR, every person is important and as far as possible an individual education pathway plan is mapped for each learner. It is vital that every young person is provided with the opportunity to become a positive contributor within our community. In a relatively small community such as Gwydir Shire,[8] this level of individual attention is possible (Eastcott 2006):

> No [*young person*] is allowed to drop through the cracks. Although poor behaviour is not condoned and carries the consequences of actions the door to redemption is always open. The GLR strongly believes that in a truly healthy community the right to redemption is a constant. (Bower 2009, p. 9). [...] Truly powerful communities are those that can identify the gifts of those people at the margin of society and pull them into community life. Gwydir Learning Region is about achieving this outcome. (p. 88)

Martin Bower's 'Belonging' document (Gwydir Shire Council 2008, p. 88) was prepared in response to the Shire's move to promote active citizenship more broadly across the Shire. In particular, the Shire wanted to target programmes for disengaged students to ensure their life choices are not irreparably damaged by ongoing poor judgements. These positive supporting types of programmes include:

- creating structured mentoring arrangements
- developing suitable reward programmes
- develop better assistance programmes for identified dysfunctional families
- running parenting programmes
- promoting volunteering opportunities to children
- promotion of the achievements of children, especially those children whose performances often go unnoticed and unacknowledged
- developing a youth council for Gwydir
- facilitating more and better-quality teacher housing within Bingara and Warialda
- greater access to school-based traineeships within the council for troubled students
- an expanded buddy programme.[9]

For example, the Council initiated an annual mayoral achiever's award for each school to present to one of its students who may not achieve in a conventional academic or sporting sense but is an active achiever in other ways within the school. This is only one example of the positive actions that the Council is taking to acknowledge good examples of active citizenship within the community.

8. See Gwydir Shire Council (2008).

9. Refers to the 'Active Citizenship' report tabled at the December 2008 Gwydir Shire ordinary council meeting (Gwydir Shire Council 2008).

To create networks of support for young families, the Shire hosts regular functions to provide welcome packs for newborns, which includes a Gwydir Shire birth certificate and other gifts such as cutlery, books, etc. These events bring the babies and their parents together, allowing for support networks to be formed. The functions are coordinated through the two toy libraries that the Council operates at Bingara and Warialda.

Ideas of 'Lifelong learning for all', throughout the life span, and all forms of learning (formal, non-formal and informal) are important concepts embraced over time in the literature (Delors 1996; UNESCO 2021). Further, UNESCO (2021) emphasises the vital importance of education and learning as critical in shaping a 'peaceful, just and sustainable futures' in times of uncertainty. From early development, the leadership of GLR has understood and put these ideas into practice. For example (Eastcott 2005a):

> Learning is seen as a way to improve the social environment (for older and socially isolated residents) and life chances of individuals and to create a desire for lifelong learning within our community. (p. 1)

UNESCO (2021, p. 9) recommends making social and cultural spaces (whether natural, built or virtual) available for learning, and Gwydir Shire makes its facilities freely available to be used for either an educational purpose or for sport.

The GLR is committed to the development and strengthening of social networks within the Shire across a broad range of areas:

- Initiating and providing ongoing support for the Gwydir concert band.
- The development of men's sheds at both Warialda and Bingara.
- Toy libraries at both Warialda and Bingara that also act as safe and supportive locations when needed.
- Free access to all council facilities if required for education or training purposes.
- The creation of the Gwydir youth council.

Martin et al. (2021, p. 6), in a detailed case study on Gwydir Shire Council as a facilitator of inclusive housing in a rural location, demonstrate how the Shire has also played a critical role in helping residents gain access to affordable housing within the context of a 'commitment to improving the well-being of its community and its citizens'. This is yet another example of building inclusive local economies.

The GLR model – which includes the development of individual pathway plans and recognising a range of informal learning opportunities (Mitchell 2006) – has a range of social and economic benefits, some of which are covered in this chapter.

## Learning and skilful economies

Enhancing innovation, skills, productive capacity and entrepreneurship in a remote rural region of NSW with a sparse population requires thinking 'outside the box'. Defining the mission and core principles of the GLR early on has been vital in establishing a lifelong learning culture that has led to significant skills outcomes.

The GLR mission is (Eastcott 2020):

> To do what is necessary to ensure high-quality education and training is available, accessible, affordable, adaptable, and acceptable for people of all ages and stages of life who live in or are associated with the Gwydir Shire. (p. 1)

The pursuit of this core pillar is the fundamental reason that the GLR was formed and continues to exist.

The following extract from a presentation made to the Director General, NSW Department of Education and Training, supports how the GLR lives its mission (Eastcott 2008):

> The GLR is not just a physical locality, and it was never meant to be identified as such. Any other community may join the GLR – it is really a forum for co-operation, the generation of ideas and a licence to take a risk – if an idea fails, try another one until it works. We value add ideas we do not kill them.
>
> The only rules we have, relate to the interpersonal relationships that exist between the representatives of the various organisations that make up the GLR network. We have codified our expectations of each other.
>
> Our focus is centred on the student, regardless of age or what they want to achieve. We also strongly believe that education can act as the circuit breaker to overcome the intergenerational poverty that exists within our community.
>
> We attempt to marry-up projected local skill requirements with the vocational education courses that we run.
>
> We see education or training as an opportunity to promote social activities for our aged population and this can range from embroidery to a Men's Shed.
>
> We do not measure success only by academic achievement because we recognise that roughly 70% of our students do not see university as playing a role in their future. But we encourage those students who do want to progress to university by encouraging them to develop employable skills to help defray the cost.
>
> We promote a connected-government philosophy to the work we undertake – with limited resources we must do this – make every dollar count.
>
> We attempt to achieve multiple social outcomes with our programs and build the community's capacity to cope with the changing circumstances that dominate their lives.
>
> Overall, our main goals are to produce life and or work ready students of any age and create a supportive community that meets the special needs of all its members. (p. 2)

The 'rules' mentioned in this quotation are outlined below and relate to the expectations of the various organisations that make up the GLR (Eastcott 2005b, p. 1):

- We recognise that our strength is the result of the diversity of our constituent members and that the external commitment of members to their respective organisations may result in differing points of view.
- At all times, we will seek to contribute in a positive and collaborative manner.
- Individually, we will be ethical in our dealings with other members and display integrity in our overall commitment to the GLR.
- During discussions, all interactions will be respectful, honest and open, with ideas challenged rather than people. We will actively listen to the contributions from other members.
- We will all 'own' the resolved position adopted at our meetings and 'sell' the outcome to our respective organisations and the community in general.
- We will not 'white-ant', externally criticise or work against the best interests of the GLR within our organisations or the community.
- Members may be assertive in expressing constructive criticism at our meetings.
- We will support each other and recognise our 'champions'.

As outlined in the evaluation by Mitchell (2006), much of the GLR-initiated training is designed to address training shortfalls in the local workforce. Over the past 19 years, the guiding principles as identified by Mitchell (2006) have been put into practice. For example, over 150 residents have been trained in a certificate III aged-care course to meet the growing need for qualified carers.

Max Eastcott views the Gwydir Shire as a learning organisation that 'walks its talk'. Around 97% of council employees now have a certificate III qualification or above (Eastcott 2020). In the ten-year period between 2003 and 2013, the Shire trained a total of 175 school-based trainees and apprentices (Eastcott 2013).

Other areas of local employment opportunities that were identified cover careers in automotive, hospitality and agriculture. The GLR developed three trade training centres for these areas of high employment demand:

- The Wally Cole Hospitality Trade Training Centre.
- The Peter Cuskelly Automotive Trade Training Centre.
- The Gary Pollock Primary Industries Trade Training Centre.

Gwydir celebrates its champions,[10] and all three of the people the listed organisations are named after were instrumental in establishing the GLR.

10. Wally Cole is a former principal of Bingara Central School, Peter Cuskelly is a former principal of Warialda High School and Gary Pollock is a former institute director, New England Institute of Technical and Further Education.

Mitchell (2006) identifies that the GLR is important in terms of skill development for individuals, and this continues to be a strength:

> From the point of view of individual development, the Gwydir Learning Region provides individuals with opportunities to extend their learning, develop new skills, achieve new goals, and pursue pathways that might not have been available to them previously. (p. 3)

The articulation of core values by the Shire council and other partners and investment in learning infrastructure – for example, the three trade training centres – has supported the development of skills and talents of individuals who then contribute to a 'learning and skilful' economy.

## Enterprise development and support

Gwydir Shire Council has many examples of innovative ways it supports enterprise development, and one example is the Bingara service station. In March 2007, the operators of the only service station in Bingara that could accommodate larger trucks on a 24/7 basis advised the Council that it intended to cease operations. After negotiations, the Council purchased the site with the intention of refurbishing the facility and either leasing or selling the site to a new operator. The eventual lessee has now purchased the site and is operating it on a profitable basis.

In addition, the Council encourages new businesses by offering incentive payments. These grants are often made available to women to set up traditionally female-focused businesses such as hairdressing. The Council also works with the Warialda High School by funding small grants of up to $500 for students who have entrepreneurial ideas, such as starting a landscaping business or a whip-making business.

The GLR also provides employment-based training, usually without cost, to students and this often enables women to either enter or re-enter the workforce with employable skills such as aged-care nursing.

## Local innovation systems

The South African framework for LED emphasises the encouragement of local governments to work towards a low carbon economy or green economy (Department of Cooperative Governance and Traditional Affairs 2018):

> Green growth and a green economy bring promising changes to the eco-industry sector and shift downstream environmental protection technologies to resource-saving technologies which are linked to innovation and competitive markets. (p. 20)

Through the GLR and its economic development plans, the Gwydir Shire Council has established a framework for inclusive innovation which applies to 'green' projects. The Gwydir Shire Council works very hard to create points of difference

to encourage potential residents and businesses to relocate to the Shire. Two recent examples of investment in green and inclusive economic recovery which have been reasonably successful in attracting new residents are (1) The Living Classroom (TLC) and (2) the Council's circular economy initiatives.

## The Living Classroom

The Living Classroom (Eastcott 2021a and 2021b) in Bingara has been in existence for just over ten years. It is an area of 150 hectares (370 acres) located on the southern and western boundary of Bingara township. It was formerly part of the Bingara town common.

The lands and soils at TLC were quite diverse and degraded when the project commenced. The objectives are to create a trade training centre for primary industries and to show how soil can be regenerated to be healthier, more resilient to drought and pests and more flexible in productive land use. Furthermore, TLC aims to become a place for visitors, be it for education, tourism or conferencing.

A primary objective is also to capture and hold water on the site for as long as possible. A grant from the Murray-Darling Basin Authority provided the means to enhance the contour banks and swales of the site, and this resulted in 5 km of new banks being constructed, along with 14 ponds, dams and lakes.

*Source:* Photograph by Amber Hall taken in 2019, retrieved from Gwydir Shire Archives. Suitable permission to republish is provided by Max Eastcott, Gwydir Shire Council.

**FIGURE 5.2:** TLC in drought, December 2019.

The previously intermittent stream through the site had a series of leaky weirs in the section between the two main dams. The main dam was enlarged to a capacity of 12 ML (12 Olympic swimming pools), and the lower dam – known as the Great Lake – was enlarged to 6 ML and designed to have extensive edges, to be deeper than normal (5 m) and to have an island in the middle.

Much of the early design work at TLC was done by John Mongard Landscape Architects. John was greatly impressed by the project and engaged final year students from the Queensland University of Technology, where he was a tutor, to come to Bingara, stay a week in the Bunkhouse at TLC and create examples of landscape design as part of their final year projects. Many of their designs were so impressive that the Gwydir Shire Council was determined to seek further grant funds for the construction of the projects. As a result, 'The Aussie Farm Dam Makeover', 'Nourish' (the Bush Tucker Garden) and 'Paradise Found' (the Mediterranean Garden) were all added to the landscape at TLC, with their layouts, plantings and signage reflecting the students' designs.

*Source*: Photograph by Amber Hall taken in 2021, retrieved from Gwydir Shire Archives. Suitable permission to republish is provided by Max Eastcott, Gwydir Shire Council.

**FIGURE 5.3:** North-east corner of TLC in March 2021. All of the banks and swales, ponds and lakes are full, and the system is overflowing.

All wastewater from TLC buildings is channelled through this septic reed bed system (Figure 5.4). The reeds today are luxuriant and widespread.

Over the past ten years, more projects and creations have been designed, planned, and undertaken. The plant nursery, the livestock barn and yards, and the koala food tree plantings have all been completed, and several other major and minor projects are either in the pipeline or at the planning stage.

The Living Classroom includes projects that are of global consequence. Climate change and a warming climate, soil carbon capture and storage, a more regenerative and diverse agriculture and localism, with a reduced amount of 'food miles' and a fresher and more nutritious food system, are all of global significance but can be addressed locally and viewed on-site at TLC.

The growing interest in these matters leads to increased visitors and a broadening of educational opportunities. The Living Classroom aims to provide examples that showcase the latest in science and in economic trends. Gwydir Shire residents are invited to engage with TLC and its projects through schools and education, recreation and nutrition. Many school groups have visited TLC.

The Living Classroom continues to grow and thrive. Recent warnings regarding our planet's changing climate make it urgent that we examine the processes and forces that are causing these changes and seek a gentler, more natural and more sustainable agriculture. The Living Classroom is a dynamic and healthy facility that can and will continue to showcase agricultural options and new ways to produce our food.

*Source*: Photograph of Queensland University of Technology students and tutor taken by Amber Hall in 2021. Taken from Gwydir Shire Archives. Suitable permission to republish is provided by Max Eastcott, Gwydir Shire Council.

**FIGURE 5.4:** Students from Queensland University of Technology planting the reeds and grasses into what was to become the septic reed bed.

*Source*: Photograph of Amber Hall and students taken by Richard Hutton in 2021. Taken from Gwydir Shire Archives. Suitable permission to republish is provided by Max Eastcott, Gwydir Shire Council.

**FIGURE 5.5:** Students from the Cape Byron Steiner School in the nursery listening to horticulturalist Amber Hall.

## Circular economy

Gwydir Shire Council has always sought to make the Shire more sustainable by seeking out any potential ideas that will create employment. One such initiative is the Council's circular economy initiative. The Council developed four focus areas in its circular economy proposal:

- a behind-the-meter scheme
- a greenhouse proposal
- a bioenergy facility
- a Greenfield poultry hub.

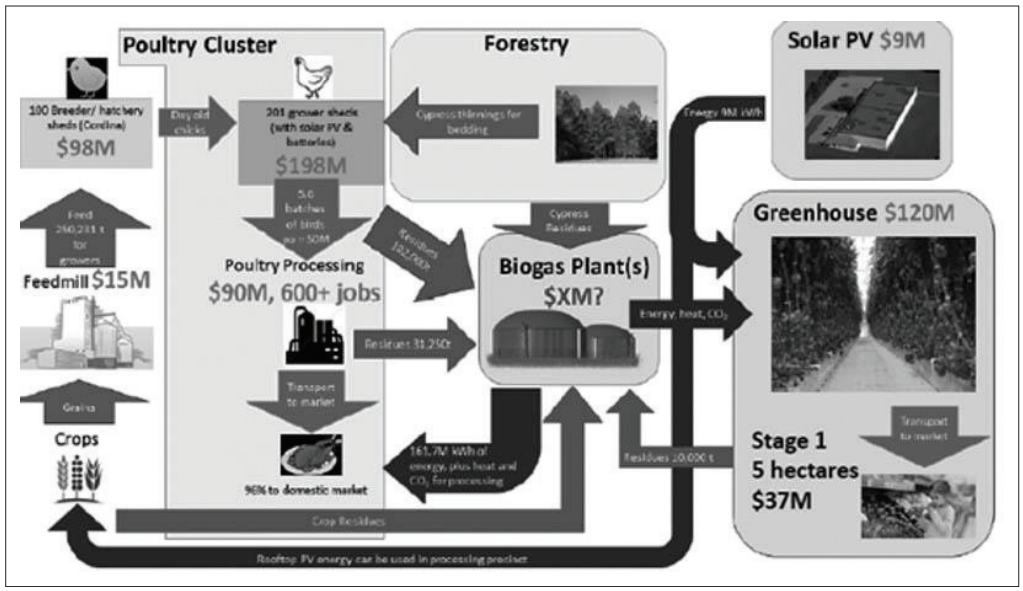
Gwydir Shire is a designated 'remote rural community' with a low socio-economic base. The behind-the-meter scheme provides for the large-scale roll-out of residential and business solar and energy efficiency packages utilising a council-guaranteed, low-cost finance package. This is a project designed to save money for residents and businesses, keep energy investment within the local community, create local jobs and strengthen the community's trust in local government.

The behind-the-meter proposal has a positive business plan (Institute for Sustainable Futures 2018) which was modelled with the assistance of the Institute for Sustainable Futures, University of Technology Sydney.

The behind-the-meter scheme required government funding, either from federal or state governments, which the Council was unable to source even though the scheme was viable and is now being introduced in a modified form by the NSW state government.

The remaining components of the Council's circular economy initiative are far more elaborate, and the Council is working with the private sector to develop the proposal in a form that can be submitted for development approval. Once the development application for the greenhouse proposal component is approved, it will be placed on the market for sale. Once again, the greenhouse proposal has an established positive business case when fully developed (Centre of Policy Studies Victoria University 2019). The biogas plant's business plan is progressing. The entire concept is presented visually in Figure 5.6.

The World Economic Forum (2021) ranks environmental risks (extreme weather events, climate action failure, human environmental action and biodiversity loss) as four of the top five most likely risks, along with 'infectious diseases'. It recommends a way forward that includes an amalgamation of investment in green and inclusive economic recovery with 'short-term measures to bridge gaps in health, education, employment prospects and social safety nets' (World Economic Forum 2021, p. 24). The Living Classroom and the circular economy concept are practical ways that the GLR and Gwydir Shire Council are investing in green, inclusive economic development that




*Source*: Eastcott (2017). Suitable permission to republish is provided by Max Eastcott, Gwydir Shire Council.
**FIGURE 5.6:** The circular economy concept.

benefits the local community and connects with UN SDGs, particularly Goal 11 – sustainable cities and communities.

## Conclusion

'The learning region is an endlessly developing entity re-inventing and re-invigorating itself in a never-ending progression. When learning stops, development stops.' – Norman Longworth (2006, p. 21)

Gwydir Shire Council is a driver of LED and utilises the lifelong learning framework of GLR – which is based on a coalition of partners – to improve the education and living standards of its residents. In this context, the broader role of education and lifelong learning within the GLR is to understand, adapt to and shape change. Like the South African framework for LED, the GLR is a multi-stakeholder-driven process with an outcomes-based approach.

Sophisticated concepts underpin the GLR, including innovation and collective creativity, lifelong learning, personalised learning, learning communities, inclusive leadership, social capital, social harmony, social infrastructure, social justice, ecological community development and sustainable rural development (Mitchell 2006).

It is the practical actions, strategies and policies, as well as the leadership of Gwydir Shire Council and its partners, that keep innovative and inclusive LED happening. For example, individuals are encouraged to value learning in all its forms and to continuously upgrade personal skills and competencies. As a learning organisation, the Gwydir Shire Council has led by example, ensuring that all its employees have the necessary level of skills and training necessary to undertake their work. As an 'optimalist', this small regional council takes on this leadership role to harness public, private and other community resources to their best advantage.

The Living Classroom and the circular economy are practical illustrations of re-inventing and re-invigorating land and thinking. These initiatives provide learning opportunities for schools, universities and the local community. They also contribute practical solutions for developing and establishing healthy and green communities, which are urgently needed in an age of climate change.

Chapter 6

# Local economic development and food and energy sustainability: City of Tshwane

**Matshepo Kanye**
Centre for Local Economic Development (CENLED), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa

**Elana Swanepoel**
Centre for Local Economic Development (CENLED)/PASCAL International Observatory (Africa), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa

## Abstract

In the wake of climate change and dwindling natural resources, the City of Tshwane has committed itself to a sustainable growth path. The city subscribes to the principles of sustainable development along with its components, namely, economy, society and environment. Since 2014, in support of the international SDGs and South Africa's NDP, the City of Tshwane has been making a concerted effort to mainstream sustainable principles in the

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municipal business operations, including the city's LED initiatives. Tshwane is divided into seven administrative and functional regions that have been created as part of a multidimensional approach to improve service delivery. In the city, Region 7 is one of the two regions with the highest unemployment rate (33.9%), as well as the largest part of the population (44.9%) living below the upper-bound poverty line. It has a Gini coefficient of 0.63 and thus a high level of inequality. Two projects are described and then compared: the Tshwane Food and Energy Centre and the Bronkhorstspruit Bio2Watt Biogas Project.

# Introduction

In the wake of climate change and dwindling natural resources, the City of Tshwane committed itself to a sustainable growth pathway – economically and environmentally – that is central to responding to climate change impacts.

One of the key roles of a municipality is to implement its legislated responsibility to promote LED. Section 153 of the Constitution states (Republic of South Africa 1996):

> A municipality must structure and manage its administration, budgeting and planning processes to give priority to the basic needs of the community and to promote the social and economic development of the community. (p.73)

Since 2014, in support of the international SDGs and South Africa's NDP, the City of Tshwane has been making a concerted effort to mainstream sustainable principles in municipal business operations, including the city's LED initiatives. The city subscribes to the principles of sustainable development and its three components, namely, economic, social and environmental sustainability (United Nations Environment Programme [UNEP] 2016; Harris 2000).

Firstly, the global and local polycrisis will be discussed, followed by a green economy to address sustainable development. The case of the City of Tshwane Metropolitan Municipality will be presented with regard to the sustainability crisis. The Bronkhorstspruit Biogas Project, which was started in 2015, and the Tshwane Food and Energy Centre will be discussed and compared.

## The global and local polycrisis

In the twenty-first century, poverty continues to plague humanity, cutting across different races, cultures, continents and countries. The 2018 Global Multidimensional Poverty Index[11] reveals that 1.34 billion people in

11. The Oxford Poverty & Human Development Initiative (OPHI) and the United Nations Development Programme (UNDP) developed this index in 2010. Replacing the previous Human Poverty Index (HPI), the Multidimensional Poverty Index (MPI) is an international measure of acute poverty covering over 100 developing countries. It complements traditional income-based poverty measures by going beyond and capturing severe education, health and living-standards deprivations faced simultaneously.

105 developing countries are affected by multiple layers of poverty (Oxford Poverty and Human Development Initiative [OPHI] 2018). They are deprived of at least one-third of possible deprivations in health, education and living standards, such as inadequate access to clean water, sanitation, nutrition and primary education (OPHI 2018). Globally, progress has been made in reducing poverty over the past decades, but the change has been slow.

In South Africa, poverty is on the rise and continues to threaten the country's social development agenda (Statistics South Africa 2017). Although there was a decrease in poverty between 2006 and 2011, the poverty headcount increased to 55.5% in 2015, from 53.2% in 2011, calculated using the upper-bound poverty line of R992 per person per month in 2015 prices (Statistics South Africa 2017). It implies that in 2015, 55.5% of South Africans were poor. Closely linked to poverty is the global inequality crisis (Berg 2015).

In recent years, income inequality has continued to increase globally. According to the World Inequality Report,[12] in 2016 the richest top 10% of Europe earned 37% of the region's national income, China's richest top 10% earned 41% of the Chinese national income, while sub-Sahara's richest top 10% earned 55% of the region's income (World Inequality Lab 2018). While the numbers paint a bleak picture of the world, South Africa's income distribution, measured by a Gini coefficient of 0.63 in 2015 (World Bank 2018), makes it one of the most unequal societies in the world.

In 2018, the global unemployment rate fell to 5.5% (International Labour Organization 2018), while in South Africa the number of unemployed was 6.1 million (Statistics South Africa 2018). The South African labour force is characterised by high levels of unemployment, low participation and many discouraged work-seekers and non-seekers (World Bank 2018). Despite past goals and targets to find solutions to the country's unemployment crisis, such as the government's plan to halve unemployment by 2014, the unemployment rate continues to rise.

Poverty, unemployment and inequality give rise to rapid urbanisation as people flock to cities in search of a better life. More than half of the world's population now lives in cities, and this number is projected to increase to 70% by 2050 (World Bank 2015). Cities have become the focal points for activities critical to a country's growth (i.e. trade and commerce, government and transport). While cities play a major role in the economy as centres of both production and consumption, this urban growth is overtaking their capacity to provide sufficient services for their populations. Cities operate on energy and require land – the burning of fossil fuels and land clearing combine to

12. The World Inequality Lab at the Paris School of Economics generates the World Inequality Report, which estimates global income and wealth inequality based on the most recent findings compiled by the World Wealth and Income Database.

contribute substantially to the concentration of greenhouse gases (GHGs) in the atmosphere.

Greenhouse gases from human activities are key drivers of observed climate change, which seriously impacts the world's water systems through floods and droughts. Rain patterns have become more extreme. Across the world, including South Africa, extreme weather patterns have become the order of the day. In addition, climate change contributes to the global burden of disease and premature deaths (Wolf & Menne 2007).

This polycrisis, both at a global and national level, and the growing awareness of an imminent ecological crisis necessitate sustainable development. According to the UN General Assembly (1987, p. 43), sustainable development is defined as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs'. Thus, sustainable development implies driving economic and social advancement while simultaneously protecting the long-term value of the environment.

The main principle of sustainable development is the integration of social, economic and environmental concerns into all aspects of decision-making (Emas 2015). A socially sustainable system is one that leaves no one behind and provides a life of dignity for all. According to the UN (2015), this feature of sustainable development advocates for distributional equity, adequate provision of social services (including health and education), gender equality, and political accountability and participation. In both developed and developing countries, the poor, vulnerable and marginalised should receive a minimum level of social and environmental protection and have a basic standard of living (UN 2015).

In an economically sustainable environment, economic growth should move away from increasing material and resource use, avoiding the environmental and social impacts of unsustainable consumption and production. This means achieving prosperity within the capacity of the earth's life support system (UN 2015). An environmentally sustainable system must maintain a stable resource base and avoid over-exploiting renewable resource systems.

## A green economy to address sustainable development

The world's economy has been resource intensive and has led to the deterioration of the environment and inequality among people. Traditional economic growth strategies do not value ecological goods and services, which are key ingredients of economic activity. On the other hand, a green economy aims to improve the efficient use of natural resources, improve

human well-being and reduce ecological scarcities and environmental risks (UNCTAD 2011).

The United Nations Environment Programme's (Fedrigo-Fazio & Ten Brink 2012) Green Economy Initiative defines a green economy as:

> [*O*]ne that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low in carbon, resource efficient and socially inclusive. (p. 3)

At the nucleus of the green economy concept (that by default includes elements of green growth) is the need to improve public and community living standards and conditions while combating energy insecurity, climate change and ecological instability. The German Federal Ministry of Economic Corporation and Development (2015) has highlighted the various benefits of a green economy transformation in sub-Saharan Africa.

## City of Tshwane metropolitan municipality: Sustainability crisis

The administrative capital city of South Africa, the City of Tshwane, is divided into seven administrative and functional regions that were created to assist with a multidimensional approach to improving service delivery. Home to 3.3 million people, spread across a 6 368 $km^2$ area, Tshwane is the largest city in Africa and the third-largest city in the world based on land size. With a GDP of R312bn in 2017, a contribution of 28.4% to the Gauteng province's GDP and 10% to the national GDP (IHS Markit Regional eXplorer 2017), the City of Tshwane is indeed an engine for economic growth in South Africa. While the city's economic performance continues to contribute to the national output, the economic gains do not necessarily translate into social and environmental well-being.

With a Gini coefficient of 0.62, the income inequality in Tshwane has serious implications for the sustainability of development in human and environmental terms (World Bank 2018). According to Pinto (2013), unequal regions – compared to more equal regions – tend to be less healthy, have a lower life expectancy and experience more crime and a range of other negative social outcomes that add to a sustainability crisis. Although the gap between the rich and the poor in Tshwane is slightly lower than the national Gini coefficient of 0.63, it remains a priority challenge for local government.

One of the factors contributing to the inequality gap is unemployment. In 2017, Tshwane's unemployment rate was 24.01%, up 4.16% from 2016's 22.5% (IHS Markit Regional eXplorer 2017). One of the serious implications of unemployment is that it robs the unemployed of the means to afford basic items of livelihood. According to Statistics South Africa (2018), 43.3% of the

City of Tshwane population lives below the upper poverty line.[13] Many live in informal dwellings, where they are exposed to environmental hazards (i.e. indoor air pollution, fires, floods and untreated waste) (Department of International Development 2001). Despite poor living conditions, many poor people flock to the city because of perceived potential opportunities in the urban labour market.

The City of Tshwane's ever-increasing population means greater consumption of natural resources, with a concomitant increase in waste products such as plastics, tins, glass and GHGs (Nkosi 2014). Tshwane's aged infrastructure creates challenges in securing and operating the landfill sites in a compliant manner, and this negatively impacts the environment (South African Cities Network 2014). Solid waste management is a challenge owing to the increasing generation of waste, the burden posed on the municipal budget as a result of the high costs associated with its management and the lack of understanding of waste management (City of Tshwane 2015a). Over and above the city's waste-diversion and minimisation efforts, new cells need to be established on the existing landfill sites to increase the capacity for residual waste.

Municipal wastewater – both domestic (sewage) and industrial wastewater – requires management by the city. In 2016, only 833,818 of 1,027,414 Tshwane households had access to flush toilets (IHS Markit Regional eXplorer 2017). While access to sanitation is improving, albeit at a slow pace, the municipality reports that its wastewater treatment plants are suffering from poor operation, servicing and maintenance (City of Tshwane 2013). This has a negative impact on the city's natural resource base, such as water resources and the provision of a range of other ecosystem goods and services.

As in most cities across the world, the energy sector in the City of Tshwane continues to contribute to the cumulative GHG emissions. In 2014, Tshwane compiled the Greenhouse Gas Emissions Inventory, said to be the first-ever annual inventory by a South African municipality, to measure the impact of its climate change mitigation and adaptation actions (City of Tshwane 2014). According to the 2016 inventory, the total GHG emissions recorded in the 2014/15 financial year – including carbon dioxide ($CO_2$), methane ($CH_4$) and nitrous oxide ($N_2O$) emissions within the energy, transport and waste sectors – equalled 16,624,981 $tCO_{2e}$ (City of Tshwane 2016). Comparing the 2016 inventory results to the base year results of 13,180,010 $tCO_{2e}$, the overall

13. The upper poverty line is defined by Statistics South Africa as the level of consumption at which individuals are able to purchase both sufficient food and non-food items without sacrificing one for the other. This percentage measures the share of the population living below that particular level of consumption for the given area and is balanced directly to the official upper poverty rate. According to Statistics South Africa, the monthly income required to meet each of the three defined poverty lines for June 2017 was R1 132.

emissions increased by 8.2%, with the largest contributor to this increase (40.9%) being residential energy consumption (City of Tshwane 2016).

The *South African National Environment Management Air Quality Act* (AQA) regulates emissions of air pollutants from listed sources, as well as ambient-air-quality criteria pollutants. In addition to enforcing the national standards, the City of Tshwane has drafted and monitors the enforcement of the municipal air quality management by-laws that provide for stricter local emission standards on specific emitters, as well as local emission standards on some emitters not covered by the AQA (City of Tshwane 2013). This is in an effort to minimise and discourage air pollution in the City of Tshwane.

The city's growing population and increasing consumption exert pressure on its already strained environment. This pressure together with the high unemployment rate and the challenges of poverty and inequality place the city in a polycrisis that could be solved through sustainable interventions.

## Addressing challenges through sustainable local economic development

In 1987, the Brundtland Commission, a sub-organisation of the UN, published its report 'Our Common Future' in an effort to link the issues of economic development and environmental stability (UN 1987). The report defines sustainable development as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (UN 1987, p. 43). The principle of protecting and conserving resources for future generations is the key element that distinguishes sustainable development from traditional economic development and growth models, which disregard externalities and environmental degradation.

At the sub-national level, development can be linked to the sustainable development discourse and principles through the LED paradigm. In 2003, the Department of Provincial and Local Government (2003) defined LED as a process to create advantageous conditions for economic growth and employment generation, involving a collective effort by the public, business and non-governmental sectors. It follows that the main purpose of LED is to improve the economic capacity of a local area, its economic future and quality of life for all.

The National Framework for LED (NFLED) 2017–2022 requires LED strategies to prioritise job creation and poverty alleviation (Department of Cooperative Governance 2017). To achieve this prioritisation, partnerships with different stakeholders, each being integrated with and benefitting the other, are important. The NFLED promotes using science, technology and innovation in LED planning and implementation (Department of Cooperative Governance 2017). Creating green job opportunities is one of the ways in

which LED could address challenges through science, technology and innovation.

Pollution and waste management have been highlighted as some of Tshwane's sustainability challenges. In response, the city is implementing a waste management strategy supported by the National Waste Management Strategy approved by the Cabinet in 2011 (Department of Environmental Affairs 2011). Tshwane's waste strategy emphasises moving away from landfilling and towards waste minimisation, reuse and recycling. Diverting waste from landfills and extracting useful constituents to feed back into the economy for further processing (i.e. recycling, composting and waste-to-energy) creates opportunities for employment and the development of local enterprises (Department of Environmental Affairs 2011). Such enterprises may relate to waste-diversion and beneficiation in activities such as composting or organic waste, energy production through technologies that enable the conversion of waste to energy or recovery of landfill gas, and the development of infrastructure such as integrated waste management facilities or material recovery facilities (City of Tshwane 2013).

Two projects, the Tshwane Food and Energy Centre and the Bronkhorstspruit Biogas Project, in Tshwane's Region 7 (Bronkhorstspruit) are examples of carefully conceptualised, constructed and implemented multi-stakeholder initiatives able to address all three pillars of sustainability (social, environmental and economic) and the eight key principles underlying LED.

## City of Tshwane: Region 7 projects

The City of Tshwane is divided into seven administrative and functional regions to assist with a multidimensional approach to improving service delivery. In the city, Region 7 is one of the top two regions in terms of the unemployment rate (33.9%), with the largest share of the population (44.8%) living below the upper-bound poverty line and a Gini coefficient of 0.63, indicating a very high level of inequality (IHS Markit Regional eXplorer 2017). This region covers an area of 1 473 km$^2$ and includes the areas of Bronkhorstspruit, Ekangala, Ekandustria, low-income residential and surrounding rural areas. The urban area of Bronkhorstspruit is developed, with modern infrastructure such as water, electricity, roads, communication networks and sanitation. The area contains some of the best farming land in the province of Gauteng but has a rather weak spatial structure characterised by heavy through-traffic, vast open spaces and small economic centres.

### Project 1: Tshwane Food and Energy Centre, Bronkhorstspruit

In 2015, as an effort to address the unemployment, poverty, inequality, food and energy security polycrisis in Region 7, the City of Tshwane's City

Sustainability Unit conceptualised and implemented – in partnership with Innovate Farming Systems (a private company) – a farming development and renewable energy production LED initiative called the Tshwane Food and Energy Centre (D Mafa 2021, pers. comm., 12 November).[14] The key objective of this centre was to enhance sustainable urban food and energy production through the development and support (i.e. market access and the establishment of strategic partnerships) of emerging farmers (City of Tshwane 2015b).

## The project business model: Successes and challenges

Before the buildings were constructed on the farm, the local community showed little interest in becoming involved with the project. Although the original plan was to involve the farmers in the construction process, this was not possible (D Mafa 2021, pers. comm., 12 November). On completion of the infrastructure on the farm, at a cost of R5m, attitudes changed. With the assistance of a local councillor, 25 displaced farming families were selected from the Rethabiseng township and provided with a plot of land on which to live and farm. Each farmer was allocated a homestead for living purposes (on a leasing agreement), a poultry shed/barn for their poultry farming (Figure 6.1), as well as a vegetable tunnel (Figure 6.2) for production. Rainwater harvesting tanks were installed and a commercial market hub was established in the centre. Called the Central Farm, the hub exists purely to service the farmers by bulk buying their produce and marketing it to retailers and visitors. The building also acts as a training and recreation centre and has some tourism spin-offs. Most importantly, it symbolises the integrated concept of living, working and production.

The photovoltaic solar panels (Figure 6.3) and the biogas plant (Figure 6.4) produce electricity for the development. The biogas is sourced from the 30 hectares of sorghum on the farm. The power generated from these two energy sources is sufficient to maintain the entire development, inclusive of dwellings, Central Farm, and operations.

The contractual agreement with the farmers states that each will be supported with skills development and training, capacity-building, inputs for farming (chicks to raise for six weeks, the chicken feed and seedlings for the vegetable gardens) and access to markets over three production cycles. The objective of the support during the first three production cycles was to capacitate the farmers with enough skills and experience to transition to the fourth and subsequent production cycles as independent entrepreneurs. The only condition was that each farmer must give the Central Farm 50% of the proceeds gained from the sales of the first two production cycles.

14. Ms Dolly Mafa is the director of sustainability finance mechanisms in the City of Tshwane's sustainability unit. She spearheaded the Tshwane Food and Energy Centre Project from conceptualisation to implementation.

*Source*: Photograph taken by an unknown photographer at the Tshwane Food and Energy Centre Project in Bronkhorstspruit, date unknown. Suitable permission to republish is provided by Helenus Kruger, Tshwane Municipality.

**FIGURE 6.1:** Chicken farm at the Tshwane Food and Energy Centre Project, Bronkhorstspruit.

These proceeds were to be used to buy the necessary production inputs for the subsequent cycles (City of Tshwane 2015b).

From a conceptual perspective, the initiative addressed six of the eight key principles underlying LED in South Africa (Department of Provincial and Local Government 2003), namely:

1. prioritising job creation and poverty alleviation
2. targeting previously disadvantaged people, marginalised communities and geographical regions
3. promoting local ownership, community involvement and local leadership
4. involving local, national and international partnerships between communities, business and government to solve problems, create joint business ventures and build local areas
5. using local resources and skills and maximising opportunities for development
6. integrating diverse economic initiatives in a comprehensive approach to local development.

*Source*: Photograph taken by an unknown photographer at the Tshwane Food and Energy Centre Project in Bronkhorstspruit, date unknown. Suitable permission to republish is provided by Helenus Kruger, Tshwane Municipality.

**FIGURE 6.2:** Vegetable garden tunnel at the Tshwane Food and Energy Centre Project, Bronkhorstspruit.

In addition, the initiative was conceptualised to address five of the 17 SDGs (UNDP 2015), namely:

1. ending extreme poverty in all forms
2. ending hunger, achieving food security and improving nutrition, and promoting sustainable agriculture
3. ensuring access to affordable, reliable, sustainable and modern energy for all
4. promoting sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
5. reducing inequality within and among countries.

## Status of the Tshwane Food and Energy Centre 2018–2021

The responsibility of the City Sustainability Unit was to demonstrate the feasibility of the project and hand it over to the relevant department to manage and monitor. After two years, the sustainability unit handed the Tshwane Food and Energy Centre over to the Tshwane Department of Agriculture.

*Source*: Photograph taken by an unknown photographer at the Tshwane Food and Energy Centre Project in Bronkhorstspruit, date unknown. Suitable permission to republish is provided by Helenus Kruger, Tshwane Municipality.

**FIGURE 6.3:** Photovoltaic panels at the Tshwane Food and Energy Centre Project, Bronkhorstspruit.

By 2018, the Tshwane Food and Energy Centre was on the brink of collapse. The initiative experienced multiple challenges and failures:

1. The 25 farmers did not keep their contractual agreement to supply the Central Farm with proceeds from the first two production cycles. As a result, they did not have production inputs for the subsequent production cycles. The chicken and vegetable production thus ceased operations.
2. The biogas digester is no longer in operation because the farm does not have a strategy to produce the input material waste needed to generate electricity. Without electricity, the electrical borehole pumps cannot pump water, resulting in limited access to water.
3. The installed solar panels were stolen. After the first production cycle, the municipality allowed the farm to connect to the Eskom grid for free electricity. Once the farm was connected to the Eskom grid, the farmers took advantage of the free electricity and a secondary 'underground' market of steel welding emerged. This resulted in an increasingly high electricity bill – a cost that was unbearable for the municipality to cover as it was not a budget item.

*Source:* Photograph taken by an unknown photographer at the Tshwane Food and Energy Centre Project in Bronkhorstspruit, date unknown. Suitable permission to republish is provided by Helenus Kruger, Tshwane Municipality.

**FIGURE 6.4:** Biogas digester at the Tshwane Food and Energy Centre Project, Bronkhorstspruit.

The Tshwane Food and Energy Centre still exists, and chicken and vegetable farming continues. However, the farmers are renting the land to other people – in some instances to foreigners – to undertake poultry and vegetable farming. The farmers themselves are involved with other activities. Instead of working collaboratively, now it is a case of 'everyone for themselves'.

## Solutions and recommendations

### *Proposed sustainable developments – from conceptualisation to implementation.*

'The challenge of our modern society is that most of our economy – from farming to industry, from banking to the internet – ignores nature, even works *against* nature' (Pauli 2017, p. 25)

Ecosystems function in self-sufficient ways, leaving no need for artificial interventions for the system to work efficiently. The interdependency of the

various components of an ecosystem is what ultimately defines the system's success. Pauli's statement aligns with the principle of systems dynamics and systems thinking. Maluleke (2014) defines systems thinking as a discipline of seeing wholes. It is the framework of seeing interrelations rather than things, for seeing patterns rather than snapshots. A systems-thinking approach suggests that a fully integrated view of a problem should be taken and that each component of the system should be understood in the context of the broader system. The following proposed changes to improve and save the Tshwane Food and Energy Centre are underpinned by the principle of systems thinking.

### ***Change the current business model***

Local economic development is 'concerned with local people working together to achieve sustainable economic growth that brings economic benefits and quality of life and improvements for all in the community' (World Bank 2003 cited in Kamara 2017, p. 7). The local community, with their driving forces and political agendas, should be researched prior to deciding on a specific area.

The current business model is based on a principle of 25 independent farmers contributing to the Central Farm to market their produce and to ensure replenishment of resources for subsequent cycles. It seems that the farmers did not buy into this concept. It is possible that if the project had been presented as a cooperative, there might have been better collaboration.

The Department of Trade and Industry (2004, p. 7) defines 'a co-operative as an autonomous association of persons united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise'. Cooperatives differ from other businesses. In a cooperative, the net income is returned to the users or patrons, while in other businesses the owners receive a return on the basis of investment (Cobia 1989). Cooperatives represent a shift of power from the owners of capital to workers as the owners of labour (Dyer 2009). According to Moloto (2012), cooperatives are formed mainly by members who bring various skills and strengths to the business. These members encourage interdependencies in running various aspects of the business operation and maximise the output of each business operation. However, if the cooperative members cannot contribute skills and strengths, the business runs the risk of failure and should not be considered an option.

It is recommended that for the Tshwane Food and Energy Centre to operate optimally, beneficiaries should be carefully selected to ensure that they have some experience in and a passion for farming. Next, they must be equipped with the critical skills to run various aspects of the farming operation to maximise the business output and profits. Skills training should include

planning for each production cycle: all aspects of chicken farming and greenhouse or tunnel farming of vegetables, waste-to-energy generation, financial planning and management, marketing and sales and general management. In particular, financial planning is critical, as the farmers need to learn to allocate some of the income to the input costs of the subsequent production cycle.

An experienced farm manager should be appointed for a five-year period to coach and mentor the farmers through the different stages of four farming cycles and to instil a sense of ownership and accountability. After four farming cycles, the farmers should be able to continue independently. Because of the skills interdependencies and the systematic, whole-view approach to running the farm, the initiative's success will depend on the strength of each variable in the system and the support it receives from other variables.

### ***Energy generation: The systems approach to safeguarding the environment***

The South African Department of Energy launched the Renewable Energy Independent Power Producer Procurement Programme. This programme was intended to support the uptake of renewable energy, help address the country's energy supply crisis and mitigate GHG emissions (Department of Energy 2014). In line with the national objectives to reduce GHG emissions and safeguard the environment, the Tshwane Food and Energy Centre initiative is the ideal platform to pioneer a waste-to-energy concept that can be replicated in future farming LED initiatives across the city.

The challenge with the current energy generation system at the centre is the reliance on sorghum, which has been planted on 30 hectares, as the only feedstock (input) into the biogas digester. The one input source possesses a risk in the supply of energy. Anything that derails the production of sorghum will negatively affect the energy generation and supply process. Jordaan (2018) explains that the success of biogas digesters relies largely on the sufficient use of waste as feedstocks. Most biogas digesters use organic food waste, agricultural crops or animal manure as feedstock. Against this backdrop, it is proposed that, going forward, the centre includes vegetable waste and chicken manure, both by-products in any farming operation, as feedstock for the biogas digester. The proposal is an effort to reduce the risk associated with the heavy reliance on one input stock and the probability of increasing the current energy supply.

An optimally operating biogas digester produces digestate. According to Torquati et al. (2014), digestate – the by-product of heat and methane production in a biogas plant – has physical and chemical characteristics comparable to manure compost. Digestate, whether in a liquid or solid form,

has a high-mineral nitrogen ($N_2$) content and other macro- and micro-elements that are needed for plant growth and that have the potential to be converted into fertiliser (Dillon & Fanning 2011). In a circular flow, it is proposed that the digestate produced at the centre be used as a valuable organic liquid fertiliser for farming activities.

The most important environmental benefit of agricultural biogas is the contribution it makes to reducing $CH_4$ emissions arising from the natural decay of organic matter and the overall decrease in $CO_2$ emissions that can be brought about by the use of alternative energy sources instead of conventional fossil fuels (Torquati et al. 2014). The proposed energy generation method supports Tshwane's commitment to the maintenance and provision of ecosystem goods and services.

## Project 2: The Bronkhorstspruit Biogas Project

The Bronkhorstspruit Biogas Project is an industrial-scale biogas waste-to-energy initiative operating in the City of Tshwane's Region 7, an extensively rural region with a low population density and high unemployment. In this case, sustainable LED addresses the challenge of job creation, poverty reduction, economic growth and environmental conservation through collaboration with multiple stakeholders (Table 6.1). The City of Tshwane partnered with Bio2Watt, the project developer that obtained the funding. While Beefcor Early Bird (Pty) Ltd provided the waste for conversion into energy, BMW committed to purchasing the energy produced by the project. Additional waste was purchased from the Bronkhorstspruit informal sector participants.

**TABLE 6.1:** Stakeholders in the Bronkhorstspruit Biogas (waste-to-energy) initiative.

| Stakeholder | Reason/interest in the initiative |
|---|---|
| City of Tshwane | The city has limited space at its landfill sites. The city is implementing a waste hierarchy, as set out in the national waste management strategy. Through this project, there is a reduction of waste to landfills and wastewater treatment plants, typical waste streams such as livestock manure, abattoir waste, food sludge, fat trap, beverages, and food waste. |
| Project developer: Bio2Watt | Project developer and main funder (with funding assistance from development finance agencies). |
| BMW in Rosslyn, Pretoria – A motor-vehicle manufacturer | Client and power purchaser. BMW International was rolling out plans to have all BMW plants across the world receiving 25% to 30% of their energy requirement from renewable sources by the year 2020. |
| Beefcor Early Bird (Pty) Ltd – A local fruit and vegetable market | Sustainable disposal of cattle and chicken manure. The feedlot provides the project with key fuel supplies, grid access and water from the Beefcor stormwater collection dams. |
| Bronkhorstspruit informal sector participants (local job seekers) | These participants collect and sort vegetable and fruit market waste from nearby markets, homes and restaurants and sell it to the plant. |

*Source*: Created by authors from City of Tshwane Metropolitan Municipality (n.d.), Project: Bronkhorstspruit Biogas and from Bio2Watt (2015).

## Links to social, environmental and economic sustainability

Social sustainability is the capacity of a social system to operate indefinitely at a specific level of social well-being and harmony (United Nations Environment Programme 2016). Job opportunities are created by the Bronkhorstspruit Biogas plant for both skilled workers (for operating the plant) and semi-skilled to unskilled workers in waste sorting. In line with Pauli's (ZERI 2018) philosophy of zero emissions, where waste is converted to revenues, waste heat from the energy plant's operations becomes available for further activities such as cooling or greenhouse farming – an opportunity for further job creation. When the unemployment issues are addressed in a community, a decrease in poverty becomes the trickle-down effect.

Environmental sustainability is the environmental capacity to indefinitely support a determined level of environmental quality and natural resource extraction rates (United Nations Environment Programme 2016). It is estimated that the Bronkhorstspruit Biogas Project – using cattle and chicken manure – will capture 100,000 tonnes of $CO_2$ through the safe disposal of dangerous waste streams. This could contribute to the avoidance of outbreaks such as avian influenza, salmonella, listeriosis and other pathogens. Cattle manure is known to pollute rivers and water supplies during the rainy season, and manure collection for biogas production will alleviate this environmental problem. In addition, because cattle manure has traditionally been used as a source of biomass for heating and cooking, it can also be used to produce electricity. Thus, the Bronkhorstspruit Biogas Project waste-to-energy project addresses clean and secure energy needs while resolving waste issues (City Energy 2018).

Economic sustainability is an economy's capacity to indefinitely support a determined level of economic production (United Nations Environment Programme 2016). The Bronkhorstspruit Biogas plant produces a soil enhancer that can be made available to local farming communities. The agriculture sector is the biggest contributor to Region 7's output and to the City of Tshwane's GDP. Region 7 in Tshwane has some of the best farming lands in Gauteng province (City of Tshwane 2015b).

## Underlying key local economic development principles

The Bronkhorstspruit Biogas Project responds to key principles underlying LED (Department of Cooperative Governance 2017):

1. Poverty and unemployment are the main challenges facing South Africa. Local economic development strategies must prioritise job creation and poverty alleviation. One of the main reasons for building the plant in Bronkhorstspruit is the high unemployment and poverty in the area.

2. Local economic development must target previously disadvantaged people, marginalised communities and geographical regions, black economic empowerment enterprises and small-, medium- and micro-enterprises to allow them to participate fully in the economic life of the country. The Bronkhorstspruit area is geographically a long distance away from the main economic hubs of the City of Tshwane. The project creates opportunities in a marginalised community and job opportunities for disadvantaged people. It supports black economic empowerment, as the owner and founder of Bio2Watt is a black pioneer in Africa's energy sector.
3. There is no single approach to LED. Each locality may develop an approach that is best suited to its local context. Given the socio-economic profile and primary economic activities (farming) of the region, a waste-to-energy project heavily reliant on farming waste is best placed in this region.
4. Local economic development promotes local ownership, community involvement, local leadership and joint decision-making. The local skills (people) are the primary employees and entrepreneurs (formal and informal) working at and supplying the plant with the input needed for energy generation.
5. Local economic development involves local, national and international partnerships between communities, businesses and government to solve problems, create joint business ventures and build local areas. The key stakeholders in the project are true representatives of a public-private joint venture. The South African project developers, Bio2Watt and the local Beefcor Early Bird company, as well as the international motor manufacturer BMW, have all partnered in the project.
6. Local economic development uses local resources and skills and maximises opportunities for development. The local community supplies the biogas plant with the necessary resources needed for energy generation.
7. Local economic development involves the integration of diverse economic initiatives in an all-inclusive approach to local development. Multiple sectors are involved in the Bronkhorstspruit Biogas Project. The key input suppliers (a beef farm, a chicken farm and the local fruit and vegetable market) are from the farming and agricultural sector. The output forms part of the energy sector, while the transport needed to deliver the inputs is part of the logistics sector. The informal waste picking sector plays a role in the energy generation process.
8. Local economic development relies on flexible approaches to respond to changing circumstances at local, national and international levels. The Bronkhorstspruit Biogas Project is partly in response to the international problem of excess GHGs in the atmosphere. It is in line with Pauli's (ZERI 2018) philosophy of zero emissions, where waste is converted to revenue (in this case, energy for the BMW plant).

# Conclusion

In comparing the two projects, both located in Bronkhorstspruit, the Bio2Watt Biogas Project seems to be more successful than the Tshwane Food and Energy Centre. The former has been in operation since about 2013 and is still continuing. Several factors contribute to this difference:

1. **Prior testing:** The Bio2Watt project achieved success during a testing phase (conducted in Bloemfontein) before it was implemented in Bronkhorstspruit. The Tshwane Food and Energy Centre was a new initiative that went 'live' before being tested.
2. **Buy-in from beneficiaries:** The Bio2Watt project carefully selected its collaboration partners to ensure the project's sustainability. The Tshwane Food and Energy Centre farmers are renting their farms instead of doing the farming themselves. This could be evidence that they did not buy into the project from its inception.
3. **The political environment:** The Bio2Watt project was managed and monitored by a private company with commercial interests, independent of local political changes. The Tshwane Food and Energy Centre was handed over to the Tshwane Department of Environment and Agriculture's Division for Agriculture and Rural Development. At the time of the handover, the department was going through political changes and was unable to give the project the attention it required.
4. **Involvement of multiple stakeholders:** The Bio2Watt project, from its inception, involved all possible stakeholders and ensured they all benefited from the project. It seems that the Tshwane Food and Energy Centre did not adequately involve all the stakeholders – such as the local community, the Department of Agriculture and other potential interest groups – when it was conceived.
5. **Management continuity:** The Bio2Watt project has management continuity to ensure the success of the project. The Tshwane Food and Energy Centre did not have a farm manager – who would have provided mentoring and guidance to the farmers.

For the City of Tshwane to continue with sustainable LED, it would be necessary to collaborate with all relevant stakeholders before investing in a project. Furthermore, a committed person or company would have to be appointed to ensure the project's sustainability.

Chapter 7

# Local economic development and infrastructure: Zero wastewater, save ocean life, save the environment and save the people

**Elana Swanepoel**
Centre for Local Economic Development (CENLED)/PASCAL International Observatory (Africa), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa

**Seutame O. Maimele**
Centre for Local Economic Development (CENLED), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa

## Abstract

Several issues related to wastewater management in the Cape Town Metropolitan Municipality need to be addressed. These range from human health, water scarcity, the environment and ecosystems to the economy and

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climate change. However, the City of Cape Town's water, science, technology and economics action plan focuses on only three needs: (1) water pollution, (2) rapid urbanisation and (3) water scarcity, as these are critical economic issues and are fundamental to LED. For the WaSTE action plan to generate a long-term sustainable solution to the Black River wastewater crisis, partnerships should be formed with the surrounding research and development (R&D) institutions. These would include colleges such as Northlink and Damelin, University of Cape Town, University of the Western Cape and Cape Peninsula University of Technology, the communities, the Western Cape Government and the City of Cape Town – along with water and environmental activists. Solutions need to be found to minimise waste, save ocean life and protect the environment and people while concurrently creating inclusive employment opportunities for the residents of Cape Town.

## Introduction

Drought has increasingly been posing a major risk to global and national economic and climatic outlooks. Following severe droughts in recent years in the Cape Town Metropolitan Municipality, it is understandable that sectors such as agro-processing are sceptical about the long-term water supply, despite the region's current positive outlook for rainfall. Fitch Solutions (2020) reports that, amid climate change dynamics and a high drought risk outlook for Cape Town, water mismanagement by the South African water authorities and municipalities remains a key concern for a sustainable water supply in metropolitan areas.

The economic lag effects of three consecutive years (2014, 2015 and 2016) of protracted drought were still evident two to three years later in the City of Cape Town (CoCT). The severe economic effect of the drought only started becoming evident in 2018. It affected the regional economic performance in agriculture and the national and international economic outlook. Many sectors were affected, including services industries and tourism in particular, as Cape Town is a top tourist destination. Tourism bookings were cancelled or changed as visitors were under the impression of continuous drought and the concomitant lack of access to water (Western Cape Government 2019a).

It was expected that the CoCT's economy would recover by 2019, but the economic outlook remained bleak (Western Cape Government 2019b). By 2020, the water supply had improved, and the city reported in August 2020 that dam storage was at more than 80% capacity, enabling the supply of 629 million L per day from all sources (City of Cape Town Water Dashboard 2020).

The CoCT's (2019a) water strategy addresses the need for a water-sustainable city. In a quest for water sustainability, the city plans to develop

new and diverse supplies of water, including ground-, reused- and desalinated water. It will do this cost-effectively and timeously to increase sustainability and resilience.

Moreover, the CoCT aligned its need for water sustainability with cost-effectiveness, which includes an investment plan, revenue and tariff models and an efficient cash collection system (City of Cape Town 2019a). This pursuit of water resilience might come at a high cost to residents who would have to pay expensive water tariffs. In a 2020 article, Bottomley (2020) reiterated that although Cape Town dams were full, 'drought' water tariffs would not be lifted – on average, Cape Town residents paid 20% more for water than residents in the City of Johannesburg at the time.

In the CoCT, expensive water tariffs are not sustainable. However, both the green economy and blue economy present opportunities. According to Pauli and Kamp (2018), the blue economy emerges with the optimisation of the performance of current resources and infrastructure to harness waste as raw material and stranded assets as infrastructure for creating new products. Pauli and Kamp (2018) infer that the green economy is expensive and unsustainable, while the blue economy is cheaper and more sustainable as it exploits existing resources.

The CoCT (2018b) defines the green economy as an economy that moves away from releasing carbon dioxide and other GHGs, components of the atmosphere that contribute to moderating the earth's temperature by retaining heat. An excess amount of GHGs in the atmosphere contributes to the greenhouse effect and consequently climate change, resulting in either severe droughts or floods.

To cope with possible future droughts, the CoCT (2018b) has identified wastewater as a potentially sustainable solution to the water crises – this is in line with the blue economy concept. The CoCT defines wastewater as any water that enters the sewerage system and passes to a wastewater treatment plant to be processed. Such wastewater includes water from bathing, showering, washing clothes and dishes, flushing toilets and industrial and commercial effluents. Moreover, the city has noted that wastewater has not been used to solve the water crises, although it has been identified as an opportunity. In most cases, the majority of the treated effluents are released into rivers, canals, marshlands (*vleie* in Afrikaans) or the ocean, which damages ocean life and the environment.

The CoCT (2018b) reports that the treatment and reuse of wastewater are recognised as a vital component in adapting to Cape Town's limited water supply to cope with drought, rapid urbanisation and population growth. In 2019, the CoCT's 4 million residences generated 500,000,000 L of wastewater per day, most of which got dumped into the oceans (CoCT 2019a).

Several authors (Charles 2020; CoCT 2019a, 2019b; Kretzmann 2020a) note that Cape Town's popular beaches are among the 31 identified polluted sites. Petrik (2019) confirms that the CoCT discharges a substantial volume of untreated or partially treated sewage effluent into the ocean via outlets located around the Cape Peninsula. Such sewage effluent contains a high level of contaminants, including chemicals, pesticides, perfumes and disinfectants, which are difficult to measure accurately (Petrik 2019). This adds up to 80% of the water deposited into rivers and oceans (Petrik 2019).

# Sustainability crisis in the City of Cape Town

## Poverty, inequality and unemployment

In 2019, across Cape Town's metropolitan area, 2.02 million people were living in poverty (using the upper poverty line definition) – this is 34.83% higher than the 1.5 million in 2009 (IHS Markit Regional eXplorer 2020). The percentage of people living in poverty has increased from 42.99% in 2009 to 45.91% in 2019. The poverty rate gap within Cape Town's Metropolitan Municipality has increased from 28.7% in 2011 to 29.7% in 2019 (IHS Markit Regional eXplorer 2020).

With regard to inequality in Cape Town's Metropolitan Municipality – in 2019, the Gini coefficient was 0.621, which reflects an increase in inequality over ten years from 2009 to 2019 (IHS Markit Regional eXplorer 2020). The Western Cape province and South Africa had a Gini coefficient of 0.618 and 0.63, respectively (IHS Markit Regional eXplorer 2020).

In 2019, the unemployment rate in Cape Town's Metropolitan Municipality (based on the official definition of unemployment) was 25.13%, which is an increase of 2.76% since 2009. This translates into a total number of 528,000 people unemployed in the region, which is an increase of 158,000 from 370,000 in 2009 (IHS Markit Regional eXplorer 2020). The Cape Town Metropolitan Municipality experienced an average annual increase of 3.62% in the number of unemployed people (Western Cape Government 2019c).

## Resource constraints

The energy crisis in South Africa affects every municipality and residence. According to the Western Cape Government (2018) report, the CoCT's energy sector contributes nearly R615m to the GDP of the region, which generates 169,880,891 gigajoules of energy per year (with a concomitant 21,927,790 tonnes carbon dioxide equivalent [$CO_2e$] per year). Moreover, the CoCT reported (City of Cape Town Water Dashboard 2020) that the Western Cape water supply system was at a storage capacity of 80.4%, with an average water consumption rate of 643 million L per day. In 2015, the CoCT generated

3,713,693 tonnes of waste and expects this to increase by 1,875,608 tonnes – a R3.1bn GDP per region contribution – owing to the expansion of the population (Green Cape 2019).

Cape Town is rich in biodiversity and natural ecosystems which attract international travellers. The metro has over 17 101 hectares of land biodiversity and over 307 km of coastline (CoCT 2017). In addition, the city produces and exports A-grade food to international markets and also supplies domestic markets. In 2020, the agriculture sector contributed R6.6bn in regional GDP, R3bn in imports, R21bn in exports, contributing to R18bn in net exports (Quantec 2020).

The infrastructure in the CoCT does not seem to support its economic growth (CoCT 2018a). It is characterised by a poor rail infrastructure – as a result of stolen railway tracks – fatal train crashes, burning of coaches on the central line, traffic congestion causing lengthy delays in commuter transport to work and increased costs to business for both informal and formal economies, which impact productivity in the city (Washinyira 2020).

## Growing population

The CoCT's population is projected to grow at an average annual rate of 1.74% from 4.39 million in 2019 to 4.79 million in 2024 (ReX Publisher 2020). An increase in population will contribute to an increase in waste. If the CoCT does not find a sustainable solution, it will be constrained in terms of infrastructure and the environment, and its ranking among the greenest cities in Africa will be threatened (Sulaiman 2014).

Increased urbanisation, population growth and expanding industrial capacity have resulted in a greater demand for water supply in metropolitan areas, while most of the water goes to waste (Rodriguez et al. 2020).

# Sustainable local economic development to address challenges

An integrated, inclusive and sustainable local economy is essential for all development in all economies in the world. According to the updated NFLED 2018–2028, LED is defined as (Department of Cooperative Governance 2018):

> An adaptive and responsive process by which government, public sector entities, citizens, business and non-governmental sector partners work collectively to create better conditions for innovation-driven inclusive economic development that is characterised by knowledge transfer and competence building; employment generation; capacity development; investment attraction and retention; image enhancement and revenue generation in a local area to improve its economic future and the quality of life for all. (p. 14)

The NFLED offers clear guidelines for sustainable solutions to solve key issues in municipalities, including how LED can provide wastewater management for developing localities (Rodriguez et al. 2020) and can support the transformation of local resources, utilising both tangible and intangible resources. The wastewater sector can potentially contribute close to R3bn to the CoCT's GDP and create sustainable jobs for many among the unskilled population while saving the environment and ocean life (Green Cape 2020). It could increase the municipal revenue and contribute to the city's economy, creating a more sustainable and caring city while maintaining its level of being the greenest and bluest economy in Africa.

According to the NFLED (Department of Cooperative Governance 2018), using science, technology and innovation is critical to driving productivity, economic growth and prosperity, and is fundamental to achieving sustainable development. It is, therefore, necessary that science, technology and innovation are incorporated into LED. This will ensure improved efficiency in all economic, societal and environmental aspects towards the development of new and more sustainable ways to satisfy human needs and empower people to drive the future. Through Cape Town's water, science, technology and economics initiative (shortened to WaSTE), a sustainable local economy can be achieved by focusing on zero wastewater, saving ocean life, the environment and residents.

# Wastewater pollution in Cape Town

## Water pollution: River, canals and ocean

The oceans around the coast of Cape Town have been polluted for over 30 years, while the city continues to underspend its budget (Chothia 2019). This threatens marine life and the ecosystem, and it exerts enormous pressure on the health risk of people living in the area. Moreover, the CoCT pumps an average of 36.5 ML of untreated raw sewage into the ocean daily (Chothia 2019). The wastewater sector is estimated to contribute close to R3bn to the GDP, projected to double to R6bn in the next 10 years owing to increasing rates of urbanisation (Green Cape 2020). Polluted water does not only threaten marine life, but effluents are also deposited in rivers that flow to the dams which provide drinkable water to the Cape Town Metro Municipality. According to Kretzmann (2019), the CoCT had not spent its budget on wastewater management in 2017 and 2018, even while some of the popular rivers and canals were open streams of sewage. Among the worst-polluted at the time were the Steenberg Canal and the Black River, which flows past Observatory and northwards along the M5, entering the sea at Paarden Eiland. Moreover, on average, there were 400 sewage spills in the municipal area (Kretzmann 2019).

In the 2018/19 financial year, the CoCT's water and sanitation department spent a minimum of 55% of its capital expenditure, while every month, the metro had between 7 000 to 8 000 spills of sewage that contributed greatly to the pollution of the canals and rivers in the municipality (Kretzmann 2019).

## Rapid urbanisation: Social inequality and sanitation

According to a report by PriceWaterhouseCooper (PwC) (2020), Cape Town is regarded as the continent's city of opportunity. The report highlights that the Cape Town metro's population has increased by 750,000 or 15% from 2010 (PwC 2020). The metro is expected to have a large influx of people, which brings an influx of human problems. At the same time, the city is experiencing a wide set of global megatrends. The report also identifies these megatrends as (PWC 2020):

> [*T*]echnological breakthroughs and social changes that transform the nature of work and the role of government, global economic shifts that require cities to redefine themselves to compete internationally, and climate change and resource scarcity that threaten lives and livelihoods. (p. 3)

## Water scarcity: Drought

In 2018, the World Economic Forum (Edmond 2019) reported that the CoCT had almost 90 days to close its taps (day 0) owing to the 2015–2018 drought that struck the Western Cape province. During the day-zero campaign to save water, the metro's residences were allocated a maximum of 50 L of water per day per person. Subsequently, the metro had heavy rainfalls and the hope for a better future and water efficiency returned. However, the demand for water continues to rise as the population increases owing to opportunities available in the area. In South Africa, the demand for water is set to reach 17.7 billion $m^3$ by 2030 – up from 13.4 billion $m^3$ in 2016 – outstripping the country's capacity (Edmond 2019).

## The context and challenges of addressing wastewater

### Water pollution: River, canals and ocean

Pollution of rivers and canals that flow into the oceans is destroying the environment and marine life. In the Cape Town metro, campaigns advocating for the protection of the oceans are launched by environmental agencies and organisations, such as Help Up, #SeaTheBiggerPicture, Oceano Reddentes, Sentinel Ocean Alliance and parley.tv (Ishmail 2020). However, the best possible sustainable solution for preventing the destruction of marine life

through wastewater and plastics is not yet articulated (Kretzmann 2020a, 2020b). Although environmental organisations are trying to clean up, their efforts are not sustainable as plastic disposal increases with population growth. Therefore, it would be necessary to find a scientificaly sustainable solution to the wastewater crisis in the metro.

### ☐ The Black River and its location

The Black River originates in Observatory and connects the metro's affluent southern suburbs with the more underprivileged Cape Flats, where it joins the Salt River to flow into Cape Town's iconic Table Bay (McTaggart 2020). Observatory is bordered by Mowbray to the south and Salt River to the northwest. Both the University of Cape Town and Groote Schuur Hospital are situated in Observatory.

### ☐ Resistance from the community

The Western Cape Government and the CoCT have already approved a budget of R4bn for the Black River project to address the gentrification in the metropole (the most populated region, close to Cape Town's Central Business District) and its surrounds (Kretzmann 2020a, 2020b). The introduction of something new, which is not seen as a priority, could complicate the initiative.

The CoCT has to contend with several major problems impacting communities, such as high crime rates, lack of service delivery in some parts of the Cape Flats, and high water and electricity tariffs. The communities directly affected by these issues would prefer they be prioritised rather than water pollution, which is not considered a pressing problem.

#### ☐ *Local government elections resulting in a change of leaderships*

Every five years, with local elections, the local government leadership changes and with this change essential projects are deprioritised to the detriment of the communities and the environment. Wastewater management requires a long-term initiative to ensure sustainability and cannot be shelved after its implementation owing to the opinions and priorities of a new leadership team.

## ■ Proposed solution: Waste action plan

Several issues related to wastewater in the Cape Town Metropolitan Municipality need to be addressed, such as human health, water scarcity, the environment and ecosystem, the economy and climate change. However, this WaSTE action plan will only focus on three issues: (1) water pollution, (2) rapid urbanisation and (3) water scarcity. These would contribute greatly to the economic benefits of the CoCT, which is fundamental to LED.

The WaSTE action plan should start by finding a long-term sustainable solution to the Black River wastewater crisis. To accomplish this, the CoCT should partner with the surrounding R&D institutions, such as Northlink College, Damelin College, the University of Cape Town, University of the Western Cape, Cape Peninsula University of Technology, the Western Cape Government, as well as environmental agencies and the communities. The CoCT should engage in conversation with water and environmental activists to find solutions that will minimise waste, save ocean life, save the environment and save the people while concurrently creating employment for the residents of Cape Town.

## Direct and indirect beneficiaries of the Black River wastewater project

### Research and development institutions

Research and development institutions can scientifically contribute to the WaSTE action plan by finding a solution that includes a scientific approach to utilise the most appropriate technologies and ensure an economic contribution. Researchers from the various institutions in Cape Town – such as the University of the Western Cape, University of Cape Town, Cape Peninsula University of Technology, Northlink College and Damelin College – could participate in the project to find sustainable scientific and economic solutions while exposing their postgraduate students to solving real-life challenges. With this practical experience, students would be more employable and the universities would increase their research outputs.

### Communities

Communities will benefit both indirectly and directly from the WaSTE action plan during and after implementation through a cleaner and healthier environment and employment opportunities. Depending on the number of jobs that can be created, it may contribute to a reduction in unemployment and indirectly reduce crime in the Cape Flats. The Black River wastewater project could contribute to a more pristine environment in Salt River and the southern suburbs, which are part of the CoCT's tourism hub. Creating such a pristine environment could benefit tourism by attracting more tourists, which in turn would contribute to job creation.

### Change agents

Water and environmental activists have made a concerted effort to clean up the Black River as a temporary solution to the pollution problem (Ishmail 2020). As wastewater is a community problem, the WaSTE action plan needs

to involve the change agents as representatives of the communities. Through their endeavours to save the environment, these change agents have gained valuable practical experience that could benefit the action plan.

### Government

In the NFLED (Department of Cooperative Governance 2018), it is the mandate of all municipalities, including the Cape Town Metropolitan Municipality, to create and sustain an enabling environment for job creation. The CoCT and the Western Cape Government should be the central players in driving this WaSTE action plan. They are the voices to advocate for regulations and accelerate project delivery.

### Private sector

The private sector will benefit indirectly by upgrading the area following the WaSTE action plan. In addition, the corporate sector allocates part of its profits to corporate social investment, which could contribute to the initiative from these funds. They would be seen to be socially responsible.

## A circular regenerative model

A circular economy is an 'industrial system/model that is restorative or regenerative by intention and design. It is an economic system/model aimed at minimising waste and making the most of resources' (Rodríguez-Antón et al. 2019, p. 13). This model allows the economy to replace the end-of-life concept with restoration, shift toward the use of renewable energy, eliminate the use of toxic chemicals that cannot be reused and are returned to the biosphere and aim for the elimination of waste through the superior design of materials, products, systems and business models (Rodriguez et al. 2019). Moreover, this model is based on three main principles: (1) design out waste and pollution, (2) keep products and materials in use and (3) regenerate natural systems. Driesenaar (2020) adds that a circular business model 'connects the end to the beginning' – the main intent of the circular model is to convert waste into a resource again. This includes recycling materials, repairing parts or reusing whole products.

A regenerative business model can also be a circular business model (Driesenaar 2020) – by using the waste of one product as a resource for another commercial product while giving back to nature. For example, if the waste from production processes can be food for the soil, nature's natural abundance is unleashed. This process aligns the economy and ecology, and it requires a different mindset. This WaSTE action plan should apply the circular regenerative model – as it extends beyond recycling and wastewater

management – because it fits perfectly in this model as it impacts the ecology and the environment. To develop this, the action plan would require scientific research from different perspectives to address all possible variables and to deliver a commercially viable and sustainable wastewater management service.

The WaSTE action plan seeks to develop a scientific research base from all spheres of interaction in the CoCT, to form the base for transforming the Black River water initiative and finding the best sustainable solutions for using wastewater to avoid impacting marine life and the surrounding environment. In collaboration with water, technological, scientific and economic agents of change, this initiative seeks to be sustainable.

## Estimated total financial resources needed for implementation

The Black River water initiative will need an estimated R64m over five years, starting in 2020, if all the relevant R&D institutions are incorporated to find a solution (Table 7.1). These estimates are based on the Western Cape Government's economic R&D budget in the 2018/19 annual report (Western Cape Government 2018, p. 213); R8m was budgeted, and R6m was spent. In Table 7.1, for 2020, an estimate of R5.9m is allocated for R&D funding, plus R5m for marketing (based on the Western Cape Government spending of R4.9m on advertising).

## Human resource needs for the Black River water initiative

For the Black River water initiative, a total of 71 human resources may be needed to ensure that the initiative's first phase of R&D is completed successfully and a feasible WaSTE action plan is developed (Table 7.2).

**TABLE 7.1:** Research and development funding of the Black River water initiative.

| Initiatives requirement | 2020 | 2021 | 2022 | 2023 | 2024 | Total |
|---|---|---|---|---|---|---|
| | R'000 | R'000 | R'000 | R'000 | R'000 | R'000 |
| Research and development funding | 5 900 | 6 136 | 6 381 | 6 637 | 6 902 | 31956 |
| University of the Western Cape | 1 600 | 1 664 | 1 731 | 1 800 | 1 872 | 8 666 |
| Cape Peninsula University of Technology | 800 | 832 | 865 | 900 | 936 | 4 333 |
| University of Cape Town | 2 000 | 2 080 | 2 163 | 2 250 | 2 340 | 10833 |
| Public colleges, technical and vocational training institutions in Cape Town | 1 500 | 1 560 | 1 622 | 1 687 | 1 755 | 8 124 |
| Change agent funding | 1 000 | 1 040 | 1 082 | 1 125 | 1 170 | 5 416 |
| Marketing | 5 000 | 5 200 | 5 408 | 5 624 | 5 849 | 27082 |
| **Total budget** | **11900** | **12376** | **12871** | **13386** | **13921** | **64454** |

*Note*: Calculations and estimates by authors (Baseline figures in the first column [2020] are estimates based on actual 2018/2019 spending on research and development in the Western Cape Government Department of Economic Development and Tourism 2018/19 Annual report).

**TABLE 7.2:** Human resource requirement for Black River water initiative.

| Human capital requirement | Function/responsibility | Total number over the initiative period |
|---|---|---|
| University professors | Supervise students and do articles related to wastewater and sustainability | 10 |
| Master's students | Conduct research | 20 |
| PhD students | Conduct applicable research | 10 |
| Change agents | Market sustainability | 5 |
| Field researchers | Conduct field research | 20 |
| Project managers | Manage the entire project | 2 |
| Administrator | Administer the initiative | 4 |
| **Total** | | **71** |

*Source*: Estimates by authors.

Providing such a sustainable solution would require these institutions to collaborate and share expertise.

## Strengths, weaknesses, opportunities and threats

From the strengths, weaknesses, opportunities and threats analysis in Box 7.1, it follows that a critical number of weaknesses will have to be addressed by the R&D team while taking into consideration the real threats. Nevertheless, the outcome of contributing to water security justifies overcoming the challenges.

**BOX 7.1:** Strengths, weaknesses, opportunities and threats analysis for WaSTE action plan.

| Strengths | Weaknesses |
|---|---|
| • Water security<br>• Increasing water and sanitation tariffs<br>• Policies, regulations, and strategies<br>• Corporate social responsibility<br>• Water resource pollution<br>• Local availability of water-efficient technology<br>• Increasing water demand and decreasing surface water supply<br>• National and provincial water strategies<br>• Availability of technology<br>• Cost competitiveness | • Currently, the poor business case<br>• Public perception and health risks<br>• Access to information on best practices and locally validated technologies<br>• Access to capital<br>• Licensing and permitting<br>• Operational complexity<br>• Policies and regulations<br>• Public perception and health risks<br>• Financing (not all off-takers are bankable)<br>• Poor quality of source water (also a potential driver) |

*box continued on next page* →

**BOX 7.1 (cont.):** Strengths, weaknesses, opportunities and threats analysis for WaSTE action plan.

| Opportunities | Threats |
|---|---|
| • Leading in the wastewater management on the African continent<br>• Projects currently in development in South Africa amount to R5.8bn<br>• R2.6bn projects planned in Western Cape in the next ten years<br>• A total of R50bn worth of projects at wastewater treatment works larger than 1 million L per day in South Africa | • Local government and change of management<br>• Budget cuts and project priorities<br>• R4bn gentrification project<br>• Increasing populations<br>• Increasing industrial output, with no improvement in technological advancement |

*Source*: Compiled from Green Cape (2019), Green Cape (2020), IHS Markit Regional eXplorer (2020) and the authors' own analysis.

# Conclusion

The CoCT already has a green economy base that seeks to promote sustainability. This WaSTE action plan should be planned in combination with the green initiatives of the city to ensure sustainability. Moreover, waste has been identified as an area for creating a sustainable base for the CoCT. However, wastewater has not been explored deeply to find the best sustainable solution to the city's ever-growing wastewater crisis. Incorporating the R&D institutions to develop a feasible and sustainable WaSTE action plan from a scientific and commercial perspective will benefit the CoCT and the communities that it services.

Chapter 8

# Local economic development and an enabling environment: A business perspective

**Natanya Meyer**
DHET-NRF SARChI in Entrepreneurship Education,
Department of Business Management, College of Business and Economics,
University of Johannesburg,
Johannesburg, South Africa

**Daniel F. Meyer**
School of Public Management, Governance and Public Policy (SPMGP),
College of Business and Economics,
University of Johannesburg,
Johannesburg, South Africa

## Abstract

Local economic development theory has identified three role-players in an economic region: local businesses, communities and government. If any of these role-players do not work effectively, the total LED system and environment can be negatively affected. Over the last decade, local

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government in South Africa has gradually deteriorated regarding management and service delivery, which has led to a lack of an enabling environment. The research on which this chapter is based aims to assess – from a business perspective – the quality of the enabling environment in Midvaal and Emfuleni, two of the municipal areas in the Vaal Triangle region in South Africa. The research methodology followed a cross-sectional quantitative research design grounded in the positivist research paradigm. The research instrument consisted of a self-administered questionnaire using the validated enabling developmental environment scale (EDES). A total of 396 owners of small and medium enterprises made up the final sample. The survey results indicated that small and medium-sized business owners from Midvaal and Emfuleni rated the enabling environment as insufficient and lacking. Although all 12 factors scored below average, the most concerning areas were agricultural development, environmental and spatial development, partnership formation, infrastructure development, poverty alleviation and social development. Good governance via quality local government with policy certainty is required for LED in any region, which is currently lacking in parts of the study region.

# Introduction

Local economic development can be defined as a deliberate intervention by local government and other local role-players to encourage sustainable economic development in a local region (Leigh & Blakely 2016).

Bartik (2003) defines LED as an overall increase in the local economy's capacity to encourage improvement on various levels and increase the wealth of its residents. Shah and Shah (2006) note that local government is considered the main LED facilitator. Local economic development will not occur at the desired level without an enabling environment (Meyer, Meyer & Neethling 2016). Local businesses also have a prominent role in contributing to LED; however, they need an enabling environment to function at a contributing economic level (Meyer & Meyer 2016).

The local government has various mandates, and one that encapsulates a large portion of its overall role is to create an enabling environment for residents and local businesses operating in the area. Unfortunately, this has been a major challenge in several local municipal areas. The deterioration of most factors constituting an enabling environment has been observed over the past 20 years. With the introduction of the South African Constitution in 1996 (Republic of South Africa 1996), the local government was mandated to follow a 'developmental' role. Although this seems rather straightforward, the delivery of this mandate has proven challenging for various reasons. In recent years, there has been an upsurge in violent protests because of a lack of

service delivery, which directly links to a non-conducive environment. These protests created an exponential increase in the problem as they often involved damaging property and infrastructure directly linked to the provision of these services (Mashamaite 2014). Based on Section 152 of the Constitution, local communities have the right to socio-economic development. The Constitution specifically states that a municipality must structure and manage its administration, budgeting and planning processes to prioritise the community's basic needs and promote the social and economic development of the community (Republic of South Africa 1996, s. 152). Hence, although not justified, the reaction by unsatisfied community members is understandable. In the context of economic development planning, the White Paper on Local Government lists the objectives of local government as maximisation, integration and coordination of social and economic growth, the redistribution of resources, provision of basic services, simplifying regulations, supporting local procurement policies, providing marketing facilities, investment and training, and establishing links and partnerships with local role-players (Republic of South Africa 1998).

Lack of service delivery and an enabling environment affects not only local residents but businesses as well. These local businesses are often the backbone of LED and a large contributor to employment and development in a region. The local government is the level of government closest to local businesses. Thus, the lack of provision of an enabling environment for local businesses to survive and potentially grow creates frustration among small and medium enterprise (SME) owners. Some roles directly linking local government and businesses include providing leadership, policy direction, facilitating LED project implementation, supporting SMEs, formulating creative innovation and solutions for local challenges, maximising local resources and potential, and developing local skills (Muro & Katz 2011).

Considering the magnitude of socio-economic and structural economic problems faced by South Africans, LED pursues the optimal potential of an area by stimulating local economic systems. Huggins et al. (2014) state that local businesses are seen as some of the most valuable assets for any local economy, as they often create the foundation for economic development. Therefore, it should remain a priority for any region to retain and entice businesses. Hindson and Meyer-Stamer (2007) state that business environment advancement positively impacts LED. As mentioned, numerous socio-economic, political and macroeconomic challenges are hindering the growth of the South African economy (Bexter 2013). A potential solution to address these problems is increased business development. But this will only be possible if the government creates a significantly improved enabling environment for businesses to prosper (Meyer et al. 2016). According to the International Labour Organization (2014), an enabling environment should

reflect a framework that enables local businesses to start, expand and generate jobs. A local enabling environment is thus imperative to ensuring business growth and sustaining improved production efficiency through the direct assistance of local government and other relevant community stakeholders (Bocken et al. 2014). Considering the aforementioned, the purpose of this study is to assess the quality of the enabling environment in two municipal areas (Midvaal and Emfuleni) in the Vaal Triangle region from a business perspective.

## Literature review

As defined by Christy et al. (2009), an enabling developmental environment can be explained as a set of policies, organisations, support services and other considerations that jointly improve or create a general setting where businesses and related activities can start, develop and thrive. An enabling environment can significantly improve its competitiveness (Konig, Da Silva & Mhlanga 2013). The role of government is to remove barriers and obstacles hindering the development of a region. This can only be done through strong leadership, effective coordination and sufficient service delivery (The Presidency 2012a). Some additional areas that the government should assist in to ensure the development of local regions include, for example, skills training, infrastructure development, a safe environment and the creation of lucrative markets to attract new business and investment (Leigh & Blakely 2016). Local economic development initiatives should encourage local participation and cooperation of local stakeholders to determine economic and social welfare initiatives (National Resources Institute 2006). Local economic development can only succeed if an enabling environment that stimulates new economic growth opportunities exists in the local area. Meyer (2014) identified the following 12 key factors as the key areas leading to an enabling environment, and this section serves as a summary thereof. These factors are interlinked, and some may share homogeneous characteristics. The factors are listed in no particular order.

### Partnership formation

The collaboration between businesses, the community and government is instrumental in forming a partnership, thus ensuring the region's development (Meyer 2013). These three stakeholders create a network known as the 'service delivery triangle' of LED, where each plays a significant role. Furthermore, established partnerships assist in accelerated growth and the relaxation of regulations and deliver competitive advantage (Human, Lochner & Botha 2008; Koven & Lyons 2010; United Nations Industrial Development Organization 2008). The development of partnerships is founded on the premise that local

government provides an enabling environment that facilitates economic activity to advance the participation between private and public stakeholders (Srinivas 2015).

## Local government structures, capacity, policies and initiatives

It is the responsibility of the local government to ensure that policies and strategies are integrated and that institutions are able to operate successfully following good governance principles (Hindson & Meyer-Stamer 2007; Human et al. 2008; Leigh & Blakely 2016; Trousdale 2005). The relaxing of regulations and allocation of finances to provide training opportunities and capital promotion projects should be considered to enhance a business's ability to develop and accommodate the expansion of local businesses (Blakely & Bradshaw 2002; Hindson & Meyer-Stamer 2007; Trousdale 2005).

## Local leadership

Local leadership is enforced by stability in the political environment that comprises government bodies, political parties, businesses and the community (Blakely & Bradshaw 2002; Swinburn, Goga & Murphy 2006; Todaro & Smith 2011). The success of local leadership depends on direct policies and strategies, managerial and individual (interpersonal) skills, and the institutional position of local businesses and government (Rogerson 2009). Meyer (2014) states that an enabling environment is supported when local political parties develop and implement policies in collaboration with local government bodies.

## Poverty alleviation and social development initiatives

The purpose of economic development in a region also includes social progress, which is the elevation of the local community's living standard and long-term sustainability (National Treasury 2015). To escape poverty, individuals require satisfaction of their basic needs (shelter, food, education, health, water and social standing, to name a few) (Davis, Proctor & Marr 2004; Sachs 2005; The Presidency 2012a; Todaro & Smith 2011). If these simple needs and requirements are not satisfied, it creates a challenging poverty cycle to escape. According to Nel and Rogerson (2006) and Meyer (2013), local government plays a vital part in bringing relief to vulnerable individuals by the provision of projects and safety nets such as social grants and subsidies (Human et al. 2008; Koven & Lyons 2010; Netshitenzhe 2011) aimed at alleviating the pressure poorer community members face.

## Local economic development initiatives

A sector or region's development depends on the inclusivity of economic development, which results in employment opportunities and an improved living standard for the local community. Todaro and Smith (2011) state that economic development should surpass the growth in the local population to ensure an increase in income per capita. Investment should focus on labour-intensive sectors such as agriculture, tourism, retail, mining and manufacturing to create employment opportunities. To ensure that LED is achieved in a region, specific plans and policies should be formulated to (1) encourage business development (new start-ups and established businesses) (Human et al. 2008; Leigh & Blakely 2016; Meyer-Stamer 2003), (2) promote trade relations (United Nations Industrial Development Organization 2008) and (3) product marketing of comparative advantage (Blakely & Bradshaw 2002; Hindson & Meyer-Stamer 2007; Porter 1985) that will, in turn, aim investment to local communities.

## Environmental and spatial development actions

An orderly, unpolluted, quality physical environment where high environmental standards are accomplished encourages economic development in a region (Koven & Lyons 2010; Leigh & Blakely 2016; The Presidency 2012a). The concept of spatial planning should be considered when creating an enabling environment. It considers the connection between social, economic and environmental benefits grounded on strategic planning with a clear vision to guide LED's local economic planning (Rydin & Pennington 2000). This considers the spatial development framework, which includes a development corridor facilitating access to products and a clean physical environment, luring investment and ensuring development in local regions (Meyer 2014). Specifically, spatial planning considers using land to improve the rural-urban linkages via development corridors facilitating participation through the incorporation of institutions (Meyer 2013).

## Infrastructure development

Infrastructure facilitates economic activity, ensuring job creation and growth, whereas the lack thereof restricts development (Canadian International Development Agency 2009; Leigh & Blakely 2016). The investment in infrastructures such as sanitation, energy generation, transportation and buildings are necessary to create an enabling environment for a region to allow comparative advantage (Amis 2002; Department of Provincial and Local Government 2001; Konig et al. 2013; Rogerson 2009; Sachs 2005; Trousdale 2005). The Presidency (2012b) states that when faced with increased unemployment and poor economic growth, the government should intervene by increasing expenditure on labour-intensive infrastructure missions.

## Human resource development

The development of human resources comprises (1) the skills of the local labour force, which are essential to determine its ability to contribute to the development of the regional economy and (2) the adaptability of the labour force to manage changes in trade, technology and production (Human Resource Development South Africa 2014). If product marketing and entrepreneurial and managerial skills within the labour market are not up to standard, it could restrict development (Canadian International Development Agency 2009). To ensure the progress of human resources in a region, it is necessary to provide training opportunities, skills creation and formulation and implementation of proper labour regulations (Blakely & Bradshaw 2002; Davis et al. 2004; Department of Provincial and Local Government 2001; Porter 1985; Trousdale 2005).

## Entrepreneurship development

Encouraging entrepreneurship and the importance of skills development for future investment facilitates the progress of sectors and creates competition (United Nations Industrial Development Organization 2008). The provision of mentorship, monetary assistance for start-ups, training opportunities, and favourable policies and regulations will help the development of entrepreneurs. In addition, entrepreneurship contributes to a community by providing employment opportunities and business development (Meyer & Meyer 2020) and should be provided by the region's local government (Gnyawali & Fogel 1994; Meyer & Meyer 2019).

## Transport and access opportunities

Proper transportation networks link economic opportunity and markets, broadening the level of consumer services (Brown & Katz 2011). Ensuring a connection between resources leads to the progress of the local community (Sibisi 2009). Therefore, the development of a region is supported by improved transportation contributing to the general infrastructure and facilitating interaction between markets.

## Agricultural and rural development actions

The agriculture sector carries great significance, as in the case of some developing economies. It adds a significant contribution to the GDP (Dasgupta et al. 2007), helps assist in the increase in job creation leading to improved living standards (Canadian International Development Agency 2009; The Presidency 2012a) and reduces overall poverty (Aliber 2003). However, larger-scale farming requires financial support, infrastructure advancement and trading prospects (De Satge 2010).

## Safety and security

Law and order in a local community is vital, as criminality deters economic development and is a barrier to businesses, the community and the environment (Amis 2002; Carroll & Buchholtz 2014; Leigh & Blakely 2016; The Presidency 2012a). Todaro and Smith (2011) state that eradicating corruption would ensure increased public faith in local government and a subsequent increase in community prosperity. To reiterate the negative impact of crime on LED, Goulas and Zervoyianni (2012) studied the impact of criminality on development. They found that a decrease in the Human Development Index is linked to the prevalence of crime that decreased human capital in the region.

# Methodology

## The study region

The Vaal Triangle region, located in the southern part of Gauteng province and the northern part of the Free State Province, was selected as the study area. More specifically, the study comprised a comparative analysis of two local municipalities within the region. These are Midvaal and Emfuleni local municipal areas. These two municipal areas are often in the news headlines, and although they share a border, they are governed by the two leading political parties. Midvaal was considered one of the best-performing municipalities in the province (Midvaal Local Municipality 2018), and Emfuleni was one of the worst-performing municipalities (Evans 2021). Table 8.1 summarises some key statistics for the two local municipal areas.

**TABLE 8.1:** Key statistics for Midvaal and Emfuleni local municipalities.

| Indicator | Emfuleni local municipal area | Midvaal local municipal area |
|---|---|---|
| Area (km$^2$) | 1 275 km$^2$ | 2 310 km$^2$ |
| Towns and cities | Sebokeng, Vanderbijlpark, Vereeniging, Evaton, Sharpeville | Meyerton, De Deur, Walkerville, Vaal Marina, Eikenhof |
| Population | 721,663 | 95,301 |
| Households | 220,135 | 29,965 |
| Household size (average) | 3.30 | 3.20 |
| Population growth (per annum) | 0.92% | 3.94% |
| People per km$^2$ | 565 p/km$^2$ | 41 p/km$^2$ |
| Main economic sectors | Manufacturing and retail | Manufacturing and agriculture |
| GDP growth 2011 to 2016 | 0.9% | 2.4% |

*Source*: Sedibeng District Municipality 2016, *Spatial development framework 2015*, Sedibeng District Municipality, Vereeniging.
Key: GDP, gross domestic product.

## Research paradigm, approach and design

Considering the primary objective of this study, the philosophical foundation was grounded in the positivist paradigm as it predominantly made use of objectively obtained empirical data, which was interpreted through the relevant statistical analysis (Howlett, Ramesh & Perl 2009). Authors such as Burrell and Morgan (1997), Healy and Perry (2000) and Krauss (2015) state that research originating from this paradigm can be summarised numerically by describing or being predictive in nature, objective and independent of the researcher. Furthermore, the study followed a quantitative, cross-sectional descriptive design.

## Research instrument, sampling strategy and data collection

A structured questionnaire was administered to a single sample and was used as the primary research instrument to collect the data. The main variable pertaining to this study was the enabling environment (see Table 8A-1). It was measured using the Enabling Developmental Environment Scale (EDES) designed by Meyer (2014) and validated by Meyer and Keyser (2017). The EDES was utilised as the measurement tool to assess business owners' perceptions regarding the enabling environment in the study region. Additional demographic and descriptive questions, such as age and gender of the business owner, number of employees and legal form, were posed to participants. Because the precise number of small business owners in this region is uncertain (no existing sample frame), it was challenging to ascertain the sample size accurately. Hair et al. (2006) and Sekaran and Bougie (2019) mention that an acceptable sample size when using non-probability sampling methods is between 100 and 500. Furthermore, based on previous studies using similar participant groups and considering the type of statistical analysis used, the sample size was estimated to be sufficient at approximately 400 participants. After discarding all incomplete questionnaires, the final sample consisted of 396 SME business owners. The data were collected at the end of 2020 and the beginning of 2021 by a private company specialising in data collection – all ethical guidelines were adhered to during the data collection phase. Two non-probability sampling techniques were used. Purposive sampling was used on business owners operating an SME in the Vaal Triangle region. The area includes towns such as Meyerton, Sasolburg, Vereeniging, Vanderbijlpark, Sharpeville and Sebokeng. In addition, a convenience sampling technique was also used based on the access and availability of business owners in the specific region. For the purpose of this study, the

two municipal areas with the most responses (Midvaal, *n* = 129 and Emfuleni, *n* = 255) were compared. The data reporting will include the total sample (*n* = 396) and the two municipal areas of Midvaal and Emfuleni.

## Data analysis

The Statistical Package for Social Sciences Version 27.0 was used to analyse the data. Various statistical methods were used, including reliability and validity, descriptive statistics, correlation, exploratory factor analysis (EFA) and an independent samples *t*-test. The reliability of the EDES was confirmed using Cronbach's alpha, while Pearson's correlation was used to verify the nomological validity.

# Results and discussion

Of the 450 distributed questionnaires, 396 questionnaires were deemed usable, resulting in an 88% response rate. Considering EFA guidelines, the sample size equals 6.4 data points per the original 62 scaled-response items. A total of three scales were included in the original questionnaire – this study only reports on the EDES scale of 12 items. The recommended sample size for factor analysis varies, with some recommending at least 300 cases or at least five cases per item (Tabachnick & Fidell 2013). Pallant (2010) recommended a ratio of 10:1. If the EDES scale (12 items) is isolated, which was done in this case, the ratio is 33:1. Considering these criteria, the sample was deemed appropriate for EFA. A description of the sample participants is provided in Table 8.2.

As shown in Table 8.2, most business owners were 31 to 40 years old, followed by the age group 41 to 50 years. Several empirical studies have noted that the peak age for new entrepreneurs tends to be in their mid-thirties and low-forties. As most of the businesses in this sample are between 1 and 3 years old, this statement seems to hold. Parker (2018) stated that this might be because of the aspects involved in entrepreneurial activity linked to the desire for challenges among younger individuals and their risk-taking propensity. A longitudinal study conducted in the USA – among 5 000 companies established in 2004 – indicates that the median age of business founders is 45 years (Stangler & Marion 2013). This was also found by Azoulay et al. (2020). Considering gender, male SME owners were slightly more represented than females. This aligns with the South African male-to-female total early entrepreneurial activity rate ratio of 0.9 (Global Entrepreneurship Monitor 2021). The sample was well educated, with approximately 60% having post-school education of some sort. As mentioned, the bulk of the SME owners (69%) were in their early stages of doing business and had only been in existence for three years or less. This early start-up phase is also reflected

**TABLE 8.2:** Sample description.

| Description | Demographical information | Total sample (%) | Midvaal LM (%) | Emfuleni LM (%) |
|---|---|---|---|---|
| Age of business owner | <21 years | 4.3 | 3.9 | 4.7 |
| | 21 to 30 years | 21.2 | 16.3 | 22.7 |
| | 31 to 40 years | 39.4 | 34.9 | 42.4 |
| | 41 to 50 years | 19.2 | 27.1 | 15.7 |
| | 51 to 60 years | 11.1 | 15.5 | 8.6 |
| | >61 years | 4.8 | 2.3 | 5.9 |
| Gender | Male | 53.5 | 50.4 | 55.3 |
| | Female | 44.9 | 46.5 | 43.9 |
| | Other | 1.5 | 3.1 | 0.8 |
| Highest level of education | Primary and secondary school not completing matric | 17.9 | 9.3 | 22.4 |
| | Secondary school completed matric | 21.7 | 23.3 | 21.6 |
| | Certificate | 37.1 | 40.3 | 35.3 |
| | Diploma (technical college or similar) | 15.9 | 19.4 | 14.1 |
| | Degree (university) | 4.5 | 4.7 | 4.3 |
| | Post Graduate degree | 2.8 | 3.1 | 2.4 |
| Age of business | Less than 1 year | 16.7 | 9.3 | 20 |
| | Between 1 and 3 years | 53.3 | 61.2 | 49 |
| | Between 4 and 6 years | 15.7 | 16.3 | 16.1 |
| | More than 6 years | 14.2 | 13.2 | 14.1 |
| Number of employees | Only myself (no employees) | 26.5 | 17.1 | 31 |
| | Micro (between 1 and 5 employees) | 55.3 | 62.8 | 52.9 |
| | Micro (between 6 and 10 employees) | 9.6 | 10.9 | 9 |
| | Small (11–49 employees) | 3.3 | 0.8 | 4.3 |
| | Medium (50–249 employees) | 1.5 | 3.7 | 0.8 |
| | Large (More than 250 employees) | 2.8 | 4.7 | 0.8 |

Key: LM, local municipality.
Note: The total sample included four local municipalities, but this study focuses only on Midvaal ($n$ = 129) and Emfuleni ($n$ = 255). The remaining two municipal areas were Lesedi LM (only one response) and Metsimaholo LM ($n$ = 11). If the cumulative percentages do not add up to 100, missing values were present and not included in the table. Bolded figures represent the highest scores in the category.

in the number of employees, of which more than 80% employed five or fewer employees. Table 8.3 reports some business information concerning the sample.

As shown in Table 8.3, 66% of the total sample indicated that they aim for a high-growth business in the future. This is surprising as most of the respondents run small businesses. Henderson (2002) defines a high-growth business as one where the owner has ambitions to grow the business into a large and profitable one in future. Contrary to high-growth businesses are lifestyle-type ones. This business type has a narrower market or product focus, may be more contingent on customer relations and is likely to operate on a lower volume business model (Morris, Schindehutte & Allen 2005). Business owners who manage this type of business often choose not to pursue a high-growth business. The main aim of such a business style is often to provide for

**TABLE 8.3:** Business information.

| Description | Business information | Total sample (%) | Midvaal LM† (%) | Emfuleni LM† (%) |
|---|---|---|---|---|
| Business style | Lifestyle | 33.8 | 59.7 | 22 |
| | High growth | **66.2** | **40.2** | **78** |
| Business exposure | None | **65.7** | **64.3** | **65.5** |
| | Yes, parents owned a business | 28.3 | 25.6 | 30.2 |
| | Yes, some other close person owned a business | 3.5 | 4.7 | 3.1 |
| Entrepreneurial training | No | **79.8** | **84.5** | **77.6** |
| | Yes | 19.7 | 15.5 | 21.6 |
| Enabling environment | No | **88.4** | **89.9** | **87.8** |
| | Yes | 9.6 | 7 | 10.6 |
| Economic outlook | Optimistic (hopeful and confident) | **51.8** | **54.3** | **50.2** |
| | Pessimistic (expecting the worst to happen) | 13.6 | 14.7 | 13.7 |
| | Neutral | 33.5 | 27.9 | 35.7 |
| Impact of load shedding‡ on your business | No impact (0%) | 12.6 | 6.2 | 16.1 |
| | Very limited impact (less than 10%) | 8.8 | 5.4 | 9.4 |
| | Limited impact (less than 20%) | **23.7** | **26.4** | **22.4** |
| | Relative substantial impact (less than 40%) | 13.6 | 17.1 | 11.8 |
| | Substantial impact (more than 50%) | 14.9 | 18.6 | 13.3 |
| | Large impact (more than 80%) | 18.9 | 17.8 | 20 |
| | Massive impact (100%) | 7.1 | 8.5 | 6.7 |

Key: LM, local municipality.
†, The total sample included four local municipalities, but this study focuses only on Midvaal (*n* = 129) and Emfuleni (*n* = 255). The remaining two municipal areas were Lesedi LM (only one response) and Metsimaholo LM (*n* = 11). If the cumulative percentages do not add up to 100, missing values were present and not included in the table.
‡, Load shedding = deliberate action to reduce the power consumption by cutting off electricity supply to certain areas to reduce the current load/consumption. Bolded figures represent the highest scores in the category.

their families through a steady income and to have a degree of entrepreneurial freedom (Henderson 2002). Interestingly, a significantly larger percentage of respondents (78% compared to 40%) in the Emfuleni Local Municipality (LM) aim for high-growth businesses over lifestyle ones. A large portion of the sample (65.7%) had no previous business exposure, such as a parent, sibling or close relative, and almost 80% had no entrepreneurial training. The literature suggests that being part of a family business or having close links to an entrepreneurial family member can have a lasting positive effect on individuals who grew up in such an environment (Carr & Sequeira 2007; Rondi, De Massis & Kraus 2021; Rovelli et al. 2021). Although some might argue that entrepreneurship includes traits that a person is born with, some believe that aspects of entrepreneurship or management can be taught (Kuratko 2005;

Nabi et al. 2018; Prommer, Tiberius & Kraus 2020). Most businesses included in the sample are micro to small in size. They may find benefits in some entrepreneurial or management training as it may assist them with growth and management strategies and refining current business models.

As this study focuses on the enabling environment, the business owners were asked whether they thought their local government was providing an enabling environment for businesses to grow. Not surprisingly, the responses were negative overall, with 88% indicating 'no'. Despite this, almost half of the sample is optimistic and hopeful about the future economic outlook. Lastly, they were asked how the recent electricity load shedding affected their businesses. Approximately 45% stated that the outages had no to limited impact on their business operations. Mahlaka (2021) reports that load shedding is estimated to have cost between R60bn and R120bn in 2019 alone. This has massive financial implications on the economy, and in many cases small businesses are most affected as they do not have the resources to revert to alternative energy supplies. Electricity shortages are just one of the many infrastructure issues South African SMEs must regularly deal with. Table 8.4 shows that 12 single items are included in the EDES.

**TABLE 8.4:** Descriptive statistics for scale items.

| Scale No. | Enabling environment statement† Government is… | Total sample (%) | | Midvaal LM (%) | | Emfuleni LM (%) | |
|---|---|---|---|---|---|---|---|
| | | Mean | s.d. | Mean‡ | s.d. | Mean‡ | s.d. |
| C1 | Creating partnership formation | **2.542 (3)** | 1.428 | 2.417 (10) | 1.223 | 2.635 (4) | 1.525 |
| C2 | Providing local leadership | 2.557 (8) | 1.390 | 2.395 (8) | 1.234 | 2.667 (7) | 1.464 |
| C3 | Creating economic development actions (LED) | 2.593 (12) | 1.384 | 2.388 (7) | 1.188 | 2.729 (10) | 1.475 |
| C4 | Providing sufficient infrastructure development | 2.578 (11) | 1.378 | **2.279 (1)** | 1.159 | 2.769 (11) | 1.452 |
| C5 | Providing sufficient entrepreneurial opportunities | 2.550 (5) | 1.345 | 2.411 (9) | 1.157 | 2.639 (5) | 1.432 |
| C6 | Providing sufficient access to opportunities | 2.547 (4) | 1.353 | 2.326 (2) | 1.119 | 2.689 (8) | 1.448 |
| C7 | Promoting a safe and secure environment | 2.552 (6) | 1.334 | 2.380 (6) | 1.105 | 2.659 (6) | 1.419 |
| C8 | Creating structures, capacity, policies and initiatives | 2.567 (9) | 1.369 | 2.364 (5) | 1.212 | 2.715 (9) | 1.430 |
| C9 | Assisting in poverty alleviation and social development | 2.573 (10) | 1.367 | **2.326 (2)** | 1.219 | 2.729 (10) | 1.423 |
| C10 | Ensuring sound environmental and spatial development actions | **2.504 (2)** | 1.296 | 2.357 (4) | 1.198 | **2.584 (2)** | 1.337 |
| C11 | Improving human resource development | 2.555 (7) | 1.419 | 2.512 (11) | 1.206 | **2.596 (3)** | 1.521 |
| C12 | Promoting agricultural development | **2.428 (1)** | 1.407 | **2.341 (3)** | 1.228 | **2.482 (1)** | 1.500 |

Key: LM, local municipality; LED, local economic development; s.d., standard deviation.
†, Item statement shortened; full statement available in Table 8A-1.
‡, Statement responses were measured on a Likert scale ranging from 1 = strongly disagree to 6 = strongly agree.
*Note*: Figures in brackets represent ranking from most to least problematic. Bolded figures represent the top three rankings.

From Table 8.4, it is evident that all 12 factors contributing to an enabling environment were deemed problematic because all received a score of below three (scores below three indicate a lack of agreement – to some extent – with the relevant statement). When considering the full sample, the top three problematic areas were C12, promoting agricultural development (mean = 2.428); C10, ensuring sound environmental and spatial development actions (mean = 2.504); and C1, creating partnership formation (mean = 2.542). For the Midvaal LM, the three most concerning areas were C4, providing sufficient infrastructure development (mean = 2.279); C9, assisting in poverty alleviation and social development (mean = 2.326); and C12, promoting agricultural development (mean = 2.341). The following took the lead for Emfuleni LM, C12, promoting agricultural development (mean = 2.482); C10, ensuring sound environmental and spatial development actions (mean = 2.584); and C11, improving human resource development (mean = 2.596). In all three cases, promoting agriculture was deemed insufficient. Dasgupta et al. (2007) note that the agriculture sector is a key sector in most developing countries, contributing to the GDP in those countries and LED in local regions. It also assists in creating food security, and as a result of rural development, poverty and environmental impact are also reduced to a certain extent (Van Zyl, Kirsten & Binswanger 1996). Both municipal areas have ample vacant land that could be used for small-scale agricultural use.

Ensuring environmental and spatial development practices was ranked second-worst in the full sample and the Emfuleni LM sample. As Rydin and Pennington (2000) point out, spatial planning is vital for creating an enabling environment. The benefits of such an integrated spatial and environmental development framework include creating predictable and secure conditions for business development and local and international investments. To create a good enabling environment for businesses to survive and grow the local area needs to be accessible for goods and services, as well as being a clean physical environment (Arnold 2013). This requires proper spatial and environmental planning on a national level and even more on a local level. For spatial planning to succeed, proper public participation with the local community should be undertaken. This will ensure that community members buy into the overall planning, which indirectly contributes to the successful implementation of LED.

Surprisingly, Midvaal LM business owners ranked infrastructure development as the worst factor, whereas Emfuleni LM only listed it as the 11th worst (although still below a mean value of three). Midvaal is considered a rural area – because of its political status, it receives only a limited capital budget from the opposition national government. The municipality also has a limited income collection potential with just over 100,000 residents. This creates a situation where few capital infrastructure projects are

implemented. Large portions of Midvaal are still lacking infrastructure development and basic service delivery. Sufficient and well-maintained infrastructure is a vital factor in assisting the effective functioning of an economy through stimulating economic growth, LED and promoting employment. Research has found that investing in infrastructure is one of the most suitable tools for promoting national and local economic growth (Kessides 1993). Infrastructure backlogs are a major concern in developing countries, and the South African economy is currently being affected in a negative manner (Perkins 2011).

A correlation analysis was done to determine if a linear relationship exists between variables. Furthermore, a correlation matrix is also useful for determining the nomological validity of constructs (Hair et al. 2010). This study made use of Pearson's product-moment correlation coefficients. Figure 8.1 outlines the correlation matrix, which reports the correlation between the items presented.

Figure 8.1 reflects that all items yielded a positive significant correlation coefficient among each other ($p \leq 0.01$). Accordingly, nomological validity is thus established as all items are positively correlated (Berndt & Petzer 2011). All items displayed strong positive relationships with each other, ranging from $r = 0.550$ to $r = 0.816$.

After calculating the frequencies, percentages and correlation for the sample and reporting on the combined and area-specific means and standard deviations, an EFA was run on the 12 scaled-response items. The EFA resulted in one extracted factor, which is in accordance with the related theory and the original EDES developed by Meyer (2014) and validated by Meyer and Keyser (2017). The factor accounted for 70.827% of the variance extracted with a computed Kaiser-Meyer-Olkin of 0.96 and a significant Bartlett's test of

**FIGURE 8.1:** Pearson's product-moment correlation.

| | C1 | C2 | C3 | C4 | C5 | C6 | C7 | C8 | C9 | C10 | C11 | C12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **C1** | 1 | - | - | - | - | - | - | - | - | - | - | - |
| **C2** | 0.791** | 1 | - | - | - | - | - | - | - | - | - | - |
| **C3** | 0.816** | 0.798** | 1 | - | - | - | - | - | - | - | - | - |
| **C4** | 0.746** | 0.802** | 0.755** | 1 | - | - | - | - | - | - | - | - |
| **C5** | 0.668** | 0.720** | 0.728** | 0.703** | 1 | - | - | - | - | - | - | - |
| **C6** | 0.687** | 0.756** | 0.742** | 0.723** | 0.752** | 1 | - | - | - | - | - | - |
| **C7** | 0.638** | 0.691** | 0.665** | 0.645** | 0.713** | 0.709** | 1 | - | - | - | - | - |
| **C8** | 0.640** | 0.690** | 0.676** | 0.647** | 0.626** | 0.730** | 0.701** | 1 | - | - | - | - |
| **C9** | 0.627** | 0.658** | 0.668** | 0.631** | 0.666** | 0.678** | 0.699** | 0.700** | 1 | - | - | - |
| **C10** | 0.632** | 0.641** | 0.653** | 0.601** | 0.587** | 0.667** | 0.674** | 0.680** | 0.678** | 1 | - | - |
| **C11** | 0.710** | 0.675** | 0.710** | 0.677** | 0.607** | 0.671** | 0.611** | 0.685** | 0.628** | 0.650** | 1 | - |
| **C12** | 0.645** | 0.671** | 0.665** | 0.636** | 0.550** | 0.653** | 0.571** | 0.672** | 0.642** | 0.628** | 0.751** | 1 |

**, Correlation is significant at the 0.01 level (2-tailed).

sphericity value ($\chi^2$: 4 431.089, df: 66, $p \leq 0.00$), indicating the sampling adequacy of the data set and the subsequent scale. The varimax-rotated factors, communalities, eigenvalues and percentage variance extracted for the factor are presented in Table 8.5.

As shown in Table 8.5, the extracted factor accounted for approximately 71% of the total variance. All factor loadings exceeded the recommended value of 0.50 and are thus both statistically ($p \leq 0.01$) and practically significant. Additionally, as Watson (2017) suggests, all items have communalities above 0.40, suggesting that each item has an acceptable fit with the other items in the component. Lastly, as the study compared the two municipal areas of Midvaal and Emfuleni, an independent samples *t*-test was performed to ascertain any differences between the groups.

As mentioned, one of the objectives was to determine if the business owners within the two chosen local municipal areas (Midvaal and Emfuleni) experience a significant difference between their perceived level of the enabling environment. The results of the independent samples *t*-test are summarised in Table 8.6.

As shown in Table 8.7, a significant difference between the two local municipal areas was observed ($p = 0.014 < 0.05$). Midvaal business owners experienced that the local government provided less of an enabling environment (mean = 2.375) than Emfuleni (mean = 2.661). To determine the degree to which the difference is practically significant or not, Cohen's D-statistic was utilised (Brace, Kemp & Snelgar 2012). As the value of 0.258 is less than 0.50, it implies that the effect size of the difference is practically non-significant (Pallant 2010). Hence, Midvaal business owners were less

**TABLE 8.5:** Varimax-rotated factor analysis.

| Scale No. | Items | Factor | Communalities |
|---|---|---|---|
| C1 | Creating partnership formation | 0.86 | 0.73 |
| C2 | Providing local leadership | 0.89 | 0.78 |
| C3 | Creating economic development actions (LED) | 0.88 | 0.78 |
| C4 | Providing sufficient infrastructure development | 0.85 | 0.73 |
| C5 | Providing sufficient entrepreneurial opportunities | 0.83 | 0.68 |
| C6 | Providing sufficient access to opportunities | 0.87 | 0.76 |
| C7 | Promoting a safe and secure environment | 0.83 | 0.68 |
| C8 | Creating structures, capacity, policies and initiatives | 0.84 | 0.70 |
| C9 | Assisting in poverty alleviation and social development | 0.82 | 0.67 |
| C10 | Ensuring sound environmental and spatial development actions | 0.80 | 0.64 |
| C11 | Improving human resource development | 0.83 | 0.69 |
| C12 | Promoting agricultural development | 0.80 | 0.64 |
| **Eigenvalues** | | **8.50** | |
| **Percentage of variance** | | **70.83** | |
| **Cronbach's alpha** | | **0.96** | |

Key: LED, local economic development.

**TABLE 8.6:** Independent samples t-test.

| Variable | Midvaal LM | | Emfuleni LM | | *t* | *p* | Cohen's D |
|---|---|---|---|---|---|---|---|
| | Mean N = 129 | s.d. | Mean N = 252 | s.d. | | | |
| Enabling environment | 2.375 | 0.976 | 2.661 | 1.228 | −2.473 | 0.014* | 0.258** |

Key: LM, local municipality; s.d., standard deviation.
*, Significance level 0.05; **, Small effect, practically non-significant.

satisfied with the local government's creation of an enabling environment, although only at a slightly lower level compared to Emfuleni business owners. Although Midvaal is regarded as a better-performing LM, there is still much room for improvement concerning the enabling environment. Interestingly, the results prove that even in the best-performing local governments, business owners feel that they are not receiving the required assistance to grow and that LED is still not at an acceptable level. With an improved enabling environment, more businesses will be established, and existing ones will grow and employ more local labour leading to increased skills development and possible investment. This will create a natural increase in LED.

## Conclusion

The local government should create an enabling environment in the region to benefit local businesses and communities for mutual success. In addition, good governance is needed to establish an enabling developmental environment. Good governance relates to institutional capacity in management and administration and includes formal and informal structures within government institutions. It encompasses the ability to coordinate and assist with implementing policies, projects and action plans, including public involvement, institutional development, transparency in decision-making processes and accountability. Good governance underpins LED, and the main link between the two concepts is to provide a local business-enabling environment (Trousdale 2005). Local economic development and the basic needs approach are closely linked with development economics and provide communities with an enabling environment required by local communities to improve quality of life and reduce poverty and inequality (Todaro & Smith 2011).

This study aims to determine the quality of the enabling environment in the Vaal Triangle region in the south of Gauteng province. The focus was specifically on the Emfuleni and Midvaal municipal areas. The main results include that business participants indicated that overall – including all 12 enabling environment factors – the Emfuleni area had a higher average score of 2.66 compared to the Midvaal area of 2.37. The Emfuleni area had the highest rating for infrastructure provision, followed by LED activities, while the area had the lowest ratings for promoting agriculture and environmental planning. Midvaal

area had the highest rating for human resource development, followed by the creation of partnerships, while the area had the lowest rating for infrastructure provision, followed by the promotion of agriculture. The scales of measurement are out of a maximum of five. This means that both municipal areas scored just above and below the average. Scores above three indicate an acceptable provision of an enabling environment, and both areas require improvements. The assessment provides the regions with a clear indication of which of the 12 factors require improvement.

Future research will include a reassessment of the scale, the factors included and the possibility of allocating differentiated weights to the 12 factors. Other areas will also be compared in developed and developing regions. Effective and efficient service delivery and creating an enabling environment by the local government in South Africa have deteriorated over the last few decades. This situation has ultimately negatively impacted local and regional development and, eventually, the loss of employment and lack of local investment.

**TABLE 8A-1:** Enabling Developmental Environment Scale.

| Scale no. | Scale description |
|---|---|
| C1 | The local government is creating partnership formation for local businesses to grow. |
| C2 | The local government is providing local leadership for local businesses to grow. |
| C3 | The local government is creating economic development actions (LED) for local businesses to grow. |
| C4 | The local government is providing sufficient infrastructure development for local businesses to grow. |
| C5 | The local government is providing sufficient entrepreneurial opportunities for local businesses to grow. |
| C6 | The local government is providing sufficient access to opportunities for local businesses to grow. |
| C7 | The local government is promoting a safe and secure environment for local businesses to grow. |
| C8 | The local government is creating structures, capacity, policies and initiatives for local businesses to grow. |
| C9 | The local government is assisting in poverty alleviation and social development, which may contribute to improved business growth. |
| C10 | The local government is ensuring sound environmental and spatial development actions, which contribute to business growth. |
| C11 | The local government is improving human resource development, which in turn can improve skills levels and eventually business growth. |
| C12 | The local government is promoting agricultural development to ensure business growth in these sectors. |

*Source*: Meyer and Keyser (2017).

Chapter 9

# Diversification or concentration of economic sectors for development: An assessment of the regional economy within the Gauteng province, South Africa

**Daniel F. Meyer**
School of Public Management, Governance and Public Policy (SPMGP), College of Business and Economics, University of Johannesburg, Johannesburg, South Africa

**Chané de Bruyn**
Centre for Local Economic Development (CENLED), College of Business and Economics, University of Johannesburg, Johannesburg, South Africa

## Abstract

With the current COVID-19 pandemic and the shock to the economy, both demand and supply systems have been negatively affected. A generally accepted regional and local economic principle is that to survive external shocks, a diverse local economy, which is well-spread across all nine main

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economic sectors, could be more resilient than more sectoral concentrated and specialisation economies. Developing regions have not succeeded in diversification as an economy moves from traditional sectors to modern sectors via, for example, industrialisation. Diversification is a process that demands structural changes with new skills development, innovation and eventually improved productivity. The objective of this study on which the chapter is based was to analyse the relationship between sectoral economic diversification and economic growth and development in the leading economic region in South Africa, the Gauteng province, with all its municipal areas. A quantitative methodology was utilised, and panel time-series data were collected from 1993 to 2020 for Gauteng province to determine the long and short-run relationships. Using econometric regression methods, two different models were estimated. Model 1 was analysed with the GDP per capita as the dependent variable, while in Model 2, a diversification index was estimated as the dependent variable. Two other variables were included in the models as independent variables, including annual household income and income inequality (Gini coefficient). The initial results indicated that increased diversification and rising household income positively impact GDP per capita (Model 1). In terms of Model 2, GDP per capita and rising household income positively impact the level of diversification of the economy. The results indicated a positive relationship between economic diversification and economic development in the study region. More focused economic diversification policies should be formulated and implemented if higher economic growth levels are to be achieved in developing regions.

# Introduction

Economic diversification has become one of the vital policy advocates for improving economic development and growth in low and middle-income countries. As Freire (2017, p. 1) points out, economic diversification could aid in promoting economic development, which subsequently allows for the creation of employment opportunities and structural change across industries. Research suggests that economies with low levels of diversification are more likely to encounter weak institutions, low levels of growth and feeble economic and structural transformation (Usman & Landry 2021, n.p.). In addition, countries with low levels of diversification are particularly susceptible to global shocks such as pandemics (Ndung'u 2020, n.p.). This is especially evident when looking at the global COVID-19 pandemic, which according to the African Development Bank (2021, p. 33) is estimated to push approximately 39 million people in Africa into extreme poverty. Therefore, resilient, strong and diversified economies must be at the forefront of development policies in developing countries.

At the regional level, there is a debate among scholars as to whether or not there should be a focus on diversifying the regional economy or focusing on a more specialised approach, concentrating on only a few sectors within the region. A specialised or concentrated approach could, for instance, prove useful in ensuring that a region's recovery is aligned with the government's green economy or climate goals (International Monetary Fund 2020, p. 15). That said, more sector-focused approaches have seen a varied history of success. The International Monetary Fund (2021, p. 3) stresses that transparency, accountability, and national and international competition are crucial for it to be successful. Hence, an economy with a more concentrated approach across sectors could increase income volatility and have adverse effects on economic growth (ECLAC 2017, p. 1).

This research project aims to analyse the relationship between economic development and the level of diversification of the economic sectors in a developing region. The study area is the Gauteng province, which is seen as the economic power hub of South Africa and even the African continent. Gauteng consists of five sub-regions or municipal areas, including the City of Johannesburg – the financial capital of South Africa – the City of Tshwane – which includes Pretoria, South Africa's administrative capital – as well as industrial, mining and commercial centres such as Alberton, Benoni, Germiston, Krugersdorp, Springs, Vanderbijlpark and Vereeniging (Gauteng City-Region Observatory 2021, n.p.). The research aims to analyse structural change since 1993 within Gauteng with all of its municipalities and to examine how the structure of the economy has transformed up to 2020. Furthermore, with econometrics, the relationship between economic growth per capita and a diversification index was tested, with the addition of the variables Gini coefficient and annual average household income. The literature suggests that high levels of diversification within the economy ought to be more adaptive in absorbing external shocks than a more specialised economy that focuses on one or two major industries. This research contributes to the current understanding of diversification within regional economies in developing countries. Similar studies have not been published recently using this specific methodology in this province.

## Literature review

Economic diversification, traditionally, includes the transition from the dependency on one or two commodities such as minerals, crude oil and agricultural products to wide-ranging sources of employment, production, trade, expenditures and revenues (Usman & Landry 2021, p. 3). Meyer (2020, p. 182) describes complexity as the range of industries, services and products that ideally exist within an economy. Usman and Landry (2021, p. 6) write that

economists generally agree that with an economic diversification policy, the process of structural transformation is the closest associated policy objective. Monga and Lin (2019, p. 1) describe structural transformation as the movement of the productive resources of a country or economy from low-production activities such as agriculture to high-production activities relating to the services or industrial industries. As COVID-19 has set the way for a new method of undertaking economic activities globally, the need for a change in diversification strategies develops as it could provide the framework for smarter and quicker economic recoveries (International Monetary Fund 2021, p. 14). Adegoke (2021, n.p.) writes that the economies of African countries such as Tanzania, Côte d'Ivoire and Kenya, which have more diversified markets, are set to recover quicker than some of the larger countries such as South Africa.

The importance of diversification is highlighted throughout the theory. The 'Big Push' theory reiterates the importance of diversification within the development of local economies. This theory further highlights that coordination among stakeholders is vital for the successful implementation of development strategies (De Bruyn 2021, p. 234). Attempting to introduce a new theory relating to the concept of economic diversification, Freire (2017, p. 6) based his theory on a 'framework of structural economic dynamics with endogenous technological change'. Meyer (2020, p. 183) explains that the number of industries contributing to the economy is used as a measurement, with labour being used as the only production factor. The model implies that countries are more likely to produce only products with sufficient labour, demand and prices over the short run, whereas, in the long run, there are changes in technology and consumption as the economy is dynamic.

In addition to an increase in more diverse employment opportunities, investing in several industries within a regional economy has the benefit of preventing the collapse of the entire economy in the event of an economic crisis in one particular industry (De Bruyn 2021, p. 92). Besides guarding against the effects of economic shocks, economic diversification is taking a key role in promoting economic growth, development and reducing poverty in developing and resource-dependent countries (McMillan & Rodrik 2011, p. 10). Venables (2016, p. 178) writes that resource-dependent countries are characterised by low levels of economic diversification and have economic activities centred around natural resources, thus making them susceptible to resource stock depletion and volatile commodity prices. What is more, the reliance on extractive industries, which are usually accompanied by hefty regulatory fees, further hampers the development of the market and political institutions (Pritchett, Sen & Werker 2017, p. 20).

Because of the comparative advantage, many countries, because of their extractive resource industries and governments, can be reluctant to implement

policies aimed at diversifying their economy. Sheng (2011, p. 1229) examines the notions of diversification compared to specialisation in the tourism industry and opines that by specialising in services and goods with efficient production levels, high productivity and comparative advantages, economies are likely to advance. Nevertheless, research by Humphreys, Sachs and Stiglitz (2007, p. 30) suggests that this hesitation by governments to diversify their economies is likely because of economic constraints and that these transitions are complex and costly. Furthermore, researchers such as Chang and Lebdioui (2020, p. 10) point out that within these resource-focused economies, the policies are generally aimed at managing revenue and achieving fiscal stability instead of diversification and structural transformation. Esanov (2012, p. 18) investigated the role of economic diversification in resource-focused economies and the policy implications thereof and found that these countries have low levels of diversification and economic growth. A study by Lashitew, Ross and Werker (2021, p. 194) indicated that Oman's dependence on oil revenue and the country's lack of diversification has made the country particularly susceptible to oil price fluctuations. They pointed out that following a decline in oil prices in 2015 and 2016, the country experienced a fiscal deficit of 16.5% of GDP in 2015 and 20.3% of GDP in 2016. A study by Sharpley (2002, p. 230) indicated that the highly oil-dependent Abu Dhabi has turned to the tourism industry to diversify its economy and reduce its volatility to international oil prices. Furthermore, Shayah (2015, p. 736) explored the possibility of oil-dependent countries diversifying and growing other industries in the United Arab Emirates (UAE) and found that, compared to other Arab countries, the economy is highly diversified and flexible to adapt to global fluctuations.

As human skills and capital development is a slow process, economic diversification is seen as a long-term process (Meyer 2020, p. 182). Usman and Landry (2021, p. 20) state that it could take decades to yield the results of economic diversification as investments intended for developing non-resource industries are a lengthy process. There are several ways to move towards a more diversified economy (OECD 2019, n.p.), and according to Sauvé (2019, p. 20) these include technological innovation with improved value chains, implementing regulatory reforms which support competitiveness, placing emphasis on the support of local firms which allows them to be more competitive, and promoting exports. The OECD (2019, n.p.) suggests four main determinants of successful economic diversification: (1) redistribution of resources to stimulate diversification objectives, (2) providing incentives for trade, investment and competition, (3) implementing interventions to resolve past policy failures and (4) investment and policy reforms. The three general conceptualisations of economic diversification are GDP diversification, export diversification and fiscal diversification. Gross domestic product diversification refers to the sectoral contributions towards production and employment,

whereas export diversification refers to diversifying the main services and goods traded. Fiscal diversification deals with the expansion of government spending, their sources of revenue and the targets of public expenditure (Usman & Landry 2021, p. 7).

Firstly, GDP diversification involves a rise in the number of industries within an economy that contributes to the aggregate output and employment (Ross 2017, p. 11). As Fonchamnyo and Akame (2017, p. 333) explain, this form of diversification implicates structural transformation as it involves the transition of primary industries to more technologically advanced industries. Hence, informal industries are now gearing towards more formal industries, whereby general productivity also increases. According to Lei and Zhang (2014, p. 68 003), countries with higher levels of diversification generally have higher levels of GDP and GDP per capita (GDPC). A study by Brown (2012, p. 8) aimed to determine whether variations in diversification could explain economic diversification and stability in the US regional economy. Using time-series data over 30 years, the study found a positive relationship between volatility and the percentage contribution of employment in resource-extractive industries. Analysing the impact of diversification on economic stability and growth in the Euro-Med Region, Pirasteh, Sayadi and Saghafi (2009, p. 125) found that improvements in the levels of economic diversification impacted positively on growth, and sectoral instability was reduced using pool panel data from 1995 to 2004. A positive relationship between economic diversification and economic growth has also been established by Gylfason (2016, p. 10), who found that sustained economic sectoral diversification could result in long-term economic growth. Determining the link between poverty and diversification in Botswana, Kapunda (2003, p. 55) concluded that economic diversification can decrease poverty levels within the country. In addition, Hammouda et al. (2010, p. 144) established that economic diversification increases production factor productivity within African economies.

Secondly, as mentioned earlier, export diversification involves the movement from exporting only a few primary commodities to exporting an extensive set of services and goods to other markets (Mania & Rieber 2019, p. 139). This allows economies to participate in newly formed global value chains. Moreover, as Usman and Landry (2021, p. 8) surmise, this allows countries to benefit from forward linkages, increasing local firms' global competitiveness through efficiency gains and the transfer of new technology. Interestingly, a study by Rondeau and Roudaut (2014, p. 1 495) shows that economic diversification increases economic growth in developing countries. However, it has diminishing marginal returns. The researchers also note that product diversification has twice the impact on economic growth compared with trade partner diversification. Research by Hausmann and Hidalgo (2011,

p. 340) further suggests that as diversification increases, the types of products and services exported become more advanced. Research by Yusof (2013, p. 12) indicates that by following an export-led growth strategy, the economy of Malaysia was able to promote diversification within its manufacturing industry. The study also indicates that the government used diversification as a critical strategy for structural change, mainly contributing to the country's growth levels. Esu and Udonwa (2015, p. 65) investigate diversification in the Nigerian economy. With time-series data from 1980 to 2011, they show that Nigeria has ample potential to diversify its economy and improve its economic gain from trade.

As mentioned earlier, fiscal diversification refers to the growth of industries that contribute significantly to government revenue. Usman and Landry (2021, p. 10) state that the share of the revenue collected from various industries forming part of the government's budget is an important measure of fiscal diversification. Fiscal diversification could involve lessening the countries' dependence on extractive industries through efforts to generate more sustainable and varied domestic revenue (Hailu & Kipgen 2017, p. 260). In addition, Hailu and Kipgen (2017, p. 262) suggest that it could also involve better utilising the underutilised tax instruments or expanding the existing tax base. Good governance and government effectiveness have a strong positive correlation with export diversification. According to Gelb (2010, p. 11), economies with strong institutions have more potential for diversification than economies with weaker institutions. Nonetheless, Coxhead (2007, p. 1 116) notes that very few countries have been able to diversify their economies successfully. The study by Usman and Landry (2021, p. 9) suggests that governments in Africa are not utilising their fiscal tools in a manner that allows them to diversify their economies. Furthermore, their results suggest that through the government's taxation policies and spending, they crowd out economic actors from non-dominant industries.

A study by Albassam (2015, p. 116) indicates how the government of Saudi Arabia has failed to diversify its economy and lessen the country's dependence on oil even though they established that diversification could lead to improved institutions, employment opportunities and less corruption. These results might imply that although governments perceive diversification as a policy implication on a national level, it is more sub-national, requiring different policies – an example being Chile, a country implementing successful diversification strategies locally. According to the OECD (2019, n.p.), the country implemented a diversification strategy that allowed for the improvement of the local logistics industry and value-added production within the mining industry and promoted diversification across all industries. In addition, Meyer (2020, p. 190) points out that spatial policies could aid in

promoting economic diversification as it encourages special economic zones and growth poles. These policies have been applied successfully in Mauritius, Malaysia and China.

As is evident from this section, diversification has a key role in the development and growth of economies. In economies with well-diversified industries, the accompanying increase in skills development and new technology contributes to value-added processes. In essence, higher economic growth rates are possible with a more diversified economy, both nationally and regionally.

## Methodology

A quantitative research methodology was followed for the study objective. The study region is the Gauteng province, the economic hub in South Africa. The methodology utilised in this study was a pooled panel using time-series data for each of the three metropolitan municipalities and the two district municipalities in the province from 1993 to 2020.

Data were obtained from Quantec (2021, n.p.) to assess the possible relationships between the variables, namely, the GDPC (used as a proxy for economic development) and the diversification index (Tress index [TRESSIND]), for all of the main economic sectors. The study included annual data for all variables (refer to Table 9.1 for details regarding the variables included in the study). As part of the econometric estimations, panel data models included:

1. determination of correlation coefficients between variables
2. level of stationarity using unit root tests for model selection
3. estimation of causality using Granger causality tests
4. long-run relationships between the variables using either an autoregressive distributed lag (ARDL) or the Johansen-Fisher test leading to regression analysis using fully modified ordinary least squares (FMOLS) and dynamic ordinary least squares (DOLS) equations
5. model stability diagnostic tests.

The five municipal regions in Gauteng province were included in the pooled panel, with a total of 140 observations. The econometric equations are listed below as equations (2) and (3). All variables were converted to their natural logarithms in the estimations of regressions.

Brooks (2014, p. 50) lists the following as the basic panel analysis equation:

$$y_{it} = \alpha + \beta x_{it} + u_{1t} \qquad \text{[Eqn 1]}$$

**TABLE 9.1:** Econometric model: Variables.

| Variable | Variable abbreviation log version in brackets) | Definition |
|---|---|---|
| GDPC (Model 1 dependent variable) | GDPC (LOGGDPC) | The value of this variable is determined by dividing the total output of the economy by the population of a region. In this case, the values are in the local currency, namely the rand (Quantec 2021, n.p.). |
| Diversification index (Tress Index)<br><br>(Model 2 dependent variable) | TRESSIND (LOGTRESSIND) | The Tress index is a measurement of the level of diversification or concentration of the economic sectors of a region. The contribution of all nine main economic sectors to the total regional economy is compared in an index. An index of 0 indicates a fully diversified economy, while an index of 100 indicates an economy dominated by a single sector. |
| Annual income per household | INCOME (LOGINCOME) | The total average income per household measured in the local currency (Rand) (Quantec 2021, n.p.). |
| Gini coefficient | GINI (LOGGINI) | The Gini coefficient or Gini index measures the level of inequality of the distribution of income in a region. A coefficient of 1 represents a perfect inequality where one person in a population receives all the income while other people earn nothing, while a coefficient of 0 indicates perfect equality (Quantec 2021, n.p.). |

*Source*: Quantec (2021).
Key: GDP, gross domestic product; GDPC, gross domestic product per capita; TRESSIND, Tress index; GINI, Gini coefficient index.

Where $y_{it}$ is the dependent variable, $\alpha$ is the intercept term, $\beta$ is a $k \times 1$ vector of parameters to be estimated on the explanatory variables and $x_{it}$ is a $1 \times k$ vector of observations on the explanatory variables, $t = 1, \ldots, T$; $i = 1$. The model from the function described in equation (1) can be listed as follows:

$$\textbf{Model 1}: GDPC_t = \alpha_1 + \sum_{j=1}^{k} \beta_{1j}\, GDPC_{t-j} + \sum_{j=1}^{k} \lambda_{1j}\, TRESSIND_{t-j} + INCOME_{t-j} + GINI_{t-j} u_{1t} \quad \text{[Eqn 2]}$$

$$\textbf{Model 2}: TRESSIND_t = \alpha_2 + \sum_{j=1}^{k} \beta_{2j}\, TRESSIND_{t-j} + \sum_{j=1}^{k} \lambda_{2j}\, GDPC_{t-j} + INCOME_{t-j} + GINI_{t-j} u_{2t} \quad \text{[Eqn 3]}$$

Where $\alpha_n$ is the constant, $\beta_n$, $\lambda_n$ are the coefficients, K is the number of lags, and $u_{1t}$ and $u_{2t}$ are the stochastic error terms known as shocks in the model. The Levin, Lin and Chu test, the Im, Pesaran and Shin W-test and the PP-Fisher Chi-square test were used to test for the levels of stationarity, or unit root tests, of the different variables. The level of stationarity determines the model to be estimated. If all variables were tested as I(0), a panel vector autoregression (VAR) analysis would be selected. If all variables are stationary at I(1), the Fisher-Johansen panel cointegration test would be conducted. If a mixture of variables were determined, a panel ARDL would be estimated.

# Results and discussion

## Descriptive analysis

In the analysis, a descriptive comparative analysis is done to compare the five sub-regions of the Gauteng province. Table 9.2 and Figure 9.1 summarise the trends in the four variables as included in the econometric models.

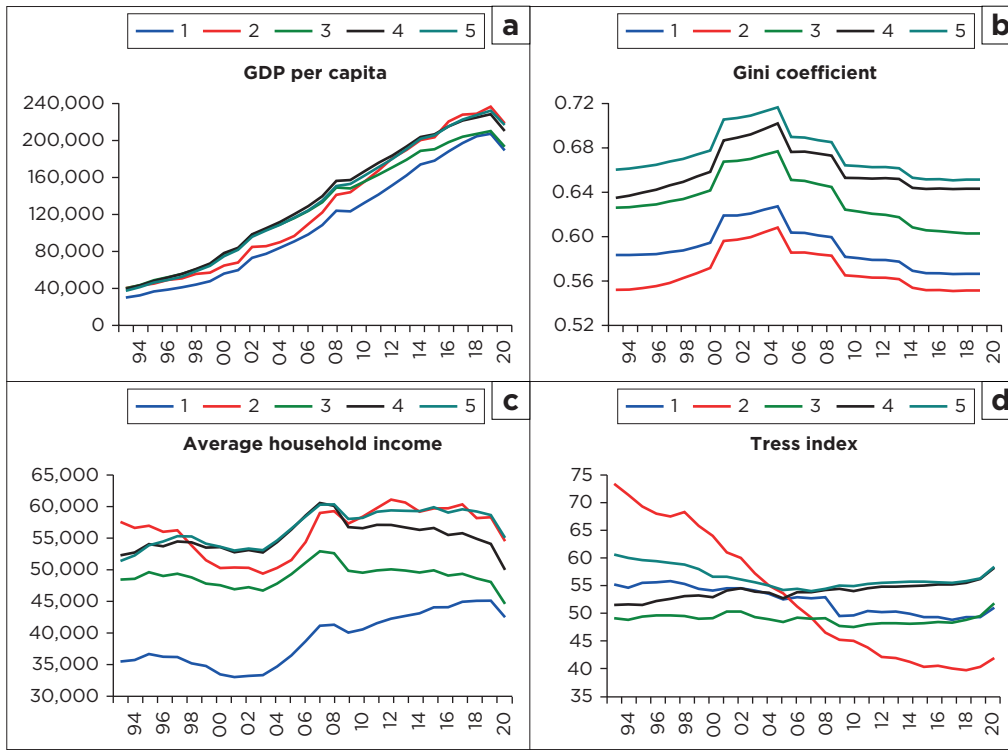
Firstly, GDPC is discussed. West Rand has the highest GDPC, followed by Tshwane, while Sedibeng has the lowest. Sedibeng, however, has the highest increases in GDPC from 1993 to 2020, coming from a low base, while Ekurhuleni has the lowest growth rate from 1993 to 2020.

Secondly, the Gini coefficients are analysed. A value closer to 1 means high levels of inequality, while a value closer to 0 means low levels of inequality. Again West Rand has the lowest and most positive value of 0.551, followed by Sedibeng. All the metro regions have higher levels of inequality if compared to the district municipalities. Ekurhuleni has the highest level of improvement in the Gini coefficient over the study period from 1993 to 2020. It should be noted that all five sub-regions have improved their levels of inequality over the study period.

**TABLE 9.2:** Trends comparative analysis.

| Region | GDPC (in Rand) | | | GINI | | | Household income per capita (INCOME) (in Rand) | | | Tress index (TRESS) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2000 | 2020 | | 2000 | 2020 | | 2000 | 2020 | | 2000 | 2020 | |
| | *n* | *n* | *%* | *N* | *n* | *%* | *n* | *n* | *%* | *n* | *n* | *%* |
| Gauteng province | 69 780 | 205,500 | 9.70 | 0.628 | 0.602 | −0.20 | 47 700 | 49 320 | 0.17 | 55.3 | 52.3 | −0.27 |
| Sedibeng District Municipality | 55 409 | 189,085 | 12.1 | 0.594 | 0.565 | −0.24 | 33 449 | 42 483 | 1.36 | 54.1 | 51.0 | −0.28 |
| West Rand District Municipality | 64 169 | 218,409 | 12.0 | 0.571 | 0.551 | −0.18 | 50 267 | 54 530 | 0.42 | 64.0 | 41.9 | −1.73 |
| City of Ekurhuleni Metro | 77 231 | 193,061 | 7.5 | 0.641 | 0.602 | −0.30 | 47 560 | 44 610 | −0.32 | 49.1 | 51.8 | 0.27 |
| City of Johannesburg Metro | 77 681 | 210,176 | 8.5 | 0.658 | 0.643 | −0.11 | 53 569 | 49 971 | −0.35 | 52.9 | 58.2 | 0.50 |
| City of Tshwane Metro | 74 369 | 216,708 | 9.6 | 0.677 | 0.651 | −0.19 | 53 648 | 55 055 | 0.14 | 56.6 | 58.4 | 0.16 |

*Source*: Quantec (2021).
Key: GDP, gross domestic product; GDPC, gross domestic product per capita; GINI, Gini coefficient index; TRESSIND, Tress Index.
Note: Annual growth rates are listed in brackets in percentage.




*Source*: Quantec (2021).
Note: Gauteng sub-regions: 1 = Sedibeng; 2 = West Rand; 3 = Ekurhuleni; 4 = Johannesburg; 5 = Tshwane.
**FIGURE 9.1:** Trend analysis for sub-regions in Gauteng province.

Thirdly, the average household incomes are analysed. Tshwane has the highest average household income of the five sub-regions, followed by West Rand, while Sedibeng has the lowest average household income. Sedibeng also has the highest increase or growth rate of all the regions, improving from a low base. Both Ekurhuleni and Johannesburg metro had negative growth rates for their household incomes over the study period.

Lastly, the TRESSIND is analysed per sub-region. Again, West Rand performed best with the lowest TRESSIND, followed by Sedibeng. Tshwane and Johannesburg had the highest indexes, meaning their economies were the least diversified. Interestingly, only the two district municipalities have improved their Tress indexes, while the metro municipalities have moved backwards regarding the diversification of their economies.

Table 9.3 summarises the descriptive statistics from the analysis for Gauteng province from 1993 to 2020. Gross domestic product per capita averaged an amount of R126,322 and with a maximum value of R236,524 in 2019. The GDPC increased steadily over the study period, although since 2018, it has declined annually. The Gini coefficient index (GINI) averaged 0.625, with a maximum value of 0.716 in 2004 and a minimum value of 0.550 in 2020.

**TABLE 9.3:** Descriptive statistics.

| Descriptive statistics | GDPC (in Rand) | GINI | Household income per capita (INCOME) (in Rand) | Tress index (TRESS) |
|---|---|---|---|---|
| Mean | 126,321.9 | 0.6247 | 51172.20 | 52.9521 |
| Median | 123,202.9 | 0.6281 | 52981.45 | 53.6500 |
| Maximum | 236,524.5 | 0.7164 | 61097.40 | 73.4000 |
| Minimum | 29 445.41 | 0.5504 | 33017.28 | 39.7000 |
| s.d. | 63 443.69 | 0.0448 | 7 366.829 | 5.9291 |
| Skewness | 0.098158 | −0.0332 | −0.8778 | 0.5522 |
| Kurtosis | 1.615970 | 1.9380 | 2.9629 | 4.7071 |
| Jarque-Bera | 11.39880 | 6.6041 | 17.988 | 24.1182 |
| Probability | 0.003348 | 0.0368 | 0.0001 | 0.0001 |

Key: GDPC, gross domestic product per capita; s.d., standard deviation.

Trends in this index indicate a steady rise from 1993 to 2004, and thereafter it declined up to 2020. Therefore, the overall trend is that of improved inequality since 2004 in the Gauteng Region. For the annual income per household (INCOME), a mean of R51 172 was recorded over the 27 years, and a maximum of R61 097 in 2018, with a minimum value of R52 981 in 1993. The trend graphs show high levels of volatility over the study period and annual household income not rising overall. The TRESSIND achieved a mean of 52.95, showing an index above 50.0 which means a less diversified economy (higher index means less diversified economy). The lowest index achieved was 39.7 in 2004, and the highest point of 53.7 was in 2020.

## Econometric analysis

Table 9.4 summarises the results of the correlation analysis of all the variables in the study. Interesting results are reported in the table. Firstly, dependent variable 1, namely, GDPC, and the relationships with the other variables are assessed. Average household income and the TRESSIND have statistically significant relationships with GDPC. The coefficient of household income is 0.3687, indicating a significant positive relationship, while the TRESSIND has a coefficient of −0.4547, indicating a negative relationship with GDPC. This means that higher levels of economic diversification positively impact GDPC. The Gini coefficient has a negative but non-significant relationship with GDPC. This means that lower levels of inequality have a positive relationship with GDPC. When focusing on the TRESSIND as the dependent variable, it was determined that the Gini coefficient has a positive and significant relationship with the TRESSIND. This means that higher levels of economic diversification have a positive relationship with lower levels of inequality. The TRESSIND is not significantly related to average household income. Lastly, average household income is significantly but negatively related to the Gini coefficient. This means that lower levels of inequality are

**TABLE 9.4:** Correlation coefficient analysis.

| Variables | GDPC | GINI | INCOME | TRESSIND |
|---|---|---|---|---|
| GDPC | 1.0000 | - | - | - |
| | (-----) | - | - | - |
| | [-----] | - | - | - |
| GINI | −0.0892 | 1.0000 | - | - |
| | (−1.0518) | (-----) | - | - |
| | [0.2947] | [-----] | - | - |
| INCOME | 0.3687 | −0.2648 | 1.0000 | - |
| | (4.6591) | (−3.2264) | (-----) | - |
| | [0.0008]* | [0.0016]* | [-----] | - |
| TRESSIND | −0.4547 | 0.1716 | 0.0167 | 1.0000 |
| | (−5.9970) | (2.0462) | (0.1957) | (-----) |
| | [0.0003]* | [0.0426]* | [0.8451] | [-----] |

Key: GDPC, gross domestic product per capita; GINI, Gini coefficient index; TRESSIND, Tress index.
*, indicates 5% statistical significance.
Note: () indicates the t-statistic and [] the p-value.

positively related to increased household income. The relationship between GDPC and the TRESSIND has the highest coefficient of all the relationships between the variables.

Unit root tests were completed to decide on the final long-run estimation model for the panel data. The panel unit roots results or level of stationarity are reported in Table 9.5. None of the four variables was stationary at levels, but all became stationary at first difference. It could, therefore, be concluded that the best-fit approach for the estimation would be the utilisation of a Fisher-Johansen panel cointegration test to assess the long-run relationships between the variables for both models.

Table 9.6 summarises the Johansen-Fisher panel cointegration test that was used to confirm long-run relationships between the variables. In terms of this method, the null hypothesis indicates no long-run relationships and that the null hypothesis could be rejected. This means that a long-run relationship exists between variables. The results from Table 9.6 indicate that the Trace and Max-Eigen tests confirm a significant long-run relationship between the variables.

Following the Fisher-Johansen cointegration estimation, the long-run relationships between the variables revealed that it is necessary to estimate regressions for both models to calculate specific coefficients. For this purpose, the recommendations by Pedroni (2000, p. 119) are followed by using the FMOLS and the DOLS models. In this study, the DOLS estimation also serves as a robustness test. After considering the various forms of residual-based panel methods, results indicate that these models generally outperform single-equation estimation techniques (Pedroni 2000, p. 120).

**TABLE 9.5:** Panel unit root test (*p*-values reported).

| Variable | Type of test | At levels I(0) | At 1st difference I(1) | Final result |
|---|---|---|---|---|
| LOGGDPC | Levin, Lin and Chu test | 0.1826 | 0.0002* | I(1) |
| | Im, Pesaran and Shin W-stat | 0.2187 | 0.0008* | I(1) |
| | ADF – Fisher Chi-square | 0.1991 | 0.0010* | I(1) |
| LOGGINI | Levin, Lin and Chu test | 0.7323 | 0.0001* | I(1) |
| | Im, Pesaran and Shin W-stat | 0.8811 | 0.0013* | I(1) |
| | ADF – Fisher Chi-square | 0.9683 | 0.0044* | I(1) |
| LOGINCOME | Levin, Lin and Chu test | 0.3814 | 0.0015* | I(1) |
| | Im, Pesaran and Shin W-stat | 0.4318 | 0.0011* | I(1) |
| | ADF – Fisher Chi-square | 0.6656 | 0.0021* | I(1) |
| LOGTRESSIND | Levin, Lin and Chu test | 0.1855 | 0.0008* | I(1) |
| | Im, Pesaran and Shin W-stat | 0.8951 | 0.0059* | I(1) |
| | ADF – Fisher Chi-square | 0.9435 | 0.0023* | I(1) |

Key: ADF, augmented Dickey–Fuller test.
Note: Null hypothesis: Unit root.
*, indicates 1% statistical significance.

**TABLE 9.6:** Fisher-Johansen panel cointegration test.

| Hypothesised No. of CE(s) | Fisher Stat.** (from trace test) | Prob. | Fisher Stat.** (from max-eigen test) | Prob. |
|---|---|---|---|---|
| None | 65.32 | 0.0004* | 42.47 | 0.0001* |
| At most 1 | 31.12 | 0.0006* | 22.15 | 0.0144** |
| At most 2 | 18.18 | 0.0521 | 9.612 | 0.4751 |

Key: CE, common effect model.
*, indicates that the test statistics are significant at the 1% level; **, indicates significance at 5% level. Probabilities are computed using asymptotic chi-square distribution.

**TABLE 9.7:** Model 1: Fully modified ordinary least squares and dynamic ordinary least squares results.

| Method | Variables | Coefficient | *t*-statistic | *p*-value (prob) | Adjusted *R*-squared |
|---|---|---|---|---|---|
| FMOLS | LOGGINI | −1.1208 | −0.6053 | 0.5461 | 42.8 |
| | LOGINCOME | 1.9095 | 3.8355 | 0.0002* | |
| | LOGTRESSIND | −1.8569 | −2.9607 | 0.0037* | |
| DOLS | LOGGINI | −1.3044 | −0.8591 | 0.3931 | 56.8 |
| | LOGINCOME | 2.0902 | 3.3793 | 0.0012* | |
| | LOGTRESSIND | −2.4798 | −3.1953 | 0.0021* | |

Key: FMOLS, fully modified ordinary least squares; DOLS, dynamic ordinary least squares.
*, indicates that the test statistics are significant at the 1% level.
Note: Dependent variable: LOGGDPC; independent variables: LOGGINI, LOGINCOME and LOGTRESSIND.

For Model 1, the estimations with GDPC as the dependent variable are indicated in Table 9.7. In terms of the FMOLS method, LOGGINI was estimated as a non-significant predictor of LOGGDPC with a negative relationship, while the other two independent variables are significant predictors at different significance levels. LOGINCOME has a positive and significant impact on LOGGDPC, with a coefficient of 1.91. This indicates that a 1% increase in household income could result in a 1.91% increase in LOGGDPC. LOGTRESSIND have a negative relationship with LOGGDPC with a coefficient of −1.86. A 1% decrease in

LOGTRESSIND could lead to an increase of 1.86% in LOGGDPC. The DOLS regression method as a robustness test resulted in slightly different outcomes. LOGGINI, again, was not a significant predictor of the dependent variable. Both LOGINCOME and LOGTRESSIND were estimated to be significant predictors of LOGGDPC. LOGINCOME has a positive impact with a coefficient of 2.09, while LOGTRESSIND has a negative impact on LOGGDPC with a coefficient of 2.48. The results from the FMOLS and DOLS estimations are similar, confirming the results of both estimations. As an independent variable or predicting variable, LOGINCOME has a positive coefficient of between 1.9 and 2.1, while LOGTRESSINDEX has a negative coefficient of between −1.86 and −2.48. These two independent variables have, therefore, similar significant impacts on LOGGDPC.

Under the results of Model 2 (Table 9.8) with the LOGTRESSIND as the dependent variable, the FMOLS analysis indicates that only LOGGINI is not a significant predictor of LOGTRESSIND. Both LOGGDPC and LOGINCOME have negative and significant impacts on LOGTRESSIND. If income levels or GDPC levels decrease in time, a recession such as the LOGTRESSIND could increase, meaning a less diversified economy. LOGGDPC has a negative coefficient of −0.18, meaning a 1% increase in LOGGDPC could decrease LOGTRESSIND by 0.18%, leading to a more diversified economy. In addition, LOGINCOME has a negative coefficient of −0.28, meaning an increase in household income of 1% could decrease the TRESSIND.

For the DOLS analysis, similar results were estimated if compared to the FMOLS analysis, with only LOGGDPC and LOGINCOME proving to be significant predictors with coefficients of −0.14 and −0.22, respectively. As an independent variable or predicting variable, LOGGDPC has a negative coefficient of between −0.14 and −0.18, while LOGINCOME has a negative coefficient of between −0.22 and −0.28. These two independent variables have, therefore, similar significant impacts on LOGTRESSIND.

Table 9.9 indicates the results of the Granger causality tests for all the variables included in the two models. The most important results from the

**TABLE 9.8:** Model 2: Fully modified ordinary least squares and dynamic ordinary least squares results.

| Method | Variables | Coefficient | *t*-statistic | *p*-value (prob) | Adjusted *R*-squared |
|---|---|---|---|---|---|
| FMOLS | LOGGDPC | −0.1822 | −3.1561 | 0.0020* | 43.0 |
| | LOGGINI | 0.0696 | 0.1765 | 0.8602 | |
| | LOGINCOME | −0.2824 | −2.2054 | 0.0303** | |
| DOLS | LOGGDPC | −0.1348 | −3.7264 | 0.0004* | 65.2 |
| | LOGGINI | 0.6568 | 1.1916 | 0.2373 | |
| | LOGINCOME | −0.2191 | −1.5300 | 0.0477** | |

Key: FMOLS, fully modified ordinary least squares; DOLS, dynamic ordinary least squares.
*, indicates that the test statistics are significant at the 1% level. **, indicates that the test statistics are significant at the 5% level.
Note: Dependent variable: LOGTRESSIND; independent variables: LOGGDPC, LOGGINI and LOGINCOME.

**TABLE 9.9:** Pairwise Granger causality test.

| Null Hypothesis: | Obs | *F*-Statistic | Prob. |
|---|---|---|---|
| LOGGINI does not Granger cause LOGGDPC | 130 | 0.9935 | 0.1208 |
| LOGGDPC does not Granger cause LOGGINI | - | 15.4190 | 0.0006* |
| LOGINCOME does not Granger cause LOGGDPC | 130 | 3.8708 | 0.0234* |
| LOGGDPC does not Granger cause LOGINCOME | - | 2.1260 | 0.0436* |
| LOGTRESSIND does not Granger cause LOGGDPC | 130 | 2.8703 | 0.0604** |
| LOGGDPC does not Granger cause LOGTRESSIND | - | 8.0982 | 0.0005* |
| LOGINCOME does not Granger cause LOGGINI | 130 | 3.6137 | 0.0240* |
| LOGGINI does not Granger cause LOGINCOME | - | 0.7440 | 0.2264 |
| LOGTRESSIND does not Granger cause LOGGINI | 130 | 5.3176 | 0.0061* |
| LOGGINI does not Granger cause LOGTRESSIND | - | 1.1644 | 0.3155 |
| LOGTRESSIND does not Granger cause LOGINCOME | 130 | 4.1888 | 0.0173* |
| LOGINCOME does not Granger cause LOGTRESSIND | - | 0.3408 | 0.7119 |

*, indicates 5% statistical significance. **, indicates 10% statistical significance.

causality analysis are that LOGGDPC does cause changes to LOGGINI and not *vice versa*, while LOGGDPC and LOGINCOME have a bidirectional relationship. Also, LOGGDPC and LOGTRESSIND have a bidirectional relationship meaning that changes in the TRESSIND will impact and cause changes in GDPC, and changes in GDPC will impact and cause changes in the TRESSIND. The TRESSIND also cause changes and impacts on the Gini coefficient and household income levels. Lastly, changes in household income levels do cause changes in the Gini coefficient.

The two models passed the Jarque-Bera normality test with a *p*-value of 0.2810 and 0.1280 and a serial correlation *p*-value of 0.1721 and 0.2572, respectively.

## Conclusion

The relevant and ongoing debate regarding economic diversification or concentration of economic sectors within a region is the focus of the study. With the onset of COVID-19, diversification has become even more important, as the pandemic affected different economic sectors in different ways. The theoretical and empirical analysis as part of the literature review section provided clear evidence that economic sectoral diversification is a well-recognised path to economic success related to both economic growth and development. Specialisation within specific sectors could increase value-added production and improve links between economic sectors via extended value chains as well as logistics and infrastructure.

The primary objective of the study was to determine the strength of the relationships between economic development using GDPC and diversification using the TRESSIND. The objective was achieved by using panel data

econometric estimations. From the primary estimation in this study, it was confirmed that all variables included in the study (GDPC, TRESSIND, household income, and Gini coefficient) cointegrate in the long run as tested via the Fisher-Johansen cointegration method. It was estimated that a 1% improvement of the diversification (Tress) index could lead to an increase of between 1.86% and 2.48% in GDPC, while household income also has a positive impact on GDPC. Improved levels of equality did not have a significant impact on GDPC (Model 1). When the diversification index is set as the dependent variable (Model 2), a 1% increase in GDPC could improve the diversification index by between 0.13% and 0.18%, while household income has an even larger effect on diversification (between 0.22% and 0.28%).

Using the Granger causality analysis, it was found that, in the short run, a bidirectional relationship exists between GDPC and the TRESSIND diversification index, while GDPC does cause changes to the Gini coefficient. It was also interesting to find that a bidirectional causality relationship exists between GDPC and household income.

Policymakers should take note that the diversification of the economy is critical for sustained growth. It is, however, a long-term process, requiring a period of sustained implementation of diversification of economic sectors policy. The study has specific limitations, including aspects such as the variables used as many alternative variables, as identified in the literature review, could have been included. Future studies could include such alternative variables with a comparative analysis of developed and developing regions.

In conclusion, we make some recommendations to improve diversification; these actions could assist developing regions in achieving higher levels of economic development with a focus on diversification of the economy.

Sustained and focused long-term policies should be implemented via the principles of good governance and quality institutions. Such policies should aim to effect structural change by:

1. relocating resources where it will lead to growth
2. continuously improving technology via incentives for innovation, which in turn will lead to higher levels of productivity
3. continuously investing in human capital and infrastructure
4. promoting exports.

A diversified, complex economy is more resilient and prepared to absorb shocks, which could include health, economic, financial and natural hazard shocks. Diversification will also make regional economies competitive on a global scale.

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Chapter 10

# The 'resettlers' of the Three Gorges Dam project: The risk of social articulation impoverishment in regional and local economic development

**Lizl Steynberg**[a,b]
[a]Department of Technical Economics and Management, School of Economics and Management, Hebei University of Technology, Tianjin, China
[b]Department of Management and Entrepreneurship, Faculty of Management Sciences, Tshwane University of Technology, Pretoria, South Africa

**Shimei Jiang**
Department of Technical Economics and Management, School of Economics and Management, Hebei University of Technology, Tianjin, China

**Jan P. Grundling**
Centre for Local Economic Development (CENLED)/PASCAL International Observatory (Africa), School of Economics, College of Business and Economics, University of Johannesburg, Johannesburg, South Africa

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**Yuan Li**
Department of Technical Economics and Management,
School of Economics and Management,
Hebei University of Technology,
Tianjin, China

## Abstract

Each year, development-induced resettlement impoverishes local populations and significantly influences the lives, livelihoods and cultures of tens of millions of people. Numerous development organisations collectively implemented the impoverishment, risks and reconstruction model to address the impact of involuntary resettlement on affected communities. Between 1995 and 2010, China’s Three Gorges Dam (TGD) on the Yangtze River, one of the world’s largest and most expensive hydropower projects, displaced nearly 1 million people, making it the largest involuntary resettlement project. The TGD, as a symbol of Chinese industrialisation and modernisation, has four main objectives: severe flood management, hydroelectric production, improved river navigation and freshwater supply. This case study examines the TGD resettlement in China’s Hubei Province. While the Chinese government has created benefit-sharing initiatives, the gains accrue to a small group of people who reside in the TGD area. It will also be confined to the impacted community, ‘resettlers’, and will focus on economic and social development aspects rather than the project’s more significant consequences. The case study is intended for different contexts, not only for a single country such as China but also for countries with different cultural and political backgrounds.

## Introduction

Large-scale and technologically complex infrastructure projects are emblematic of modern society. Governments, international financial institutions and private financiers are investing billions in large-scale infrastructure projects worldwide to stimulate economies and accelerate growth. Power generation, transportation network expansion and bridges, irrigation and drinking water systems, urban environmental services, telecommunication systems, gas-related infrastructure, utilities, ports, urban construction and development, and information technologies are just a few of the projects that developers are interested in (Dinkelman 2011; Donaldson 2018; Donaldson & Hornbeck 2016; Lipscomb, Mobarak & Barham 2013; Roller & Waverman 2001). Such initiatives are critical to nation-building and modernisation (Gellert & Lynch 2003).

Governments expect capital accumulation and substantial growth in wages, production, export capacity and regional economy through investing in major infrastructure projects (Gellert & Lynch 2003). On the other hand, the scale of construction and level of technical sophistication of large-scale infrastructure

projects necessitate a significant amount of limited financial, technological and industrial capital (Steinberg 1982). The disadvantages are insignificant compared to the benefits – which include increased national and regional economic growth, improved living conditions, necessary environmental infrastructure, expanded public services, and strengthened national security (Liang 2008). The conundrum is that, although large-scale infrastructure projects support these benefits, they also harm the environment and impoverish people. As long as conventional development practices and economic reasoning promote infrastructure development, large-scale infrastructure projects will be inevitable. As a result, adverse effects on the natural environment and the resettlement of the population must be minimised.

Throughout history, involuntary resettlement has always been a part of development. It has left an indelible mark on the development of developed and underdeveloped countries. Involuntary resettlement of people displaced by large-scale infrastructure projects is a major development challenge that is accompanied by economic, social and environmental challenges that result in hardship and deprivation (Cernea & McDowell 2000; Operation Evaluation Department 1998; World Bank 2001). According to Cernea and McDowell (2000, p. 12), a significant number of people are impoverished by involuntary resettlement. The authors assert that socially responsible resettlement, or resettlement based on equality, will alleviate poverty and benefit national and regional economies. The involuntary resettlement process usually begins once potential project effects on resettlers have been assessed. A socio-economic crisis is, therefore, unavoidable if involuntary resettlement is not adequately managed. Involuntary resettlement may also result in a significant loss of physical and or non-physical assets, raise the risk of poverty, impede livelihoods and create development stagnation (Downing 2002). Construction of roads, schools, hospitals, and cultural and recreational facilities, on the other hand, may promote economic growth. During the construction phase of large-scale projects such as hydropower projects, the unexpected influx of outside labour may cause conflicts with local communities. These projects, however, may be a substantial source of income for local communities throughout the operational phase. Local electricity supply and other reservoir-related activities are potential drivers of long-term economic and social development.

The human implications of large-scale infrastructure projects based on involuntary resettlement are the subject of this chapter. When grandiose infrastructure is constructed, local populations are challenged because they are either displaced by the project (the resettlers) or must support the displaced (the host community). In this context, involuntary resettlement refers to the phase of displacement and eventual settlement – involuntary because a procedure is required, and resettlement because the affected population must start anew in a new location. Croll (1999) describes involuntary resettlement as the forced displacement of entire families to

remain there permanently. Under this term, though, there are many types of resettlements, ranging from *in-situ* resettlement, which involves only a partial loss of assets, to long-distance resettlement, which involves people being relocated thousands of kilometres away from their original location.

Large-scale projects such as road construction, dam construction and the construction of many other types of infrastructure may require the relocation of a community or a group of people. This procedure necessitates people physically moving from one area to another. Unless carefully and thoroughly planned and managed, large-scale infrastructure projects, especially dam projects, can cause severe ecological damage and undermine the natural resource base, leading to a socio-economic impact on resettlers. The purpose of this case study is to describe the involuntary resettlement of the affected population in Yiling District, People's Republic of China, as a result of the construction of the TGD. Considering the discussion above, the primary aim of this case study is to explore the impoverishment risk of social disarticulation for involuntary resettlement as experienced by resettlers in the TGD area.

The significance of the case study is that it provides essential information for government decision-makers to address gaps in existing resettlement social articulation plans. Also, project managers will be able to obtain additional information about the impact of involuntary resettlement on creating social capital in the affected communities. The case study can also be used as a resource for other scholars and as a springboard for a more in-depth investigation of the impact of involuntary resettlement caused by large-scale infrastructure projects. In addition, it also touched on some crucial issues, namely, the consequence of large-scale infrastructure projects imposed by governments on local communities – communities that have been deemed in need of change and need to be brought closer to urbanisation, in terms of modernisation, through involuntary resettlement. The remainder of the chapter is organised as follows: the second section presents the literature review of social disarticulation based on the impoverishment, risks and reconstruction (IRR) model; the methodology is outlined in the third section; the TGD case is discussed in the fourth section; the key recommendations are discussed in the fifth section, and the conclusion and implications are provided in the sixth section.

## Literature review

This section discusses the theoretical base of impoverishment risk of social disarticulation of involuntary resettlement of the TGD project using the IRR model.

In the era of Baron Haussmann, severe population displacement made possible the exquisite master plan of today's Paris, especially the unique urban marvel of Place de L'Etoile. New York's majestic Cross Bronx Expressway cut through numerous neighbourhoods, some of which should have been

preserved (Caro 1975). Forced urban displacement in Boston's West End is well-known, and it gave birth to the entire sociological literature (Gans 1959, 1968). Current hydropower projects in Romania, such as the Bicaz power plant and the Portile de Fier Dam on the Danube, have caused the displacement of several towns and the inundation of an island. Many other world-renowned cases may be added to this list.

Because of various reasons – including improving living conditions, introducing necessary environmental infrastructure and increasing public services – all countries continue to experience involuntary displacements. As a consequence of accelerated infrastructure provision and rising population densities, the degree of population displacement related to development has increased dramatically in recent decades, especially in developing countries.

Involuntary resettlement is described by Cernea and Schmidt-Soltau (2006, p. 1810) as 'the compulsory removal processes initiated when a project's need for right of way is deemed to override the "right to stay" of the inhabiting populations'. Voluntary resettlement occurs if the affected population can stay; otherwise, involuntary or forced resettlement occurs (Boyle, Halfacree & Robinson 1998; McDowell & Morrell 2010; Muggah 2003; Schmidt-Soltau & Brockington 2007; Wilmsen & Wang 2015; Yang & Qian 2021). It is possible to divide involuntary resettlement into three categories: political, environmental and people displaced by dams and other large construction projects. While migrants that are resettled involuntarily do not have the right to remain, it is important to obtain their free and informed consent before migration (Vanclay 2017). Whereas what is labelled involuntary can require certain affected people's previous, free and informed consent, willingness to migrate and their number of choices. Involuntary resettlement sets in motion a slew of international and national policies and regulations aimed at safeguarding the needs of displaced people. Meeting these directives necessitates a significant amount of commitment, planning and financing on the part of the government and its partners.

The main characteristics of involuntary resettlement include conforming to development processes and schedules, viewed as economic externalities; improperly identified expenses and no specific advantages, not treated independently from environmental impacts; problem-solving addressed within the project period rather than ahead of time, sponsored by government and other organisations; and coercion used to relocate people, which represents the interest of the government and influential organisations.

Involuntary resettlement should have the following objectives, according to the World Bank (2001):

> Involuntary resettlement should be avoided where feasible, or minimised, exploring all viable alternative project designs [...] Where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits [...]. Displaced persons should be assisted

> in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels or to levels prevailing prior to beginning of project implementation, whichever is higher. (n.p.)

For more than a decade, the notion that resettlement can and should be a development opportunity has been clearly expressed (Cernea 1999, 2003, 2007; Perera 2014; World Bank 2004). Ethnographers, sociologists, geographers, economists, anthropologists and development practitioners collectively provide a detailed account of the resettlement experience (Chambers 1969; Colson 1971; Croll 1999; Drèze, Samson & Singh 1997; Hansen & Oliver-Smith 1982; Scudder 1962, 1981; Vandenberg 1999) and offer a comprehensive overview of the contributing factors of poverty. Based on the preceding, Cernea (1996, 2021) identifies eight significant (listed later on) impoverishment risks resettlers face.

Based on these eight impoverishment risks, the IRR model was developed as a prescriptive resettlement framework (Cernea 1995, 1996, 1997b, 1998, 1999; Cernea & McDowell 2000; Downing 2002; Gutman 1994). Cernea's IRR model, developed in the 1990s, is the basis of this case study. The IRR model provides a conceptual framework for explaining, predicting and reversing the risk of poverty during involuntary resettlement (Cernea 2007; Xiao, Liu & Feldman 2018). It is widely adopted in impoverishment through resettlement studies and hundreds of World Bank resettlement initiatives (Cernea & McDowell 2000; Mathur 1998; Meikle & Walker 2000; Mejía 2000; Rogers & Wang 2006; Tan, Hugo & Potter 2005; Tan, Zuo & Hugo 2013). On the other hand, the IRR model is simply a conceptual framework, and it does not provide a specific toolbox for solving practical problems.

The IRR model identifies poverty risks associated with involuntary resettlement and describes the processes needed to rebuild resettlers' livelihoods (Cernea 1997b). Therefore, project planners can utilise the IRR model for regulating involuntary resettlement to produce favourable and generally predictable outcomes. In contrast, it has been less successful in explaining inequalities in involuntary resettlement impacts, and IRR cannot provide a framework for understanding the governance of resettlement initiatives (Wilmsen, Adjartey & Van Hulten 2018) as it positions a homogeneous state as in conflict with development 'victims' (Cernea 1997b).

Unless explicitly addressed by targeted policies, this model stresses that involuntary resettlement creates impoverishment among resettlers, resulting in issues such as landlessness, homelessness, joblessness, marginalisation, food insecurity, loss of access to property resources and services, increased morbidity, and mortality and social disarticulation. The eight risks or resettlement principles of the IRR model include:

1. **Landlessness:** The loss of land is referred to as landlessness and is the main foundation for the livelihood of rural people. Land expropriation deprives

many people of their primary means for establishing livelihoods, economic activities and production systems. Often, land is lost forever and never fully compensated, only to be partially replaced. This is the most common way for the displaced to be decapitalised and reduced to poverty. Whereupon, natural and manufactured capital are both depleted.

2. **Homelessness:** Loss of housing is termed homelessness. For many people, the loss of housing is only temporary, but it is a chronic condition lasting for years for others. Homelessness is, therefore, related to loss of identity and cultural impoverishment. If neighbouring households of the same relative group are scattered, the loss of housing may affect family cohesion and mutual support. Therefore, decentralised relocation is preferable to collective relocation of related people and neighbours.
3. **Joblessness:** It is defined as securing a job that can ensure a living wage. Both rural and urban displacements have led to unemployment. Landless agricultural workers, service workers and artisans may be among the unemployed. Unemployment or underemployment of resettlers may have a long-lasting effect after physical relocation. Creating new job opportunities is challenging and requires significant investment, new creative approaches and greater dependence on project benefits.
4. **Marginalisation:** Displaced people cannot restore their previous social status. When resettlers lose their economic status, they are marginalised. For example, middle-income agriculture families become small landowners, and small business owners and artisans lose their businesses and fall into poverty. It is further possible that human capital may be lost or outdated. Social and psychological marginalisation often accompany economic marginalisation, which manifests in a decline in social status, a loss of confidence in themselves and society, and a sense of injustice and vulnerability.
5. **Food insecurity:** It occurs when the calorie-protein consumption is lower than the minimum level required for average growth and work. Involuntary resettlement reduces self-sufficiency and disrupts the local food supply system, increasing the possibility of long-term food insecurity.
6. **Loss of common property resources and services:** It entails the loss of property assets of the relocated community, including forested land, water bodies, pastures and burial grounds. During resettlement, poor farmers lose access to common community property, such as access to forests, water bodies and pastures. This indicates unpaid loss of income and livelihood degradation that planners often overlook.
7. **Increased morbidity and mortality:** It includes severe health problems and, in some cases, death. Involuntary resettlement increases the risk of illness among the poorest people because it involves increased stress, psychological trauma and the spread of parasites and vector-borne diseases. Epidemiological problems caused by unsafe water and sewage systems include diarrhoea and dysentery, causing severe health problems.

8. **Social disarticulation:** It consists of the disarticulation of the social fabric of communities, such as social organisation, interpersonal relations, kinship groups and informal networks. Dismantling community structures and social organisation – as well as the decentralisation of informal and formal networks, local associations, and other forms of social capital – results in significant social capital losses. Such disarticulation endangers livelihoods that planners rarely understand or assess and is a source of loss of power and impoverishment (Cernea 1997a; Dwivedi 2002; McDonald-Wilmsen & Webber 2010). Therefore, this risk provides a foundation for thinking about what happens when an established community is involuntarily resettled by external forces. As a result, social disarticulation is forced displacement that strips away the existing social fabric. Communities are divided and dispersed, social organisation is disrupted, interpersonal relationships are disrupted and kinships are decentralised. Mutual support, local volunteer organisations and self-organised mutual service are disturbed. Besides environmental, physical and human capital losses, this represents a net loss of social capital (Cernea 2000, p. 30).

Adding to the eight risks identified by Cernea (2000), Scudder (1997) added a ninth risk, the loss of resiliency.

These risks are related to impoverishment. To mitigate these risks and help resettlers rebuild sustainable livelihoods, counter-risk strategies must be implemented (Cernea 2007; Xiao et al. 2018). The risk-reversal activities of livelihood reconstruction, according to the IRR model (Cernea 1997b, 2000; Cernea & Schmidt-Soltau 2006), include:

1. landlessness to land-based resettlement
2. homelessness to house reconstruction
3. joblessness to re-employment
4. marginalisation to social inclusion
5. food insecurity to adequate nutrition
6. loss of access to the restoration of community assets and services
7. increased morbidity to improved health care
8. social disarticulation to rebuilding networks and communities.

Failure to effectively plan and execute large-scale infrastructure resettlement will cause economic, social and institutional problems. Cernea (2000) and other supporters of the IRR model believe that social disarticulation is one of the primary social risks that development-induced resettlement brings to affected communities. If not managed effectively, social articulation may become a challenge for locals, making it difficult to achieve a harmonious social organisation and limited social differentiation.

Earlier research has linked social disarticulation to loss of place-based identity (Hirschon 2000), overburdened social networks and informal support mechanisms (Rogers & Wang 2006), loss of authority structures (Downing 1996), undermining

the stability of routine culture (Downing & Garcia-Downing 2009), or it being viewed as merely a stage in the adjustment process (Scudder & Colson 1982).

According to researchers, involuntary resettlement undermines the community's cohesion (Vandenberg 1999). The social network – including mutuality, reciprocity, dominance and submissive social interrelationships – that provides stability and safety nets is destroyed, and social capital is lost (Cernea & McDowell 2000; Peng, Shi & Zhang 2021). Communities may temporarily lose their ability to manage themselves as a result of involuntary resettlement, and their ability to cope with uncertainty can be compromised (Downing 1996). Some studies indicate that social disarticulation in resettlement is a result of (1) a lack of awareness or attention to social issues by planners (Mahapatra & Mahapatra 2000) or a lack of awareness of the importance of cultural customs and religion (Abutte 2000; Vandenberg 1999) or (2) other intangible losses such as relationships, ancestral ties, and non-codified rights and claims to land and resources (Witter & Satterfield 2014). Because of the loss of social and cultural capital, these general assumptions point to social disarticulation.

These losses are significant, but when the reasons for disarticulation are viewed merely as cultural or social the material resources of the community before and after resettlement are sometimes ignored (Price 2009). Therefore, material changes are understood as coming from, inherent to, and mutually constituting cultural-social interactions. Changes in material resources have reshaped cultural and social relations and, at the same time, mobilised social and cultural meanings and affected material distribution patterns. Cultural-social relations are rooted in habits that justify and maintain material acquisition patterns, as expressed in discourses, laws and practices (Bourdieu 1977).

In addition to economic risks, social disarticulation has challenged resettlers to lead a socially stable existence in a 'new' economic, social and environmental environment affected by development, especially the displacement caused by dams like the TGD case. Involuntary resettlement fractures the current social fabric, as Cernea (2004) summarises in describing the risk of social disarticulation. It divides and disperses communities, disrupts social structures and interpersonal relationships and separates groups of relatives. There are disruptions to life-sustaining informal networks of mutual assistance, local volunteer groups and self-organised mutual service. The result is a net loss of social capital that is exacerbated by natural, physical and human capital losses. The programmes that cause social disarticulation are usually ignored, and social capital losses are not compensated, and such losses have long-term implications.

The aforementioned summary of social disarticulation demonstrates that resettlers suffer from the loss of social capital, which is at the core of human cohesion and interaction, in addition to economic losses. This may have a significant impact on the instability and disintegration of society.

# Method

Appropriate and rigorous methods were formulated to address the research question. However, background information was used first to place the study in a global perspective. Academic literature, government reports and documents from major international organisations, especially the World Bank, were important sources. The reasoning underlying these practices is outlined in academic literature. Reports from the government provided an outline of the national situation, including policy, practice and outcomes. Finally, documents from international institutions included an overview of national practices and outcomes and a comprehensive presentation of the impoverishment risk of social disarticulation relevant to the TGD.

A descriptive case study was chosen. A descriptive case study is a narrative of a real-life event that individuals or communities faced and how they dealt with it. It provides a concise yet detailed account of the facts of the case to help the reader consider the causes of the problem, the factors behind the solution, the consequences of execution, lessons learnt and references to relevant theories, concepts, policies and tools. The following are the basic features of descriptive cases. They begin by telling a story, defining a real-world problem and offering key information about it. They then identify the key individuals and groups involved in the problem, as well as their actions, thoughts and viewpoints, building the storyline around the main characters and fascinating and relevant events that are both engaging and instructive. The main characters’ views of the problem are then described, along with the solutions they discussed, the solution they selected, the implementation procedure, the outcomes and the current status of the problem and the solution using frameworks, principles and analytical methods that are relevant to the story.

# The case of the Three Gorges Dam Project in China (1993–2009)

In this section, the case of the TGD Project in China from 1993 to 2009 is discussed, with a specific focus on the background, history, involuntary resettlement, primary concerns and results of involuntary resettlement at the TGD.

## Background

After the Nile and the Amazon River, the Yangzi (Yangtze) River is the third longest river in the world, with a total length of 6 380 km, and China’s ‘golden waterway’ connecting southwest and central regions with coastal regions (Li 1990). The TGD in Yiling District, People’s Republic of China, was first proposed in the early 1900s and officially approved in 1958. However, the world’s largest hydropower project did not commence until 1993, with completion

expected between 1994 and 2009 (Ma 2010; Xu, Tan & Yang 2013). Subsequently, several other projects were required to ultimately operationalise the dam, causing the project to be postponed until 2011 (Xu et al. 2013). Almost the size of Singapore, the TGD covers 1 080 $km^2$ with a 185 m-high wall enclosing a 632 $km^2$ reservoir and has a storage capacity of 39.3 billion $m^3$ (Challman 2000; Smil 1995). Referred to as China's 'Great Wall' across the Yangtze, it is viewed as a sign of China's vitality (Kennedy 2001). The total cost, anticipated at $22.5bn, totalled $27.6bn at the end of the project. Because it offered probable geological threats to the surrounding area, the project had substantial environmental, ecological and socio-economic repercussions. Long-term dam problems include limiting the dam's adverse environmental impact while ensuring its positive impacts, including flood management in densely populated areas along the middle and lower Yangtze River', the generation of electricity to help industrialise central south and eastern China, greater Yangtze River navigability and availability of fresh water (Fu et al. 2010; Li 1990). The impact that distinguishes this dam from others though is resettlement. Chongqing (80% of flooded areas and displaced residents) and Hubei (20%) are among the flooded areas. The dam inundated 31 000 hectares of agricultural land, 1 300 villages, 140 towns and 13 cities (Alberts et al. 2004). The reservoir was filled in three stages, with an elevation of 135 m in 2003, 156 m in 2006 and 175 m in 2009 (Gao et al. 2010).

With a capacity of 22 500 megawatts, the TGD is the largest hydroelectric power station in the world, equivalent to about 20 coal-fired power plants. It is also one of the largest and most prominent manufactured structures, and its supporters hail it as the crown jewel of infrastructure development. Furthermore, it is one of the most controversial water conservancy projects ever constructed. Two more reasons make the TGD the largest water project in the world: it produces the most electricity of any hydroelectric station in the world, and it displaced the most people in a single project in history.

However, during its 17-year construction period from 1994 to 2010, the scheme was surrounded by controversy and misunderstanding. When completely operational, the dam lifted Yangtze River water levels from 68 m to 175 m above sea level, flooding over 1 000 $km^2$. Floods that followed led to the largest dam-induced involuntary displacement surge in history, displacing at least 1.3 million people (Zhu et al. 1992). This involuntary displacement shattered all previous global records, and several exclusions in these figures imply that the relocated population is substantially more significant. As one of the world's most densely populated countries, China has one of the highest levels of development-induced displacement and resettlement in the world. Dam construction was the sole reason for 34% of development-induced displacement and resettlement in China between 1950 and 1990 (Koenig 2002). The Danjiangkou Dam on the Han River (380 000 people) and the Sanmenxia Dam on the Yellow River (320 000) have required large-scale resettlements.

A similar issue occurred in other Asian countries as well as in Africa and Latin America during the 20th century, resulting in large-scale displacement because of development. As an example of an Asian country, Bangladesh has been severely impacted. Because of the construction of the Kaptai Dam, which was completed in 1962, over 60 000 Chakma and Hajong tribes were forced to relocate (Pegu & Dutta 2019). Bangladesh deals similarly with large populations of individuals forced to invade public land. Involuntary resettlement because of dam construction is a well-known issue in Vietnam, Turkey and Nepal. Over the past 50 years, more than 50 million people have been displaced in India (Singh & Ganguly 2011). Dams were built throughout Africa in response to political developments brought about by independence and the increased energy demands of autonomous governments. Akosobmo Dam in Ghana (in 1965), Aswan High Dam in Egypt (in 1970) and Kariba Dam on the Zambezi River on the Zambia-Zimbabwe border (in 1959) are all examples of dam construction in Africa in the 1950s and 1960s. Furthermore, there have been an increasing number of dam projects in Africa in recent years, many of which have been financed by China. Africa has recently witnessed the completion of a number of major infrastructure projects, including the Gibe III Dam in Ethiopia, the Merowe Dam in Sudan and the Lesotho Highland Water Project (between Lesotho and South Africa). In Latin America, dam construction is particularly noticeable as a cause of displacement. A total of 68 000 people were replaced during the construction of the Yacyreta Dam on the Argentina-Paraguay border and 59 000 people during the Itaipu Dam construction on the Brazil-Paraguay border. The building of the Sobradinho Dam in Brazil, which opened in 1979, is reported to have displaced 60 000 people. The building of the Itaparica Dam in Brazil (also known as the Luiz Gonzaga Dam) resulted in the displacement of approximately 50 000 people (Cernea 1997b).

Those displaced in the TGD were promised compensation for the loss of their housing and income, but in most cases, this compensation was insufficient to restore their standard of living or never materialised (Li & Rees 2000; Wilmsen, Webber & Yuefang 2011a, Wilmsen, Webber & Yuefang 2011b; Yuefang & Steil 2003). Dam construction often involves relocating and resettling people to make room for reservoirs. As a result, in the TGD, the majority of resettlers remained on their native land. They were often without stable housing or employment, and their former way of life was irreversibly destroyed. The affected population is projected to gain from their relocation if the resettlement is seen as a separate development initiative. Such a result would be noteworthy because resettlement initiatives have long been associated with poverty in underdeveloped countries.

Located in China, the Three Gorges Project (TGP) involves the biggest hydroelectric power project in the world, including the TGD. The TGP has several features that make it an especially appealing location. Firstly, the

project introduces an exogenous source of variation that can be used as a natural experiment to estimate the effect of flooding and involuntary displacement on the labour market. Decision-making was heavily concentrated during the lengthy deliberation and completion period, with limited input from local stakeholders. A comprehensive geological survey was conducted in 1979, about two decades before construction began, to determine the dam's location. Secondly, the scale and duration of the resettlement process were extraordinary, necessitating a more thorough investigation of the short- and long-term effects on resettlers and non-resettlers. Thirdly, and most critical, the government used a simple and unambiguous regulation to identify residents as part of the displaced population. Around 1995 and 2010, all people residing below the 175 m flood line in the reservoir catchment zone were evacuated, and homes at lower elevations were ordered to move sooner.

## History

China has envisioned constructing a large-scale dam on the Yangtze for more than a century. The founder and father of modern China, Sun Yat-sen, proposed in 1919 in his Nation-Building Strategy Part II: Industrial Plan to build flood control dikes in the Three Gorges section of the Yangtze River to strengthen the waterway connecting Wuhan and Chongqing, flood control in the middle reaches of the river and electricity generation (Dai 1994; Gleick 2008; Sun 1922). Perhaps the earliest TGP proposal was his.

To determine the feasibility of constructing a large-scale dam on the Yangtze River's upper reaches, the Kuomintang government carried out several field studies in 1932. This marked the start of preliminary work for building the dam. In 1944, J.L. Savage, an American design engineer from the United States Bureau of Reclamation, presented initial recommendations and a plan for constructing the TGD (Jones & Freeman 2008). In 1946, the United States Bureau of Reclamation and the People's Republic of China signed an agreement for the construction of a massive dam in the Three Gorges area. More than 50 Chinese technicians were sent to the United States to assist with the project. In 1947, because of the severe economic crisis and the escalation of China's civil war, Chiang Kai-Shek's administration terminated all design work of the TGD (Dai 1994).

After severe flooding along the Yangtze River in 1949, the newly formed communist government, under the leadership of Chairman Mao Zedong, vowed to speed up the construction of large-scale hydropower projects to prevent floods and planned to build large-scale dams, dikes and sluices – but nothing significant happened for several more decades. Following the 1949 revolution, the government revived the dam's construction. As Gleick (2008) notes, Mao Zedong wrote about the TGD plan in the 1950s that a stone wall was 'to be erected, to cut off the cloud and rain from the Wushan Mountain; a lake with flat water surface is thus created in the high gorges'.

Although Mao Zedong proposed a project at the Three Gorges to tame the turbulent river in 1953, the major event that prompted the government to reconsider the TGD was the devastating flood of the Yangtze in 1954, which killed more than 30 000 people and caused massive economic losses, which led the government to revive the Three Gorges plan in 1955, with flood control as the primary goal (Dai 1994; Gleick 2008; Ponseti & López-Pujol 2006). In 1956, the Yangtze Valley Planning Office was established, assisted by Soviet experts, to conduct specialised design and feasibility studies for the TGP (Barber & Gráinne 1993).

Office Director Lin Yishan, as a supporter of the TGD, suggested constructing a large-scale dam nearly 250 m high for flood control. On the other hand, Li Rui from the Ministry of Electric Power opposed the TGD, advocating a smaller dam and questioning its unlimited flood control potential (Dai 1994). After an intense debate in 1957, although the TGD was opposed by the short-lived ‘Hundred Flowers Movement’, critics of the project used the short-term press freedom to attack supporters for ignoring complex technical issues and building the dam purely for national prestige. The Central Committee of the Communist Party of China approved the construction of the TGD. Nevertheless, socio-political events and turmoil (such as the civil war, the communist revolution, the cultural revolution and the democracy movement) delayed the approval of a large-scale Yangtze River dam until almost three decades later, in 1993 (Huang & Xiao 2005).

In the 1980s, Li Peng resumed design work, and the State Council approved the construction of a 175-m-high dam with a 150-m water level. Construction was initially scheduled to start in 1986 but was postponed because of increased economic difficulties. The National People’s Congress approved the dam’s construction on 03 April 1992 despite an unprecedented number of absentees. This almost certainly raised responses to various environmental and other concerns. Vice-Premier Zou Jiahua announced on 28 December 1993 that the government would stop the pilot resettlement programme, and full-scale evacuation would begin in 1994. The TGD’s formal construction started on 14 December 1994 (Allin 2004). In 2003, the first electricity was generated, and the dam was completed in 2006.

## Involuntary resettlement of the Three Gorges Dam

Prior to resettlement, living conditions at the TGD were challenging. Because of the anticipation of the dam for many years, investment in the area stagnated (Yuefang & Wilmsen 2012). The TGD affected 20 counties, 12 designated as national poverty level counties (Zhang & Zhang 2008). In 1993, the average annual income per capita was $113.75 (R1 909.57; 769.20 RMD), much lower than the regional ($178.27; R2 992.66; 1 205.50 RMD in Hubei and $139.58; R2 343.16; 943.87 RMD in Sichuan) and national ($203.59; R3 383; 1 376.72 RMD)

averages (Yuefang & Steil 2003). Additionally, urban dwellers constituted only 10% of the total population, even less than the national average of 28% (Wilmsen 2018b; Yuefang & Steil 2003).

Three types of resettlements were initiated by the Chinese authorities: near-resettlement, voluntary scattered distant resettlement and government-organised distant resettlement (GODR). In the TGD near-resettlement phase, 1.2 million people were resettled upslope or to nearby towns or cities, whereas the voluntary scattered distant resettlement phase resulted in 24 214 people moving to 27 provinces, while the GODR led to 190,000 people leaving their hometowns and counties to relocate to 11 provinces (about 1 000 km to 2 000 km away). Although exact numbers are difficult to obtain, over 17 years (1991–2007), estimates of displaced people ranged from 725,500 (Dai, Thibodeau & Williams 1998), 846,550 (Zhu 1996), 1.2 million (Yangtze Water Resources Commission 1997), 1.35 million (Xu et al. 2013), 1.6 million (Qi 1998) to 1.9 million (Dai 1997, 1998).

Thirteen cities, 116 townships (formerly known as communes), 1 711 administrative villages and 17 160 hectares of farmland that fell below the 5 000 km shoreline of the reservoir area were flooded. During the early stages of the TGD, new regulations were passed requiring, in addition to individual and household compensation, economic development of the resettlement area. These policies, which are known as 'development type resettlement' (Heggelund 2004) or 'resettlement with development' (McDonald, Webber & Yuefang 2008), emphasise the improvement of infrastructure and the economy of the destination community. In essence, this strategy provided displaced people with higher incomes and better living conditions than before and promoted the economy of the surrounding area (McDonald et al. 2008). State Council Decree 126 of 1993, The Regulations on Resettlement for the Construction of the TGP (hereafter, 1993 Decree), was the first to implement resettlement on the Yangtze River. These regulations emphasised near-resettlement by opening up the so-called wasteland to improve land resources (Yan et al. 2018). However, two amendments to the 1993 Decree were made in 1999 to ensure the environmental conservation of the Yangtze Basin's deteriorated slopes. The first was to relocate a vast number of resettlers from the reservoir region, and the second was to close or restructure unprofitable businesses. These amendments were included in the Regulations of 2001 (State Council 2001).

Several measures to extend the economic benefits of improving the resettlement region are outlined in the 2001 Regulations. These include (1) distributing dam revenue from power generation and taxes raised during the project's construction to the flooded areas, (2) providing electricity to the flooded areas, (3) providing local residents with preferential employment and tax incentives and (4) providing loans to local farmers and entrepreneurs for the growth of key industries (Wilmsen 2016; Wilmsen et al. 2011a). The State

Council also created two programmes to redistribute project benefits in the resettlement region: the Partnership Support Programme, in which eastern provinces supported specific counties in the TGD region; and the Development Assistance Fund, in which government funds were distributed to the TGD based on electricity generation revenues (Wilmsen et al. 2011a).

Although the TGD is regarded as involuntary resettlement, the resettlers’ perspectives are much more complex. Involuntary resettlement seems linked to the idea that affected populations lack agency or choice over their futures (McDonald et al. 2008). The state obtained informed consent, so there was no choice but to remain (McDonald-Wilmsen 2009). The resettlers, on the other hand, were not without options. Households took various decisions, some within the context of the relocation plan and others outside of the plan. There was an opportunity to volunteer for long-distance resettlement (GODR) (Padovani 2005; Tan 2008). In this scheme, an individual from each family visited the suggested resettlement location to choose where they wanted to live. The choice was determined by the availability of the site and by drawing lots (Tan 2008; Wilmsen & Wang 2015). Independently of the initiative, residents had to decide whether to relocate with their original village, migrate to an urban centre or leave for good indefinitely or temporarily to find employment or join family members elsewhere (Wilmsen 2018b).

Despite reports that the TGD was used as a development opportunity (McDonald et al. 2008), resettlement was a necessary part of the TGD construction. The resettlement was limited to the construction stages to save money and complete the project on time. There were three phases of resettlement. Stage I was completed between 1993 and 1997 to ensure that the Yangtze River was diverted and dammed by 1997. Between 1998 and 2003, Stage II was completed, allowing the dam to be filled to 135 m and the turbines to be installed (Tan et al. 2005; Wilmsen & Wang 2015). Between 2004 and 2009, Stage III of the resettlement was completed, allowing the dam to reach its final height of 175 m (Tan et al. 2005). Financial considerations rather than welfare concerns prompted the resettling of citizens during these main phases (Yuefang & Wilmsen 2012).

About 20% of the population lived in rural areas, and they were all relocated to the same administrative county. As a result, many rural residents moved to urban areas (Wilmsen & Webber 2017). The majority of resettlers were urban residents, who were mainly relocated to nearby urban areas or newly developed urban areas outside of the floodplain. In addition, nearly 125,000 urban residents were resettled, often to different provinces, outside the TGD floodplain (Xu, Tan & Yang 2011).

The idea of ‘resettlement with development’ was implemented with noble intentions and garnered extensive international support. Resettlement policies in China are seen by the World Bank as a model for developing countries (McDonald et al. 2008) because they strive to balance infrastructure

development with the individual rights and freedoms of citizens. Recent studies have found that resettlement impacts people differently, and many resettlers lead better lives than before. Xi (2016) investigated the social and psychological impacts of newly resettled citizens integrating into any new community and found that integration and overall well-being are a gradual process. According to Wilmsen (2016), a longitudinal study of two relocated communities in the TGD area found that the situation has improved considerably over time, especially among the poorest and most rural resettlers. Although there were 'difficulties early on', the relocation project was deemed successful, praising the Chinese government's efforts to meet the needs of TGD communities fairly and peacefully (Wilmsen 2016).

As a result of changes in infrastructure and housing (Cernea 1994; Wilmsen et al. 2011b), resettlers' incomes have declined (McDonald 2006; Wilmsen 2011; Wilmsen et al. 2011b), their livelihoods have been destroyed and permanent employment has been replaced with temporary agricultural and industrial employment (McDonald 2006; Vanclay 2017), resulting in high levels of discontent (Padovani 2006; Wilmsen & Van Hulten 2017), violent demonstrations (Jun 2000; Yardley 2007) and outmigration (Hwang et al. 2007; Li & Rees 2000).

## Primary concerns

Involuntary resettlement at the TGD has serious societal consequences. Ninety-nine percent of people living here have never relocated (Zhu 1996). Although most resettlers preferred to live near their previous houses (Zhu 1996), most were forced to migrate to settlements further afield by the lack of farmland. In addition, because of restrictions at resettlement sites and logistical concerns, many larger villages were divided, and residents from the same clan were relocated in groups to different resettlement sites. Involuntary resettlement caused these residents to leave their ancestral homes and disrupted their close social networks.

Nonetheless, there is a darker side to resettlement with development. In certain involuntary resettlements, poverty levels are higher than before the relocation (Flower 2009; Xi & Hwang 2011b). Especially rural inhabitants suffered because of the loss of land after resettlement (Padovani 2009). The majority of involuntary resettlers did not benefit from the TGD project (McDonald et al. 2008; Wilmsen et al. 2011a, 2011b). Likewise, Flower (2009) and Xi and Hwang (2011b) agree that resettlers' quality of life was lower after resettlement than before, and a substantial number of resettlers became urban working class members. Furthermore, income from non-agricultural activities could not cover agricultural expenses, which made them more vulnerable to future setbacks than before resettlement. Moreover, the failure of industrial development initiatives led to the closure of many businesses

intended to provide employment opportunities and attract resettlers, resulting in high unemployment for many resettlers relocated through near-resettlement (Tan & Hugo 2011). As a result, they fall deeper into poverty and are discriminated against by local authorities and urban residents.

With the large-scale resettlement at the TGD, the environmental carrying capacity in the reservoir (particularly land resources) became a significant issue (Xu et al. 2013), especially the overestimation of the carrying capacity. Even though the Canadian-Chinese joint venture resettlement feasibility study indicated that ‘the reservoir area has abundant virgin land that can be opened to compensate for the inundated farmland, and there is great potential for the development of industry and services’ (Yuefang & Steil 2003, p. 430). Based on these results, the first resettlement strategy was mainly near-resettlement (Heming & Rees 2000). Although there was a lack of suitable land because of the high population density in the TGD area (2.7 times that of the national average) (Chau 1995; Yangtze Valley Water Resources Protection 1999), resettlers were forced higher into the mountains, and steeper slopes and poorer soils led to reduced crop yields and reduced land assets (Xi & Hwang 2011b), thereby making people’s relocation to neighbouring areas difficult (Yuefang & Steil 2003).

In particular, the poor had additional financial burdens, forcing them to reduce agricultural production and investments (International Rivers Network 2003). Moreover, after resettlement in new localities, these areas had insufficient and infertile land, as well as a lack of infrastructure and technical support to restore their production systems. As a result, conflict occurred between resettlers, the local government and host communities (Tan & Hugo 2011). According to these authors, the Chinese government changed the resettlement policy in 2000, from near-resettlement to GODR to alleviate the increasing environmental pressure in the catchment area.

In addition to material wealth, many people forced to relocate have struggled to integrate into their new communities. This resulted in feelings of isolation, loss of social networks, linguistic competency issues, and other psychological and social issues (Hwang, Cao & Xi 2011). Increased depression and different psychological distress rates were also linked to involuntary resettlement (Wines 2011). Involuntary resettlers face loss, trauma, chronic stress and other challenges adjusting to a new lifestyle in an unfamiliar place. Therefore, resettlement related to TGD has seriously impacted the well-being of hundreds of thousands of individuals, both physically and psychologically.

As part of the Chinese resettlement policy, the government attempted to restore or improve the living conditions of the displaced population, at least to what they were prior to resettlement (Yang & Qian 2021). Therefore, they have shifted their focus to the strategy and outcomes of resettlement in the TGD area. Firstly, the government reclassified the TGD resettlement as a development

project, and resettlers should benefit from hydropower developments. Secondly, the long-term costs of ineffective resettlement were recognised by the government. Thirdly, benefit-sharing initiatives have provided direct advantages to vulnerable resettlement. For example, the government set up a 20-year post-relocation fund and a separate social security fund for farmers who lost their land to hydropower projects and became urban residents. As a result of this plan, little attention has been paid to the needs of ethnic minorities, production systems, lifestyles or the interests of women displaced by the dam.

Additionally, it is unclear who will be eligible to receive social security funds and how these funds will meet short-term and long-term needs. Wilmsen (2011) further advocated formulating policies for the resettlement of ethnic minorities at risk of displacement, and long-term monitoring and evaluation of the resettlement process. The TGP resettlement also highlighted the danger of ignoring ethnic issues in resettlement. As land was scarce in the TGD and the government needed to control the border regions, Han Chinese were relocated into ethnically diverse provinces such as Xinjiang and Inner Mongolia (Colchester 2000). This resulted in serious tensions between resettlers and host communities following the resettlement. Padovani (2009) also found that post-resettlement problems are not the responsibility of any department or agency. Furthermore, local government employees viewed relocation as only an administrative task, and they were not responsible for the reconstruction.

The standards and methods of compensation, on the contrary, were also problematic. According to Hwang et al. (2011), resettlers were fairly compensated financially based on the market value of their properties. On the contrary, Jackson and Sleigh (2001) indicated that in China resettlers received insufficient compensation because of a lack of property rights, limited peasants' power and capacity, and lack of land. The disparity between compensation and home construction or purchase costs was imposed on the resettlers (International Rivers Network 2003; Wilmsen et al. 2011b; Yuefang & Steil 2003). The average TGD compensation per household was between 10 000 and 20 000 RMD ($1 479.79 – $2 959.59; R24 587.15 – R49 174.30), accounting for approximately 35% of the average gross house cost. To compensate for the shortfall in compensation, most resettlers borrowed money from friends or family. This entails not just a significant financial burden, but also a social one.

The various TGD drivers had ramifications for the resettlement and long-term sustainability of the settlements. The area surrounding the TGD was permanently flooded, destroying the resettlers' land and or homes. Resettlers could cultivate the land until it was flooded or used for construction if they were resettled near their original homes. For others, this meant a more extended transition. However, for those relocated to urban areas, accessibility was complicated because of the gap between the new sites and the rapid removal of homes and infrastructure. Because of these reasons, they were unable to resettle in their own time.

## Results of involuntary resettlement at the Three Gorges Dam

Cernea (1997a) states that China is the only country that fosters community solidarity by sharing losses (especially land) and redistributing unaffected village land between non-displaced farmers and their community neighbours. This was not the case with the TGD, as disputes between host communities and resettlers were widespread. Farmland owned by farmers was given to the resettled population, and this land was divided between the host community and the newly resettled population. The pressure on resources and social services increases when migrants are resettled into host communities, resulting in economic losses for the host community, leading to a hostile relationship between the two groups (Heggelund 2006; Jackson & Sleigh 2000). In addition, in the first few years following resettlement at the TGD, resettlers were granted preferential tax treatment and living subsidies. This also led to hostility and conflict between the host community and the resettled population. Establishing a favourable policy for the host communities, rather than focusing solely on the reservoir area and involuntary resettlers, is a suggestion for avoiding such conflicts (Heming, Waley & Rees 2001).

In the TGD area, a phenomenon called secondary migration or relocation (*erci yimin*) seems to be a significant concern (Heggelund 2006). Secondary migrants are farmers who live above the submergence line. Still, their land was used for urban reconstruction in areas flooded by the reservoir – they, therefore, lost their houses and farms because of reconstruction. There were three ways farmers were resettled: industrial employment, independently securing jobs and compensation for living expenses. These former farmers became part of the non-agricultural population. When relocating to urban centres, they changed occupations to maintain income, resulting in marginalisation because of the loss of land and housing to urban development.

In addition to cultivating the land, many farmers had side businesses (such as selling fresh produce), which they had to give up. They were relocated to high-rise buildings especially designed for resettlers, and in these new resettlement environments, many had difficulty finding new or stable employment. Most survive on monthly government subsidies and sporadic construction projects in the area. The typical monthly salary for resettlers in 1999 was 30–40 yuan ($4.44–$5.92; R73.76–R98.35) (Luk & Whitney 1993; Hvistendahl 2008), which was 50% less than the national average, excluding school, medical and other expenses. Losing their backyard economies also disrupted the resettlers' productive activities (Wilmsen & Wang 2015). Backyard areas were reduced from 400 $m^2$ to 150 $m^2$ per household, with 150 $m^2$ being insufficient for backyard livestock, such as sheep, pigs or cows, or vegetable production (Wilmsen & Wang 2015). The new resettlement environment also impacted the traditional production and market After the

TGD resettlement programme, average income decreased, especially in rural areas where land loss limited productivity and few new job opportunities were available for resettlers with low skill and education levels (Wilmsen 2018a). In addition, cropping patterns were altered (Wilmsen 2016). Food production for personal consumption and sale shifted to cash crops, such as oranges for sale in distant markets (Tan, Hugo & Potter 2000).

Moving out of the reservoir area had numerous adverse effects on involuntary resettlers, including network disruption and disintegration. Family and community relationships are significant in Chinese culture. Therefore, according to government policy, involuntary resettlers were moved in groups and social units (Xi & Hwang 2011a), but the number of people who stayed together or were separated is unknown. When family interactions decrease, the responsibility of involuntary resettlers to non-displaced relatives will be weakened. Moreover, when involuntary resettlers live among strangers, communication is difficult, favours are not returned and disagreements are common. Involuntary resettlers may also face discrimination in the host community. Chinese villagers are very particular about their clan [*shi*] and their surname; hence, involuntary resettlers are viewed as strangers, and this status can last for one or two generations, making resettlement much more difficult.

Conversely, people resettled locally will not lose contact with friends and family because of distance. As Cernea (2007) defined in the IRR model, one might argue that they are not at risk of social disarticulation. Involuntary resettlers will not lose their personal relationships, and they will not need to recreate their relationships (*guanxi*) with new individuals in a new location. Therefore, involuntary resettlers will maintain their personal relationships. Even if distance is not an issue, social disarticulation may occur. There may be risks associated with individuals living closer to their neighbours and adjusting to new living conditions. However, some TGD resettlers have changed their cultural habit of keeping a distance from their neighbours. Some resettlers embraced this new habit, while others vehemently opposed it. One can assume that living closer together may lead to conflict. As previously stated, some residents who were not resettled are envious of others. Those who lived next door to one another were now divided by differences in housing standards, rather than distance. This may cause problems and arguments, leading to greater social conflicts within and across communities (Cernea 2007).

Regarding the loss of social networks, involuntary resettlers paid a huge social and cultural price. Personal income and property losses are observable, as are quantifiable economic losses. However, social well-being is difficult to quantify and cannot be replaced when lost because of resettlement (Cernea 1996). Furthermore, involuntary resettlement is distressing because it destroys familiar things in everyday life and social networks. Anxiety may be exacerbated by the fear of hostile reception. When involuntary resettlers have difficulty reestablishing their living standards and integrating into host communities,

resettlement stress can persist and worsen. More importantly, unlike rural-urban migrants who accept resettlement risks and return to their homes at any time, involuntary resettlers displaced by dam construction regard resettlement as ‘government business’ and cannot return to their homes. Consequently, many involuntary resettlers felt they had suffered far more than economic losses from the destruction of farm land and resettlement to a distant location and thus lost a way of life rich in culture and symbolic value (Heming et al. 2001). In terms of involuntary resettlement, the risk of social disarticulation is unavoidable. The risk of social disarticulation faced by local resettlers in the TGD is not particularly significant for those who have not moved out of the community. Resettlers who were relocated farther away are more likely to experience social disarticulation. These involuntary resettlers missed their old surroundings and families. They also failed to find employment in new host communities because of the loss of social ties, which might have assisted them in securing employment in a new resettlement location. Others refused to hire these resettlers because of their age.

Prior to its execution, the Chinese government recognised the large-scale involuntary resettlement at the TGD and its associated social difficulties in building the dam reflect the Chinese government’s utilitarian view (Jenkins 2002; Webber 2012). Utilitarianism prioritises the largest benefit for the greatest number and seeks to enhance overall well-being to provide the country with the highest possible return. Conversely, Western scholars or those educated in Western ideologies are more inclined to adopt a different perspective (Zhou 2014). According to them, any national project should be borne fairly by the public, and 1.3 million people forced to leave their homes and land amounts to environmental injustice. In national initiatives like the TGD, the Western scholar’s position is based on an egalitarian perspective of justice, emphasising the fair distribution of beliefs and consequences.

In spite of improving living conditions (as evidenced by the ownership of household appliances), social support and a sense of belonging in the new community were lacking. It was difficult for these TGD resettlers to adapt to the new cultural customs of the host communities, as well as to integrate into this new resettlement environment. The latter is primarily attributed to the cultural traditions and customs acquired by involuntary resettlers in their home villages that differed from the host community. Some host communities also had dialectical differences, making it more difficult for the involuntary resettlers to adjust and develop new lifestyles. Therefore, involuntary resettlers took more mental strain, and their health deteriorated significantly after relocation (i.e. number of doctor visits, medicines taken, accidents or illnesses).

Involuntary resettlers constituted the ‘invisible community’ of the TGD. The term ‘invisible community’ describes a marginalised population whose sufferings are hidden from sight. To maintain political stability and economic

prosperity, the Chinese authorities strictly limited the dissemination of information about the plight of the involuntary resettlers. It imposed strict restrictions on the media to ensure that no information about these invisible communities entered the public domain. Like the involuntary resettlers from the TGD, most invisible communities are at the lower socio-economic end. Many were small-scale farmers with little socio-economic influence who were exposed to repression from the government, and demonstrations, such as those in Yaowan village, were ineffective. Because of a lack of media attention and protest success, these invisible communities gradually disappeared from public view and were forgotten.

According to Flower (2009), there is also a disparity between the government's perceptions of development and the experience of involuntary resettlers. Although the government considers subsistence agriculture – on which most TGD resettlers depend – as backward and tries to move them away from it, resettlers value the importance of food in their household economies. In an unpredictable world, involuntary resettlers regard subsistence agriculture as a guarantee against hunger, rather than advancing from poverty into a modern advanced economy. As a result, moving farmers from their land to new resettlement locations tested their judgement and caused anxiety and instability. Furthermore, regardless of monetary compensation, their ideological interests were violated during the resettlement process. There is still a strong belief in Mao Zedong's socialism, where the principle everyone has equal access to food, is respected and participates in the implementation process (Flower 2009). The TGD, on the other hand, followed an advanced socialist system in which the government formulated policies without notifying the resettlers, making them feel disrespected in the process. These involuntary resettlers are likely to be marginalised if economic influence is not regained. The rural resettlers are also no longer able to cultivate land as they once did – even if they are not landless, they fall below the poverty line because of the lack of arable land.

Xi and Hwang (2011b) acknowledge that lack of information and disrespect impact mental stress and that there are two types of coping strategies, namely, problem-focused and emotion-focused. In both cases, a feeling of control is restored. Problem-focused coping involves taking action to solve a problem in order to empower and improve oneself. In contrast, emotion-focused coping involves shifting one's attention away from uncontrollable variables. Two indicators were included for problem-focused coping, including higher compensation and relocation information. The use of positive comparisons (resettlers are better off than someone they know), compliance and expecting the worst are characteristics of emotion-focused coping. Xi and Hwang (2011b) argue that problem-focused coping is ineffective compared to emotion-focused coping. The use of positive comparisons and expecting the worst can drastically reduce resettlers' stress levels and help them regain control.

Bargaining for more compensation and obtaining relocation information are examples of problem-focused coping. Flower’s (2009) thesis on the distinct understanding of the political framework in which the TGD operates is supported by the lack of these two types of coping strategies. While the involuntary resettlers maintained their socialist mentality – which supports free disclosure of information and participation in decision-making – the Chinese government restricted the resettlers in both domains, adding to their mental stress.

Because of differences between individuals, it is challenging to assess the perspectives of the TGP resettlers. On the other hand, Flower’s (2009) statement on the ideological differences between resettlers and the government provides some insight into the local setting and helps understand resettlement issues.

The involuntary resettlement of the TGD is a complex social issue. Three points of view were presented: the government, egalitarian scholars and resettlers. Their views and perspectives differ considerably. In determining appropriate compensation for the resettlers, the government placed great emphasis on the overall public utility system and relied on the market system. Egalitarian scholars who advocated for the interests of the resettlers concluded that involuntary resettlement resulted in unequal burdens and benefits. The involuntary resettlers are more complex, and their viewpoints vary. While these different perspectives are subject to diverse value judgements, they all agree on the importance of improving the living standards of involuntary resettlers of the TGD.

## Recommendations

This case study draws on a large body of existing literature on involuntary resettlement of the TGD. However, to eradicate poverty and rebuild livelihoods, some recommendations are proposed. This case study has raised many issues, and finding conclusive answers will require further investigation. The following recommendations are made.

The re-employment of involuntary resettlers of the TGD should be better understood. Neither the promised jobs in large companies nor micro-enterprises are enough to fulfil the existing employment demand. Among other possibilities, more consideration should be given to private sector enterprises, especially small and medium-sized enterprises participating in employment reconstruction.

The economic and social systems that exist in urban areas should be further explored, as well as the ways to rebuild these systems after large-scale construction projects. In most cases, urban resettlement is often related to housing rather than economic recovery. Better employment and income-generating ideas can assist urban projects to progress beyond housing projects.

When viewed through the lens of private-sector infrastructure development, the characteristics of involuntary resettlement are more apparent. Further investigation is necessary into how the private sector interacts with government institutions and how they utilise their existing legal. The preceding seems to vary significantly from country to country. The role of the court in resisting involuntary resettlement also needs further elucidation.

A better understanding of conflicts of interest and boundaries between involuntary resettlement communities should be gained. It has long been acknowledged that there is an inherent conflict of interest between involuntary resettlers, host communities, the government and the private sector. There has been a tendency to treat the affected as a homogenous population rather than as a population divided by gender, class, age, ethnicity and other factors. However, differences in resettlement make resistance more difficult and hinder the process of livelihood recovery. To date, very little has been done to examine how to promote inclusive development in the TGD area. There is a particular need to find strategies to convince local elites to work for the community's interest rather than for their own.

In addition, the best results will be achieved when a social impact assessment is conducted early in the project development process by experts not associated with the government or engineering companies. The resettlement plan should include a thorough income restoration strategy. There are not many thorough post-project assessment studies available. One of the most investigated hydropower projects in the world, the TGD has been lauded by some and strongly condemned by others. Despite this, no comprehensive assessment has been conducted of its social, economic and environmental effects. To analyse the successes, failures and best practices of the TGD, more post-project assessments are needed (Gutman 1994).

During and after the project's construction, resettlement should be rigorously monitored, just like all other significant project components. Monitoring capabilities should be developed and maintained by the project developer or the national agency responsible for project monitoring. Throughout the project cycle, especially when serious problems occur, frequent in-depth monitoring should be carried out and continued during the operation of the entire dam construction. Therefore, on completion of the project, the social consequences of the resettlement process will be acted upon.

Restoring the income and livelihoods of the resettled people is a long-term process that lasts considerably longer than the duration of dam construction projects. It is strongly recommended that specific measures be taken to mitigate these and other negative local externalities of the dam construction. For example, a small amount of electricity sales from hydropower projects should be allocated to local development projects.

It is inevitable that there will be a great deal of social discomfort and conflict as a result of involuntary resettlement. It is crucial for the government and project developers to realise there are no simple economic or technological solutions for involuntary resettlement. The resettlement process must be governed by clear rules and procedures, especially when it comes to conflict resolution and public visibility. Project officials must be trained to handle transparency and accountability issues appropriately (Gutman 1994).

## Conclusion

It is critical to remember that resettlement is only one of a category of social issues that afflict many, if not all, development initiatives. Because the world is paying more attention to human livelihoods and the environment, it is logical that the public will scrutinise more development initiatives. Consequently, resettlement should be viewed in the context of increasing public demand for accountability in development projects and policies.

One of the benefits of studying the TGD is the vast number of literature and data sources available. Secondly, the TGD achieved the objectives of the Chinese government, including regulating floods with a 100-year frequency and generating a large amount of clean energy. Regardless, involuntary resettlement because of hydroelectric dam construction is by far the most severe counter-development social consequence of infrastructure development.

Involuntary resettlement is the central theme of this case study. The social disarticulation variable of Cernea’s (2000) IRR model was used to conceptualise this case study and provide a fundamental basis for demonstrating the impact of involuntary resettlement. Involuntary resettlement and the disintegration of traditional power, community and family networks are examples of social disarticulation. In summary, the research approach has demonstrated the impact of involuntary resettlement that has resulted in social disarticulation. Based on the complexity of the TGD and in agreement with Tan (2008), it is proposed that the IRR model can be improved by incorporating several important issues that require further research, such as socio-economic, environmental assessment frameworks, assessment indicators, addressing gender and age impacts, resilience, and poverty and vulnerability development issues.

The lack of public participation in planning and implementation of the TGD resettlement, as well as the underestimation of costs and the impact of involuntary resettlement, are currently regarded as the most common problems. These highlighted problems had unintended social consequences, leading to cost overruns, scheduling delays and unfair burdens on the TGD resettlers. The most serious problem is that many large-scale development initiatives fail to consider the needs of the resettlers. Part of the solution is to

avoid or minimise resettlement wherever feasible. As a valid strategy, it is also imperative to consider the needs and concerns of the affected population.

Additionally, the TGD resettlers found themselves caught between the forces of technology and tradition as they settled into their new resettlement localities. The modern planning process of large-scale development projects provided conditions for their resettlement, but it did not anticipate the circumstances that would make local resettlement difficult. Involuntary resettlers must resettle in various parts of China, and many find themselves in unfamiliar areas, unprepared and often facing hostility to their arrival. The government's compensation for building new houses has been insufficient, and the involuntary resettlers had no institutions to resort to for appropriate compensation. The resettlers found themselves in an unexpected situation in a country undergoing tremendous economic, social and cultural changes. The TGD resettlers no longer have access to traditional common property and space, which has resulted in competition for natural resources, state-owned land and residential space. The involuntary resettlers also experienced significant social disarticulation, resulting in a breakdown of traditional power relations and communal and family networks. Because of the destruction or disintegration of these social networks and life support mechanisms, the trauma of resettlement was severe, and they have lost the ability to self-manage.

Involuntary resettlements may contain elements of choice, such as the willingness to move, but not the choice to stay. Despite their opposition to resettlement, the resettlers had no choice but to resettle involuntarily. Even after the relocation, the TGD resettlers were impoverished. Many households struggled to maintain their livelihoods during the resettlement process because the resources needed to generate income were scarce. Although a few individuals have adapted to the challenging conditions in the early stages of resettlement, most merely managed to avoid being entirely economically devastated in the new environment. They continued to suffer at every stage of their lives, with resettlement affecting them economically, socially and politically – they constantly struggled with the social changes that occurred as a result of resettlement. Government efforts to develop resettlers severely damaged their socio-economic status. These efforts led to displacement in many aspects of resettlers' lives and livelihoods and were far from fulfilling the resettlement programme's objectives.

In terms of developing people through resettlement programmes, the losses outweigh the benefits, especially for the resettlers. What they have left behind in their native area (history, livelihood, rights and identity) cannot be recovered or compensated. The reality is that uncompensated losses are still the primary concern for resettlers and the major cause of continuous displacement. Although involuntary resettlement brings many new challenges, many of these are beyond the abilities of the resettlers. Fundamentally, from the moment the TGD idea was suggested, resettlers did not actively participate

in planning their future in the new host communities. During the implementation of the resettlement plan, involuntary resettlers had little knowledge of the resettlement programme, and there were few public platforms for expressing their complaints and ideas. Because of a lack of natural resources and land to generate income, they continue to migrate (most are farmers without the skills to work in non-agricultural jobs). Their lives were difficult in the previous hamlet, but they were free to take advantage of local natural resources as they saw fit. The new resettlement community is as foreign to them as the location itself. In other words, because they lack the required life tools, resettlers do not know how to act in a rapidly changing social environment.

Since the first feasibility assessment of the TGD in the mid-1980s, through the construction of the dam, resettlement and environmental capabilities (particularly land resources) have been regarded as crucial long-term issues (Xu et al. 2013). At the same time, the various types of resettlements had extensive impacts on this environment and society. Furthermore, understanding the process has become complicated because of multiple factors influencing the success or failure of resettlement initiatives. In agreement with Tan (2008), more research is needed to understand the implications of different resettlement approaches on different groups in different resettlement environments.

Although people will always suffer some loss or inconvenience, resettlement can bring about positive change, at least if the resettlement process is successful and benefit-sharing mechanisms are in place. Project developers should be encouraged to shift their focus from reducing the direct resettlement costs of a project to increasing awareness and commitment, lowering the initial resettlement cost of the project and moving toward greater awareness and commitment to shared value for resettlement to be a development opportunity (Hidalgo, Peterson & Smith 2014; Porter & Kramer 2011; Wilson & Kuszewski 2011). On the other hand, involuntary resettlement may also have a beneficial influence if it is carefully planned, but this takes time. The benefits of successful resettlement are usually realised by the second generation of the displaced community, who make greater use of the available resources. These communities can use these opportunities to increase income and living conditions if relocated with sufficient compensation, new economic opportunities and social benefits. The new settlement might improve infrastructure and reduce future vulnerability to natural disasters.

Globally, the issue of project-induced resettlement is debated, but the TGD project and China’s particular political-economic environment make it more complex and exemplary. In particular, differing value judgements and viewpoints lead to a differentiated analysis of issues. As a result, all analyses are based on the same premise, a comprehensive understanding of the situation and formulating policy recommendations to strengthen the current practices.

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## Chapter 1


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## Chapter 10

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# Index

The case studies in this book offer a non-traditional, interdisciplinary mix of interpretations and approaches which can shed new light on how to overcome multiple interrelated obstacles such as low skills levels, lack of an entrepreneurial culture, inappropriate or weak support mechanisms, and more. The book showcases local economic development (LED) initiatives to improve an area's locational factors by tapping into the comparative and competitive advantages of regions, the potential of natural resources, as well as leadership and willingness for change by actors in the private and public sectors. The book is timely because of the significant impact of COVID-19 on local economies, and unlocks the potential of a substantial agenda for university researchers to support innovative ways of achieving just, sustainable LED initiatives and building global consciousness and empathy towards building a sustainable world. The distinctive contribution of this book to the production of a local developmental body of knowledge lies in the synergetic relationships between the case studies, so that LED professionals globally can work towards approaches and initiatives that have a broader significance for their communities.

This book is a diverse collection of ten perfectly selected case studies of contemporary LED stimulation, taking into account the determinants of sustainable development in the territorial dimension of South Africa. It has a very high scientific and application value. In the scientific dimension, it provides an attractive insight into the essence of mechanisms and the course of LED processes, which allows for the verification and enrichment of its theory; therefore, it will be extremely useful for the scientific community around the world. In practical terms, this book is ground-breaking for the implementation of The New South African LED Agenda, which was launched in 2017 by the Ministry of Small Business Development, in terms of the implementation of the revised National Framework for Local Economic Development. The examples of activities for LED discussed in the book can be replicated in practice in an original or modified way, avoiding the mistakes presented in it. These examples will also inspire the search for new, innovative methods of pursuing LED. In this context, this book can be seen as a practical LED work guide for researchers. It is worth emphasizing, however, that the utilitarian value of this book exceeds the boundaries of South Africa. Each of the case studies it contains can also be used abroad. This applies particularly to developing countries, but they may also turn out to be surprisingly useful in countries with higher levels of socio-economic development. Therefore, this book is recommended as an extremely interesting and theoretically and practically valuable book on LED.

**Prof. Andrzej Sztando, Department of Spatial Economy and Self-Governed Administration, Faculty of Economic Sciences, Wroclaw University of Economics and Business, Wroclaw, Poland**

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