# RURAL DEVELOPMENT PLANNING IN AFRICA

Edited by
Meleckidzedeck Khayesi

# Rural Development Planning in Africa

"In the much talked about and documented worldwide rush to cities, the challenges of rural development, equity and efficiency are being ignored as experts and institutions are by and large concentrating on the pressing needs of the people who are crowding into the cities. And nowhere has this been more pronounced than in the great, needy and inventive continent of Africa. For any individual or institution who cares about development and democracy, this comprehensive synthesis of research, experience and insights into rural development planning in Africa comes at a time of great need, accelerated change, and an on-going explosion of new tools and technologies. It is required reading. The future is already here. Open up that window and let the fresh air of new thinking blow in from Africa."

–Eric Britton
*Professor of Sustainable Development, Economy and Democracy, Institut Supérieur de Gestion, Paris, France*

"Rural Africa has been a site of research and policy programmes on a wide range of issues. I highly recommend this book for its thorough effort to synthesize the evergrowing literature on rural development planning in Africa. The book chapters provide details on methods, theories, conceptual models and empirical findings of this growing literature."

–Ruth K. Oniang'o
*Editor-in-Chief, African Journal of Food, Agriculture, Nutrition and Development; Founder, Rural Outreach Program Africa*

Meleckidzedeck Khayesi
Editor

# Rural Development Planning in Africa

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*This book is dedicated to the memory of Wangari Maathai for her relentless effort to conserve environmental resources in Kenya; to Michael Bernard Kwesi Darkoh for his dedication as a teacher and researcher on environment and development; and to Kingsley Lwanda, who was born to Constance Ouko and Robert Ouko in June 2016.*

# Foreword

Rural development remains one of the most enduring challenges confronting the African state, peasants and development practitioners in the public and private sector. Some of these challenges are old (technology, management and finance), while others are new, stemming from rapidly changing regional and global contexts of development (how to harness new technologies, cope with climate change and increase productivity in a shrinking environmental space). However, these changing contexts and challenges of development have also opened up new opportunities never before available for rural Africa (better transport, marketing information flows, and ICT-facilitated emarkets, efinance, ebanking and input delivery systems).

The authors of this volume collectively turned their attention to a subject which has almost disappeared from the vocabulary of an African development scholarship consumed by a manifest craving for an "Africa rising" narrative based on industrialization and urbanization. Several voices, such as those reflected in this volume, called for a return to the future by privileging an integrated approach not only to rural development, but also to an integrated agro-industrialization as part of African structural transformation policies.

Two decades ago, when planning was considered heresy, the title *Rural Development Planning in Africa* would have been scorned. The volume also reflects the "return to planning movement" sparked by the 2009 financial crisis and African government adoption of long-term strategic development plans, covering a period of two to three decades. The authors seem to have parted with rather than affirming outdated

development models often narrowly associating rural development with agriculture to the neglect of other sectors that are equally deserving for attention. Not surprisingly, the new context of African rural development planning is an all-encompassing activity situated within the realm of local governance and inspired by emergent powerful networks, including the state, international development partners, the private sector and rural communities.

The authors of *Rural Development Planning in Africa* have adopted an approach that expands conventional rural development planning trajectories by exploring the role of agriculture, finance and investment, rural-urban linkages and markets, energy, health, and water. While each chapter can be elaborated in a full-fledged volume, Meleckidzedeck Khayesi, the editor, has crafted a seminal introduction which stitches into an integrative whole what might seem from the outset to be a collection of disparate chapters.

Two facts add authenticity to this book: it is written by academics and professionals with hands-on, long-term experiences in the field of rural development, and some of them are rural development practitioners in their own right. In addition, all the authors, the majority of whom were raised and have lived in rural Africa, are a unique and welcome addition to an evolving African scholarship ushering in distinctive and context-specific approaches to African development. This volume is an inspirational read for those involved in the academic and policy debate on rural development in Africa and beyond.

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# Preface

Contributing to African rural development planning experience fulfils a long passion I have had not only in research but also in wanting to improve the living conditions in rural areas of Africa. I have not only read about and carried out research on African rural development programmes, but also experienced the African rural development landscape in a personal way. I was born and raised in a rural district in Kenya. I have been involved in the ordinary rural life in Kenya. I am always fascinated with the rising of the sun, when my rural community wakes up; the development of the day, when this community gets engaged in several activities; and the setting of the sun, when the community settles down to evening meals and storytelling, and then retires to sleep. I remember well how other boys and I would be tending cattle in the afternoon and evening, while the girls would be fetching water and preparing meals. I remember how we, the young ones, would spend the day at school while our parents would be working on their farms or doing other important life-sustaining activities.

My rural community has also changed in several ways. Numerous members now own cell phones, radios and many modern gadgets. I have witnessed a number of rural development initiatives being introduced and implemented in my own local district and others parts of Kenya. Though I moved away to study and work in Nairobi and abroad, I have maintained links with my rural origins. I have been involved in discussions and initiatives seeking to support the development of African rural areas and Africa in general. I cannot fully describe the joy and peace I always get when I am in my rural community. Listening to cattle mooing, cocks crowing, children making joyful sounds as they play, a mother calling her children to

come to the house to eat, and news about happy and sad events in the community remind me a lot about the importance of the basics of life.

In addition to these personal experiences that I have just described, I have also been involved in research and initiatives in rural development. My master's thesis was on rural transport and it helped me to apply scientific analytical tools to rural household travel behaviour and its relationship to the rural economy. The first book review I ever published was on a book entitled *Integrated Rural Development: The Ethiopian Experience and Debate*, written by J.M.O. Cohen in 1987. It was published in the *Journal of Eastern African Research and Development*, 1992, Vol. 22, pp. 157–159. I have individually and jointly conducted other research in rural and urban areas.

African rural development planning is an interest not only of mine but also of several other people and institutions, including researchers, policy-makers, practitioners, the media, politicians, development partners, humanitarian organizations and the public. The contributors to this volume have also experienced the African rural development reality as residents in African rural areas, researchers, decision-makers, implementers and investors. The cumulative experience of the contributors to this book brings life to the topics covered in different chapters. The authors are not just summarizing evidence from which they are detached. They have actually also been part and parcel of the experience in which they acquired knowledge, enabling them to synthesize the information gathered; knowledge is intangible.

The main achievement of this book is in providing a synthesis of research evidence on selected themes in African rural development planning experience. I look at this edition as the first step in a process that may see the authors of this book and/or other researchers updating the chapters and even adding new themes in the coming years.

Meleckidzedeck Khayesi

# Acknowledgements

Editing and writing a book involves networking with several people and institutions. It is indeed a collective effort, and the editor is basically a facilitator of this dynamic group of persons and institutions. I am grateful to the dedicated authors, who spent several hours reading literature, extracting information and preparing chapters for this book. I thank the many scholars whose work on rural development planning provided the information that has been synthesized in the chapters of this book.

I am also grateful for the editing support from Felicia Yieke. I thank the staff of Palgrave Macmillan (Christina Brian, Renee Takken, Sarah Doskov, Chris Robinson, Alina Yurova, Ben Bailey and Dana De Siena, along with Sharon Rajkumar and Ganesh Ekambaram of SPi Global) for their collaborative approach when developing this book.

Last, but not least, I am grateful for the encouragement received from my family and friends.

# Contents

# List of Figures

# List of Tables

CHAPTER 1

# Encountering African Rural Development Planning

*Meleckidzedeck Khayesi, Peter Mala, and Joan Fairhurst*

## What Is This Chapter About?

This chapter begins by providing a brief overview of the African rural development planning landscape. A definition of rural development follows as does a justification for the choice of themes presented. The approach adopted to prepare this book is spelt out in detail and a brief outline summary of the findings of each chapter is given.

## What Characterizes the African Rural Development Planning Landscape?

There are several policy contexts, theoretical models and strategic approaches that have guided the planning of rural development in Africa. To begin with, it is noted that Africa's population of over 1.1 billion people mostly live in rural areas (UN, 2013). Although remaining mostly

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rural, it is estimated that the number of people living in urban settlements will increase from 40 per cent in 2010 to 62 per cent in 2050 (UN, 2010). This is because it is expected that, in contrast to world population trends, Africa's rising rural population will eventually reach 0.8 billion by 2050 and two African countries out of only five countries in the world will actually have growing rural populations (UN, 2010). Moreover, Africa's urban population will become the second largest in the world (UN, 2010). This is a sobering thought given that all these people, including those living in rural and urban areas, have to be fed through agricultural activity, which is essentially rural-based. Planning for this high concentration of people in rural areas in Africa remains important even though considerable attention still needs to be given to the ever-increasing urban population.

Development, without specifically incorporating rural development planning, was for long looked at as having an economic growth dimension (Seers, 1972). This situation no longer exists because the definition and scope of the analysis of development have evolved over time following a sustained critique of the then dominant economic perspective and proposals by scholars such as Rodney (1981), Frank (1966, 1967) and Sen (1999) for alternative and complementary perspectives. In the case of rural development planning, scholars such as Chambers (1983, 2005a) have been at the forefront in challenging the dominant ivory tower approach by proposing a participatory model to rural planning. It is largely due to these engaging scholarly efforts that theorists and practitioners today concur that an accurate description and interpretation should accommodate striving for economic, social and ecological change in terms of better social standards of life, human improvement and environmental protection rather than just economic growth (Gabriel, 1991). It is a process that unfolds, thus leading to improvement, use and redeployment of resources, and acknowledging that political choices have to be made. Rural development planning therefore should integrate economic, social and ecological aspects to create better and more secure livelihoods for rural and urban people.

Strategies to enhance rural development should acknowledge people as the key factor. A model of the basic livelihoods framework (Ellis & Freeman, 2005, p. 4) captures the link between rural livelihoods, government and donors as each focus on poverty reduction. It is based on empirical research done in eastern and southern Africa. Acknowledging that the livelihoods approach strives to be people-centred and holistic, it highlights the fact that 'people make a living within evolving social, institutional, political, economic and environmental contexts' (Ellis & Freeman, 2005, p. 5).

By applying this method, significant observations emerge that would affect the growth and development of agriculture and other sectors of rural areas. Attention is drawn to assets: including activities (near and distant) and outcomes, as the core issue of investment; human capital (skills, education and health) links to policies; and physical natural capital (land, water, trees) links to land use, agricultural and environmental policies. Financial capital as the physical impetus to the economic arm of the human organization in space (produced investment goods) and social capital (networks and associations such as kinship ties and traditional culture practices) form the cornerstone of modern living. However, overriding influences come from policies, institutionalized laws and rights and accommodating the ideals of democracy in a range of circumstances worldwide. Equally significant is the risk factor involved in making a living that stems from the flow of internal and external sources as shocks, trends and the effects of seasonality. Livelihood outcomes relate to material welfare (better or worse), reduced or increased vulnerability to food security, and improving or degrading environmental resources. This framework clearly demonstrates the complex and changing character of rural livelihoods in a general context and acknowledges how people's use of both land and available resources are some form of agricultural activity.

There are other approaches to rural development, especially agriculture, that have been utilized. Systems approaches, decision-making models and structural-historical interpretation through participatory investigations since the 1990s have drawn attention to a range of socio-political and economic innuendos. Specifically identified concerns are about equity with regard to poverty, gender and development, employment and income, food and health as well as access to public goods and services. Studies chose to work at micro-level within the ambit of macro-policy to find ways to promote human and environmental sustainability in the long term. Foundational approaches, *inter alia* rapid rural appraisal (Chambers, 2005b), participatory rural appraisal (Chambers, 2005b), farming systems research, structural adjustment programmes, micro-credit, free markets, stakeholder analysis and poverty reduction have extended knowledge of the farmer on the small farm to a broader focus on the community and its households. Asset-based community development and its expansion into recognition of the spatial aspect used in community asset mapping programmes (Nicolau, 2012) are bringing a wider perspective to the human dimension in rural development. Sustainable livelihoods

are to replace small farm dominance but the concept has been useful to effect the change from top-down to bottom-up, a necessary developmental move. Ellis and Biggs (2001, p. 445) made this prophetic assumption at the turn of the century:

> If a new paradigm of rural development is to emerge, it will be one in which agriculture takes its place along with a host of other actual and potential rural and non-rural activities that are important to the construction of viable rural livelihoods… It is in this sense that cross-sectoral and multi-occupational diversity of rural livelihoods may need to become the cornerstone of rural development policy.

Considering Africa's demographic dynamics regarding population distribution, composition, change and migration with its associated politico-economic developments, and being mindful of environmental care, this could well become a reality. As noted in the preceding paragraphs, rural areas in Africa do not exist in isolation. There is a strong rural-urban linkage through migration, financial flows, property ownership and information sharing. A growing number of people in Africa live in urban areas. Some of them are beginning to look at urban areas as their 'natural' home. There are also African people who live outside their original countries in Asian, European, Arab and other African countries. This group, often referred to as the African diaspora, has maintained varied levels of links with rural Africa. There are also a number of people from other continents who have migrated to Africa, and live in both rural and urban Africa. Some of them look to Africa as their home. The African rural development landscape thus has many people related to it by birth, migration, residence, marriage, work and several other linkages.

What happens in African rural areas is not just an outcome of decisions and actions taken by those who live in these areas. It is also influenced by the decisions and actions of several people and institutions far away from these rural areas. African rural areas exist within an intricate web of relationships at different social, administrative and spatial scales. It is this striking and beautiful, yet rich mosaic of the African development planning landscape and relations within it that begs an invitation that we, together with the other contributors to this book, have accepted. The written word from diverse sources and thinking processes has been read and summarised for enjoyment, and to extend the knowledge base about Africa's rural people.

## Why Synthesize African Rural Development Planning Knowledge?

Any reader would be justified to ask a question such as: 'What does a book based on a synthesis of African rural development planning knowledge add to the existing development literature?' As editor and contributors to this book, we also had a similar question. We had assumed that several studies that had been conducted on African rural development planning had been summarized by someone and were readily available for use by scholars and decision-makers. Following a conversation with a colleague that Meleckidzedeck has already referred to, we conducted a thorough search of major publishers on development and politics and, to our surprise, we found none with a book offering a synthesis of the evidence on African rural development planning experience. Indeed, substantial knowledge has been produced on several aspects of African rural development planning. This knowledge exists in form of dissertations, research reports, journal papers, consultancy reports and databases. The information is located in several institutions, both inside and outside Africa. We wondered how so many institutions and individuals could go on advising Africa when the existing knowledge on African rural development planning has not been fully synthesized to provide a key reference to policy makers, practitioners and researchers to use in planning and future research. We also wondered whether we should devote most of our research efforts to new primary research or get a few of us to stop for a while to process what already exists into one volume for readers. After consultation, we chose to prepare this book to fill the gap. To address this dearth, we offer this volume that synthesizes in-depth and current information on development planning and life in rural Africa. This book therefore answers a key research question: *Where are we in African rural development planning knowledge and practice?*

Instead of focusing mainly on continuing to conduct new research and to publish papers on but a few singular aspects, a reasonable starting point would be to find available literature on key issues relevant to African rural development planning. Sometimes it is necessary to stop for a while and take stock of what exists. A synthesis of evidence concerning research designs, theories, conceptual models and empirical findings has resulted. Such a reflective pause may contribute to identifying gaps in knowledge and planning strategies to use to engage with the emerging future of Africa.

This book will hopefully serve the information needs of several stakeholders in African rural development planning. The first group comprises researchers, who will be able to draw on previous research while avoiding unnecessary duplication of research already done. Second, are the policy makers who could use this research when formulating development policies for African countries. The third are practitioners and implementers, who will have access to information about experiences concerning rural development policy programmes, documentation that offers insights into the successes and failures found in the practice of rural development planning in Africa. It is hoped that this rich information will provide insights for current and future research, policy-making and intervention programmes in African rural development planning initiatives.

## How Was This Book Prepared?

Discussion of ideas for this book started in 2011. The editor and a colleague with whom he used to attend church services and chat afterwards found themselves conversing about the need to synthesize existing knowledge on African development. Inspired by the discussion, the editor went home, conducted a quick search on the Internet and did not find any literature to review. He prepared a brief concept note and shared it with his colleague and others. On collating responses and fresh ideas from a variety of conversations and sources of information, he felt the urge to take the lead and address this identified gap in knowledge in the field of African rural development. A summary of how the preparation of this book was done follows.

### *The Self-Organization and Mobilization Process*

The contributors to this book established a self-organizing group that utilized its own networks, resources and friendship to gather information and summarize evidence on selected themes related to African rural development planning. The group did not receive any funding to undertake this book project but explored a model of mutual support to undertake this assignment, which it felt was important. Several members of this group have spent time together discussing African development. They have challenged each other on various aspects, including the need to lead by example. A specific challenge was to write about African development using documented resources that would be available for present and future generations to consult.

The group undertook the following steps to mobilize and organize itself to write this book by:

- defining the research topic on which to focus that provide a synthesis of knowledge on African rural development planning that covered several topics;
- identifying and assigning selected topics to member authors, including inviting other researchers to join in the project;
- preparing a book proposal and initially identifying three possible publishers but to start off with a submission to Palgrave Macmillan who accepted the proposal—this really motivated the writers greatly.

The process of gathering information and preparing chapters is described in the next section.

### *Information Gathering, Processing and Analysis*

A basic but flexible literature review approach was used for gathering and selecting information for each chapter. While a strict systematic review was not undertaken, the principle of identifying, synthesizing and assessing the available evidence in an objective and transparent way was followed to provide an answer to the specific research question (Hagen-Zanker et al., 2012) as stated. The approach consisted of:

- defining the topic for which the literature would be reviewed;
- stating clearly the inclusion/exclusion criteria for each topic;
- defining key search terms;
- identifying and searching several electronic sources; for example, Web of Science, Springer Verlag, Google Scholar, ScienceDirect, Wiley InterScience, and Grey literature databases;
- running an initial/trail search using the key search terms to obtain an overview of available literature;
- reviewing titles, abstracts and key words of literature retrieved from the preliminary search conducted to identify appropriate search terms;
- repeating the search with revised lists of search terms;
- conducting secondary searches based on references found in primary studies;
- hand searches to minimize publication bias;

- selecting studies for review; and
- extracting information.

Each author answered the research question by recording information on a separate results row manually or using endnotes software to identify the topics emanating from the findings reported in each accepted study in this publication.

### *The Main Themes*

Although the authors followed a basic approach, flexibility and creativity were accommodated. The authors matched their own identified detailed information and presented their own chapter under the following headings:

(a) ***Study design***. Since each chapter not only highlights the research design and techniques of analysis, relevant issues such as unit of analysis, data collection methods, sampling frame and depth of analysis are also provided.
(b) ***Theories and conceptual models.*** The appropriateness of the theories and conceptual models that have been used for the specific topic is determined and the extent to which they relate to African rural development experience is assessed.
(c) ***Empirical evidence***. The evidence gathered to generate categories is distilled and the findings are presented according to appropriate sub-themes. Where possible, information from case studies or specific examples of policy response, programmes or interventions is given.
(d) ***Conclusion***. Each chapter presents a conclusion, indicating the key findings and the contribution of the study as synthesized.

Details of how the agreed approach was executed are explained in each chapter. We believe that the specific studies reviewed and other relevant sources cited in this book form a rich resource for researchers and practitioners.

### *High and Low Moments in Collaboration Experience*

The preparation of this book had its high and low moments. The high moments were the great support for the book idea, rapid identification of

contributors, acceptance of the book proposal by Palgrave Macmillan, support among the authors during writing and firmly setting 1 May 2017 as the date for delivery of the final complete text to Palgrave Macmillan. In addition, an opportunity for the editor to give a seminar on systematic literature at the University of Nairobi on 2 June 2016 revealed a great interest in the subject from over 40 students and academic staff who attended. It generated considerable discussion on the need for having similar seminars at other universities in East Africa. Two contributors to this book attended this seminar and shared their experience of preparing a chapter for the book. Francis N. Wegulo introduced his students to using the systematic literature review approach. At this seminar, Paschalin Mbenge Basil presented a summary of a literature review she read as a paper. She commented that she was beginning to understand the value of this technique better and would share this approach with her fellow graduate students. She even wanted to form a literature review group.

There were low moments as well: failure to submit a complete manuscript to Palgrave Macmillan in December 2014; slow progress in preparing some chapters; withdrawal or reluctance of a few authors who, for some or other reason, felt the knowledge synthesis approach adopted was too rigid; the death of a brother of the editor in August 2015; and the death of Prof. Michael Bernard Kwesi Darkoh in July 2016, who was to write the foreword for this book. All in all, we adjusted the pace of preparing the book and incorporated a strong capacity building component for the team members who were not very familiar with writing a comprehensive literature review.

The developmental approach of the editors and staff we worked with at Palgrave Macmillan helped us a great deal in overcoming the low moments and maximizing the high ones. The commissioning editors at Palgrave Macmillan extended the dates for submission of the final manuscript twice and showed supportive confidence in this group of writers. Towards the end, Alina Yurova, our third editor at Palgrave Macmillan, became part of the conversation to engage with the writers. She was included in our e-mail conversations during the last phase of preparation and some individual members wrote to her directly. Felicia Yieke, the technical editor, too became an advisory member of our e-mail communication group when discussing her comments with the individual writers. Thus, we ended up with a writing group conversing electronically whilst involving the authors, publisher representative, book editor and technical editor, as

part of our emergent collective leadership in our book manuscript preparation journey. Borrowing from Bourdieu (1990), we can say that we created our own *habitus* or logic of practice for producing this book's text.

Overall, it was a productive learning experience as reflected upon by Joan Fairhurst, Gladys Moraa and Francis N. Wegulo, three of the contributors to this book:

> When I look back in time, and remember sitting with pen and paper in hand, reading and rereading the initial outline for this edited volume, a warm feeling comes over me as I realise that dreams do come true! There is such a dearth of in-depth and current material on life in rural African communities. Obviously, I started with Melecki's challenge of ensuring that a range of relevant sources of information accompany the text. Searching for these yielded useful material. It wasn't too long before my passion for geography took over and I had to ask for permission for more words! I look forward to working with Melecki and Peter to see how the final story unfolds in the Introduction—it was getting close to the last time I worked with the text. Especially important is the inclusion of authors and source material from so many countries. (Joan Fairhurst, 10 March 2017)

Whereas Joan warmly grasped the book idea and started running with it, Gladys was hesitant at the beginning:

> Thanks for supporting me and pushing me on. I have learnt something very new. You know what, when you first asked me to contribute a book chapter, I was scared…but with your constant encouragement and support, here we are. (Gladys Moraa, 18 March 2017)

Francis embraced the book as a great learning opportunity despite the demanding approach:

> When the editor invited me to join a team to develop a chapter for a book on rural development in Africa, my initial reaction was one of excitement. I had been involved in chapter and book writing before and I saw this as a chance to extend my writing experience. But little did I know what I was getting into! I soon discovered that my previous experience and writing style was not going to be very useful in this exercise. The editor explained to me that this book's style would take on a new approach. The focus was on treating each researcher's findings as the raw material or primary data to be sourced, analysed and consolidated with findings from other studies. Moreover, the review was to have a structured methodology and a research

design, a defined population of studies from which a sample was to be drawn and upon which analysis was to be conducted. All of these sounded new and, to say the least, a little confusing. It took long to comprehend the mechanics and logic behind the work. And to be sure, several e-mail interactions and exchanges went on between the editor and chapter writers like myself. It was a steep learning curve, one that on many occasions cast doubt as to my academic standing in society. But you know what, I remained resilient and patient, believing that one day this whole new approach would be clear to me. And that happened eventually!

As we came to the end of the process I was delighted that the whole project had been a great learning experience. It was revealing and engaging, even if tedious, and at times frustrating. It gave me a rare opportunity to delve into extensive reading on the subject of markets and small towns and their respective roles in enhancing rural development in Africa. To this end, my perspective of the subject matter became much broader and deeper than it would have ever been. In view of this experience, my reading and future research work will never be the same. In addition, reading and analysing existing research revealed gaps in theories and inadequacies in empirical rigour, both of which probably account for the lacklustre interest most research has received from policy makers in government and private sector practitioners (Francis N Wegulo, 25 April 2017).

## What Do the Book Chapters Reveal?

Each chapter synthesizes evidence on a selected topic that is central to African rural development planning. A summary of the key findings presented in each chapter is provided below.

Chapter 2 considers natural resource management. Most of the 12 studies reviewed relied on documentary data sources in which national and continental geographical units were generally involved. The key natural resource management approaches utilized in these studies were regional and community-based. They are referred to as the adaptive measurement approach, integrated natural resource management, land management and the ecosystem approach. The chapter pays attention to the community-based natural resource management approach that is described as amongst the most popular approach to participatory natural resource management in Africa. The historical development, as well as strengths and limitations of this approach are presented.

Chapter 3 presents evidence on local governance, showing that the main designs in the studies reviewed are case studies. The theories and

conceptual models utilized centre around constitutional analysis. The chapter shows how the modern history of post-colonial Africa is characterized by the evolving establishment of a strong state. It notes that the only phase of 'state weakness' occurred during the 1980s and 1990s. Although devolution is explored, it is more of a compromise to pacify the nation and to maintain state legitimacy than a deliberate choice of political will. This was the time when the purpose of local government was less about delivering results but was rather about ensuring processes that provide room for the local community to actively participate in public affairs. As soon as the central government regained its momentum, the purpose of local government reverted to delivering results, thereby reducing popular participation to mere formality that simply validated national policies. The chapter points out that the concept and practice of local government has largely served to construct a strong state, not by empowering local people but by delivering results.

Chapter 4 illustrates the integral role that agriculture plays in rural and national development in Africa. It examines a variety of qualitative and quantitative techniques as well as theories and conceptual models, case studies, household surveys, existing documents, a livelihood model, feminist theory and development perspectives. Main trends in agriculture that emerge from the information reviewed are highlighted. It reveals that, although agriculture is the main livelihood among Africa's rural inhabitants, widespread poverty, hunger and undernourishment are rife on the continent. The research focuses on regional and sub-regional priorities as well as challenges facing agriculture in Africa. These reflect a concentration on staple food crops; conservation; enhancement of genetic resources; integrated natural resource management; markets; institutions; information and up-scaling challenges; improving livelihoods in high stressed unstable environments; and capacity building especially where new skills in science and technology are involved. Especially significant are biotechnology and information communication technology; improved governance structure which includes genuine decentralization; ensuring gender equity; and giving voice to those who are marginalized in the rural communities. Examples of policy programmes such as land reform, soil management and water management are mentioned in the chapter.

Chapter 5 presents evidence on financing rural development programmes. Thirteen of the 21 studies reviewed focus on a single country, one sub-Saharan Africa as a region, two on the African continent as a whole, while six did not focus on any specific area. The studies reviewed

draw on three main theoretical and conceptual models: social capital, infrastructure, and governance and policy-making. While the studies demonstrated different ways in which rural finance is an essential component of the African economy, the chapter draws specific attention to challenges facing growth of rural finance, especially for agricultural activities.

Chapter 6 reflects on small market and urban centres. Studies with a focus on the national level are in the majority, with the rest focusing on the local and continental (African). The theories and conceptual models centre around rural-urban linkages, growth poles and service centres, and decentration. While the studies reviewed generally show that the development of both rural and market and small urban areas are intimately connected, three distinct patterns are identified. The first is an optimistic perspective that sees the growth of small urban centres as a necessary condition and prerequisite for rural transformation. Small towns are perceived as catalysts for rural improvement. The positive impact of small urban centres on rural development and agricultural productivity is demonstrated using data related to the provision of a great range of goods, agricultural inputs, consumer items, and so on; urban cash flows and services, agricultural extension, welfare services, including health and education facilities; and the diffusion of innovation and ideas.

The second is the intermediate view that sees urban-led development in the rural context approach as valid, logical and of value. However, more studies need to be undertaken and more experience accumulated before definite conclusions can be made. The third is a pessimistic perspective that does not see much value in the urban-led development in the rural context approach. While this approach is sound conceptually, and useful as a theoretical construct, it is pointed out that empirically the results do not provide adequate grounds for much optimism. The chapter has three case studies that illustrate empirical analysis on the role of market and small urban centres in rural development.

Chapter 7 provides supportive discussion on energy based mostly on 23 studies done at national level in the sub-Sahara region. Surveys were the main technique of data collection used in these studies that employed diverse theoretical frameworks and conceptual models that are identified in this chapter. A supportive detailed exposition of the dominant energy transition theory/energy ladder model institutional framework is given in this chapter. An emerging finding from an analysis of these studies is the fact that there still exists a big gap in the provision of energy in the rural economies of many countries in Africa.

Chapter 8 presents evidence on water issues. Both qualitative and quantitative techniques were used in the 21 studies that this chapter reviewed. The majority of them examined focused on South Africa. Different conceptual and theoretical frameworks are used in an attempt to understand rural water dynamics in Africa with the main ones being input orientated data envelopment analysis; the output-based payment model; participatory paradigms; risk management; and general management strategies. These frameworks are applied to several themes in rural water planning, including; water quality, water supply water security, water access, water policy and community participation. Overall, the studies show that many challenges in rural water development still exist and these need urgent attention.

Chapter 9 investigates reporting on health care delivery, showing that a significant amount of research has addressed this theme in Africa. Only two studies specified explicit theoretical or conceptual models out of the 54 studies reviewed. Regarding areas of focus of these, health services accounted for most of them, with health care delivery for increasing the burden of chronic diseases in rural areas featuring most prominently. Health financing was the second most researched followed by general health planning. Other topics were health planning for human resources, health systems and health information. Overall the studies lacked scientific rigour as the majority lacked inclusion of debate of conceptual or theoretical models.

Chapter 10 focuses on physical activity. While four of the 20 studies reviewed were at the global level, the rest were national and local studies that used these conceptual models: physical activity transition; ecological/socio-ecological model; Delphi method; human capital mode; the social capital and community model; the wellness continuum; and the descriptive paradigm. The chapter notes that rising global attention is being given to non-communicable diseases (NCDs) through increasing research worldwide with accompanying peer-reviewed publications on the severity of the situation. However, there is still limited research that concentrates on the NCDs in Africa. Moreover, the lack of detailed analyses on what interventions are being put in place to prevent the surge is distressing. The chapter points out that more research is definitely needed on high-priority interventions related to physical activity and health promotion as well as aspects of obesity and dietary patterns in Africa. Two examples are given, one from Mauritius and one from South Africa. The chapter documents these countries' national commitment to promoting physical

activity, advocating prevention initiatives to inform its citizens about the consequences of falling prey to sedentary lifestyle diseases. It stresses that the rest of Africa too needs to heed the warning and embark on programmes to sustain physical activity levels, promote health practices and empower local communities and individuals to take charge of their own health for their own good as well as that of their communities and the countries of Africa as a whole.

The evidence presented in this book opens up a key question on where to go from here with respect to research and possible use of this synthesis in policy-making. We reflect on this question further. In concluding this introductory chapter, we ask and answer our own question: 'Is this book as complete as it should be?' Our answer is 'no'. We see it as work in progress and look forward to updating it by ourselves or other researchers in future. As pointed out by Joan Fairhurst in her conclusion to Chap. 4, we too note that findings and discussions about programmes, interventions and research presented in this book enhance appreciation and understanding of the dynamic nature of rural development planning in Africa. Like her, we are convinced that the continued process of planning and life in the rural areas of Africa, including programmes that succeed and fail, offers the raw material for further research and future revision of this book.

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CHAPTER 2

# Natural Resource Management

*Chris Allan Shisanya*

## Introduction

Viable and sustainable natural resource management is key to availing biological and other physical resources for use in rural development in Africa. Natural resource management involves efforts by different institutions to formulate and implement laws, policies and legislation to ensure viable use of natural resources. Natural resources, mainly found in rural areas, are not only important as a source of food and other domestic products but also form the basis for social and cultural functions. This chapter presents the evidence on natural resource management in Africa.

## Methods

Information for this chapter was collected through a review of literature related to natural resource management (NRM) with a focus on Africa. Two data sources were used. The first source is peer-reviewed journal papers, while the second one is grey literature, which includes working

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papers, theses, meetings, organizational and project reports as well as case studies. The bibliographic databases searched included Web of Science, Scopus, IDRC library, UCT library, Google Scholar and Google search engine. The search was conducted in two stages. Stage one involved searching for literature on natural resource management in Africa. A keyword search was performed within the ISI Web of Knowledge electronic database using the keywords (in all fields): 'natural resource management' AND 'Africa'. Stage two involved searching for literature relevant to best practices in natural resources management in Africa. These two stages yielded 115 publications. Applying the inclusion and exclusion criteria summarized in Table 2.1, yielded 12 articles for final review (Table 2.2).

**Table 2.1** Criteria for inclusion or exclusion of articles during systematic review process

| *Criteria* | *Excluded* | *Included* | *Justification* |
|---|---|---|---|
| Date of publication | Articles published prior to 1980 | Articles published between January 1980 and December 2015 | It is assumed that attention on NRM in Africa, particularly community-based natural resource management started gaining momentum in 1980 |
| Language of publications | Articles published in languages other than English | Articles published in English | To facilitate understanding of published articles |
| Main theme of publication | Articles that did not pay particular attention to NRM in Africa | Articles that had the words NRM in Africa in title or abstract | The chapter focuses on natural resource management in Africa |
| Availability of article | Articles that were not available on the Web of Science | Articles that are available in the Web of Science | The Web of Science provides an authoritative source for filtering literature from published sources |
| Country or region of study | Articles that did not focus on Africa | Articles that have NRM in Africa as major focus of study | Publication has to focus on Africa |
| Type of article | Grey literature such as conference proceedings were not included | Only peer-reviewed articles were included | To avoid grey literature and arbitrariness in the selection of research articles |

**Table 2.2** Summary of empirical research on natural resources management in Africa

| *Author* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study design* | *Data collection method* | *Study focus* | *Key findings* |
|---|---|---|---|---|---|---|---|
| Adams (2004) | None | Africa and India | Historiography | Documentary review | Secondary sources | How can the diversity of life be maintained as human demands on earth expand seemingly without limit?<br>How can preservation be recruited with human rights and development needs of the poor?<br>Is conservation something that can be imposed by the knowledgeable elite, or is it something that should emerge naturally from people's free choices? | Driving force for wildlife conservation at the start of the twentieth century in both Africa and India were the European hunters<br>Colonial hunters were in a position to launch international meetings and organizations supporting the course of nature conservation |

(*continued*)

**Table 2.2** (continued)

| *Author* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study design* | *Data collection method* | *Study focus* | *Key findings* |
|---|---|---|---|---|---|---|---|
| Appiah-Opoku and Hyma (1999) | $N = 115$; Probability and non-probability sampling techniques employed | Talensi-Nabdan District of Ghana | Problem assurance theory (Hardin's, 1968) 'Tragedy of the Commons' | Qualitative and Quantitative | Primary data: interviews, questionnaire, observation Secondary data: documentary review | What are the indigenous NRM systems and to what extent can Traditional Institutions still play in the sustainable management of natural resources in contemporary times? | There is a shift in management role by chiefs and elders, particularly in water resources. Male dominance is evident at various institutional levels Ownership and control of forest and wildlife resources are perceived as vested in government. Communities have limited access to resources because of government policies that restrain them. |
| Batterbury (1998) | Not applicable | Bam Province, Central Plateau of Burkina Faso | Impact assessment model | Qualitative and quantitative | Primary data: interviews, questionnaire, observation Secondary data: documentary review | Evaluation of *gestion des terroirs villageois* (GTV) approach to community management of natural resources | Landscapes in the study area have been transformed by continued investment by farmers in environmental projects. |

(*continued*)

**Table 2.2** (continued)

| *Author* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study design* | *Data collection method* | *Study focus* | *Key findings* |
|---|---|---|---|---|---|---|---|
| Hardin (1968) | Not applicable | Global | Problem assurance theory (Hardin's, 1968)' 'Tragedy of the Commons' | Documentary review | Not applicable | Herders sharing a common pasture are led by the inexorable logic of individually rational decisions for optimizing personal gain, to ultimately overstock their herds and destroy their shared resource | The population problem has no technical solution; it requires a fundamental extension in morality. |
| Hutton et al. (2005) | Not applicable | Southern Africa | Community-based natural resource management approaches | Documentary review | Not applicable | Draws on the experience in southern Africa to examine the growth of the community narrative and the subsequent revival of the fortress conservation narrative | Changes in narratives have had profound impacts upon conservation and natural resources management, livelihood strategies and political process. |

(*continued*)

**Table 2.2** (continued)

| *Author* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study design* | *Data collection method* | *Study focus* | *Key findings* |
|---|---|---|---|---|---|---|---|
| Nelson and Agrawal (2008) | Not applicable | Mexico, Nepal, Tanzania | None | Case study approach | Review of empirical research on local forest governance | How local forest governance can be as, if not more, effective as centralized state-based regimes | REDD payments are likely to create incentives for forest managers to return to past centralized models of forest conservation. In governance contexts characterized by weak rule of law and low levels of public accountability, REDD payments are likely to increase corruption and elite capture around forest governance institutions and forest product harvests. |

(*continued*)

**Table 2.2** (continued)

| *Author* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study design* | *Data collection method* | *Study focus* | *Key findings* |
|---|---|---|---|---|---|---|---|
| Norton-Griffiths (2007) | Not applicable | Kenya's rangelands | None | Case study approach | Review of secondary documents | Wildlife carrying capacity of the Kenyan rangelands | Land sub-division has far-reaching impacts on wildlife.<br>The uncompetitive returns from wildlife compared with other production systems encapsulate the entire dynamics of change observed on the rangelands of Kenya |
| Ribot (2003) | Not applicable | Sub-Saharan Africa | None | Documentary review | Review of empirical literature | Is decentralization of natural resources based on, or support institutional arrangement that enfranchises local populations? | To date, local actors receiving environmental powers are rarely representative or downwardly accountable.<br>The general failure of African governments to establish democratic decentralization of natural resources appears to reflect a larger resistance to establishing local democracy. |

(*continued*)

**Table 2.2** (continued)

| *Author* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study design* | *Data collection method* | *Study focus* | *Key findings* |
|---|---|---|---|---|---|---|---|
| Nelson and Agrawal (2008) | Not applicable | Africa | None | Documentary review | Comparative Regional reviews of community-based natural resource management (CBNRM) reforms | Institutional factors that account for the outcome of efforts to decentralize control over natural resources to local communities in Sub-Saharan Africa | High financial wildlife values captured by state agents, especially when coupled with high levels of corruption, create strong disincentives for central managers to devolve authority over wildlife to local communities |

(*continued*)

**Table 2.2** (continued)

| *Author* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study design* | *Data collection method* | *Study focus* | *Key findings* |
|---|---|---|---|---|---|---|---|
| Roe et al. (2009) | Not applicable | Africa | None | Documentary review | Regional reviews of CBNRM experiences | Different experiences of CBNRM in different regions of Africa | Transfer of authority from central government to a diverse range of co-management arrangements has had both success and many challenges in Africa. Developing strong and resilient community organizations for the management of land and natural resources will take generations to accomplish. The challenges to a successful devolution include elite capture of opportunities and benefits, corruption and mismanagement. In some cases, these problems have been used by central governments as reason to abort devolution and reclaim rights over land and resource management. |

(*continued*)

**Table 2.2** (continued)

| *Author* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study design* | *Data collection method* | *Study focus* | *Key findings* |
|---|---|---|---|---|---|---|---|
| Roe (2008) | Not applicable | Global perspective | None | Documentary review | Review | What commonalities are emerging from research exploring the social and livelihood impacts of conservation initiatives? | Activities and accountability of big international NGOs are now in focus. Increasing protectionist focus of conservation policy and the implications for communities residing in and around protected areas. Lack of attention to biodiversity conservation on the development agenda with current focus on poverty reduction. |
| Dyer et al. (2014) | Not applicable | South Africa | None | Process-based evaluation | Case studies | To assess the factors affecting community engagement within externally initiated CBNRM projects alongside stakeholder experiences in three participatory case studies from southern Africa | Community access to, and regular communications with the project initiator throughout the project is important for achieving the outcomes |

## Results and Discussion

Table 2.2 further down shows a summary of the key aspects extracted from the 11 reviewed publications. These include the author(s), sample characteristics or nature of study, title of the article, conceptual approach, study type, data collection method, study focus, findings and conclusions and/or recommendations. Of the 12 studies reviewed, all were based on desk reviews with the exception of Dyer et al. (2014) and Appiah-Opoku and Hyma (1999) that were based on empirical work in Southern Africa and Ghana, respectively. Another important aspect to note is that these studies do not demonstrate any theoretical orientation underpinning the respective research, with the exception of Appiah-Opoku and Hyma (1999) and Batterbury (1998).

## Study Designs and Approaches

The 12 articles reviewed utilized four study designs. The first design was documentary review (58%), which included Roe, Nelson, and Sandbrook (2009), Roe (2008), Nelson and Agrawal (2008), Hutton, Adams, and Murombedzi (2005), Adams (2004), Ribot (2003), Hardin (1968). The second design was qualitative and quantitative (17%). It included Appiah-Opoku and Hyma (1999), Batterbury (1998). The third design was case study (17%). This included Nelson and Agrawal (2008), Norton-Griffiths (2007). The fourth and final design was process-based evaluation (8%), which included Dyer et al. (2014). As seen from these statistics, most of the publications adapted the documentary review design in elucidating natural resource management in Africa. This approach refers to the analysis of documents that contain information about the phenomenon we wish to study (Bailey, 1994). Payne and Payne (2004) describe the documentary method as the technique used to categorize, investigate, interpret and identify the limitations of physical sources, most commonly written documents whether in the private or public domain. This study design has been viewed in other quarters as being more cost-effective than social surveys, in-depth interviews or participant observation (Mogalakwe, 2006).

The units of analysis in these studies have been regional (Adams, 2004; Dyer et al., 2014; Hutton et al., 2005; Nelson & Agrawal, 2008; Ribot, 2003; Roe et al., 2009) and also country specific (Appiah-Opoku & Hyma, 1999; Batterbury, 1998; Hutton et al., 2005; Nelson & Agrawal, 2008; Norton-Griffiths, 2007). It is very clear from the above studies that

not much has changed as far as methodology is concerned in elucidating natural resource management in Africa.

## Theories and Conceptual Models

The majority of the studies (8) reviewed did not have any theoretical or conceptual underpinnings. One of the studies (Batterbury, 1998) utilized the impact assessment model to inform the study, while Hutton et al. (2005) adopted the community-based natural resources management approaches to inform their study. Impact assessment models seek to understand the linkages and feedbacks among complex systems associated with natural resource management (Shiferaw, Freeman, & Woldemariam, 2003). Conversely, approaches applied in natural resource management include (Hutton et al., 2005):

- **Regional/community-based natural resource management.** This approach combines conservation objectives with the generation of economic benefits for rural communities. The three key assumptions being that: local people are better placed to conserve natural resource; people will conserve a resource only if its benefits exceed the cost of conservation and people will conserve a resource that is linked directly to their quality of life. When local people's quality of life is enhanced, their efforts and commitment to ensure the future well being of the resource are also enhanced. Regional and community-based natural resource management is also based on the principal of subsidiarity, which suggests that management should take place at the lowest appropriate governance level.
- **Adaptive measurement approach.** This approach includes recognition that adaption occurs through a process of plan do—review—act. It also recognizes seven key components that should be considered for quality natural resource management practice as follows: determination of scale, collection and use of knowledge, information management, monitoring and evaluation, risk management, community engagement, and opportunities for collaboration.
- **Integrated natural resource management.** This approach is a process of managing natural resources in a systematic way, which includes multiple aspects of natural resource use (biophysical, socio-political and economic), meeting production goals of producers and other direct users (food security, profitability) as well as goals of the wider

community (poverty alleviation, welfare of future generations, environmental conservation). It focuses on sustainability.

- **Land management approach.** Emphasis of this approach is on the following strategies: (a) comprehending the process of nature including ecosystem, water and soils; (b) using appropriate and adapting management system in local situation; and (c) cooperation between scientists who have knowledge and resources and local people who have knowledge and skills.
- **An ecosystem approach.** This is a focal approach that examines and understands the interdependent relationships of plants, animals and ecological processes that link them with physical environment and the needs of the people.

In addition to the above, one of the theories utilized in the studies reviewed is Hardin's (1968) 'Tragedy of the Commons', which argues that users of common property cannot be left to decide how to use them and that their use has to be controlled to avoid over exploitation. It is with the objective of preventing the Hardian Tragedy of the Commons that governments in Africa, and other parts of the world have, until recently, assumed the direct control and management of natural resources, such as forest, water bodies, game and wild life. Hence, this guided government policies in their design of codes, and laws in the management of common property resources. The suitability of governments' direct control of what should properly be locally managed for the livelihood sustainability of the poor is increasingly being questioned. Fairhead and Leach (2004: 13) argue: 'the alienation of local resource control to state structures …', among other factors, accounted for resource management failures in most parts of the third world. Rules established by governments to manage natural resources have most often been in conflict with the rights of local residents. Available literature (Commons, 1970; Marsh, 2003; North, 1990) demonstrates that local communities and traditional institutions have been able to establish and maintain organisational structures and enforce mutually agreed rules on the use of natural resources.

Evidence (Adams & Anderson, 1988; Goodin, 1996) also points to the fact that communities in the past had effective institutions to manage resources and that these institutions are in some places still active and effective today. Runge (1996) and Ostrom (1992) demonstrate that field work and theory is converging to show that where traditional institutions are given the opportunity and the resources to develop their own management systems and tenure regimes, they are well able to do so.

Contrary to the 'Tragedy of the Commons' argument (premised on the mainstream view that local people are responsible for causing natural resource degradation), Runge (1996) formulated an 'Assurance Problem' theory as a means of understanding how rural communities evolve their own management systems (see Appiah-Opoku & Hyma, 1999 in Table 2.2). The theory is framed on the principle that natural resource management policies, given the failure of the top-down (policies, codes and laws on natural resource management designed by government agencies) 'Tragedy of the Commons' approach, should seek to support traditional institutions where they are effective, and promote them where they no longer exist in their efforts to manage natural resources. The theory further argues that the assumptions of the 'Tragedy of the Commons' hypothesis are unrealistic; rural producers living in the same community often do not practise the same livelihood, thus they neither share the same interests in resources, nor act entirely independently of their fellow producers. Hence, research using this approach argues that a learning process takes place between competing but linked users of resources. Runge (1996) therefore, argues that individual decisions are conditioned by the expected decisions of others. Thus, if expectations, assurance and actions can be coordinated, there is less necessity for people to pursue 'free-rider' strategies; indeed, co-operative behaviour might be a utility maximizing strategy. For Runge, the institutions of traditional societies exist to coordinate and predict behaviour.

## Study Focus and Empirical Findings

The common theme flowing through the reviewed articles is the apparent shift to community-based natural resource management (CBNRM) in sub-Saharan Africa (SSA). This shift is viewed as a catalyst for rural development and conservation efforts (Fabricius, Koch, Magome, & Turner, 2004; Hulme & Murphee, 2001). The institutionalization of CBNRM across SSA can be attributed to the following: growth in scholarship on common property and in political ecology; the broader tenets of the neoliberal orthodoxy or market-based incentives, property rights, and decentralization; donor interests in achieving synergies between rural development and biodiversity conservation; and the intersection between local demands for greater control over resources and political decision makers' interest in reducing expenditures (Agrawal, Chhatre, & Hardin, 2008; Batterbury & Fernando, 2006; Brosius, Tsing, & Zerner, 2005).

## Developments in Natural Resource Management in Africa

The present regime of natural resource management in most resource-dependent countries in Africa is 'state-centric' to the extent that they depict (over)centralized resource governance structure. The top-down pattern of the resources regimes in the region is a mix of historical, cultural, political, economic and transnational trends. First, the colonialist came with predetermined objectives of political domination and trade exploitation (Battiste & Henderson, 2001). The socio-economic and political structures of the post-colonial era were patterned after the colonial models, resulting in the emergence new cultural orientations. The traditional resource management patterns hitherto in place were undermined, and many of them became structurally deformed, derailed and disintegrative. The dysfunctional impacts of these were not immediately felt until few decades after the colonialists had gone. A World Bank study on Nigeria corroborates this assertion. The report succinctly points out the extent of degradation brought about by colonial incidents vis-à-vis traditional systems and indigenous institutions of resource and environmental management in the country (World Bank, 2003).

A regime of economic-motivated colonization was entrenched in the region through imperialists' legal and socio-political governance structures. The Western idea of resource ownership and management was conceived, developed and introduced. Colonization relegated indigenous cultures and the natural world in which the local people had lived to the status of commodities that could be taken and owned by non-indigenous colonizers. The philosophy of colonization was anchored on the notion of appropriation and control through individuals and corporate agencies like the *Royal Niger Company* (Battiste & Henderson, 2001). African territories were denominated as mere colonial goods to be traded for commercial gains. The 'commoditizers' defined countries in terms of mercantilist economic goods: the *Ivory Coast* (renamed Cote D'Ivoire), the *Gold Coast* (renamed Ghana), and the *Slave Coast* (Liberia). The name 'Nigeria' emerged from River Niger, a marine environment rich in natural (aquatic and aquaculture) resources. The river served as the commercial route for the British companies through which natural endowments were plundered. Human resources were also shipped through the avenues for commercial purposes, as slaves to the land of the colonial overlords.

Unlike the British 'commoditizers' and their 'mercantilists' supporters, indigenous peoples of Africa do not view their heritage in terms of property goods that have owners, or that which could be used for purposes of extracting economic benefits alone. The traditional communities view their natural heritage or resources in collective terms. Even where resources are vested in individual managers, they are responsible to the larger community and future generations of community-owners. This is due to their common ownership and communality systems of natural resource governance. The same model is reflected in the local formula for sharing accruing benefits from natural resources among the communities. Testifying before the *West African Lands Commission* in 1908, a Yoruba traditional ruler, Chief Elesi of Odogbolu, expounded the traditional conception of resource ownership and management in indigenous communities of Nigeria thus: '*I conceive that land (and by implication, resources beneath it) belongs to a vast family of which many are dead, few are living and countless members are still unborn*'.[1] These and other indigenous philosophical assumptions underpin the natural resource management before the advent of modern (now global) conception of sustainability.

## Implementation of Community-Based Natural Resource Management in Africa

CBNRM is, quite simply (and as its name suggests), a term to describe the management of resources such as land, forests, wildlife and water by collective local institutions for local benefit. CBNRM takes many different forms in different locations and different socio-political and biophysical contexts. CBNRM may be based on commercial uses of natural resources, such as managing wildlife for local tourism or hunting enterprises, or it may be based on primarily subsistence uses of resources such as Non-Timber Forest Products (NTFP).

CBNRM is not a new phenomenon. Local groups of people have managed the land on which they live and the natural resources with which they are surrounded for millennia. Indigenous African communities often developed elaborate resource management systems (Fabricius et al., 2004), as have local communities throughout the world (Ostrom, 1990). Today, local groups of pastoralists, farmers, and hunter-gatherers throughout Africa maintain many traditional systems of collective natural resource management which help to sustain the livelihoods and cultures of millions of people.

In the last few decades, there has been a growing awareness of the importance of collective natural resource management practices and institutions, and recognition of the ways that historic forces have disrupted local people's ability to manage the lands and resources they depend upon. A wide range of policy makers and development and conservation practitioners have supported efforts to revive or bolster local natural resource management institutions in response to various economic, social, environmental and political pressures. Increasingly, debates over local communities' ability to manage their lands and natural resources are a part of broader struggles over political and economic power and authority in African countries. This section briefly reviews the reasons for this return to local level management and the way in which CBNRM has been initiated, evolved, and ultimately constrained over time and from place to place.

## Origin of CBNRM Paradigm

Natural resource management policies in the colonial era were a central component of the project of extending European political control into rural African landscapes (Neumann, 1998). Colonization by European powers in the eighteenth and nineteenth centuries, and the accompanying spread of conservation practice, did not bring with it this respect for traditional rights. The model for nature conservation that was globally imposed by European nations was based on the American approach of pristine wild areas set aside for human enjoyment and fulfilment and was encouraged by concerns about the depletion of wildlife, timber, and other valuable resources (Adams, 2004). Ownership of land was gradually transferred from traditional local authority to the state domain in order to enable colonial authorities to exploit African lands, labour, and resources. Ultimately, this shift in tenure became one of the key drivers of African independence movements seeking to recover entitlements to land and resources. Resources such as wildlife were progressively placed under central regulatory authority, with the rights of local people to utilize resources alienated over time.

The newly independent African nations that emerged starting in the late 1950s inherited colonially derived political structures based on centralized control and exploitation (Mamdani, 1996). African states often maintained heavily centralized political economic institutions, as a result of socialist ideologies favouring state direction of the economy and ownership of valuable resources and the desire of elites in many emerging nations

to build patronage networks essential for their own authority and political stability (Ake, 1996; Bates, 1981; van de Walle, 2001). As a result, for example, colonial land tenure institutions were generally retained, and in many instances central authority over lands and resources extended and local rights further alienated (Wily, 2008).

In the 1980s, a community-based counter-narrative began to emerge as a result of manifold trends, ideas, and crises which led to a broad rethinking of both development and conservation fields. The influences that led to the widespread support for CBNRM that emerged during the 1990s were both internally and externally derived. The emergence of CBNRM in southern and eastern Africa often had deep locally derived roots. In the late 1960s, use rights over wildlife on freehold lands in Zimbabwe, South Africa and Namibia—all then under the rule of contested white minority regimes—was through a series of legislative reforms, devolved to landowners (Jones & Murphree, 2001). This dramatic shift away from strictly centralized governance of wildlife effectively changed the status of wildlife on private lands from an economic liability to an asset, and this led to profound recoveries of wildlife on freehold lands and the growth of wildlife-based industries in all three countries (Bond, 2004). The reforms also laid the basis for extending the model of local management to communal lands after the enactment of majority rule in those countries, resulting in Zimbabwe's iconic Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) in the 1980s, and Namibia's Communal Conservancies in the 1990s (Jones & Murphree, 2001). These local experiments in CBNRM provided new ideas and opportunities for adaptive learning; CAMPFIRE, for example, played a key role in shaping pilot initiatives in community-based wildlife management in neighbouring countries including Mozambique, Botswana and Namibia.

Similar experiments were also occurring as early as the 1960s outside of southern Africa. In Kenya, local communities were able to earn income from lease fees paid by hunters in areas such as Kajiado District, where efforts to integrate the management of Amboseli National Park with local livelihood interests led to the crystallization of new 'community-based' conservation paradigms in the 1970s (Homewood, Kristjanson, & Trench, 2009; Western, 1994). In contrast, many countries in Central and West Africa were gaining independence from French, English and Spanish colonial rule in the early 1960s. After independence, tenure rights for many countries became more, rather than less centralized (e.g. in Ghana (Alhassan & Manuh, 2005), Mali (Hilhorst & Coulibaly, 1998) and Cote

d'Ivoire (Stamm, 2000)). This delayed the emergence of community-based management models, which only started to appear in the 1980s and 1990s, with the introduction of decentralization policies in many countries (e.g. the *Gestion de terriors* approach of Burkina Faso; Batterbury, 1998).

By the late 1980s, there was a confluence of this type of local experimentation, changing global discourses on rural development and conservation, and changing political conditions across Africa. Development theory in the 1980s particularly that oriented to rural development began to emphasize decentralization and local empowerment (Chambers, 1983, 1987). In the natural resource management field, the emergence of an array of new studies documenting sustainable forms of collective resource management based on traditional rules and norms transformed thinking about communal property rights and institutions (Berkes, 1989; Ostrom, 1990). This scholarship provided much of the conceptual basis for CBNRM, and in many ways was convergent with ideas emerging independently within Africa about local resource management regimes (for instance, Murphree, 1993), as well as with parallel experiments with Participatory Forest Management (PFM) in places like southern Asia. Conservation efforts, meanwhile, were increasingly subject to concerns regarding the negative impact of protectionist approaches based on exclusion of local people. The Bali Action Plan, an outcome of the 3rd International Union for Conservation of Nature (IUCN) World Parks Congress in 1982, is seen by some as a turning point in conservation practice, through its encouragement of local participation and sustainable use (Wilshusen, Brechin, Fortwangler, & West, 2002). Just after this, in 1985, the World Wildlife Fund (WWF) launched its Wildlife and Human Needs Programme comprising some 20 projects that sought to combine conservation and development in developing countries.

Alongside the emergence of new ideas and narratives about rural development and natural resource management were a range of shocks and crises that overtook Africa during the 1980s, which often created new political space for experiments with CBNRM. Africa's share of global GDP decreased from 2.5 per cent in 1980 to 1.1 per cent in 1996, and African countries had a per capita Gross National Product in 1998 that was only 91 per cent of what it was in 1970 (van de Walle, 2001). The fiscal insolvency of many states led to increasing reliance on external rescue packages and global financial institutions. By the 1980s, a range of bail-outs led by the International Monetary Fund and World Bank were being

adopted, based on the new global economic prescriptions of 'structural adjustment' (Devarajan, Dollar, & Holmgren, 2001). These adjustment policies called for market-based measures, reduced government budget deficits, and decentralized political economic structures that would promote investment. CBNRM, with its focus on local management and incentives and a reduced role of centralized state bureaucracies, fitted well with the broader suite of economic policies being promoted by donors across Africa during this period. For example, the World Bank published *Living with Wildlife* (Kiss, 1990), while the UK Overseas Development Administration (now Department for International Development) commissioned a review of participatory approaches to wildlife management in order to inform its new African wildlife policy (IIED, 1994).

Finally, the end of the Cold War and collapse of communism in Eastern Europe contributed to a sudden resurgence of democratic governance in Africa in the late 1980s and early 1990s (Bratton & van de Walle, 1997). Culminating in the South African general elections in 1994 following the end of Apartheid, this 'second liberation' seemed to usher in a new era of popular participation in government decision-making. The promotion of local participatory and accountable institutions with authority over lands and resources seemed to be an essential component of such political reforms. Indeed, throughout sub-Saharan Africa, reforms were adopted during the 1990s which called for decentralization of natural resources and land tenure institutions and greater participation by the public and local communities (Ribot, 2003). However, the widespread adoption of CBNRM in policy and legal reforms during the 1990s, as with the 'second liberation' more broadly, did not necessarily translate into radical changes in local rights or authority over natural resources in the years that followed (Nelson & Agrawal, 2008).

## Impacts and Limitations of CBNRM in Africa

The work by Roe et al. (2009) (Table 2.2) perhaps illustrates best the impacts and limitations of CBNRM in Africa. Its objective was to review different experiences of CBNRM in different regions of Africa. The review identified the following as key themes: formal policy; institutional framework; role of the private sector; role of donors; benefit sharing mechanisms; taxation mechanisms; CBNRM contributions to environmental improvements; and governance and policy reforms. The key findings of this review are as follows:

- The transfer of authority from central government to a diverse range of co-management arrangements has had both success and challenges in Africa.
- Developing strong and resilient community organizations for the management of land and natural resources will take generations to accomplish.
- The challenge to successful devolution includes elite capture of opportunities and benefits, corruption and mismanagement. In some cases, these problems have been used by central governments as a reason to abort devolution and reclaim rights over land and resource management.

The review of Roe et al. (2009) concludes that there is evidence of improved wildlife numbers in specific locations that can be attributed to contemporary CBNRM processes, but that conflicts between people and wildlife have not been adequately resolved. Following in the same footsteps as Roe et al. (2009), Nelson and Agrawal (2008) (Table 2.2) examine the institutional factors that account for the outcome of efforts to decentralize control over natural resources to local communities. They focus on the political nature of institutional processes associated with decentralization in sub-Saharan Africa through a comparative analysis of wildlife management reforms in seven eastern and southern African countries. The key findings of this work (2008, p. 580) are:

- That high financial wildlife values captured by state agents, especially when coupled with high levels of corruption, create strong disincentives for central managers to devolve authority over wildlife to local communities. Where CBNRM reforms have occurred, the institutional context is distinguished by stronger public institutions, notably lower levels of corruption, and relatively lower wildlife value that state actors can capture. The conjunction of these latter factors has been of basic importance in creating the enabling institutional environment that favours innovation within state wildlife agencies.
- That neither donors nor local communities have played a determining role in the adoption of key institutional reforms related to wildlife management in the studied countries.

A case study on CBNRM is presented in the next section.

**Case study 2.1 The Imbirikani Group Ranch Project Case Study, Kenya**

Imbirikani Ranch is wholly within Olotokitok Division of Kajiado District (19,600 km$^2$). The other divisions in the district are Magadi, Ngong, Central, Namanga and Mashuru (Fig. 2.1).

Imbirikani area has two Sub-locations, Imbirikani and Oltiasika (Fig. 2.2), which are each administratively managed by a Chief and two Sub-Chiefs. The area is confined within latitudes S2.31° and S2.46° and longitudes E37.44° and E37.87° and sits on the northern plains at the foot of Kilimanjaro Mountain.

The northern boundary of the area is formed by the Kiboko river while the southern boundary by the Kikarankot river. The area is bordered to the east by Chyulu hills that rise to 2175 m. Chyulu hills are within a game reserve. The Amboseli plains and Game Park form the western boundary. The Imbirikani ranch is within the Amboseli ecozone and is a wildlife migratory corridor between Amboseli and Tsavo national parks. The lowest point in the area is at an altitude of 1050 m at Olngarua Leinkati swamp. The Chyulu hills form a rain shadow for Imbirikani.

The volcanic geology of Chyulu hills has influenced the faunal and floral resources in the area with most lava flow bearing a denser vegetation growth than the Precambrian metamorphic underlain areas. The larger part of the area is under volcanic geology. There is no drainage over the lava flow with the precipitation quickly disappearing over the highly porous boulders of lava. Water resources of any significance are located at Kikarankot River. Most of the drainage over the Precambrian terrain to the west flows into the Mpakai depression which in exceptional periods of rainfall turns into an ephemeral lake. Apart from the low Precambrian hills on the western parts of the area and the lava covered areas, most of the rest of the terrain is a plain generally at 1200 m above sea level. There are some interruptions from gneissic tors and volcanic hills.

The soils are of two characters, the sandy shallow soils (Regosols) over the Precambrian terrain and occupying the non-dissected plains to the west with a poor vegetation cover and grass biomass especially around Imbirikani market centre, and clay soil at the foot of Chyulu Hills. The Chyulu hills themselves are at various locations covered by

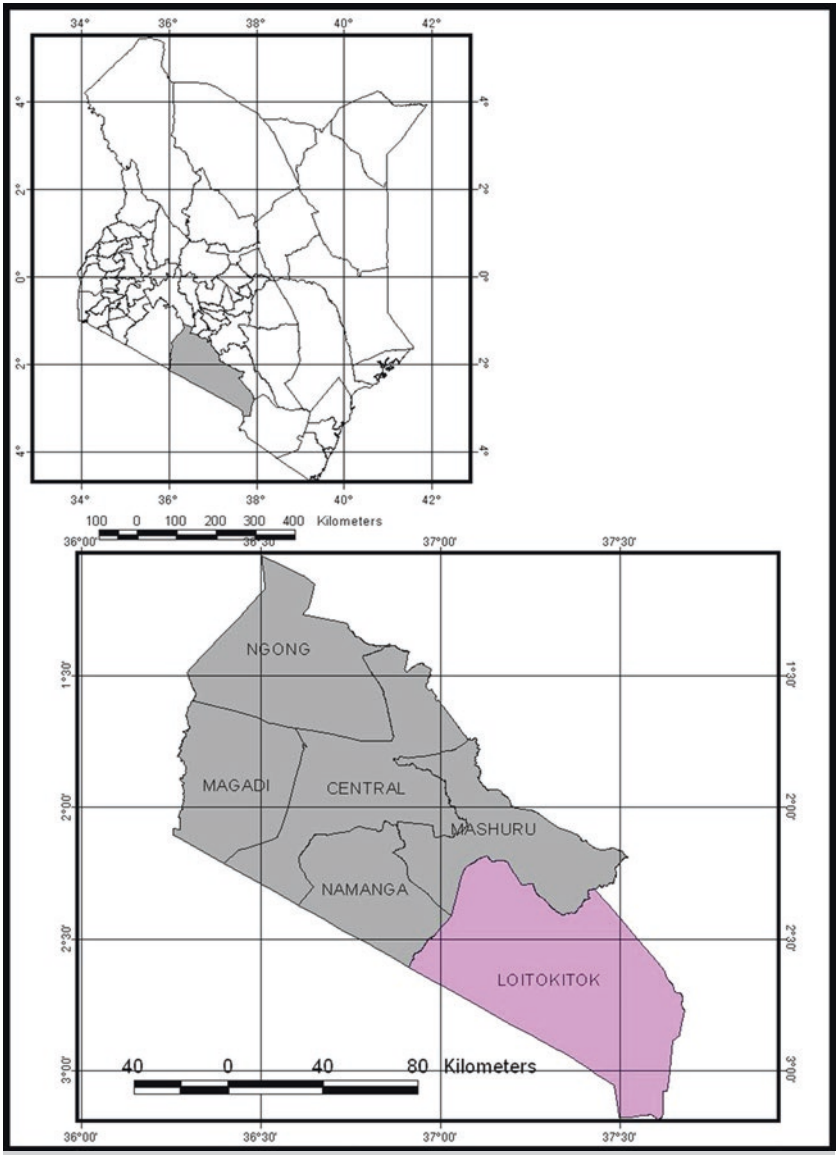


**Fig. 2.1** Map of Kenya showing the location of Kajiado District and Oloitokitok Division. Source: Shisanya et al. (2010, p. 1)

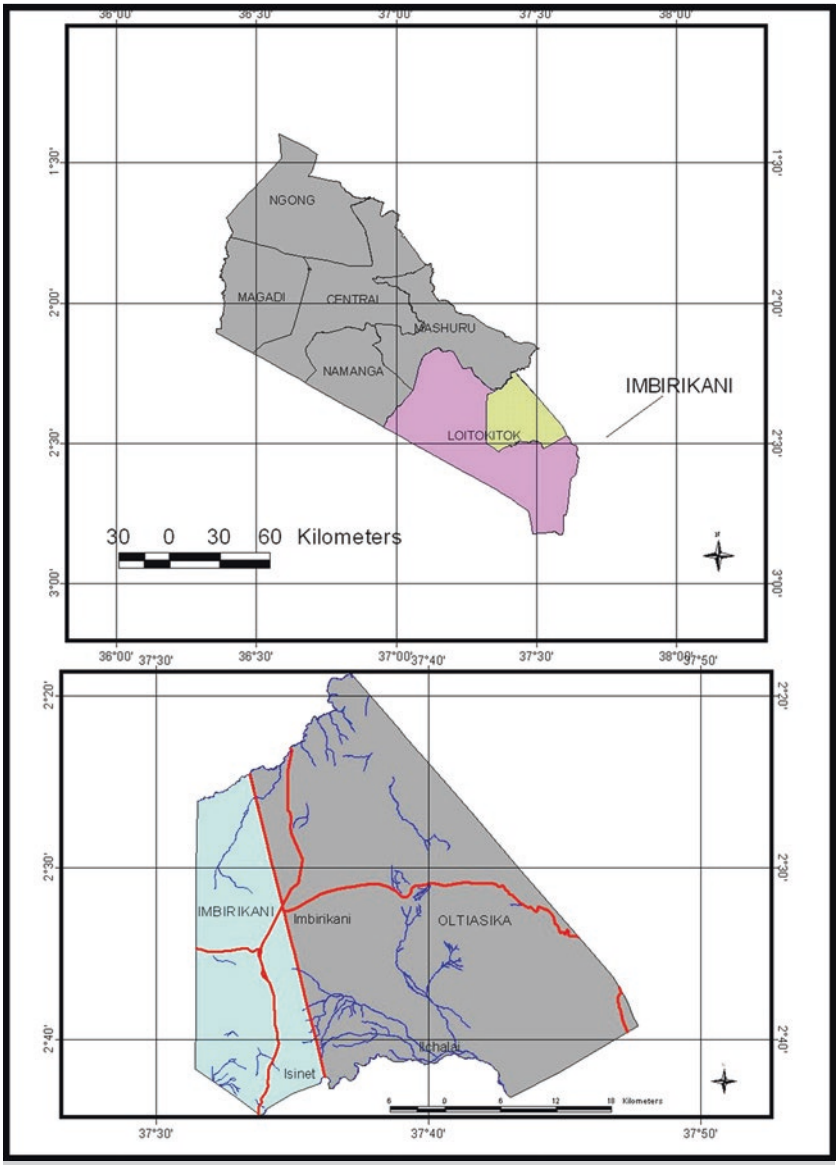


**Fig. 2.2** Map of Kajiado District showing location of Imbirikani within Oloitokitok Division. Source: Shisanya et al. (2010, p. 2)

red volcanic soils (Nitisols) at the top and Andosols at the slopes. Along the Kikarankot River and at the flood plains are poorly drained moderately deep to deep clay soils (Greyzems). Pockets of Piedmont plains of Andisols are located at various areas within the lava plains. There is also badland of shallow soils (rendzines) located to the west of Lowa (Exploratory Soil Map of Kenya, KSS, 1982).

The larger part of Imbirikani falls under Kenya's climatic zones V-2 and VI-2 which range from semi-arid to arid with a temperature range of 22–24 °C and an average annual rainfall range of 300–900 mm that is suitable only for bush land and scrubland vegetation. The Chyulu hills area however falls in agro-climatic zones II-4 (1500–1850 m) at the top of the hills, III-3 (1200–1500 m) at mid altitude and IV-2 (900–1200 m) in the lower slopes with a temperature range of 18–24 °C. The low lying areas are semi-arid to arid whereas the Chyulu hills area are semi-humid to semi-arid with an annual rainfall range of 600 mm at the western foot slopes to 1400 mm at the hilltops. The annual average potential evaporation is high (1900–2400 mm) at the Imbirikani Plains. The dry season usually lasts five to seven months.

The climatic factors affect the vegetation cover (see Fig. 2.3) and the livestock-carrying capacity in Imbirikani and consequently impacting on the livestock production economy.

The major elements of climate that affect herbage growth are the intensity and duration of rainfall, the ratio between annual rainfall and potential evaporation, and the year-to-year variation in rainfall which in the last ten years has been erratic and unpredictable with a most devastating drought in 2009. Wild herbivores also compete with the livestock to forage leading to conflicts during the drought periods. The most common herbivores are wildebeest, zebra, giraffe and eland. The broad categories of land uses are shown in Fig. 2.4.

The only river in the area, River Kikarankot, runs westerly and south-westerly along the southern boundary of Imbirikani. The river is a source of water for irrigation at two major swamps; Leilerai Kimana swamp and Olngarua Leinkati swamp.

The Maasai, who are the main community in Kajiado District, practise semi-nomadic pastoralism as their main mode of life. Land in Kajiado is communally owned but it has been undergoing change over

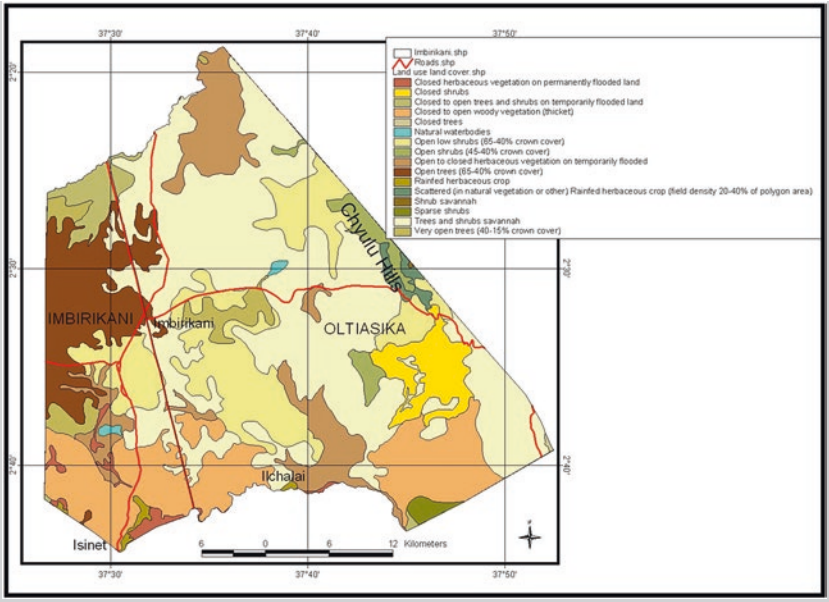


**Fig. 2.3** Land cover types in Imbirikani area. Source: Shisanya et al. (2010, p. 4)

the last two decades due to land adjunction and sub-division of group ranches to smaller individually owned land. A group ranch is a livestock production system where a group of people jointly own freehold title to land, maintain agreed stocking levels and herd their livestock collectively on the land. Selection of members to a particular group ranch is based on kinship and traditional land rights (Shisanya et al., 2010).

The group ranches are designed by the government to meet the following objectives:

- To increase the productivity of semi-arid and arid lands through livestock support and off-take.
- To improve the earning capacity of pastoralists.
- To avoid possible landlessness among pastoralists in case of allocation of large tracts of land to individual ranchers.
- To avoid environmental degradation due to overstocking on communal lands.

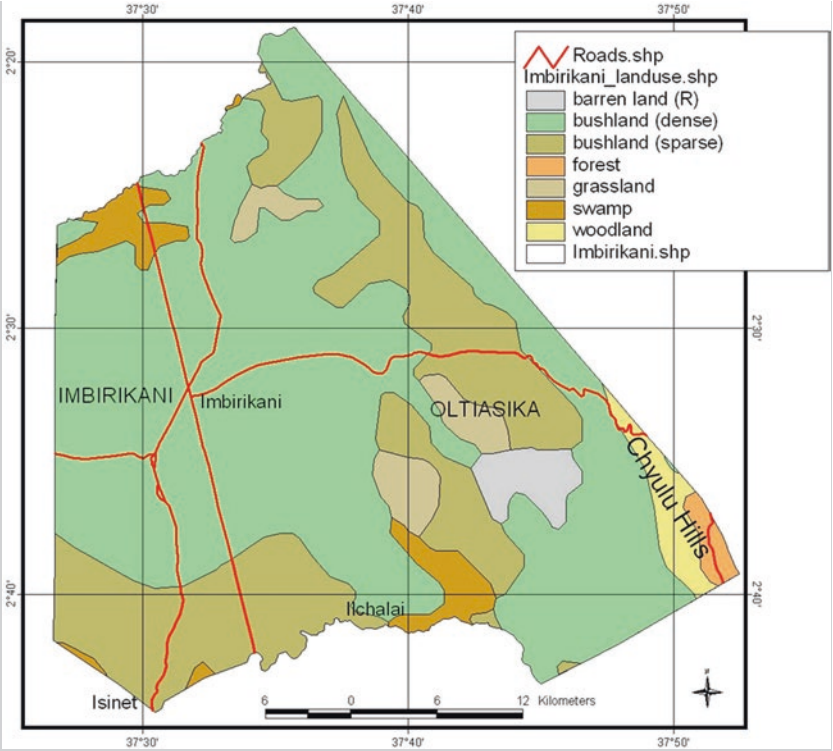


**Fig. 2.4** Major land cover classes and land use in Imbirikani area. Source: Shisanya et al. (2010, p. 5)

- To establish a livestock production system that allows modernization of livestock husbandry and still preserves many of the traditional ways of life without causing social dysfunction from degradation of environmental resources.

The Kajiado rangelands support a range of livestock production systems because of the differences between the biophysical environment from the rift floor through the escarpment and the plains of Amboseli and Imbirikani, and the Chyulu Hills, population density, level of economic development and the market economy. The main economic activity is therefore livestock keeping. 92 per cent

of the land in the district is non-arable, while only 8 per cent can support subsistence farming. The district is largely water deficit. The ephemeral Athi, Eselenkei and Kajiado are the main rivers draining the area. The alternative water sources are pans/dams and boreholes.

The long-term carrying capacity of agro-climatic zones V and VI, within which the Imbirikani group ranch is located, has been estimated to be between 3 and 7 ha per 250 kg tropical livestock unit (TLU). It is difficult to estimate the safe stocking rate for Imbirikani because much of the ranch is too far from water sources. Areas within reach of the water sources have been seriously overgrazed. While in a good year a stocking rate of 6 ha/TLU may be safe, more than 10 ha/TLU may be needed after poor rains.

Small stock (sheep and goats) also form an important economic component in the livestock industry in Imbirikani. There are higher sheep numbers than goats. This is due to higher off-take of goats compared with sheep. The presence of small stock has had a toll on the forage and capacity of the land to regenerate.

Imbirikani Group Ranch is approximately 1300 $km^2$ (320,000 acres), bordered on the eastern edge by the Chyulu Hills National Park. Imbirikani is owned and run communally by about 4500 members of Ilkisongo Maasai. There are just over 10,000 people living on the ranch, along with some 60–90,000 head of livestock. The vegetation on the ranch ranges from upland grasslands to flat savannah grasslands to dense bush. The low rainfall regime makes it difficult for the community to generate income for other means besides pastoralism.

This area is referred to as the Chyulu West Game Conservation Area; this is a proposed conservation area as none of this land is legally protected. Ol Donyo Wuas, which is a lodge located on Imbirikani Group Ranch, is working to secure approximately 25,000 with a lease, supported by income from the lodge. The proposed carbon easement would cover the 40,000 acre lava forest. The major threats to the forest include: logging for timber, for construction poles, for firewood and for illegal charcoal production; harvesting of honey using traditional harvesting methods that often cause fires; overharvesting of medicinal herbs; and poaching for wild meat.

Imbirikani Group Ranch is home to a wide diversity of wildlife, including the elephant, lion, cheetah, leopard, giraffe, buffalo, impala, gazelle, hyena and jackal. The African Wildlife Foundation (AWF) is working with partners to maintain a wildlife linkage, particularly for the elephant, extending from Amboseli National Park to Chyulu and Tsavo National Parks. Wildlife seasonally disperses and migrates from Amboseli to Imbirikani Group Ranch. Protecting this area for wildlife is thus critical to a landscape-scale conservation initiative.

The Imbirikani Maasai community is slowly embracing agriculture within the wetlands located along Kikarankot River as an alternative to livestock keeping. According to respondents during the Focus Group Discussions (FGDs), this move is a response to the devastating drought of 2008/2009 that decimated close to 95 per cent of their livestock. Respondents gave examples of a pastoralist who had 2000 heads of cattle and now left with 80 of them. Another had 500 heads of cattle before the drought and is now only left with 7 heads of cattle! The effects of this drought were such that they shook the social fabric and economic base of the community. One male respondent summed up the effects as follows: 'I lost my entire livestock herd! This has made it very difficult for me to talk where men are since I don't own anything!' The 'new farmers' converted from pastoralism need to be made aware that utilisation of wetlands must be done in a sustainable manner. It is encouraging to note that the farmers utilising these wetlands have left a few original vegetation of mainly *Acacia* spp. The 'new farmers' expressed strong interest and willingness to participate in tree planting activities along the river so as to reduce river evaporation. This initiative needs to be encouraged in all wetlands within Imbirikani to enhance carbon stocks. The only limitation respondents cited in increasing riverine vegetation cover was the lack of tree seedlings for planting. Plate 2.1 provides various uses of resources in Imbirikani.

While the community is still actively engaged in livestock keeping, emphasis now is on smaller herd sizes, which are fattened and later on sold for cash. When responding to the question 'Is the current pasture enough for your present livestock herds?', all were in agreement that with present reduced herd size due to the previous

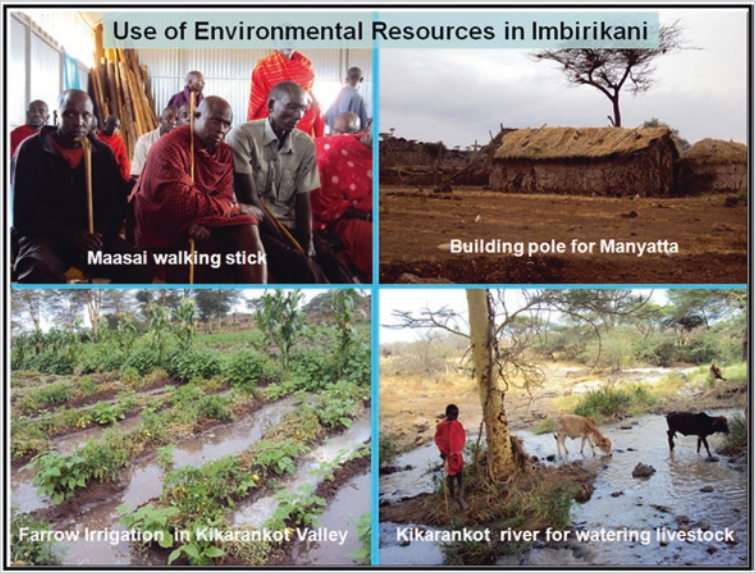


**Plate 2.1** Use of natural resources in Imbirikani. Source: Shisanya et al. (2010)

drought, the pasture was adequate. This is a pointer to their recent realization that keeping large herd sizes is risky in the wake of climate variability as manifested in the form of recurrent droughts that affect the area.

## Conclusion

This chapter has examined the trends and status of natural resource management in Africa. We emphasize on participatory approaches to natural resources management as opposed to traditional top-down, centralized, exclusionary approaches (see Hulme & Murphree, 1999; Kapoor, 2001; Kumasi, Obiri-Danso, & Ephraim, 2010). The aim of participatory natural resources management as illustrated in this chapter, is to align with co-generation of conservation and sustainable development outcomes that are enabled through local actions, as emphasized by the Brundtland

Report (1987), Agenda 21 (Hutton et al., 2005) and the former Millennium Development Goals (MDGs). CBNRM is amongst the most popular approaches to participatory natural resource management in Africa as demonstrated in this chapter. Despite the challenges faced by CBNRM, the chapter has argued that sustainable resource management based on the integration of social and economic needs of the local people offers better effectiveness in resource management for countries in the region as illustrated by the Imbirikani project case study in Kenya.

## Notes

1. See reports of the *West African Lands Commission* (1908) at 183 Para. 1048 (emphasis is by the author).

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CHAPTER 3

# Local Governance

*Wossenyeleh Aregay*

## Introduction

Local governance in Africa is not a given. It is a design. Within the process of nation-state building, African states faced similar realities. They had to deal with issues that come up as a result of an ethnically diverse society, technological backwardness, weak state institutions and limited state capacities to extract and redistribute resources, as well as the state lacking national coherence. The daunting task after achieving independence was and still is the transformation of a once colonial dominion into a formidable nation-state with the vision of a fast-paced development.

The idea of empowering rural people for self-administration was always an appealing concept among the ruling African elites because it served to incorporate the periphery within the institutional framework of the state. The concept of introducing some sort of rural public participation within a democratic, institutional framework was always regarded as an enhancement of state legitimacy by the political elites. The fear of rural governance as a slippery slope for anarchy is when real political power is delegated to local governing bodies. Here, African experiences vary. Accordingly, there is an abundant amount of research material on local governance in Africa. However, it is compartmentalized to the experience of the single African

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nation held within a particular confinement of ideas, geographic and political boundaries and time.

The academic debate seems to be less vigorous when it comes to a comparative approach within a Pan-African perspective. This chapter aims to encourage an academic debate in this sense. As such, it focuses on experiences within the Pan-African perspective. The time frame is the post-Second World War period. The concept and practice of local governance is seen from the constitutional angle, meaning the institutionalized power relation between the centre and the periphery. Similar patterns of experiences shall be outlined to have a better understanding of the Pan-African evolution with regards to local governance.

## Methods

The main research for this chapter is based on four key dissertations that the author deems to be useful and full of insight for further research. For this chapter, the author assembled various other publications. Some of them will be discussed in the table below.

The author limited research on findings in the library of the Institute of Federalism at the University of Fribourg and on the electronic database on www.jstor.org. All in all, the author assembled seven books and more than thirty journal articles (Table 3.1). The electronic search for publication was selected by keywords as; Africa, local government, devolution, federalism. In terms of language, publications written in the English language were consideration.

## Results and Discussion

The table above gives an overview of the seven key books. The books are presented by title, author and date, key characteristics, geographical scale, methodology, study focus, key findings and (my personal) conclusion.

All of the works cited above are constitutional studies within a distinctive African context. All of them are case studies. The first two books in the table assemble various case studies to give an evaluation within the Pan-African context. The other books are entirely single case studies. However, they include a comparative approach where other African experiences were taken into account. It has to be noted that these (single case study) books are dissertation theses. As a result, broad and varied methodological approaches to tackle the topic local governance can, and must be expected.

**Table 3.1** Summary of empirical research on local governance in Africa

| *Author* | *Characteristics* | *Geographical scale* | *Method* | *Study focus* | *Key findings* | *Conclusions* |
|---|---|---|---|---|---|---|
| Mawhood, Phillip (Ed.) Local Governance in the Third World (1983) | Collection of publications | Sudan, Tanzania, Kenya, Botswana, Cameroon, Ghana, Nigeria | Multiple case studies followed by a comparative evaluation Constitutional study Historical approach | Local government as an agent to promote the modern post-colonial state apparatus. | Local government was meant to compete against the traditional establishment within the periphery in order to rally the people for the central state. From the constitutions perspective, local government was an executive body of the central government. | Evaluation of local government as an indicator to a certain degree of political decentralization. Cohesive case studies |
| Oluwu et al. Local Governance in Africa (2004) | Collection of publications | South Africa, Botswana, Nigeria, Ghana, Chad, Uganda, Kenya, | Multiple case studies followed by a comparative evaluation Constitutional study Political approach | Evaluation of local level prerequisites for local governance. | Local autonomy, adequate resources, local institutions of collective actions and accountability to the public are the key intervening factors for effective local government. | Legal framework is not enough. External factors such as the inclusion of traditional establishment can enhance the effectiveness of local government. |

(*continued*)

**Table 3.1** (continued)

| *Author* | *Characteristics* | *Geographical scale* | *Method* | *Study focus* | *Key findings* | *Conclusions* |
|---|---|---|---|---|---|---|
| Ayele, Zemelak Ayitenew. Local Governance in Ethiopia (2014) | Dissertation Thesis | Ethiopia | Single case study Comparative analyses with other African nations. Constitutional study Socio-economic approach | Effective local government can be a trigger for sustainable development | Local government is a political design. It is vaguely formulated by the constitution. Hence, there is a lack of adequate constitutional protection. | Devolution of power depends on the political will. |
| Chanie, Paulos. What one Hand giveth, the other taketh away (2007) | Dissertation Thesis | Ethiopia | Single case study Constitutional study Economic and legal approach | Fiscal decentralization | Resource management determines the effectiveness of local government. | Resource management in a neo-patrimonial system is designed to change the rural periphery into a dependant unit fully accountable to the central government. |
| Ayee, Jospeh R.A. Anatomy of Public Policy Implementation (1994) | Dissertation | Ghana | Single case study Constitutional study Political approach | Discussing and analyzing the various methods of Implementation of a political design | Political will that is not interested in power allocation to the local level facilitates implementation failures. | Implementation policies are as important as the political design itself. |

(*continued*)

**Table 3.1** (continued)

| *Author* | *Characteristics* | *Geographical scale* | *Method* | *Study focus* | *Key findings* | *Conclusions* |
|---|---|---|---|---|---|---|
| Assefa, Fisseha, Federalism and the Accommodation of Diversity in Ethiopia (2005) | Dissertation | Ethiopia | Single case study<br>Constitutional study<br>Legal and political approach | Institutional set-up of ethnic federalism in Ethiopia | Decentralization is mainly a tool to enhance state legitimacy and a better form of institutional incorporation of the periphery to the centre. | The political will behind decentralization is about democratization of the rural population rather than devolution. |
| Crawford, Gordon/ Hartmann, Christof (eds.) Decentralization in Africa: A Pathway out of Poverty and Conflict? (2008) | Collection of publications | Uganda, Malawi, Tanzania, Ghana, Namibia, South Africa, Rwanda | Multiple Case studies followed by an evolution | Decentralization as a tool to poverty reduction and conflict management | Dependency of local government on personal and financial resources from the central state. | Developmental deconcentration is in fact centralization in disguise. |

All works apart from being constitutional studies do also have an interdisciplinary emphasis either on history, politics, law or socio-economics.

## Approaches to Local Governance

Post-colonialism, in a way, aligned African nations along their common past; namely, colonialism, and also by a common outlook; namely, the establishment of the modern nation-state. Consequently, constitutional concepts that were tested on the ground of realities in various African countries were introduced. In this regard, post-colonial African history can be roughly categorized in three waves. The first wave, roughly occurring in the 1960s and the 1970s, linked local government with the established local structure in favour of people's participation at a local level. The objective was to emancipate the periphery from traditional rule. The second wave, occurring roughly in the 1980s up to the 2000s, emphasized the idea of devolution as a prerequisite for local government. Local government had the role of a facilitator to pacify and restore legitimacy for the nation-state. Since 2000, one can observe a third wave where local government is seen as a stimulant of rapid and sustainable development. Each of the three waves, namely the democratic wave, the devolution wave and the development wave, are discussed in the sections that follow. Each section will be illustrated by a brief summary of the Ghanaian, Tanzanian and Ethiopian experiences.

### *The Democratic Wave*

Colonial administration in various African countries was practised through indirect rule by which the traditional local authorities were used as intermediaries and executors of the colonial administration. As long as traditional authorities played the game of their masters, they enjoyed a certain range of autonomy within their sphere of rule (Firmin-Sellers, 2001). Traditional rule enjoyed a certain degree of autonomy as long as they executed tasks given by the central colonial administration. In this regard, the centre-periphery relation is qualified as a deconcentration. The authority to local autonomy is delegated by the central state and it comes with the mandate to execute certain tasks defined by the central state. Furthermore, the extent of local autonomy is shaped and defined by the degree of loyalty of the traditional entity towards the central state. Relations between the centre and the periphery were entirely political by nature.

National struggle for independence targeted the status quo in the centre (colonial administration) as well as in the periphery (traditional authorities). Traditional rule was seen as a remnant of a backward and reactionary system blocking national cohesion and the desire for sustainable development (Olowu & Wunsch, 2004).

Some African countries opted for the appointment of a sole district administrator by the central government. District administration became part of a centralized governance system. Other African countries subordinated traditional institutions to formerly elected local councils (Egwurube, 1988; Olowu & Erero, 1996; Wynne, 1989). These district councils were confronted with an increase of tasks without the power to generate necessary resources. Often the representatives themselves lacked the necessary skills, which resulted in a poor provision of public services (Chanie, 2007). Besides, traditional leaders found their way, as people's representatives, in the district councils. Over time, it became clear that the district councils were ineffective. Some countries provided external advisors to assist the district councils to enhance their efficiency. Needless to say, this was in no way a concession towards any kind of decentralization. Other countries introduced the system of mixed councils with part of the representatives being officers from the central government. This system led to a power shift within the local government in favour of the local executive body (and not the local legislative body) because the latter brought in the necessary skills as well as on top guarantee back-up funding from the central government (Chanie, 2007). These mixed district councils quickly became an extended executive body for the central government (Mawhood, 1983). The early stages of modern nation-state building were not marked by decentralization but rather by deconcentration, which was about the delegation of responsibilities without the necessary transfer of authority, resources and accountability.

### *The Ghanaian Case*

In the early stages of independence, Ghana embraced the mixed district approach in order to merge the needs of providing proper public services and to invest in local development (Olowu & Wunsch, 2004). Districts were therefore composed of candidates from the rural population as well as those from the central state.

The rural population appoints its candidates via local committees. The selection of candidates does not hold short to traditional rulers. The Ghanaian approach thus seeks to integrate traditional rule in the framework

of the modern state while at the same time exploiting the traditional legitimacy for its own benefit.

The central state appoints candidates that have been party cadres of the incumbent regime to ensure an informal cohesion of the relations between the centre and the periphery. In other words, from the very beginning, local governance was designed and limited by the central state authority (Mawhood, 1983).

The result of a regime change in the 1960s put an emphasis on centralization. The mixed district approach was put to an end. It was replaced by management committees composed of three civil servants and one public servant. The committee was presided by a district administrative officer (Olowu & Wunsch, 2004). The centre provided all the necessary resources and monitored the districts. Districts had the role of executing bodies to the central state authority. The rationale behind that move was entirely political; districts were seen as a stronghold of the former regime as they had control via the informal network of party cadres still operating in the districts. By depriving the districts of their autonomy, oppositional forces are expected to lose their power base to mobilize the periphery against the centre. The weakening of districts is, in fact, the consequence of a power struggle in the centre (Mawhood, 1983).

### *The Tanzanian Case*

Attempts to restrict local autonomy in the aftermath of the Second World War led to an enhanced national struggle. The concept of regional bodies of a multi-racial set-up superseding the native authorities was immediately dismantled after independence. Still, the idea of centralization by limiting the extent of local autonomy was still a major issue for the new Tanzanian nation-state.

The Municipality Act of 1947 gave cities and towns corporate status. This meant that they were able to generate their own funds by levying personal taxes. They were represented by urban councils that were composed of local representatives and experts appointed by the central state. Urban councils were designed to be agents for accelerated local development, and thus, were in direct competition with native authorities. In 1961, native authorities were replaced by district councils. The latter had a mixed set-up of representatives elected by local committees and experts appointed by the central state. Central government provided personal and

financial support. District councils, cities and towns were supervised by the Ministry of Local Government.

Next to the formal institutional framework, there was the informal network system of appointed party cadres that linked the periphery with the centre. Political commissioners at district and regional level became party secretaries of the respected areas. The party district chairman became ex-officio chairman of the district or the urban council (Mawhood, 1983).

The *Ujamaa* villagization scheme of the 1970s was actually a settlement programme of the periphery in order to set up an administration at the village level. Constituting bodies of the *ujamaa* village is the village assembly and a village council (25 members). The purpose is the collectivization of generating and sharing resources. Party chairman and secretary of the village branch were ex-officio chairman and secretary of the village council (Mawhood, 1983).

### *The Ethiopian Case*

After the brief stint of Italian occupation from 1936 to 1940, the Ethiopian imperial government began to radically modernize the state apparatus with the aim of consolidating absolute power for the emperor.

With the Provincial and Local Reform Act of 1942, regional and local borders were redrawn. The spheres of influence were reshaped which weakened the nobility. The emperor had the power to appoint officers on all levels of peripheral administration (province, district and sub-district). The fact that the emperor appointed the nobility in their own areas of influence made them salaried employees of the emperor. All administrative matters were supervised by the Ministry of Interior. All financial matters were supervised by the Ministry of Finance.

The Urban Administration Reform Act of 1945 foresaw the establishment of municipalities and towns with a mixed representation system. Urban councils are composed of candidates elected by urban property owners and appointed central state officers. They lacked local autonomy as well as democratic representation. Furthermore, all decisions had to be approved by the Ministry of Interior.

The revolution of 1974 produced two peripheral bodies at the local level. One is the peasant association (or cooperative) for the rural population, and the other is the urban dweller association for the urban population. In the early days of the revolution, these local bodies were supposed to be autonomous and democratic in the sense of providing

space for public participation. They quickly evolved into a stronghold of the party in power (Ayele, 2014).

### *The Devolution Wave*

Negative economic growth, indebtedness, systemic fiscal imbalances and dependency on foreign donor countries were inherent traits of several African countries from the 1980s up to 2000. Internal and external pressure led to a policy towards liberalization and devolution of state responsibilities towards lower level of state bodies and domestic private actors (Bratton & van de Walle, 1997). Despite devolution and privatization, the desired results of effective local government and economic growth did not materialize. According to Olowu & Wunsch (2004) providing the legal framework and implementing decentralization per se is not enough to prevent low performance of the local government.

Prior to the establishment of the nation-state, European states witnessed an absolute concentration of state power in the central government with a firm control of political, social and economic life in the nation (Mazrui, 1983). Without this prerequisite, decentralizing means giving space for extra-constitutional actors that eventually have to be confronted by force. Under these circumstances, decentralization bears the risk of political instability. Moreover, political culture in several African states is impregnated by neo-patrimonialism (Bratton & van de Walle, 1997; Chanie, 2007; Hydén, Olowu, Okoth-Ogendo, & Opinya, 2000; Mamdani, 1996). This has a deep impact on a local level, where scarcity of public goods and services is being corrupted in favour of patron-client relationships. In view of the ethnic heterogeneity of African society, corruption goes along ethnic affiliation, weakening the fabric of national cohesion and enhancing unchecked rule at the local level. National segregation and local despotism are possible outcomes that compromise the quintessence of the nation-state.

Effective local government requires more than devolution (Clarke, 2001). There are other factors that have to be considered as well. One major factor is accountability. The executive body of the local government has to be held accountable to the legislative body. The latter shall have the power to provide funding and to appoint executive officers (Crook & Manor, 1998; Olowu & Wunsch, 2004). Training of representatives of the legislative body will improve their capacity to formulate and implement

policies. They shall be held accountable to their constituency through election, recalls, referenda, and so on. As to performance of the local government, public surveys on delivery of public goods and services are seen as an effective tool (Adedeji, 1997; Barkan, 1994; Dia, 1996; Olowu & Erero, 1996; Ribot, 2000). Other propositions go as far as to suggesting having smaller units as local governments. Due to the smaller size, fewer resources would have to be managed and even the inner working of the institution is more accessible to the constituency; this would in turn encourage popular participation. Feedback on low performance would be imminent. The individual would have more incentives to participate actively and in meaningful ways also achieve tangible results (Ayele, 2014). The focus of smaller units of governance may come with less performance in form of quantity of public goods and services but it also gives space and incentive for grassroots development of real self-administration where local people take public matters in their hands.

### *The Ghanaian Case*

The economic recession of the 1980s resulted in a change of policies. Prior to that, the socialist experiment of democratic centralism resulted in the establishment of peripheral administration that was centre focused. The regime in power shifted back to the model of 1974; meaning that traditional rule was considerably represented in district councils. The regional body approved the selected candidates as well as the district manager (Mawhood, 1983). The devolution era was in fact a deconcentration. It was about a delegation of tasks from the centre to the periphery (Crawford & Hartmann, 2008).

### *The Tanzanian Case*

Due to the reform of 1982, the principle of representation was introduced at the district level. The governing principle that the party chairman and the party secretary of the respective area were supposed to be ex-officio chairman and secretary of the district council was abandoned. Urban and district council do have the power to levy taxes and take loans from third parties. The purpose of devolution was to enhance equitable and broad-based development (Mawhood, 1983).

### *The Ethiopian Case*

The purpose of devolution is linked with the national (ethnical) question. It is a direct revision of the past constitutions where the Ethiopian nation-building went hand in hand with cultural marginalization. Since 1991, the trend was to put an emphasis on local governance in order to provide national (ethnical) equality. A distinctive feature was the establishment of regular districts and ethnical districts. The latter was to provide the institutional framework for ethnic minorities to constitute themselves in the rural areas. Apart from that, districts were part of the executive body of the regional government. The local bodies inherited by the previous regime, which were the peasants' association and the urban dwellers' association were kept intact since they were the instruments of implementation of national policies at the lowest level. Devolution according to the current constitution is dual federalism. Hence, separation of powers is a matter between the centre and the regions (Ayele, 2014).

### *The Development Wave*

In the new millennium, discourse on development has been shifting. Prior to that, economic growth was tantamount to development. Likewise, poverty was associated with low income and consumption. The discourses on development have a more wholesome approach in the sense that other factors such as human welfare and participation in public affairs are included as well. In other words, the purpose of development is the constant betterment of human well-being by providing better access to basic needs (e.g. health, education, sanitation, and so on.) and by providing the space for free, active and meaningful participation in public life (Olowu & Wunsch, 2004).

Contemporary discourse links decentralization to development because of the possibility of participation and exercising accountability on government authorities. On a local level, people have the space to impact their local government if given the necessary autonomy to administer themselves. Public policy must not be a one-size-fits-all concept. It can be adjusted according to the specific needs of the local units that self-formulate them. The local population knows best what it needs. Direct participation gives the community the space to articulate its needs and allocate the necessary resources. In case of incongruence of the latter, policies can adapt pragmatically to changing circumstances. New policies can

be tested on a trial and error basis at a local level before introducing them nationwide. Local entities have their own unique public life that is distinguishable from other local units even from the central government. This can enhance a healthy and innovative competition among the local units to achieve better performance on welfare, participation and economy (Ayele, 2014).

Empirical studies have shown that this theory is not fully applicable to the realities on the ground (UNDP, 2010). Ethnic bonding or other special interests can corrupt accountability. Hence, the elected representatives do not necessarily act in the interest of the community. Bad performance is neither a reason to change policies nor an obstacle for re-election. Ethnic and class minorities are vulnerable to local discrimination which diminishes their influence at a local level (Ayele, 2014). Unchecked local autonomy might transform into local despotism without the desired effects of development. Conversely, one can observe that development is achievable without local autonomy. Due to scarcity of resources, local governments struggle to provide even the most basic needs. The central government can provide funding, personnel and policies in order to give assurance of a certain living standard on the ground and level the gap of inequality within the nation (Ayele, 2014).

### *The Ghanaian Case*

According to the constitution of 1992, the local government is the highest political and administrative body in a district. Therefore, the district enjoys local autonomy to a large extent. Legally, it is a corporate body with the power to levy taxes, to sue and be sued, to borrow and to award contracts up to 100,000 dollars. Personnel and staff is coordinated at the centre. Functions of the districts are monitored and coordinated by the Regional Coordinating Council. Districts budget are submitted to the latter, and are eventually approved by the Ministry of Finance (Olowu & Wunsch, 2004).

### *The Tanzanian Case*

The Local Government Reform Programme of 1992 is a shift of policies defining local authorities as primary agents for the allocation of public goods and services. This, in effect, means the reduction of central state presence within the periphery. This was explicitly confirmed in the

Regional Administration Act Number 19 of 1997. In areas that concerned the districts, the decision-making processes were delegated to them. Coordination and management of local government is effectuated by the Ministry of State. Districts are corporate bodies. They have the power to collect taxes. Due to insufficient funding, the central state still provides funds (Crawford & Hartmann, 2008).

### *The Ethiopian Case*

The current constitution of 1995 has a wholesome approach to development. In that sense, emphasis is given on the universal access of basic services (health, education, sanitation, water and so on). The District Level Decentralization Programme of 2000 defined decentralization as a poverty reduction strategy. The decision-making process concerning local matters shifted from the regions to the districts. In 2001, the Ministry of Capacity Building was established to staff and to consult local authorities at the district level. Furthermore, a grant system was established for districts. This change of policies was the result of an internal party crisis at the Centre (in the aftermath of the Ethiopian-Eritrean Border War of 1999). It resulted in a mutual estrangement vertical power relation between the Centre and some regions. Since then, districts have become tipping points in the vertical balance of power between the Central state and the regions (Ayele, 2014).

## Conclusion

The break-up of the traditional past and the incorporation of the periphery to the modern institutionalized rule of the Central state distinguish the African nation-state. In essence, African nation-building is about maintaining and widening the momentum of centralized state power. Having said that, the concept of local government is incorporated within the institutional framework of the central state. It is a top-down initiative, and is thus dependant on political will. In other words, the system of local government is highly political and consequently vulnerable to the political climate at the Centre. Devolution cannot be seen as anything else, other than a tactical manoeuvre in order to maintain political control over the periphery (Olowu & Wunsch, 2004).

Linking devolution with development is, in fact, a shift of state legitimacy from ideology to public management. As long as the incumbent

regime can provide (developmental) results, it remains on the seat of power. The state of local government depends on the regime in power. On the contrary, the regime in power also depends on local government since they are capable of delivering results. There is therefore hope that local government has a future in African Constitutionalism.

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CHAPTER 4

# Agriculture

*Joan Fairhurst*

## Introduction

From time immemorial, agriculture has been the lifeblood of Africa. Agriculture is, in essence, a part of rural community living, spontaneous and integrated. Planning is integral to agrarian development that in itself too is driven by socio-cultural, political and economic organisation within different environmental settings. This recognition highlights the diversity inherent in agriculture as a vital aspect of rural life. The role of agriculture in rural development planning in Africa is dealt with in this chapter. It presents findings from selected studies on designs used in research on agriculture on the continent referring to theories and conceptual models, the main trends in agricultural production and policy programmes. Case illustrations are provided.

## Method

A methodology for a review of the literature on the status of agriculture in Africa requires recognition of the regional environmental and socio-cultural variations found in the prevailing political economies. Selected studies are reviewed to represent major geographical regions and states that fall within them. Today, agriculture is clearly the responsibility of the country's government in power, both as a major economic sector to meet its economic needs,

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as well as providing necessities from agricultural resources for its citizens. It is this very responsibility that has drawn attention to a range of agrarian issues. People themselves, politicians, economists, philanthropists and donors, international and national, environmentalists, social and natural scientists have not only become aware of these, but have also expressed their concerns about them. It is these sources of information that appear as reports, discussion papers, research endeavours, media news items and comments that align with the discourse documented in this chapter. Significantly they represent popular, academic and political opinion.

By virtue of the nature of the role of agriculture in rural development that clearly neither stands alone nor is dealt with in isolation, literature sources were prolific and scattered. Scholars from a variety of academic disciplines and institutions that are organisational and philanthropic address relevant aspects, covering an extensive range of items from the microscopic to the macroscopic; a cursory glance of the bibliography at the end of the chapter will reveal this.

Sources used in this chapter came from the Internet using book titles from the University of South Africa library catalogue, Sabinet, Proquest, ebscohost, Wiley, JStor, ISI, ScienceDirect, Gale Cengage, SpringerLink, ebary, Emerald databases and websites. A range of keywords enabled access especially for confirmation and extension purposes. Bibliographic details (the title,content and abstract where available) of the sources were recorded. Care was taken to cover a range of sources especially official reports prepared by policymakers, donors and researchers. The general and the specific were purposively accommodated at various spatial scales and units of analysis. Selected sources were coded by author, date, title, key idea, theme, geographical scale, region, country, main issue, study population/unit, objective, research methods, source and observation to produce reference tables to inform an overview of the topic. As past scholars have done, and future work will do, the focus on agriculture here is on particular aspects of agriculture in relation to rural development planning either in relative, macro or micro context.

## Results and Discussion

### *Research Designs*

The methodology used by Holcombe (1994, 2012) is an example of a frequently used approach for gathering information. Her stated purpose was to concentrate on innovation as a change agent in development, a

challenge that would increase agricultural and rural incomes and well-being. The topic is introduced by describing the background, the merit and the vision of work done that focused on 'linking small farmers to markets; improving access to land and land tenure for communities living in poverty; and promoting the contribution of agriculture to environmental services that mitigate climate change and support biodiversity conservation' (Holcombe, 2012, p. 13). Explanation of the methodology was done, terms used were defined and study limitations were specified. Findings from a review of existing literature, desk studies of 22 innovative projects (done in 2008), three field case studies (Mongolia, India and Nigeria) and a survey of selected stakeholders in the innovations, were synthesised and revisited. Recommendations offered and a bibliography containing relevant references is attached. Conclusions endorse the reality that practitioners of innovations have to correct the mindset required for the scaling up process which can be represented as a simple model (Holcombe, 2012, p. 149). It is an iterative process that has to be simple enough to deal with the complex realities of the development context (Holcombe, 2012, p. 5). 'Scaling up means the expansion, adaptation, replication and sustaining of desired policy, programme and practice changes' (Holcombe, 2012, p. 9). Hence it is a significant aspect for contemporary progress in development undertakings.

From a development perspective, a structured basic agricultural household model on which most case studies are based, provide the theory, empirical results, policy conclusions and methodological issues to examine the effects of governmental interventions. In their work, Singh, Squire, and Strauss (1986) felt that the decisions of agricultural households would take price policies and public investments on the production, consumption and labour allocation into account. In their study, they use seven cases to expand this approach to analyse the effects of governmental policy on crop composition, nutritional status, health, savings, borrowing and investment. Data for Africa came from Nigeria, Senegal and Sierra Leone whereas data for Asia was from China, India, Indonesia and Korea. The methodology in all cases was seen to be useful.

Researchers have theorised about their methods in a similar vein when dealing a range of issues. Adato and Meinzen-Dick (2002) point out that the sustainable livelihoods approach lends itself to accommodating 'the multi-layered interactions between technologies and the vulnerability context of households, their asset base, intervening institutions, and livelihood strategies', and finds it particularly applicable to agricultural research

that seeks to address poverty. The integrated model that guides the method will perforce not neglect to include aspects of culture, power, history and all forms of social differentiation. They aver that 'this approach is more difficult for research than conventional single-disciplinary analyses, [but] it leads to a more complete understanding that can help develop technologies that better fit in with complex livelihood strategies, especially [those] of the poor' (Adato & Meinzen-Dick, 2002).

Covering the period 1981 to 2008, Banya (2012) uses sources of information from the World Bank and provides a theoretical analysis about what causes poverty and its alleviation. This is then applied to Sierra Leone and Togo to anticipate the situation that could arise within the entire sub-Saharan Africa region. From documented quantitative data, despite its limitations, he identifies the challenges that a viable and stable macroeconomic framework should adopt as a basis for an appropriate development model. He points out that the previous structural adjustment model was successful in the region. Banya also advocates that the delivery of quality services to civil society and accountable, transparent governance with investment in the poor is beneficial whereas dependence on handouts from external sources should be discouraged. The multi-dimensional characteristic of poverty has to be addressed by strong state capacity, stable regulatory structures and improved levels of human capacity that is adversely affected by a high disease burden, government corruption and internal conflict.

Empirical evidence from case studies that are multi-, trans- and interdisciplinary enriches the understanding of agriculture in present-day development context. Besides, it has supported finding effective solutions to the problems faced in local settings within countries. Due to variations within and between countries, the importance of country studies is advocated. The typology of all African countries in terms of their 'stage of development, agricultural conditions, natural resources, and geographic location' (Diao, Hazell, Resnick, & Thurlow, 2006) shows that the growth of agriculture and poverty reduction potential varies substantially across the continent. For an in-depth analysis of agriculture and growth-poverty linkages economy-wide, macro-micro linkages models were used in five African countries, Ethiopia, Ghana, Rwanda, Uganda and Zambia (Diao et al., 2006).

The South African government initiated a detailed, intensive scientifically designed investigation into the prevalence and impact of poverty (Mbonga, 2010, pp. 6, 10, 11, 12, 14, 27). Findings were that only 5 per

cent of the household members had farming skills with 58 per cent of the adults having no skills at all. Agricultural assets, drinking water, soil and water works and psycho-social support were necessary deliverables (Mbonga, 2010, p. 29). Targeting poor individuals, households, communities, wards and organisations (Mbonga, 2010, p. 5), the need to enhance capacity is clear. Emphasis is to be placed on ensuring knowledgeable co-operation between national, provincial, metropolitan and local municipalities (Mbonga, 2010, p. 44).

In Kenya, Adato and Meinzen-Dick (2002) focused on soil fertility management practices and in Zimbabwe on hybrid maize conceptualising the topic applying the sustainable livelihoods approach, using both quantitative and qualitative methods. Their findings endorse the trends that the goals of international agricultural research should, and are moving beyond increasing food production to the broader aims of reducing poverty. They reiterate the complexity of both the topic and its impact. Poverty is seen as going 'beyond income or consumption-based headcounts or severity measures, to consider many other factors that poor people in different contexts define as contributing to their vulnerability, poverty and well-being' (ibid).

To demystify the point that contract farming could ease the ill-effects of poverty warrants intensive further research. Its structural operation justifies this assertion since it purports to enable farmers to gain access to credit, better equipment and agricultural inputs, technical assistance and marketing especially regarding price, Freguingresh and Anseeuw (2010, p. 3) confirm that empirical evidence from case studies and data are needed. However, they stress that this is not easy to effect. The methodology used in a comprehensive study on this issue (Freguingresh & Anseeuw, 2010) demonstrates the necessity to incorporate consideration of all relevant aspects. A general failing of case studies is that they tend to focus only on one single aspect. This is a feature of the use of the livelihoods approach hence the recent tendency to bear this in mind.

Vermeulen, Kirsten, and Sartorius (2008) draw attention to the fact that the volume of agricultural production in various forms is considerable in the South African context. This trend too appears to be increasingly encouraged to happen throughout the continent. However, and understandably, the type of crops in the value chain, the number of contract producers and the total percentage number of farms in different countries varies quite markedly. Freguingresh and Anseeuw (2010, p. 5) give data for South Africa, Mozambique, Madagascar and Zambia to support the

growth of this tendency. They select both a rural and a peri-urban site to investigate the agro-ecological conditions and the importance of farming, the land characteristics, the type of holding, the proximity to markets and presence of contracts. These are all significant issues in African agricultural development. Applying quantitative and qualitative methods, these researchers record the small farmers' characteristics, the nature of their activities and constraints, as well as their land tenure status. They produce an interesting model showing the historical implications for the farming households from pre-1950 to 2010. Findings (Freguingresh & Anseeuw, 2010, p. 5) support current thinking that asset endowments for those who receive them are beneficial, constraints are multi-faceted and agriculture is not and cannot be the only major livelihood; a range of support measures should reach more farmers. Other studies too touch on several of these aspects.

Traditionally, pastoral farming is inseparable from African culture and way of life. However, with the passing of time and changing environmental, economic and political circumstances, particularly in low-income countries, pastoralists themselves, their communities, governments and international organisations are voicing a range of concerns. To address them, working groups, under the auspices of the Food and Agricultural Organization of the United Nations (FAO) and the International Livestock Research Institute (ILTI), went into the field to investigate the constraints and opportunities for increasing livestock's contribution as an indispensable production system (Wilson, Ehui, & Mack, 1995). Working groups were convened in sub-Saharan Africa and North Africa; thus Africa was well represented and useful documented findings and recommendations became available (Wilson et al., 1995). Subsequently, suggested strategies were tried and tested in the field and research endeavours continued in many localities.

The importance of observation over time and identifying the trajectory of change based on empirical evidence is an essential element of agricultural research. It can even lead to changing existing theory that could have been based unwittingly on a wrong assumption. A case in point is that of the relationship between desertification and climate change that affects pastoral farming in Africa's widespread savannah lands. Allan Savory did intensive research (Savory, 2009, 2010). He soon began to advocate and promulgate with determination of the importance of holistic management in the field of agriculture, ensuring that pastoral farming received prominent attention. His research is well-positioned, sound and appropriately

presented. It is widely disseminated to ensure that all stakeholders in the field of agriculture are aware of changing existing approaches and methods. It is noteworthy that close study of farming practices in the grassland biomes has been intense for several decades.

Teller-Elsberg (2010, point 10) shares his succinct model, *Brittleness Scale and Tendency Tools* that clarifies the impact of human-environment interaction to explain that humidity distribution not total rainfall is important, an issue to which pastoral farmers should respond. A successful and sustainable project in dry rural areas in South Africa uses climatic conditions to good effect in that nets have been constructed to catch water vapour that condenses to water that people collect for drinking and home garden use purposes—children at school too (Kotze, 2012). Valuable research comes from methodologies that integrate theory, models and practice in the real world and ensure that reliable information reaches practitioners in all fields of agriculture.

Literature analysis is common practice in both rural development and agricultural science. Ojha (2010), in reflecting on the merit of using adaptive collaborative approaches to enhance empirical studies, points out that research is only one aspect of innovation. However, communication between practitioners and researchers, acknowledgement of social systems and power relations that are very real, too should be considered when dealing with innovation in local contexts. In an explicit manner, Warren and Cashman (1998, p. 3) plead the case for deliberate action that does not overlook the vital role indigenous knowledge can play in designing sustainable agricultural systems. It is well known that rural people have a great deal to offer and should be given a voice in decision making associated with interventions and programmes, as their knowledge has come from a long history of their society and its culture and technological expertise. They know their environment intimately. The expression of local culture is part of their world of yesteryear and today.

### *Theories and Conceptual Models*

Theorising about development is dominant in agriculture-related literature sources although opinions differ. Several authors (Diao et al., 2006; Mokwunye, 2010; Theriault & Tschirley, 2014) specifically contend that conventional theory on the role of agriculture in the early stage of development remains relevant to Africa. In global context, historically, African countries experienced the post-independence era differently. Most of them

are now finding it necessary to focus on agricultural development to reduce poverty significantly, increase per capita incomes and transform land areas into modern economies (Diao et al., 2006). This is not the case in some Asian and Latin American countries. In general discourse, the traditional theoretical literature on agriculture's role is fused with a development process bias. More recent views appear unconvinced about agriculture's development potential for Africa.

Theories that offer more scope for conceptualising agriculture as integral to creating a sustainable outlook for the people of rural Africa, have taken livelihood analyses as a point of departure—appropriately to represent a form of human endeavour. Since the idea was first mooted in household studies in the 1970s, the concept was interpreted in a more restrictive sense and it became lost in the era of the dominance of modernisation theory. In this idiom, industrialisation was regarded as the trigger for economic growth, an outcome of the historical and geographical. However, considerable research is currently taking place and the concept is becoming firmly entrenched in contemporary development thinking (Morse, McNamara, & Acholo, 2009). A valuable and constructive result is an expanded vision of the potential small farmer participation at both community and country level.

Although very different geographically and historically, as well as socioculturally and politically, China's model for achievement in agriculture can be widely applied to the African situation. Africa has more arable land and water and, although comprising 53 countries with many different tribes, ethnic groups and languages, it has a smaller but very fast-growing population (Davis & Woetzel, 2011). With its assets and specific perceptive, under strong leadership, Africa as a continent should focus on appropriate agricultural reform to promote food security at household level. However, at the same time, it should be generating surplus income to establish rural stability with support for managing research, finance, irrigation and market integration at micro-level. Using the China model will mitigate the African tendency to underrate the role of technologies and extension services (Davis & Woetzel, 2011). Yet adaptations would do well to purposefully avoid the negative consequences of the Chinese experience by cultivating cultures of accountability and entrepreneurship, and avoiding further environmental degradation, labour exploitation and social inequities (Davis & Woetzel, 2011).

Across the continent there is evidence that this is happening. Research on diversifying rural livelihoods and income generation (Ndhleve, 2009),

and encouraging and training small farm holders to maximise their assets, are steps in the right direction. Developing research capacity particularly at national level is seen as important in both the developed and, increasingly so, the developing world (Lele & Goldsmith, 1989). It has to accommodate the uniqueness of each country's situation to inform policy, and ensure that valid and useful information filters through to the commercial and smallholder farms. This is dynamic and focuses on process. Moreover, it is appearing to be successfully on-going in Africa too (Adato & Meinzen-Dick, 2002; Everson et al., 2011; Freeman & Ellis, 2005a, 2005b; Mahati, 2010; Mokwunye, 2010; Ojha, 2010; Van Zyl, 2006; Wilson et al., 1995). Sound research needs to fulfil its responsibility to be of utility value and inform training programmes to enhance agricultural output, environmental care and farming practices.

Since agriculture depends on scientific management of its praxis and natural resources to effectively contend with both poverty and environmental degradation, Ojha (2010) points to the merit of collaborative approaches that are evolving in the light of having to move away from technology-dominant thinking characteristic of the development industry of the 1960s. He points out that knowledge and problem solving need to be drawn into practice in the light of changing contexts. Combining the theories of social learning, adaptive management, participatory research and innovation systems can cover and enhance the input and output of the industry socially and psychologically, politically and environmentally.

Feminist theory (Crossman, 2012) is inevitably closely linked to livelihood, and development thinking has very specific gender role differences, inequities and oppressions that are socially and structurally clearly recognisable. The central role of women as producers, farmers and traders in agriculture is well documented, and numerous case studies show how development organisations and private entrepreneurs are working to improve the general challenges and the position of small-scale women farmers and primary processors in agricultural value chains (KIT, 2006, 2012). Gender is acknowledged as relevant and significant in developing strategies (Crossman, 2012). They address a range of issues such as working with the so-called women's products such as shea, poultry; opening up opportunities for women to work on what are traditionally 'men's commodities' or in men's domains; supporting women and men in organising for change by building capacity, organisation sensitisation and access to finance; using standards and certification to promote gender equity; and promoting gender-responsible business (KIT, 2012). In a current international

research programme focusing on managing soil fertility that includes sites in Africa (ASHC, 2010; CAB, 2010), drafting a gender strategy is seen as an imperative and vital part of the project.

A sustained and focused researcher in women and agriculture in theory and practice, Holcombe (1987) draws attention to the fact that migration has increased the level and nature of women's responsibilities. This is a prevalent situation throughout African history and has been intensifying in recent times. Findings from her research in Western Sudan, led her to endorse, *inter alia*, support for more recognition of the traditional cultivation practices and women producers in subsistence farming. Gender-related constraints are identified (Holcombe, 1987, p. 22). However, breaking entrenched patterns in development that 'exclude women will require leadership, advocacy, communication and training' (Holcombe, 1987, p. 27). These ideas are taken further in subsequent work. Development theories devoid of concern for social justice will not stand the test of time.

## *Main Trends*

Agriculture is the main source of livelihood of Africa's rural inhabitants, yet evidence shows that undeniable and widespread poverty, hunger and undernourishment is rife on the continent. Data from the generally better environmentally resourced sub-Saharan region reveals clear underperformance of this important sector with the number of chronically undernourished people rising from 173 million in 1990 to 250 million a decade later (Mokwunye, 2010). Moreover, Africa as a whole is spending incredibly large sums of money on importing food, resources that could be channelled to improving people's quality of life. It is against this background that Africa's heads of state and government adopted the Comprehensive Africa Agricultural Development Programme (CAADP). It has become the key platform for food and agricultural development in Africa based on the premise that 'agriculture-led development is fundamental to cutting hunger, reducing poverty, generating economic growth, reducing the burden of food imports and opening the way to the expansion of exports' (Mokwunye, 2010). Domestic agricultural mobilisation, by concentrating on smallholder farmers in potentially productive areas especially with access to markets, together with timely, supportive and significant investment by Africa's development partners, would promote effective agriculture-led growth (Mokwunye, 2010). However, this is a contentious

issue (Collier & Dercon, 2014). The coordination, monitoring and implementation of CAADP are the responsibilities assigned to Africa's Regional Economic Commissions (RECs) (Mokwunye, 2010).

Evidence from existing research reflects response to the regional and sub-regional priorities identified by CAADP (Mokwunye, 2010): concentrating on staple food crops (Cleaver & Schreiber, 1994); conservation; enhancement of genetic resources; integrated natural resource management; markets; institutions; information and up-scaling challenges; improving livelihoods in high stress/unstable environments; capacity building especially new skills in science and technology especially biotechnology and information communication technology (ICT); improved governance structure which includes genuine decentralisation; ensuring gender equity; and giving voice to those who are marginalised in the rural communities.

Many scholars draw attention to the common problems confronting agriculture in Africa's different regions today. The need to devise strategies to address them has to take modern thinking and interventions and human endeavour over time and space into account. After thorough investigation, although focusing on sub-Saharan Africa, Cleaver and Schreiber (1994) suggest as imperatives: the need to intensify agriculture; to promote smaller families; to reform land tenure practices; to conserve the environment; and to address the special problems of women. The interrelated effects of rapid population growth, poor agricultural performance and increasing environmental degradation should be addressed. Key links are being found between traditional crop and livestock production methods, land tenure systems, women's responsibilities, traditional family planning mechanisms and methods of forest resource utilisation. Traditional systems and practices, well-suited to people's survival needs when population densities were low, were only able to evolve in response to slow population growth. With the acceleration of population growth in the 1950s, traditional ways came under increasing strain resulting in the triad of problems addressed (Cleaver & Schreiber, 1994).

### *Programmes, Interventions and Specific Cases*

The multi-faceted nature of agriculture is represented and analysed from the smallest micro- to the largest macro-level of scale in spatio-cultural context. This is reflected in designed programmes and implemented interventions in specific localities. It captures both its importance as an

economic sector, locally, nationally and globally, and its significance as an element in many a survival strategy. Intervention should take place systematically according to specified processes in logically programmed phases. The South African example is a case in point (Mbonga, 2010, p. 17).

The effectiveness of development intervention to enhance rural livelihoods sustainably requires a holistic perspective normatively and operationally (FAO, 2000–2015). It is common knowledge that rural men and women, especially in poor households, engage in farm and non-farm activities as they strive to improve their health, education, living environment, income and material provision status that Mbonga (2010, p. 11) describes as deprivation. To achieve this, they need the necessary knowledge, skills and wherewithal to lighten the burden of being vulnerable and at risk. A supportive development environment is required in which they can access and control their asset base, carry out their productive and reproductive roles responsibly, refine their capabilities and develop macro- and micro-linkages with other rural and urban actors (FAO, 2000–2015). Developing policies, interventions and projects should be done against this background, although both success and failure (Holcombe, 1987) are possibilities.

The historical and geographical dimension is clear in land reform as a strategy. It is an example of political intervention that illustrates the way in which both the history and geographical characteristics of an essentially agricultural setting have affected people. The South African situation is a good example. Patterns of human endeavour were radically changed through the legally enforced implementation of racial segregation restricting appropriate development in the homelands irrespective of their political status. This affected farming practice and land use negatively. With the legal repeal of apartheid, policies were put in place to redistribute land and to restructure the agricultural sector. In his paper, Anseeuw (2005) points out that 'the farming sector remains extremely dual' and 'the implemented market-oriented reforms, which are not complemented by regulation measures, do not represent the capacities of transformation of the racial configuration of South Africa's territory and agricultural sector'.

Agricultural invention programmes in Africa in the present century, according to Akiri (2011, p. 8) should appreciate that smallholder farmers should be able to contribute commodity value chains to compete in global markets. The spread of invasive species and their impact on agriculture, trade and the environment should be reduced. It is important that knowledge for development should build capacity to use specific knowledge

from research done and respond to emerging problems through enhanced innovation capacity. Furthermore, smallholder farmers specially have the skills to manage knowledge through available products and processes based on information communication. Evidence of the realisation that this opinion is valid is found in the literature in a range of activities and discourses.

Reporting on a recent international conference, Chulu (2013) is able to conclude that agriculture is the best way to reduce poverty by 'unlocking Africa's potential' since for too long, the agricultural sector has been neglected by African governments. An appeal too was made for the involvement of non-state stakeholders such as farmers, the private sector and civil society in the design, implementation and monitoring of plans. More emphasis should be placed on women farmers and nutritional outcomes (Chulu, 2013). Nepad (2003), set up by the African Union (AU), established the Comprehensive Africa Agriculture Development Programme (CAADP) to address key issues concerning land and water management; market access; food supply and hunger; and agricultural research with the aim of improving and promoting agriculture across Africa (Nepad, 2003), already noted as a significant trend (cf p. 14) in the field of agricultural development. Particularly significant is the determination to bring key players together as continental, regional and national levels to achieve its goals to encourage and share knowledge and experiences.

Soil has a vital role in agricultural production. The CABI (Centre for Agricultural Bioscience International, formerly Commonwealth Agricultural Bureaux (CAB) founded in 1910) soil fertility project illustrates international concern about an identified and seriously invasive agricultural problem its members were experiencing. A strategy was devised to explore the situation and to find a remedy. CABI is a not-for-profit international organisation and offers service in agricultural information, pest identification and biological control. It strives to improve people's lives by providing information and applying scientific expertise to solve problems in agriculture and the environment (CABI home page).

With substantive donor support, an ambitious collaborative project, the Africa Soil Health Consortium (ASHC) will contribute towards radical change in the understanding and use of Integrated Soil Fertility Management (ISFM) techniques in sub-Saharan Africa. This will enable smallholder farmers to grow more and better crops. Everyone is involved in farming systems development—from policymakers, researchers and university

lecturers to extension workers, input suppliers and the farmers themselves (AHS; CABI, 2010). The problem is summed up in the words of the Regional Director of CABI Africa: 'Soil fertility degradation has been described as the second most serious constraint to food security in Africa. After decades of reliance on biological approaches to soil fertility improvement, partly because fertilizer has not been easily available, agriculture experts now agree on the need to integrate fertilizer use with other aspects of soil fertility management. However, there is a desperate lack of knowledge, not only amongst farmers but amongst service-providers and decision-makers too. This project will address that knowledge gap.'

Well-conceived criteria were applied to choose field sites in countries in each major macro- region of sub-Saharan Africa: Ghana and Mali in West Africa, Mozambique in southern Africa and Tanzania in East Africa where similar initiatives are already in place. The main common cropping systems were identified in sub-humid and savannah zones: maize-legumes, irrigated rice, sorghum-millet-cowpeas, highland banana, coffee, and cassava. A three-pronged strategy focuses on monitoring and evaluation that includes output mapping, tabulated indicators, feedback sessions (completed in 2012) and reports; drafting a gender strategy (completed 2011); and communications with an emphasis on making useful extension materials (AHS; CABI). 'The project will work to combine the most up-to-date research information and, using participatory approaches, adapt it in a variety of formats so that it is suitable for use by the different groups of people involved in soil management. It will engage with high-level stakeholders and policymakers; build the capacity of country level information providers; and support local project development teams to work with existing initiatives' (CABI, 2010). The principals acknowledge that knowledge of communication products and tried and tested processes that be applied provides the 'key to bringing about sustainable change in developing countries that are experiencing many and complex difficulties. This project is ultimately about expanding the choices and tools small farmers have, to improve their incomes and to build better lives' with a long-term vision that 'millions of small farmers in the developing world [will have] tolls and opportunities to boost their yields, increase their incomes and build better lives for themselves and their families … to strengthen the entire agricultural value chain form seeds and soil to farm management and market access—so that progress against hunger and poverty is sustainable over the long term' (CABI, 2010). A decade ago, a similar multi-country study of the poverty impact of research programmes was done

under the auspices of the Consultative Group on International Agricultural Research (CGIAR) (Adato & Meinzen-Dick, 2002).

Water is an issue in African agriculture with far-reaching implications. Its management is a continuum from rainfall to irrigation that accommodates conservation farming, water harvesting, supplemental irrigation, surface and ground water irrigation, drainage, wetlands and inland valley bottoms (AgWA, 2010b). Suffice to say, endeavours are afoot to focus on agriculture and food production as a major water issue although it is capital intensive. AgWA launched its collaborative programme with AfDB, IFAD, FAO, NEPAD, ICID, IMAWESA, IWMI, WB and others during 2008 to counter the agricultural sector's tendency to be fragmented (AgWA, 2010a). Its overarching mission is to manage agricultural water that is socially equitable, profitable at the farm level, economically viable, environmentally sound and sustainable with 'five priority components for action: advocacy, resource mobilisation, knowledge sharing, donor harmonisation and capacity development'.

The titles of scientific water research projects in South Africa, based on empirical evidence, reveal the application of a range of theories, models, programmes and interventions associated with various water related issues: *The long-term impact of* Acacia mearnsii *trees on evaporation, stream flow and groundwater resources* (Clulow, Everson, & Gush, 2011); *Impact of a ceramic pot point-of-use water treatment device on rural people living with HIV and AIDS* (Potgieter, 2011); *Sustainable techniques and practices for water harvesting and conservation and their effective application in resource-poor agricultural production through participatory adaptive research* (Everson et al., 2011)*; Rapid enzymatic detection of organophosphorus and carbamate pesticides in water* (Pletschke et al., 2011); *Implementation of ecological hazard assessment of industrial waste discharge: A comparison of toxicity test methods* (Griffin, Muller, & Gordon, 2011); *Development of an indicator methodology to estimate the relative exposure and risk of pesticides in South African surface waters* (Dabrowski, Schachtschneider, Ross, Bollmohr, & Thwala, 2011); *A framework for the classification of drainage networks in savannah landscapes* (Cullum & Rogers, 2011); *Nitrate removal for groundwater supply to rural communities* (Israel et al., 2011); *Water related microbial disease guidelines Volume 5: What we and our children need to know—Health and hygiene awareness* (Potgieter, 2011; Potgieter, Barnard, Bown, & Sobsey, 2011); *Water quality data and information: A communicator's manual* (Murray et al., 2010).

Across the continent, communities are being encouraged to actively engage in all aspects of daily life, including agriculture as a particularly significant component of rural development planning (Fairhurst & Mashaba, 1997). Although asset mapping is a useful methodology in these fields, the concept is now being extended by applying community asset mapping techniques since it involves human endeavour (Nicolau, 2013 cf. p. 6). The Community Asset Mapping Programme (CAMP) contends that, for sustainability and personal development, communities need support from supportive partners like NGOs, government, civil society, business and academe for viable roots-driven change (Nicolau, 2013). Long-term gain will only materialise with access to funds, acquiring mentorship skills and continuous monitoring (Nicolau, 2012). In an empirical process of critically analysing their real experiences with the local government's tender process in the Eastern Cape of South Africa, Illing and Gibson (2004) designed and tested their operational model with collaboration between municipalities, community-based organisations (CBOs) and the private sector. Their findings stress that CBOs should gradually take on more and more responsibility and ensure an appropriate and cost-effective level of service provision throughout the process. Although their study related to water provision, the principles and theoretical assumptions they used support current development thinking concerning community participation.

Organic farming is becoming increasingly recognised in the world today. Supporting 'successful organic farming systems and organic marketing initiatives and offer guidelines for the main subsistence and cash crops of the tropics' (Willer & Kilcher, 2009) is the availability of training manuals support and prepared by the International Federation of Organic Agriculture Movements (IFOAM) and their partners.

The Green Revolution (GR) Programme dates back to the early 1940s (Kolewane, 2012) and continues to be regularly drawn into agricultural research endeavours. This is not surprising as it advocates agricultural intensification and the development of high-yielding and disease resistant seed varieties as a means of securing efficient and dependable food production. In 2008 at the Salzburg Global Seminar (SGS) conference, the question of having a uniquely African GR as a pro-poor development strategy was on the table. Since technology and knowledge management were gaining ground in scientific thinking in agricultural practice and research, this development is not surprising. Kolewane (2012) uses critical discourse analysis and Nigeria's political economy as a case study to anal-

yse the political and bureaucratic lapses associated with the introduction and implementation of GR reform to reshape the agricultural sector on the continent. From his findings, he suggests that a uniquely African GR could benefit African agrarian economies and the poor majority. The proviso is that the socio-political and environmental issues surround the production of genetically-modified organism (GMOs) and high external inputs (HEIs) would have to be accommodated (Kolewane, 2012). The historical, the geographical, human endeavour, development and technology converge as a reiterative cycle here as illustrated in this chapter and in other contemporary and forward-looking papers (e.g., Holcombe, 2012).

The concept of food sovereignty is a framework that offers a solution to the food crisis based on principles of local empowerment, equity and agroecology (Curtis & Hilary, 2012; Fairhurst & Mashaba, 1997) and it appears to capture the holistic approach adopted in contemporary thinking about agriculture. It serves as a framework to address the global food crisis that is very real in Africa. Its ethos embodies several ideologies significant for social relations and care of the environment. Patel (2009) points out that acknowledging rights implies ensuring that 'those rights are met across a range of geographies, by everyone, in substantive and meaningful ways'. In the context of viewing the home as a locus of social relations, he points out that food sovereignty requires respect for women's rights that would supersede patriarchal traditions in the household with culture undergoing transformation; that relations between farmers and farm workers should not be subjected to structural inequalities in power; and suggests that food sovereignty is simultaneously about farming technology, democratic policy making, public health, the environment and gender. His view clarifies IAASTD's simple definition that food sovereignty concerns 'the right of peoples and sovereign states to democratically determine their own agricultural and food policies' (IAASTD, 2009, p. 5).

In essence, the call is for food-related initiatives to uphold the ideals of food sovereignty by action: to strengthen farmers' organisations; to support the small-scale farm sector; to recognise local and indigenous knowledge; to value integrating formal and informal scientific processes; to increase investments in agro-ecological farming; to create more equitable and transparent trade agreements; and to encourage local participation in policy formation and decision-making processes—particularly by women, indigenous peoples, community groups, farmers and their organisations (Ishii-Eiteman, 2009, p. 698). These are significant contemporary concerns captured in this chapter.

## Conclusion

Conclusions documented from selected information about programmes, interventions and research endeavours further enhance appreciation and understanding of the integral part played by agriculture in rural development planning. It is, however, inevitable that some interventions succeed and some fail. However, virtually without exception, irrespective of the theoretical basis applied to the conceptualisation and analysis of the problem or the methods used to get information, assumptions, perceptions or ideas, observations or dreams recorded in this chapter have hopefully stimulated and enlightened the reader. May this chapter inspire to keep the wheel spinning, not attempting to reinvent it—it is the wheel of human-environment interaction and intervention in African agriculture that allows it to uplift its people's well-being and quality of life in many ways.

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CHAPTER 5

# Financing Rural Development Programmes

*Rodney Asilla and Anna Nyaoro Mala*

## Introduction

Mobilising and allocating finances to rural development programmes is important to realise their implementation. Of course, other inputs such as human resources and sustained implementation are also important. Finance for rural development planning encompasses savings, lending, financing and risk minimising opportunities, as well as related norms and institutions in rural areas (Department for International Development [DFID], 2004).

Both agricultural and non-agricultural activities taking place in rural areas involve financial transactions (International Fund for Agricultural Development [IFAD], 2009). Thus, rural finance is not only characterised by credit facilities, but also other services such as savings and insurance (Demirguc-Kunt and Levine, 2004; World Bank, 2003). Rural finance affects many areas of rural socio-economic development and not just the routine agricultural aspects. This chapter presents results of a review on financing rural development programmes in Africa.

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## Methods

Peer reviewed articles on rural financing were accessed from electronic databases including Elsevier and Pergamon. Articles from academic institutions, such as the University of Helsinki, University of Free State, Bloemfontein, and the University of Kwa-Zulu Natal, were also included. Additionally, the study also included literature from organisational databases, such as the Japanese International Cooperation Agency (JICA), the International Fund for Agricultural Development (IFAD), the Finmark Trust, the International Institute for Environment and Development, the African Monitor, and the Economic and Social Research Foundation.

Key words used during the search for literature were rural finance in Africa, microfinance in rural Africa, and financial development in rural Africa. The search yielded a large number of publications. Twenty-one publications were found appropriate for the topic at hand. Information was extracted and processed for presentation and discussion. Each selected study was examined and information extracted with regard to its design, theories and conceptual models, and empirical findings.

## Results and Discussion

### *Study Designs*

As shown in Table 5.1, majority of the studies (13) focused on a single country (Basaza, Criel, & Van der Stuyft, 2008; Gilson et al., 2001; Haselip, Desgain, & Mackenzie, 2013; Ilskog, Kjellstroma, Gullberg, Katyegac, & Chambala, 2004; Lyon, 2000; Macintyre & Hotchkiss, 1999; Mariam, 2003; Mills et al., 2012; Murphy, 1999; Nishimura & Yamano, 2012; Palmer, 2007; Porter, 2002; Schicks, 2013). One focused on the region of Sub-Saharan Africa (Mladovsky & Mossialos, 2007). Two studies focused on the African continent as a whole (Gujba, Thorne, Mulugetta, Rai, & Sokona, 2012; Skinner, 2008), and six of the studies did not focus on any specific region (Eberhard & Shkaratan, 2009; Eckart & Henshaw, 2012; Ensor & Ronoh, 2005; Leighton, 1996; Platteau, 2009; Van, Stewart, & de Wet, 2012).

In relation to study type, three of the studies were reports (Basaza et al., 2008; Ilskog et al., 2004; Macintyre & Hotchkiss, 1999). Six of them were comparative studies (Gilson et al., 2001; Leighton, 1996; Mills et al., 2012), and seven were documentary reviews (Eckart & Henshaw, 2012; Ensor &

**Table 5.1** Summary of research on financing rural development programmes in Africa

| *Author, date* | *Geographical unit* | *Data collection method* | *Theoretical framework* | *Study focus* | *Key findings* |
|---|---|---|---|---|---|
| Macintyre and Hotchkiss (1999) | Country (Kenya, Samburu District) | Review of documents | Social capital | Emergency transport in rural health care | A reliable emergency transport system increases the efficiency of a health referral system |
| Gilson et al. (2001) | Country (Kenya, Zambia, Benin) | Document review, authoritative opinion | Equitability | Creating equity in health policy through pro-poor health reform agendas | All the three countries failed to provide adequate pro-poor health reforms |
| Mladovsky and Mossialos (2007) | N/A | Documentary review | Social capital | Role of social capital in promoting economic development through enhancing the success of Community-Based Health Initiatives | Application of a social capital approach in Community-Based Health Initiatives could facilitate universal healthcare coverage in low-income countries |
| Ilskog et al. (2004) | Townships and villages (Tanzania) | Observation (Monitoring and evaluation) | Social capital | Role of electrification cooperative to bringing electricity to rural areas | Rural electrification cooperatives played a major role in bringing electricity to rural communities in Tanzania |
| Eckart and Henshaw (2012) | Village | Review of documents | Sustainable development | Viability of use of *Jatropha curcas* as fuel towards management of a multifunctional platform project | Jatropha can be successfully used as a tool for sustainable development through production of fuel for multifunctional platforms (MFPs) |

(*continued*)

**Table 5.1** (continued)

| *Author, date* | *Geographical unit* | *Data collection method* | *Theoretical framework* | *Study focus* | *Key findings* |
|---|---|---|---|---|---|
| Mills et al. (2012) | Country (Ghana, South Africa, Tanzania) | Survey | Universal coverage | Equity in financing and use of healthcare by people outside formal employment in Ghana, South Africa and Tanzania | Health care financing is progressive in all three countries, but distribution of healthcare benefits has a pro-rich inclination |
| Haselip et al. (2013) | Countries (Ghana, Senegal) | Semi-structured interviews | Demonstration effect | Role of financing towards growth of energy SMEs in rural areas of Africa | Financing SMEs in Africa can be key to alleviating energy and fuel problems in rural Africa, if reluctance of internal investors can be overcome |
| Gujba et al. (2012) | Africa (no specific country) | Review of documents | | Availability of financing of low carbon energy production and access in Africa | There are various ways to address the issue of funding for low carbon energy production and access in Africa |
| Ensor and Ronoh (2005) | Country | Review of documents | Social capital | Effective financing of maternal health services for poor people | There is a general failure by African governments to provide sufficient financial support for poor people seeking maternal healthcare |
| Palmer (2007) | Country (Ghana) | Review of documents | | Pro-poor policies focusing on skills development in Ghana | Ghana lacks an effective skills development policy that specifically addresses a pro-poor youth agenda |
| Van Rooyen et al. (2012) | Sub-Saharan Africa | Review of documents | | The impact of microfinance on development in Sub-Saharan Africa | Microfinance can have a negative impact on growth and development targeted at poverty reduction, through increased possibilities of debt |

(*continued*)

**Table 5.1** (continued)

| *Author, date* | *Geographical unit* | *Data collection method* | *Theoretical framework* | *Study focus* | *Key findings* |
|---|---|---|---|---|---|
| Mariam (2003) | Village/ neighbourhood | Interviews | Social capital | Looking at the effectiveness of indigenous social insurance in financing access to health services in Ethiopia | Indigenous social insurance is an effective way of financing access to health services in rural areas |
| Nishimura and Yamano (2012) | Primary schools in Kenya | Interviews | Universal primary education | Issues of school choice, progress and transfers under Free Primary Education in rural areas in Kenya | Most parents would opt to send their children to private schools due to the deteriorating standards of education after the introduction of Free Primary Education |
| Murphy (1999) | Countries (Kenya, Uganda, Tanzania) | Expert opinion | Developmental leapfrogging | Limitations to successful energy-based developmental leapfrogging in East Africa | Energy technology leapfrogging cannot be isolated from other aspect of socio-economic development |
| Platteau (2009) | Not specified | Review of documents | Institutionalism | Institutional obstacle to Sub-Saharan African economic development (state, ethnicity, tradition) | Some of Africa's greatest obstacles to growth and development are ethnicity, religious beliefs and lack of strong social and governance structures |
| Basaza et al. (2008) | Uganda | Focus group discussions | Social capital | Factors that hinder registration into Community Health Insurance schemes in Uganda | Financial challenges, poor health care benefits and rigidity of the institutions hinder registration to Community Health Schemes |

(*continued*)

**Table 5.1** (continued)

| *Author, date* | *Geographical unit* | *Data collection method* | *Theoretical framework* | *Study focus* | *Key findings* |
|---|---|---|---|---|---|
| Schicks (2013) | Ghana | Questionnaire | Customer protection | Factors related to over-indebtedness in African microfinance loan systems | Overdependence on microfinance and lack of adequate information on microfinance systems are a major cause of over-indebtedness |
| Eberhard and Shkaratan (2012) | Sub-Saharan Africa | Review of documents | Socio-economic development | Challenges to power generation in Sub-Saharan Africa and how to overcome them | Low investment, inefficiencies and lack of robust governance structures affect power production in Africa |
| Porter (2002) | Country (Ghana) | Cross-sectional studies | equity | Equitability in rural transport and communication sector in rural Sub-Saharan Africa | Low level of transport and communication infrastructure in rural Sub-Saharan Africa hinders socio-economic growth |
| Skinner (2008) | Country | Review of documents | Social exclusion | Trends in social inclusion and exclusion of street traders in Africa | Street trading is a source of income for many urban residents in Africa, and cannot be done away with |
| Lyon (2000) | Country (Ghana) | Interviews | Social capital | Social capital building through trust networks | Trust is an essential component of social capital building for success of micro-enterprises in rural areas |
| Leighton (1996) | Africa | Review of documents | Policy reform | Strategic and implementation issues in health financing in Africa, and strategies to overcome them | Most African countries face common issues in health reform such as time constraints, political, economic and technical challenges |

Ronoh, 2015; Mladovsky & Mossialos, 2007; Murphy, 1999; Palmer, 2007; Platteau, 2009; Skinner, 2008). One study was an interview (Haselip et al., 2013), while another one was a systematic review (Van Rooyen et al., 2012). One other study took the form of an authoritative opinion (Eberhard & Shkaratan, 2012), while another one was a cross-sectional study (Porter, 2002). Four of the studies were surveys (Lyon, 2000; Mariam, 2003; Nishimura & Yamano, 2012; Schicks, 2013).

### *Theories and Conceptual Models*

Various theories and conceptual models were used in the different studies. Seven of the studies used the social capital theory (Basaza et al., 2008; Ensor & Ronoh, 2005; Ilskog et al., 2004; Macintyre & Hotchkiss, 1999; Mariam, 2003; Mladovsky & Mossialos, 2007; Lyon, 2000). One study was based on policy reform (Leighton, 1996), and another was on social exclusion (Skinner, 2008). One other study was based on socio-economic development (Eberhard & Shkaratan, 2012), and two others were on equity (Gilson et al., 2001; Porter, 2002). One study looked at on customer protection (Schicks, 2013) while another was based on institutionalism (Platteau, 2009), and yet another one dealt with developmental leapfrogging (Murphy, 1999). One study was grounded on the principle of universal primary education (Nishimura & Yamano, 2012), and yet another was anchored on the theory of the demonstration effect (Haselip et al., 2013). A further study was founded on the concept of universal coverage (Mills et al., 2012), and another one based on sustainable development (Eckart & Henshaw, 2012). Finally, three studies did not have a clear theory or conceptual model guiding them (Gujba et al., 2012; Palmer, 2007; Van et al., 2012).

Overall, the studies identified and reviewed drew on three main theoretical and conceptual models. These are social capital (Basaza et al., 2008; Ensor & Ronoh, 2005; Ilskog et al., 2004; Lyon, 2012; Mariam, 2003; Mills et al., 2012; Mladovsky & Mossialos, 2007; Skinner, 2008), infrastructure (Leighton, 1996; Macintyre & Hotchkiss, 1999; Porter, 2002), and governance and policymaking (Eberhard & Shkaratan, 2002; Eckart & Henshaw, 2012; Gilson et al., 2001; Gujba et al., 2012; Haselip et al., 2013; Murphy, 1999; Nishimura & Yamano, 2012; Palmer, 2007; Schicks, 2013; Van Rooyen et al., 2012). While these studies contributed to an understanding of the respective theories used, they did not seem to contribute to the further development of these theories by critiquing existing ones and even elaborating new ones.

### *Study Focus and Empirical Findings*

From Table 5.1, it can be noted that the studies fall into two related but distinct categories within rural finance: infrastructural and socio-economic aspects of rural finance. Some of the studies fit into both categories. However, in an attempt to achieve clarity of distinction within the review, they were categorised as one of either of the two main categories.

### *Rural Finance and Infrastructure*

A number of the studies within the corpus highlighted the essence of enhancing the link between rural finance and infrastructure. The infrastructure needs not to be considered only as physical infrastructure but also as political infrastructure. Studies noted that rural finance and infrastructure are in a continuous cause-and-effect cycle, where they impact on each other. In these cause-and-effect cycles, for instance, it was observed that investing in energy infrastructure and production, both mainstream and alternative sources, was going to positively impact on productivity, and subsequently, would contribute to the growth of rural finance (Eberhard & Shkaratan, 2012; Ilskog et al., 2004). Similarly, financing production of alternative energy would result in growth of rural economies with the long-term objective of improving rural economies (Gujba et al., 2012; Haselip et al., 2013; Murphy, 1999).

Other areas of infrastructural investment in rural areas include health. Gilson et al. (2001), Leighton (1996) and Mills et al. (2012) pointed out that there was need to invest in a policy infrastructure that ensured the creation of proper, pro-poor health policies that would ease the burden of access to health care by poor people, as well as those who were outside the formal employment sector in Africa. However, such policy infrastructure may present unintended challenges. These are presented by Nishimura and Yamano (2012) who observe that while seeking to attain universal education through the free primary education programme, the initiative resulted in lower education quality in government schools, forcing parents to seek private alternatives to education. Platteau (2008) also challenges the institutionalism that characterises African governance as a major hindrance to growth and development.

### *Socio-Economic Aspect of Rural Finance*

While rural finance has a lot to do with monetary circulation and management, a significant part of its success is linked to the social facet of its operations. Rural societies in Africa are noted for their strong, distinct

social framework. The role of such social frameworks has consequently been brought into the scope of rural finance in a variety of ways, especially through social capital. This has been identified in a number of the selected studies in this review.

Macintyre and Hotchkiss (1999) identify the role of social capital in enhancing infrastructure by investing in emergency transport for ease of access to health care. Mladovsky and Mossialos (2007) also note that the use of the social capital approach through Community-Based Healthcare Initiatives would improve attainment of universal health care objectives. This has also been argued for by Ensor and Ronoh (2005) who asserted that social capital can help improve access to maternal health care, as community-based initiatives will reach those who cannot yet access government health services in Africa. Mariam (2003) and Basaza et al. (2008) also argued for the importance of social capital in rural communal health initiatives.

Lyon (2000) has argued that social capital has been of great importance for economic growth in rural areas, where social networks have contributed to the increased supply and demand of goods and services. Skinner (2008) has noted that there is a need to mitigate social exclusion of street traders in Africa because they equally contribute to adequate economic growth. Still on this part, Schicks (2013) and Van et al. (2012) have argued against microfinance as a development strategy, since lack of adequate information and a tendency for over-indebtedness can result in more negative than positive outcomes while fighting poverty.

### *Growth and State of Rural Finance in Africa*

Results presented in Table 5.1 show rural financing is needed for socio-economic and infrastructural investment. The results also reveal that inadequate financial resources remain a problem in rural development efforts. In the 1960s and the 1970s, rural finance took mainly the form of agricultural credit loans, with an aim towards increasing incomes and reducing poverty levels among rural populations, while at the same time increasing agricultural productivity, since most rural people who were adversely affected by high poverty levels were in economies which were mainly dependent on agriculture (Yaron, Benjamin, & Piprek, 1997). Funds for these programmes were provided by the respective governments, and were also sourced from donor corporations (Marr, 2012). These programmes, however, were unsustainable as well as ineffective, and they negatively impacted on financial markets in most developing countries (Yaron et al., 1997).

The failure of these programmes led to the development of alternative rural finance strategies; the most prevalent being the microfinance institutions (Marr, 2012). Microfinance has been defined by Robinson (2001) as the small-scale financial services provided to people who run petty businesses in both rural and urban communities. Over time, the microfinance sector has steadily risen to be an influential player in the growth of rural finance in Africa, and subsequently, has contributed towards African rural development. This growth has mainly been attributed to the emergence of the concept of financial inclusion (Meyer, 2015). There has been an increase in rural finance projects that also operate along equitability principles, by targeting the vulnerable in society such as women, and even those suffering from HIV/AIDS (World Bank, 2001).

Rural finance in Africa has taken various forms over the years. These forms have included:

- intermediation, which focuses on mobilisation and transfer of savings from surplus to deficit units. It also provides savings facilities and access to credit facilities that respond to the specific needs of the rural setup (World Bank, 2004);
- savings facilities, which maintain value preservation, liquidity and accessibility of wealth (DFID, 2004);
- credit for consumption smoothing and investment in agricultural production, marketing, processing and input supplies (Gonzalez-Vega, 2003);
- effective payments and remittance transfer systems (Orozco, 2003; Sanders, 2003); and
- general insurance and cover against variability in output (especially as agriculture is largely weather-dependent), price and marketing uncertainty (Skees, 2003; Von Pischke, 2003).

## Conclusion

Three main conclusions are derived from the presentation and discussion of the findings in this chapter. The first is that rural finance is considered an essential component of the African economy. This is supported by the fact that majority of Africa's population is based in the rural areas. It therefore lends strength to the argument for African governments to invest more in improving the financial atmosphere of rural areas; or at the very

least, create a suitable environment in which rural finance thrives. This also involves infrastructural investments in accessibility and communication.

The second is that with the majority of Africa's economies being characterised by a significant dependence on agriculture in the rural areas, it is imperative that rural areas attain financial and subsequently, economic growth. As observed in most of the cases, investing in the financial growth of these agriculturally productive areas will spur economic growth, and consequently contribute to aggregate economic growth of African countries. While admittedly, in recent times, there has been a trend among many African countries looking to turn away from agriculture-based economies mainly as a result of new discoveries of mineral wealth, agriculture still remains a significant contributor to African economies.

The third conclusion is that the role of the community in growth and development of rural finance cannot be ignored. One way this has been brought out is through the concept of social capital. The networks and relationships in African rural communities are an important part of rural African society. This manifests in close familial, friendship and kinship connections going back in time. This characteristic of African society has equally been incorporated into rural finance.

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CHAPTER 6

# Small Market and Urban Centres

*Francis N. Wegulo*

## Introduction

Market centres and small urban settlements, which form lower-order centres in the urban rank size hierarchy, and their roles and functions in rural and regional development remain an important subject of interest and debate among planners, decision-makers and researchers. This chapter presents and discusses evidence on the role that markets and small urban centres play in rural and regional development in Africa. The chapter examines research designs, theories, conceptual models and role of these centres in selected studies.

## Methods

Literature related to markets and small towns and their role in rural and regional development in Africa between about the mid-1990s and the present were reviewed. The benchmark of the mid-1990s was considered appropriate in view of the various external and internal events that influenced the economies of sub-Saharan African (SSA) countries, including socio-economic impacts associated with the neoliberal economic push

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from western countries and the Bretton Wood institutions to make structural adjustments in their economies as a way of making them resilient and efficient. Internally, the decade preceding the 1990s witnessed frantic efforts by various governments in most African countries to grapple with the issue of rural and regional development, and the measures that could facilitate equitable spatial development.

In the process of searching for the relevant literature on the study subject, I came across a variety of interesting perspectives contributed from within and outside Africa. The sources of these studies were published books, book chapters, journal papers, dissertations, working papers, policy briefs, and conference papers. The search for the literature was guided by the following key terms: market and small towns in rural development, rural–urban links, rural–urban dynamics, rural–urban development, rural development, decentralization and rural development, and integrated rural–urban development. The search yielded a substantial number of studies. The universe of studies that address issues of market centres and small towns and their place and role in rural and regional development in Africa is varied, extensive and, in all probability, still growing. Hence the 58 selected studies (Table 6.1) are by all intents and purposes non-exhaustive; they are tentative, and therefore only serve as an indication of the broad picture with respect to the theme under review. Nevertheless, this selection serves to capture various dimensions and perspectives of the role of market centres and small urban centres in rural and regional development in Africa.

From the selected studies, information was extracted and processed to discuss specific aspects indicated in the questions in the introduction. These aspects are presented in the sections that follow. I begin with an examination of research designs used by various authors, followed by theories and conceptual models, and the role played by market centres and small towns in rural development in African countries.

## Results and Discussion

### *Study Designs*

Table 6.2 provides details of the distribution of studies by geographical location, sources of data, and type of data used in the sample study. It is noted from Table 6.2 that the studies with a focus at the national level were the majority (13 of them equivalent of 42%), followed by 7 (23%) at

**Table 6.1** Scope of research on market and small urban centres in selected studies

| *Author, year* | *Focus* |
|---|---|
| Akkoyunlu (2015) | Influence of infrastructure, institutions and trade on linkages between rural and urban regions in the context of rural empowerment and economic development |
| Alaci (2010) | Need for governments across SSA countries to identify growth inducing agents, build capacity of professional planners, and managers; as well as establish economic settlement clusters to re-invigorate the development of small and medium size towns |
| Baker (1990) | Theoretical and conceptual contributions on the role of small towns in rural development in SSA |
| Baker and Pedersen (1992) | Overview of theoretical approaches, rural–urban linkages, entrepreneurship, living conditions and labour markets, and urban agriculture |
| Corwin (1977) | Rural town and minimal urban centre |
| Darkoh (1994) | Tanzania's growth and industrial decentralisation strategy in the post-independence period focusing on industrial and urban development policies |
| Dorosh and Thurlow (2012) | Capacity of cities or towns to drive African development: a focused analysis of Ethiopia and Uganda |
| Dorosh et al. (2011) | Growth and distributional impacts of alternative regional investment options in Ethiopia |
| Dunham (1991) | Link between agricultural growth, non-farm expansion and poverty |
| Egunjobi (1990) | The development potentials of local central places in Nigeria |
| Engel (1997) | Concept of 'regional rural development' and its development in Southern Africa |
| Evans (1992) | Rural–urban relations and household income diversification |
| Gaile (1992) | Basic aspects of a small town programme in market-based development contexts, and the criteria and guidelines for choosing the small towns |
| Gete et al. (2007) | Regional development planning in Ethiopia and mutual relations between rural and urban areas |
| Gilbert and Gugler (1992) | Broad appraisal of urbanisation in the Third World |
| Gooneratne (1996) | Prospects for alternative urban futures in Sub-Saharan Africa |
| Hinderink and Titus (1988) | Paradigms of regional development & role of small centres |
| Hinderink and Titus (2002) | Role of small towns in regional development |
| Hussein (2004) | Decentralization and its role in promoting participatory development in Malawi |

(*continued*)

**Table 6.1** (continued)

| *Author, year* | *Focus* |
|---|---|
| Kabwegere (1978) | A historical–political economy analysis and review of urbanization in Kenya. |
| Kamete (1998) | Links and interactions between farm and town settlements in north-west Zimbabwe |
| Manyanhaire, Rwafa, and Mutangadura (2011) | Growth centre concept and a critique of the constraints to the development of growth centres |
| Mason (1989) | Role of urbanization in developing countries—focus on Kutus, Kenya |
| Maro (1990) | Decentralization and villagization policies and impacts in reducing spatial inequalities and promoting rural development in Tanzania |
| Mehretu (1989) | Socio-spatial constraints to development in Sub-Saharan Africa |
| Mitchell-Weaver (1991) | Review of urban systems theory and Third World development |
| Seraje (2007) | Ways in which different households rely on varying combinations of activities, the factors affecting each strategy and their implications for rural–urban linkages |
| Mulongo, Erute, and Kerre (2012) | Rural–urban interlink and sustainability of urban centres in Kenya |
| Mushi (2003) | Regional development through rural–urban linkages |
| Muzzini and Lindeboom (2008) | Urban-related empirical questions associated with the urban transition in mainland Tanzania |
| Mwanamtwa (2012) | Examination of the role of urbanization in rural development, case of Tanzania |
| Mylott (n.d.) | Public policies, urban and regional plans and their role in spurring economic growth in a sustainable manner |
| Ngau (1989) | Rural–urban relations in Kutus town of Kirinyaga County, Kenya |
| Nhede (2013) | Examination of potential of growth points and implication on public service |
| Nicchia (2011) | The study reviews theoretical issues, and presents case studies to facilitate analysis of two towns—Caia and Sena (Mozambique) in the context of town planning. |
| Obudho and Aduwo (1990) | Urban approaches to regional and rural development (Kenya) |
| Obudho, Akatch, and Aduwo (1988) | Urbanization and regional planning in Africa in the context of socio-economic change |
| Ojeh and Thaddeus (2012) | An empirical validation of the growth pole concept with a focus on Delta State University in Abraka in Nigeria |
| Okpala (2003) | Study seeks to review strategies for promoting the positive aspects of rural–urban linkages |

(*continued*)

**Table 6.1** (continued)

| *Author, year* | *Focus* |
|---|---|
| Otiso (2005) | Study examines the current state of Kenya's secondary cities in the context of its urban and regional development strategies |
| Otiso and Owusu (2008) | Study reviews the comparative spatial and temporal analysis of urbanization in Ghana and Kenya |
| Oucho (2004) | Reviews case studies that examine rural–urban Linkages in SSA |
| Owusu (2005a) | Role of District Capitals in Regional Development in Ghana |
| Owusu (2005b) | Promotion of small towns under Ghana's decentralization programme |
| Pedersen (1990) | Role of small towns in organizing enterprise in space |
| Pedersen (1991) | The role of Small & Intermediate Urban Centres in Planning in Africa |
| Potts (2012) | Evaluation of urbanization in SSA, and its impact on rural development |
| Rondinelli (1983) | An examination of applied methods of regional planning |
| Rondinelli (1986) | Explication of relationships among urbanization, agricultural development and employment generation in developing counties and their implications for international assistance to Third World Countries |
| Satterrthwaite and Tacoli (2003) | Role of small & intermediate urban centres in rural & regional development & poverty reduction |
| Southall (1988) | Role of small towns in rural/regional development |
| Southall (1979) | Subject matter is centred on the place and role of |
| Tacoli (1998) | Literature review on the subject rural–urban interactions |
| Gooneratne (1996) | Role of Cities in regional development |
| United Nations Development Programme (2016) | Regional urban policy in Africa |
| Mason (1989) | Role of urbanization in developing countries |
| Veron (2010) | Examination of a conceptual framework and agenda for the study of small cities in the Global South, their environmental dynamics, governance, and politics in the current neoliberal context |
| Wafula (2011) | Planning and managing urbanization in Kenya following the new Constitution |
| Wakwete (1988) | Rural Growth Points—future prospects |
| Wakwete (1990) | A historical analysis of urbanization focusing on the colonial and post-independence spatial strategies meant to service rural hinterland populations |
| Wegulo (1993) | Farm-non-farm activities and their impact on rural development |
| Wegulo and Obulinji (2001) | Link between sugarcane farming and investment patterns |

**Table 6.2** Study designs

| *Aspect* | *Geographical focus* | | | | |
|---|---|---|---|---|---|
| Geographical unit | Local | National | Continental | Other (Developing country/global) | Total |
| Frequency | 07 | 13 | 06 | 05 | 31 |
| Data sources | Survey/ primary | Secondary | Review | Other (mixed sources) | |
| Frequency | 10 | 07 | 09 | 05 | 31 |
| Data analysis | Quantitative | Qualitative | Quantitative/ qualitative | Other | |
| Frequency | 09 | 12 | 10 | 01 | 32 |

local level and 6 (19%) at continental (African) level. Of the total, 5 studies (16%) focused on other developing countries/global level. Overall, it is clear that the studies covered wide geographical units.

With regard to analysis, 12 studies (38.7%) relied on qualitative, 10 (32.25%) on a combination of quantitative and qualitative, and 9 (29%) on quantitative designs. One study (1%) relied on meta-analysis. As for data sources, 10 studies or 32 per cent relied upon primary sources especially surveys. This was closely followed by reviews (9 or 29%). Secondary and mixed sources accounted for 7 (22.5%) and 5 (16%) studies, respectively. It can be observed that the studies under review sourced their data from a wide base.

### *Theories and Conceptual Models*

Table 6.3 presents data on the concepts, and theories as employed in the sample studies. From this table, two important features emerge. The first is the diversity of theories and concepts that have been used in the various studies. The second is that nearly all the studies reviewed have been anchored in one or a combination of concepts, models and theories. It is noted that a few of the studies have employed a historical perspective.

A question one may ask is as follows: 'Why is it that different studies have used a combination of theories and conceptual models?' The question could be handled in different ways but perhaps the most rational answer would be that the studies under review addressed unique problems in varied geographical, socio-economic and political situations. Moreover, the studies were conducted at different periods in time. This suggests that

**Table 6.3** Dominant theories and conceptual models used in sample studies

| *Theory and conceptual model* | *Authors* | *Frequency* |
|---|---|---|
| Rural–urban linkages/rural–urban interactions | Tacoli (1998), Satterthwaite and Tacoli (2003), Oucho (2004), Mushi (2003), Mulongo et al. (2012), Hinderink and Titus (2002), Gete et al. (2007), Trutmann and Aster (2007), Evans (1992), Oucho (2004), Wegulo and Obulinji (2001), Gaile (1992) | 12 |
| Growth pole & service centre, growth points, urban functions in rural development | Darkoh (1994), Gantsho (2008), Mulongo, Erute, and Kerre (2012), Manyanhaire et al. (2011) | 4 |
| Decentralization concept | Darkoh (1994), Owusu (2005a) | 3 |
| Network analysis | Uchendu (2013), Pedersen (1990) | 2 |
| Multi-spatial livelihoods analysis model | Owuor (2006) | 1 |
| Central place theory | Egunjobi (1990) | 1 |
| Functional integration | Hinderink and Titus (2002) | 1 |
| Rural growth linkages | Dunham (1991) | 1 |
| Agropolitan development strategies | Darkoh (1994) | 1 |
| Economic settlement cluster | Alaci (2010) | 1 |
| Territorial development | Darkoh (1994), Rondinelli (1983) | 1 |

the spatial and temporal contexts are of paramount importance in our interrogation of the different theories and models adopted to guide the different studies. It may also be argued that different authors were persuaded in theoretically and intellectually different ways, partly because of hegemonic influence of the reigning theories at the time of their contribution, as well as their own philosophical and ideological inclinations.

Overall, the theories and conceptual models used in the sample studies include: the family of theories linking rural areas and urban centres; the family of theories that focus on concentrated development—growth pole/growth centre, and growth points; decentralization–related development theories. Others are: network analysis; central place theory; multi-spatial livelihoods analysis model; functional integration; rural growth linkages; agropolitan development strategies; and economic settlement cluster (Table 6.3). A discussion of the predominant and commonly used spatial theories of rural/regional development is presented in the section that

follows. The discussion focuses on three key groups of spatial theories: rural–urban linkages; growth pole/growth centre; and decentralization.

### *Rural–Urban Linkages (RUL)*

This group of theories takes several names such as rural–urban interactions, rural–urban relations, rural–urban development, rural–urban dynamics model and rural–urban balance. From the studies reviewed, this group of theories has attracted the highest number of researchers including but not limited to Tacoli (1998), Satterthwaite and Tacoli (2003), Oucho (2004), Mushi (2003), Mulongo et al. (2012), Hinderink and Titus (2002), Gete et al. (2007), Trutmann and Aster (2007), Evans (1992), Oucho (2004), Wegulo and Obulinji (2001), and Gaile (1992).

The main argument in this model is that there are close and practical relations between urban and rural areas. Rural areas depend on urban areas for secondary schools, post and telephone, credit, agricultural expansion services, farm equipment, hospitals and government services. Rural areas on the other hand supply towns with food needed to satisfy the growing consumption, raw materials for manufacturing and processing industries, and human labour among other flows. These relations have over the time been greatly expanded in view of greater access to information technology, better roads, improved education and changing economic realities. All these have served to increase the movement of people, goods and services.

Scholars are, however, divided as to whether towns play parasitic or generative roles in their relations with their rural hinterlands. Some scholars vouch for mutual and synergetic flows; the markets centres and towns being seen to support the development of their rural hinterlands (Rondinelli, 1988). Several others led by Southall (1988) argue to the contrary, suggesting that towns exploit their rural hinterlands.

A question that may arise is as follows: 'To what extent do these theories illustrate the efficacy of the linkages between urban centres and development of their rural hinterlands?' This question is best answered by looking at selected studies with empirical verifications (Karaska, 1999; Mason, 1989; Mushi, 2003; Wegulo & Obulinji, 2001). These studies demonstrate the existence of fairly dynamic relations between rural areas, and the small towns. The study of the impact region of Dar es Salaam by Mushi (2003) for example, unveils the latent potentials of rural–urban linkages (in terms of livelihood enhancement) between the rural and

urban sectors. The study, however, underscores the weak linkages existing between the rural agricultural hinterland and Dar es Salaam. The weaknesses are attributed to several factors including limited local institutional development, and its interplay, inadequate provision of social, physical and economic infrastructure, and ineffective regional planning machinery in the impact region (Mushi, 2003).

Results from studies conducted in Kutus in Kirinyaga in Kenya and reported variously by Mason (1989) and Karaska (1999) equally demonstrate the potential benefits of linkage between towns and their rural hinterlands. It is observed that the Kutus exchange system has several key ingredients briefly described as income multiplication, production and marketing generated revenue, and consumption expenditure. These flows benefit both the agricultural sector (rural) and town. However, like in the case of Dar es Salaam impact study area, the agricultural sector and by extension the farm households remain the most critical factor in driving the Kutus regional economy.

The study by Wegulo and Obulinji (2001) provides further elaboration of the links between the rural-based agricultural sector (sugarcane production), and market centre and small-town-based activities (trading, artisanal and provision of a wide range of services). It is evident from the study results that the rural economy and its development are largely dependent upon the agricultural sector.

### *Growth Poles and Service Centre*

Growth points (GPs), growth poles (GPs), small towns (STs) or growth centres (GCs) as they are variously named in literature are defined as centres with strong resource base that can initiate a cumulative causation process that culminate in continuous and sustainable development (Manyanhaire et al., 2011). The growth pole/growth centre strategy is justified on the grounds that for an economy to grow to higher income levels, it must of necessity develop one or several regional centres or growth poles (Hirschman, 1958: cited in Darkoh, 1994). This argument has been supported on the probability grounds that rather than starting from everywhere in a country, development will focus in a select number of centres (Obudho & Aduwo, 1990). Such centres would then attract external economies increasingly, and with time impact on the outlying areas through its demand for the products of the outlying areas. The outlying areas would later then benefit as sources supply for the faster

developing regions, and in time cause growth and development in the centre and its outlying areas. Thus, once a centre has been established, there should be an observable change in the spatial structure and pattern; the spatio-temporal expansion is tantamount to development, and not just growth (Ojeh & Thaddeus, 2012).

The perception of cities as growth poles in the urbanization process was received with excitement and expectations as a means to re-energize economic growth in developing and industrializing countries in the 1960s and 1970s, especially those in Latin America and Southeast Asia. The prime mover of this process was seen to be the growth pole strategy. Against this backdrop, planners and development economists keenly set about to identify locations, which they believed, could act as growth poles or growth centres in the national urban system (see for example, Darkoh, 1994; Wakwete, 1988). In nearly all cases, established cities were assigned the function of growth poles and strategically located points in a region were artificially induced as growth poles. These poles tended to be secondary cities within the national urban hierarchy; places that could grow to fill the gap between the primary city and smaller places (Mitchell-Weaver, 1991). Well-planned and efficiently managed cities were presumed to have the ability to relieve pressures on surrounding rural areas by concentrating populations for productive ventures, achieving economies of scale in such areas as energy, housing, transportation, and promoting land use connectivity. In a similar way, successful rural development would stimulate and support urban development; and urban development serving as key impetus to rural development. In this way, it can be seen that the process of urbanization is closely tied with the rural fringes. It is largely from this perspective that Gantsho (2008) perceives cities as part of a larger ecological system than the city limits administratively. In this context, an argument is made to the effect that as remote rural areas are penetrated via advanced technology and the global economy, urban and rural areas become more linked and interdependent.

The question we need to seriously consider is: To what extent is the Growth Pole Strategy an Economic Growth Option for African Countries? In response to this question, Gantsho (2008, p. 18) suggests that the use of the growth pole concept as growth diffusion theory does not work for African nations. Mabogunje (1971), Mitchell-Weaver (1991) and Kessides (2007) reach similar conclusions on this matter. Mitchell-Weaver (1991) puts it more succinctly, arguing that ‘development models based on hypothetical relationships posited to exist in a mature capitalist urban economic

system is inappropriate in most third world countries'. A case study of the use of growth centre strategy in national development is presented below (see Case Study 6.1).

**Case Study 6.1 Growth Centre Strategy as a National Planning Model**

Like many governments in sub-Saharan Africa, Tanzania inherited a distorted spatial structure at independence in 1961. In an effort to re-structure its national space economy, the country embarked on the use of the Growth Centre strategy. The growth pole/growth centre theory suggests that by concentrating investment and innovation in a few carefully selected centres, development would either spontaneously or by inducement 'trickle down' throughout the region (Hansen, 1981).

Darkoh (1994) vividly describes attempts by the Tanzanian Government (using the growth centre/growth pole strategy) to distribute industry and allied growth/development from the Dar es Salaam core into the newly identified growth centres. In the first two years of its implementation, thirty major industries were allocated, and of these, only ten went to the growth centres and the remainder to Dar es Salaam. Of the ten that were allocated to the growth centres, seven went to Arusha-Moshi. It is therefore evident that Dar es Salaam continued to exercise dominance through retaining the largest share of the major industries (Darkoh, 1994, p. 89).

After a few years of implementation of this strategy, the Government of Tanzania acknowledged the ineffectiveness of the growth centre strategy giving three reasons as follows: firstly, in most cases, location decisions had been made before the start of the plan; secondly, no government agency was given formal and direct responsibility for implementing the policy; and finally, many of the towns designated as growth centres did not have high enough levels of urban infrastructure to sustain major industries (United Republic of Tanzania, 1971, p. 103, cited in Darkoh, 1994, p. 90).

Having recognized the failure of the growth centre strategy, the Tanzania Government sought to engage a major policy reform under the framework of decentralization. This in effect was a planned departure from the previous focus on growth centre as a strategy

towards dispersing industry away from Dar es Salaam, as well as equitably distributing employment incomes and development prospects across the rest of the country.

Evidence from other countries such as Zambia and Kenya suggest disappointment vis-à-vis the high expectations placed on the growth centre strategy (Obudho & Aduwo, 1990; Wakwete, 1988). The 'trickle down' effects which were supposed to follow after the establishment of several growth centres in several regions in the respective countries, did not yield the anticipated results and spin-offs. In anything, it is the large component of suppliers and contractors located in the large centres that seemed to benefit. It has been observed (for example, Hansen, 1981) that the spread effects from urban centres to the immediate rural hinterlands have remained very minimal in comparison to the linkages that connect these centres with numerous distant places.

This case demonstrates among other things the futility of developing countries' engagement in theories and strategies supplemented from the western world where economic and social systems run very different paradigms. The lesson is that a thorough interrogation of theories and models against relevance and appropriateness is an important requirement by planners in developing countries, prior to adopting ideologies, models and theories from foreign countries.

### *Decentralization Concept in Rural Development*

Development of small and medium-sized towns has been seen by a number of Third World countries as a way of mitigating the rapid urban growth of large cities. It has been argued that the size of towns has the potential to contribute towards a balanced and dispersed urbanization. One of the key drivers of this process is decentralization, which is perceived to facilitate the development of centres (including small towns) within the lower echelons of the urban hierarchy; leading to uniform distribution of the urban population, and avoiding concentrations in a few large cities with their attendant development challenges (Obudho & Aduwo, 1990; Owusu, 2004, 2005a).

Proponents of decentralization argue that it facilitates both urban and rural development. In view of this, it is expected that transfer of authority and resources from the central government under decentralization

enhances the growth of small towns. Small town development programmes in this sense aim at the development of these centres while also strengthening rural–urban linkages. All these enhance both rural and urban livelihoods leading, among other benefits, to poverty reduction.

In his studies of the link between decentralization and the growth of small towns in Ghana, Owusu (2005a, 2008) shows that contrary to expectation, there is an increasing degree of centralization and concentration of the urban spatial hierarchy. This pattern is attributed among other factors to:

- Unfavourable decentralized policies;
- Policies that favour spatial concentration;
- Irresistible processes of global forces (market liberalization and globalization). These are contributing to new concentration of activities in metropolitan;
- Inherent weaknesses of small towns in Ghana, the majority of which are associated with functional structures that are dominated by commerce and services activities, and not adequately adapted to the needs of their rural agricultural hinterland population.

Moreover, these small towns are not well linked to their rural hinterlands because of poor road infrastructure, poor market infrastructure and the fragmented, unregulated and inefficient nature of the trade relations result in small towns 'by-passed' by more efficient traders operating from high-order centres. These structural weaknesses are characteristic of several Third World countries as the work of Wakwete (1988) in Tanzania; Mushi (2003) in Tanzania; and Bendavid-Val and Karaska (1987) in Kenya show.

The theories and conceptual models discussed in this section have been operationalized and used as strategies for rural and regional development in Africa. A summary of the strategies, their viability, challenges and policy options is presented in Table 6.4.

### *Role and Impact of Market and Small Urban Centres on Rural Development*

The impact of markets and small towns on rural development in SSA has been perceived in the light of the theories and related strategies which have been used by various researchers on the subject. The pattern and trend observed in Table 6.5 underscore the observation that different

**Table 6.4** A summary of strategies used to foster rural development through markets and small towns in Africa

| *Strategy* | *Viability to planning rural development in Africa* | *Challenges* | *Policy options* |
|---|---|---|---|
| Rural–urban relations | Inter-industry production linkages between the rural sector (agriculture) and urban (industry) exist but are weak, resulting in constrained viability of rural–urban relations (Gete et al, 2007; Mushi, 2003)<br>Small towns poorly connected to their rural hinterlands (Nacchia, 2011). Trade relations between market centres (Dunkwa in Ghana) and its rural hinterland are fragmented and regulated. Market is therefore by-passed by more efficient towns (Kumasi, Obuasi, Takoradi)<br>Owusu (2005a) | Subsistence nature of agriculture, the private sector not effectively engaged in input distribution, disinterest of formal banks to finance rural people. Other factors include limited local institutional development, inadequate provision of social, physical and economic infrastructure<br>Poor road conditions, lack of local capacity in planning | Improve road infrastructure for successful RUL, promotion of value addition in agricultural and micro small scale enterprises in order to strengthen the rural–urban linkages, address the poor/inadequate infrastructure<br>Raise the competencies of local administrators and planners<br>Promote effective working of markets/small towns and their hinterlands through improvement of infrastructure |

(*continued*)

**Table 6.4** (continued)

| *Strategy* | *Viability to planning rural development in Africa* | *Challenges* | *Policy options* |
|---|---|---|---|
| Urban-led rural development | Provision of markets and services by urban centres not enough to bring about expansion of nonfarm employment and increased demand for agricultural goods and services (2003)<br>Urban centres operate in diverse and complex social, historical and economic systems (Baker & Pedersen, 1992; Obudho & Aduwo, 1990). Promotion of urban centres necessary but not a sufficient condition to generate and sustain economic growth in rural areas<br>Urbanization and industrialization foster positive externalities, nourish innovation, provide a hub for trade, and thus attract population<br>Urban areas have comparative advantage over rural areas in facilitating rural development (Muzzini & Linderboom, 2008) | The social, economic, geographical, and cultural context may be the limiting factors<br>Inadequate access to basic infrastructure—limiting expansion of non-farm activities | Rural development planning matrix should include social, economic, geographical, and cultural elements<br>Planners should exercise flexibility in designing interventions that target rural areas for growth and development<br>For rural development efforts to succeed, planners should exploit the prevailing (and potential) synergies between rural and urban areas within specific regions<br>Infrastructure and market access should be carefully considered in planning for markets and small towns |
| Growth pole and growth centre | Strategies are not appropriate for resolving urban imbalance and facilitating rural and regional development in Tanzania and in any developing country (Darkoh, 1994)<br>Expected spin-off effects of growth centres on rural hinterlands have been minimal (Egunjobi, 1990) | Underlying assumptions not applicable in Third World countries<br>Distance separating substantial proportions of the hinterland from state capitals | Caution should be exercised by planners in the Third World in adopting western-based models in planning development in Africa<br>Lower level centres should be facilitated and supported to empower local communities to participate in rural development |

**Table 6.5** Summary of views on the role of small towns on rural development

| *View* | *Brief description* |
|---|---|
| Optimistic view | A commonly held view by protagonists in this optimistic group is that urban-led development in the rural context is conceptually and empirically attractive and should therefore be pursued (Baker & Claeson, 1990). Given this logic, the growth of small urban centres is considered a necessary condition and prerequisite for rural transformation. Researchers in this group therefore perceive small towns as catalysts for rural improvement. Analysis of relations between the urban and rural areas, however, goes further than the conceptualisation of a one-way process of rural development. In the formulation of the present research programme, the concept of integrated and mutual development of urban and rural societies is therefore considered to be of vital concern. Perceived from this viewpoint, the role of small urban centres may have a very positive influence on rural development and agricultural productivity through the provision of a great range of goods (agricultural inputs, consumer items, and so on), urban cash flows, and services (agricultural extension, welfare services, including health and education facilities, and the diffusion of innovation and ideas). A leading voice in this persuasion are Rondinelli (1986, 1988), Gaile (1992), Kamete (1998), Durham (1991), Satterwaite and Tacoli (2003). |
| Intermediate view | This group of researchers/authors subscribe to an intermediate position and feel that the urban-led development in the rural context approach is valid, logical and of value but that more studies need to be undertaken and more experience accumulated before definite conclusions can be made. Hardoy, Mitlin and Satterthwaite (2001) provide the leading voices in this thinking. Others are Bah et al. (2003), Baker and Claesen (1990), Pedersen (1992), Gantsho (2008), Muzzini and Lindeboom (2008), Mason (2008), Mulongo et al. (2012), Wegulo and Obulinji (2001), and Uchendu (2013). |
| Pessimistic view | Those who do not see much value in the urban-led development in the rural context approach argue that while this approach is sound conceptually and useful as a theoretical construct, empirically the results do not provide adequate grounds for much optimism. The main proponents of this view include Southall (1988), Darkoh (1994), Dorosh and Thurlow (2012), Egunjobi (1990), Nicchia (2011), Mushi (2003), Otiso and Owusu (2008), Southhall (1979), Tegegne (2001), Otiso (2005), Owusu (2005b). |

researchers/authors have attached varying importance to various concepts and theories proposed as guides to understanding of the spatial aspects of rural/regional development in various parts of sub-Saharan Africa. The key points to be observed on the emerging pattern include: first, that many authors consider the development of both rural and urban areas to be intimately connected; and second, that given the wisdom implied in the above statement, previous compartmentalization between the rural and urban sectors in planning and implementing development was/is inappropriate, and harmful to the prospects and development potential of both rural and urban areas.

Two case studies are presented in the section that follows to illustrate the empirical analysis on the role of market centres in rural development.

**Case Study 6.2 Market Centres in Rural Development in Isuikwuato, Abia State, Nigeria**

Markets very much like small towns may in several ways influence development within their surrounding areas. Many studies have been carried out to examine relations of this nature. The study under review by Uchendu (2013) seeks to demonstrate the existence of networks between the rural and urban economies in Isuikwuato (Abia State—Nigeria). The study shows that networks encourage concentration of activities and functions around the urban nodes, while for the rural centres the networks go further beyond their surrounding villages. It is observed that this linkage appears mutual between the urban and rural centres since these settlements exchange urban functions. However, Akpaka, which is a relatively larger town within the study area, supplies urban functions to Hopeville and Ukwunwangwu (which are urban nodes, but with much less urban amenities compared to Akpaka). The market centres at Hopeville and Ukwunwangwu share mutual relationships, but supply to surrounding villages in the northern part of the territory. Mbalano, another town in the study area, supplies urban functions to surrounding areas in the south. However, besides the political role, it (Mbalano) serves no significant urban function to settlements in the northern part of the territory.

From this study, a number of observations can be made: First, the study shows that there is nesting of relations between and among

markets in the rural setting (study area), thus suggesting the somewhat complex and dynamics that need to be considered in planning for rural development; Second, the study underscores the importance of markets' capacity to facilitate the development of rural areas. It is noted for example that although Hopeville, Ukwunwangwu and Mbalano are urban nodes, they have far less urban amenities in comparison to Akpaka; Third, we observe the importance of an urban spatial planning policy which among other things specifies the hierarchical structure of markets, towns and urban centres with designated economic, social and political functions in the spirit of Walter Chrystal's Place Theory (CPT) (1933). It is noted that CPT attempts to explain the logic and rationale of spatial arrangement and distribution of human settlements and their numbers based on population and distance from another human settlement.

It can be observed from the above case illustration that it is not enough that market centres and/or small towns exist in a spatial unit. What is more important is the capacity of each market centre or small town to facilitate development of the hinterlands within which they are located. Uchendu's work focuses on explaining the infrastructural amenities in the chosen study area, and how these affect the functionality of Hopeville, Ukwunwangwu, Mbalano and Akpaka. It is clear that the first three market centres are structurally weak and therefore not capable of fostering the development of the rural areas in their hinterlands. These are important lessons as we continue to examine potential for the development of rural areas in Africa.

**Case Study 6.3 Rural–Urban Relations in the Kutus Area of Kenya**

Studies on the rural–urban linkages and their impacts on rural development have focused on a variety of geographical scales—global, continental, national, and local levels (Table 6.2). This case study examines rural–urban relations at the local level, the case of Kutus town and its hinterland, in Kirinyaga County, Kenya. This town and area has attracted a number of studies (Karaska, 1988; Mason, 2008), which have sought to highlight Kutus' exchange system with

a focus on the following key components: income multiplication in production and consumption in Kutus town and its hinterland; the spatial distribution of gross revenue from the production and marketing of the main commodities between the Kutus area and areas external to it, and between Kutus town and farm households; distribution of consumption expenditure between farm and town households. With regard to the marketing exchange, it has been shown that Kutus town and its rural hinterland retain four-fifths of the value of final coffee, maize, and tomato production (Karaska, 1988). This revenue generates income for farm households, which spend over 40 per cent of the income on consumption items purchased in Kutus town. Further, a significant portion of spending in Kutus accrues in turn to area farm households that market produce or those that have members working in Kutus town. It is clear from this observation that farm households drive the local economy resulting in income multiplier effects for both farm and town residents.

In a sample survey of the same town of Kutus, Evans (1992) found that on average 59 per cent of the total spending by farm families accrued to Kutus town and its surrounding region. However, this spending was largely for food, services and purchase of goods produced elsewhere. The remaining leaked out of the region, mainly to Nairobi and the rest of the world.

From this study, we observe that whereas there are intimate relations existing between farm and town activities, it is not obvious that urban centres necessarily positively impact rural areas. Also, urban areas themselves may fail to benefit in a meaningful way from the resource flows emanating from the rural areas. This suggests that the nature of relations between rural and urban areas should be carefully examined to provide clear policy guidelines for purposes of situating markets and small towns in the rural development matrix (Evans, 1992). In his work in the same area, Mason (1989) makes similar observations concerning the exchange of resources between Kutus and its hinterland.

Overall, it is noted from the different views and case illustrations examined in this chapter, that markets and small towns are the hub through which resources between the two sectors flow. It is clear, however, that a number of constraints hinder the mutual flow of

such resources. These constraints in different ways affect both the urban and the rural sector. Key among the urban-related constraints include poor basic infrastructure, and lack of institutional and human capital. For rural areas, the constraints include poor connectivity between the rural sector and urban centres, scarce financial and human capital, biased planning priorities, to name a few. The sum total of these is that the two sectors are disconnected, with a dysfunctional socioeconomic environment in majority of markets and small towns. These have discouraged and undermined rural development.

## Conclusion

This chapter has examined research with a focus on the role of market and small urban centres in rural development in Africa. The chapter has unravelled not only a plethora of research on the theme of market and small urban centres and their role in enhancing rural development of their hinterlands, but also the fact that the studies have been anchored in a diversity of theories and models. Two of the theoretical frameworks relied upon by the majority of the researchers/reviewers are those that seek to link the development of rural and urban areas (the rural–urban linkages), and the growth pole/growth centre strategies. The study has also revealed interesting aspects concerning the geographical focus of the sample studies as well as the research designs applied in each study. It is clear that the majority of studies have been focused at the national level, and followed in that order by those at local level, continental (African) level, and on other developing countries/global level. This demonstrates that the sample studies reviewed in this exercise have captured a wide coverage geographically.

It is also evident that a significant number of the studies relied upon primary sources; especially empirical surveys, followed by reviews, secondary and mixed data sources. This is another indication that the studies under review sourced their data from a wide base. With regard to analysis, majority of studies relied on qualitative, a combination of quantitative and qualitative mixed designs, and quantitative designs.

Finally, back to the study question: To what extent do markets and small towns facilitate rural development in Africa? The emerging evidence

is not unanimous and outright. However, the evidence points to the suggestion that the extent to which markets and small towns impact the development of rural areas within their hinterlands depends on the unique socio-economic, cultural and political environments within which they are located. Besides, the amenities present in each market centre or small town do exercise tremendous influence on what a town/market centre can do to influence development in their hinterland. Broadly, therefore, the evidence for effective functioning of market centres and small towns to bring about rural development is scarce.

The review has also variously identified in the literature, several weaknesses which may explain the tenuous relations between markets and small towns on the one hand, and the development of rural areas on the other. These are summarized as poor infrastructure, especially roads, inadequately equipped manpower, ill-equipped institutions, and poor access to finance. In addition, emerging from the analysis is the view that in examining their capacity for facilitating rural development, each and every market centre and small town must be evaluated from a specific context. The tendency to make generalizations about markets and small towns with respect to their ability to foster rural development is futile given the unique characteristics associated with these human settlements.

Whereas this scenario presents formidable challenges to planning development in rural Africa, there are nevertheless ways of addressing the shortcomings. More focused studies of markets and small towns, a better understanding of the rural hinterlands with regard to their socio-economic, cultural and political characteristics are examples of what can be done.

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CHAPTER 7

# Energy

*Paschalin Mbenge Basil and Robert Ouko*

## Introduction

Access to and utilization of different forms of energy is important for rural development in Africa. While achieving universal access to electricity is one of the most important goals set for the energy sector by governments in the developing world, approximately 1.4 billion people around the world lack access to electricity, of which 85 per cent are rural dwellers, mostly living in sub-Saharan Africa (Longe, Ouahada, Ferreira, & Chinnappen, 2014). Other forms of energy are also used in rural Africa. This chapter presents results of a review of research on energy in rural Africa.

## Methods

The literature was located by performing keyword searches using the Google Scholar Advanced Search function and electronic journals. The keywords and phrases used in the literature search included rural energy, rural electrification, energy access, energy policy, energy supply, rural household, rural poor, renewable energy technologies, renewable energy

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**Table 7.1** Year of publication

| *Year of publication* | *Frequency* |
|---|---|
| 1998 | 1 |
| 2001 | 1 |
| 2002 | 6 |
| 2006 | 1 |
| 2010 | 2 |
| 2011 | 5 |
| 2012 | 2 |
| 2014 | 3 |
| 2015 | 2 |
| Total | 23 |

resources, Africa, sub-Saharan Africa, and developing countries. The search strategy included published papers in peer-reviewed journals and conducted within the journals area. In addition, academic presentations at international conferences were also incorporated in the search.

Results were limited to those articles published between 1998 and 2015. Once downloaded, the abstracts of articles were read; those deemed relevant (to use for inclusion in the study) were classified according to their theme of interest (rural energy in Africa, rural electrification, renewable energy, among other themes). Papers which could not be excluded on the basis of the title and abstract were obtained in full and reviewed for suitability for inclusion. The search found a large pool of evidence which resulted in over 100 hits, which were then scanned for relevance and narrowed down to 40 'probably relevant' reports. The articles were further screened to 23 publications (see Table 7.1) which were found to elicit a high degree of relevance. The studies are presented below.

## Results and Discussion

Results are presented and discussed according to the year of publication, geographical unit, study type, theory and conceptual model used, and findings.

### *Study Designs*

Table 7.1 shows that all the studies were published after 1998, with the latest studies being published in 2015. One study was done in 1998, and the rest appear as from 2000 onwards. Only one study was done in 2001, with the

majority of studies having been published in 2002, which gave a total of six studies. In 2006, only one study was published. The year 2010 had two studies. The year 2011 had the second-highest number of articles captured in the study (five studies). The year 2012 had two studies, 2014 had three studies, and 2015 had two studies. In terms of geographical coverage, as shown in Table 7.2, the studies were widely spread across a number of countries in Africa. However, South Africa led with four studies (Davis, 1998; Longe et al., 2014; Madubansi & Shackleton, 2006; Mudziwepasi & Scott, 2014). Nigeria had two studies (Adewuyi, 2012; Shaaban & Petinrin, 2014); Kenya had two (Harries, 2002; Mariita, 2002); Ethiopia had three (Howell, 2011; Teferra, 2002; Wolde-Ghiorgis, 2002); Eritrea had one (Habtetsiona & Tsighe, 2002); subequatorial Africa—Cameroon had one (Bogno, Salia, & Aillerie, 2015); Kenya, Uganda, and Tanzania had one (Murphy, 2001); and sub-Saharan Africa had three (Karekezi & Kithyoma, 2002; Okou, Sebitosi, & Pillay, 2011; Szabo, Bodis, Huld, & Moner-Girona, 2011).

**Table 7.2** Geographical units

| *Geographical unit* | *Author and year* | *Frequency* |
|---|---|---|
| South Africa | Longe et al. (2014), Mudziwepasi and Scott (2014), Madubansi and Shackleton (2006), Davis (1998) | 4 |
| Ethiopia | Wolde-Ghiorgis (2002), Teferra (2002), Howell (2011) | 3 |
| Nigeria | Adewuyi (2012), Shaaban and Petinrin (2014) | 2 |
| Kenya | Mariita (2002), Harries (2002) | 2 |
| Eritrea | Habtetsiona and Tsighe (2002) | 1 |
| East Africa: Kenya, Uganda, and Tanzania | Murphy (2001) | 1 |
| Subequatorial Africa—Cameroon | Bogno et al. (2015) | 1 |
| Sub-Saharan Africa | Karekezi and Kithyoma (2002), Okou et al. (2011), Szabo et al. (2011) | 3 |
| Africa (Ghana, Senegal, Malawi, Kenya, Togo, Nigeria, Rwanda, Tanzania, Uganda, and Mali) | Adkins et al. (2012) | 1 |
| West Africa: Mali and Burkina Faso | Nygaard (2010) | 1 |
| Burkina Faso | Azoumah et al. (2011) | 1 |
| Ethiopia, Ghana, and Kenya | Deichmann et al. (2011) | 1 |
| Ethiopia, Ghana, and Kenya | Deichmann et al. (2010) | 1 |
| Not indicated | Papageorgasa et al. (2015) | 1 |
| Total | | 23 |

Adkins, Oppelstrup, and Modi (2012) focused on a number of countries in Africa (Ghana, Senegal, Malawi, Kenya, Togo, Nigeria, Rwanda, Tanzania, Uganda, and Mali). Nygaard (2010) covered Mali and Burkina Faso in West Africa. Azoumah, Yamegueu, Ginies, Coulibaly, and Girard (2011) looked at Burkina Faso, while Deichmann, Meisner, Murray, and Wheeler (2011) covered three countries: Ethiopia, Ghana, and Kenya. Additionally, Deichmann, Meisner, Murray, and Wheeler (2010) also covered Ethiopia, Ghana, and Kenya. However, one study by Papageorgasa et al. (2015) did not indicate its area of study.

It can be seen from Table 7.3 that the main study types adopted were meta-analysis (nine studies), comparative study (seven studies), longitudinal study (two studies), and case study (two studies), while three studies were conference reports/papers. In terms of data collection methods, surveys were widely employed in 15 studies, while the rest of the studies adopted experiments/field testing.

**Table 7.3** Study types and data collection methods

| *Author (year)* | *Study type* | *Data collection method* |
|---|---|---|
| Davis (1998) | Comparative | Survey |
| Wolde-Ghiorgis (2002) | Meta-analysis | Survey |
| Teferra (2002) | Meta-analysis | Survey |
| Nygaard (2010) | Comparative study | Survey |
| Harries (2002) | Case study | Field testing |
| Deichmann et al. (2011) | Longitudinal study | Survey |
| Habtetsiona and Tsighe (2002) | Meta-analysis | Survey |
| Azoumah et al. (2011) | Comparative | Survey |
| Mariita (2002) | Meta-analysis | Survey |
| Madubansi and Shackleton (2006) | Longitudinal study | Survey |
| Adkins et al. (2012) | Comparative study | Baseline energy survey |
| Szabo et al. (2011) | Report | Evidence-based report |
| Karekezi and Kithyoma (2002) | Meta-analysis | Survey |
| Okou et al. (2011) | Meta-analysis | Survey |
| Murphy (2001) | Meta-analysis | Survey |
| Papageorgasa et al. (2015) | Comparative study | Experiments |
| Mudziwepasi and Scott (2014) | Conference paper | Experiments |
| Longe et al. (2014) | Comparative study | Conference report |
| Adewuyi (2012) | Conference report | Experiments |
| Shaaban and Petinrin (2014) | Meta-analysis | Survey |
| Bogno et al. (2015) | Comparative study | Field experiments |
| Deichmann et al. (2010) | Case study | Survey |
| Howell (2011) | Meta-analysis | Case study |

### *Theories and Conceptual Models*

Table 7.4 shows a summary of the theories and conceptual models used in the studies. It can be seen that the authors have employed different theoretical/conceptual frameworks. However, a few theories appear to dominate the studies. Energy transition theory/energy ladder model was the most dominant model, with four articles adopting the model (Adkins et al., 2012; Davis, 1998; Deichmann et al., 2011; Madubansi & Shackleton, 2006). Institutional framework was used in Wolde-Ghiorgis (2002), Teferra (2002), and Habtetsiona and Tsighe (2002). The rest of the articles have adopted a variety of concepts or models, ranging from the multifunctional platform, historical analysis, energy ladder hypothesis/

**Table 7.4** Theories and conceptual models

| *Author (year)* | *Theory and conceptual model* |
|---|---|
| Davis (1998) | Energy transition theory |
| Wolde-Ghiorgis (2002) | Institutional framework |
| Teferra (2002) | Institutional framework |
| Nygaard (2010) | Multifunctional platform |
| Harries (2002) | Historical reviews |
| Deichmann et al. (2011) | Energy ladder hypothesis |
| Habtetsiona and Tsighe (2002) | Institutional framework |
| Azoumah et al. (2011) | The flexy energy concept |
| Mariita (2002) | Environmental/Socio-economic model |
| Madubansi and Shackleton (2006) | Energy ladder model |
| Adkins et al. (2012) | Energy transition model |
| Szabo et al. (2011) | Spatial electricity cost model |
| Karekezi and Kithyoma (2002) | Photovoltaic-led approach |
| Okou et al. (2011) | Life cycle cost analytical model |
| Murphy (2001) | Leapfrogging |
| Papageorgasa et al. (2015) | Open-source hardware approach |
| Mudziwepasi and Scott (2014) | An empirical model for grid extension |
| Longe et al. (2014) | Hybrid optimization model for electric renewable (HOMER) software |
| Adewuyi (2012) | Not indicated |
| Shaaban and Petinrin (2014) | The integrated rural village energy supply (IRVES) concept |
| Bogno et al. (2015) | Down approach dimensioning method |
| Deichmann et al. (2010) | Spatial modelling and cost estimates |
| Howell (2011) | Spatial analysis of institutions |

model, flexy energy concept, spatial electricity cost model, life cycle cost analytical model, leapfrogging, open-source hardware approach, down approach dimensioning method, and hybrid optimization model for electric renewable (HOMER) software to spatial modelling and cost estimates. It can therefore be concluded that there were diverse theoretical frameworks and concepts that investigated rural energy in Africa. A brief description of the energy ladder hypothesis is presented next.

### *Energy Ladder Hypothesis/Energy Transition Theory*

The energy transition theory proposes that there is a ladder of fuel preferences from low-quality traditional forms of energy to high-quality modern forms of energy (Leach, 1987). Other authors, such as Foley (1995), argued that the energy transition theory is a ladder of energy demand, rather than of fuel preferences, that determines fuel choice. Using spatial modelling and cost estimates, Deichmann et al. (2010) found that the lowest-cost option will be the preferred choice for a minority of households in Africa, even when likely cost reductions for a long time are considered.

Madubansi and Shackleton (2006) used the leapfrogging concept, which denotes a transition from traditional forms of energy (e.g., fuel wood and charcoal) to modern sources (e.g., electricity) without passing through the conventional path of energy development. The authors argue that the concept of leapfrogging contrasts the energy ladder hypothesis, as advanced by Leach (1987), as a shift from low-quality fuels, such as biomass, to more convenient, versatile, and cleaner modern fuels, such as paraffin, gas, and electricity. Murphy (2001) argues that by adopting highly efficient and renewable technologies, the region can rapidly bypass the conventional path of energy development and skip directly into the use of more efficient and environmentally friendly technologies.

The adoption of the energy transition theory/energy ladder model to study rural energy in the many developing economies in Africa has been due to the fact that provision of energy in the rural areas undergoes a process as people move from the traditional forms of fuel consumption to the modern forms. Azoumah et al. (2011) used the flexy energy concept of hybrid solar photovoltaic (PV)/diesel/biofuel power plants without battery storage and argue that it not only makes access to energy possible for

rural and peri-urban populations in Africa (by reducing the electricity generation cost) but also makes electricity production sustainable in these areas. Nonetheless, it is important that the discussion of rural energy in Africa adopts a variety of theoretical concepts.

### *Empirical Findings*

Out of the 23 studies reviewed, 15 studies focused on renewable energy sources/strategies (Adewuyi, Oderinde, Rao, Prasad, & Anjaneyulu, 2012; Azoumah et al., 2011; Bogno et al., 2011; Deichmann et al., 2010, 2011; Howell, 2011; Karekezi & Kithyoma, 2002; Longe et al., 2014; Madubansi & Shackleton, 2006; Mariita, 2002; Mudziwepasi & Scott, 2014; Okou et al., 2011; Papageorgasa et al., 2015; Shaaban & Petinrin, 2014; Szabo et al., 2011). Five studies focused on institutions and energy policy (Habtetsiona & Tsighe, 2002; Murphy, 2001; Nygaard, 2010; Teferra, 2002; Wolde-Ghiorgis, 2002). Two studies covered rural household consumption (Adkins et al., 2012; Davis, 1998), and one study focused on the usage of wind pumps for rural water needs (Harries, 2002). Table 7.5 illustrates the focus and findings of the studies. Two broad themes (renewable energy and energy policy) emerged from the studies reviewed.

### *Renewable Energy Sources and Strategies*

The majority of the studies that focused on household consumption found that there is heavy reliance on biomass as cooking fuel, the dominant use of kerosene for household lighting, and the very low rate of household connections to the electricity grid in many rural parts of sub-Saharan Africa. Results from other studies indicate a changing pattern of energy use for lighting and powering entertainment appliances, more specifically from dry-cell batteries and paraffin to electricity (Madubansi & Shackleton, 2006). Thus, it would be desirable to move towards more modern, more efficient, and cleaner sources of energy (Adkins et al., 2012). The studies suggest that the economics of decentralized renewable power may be compelling for large regions of rural Africa and that energy planners in sub-Saharan Africa should pay careful attention to opportunities for the expansion of renewable power in the region.

**Table 7.5** Empirical findings

| *Author* | *Study focus* | *Findings* |
|---|---|---|
| Davis (1998) | Access to electricity, how it has displaced other fuels, and its end uses | Energy transition in rural households is mainly driven by income<br>Access to electricity can accelerate the transition process |
| Wolde-Ghiorgis (2002) | Renewable energy for rural development | Energy policy does not address energy requirements for subsistence and development, especially energy requirements in rural areas for modern productive activities |
| Teferra (2002) | Power sector reforms and attraction of private investment in rural electrification | Private investment in rural electrification can be enhanced with some improvement in legal and regulatory provisions |
| Nygaard (2010) | The concept of the multifunctional platform for rural energy access | The main argument in the paper is that while preconceived concepts that are innovative and address various donor concerns may be successful in mobilizing funding, they are difficult to implement on the ground, where they conflict with a complex reality |
| Harries (2002) | Challenges on dissemination of wind pumps in Africa and the benefits of wind pumps to rural and remote areas | Scepticism from people, corruption, failure to realize the benefits of local manufacture of wind pumps, few policy-makers would want to take the 'risk' of suggesting the installation of a wind pump that 'might' fail, a number of amateur initiatives and well-publicized failures<br>This has damaged the reputation of the whole technology |
| Deichmann et al. (2011) | Cost-effectiveness of stand-alone renewable energy generation compared with centralized grid supply | Decentralized renewable power expansion in sub-Saharan countries cannot be a universal solution to universal access, but will likely be an important component of any significant expansion in electricity access |
| Habtetsiona and Tsighe (2002) | Institutional and policy options for improving rural energy services | Eritrea has general energy policies pertaining to the development of electricity, oil, and renewable energy subsectors. The absence of a sharply focused, pro-rural energy policy and/or policy instruments has been observed. The key problem is, however, the weakness in the implementation of rural energy projects and programmes |

(*continued*)

**Table 7.5** (continued)

| *Author* | *Study focus* | *Findings* |
|---|---|---|
| Azoumah et al. (2011) | The flexy energy concept of hybrid solar PV/diesel/biofuel power plants | The flexy energy concept will allow to propose a cost of electricity less subject to fluctuations of world prices of raw materials (hydrocarbon) |
| Mariita (2002) | Local environmental and socio-economic impacts of geothermal power plants on poor rural community | The socio-economic impact of geothermal energy development is likely to be the main source of conflict |
| Madubansi and Shackleton (2006) | Patterns of household energy use in five rural settlements | Households in the sample settlements have witnessed pronounced changes in their patterns of energy use in the past 11 years. The introduction of electricity has played a role in spurring the shift<br>However, the number and diversity of energies used by the rural households have not declined following the introduction of electricity |
| Adkins et al. (2012) | Household energy use in ten rural agro-ecological locations in sub-Saharan Africa | Households' reliance on biomass and other traditional fuels across all project sites. The two most commonly used fuels for cooking were fuel wood and farm residue, representing 74 per cent and 12 per cent of all cooking fuels, respectively. Fuel wood was used primarily for cooking, and mostly acquired through collection by women on foot. Eighty-six per cent of household cooks reported using kerosene, and 80 per cent of this use was for lighting |
| Szabo et al. (2011) | Whether diesel generators, PV systems, or extension of the grid is the least-cost option in off-grid areas | There exists a good potential for PV and diesel decentralized rural electrification options |
| Karekezi and Kithyoma (2002) | Renewable energy strategies for rural Africa | Rural energy policies that emphasize a broader range of renewables and target income-generating activities are likely to yield greater benefits to the rural poor than the current policies that rely on the solar PV option |

(*continued*)

**Table 7.5** (continued)

| *Author* | *Study focus* | *Findings* |
|---|---|---|
| Okou et al. (2011) | Flywheel rotor manufacture for rural energy storage in sub-Saharan Africa | Small-scale flywheel energy storage has the potential to improve rural electrification problems in sub-Saharan Africa |
| Murphy (2001) | Potential for energy leapfrogging in rural households in East Africa: conventional grid expansion, renewable energy technologies supplying electricity, and improved coo stoves | Energy transitions in rural areas are incremental processes, not leaps dependent upon household and regional accumulations of technological capabilities. These capabilities have technical, organizational, and institutional components, and are manifest in individuals' capacity to adapt to new technologies, their ability to take economic risks, and their desire to modify their behaviour |
| Papageorgasa et al. (2015) | A low-cost and fast PV I-V curve tracer based on an open-source platform with machine-to-machine communication capabilities for preventive monitoring | There exists the potential for realization of a low-cost I-V curve tracer especially designed for solar panels |
| Adewuyi (2012) | *Blighia unijugata* and *Luffa cylindrica* seed oils: renewable sources of energy for sustainable development in rural Africa | Oil of *B. unijugata* and *L. cylindrica* with high free fatty acid content can be reduced in a one-step pre-treatment (esterification) using $H_2SO_4$ as catalyst. This one-step pre-treatment reduces the problem of soap formation normally encountered when using oil with high free fatty acid content for the production of biodiesel |
| Longe et al. (2014) | Renewable Energy Sources Microgrid Design for rural areas in South Africa | Renewable Energy Technology (RET) microgrid is a local solution to electricity access in rural unelectrified areas of South Africa and most developing countries of the world |
| Bogno et al. (2015) | Possible technical and economical optimization of electricity production using autonomous hybrid power generators from renewable sources by integrating an electrochemical storage system | A hybrid generator can fully support 59 per cent of total demand and costs nearly half as much as a stand-alone PV generator, and even much cheaper than a stand-alone wind generator |

(*continued*)

**Table 7.5** (continued)

| *Author* | *Study focus* | *Findings* |
|---|---|---|
| Mudziwepasi and Scott (2014) | Alternative to grid extension for rural electrification | Use of either wind generators or solar PVs is economically feasible in rural villages and remote areas of South Africa |
| Shaaban and Petinrin (2014) | A review of renewable energy potential in Nigeria to be tapped for useful and uninterrupted electric energy supply | Dissemination of decentralized renewable energy resources will not only improve the well-being of rural Nigerian communities, but also enhance Nigeria's energy and economic prospects for potential global investment |
| Deichmann et al. (2010) | How essential economic development might be reconciled with the need to keep carbon emissions in check | Decentralized renewable energy will most likely play an important role in expanding rural energy access. But it will be the lowest-cost option for a minority of households in Africa, even when likely cost reductions over the next 20 years are considered |
| Howell (2011) | What renewable energy resources and technologies are available in Ethiopia that can lessen the negative environmental impacts of current energy use, specifically in rural areas | There is a disparity between rural and urban energy use in Ethiopia, as rural areas are largely left out of the central electrical grid |

Another study by Okou et al. (2011) found that flywheel was more cost-effective in the long run than the traditional lead battery; thus, small-scale flywheel energy storage has the potential to improve rural electrification problems in sub-Saharan Africa. A flywheel system consists of a flywheel rotor, an electrical machine, power electronics, bearings, and a containment system. The flywheel rotor is crucial in high-speed flywheel systems (for long-time energy storage), as these systems require special considerations on profile design and manufacture due to the high stresses exerted. The author also found that the use of electromechanical flywheel battery storage would mitigate the environmental problems associated with lead acid battery disposal.

Bogno et al. (2015) proposed a top-down method for the optimization of electricity production by an autonomous hybrid power generator from renewable sources, which abound in subequatorial Africa, mainly solar and

wind. This method involves adjusting the electrochemical storage system size to the most essential needs in energy requirement and then hybridizing an autonomous generator, allowing improvement in the reliability and reduction in the global cost of the system.

Analysis of studies that examined the renewable energy potential found that stand-alone renewable energy technology will be the lowest-cost option for a significant minority of households in African countries (Deichmann et al., 2011). The same authors also concluded that decentralized renewable power expansion in sub-Saharan countries cannot be a universal solution to universal access, but that it will most likely be an important component of any significant expansion in electricity access. Longe et al. (2014) argued that for an unelectrified locality in Africa, a stand-alone microgrid is an optimum solution to bring electricity access to rural areas.

Mudziwepasi and Scott (2014) found that the use of either wind generators or solar PVs is economically feasible in rural villages and remote areas of sub-Saharan Africa. These technologies are clean and can be constructed even in the remotest corners of the region within a short period of time. However, there should be policies for the development of this sector due to the high initial investment cost of these technologies. Murphy (2001) further proposes that in designing technology dissemination or energy supply projects, planners must thoroughly account for the capabilities existing in rural areas.

### *Energy Policy*

Studies that focused on institutional reforms argued that a comprehensive and coherent energy policy is essential in guiding a country towards the efficient utilization of its energy resources, and that even though the existence of an energy policy is crucial, it does not guarantee the prudent responsibility management of a country's energy resources (Shaaban & Petinrin, 2014). Karekezi and Kithyoma (2002) argue that rural energy policies that emphasize a broader range of renewables and target income-generating activities are likely to yield greater benefits to the rural poor than the current policies that rely on the solar PV option. There is need for commitment from concerned authorities to the use of renewables for spurring rural development (Wolde-Ghiorgis, 2002).

Teferra (2002) also argued that private investment in rural electrification can be enhanced with some improvement in legal and regulatory

provisions. This could be done through increasing the budget allocation to rural energy, the modification of existing institutional frameworks for rural energy delivery, and the design and implementation of appropriate rural energy initiatives suitable for productive activities and sustainable development (see Case Study 7.1).

**Case Study 7.1 Effects of Rural Electrification on Employment in South Africa**

Rural electrification is a common policy objective in several African countries. This case study is based on research published by Dinkelman (2010). The study assessed the impact of electrification on employment growth by analysing South Africa's mass roll-out of electricity to rural households in rural KwaZulu-Natal. The study used several new data sources and two different identification strategies (an instrumental variables strategy and a fixed effects approach). The findings of the study were that electrification significantly raises female employment within five years. Electrification was also found to increase hours of work for men and women, while reducing female wages and increasing male earnings. Several pieces of evidence suggest that household electrification raises employment by releasing women from home production and enabling microenterprises. Electrification was also found to affect migration behaviour of communities.

To evaluate the impact of the programme on employment, data were collected from ten districts in rural KwaZulu-Natal. The key sources of data were the South African census data (1996 and 2001), spatial data collected on the location of electrification infrastructure in KwaZulu at baseline (1996), administrative data on project placement across the province between 1990 and 2007, and individual-level data on employment, hours of work, wages, earnings, demographics, and households' fuel sources from four cross-sectional household surveys. Analysis revealed that household electrification increased employment in rural communities. Specifically, the study found that electrification significantly raised female employment within five years. Further, the study also revealed that rural electrification appeared to increase hours of work for both men and women,

while reducing female wages and increasing male earnings. It is insightful when the study shows that household electrification raised employment by releasing women from home production and enabling microenterprises. This project and assessment provides important lessons for many African countries, as well as for researchers, given the continued policy goals for rural electrification in these countries.

Habtetsiona and Tsighe (2002) found that Africa lacks sharply focused, pro-poor energy policies and that there were weaknesses in the implementation of rural energy projects and programmes. Mariita (2002) proposed the need for policy and institutional measures that would ensure that the local community enjoys a wider range of socio-economic benefits, as well as mitigate long-term adverse environmental impacts associated with geothermal energy development. Nygaard (2010) says that 'in the struggle for donor resources in the international development arena, it is tempting to market concepts that are innovative and that meet the major donor concerns of the time in order to obtain the funding'. Thus, an argument for building development aid on existing structures, instead of inventing new complicated concepts and approaches, is proposed. Murphy (2001) further argues that energy planners and policymakers must understand local knowledge, capacities, and skills, and determine how these factors will influence the uptake of any given new technology.

## Conclusion

Energy is a key issue for not only poverty reduction but also poverty eradication. Sub-Saharan Africa is endowed with natural energy resources that could help elevate its access to energy, which can transform the region's economic development. The studies that were used in the chapter covered different countries to investigate rural energy within the African continent. There was no dominant research design employed in the reviewed studies. The research designs ranged from comparative study, longitudinal study, conference reports, and meta-analysis to case study approaches. In terms of the theories and conceptual models utilized, again the studies used diverse theoretical models and thus no single theory dominated across the studies. However, it appeared that the energy ladder hypothesis,

also referred to as energy transition theory, was preferred by four authors (Adkins et al., 2012; Davis, 1998; Deichmann et al., 2011; Madubansi & Shackleton, 2006). Regarding methods of data collection, surveys were widely used in many studies; thus, they dominated as a method of collecting data. It can therefore be concluded that it is a more viable method, as it was the most preferred one. Nonetheless, there is still room for adoption of other methods of data collection.

In terms of study focus, the majority of the 23 studies examined in this chapter focused on South Africa, with the rest of the studies spread across the sub-Saharan region. The studies had one common finding: that there still exists a big gap in the provision of energy, particularly renewable energy sources, in the urban and rural economies of many countries in Africa. The energy policy therefore needs to address energy requirements in rural areas for modern productive activities. The findings have indicated that more research is still needed to investigate rural energy provisions across the African continent to ensure sustainable energy solutions for all.

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CHAPTER 8

# Water

*Gladys Moraa Marie Nyachieo*
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## Introduction

Water is essential for life. Water has a myriad of uses and hence is very important for existence or survival of all life on earth. Water and its planning and management are therefore key to African rural development. Without clean water, it will be impossible to keep away water related diseases among rural families. There are other related problems associated with the lack of clean potable water for the rural population. Water as a basic service plays a significant role in providing livelihood opportunities and supporting the health and well-being of rural families in Africa and the world over. About 23 per cent of the rural population of Africa had access to proper sanitation and 41 per cent had access to clean water in 2010 (WHO/UNESCO, 2010). How water is sourced, where it is sourced from, how it is transported and how it is stored, all contribute to water quality. This chapter presents evidence on research and policy on water in rural Africa.

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## Methods

Electronic databases, including ScienceDirect, as well as titles and abstracts from peer-reviewed journals and articles, were identified. The focus was on Africa; therefore, the titles and abstracts were predominantly from Africa. The keywords used in the literature search included water, rural and Africa. The review of literature was not limited to a specific time in history but also included studies published in English.

The titles and abstracts identified from the electronic searches were thoroughly screened and those that did meet the criteria of the study were excluded on the basis of relevance. A further review of the 91 abstracts and titles of articles that were initially identified was done. This further screening resulted in selection of 30 items. These 30 items were printed, organized and subjected to further review. Eventually, 21 publications were found appropriate, based mainly on the topic of interest, which was rural water in Africa. These are the articles that were finally used for extracting and processing information for this chapter.

## Results and Discussion

Results from the 21 studies reviewed are presented thematically according to key aspects that were examined: research designs, theories and conceptual models, as well as study focus and empirical findings. Two case illustrations are also presented.

### *Study Designs*

Research designs are discussed for eight studies because some studies did not explicitly indicate the design employed (Table 8.1). Most studies were done after 2000 (Table 8.1). The latest study was done in 2016. One study was conducted in 2015. Four were carried out in 2014. The year 2012 had six studies. The year 2012 registered most studies analysed in this review. The years 2010 and 2011 each had two studies captured in the study. The rest—2009, 2008, 2006, 2003 and 2000—had one study each.

Table 8.2 gives a summary of the geographical units of the 21 studies. Two studies focused on sub-Saharan Africa as a region (MacDonald & Calow, 2008; MacDonald & Davies, 2000). Within sub-Saharan Africa, the majority of the studies came from South Africa (Brettenny & Sharp, 2016; Fosso-Kankeu, Preez, & Jagals, 2010; Hemson & Buccus, 2009;

**Table 8.1** Study design characteristics

| *Year published* | *Number of studies* | *Study type* | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | *Case study* | *Survey* | *Review* | *Experimental/ Quasi-experimental* | *Comparative* | *Meta-analysis* | *Report* | *Longitudinal* |
| 2000 | 1 | | | | | | | 1 | |
| 2003 | 1 | | | | | | | 1 | |
| 2006 | 1 | | | | | | | 1 | |
| 2008 | 1 | | | 1 | | | | | |
| 2009 | 1 | 1 | | | | | | | |
| 2010 | 2 | 1 | | | 1 | | | | |
| 2011 | 2 | 1 | 1 | 1 | | | | | |
| 2012 | 6 | 1 | | 1 | 1 | 1 | 1 | | |
| 2014 | 4 | 1 | 1 | | | | | | 1 |
| 2015 | 1 | | 1 | | | | | | |
| 2016 | 1 | | | | | 1 | | | |
| **Total** | **21** | **5** | **3** | **3** | **2** | **2** | **1** | **3** | **1** |

**Table 8.2** Geographical units

| *Geographical unit* | *Author and year* |
|---|---|
| South Africa | Brettenny and Sharp (2016) |
| Kenya (Kyuso) | Koehler, Thomson, and Hope (2015) |
| Semi-arid Africa (Namibia) | Sarma and Xu (2014) |
| South Africa (Tshaanda) | Molelekwa et al. (2014) |
| South Africa | Sinyolo et al. (2014) |
| South Africa (Thukela River Basin—KwaZulu-Natal) | Kemerink et al. (2012) |
| Tanzania (East Africa) | Arvai and Post (2012) |
| South Africa (Limpopo) | Thwala (2010) |
| South Africa | Fosso-Kankeu et al. (2010) |
| South Africa | Hemson and Buccus (2009) |
| Sub-Saharan Africa (Tanzania, South Africa, Ghana, Mozambique) | van Koppen, van der Zaag, Manzungu, and Tapela (2014) |
| Ghana (Northern Ghana) | Engelaer, Koopman, van Bodegom, Eriksson, and Westendorp (2014) |
| Sub-Saharan Africa | MacDonald and Calow (2008) |
| South Africa | Mwabi et al. (2013) |
| South Africa | Odiyo and Makungo (2012) |
| South Africa | Majuru et al. (2012) |
| Global | World Health Organization and UNICEF (2006) |
| Africa region | Harvey and Reed (2003) |
| Sub-Saharan Africa | MacDonald and Davies (2000) |
| Africa (Kenya and Uganda used as examples) | Hope, Foster, and Thomson (2012) |
| Sub-Saharan Africa (Togo) | Nkem, Munang, and Jallow (2011) |

Kemerink, Méndez, Ahlers, Wester, & van der Zaag, 2012; Majuru, Jagals, & Hunter, 2012; Molelekwa, Mukhola, van der Bruggen, & Luis, 2014; Mwabi, Mamba, & Momba, 2013; Odiyo & Makungo, 2012; Sinyolo, Mudhara, & Wale, 2014; Thwala, 2010).

Within South Africa, studies focused on particular rural areas. Brettenny and Sharp (2016) focused on the following rural municipalities: Renosterberg, Camdeboo, Ndlambe, Maluti-a-Phofung and Moretele. Molelekwa et al. (2014) focused on the Tshaanda area in rural South Africa. Sinyolo et al. (2014) had the study site at the Tugela Ferry situated in Msinga Local Municipality in KwaZulu-Natal province. Kemerink et al. (2012) focused on the Thukela River Basin located in KwaZulu-Natal province. In all, four studies were carried out in Limpopo province.

Thwala (2010) and Fosso-Kankeu et al. (2010) did their study on Limpopo province. Majuru et al. (2012) also carried out their study in Vhembe district of Limpopo province, where they focused on two communities. Further, Odiyo and Makungo (2012) also carried out their research in Limpopo. Hemson and Buccus (2009) looked at rural Mbizana in the Eastern Cape. Mwabi et al. (2013) did not specify a particular area, but their focus was on rural communities in South Africa.

Another area of study, not in South Africa but in the southern region, was Namibi. Sarma and Xu (2014) studied rural semi-arid Namibia. Other studies were from elsewhere in Africa, including Eastern Africa as well as Western Africa. From Eastern Africa, there were studies from Kenya (Hope et al., 2012; Koehler et al., 2015), Tanzania (Arvai & Post, 2012; van Koppen et al., 2014) and Uganda (Hope et al., 2012). In the western part of Africa, there were studies from Togo (Nkem et al., 2011) and Ghana (Engelaer et al., 2014). Ghana is also cited in a study in sub-Saharan Africa (Van Koppen et al., 2014). There were therefore different geographical units explored in rural water research in Africa as a region.

With regard to data collection, different studies utilized different methods for data collection (Table 8.3). In some cases, a combination of methods was used, and yet in other cases, multiple data sources were used, as in the case of Brettenny and Sharp (2016), who utilized secondary data collected from the StatsSA—P9115 Financial Census of Municipalities document (StatsSA, 2011a) and the WRC TT522/12 report, StatsSA—P9114 Non-Financial Audit of Municipalities document (StatsSA, 2011b). Koehler et al. (2015) used a baseline survey and hand-pump monitoring using mobile transmitters. In addition, they also utilized focus group discussions (FGDs).

In a study by Sarma and Xu (2014) on sustainable rural water supply, geology maps, hydrocensus data, geophysical surveys, and drilling and hydraulic testing data were used. Molelekwa et al. (2014) also used a baseline survey to collect data on the quality of drinking water. Sinyolo et al. (2014) utilized household surveys for the study on water security. Kemerink et al. (2012) used in-depth semi-structured interviews for the study on water policy. Arvai and Post (2012) conducted field tests of water quality before and after the use of each point-of-use (POU) system at two study sites, in addition to workshops and group discussions. Thwala (2010) used questionnaires and informal interviews, together with field observation, in the study on community participation. Fosso-Kankeu et al. (2010) utilized an experimental study in which water samples were

**Table 8.3** Study types and data collection methods

| *Study type* | *Data collection method* |
|---|---|
| Comparative | Secondary data collected from Financial Census of Non-Financial Audit Municipalities documents |
| Case study | Baseline survey, hand-pump monitoring (using mobile transmitters)<br>Focus group discussions |
| Case study | Geology maps, hydrocensus data, geophysical surveys, drilling and hydraulic testing data |
| Case study | Baseline data of the quality of drinking water |
| Case study | Household survey |
| Case study | In-depth semi-structured interviews |
| Comparative | Field tests of water quality before and after the use of each POU system at two study sites<br>Workshops and group discussions |
| Case study | Formal (questionnaires) and informal interviews (individual and group interviews), field observation |
| Experimental case study | Water samples collected from source points and households in two poor village groups |
| Case study | Community appraisal fulfilled through a simple scorecard. Tools for participatory research, for example, community and water mapping, use of 'diarrhoea diary' and distances children carry water. |
| Meta-analysis | Survey and review of literature |
| Longitudinal study | Household interviews |
| Review of literature | Thematic systematic review |
| Extensive study literature | Experimental study, evaluation of devices for household water treatment systems (HWTS) |
| Meta-analysis | Review of literature and photography |
| Quasi-experimental | Structured interviews, observations and measurement |
| Report | Demographic and Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS), Living Standards Measurement Study (LSMS) and World Health Surveys (WHS) |
| Conference report | Review of literature |
| Technical report Department for International Development (DFID), World Bank | Review of literature |
| Output from Smart Water Systems project (DFID) | Review of literature |
| Case study | Review of literature |

collected from domestic storage tins and tested for lipopolysaccharide endotoxins.

Hemson and Buccus (2009) collected the study data through community appraisal using a simple scorecard. Other tools used for participatory research were, for example, community and water mapping, 'diarrhoea diary' and measurement of distances children carry water. Van Koppen et al. (2014) used surveys and review of literature. Engelaer et al. (2014) utilized household interviews in a study on water quality. Mwabi et al. (2013) used experiments and evaluation of devices for household water treatment systems (HWTS), together with an extensive literature review.

Odiyo and Makungo (2012) used review of literature and photography. Majuru et al. (2012) used structured interviews, observations and measurement for data collection. World Health Organization and UNICEF (2006) in a study on water access used Demographic and Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS), Living Standards Measurement Studies (LSMS) and World Health Surveys (WHS) for data. A good number of authors utilized literature review: Harvey and Reed (2003) in a study on sustainable rural water supply in Africa, MacDonald and Davies (2000) and Hope et al. (2012) in a study on rural water security, Nkem et al. (2011) in looking for solutions to rural water supply and MacDonald and Calow (2008) to collect secondary data for their study.

It can be seen from the preceding discussion that different methods of data collection were used in the 21 studies. Most studies used combination methods in data collection. It is also important to note that most studies utilized the case study design, which allows one to use a number of data collection methods for the study. It is also evident that the different case studies employed different methods of data collection.

### *Theories and Conceptual Models*

Theories and conceptual models used in the 21 studies varied (Table 8.4). There was no one main theoretical or conceptual framework that dominated. Some of the conceptual and theoretical frameworks used are as follows:

- Input-oriented data envelopment analysis (DEA) model: This model was used to evaluate efficiency (Brettenny & Sharp, 2016).
- Output-based payment model: Koehler et al. (2015) used this model to examine sustainable water user payment in rural areas in Kenya.

**Table 8.4** Theories and conceptual models

| *Theory and conceptual model* | *Appropriateness* |
|---|---|
| Input-oriented data envelopment analysis (DEA) model | The model is appropriate. DEA is a linear programming technique used mainly for estimating efficiency, and in this case, it is estimating the efficiency of municipal water services |
| Public goods theory and output-based payment model | The model is appropriate for community water management structures because goods that are collectively consumed are non-rival and non-excludable. The theory assisted in examining new ways of ensuring financial sustainability by the use of the output payment model to act as an incentive to pay for pump water services for community members |
| Participatory approach | A participatory approach aims at incorporating the knowledge and opinions of rural people in the planning and management of development projects and/or programmes. This is therefore appropriate for this study because it looks at the issues of inclusion and representation in Water User Associations (WUAs) in rural south Africa |
| Action research | Action research is a research approach set off to solve an immediate community problem, led by individuals working with others as part of a community to improve the way they address issues and solve problems. This approach is appropriate because the study focus is community participation in solving rural water supply problems |
| Risk management | Risk management is the process of identifying risk, assessing it and taking steps to reduce it to an acceptable level. This deliberative risk management framework was appropriate; it was effected through the structured decision-making (SDM) model. This approach was used to determine the processes, techniques, tools, and team roles and responsibilities for reducing the risk of consuming unsafe water by treating the water to improve its quality |
| Management strategies | This approach is appropriate for the study. Management involves the formulation and implementation of the goals and initiatives taken by those charged with that responsibility on behalf of owners. If there is lack of management due to a lack of technical capacity as a result of inadequate finances, efficient implementation will not be possible |
| Human rights approach | A human rights–based approach is a conceptual framework for the process of human development that is normatively based on international human rights standards and operationally directed to promoting and protecting human rights. This approach is therefore appropriate for this study and fits the African rural development experience. This is because international human rights standards also apply to the rural people in Africa |

(*continued*)

**Table 8.4** (continued)

| *Theory and conceptual model* | *Appropriateness* |
|---|---|
| Institutional and legislative approach | Institutional and legislative approach has to do with having the power to make laws that touch on social structure. This approach is appropriate for this study because the study is looking at issues that deal with Roman water law in rural Africa: dispossession, discrimination and weakening state regulation |
| Epidemiology of population change approach | The epidemiological transition deals with the changing patterns of mortality and fertility. This study looked at the determinants of epidemiological transition and the role of the socio-economic status and the drinking water source. This framework was used to show that the epidemiology of population change does not depend on the socio-economic status or the drinking water source. Since this was a longitudinal study, the approach was appropriate |
| World Health Organization (WHO) guidelines as a benchmark | Benchmarking is a way of discovering what is the best performance being achieved. WHO has basic requirements for different issues. By using the WHO guidelines, it is evident that water in rural households of South Africa was not fit for human consumption. This framework is appropriate for the study |
| Defined substrate technology (DST) | The DST method is a reagent system designed to enumerate specific target microbes(s) from a mixture of bacteria. The system simultaneously enumerates total coliforms and *Escherichia coli* directly from a water sample. Since the study was looking at water quality, DST was appropriate |
| Smart approach | Smart approach involves the use of technology in development initiatives. There was a suggestion to use mobile technologies that capture and transmit water user data. This water user data could be utilized in dealing with hydroclimatic risks. Due to social changes and the adoption of new and better technologies, smart approach is appropriate |
| Multi-level linear regression models | Multi-level linear regression models are statistical models of parameters that vary at more than one level. This model was appropriate because it looked at the three indicators of water service: access, availability and potability. This helped in finding out which of the three indicators had shown some improvements after the interventions |

- Participatory paradigms: Kemerink et al. (2012) used a participatory approach to ensure user participation and inclusion in water management in rural areas. The other participatory approach used was participatory action research (PAR) in Thwala (2010). This approach was used to encourage learning 'by doing'. Learning by doing is a situation where a small number of people identify a problem and come up with creative ways of solving it. This was applied in dealing with challenging water issues. Action research was also utilized by Hemson and Buccus (2009) in ensuring that all stakeholders in rural water were able to work together to come up with a scorecard for community assessment of services and eventually point to key areas of action.
- Risk management: Arvai and Post (2012) used this approach to involve the affected stakeholders in decisions on POU water treatment systems.
- Management strategies: Odiyo and Makungo (2012) used management strategies to help in water management.

Other models were used as well. The human rights approach was used by Hope et al. (2012) to examine the human right to water. van Koppen et al. (2014) explored institutional and legislative approaches where the Roman law is seen to benefit both nationals and foreigners who can pay for water as a commodity. Engelaer et al. (2014) used the epidemiology of population change approach to show the effects of the socio-economic status and the drinking water source on transition. Fosso-Kankeu et al. (2010) used World Health Organization (WHO) guidelines as a benchmark. There was also the use of numerical modelling to enable monitoring and sustainably managing water resources. Defined substrate technology (DST) was used for the bacteriological analysis of water samples for quality (Molelekwa et al., 2014). Smart approach was utilized by Nkem et al. (2011) to deal with water needs of a warming continent, and multi-level linear regression models were used by Majuru et al. (2012) to find out whether upgrading water supply systems in small rural communities improved access, availability and potability of water.

### *Study Focus and Empirical Findings*

Although the general study focus was rural water in Africa, different areas presented different issues, mostly depending on the pressing problems about water in the area. The areas of concern were:

- Efficiency of water services (Brettenny & Sharp, 2016)
- Payments (Koehler et al., 2015)
- Water supply (Harvey & Reed, 2003; MacDonald & Calow, 2008; MacDonald & Davies, 2000; Majuru et al., 2012; Nkem et al., 2011; Sarma & Xu, 2014)
- Water quality (Engelaer et al., 2014; Fosso-Kankeu et al., 2010; Molelekwa et al., 2014; Mwabi et al., 2013; Odiyo & Makungo, 2012)
- Water security (Hope et al., 2012; Sinyolo et al., 2014)
- Community participation (Hemson & Buccus, 2009; Thwala, 2010)
- Risk management (Arvai & Post, 2012)
- Water policy (Kemerink et al., 2012)
- Water law (van Koppen et al., 2014)
- Water access (World Health Organization & UNICEF, 2006)

It is evident that a variety of issues were examined by the authors of the 21 studies. The study findings are briefly presented and discussed below according to the study focus. Table 8.5 provides a summary of the individual study focus and findings.

*Water Supply*

Six studies focused on water supply and the findings are discussed in this section. Inflow rates into aquifers were found to be generally low in Namibia (Sarma & Xu, 2014). In addition, there was lack of data, which made it difficult to appraise parallel rural water supply schemes. In yet another study on water supply, the findings showed that groundwater resources need to be well understood hydrogeologically for long-term availability for rural people (MacDonald & Calow, 2008). In a study focusing on sustainable rural water supply in Africa, it was found that a number of African nations had adopted hand-pump standardization policies, mostly advised by external donors, but it was noted that this could be working against the local people in rural areas (Harvey & Reed, 2003).

In a technical report on groundwater for rural water supply, the findings indicated that devolution and demand-responsive approaches to the provision of rural water supplies led to lack of coordination in groundwater research and data collection (MacDonald & Davies, 2000). Another study on assessing rural small-community water supply found that there were overall improvements in the three main indicators of water services: access, availability and potability (Majuru et al., 2012). In a study that

**Table 8.5** Study focus and findings

| *Study focus* | *Findings* |
|---|---|
| Efficiency evaluation of urban and rural municipal water service authorities (Brettenny & Sharp, 2016) | The rural municipality exhibited decreasing returns to scale in all cases of scale inefficiency |
| Pump-priming payments for sustainable water services in rural Africa (Koehler et al., 2015) | Payments are contingent on service delivery. The most-valued aspects of service delivery for water users were the speed of the service, the quality of the service and the knowledge that the service was guaranteed |
| Sustainable rural water supply in semi-arid Africa (Sarma & Xu, 2014) | Inflow rates into aquifers are generally low. The tested conceptual aquifer model indicated that limited resource was available and that it relied on the episodic recharge events |
| Water quality in rural South Africa (Molelekwa et al., 2014) | The microbiological quality of the permeate was within recommended and acceptable limits of the WHO and South African standards for drinking water quality<br>On the successful removal of *Escherichia coli*, the membrane system was able to produce safe drinking water |
| Water security and rural household food security (Sinyolo et al., 2014) | Strengthening farmer organizational capacity and local institutions could enhance the water security status of farmers in smallholder irrigation schemes<br>Farmer's age, off-farm income, farmer association membership, use of pumps, location on the upper end of the canal and training increase household water security |
| Water policy: inclusion and representation in Water User Associations (WUAs) (Kemerink et al., 2012) | Establishment of new institutions (for WUAs) has been unsuccessful in contributing to transformation in the case-study area. Existing structures were chosen as a line of thought for the implementation of the Water Act, as they have further reinforced existing inequities |
| Risk management in a developing country context (Arvai & Post, 2012) | WaterGuard was selected as the preferred method through the structured decision-making (SDM) model<br>WaterGuard was more likely to be used by most people |
| Community participation (Thwala, 2010) | The majority of the interviewees (90 per cent) confirmed that the supply of community tap water had improved their lives<br>Less than half of the interviewees had never been involved in water projects previously |
| Water quality; health implications (Fosso-Kankeu et al., 2010) | Endotoxins were detected in river water only, and in widely varying concentrations. The level of endotoxins was higher in summer than in winter. Endotoxins were detected in all water samples from household containers, and the concentrations varied within the range |

(*continued*)

**Table 8.5** (continued)

| *Study focus* | *Findings* |
|---|---|
| Community participation (Hemson & Buccus, 2009) | Water service delivery levels were extremely low. People were not satisfied because of the lack of service delivery |
| Roman water law in rural Africa (van Koppen et al., 2014) | Roman water law vested ownership of water resources in colonial rulers |
| Determinants of epidemiological transition and drinking water source (Engelaer et al., 2014) | Mortality and fertility transitions were not dependent on the socio-economic status or the drinking water source |
| Developing groundwater for secure rural water supplies in Africa (MacDonald & Calow, 2008) | The quality of the water must be known (avoid contamination). Community participation in the long-term management of the water source is important in enabling benefit of all |
| Removal of waterborne bacteria from surface water and groundwater (Mwabi et al., 2013) | The only filter that produced safe drinking water, with <1 NTU for turbidity level and 0 CFU/100 mL for pathogenic bacteria, was the silver-impregnated porous pot |
| Water quality problems and management (Odiyo & Makungo, 2012) | The water contains nitrates, fluorides, chlorides, total dissolved solids and microbes |
| Assessing rural small-community water supply (Majuru et al., 2012) | There was an overall improvement in the three main indicators: access, availability and potability |
| Water access (WHO & UNICEF, 2006) | About 84 per cent of the population without access to an improved source of drinking water lives in rural areas |
| Sustainable rural water supply in Africa (Harvey & Reed, 2003) | A number of African governments have adopted hand-pump standardization policies, mostly advised by external donors |
| Groundwater for rural water supply (MacDonald & Davies, 2000) | Decentralization and demand-responsive approaches to the provision of rural water supplies lead to a lack of coordination in groundwater research and makes collection of data more complex in sub-Saharan Africa |
| Rural water security (Hope et al., 2012) | Water services can be improved by good governance of groundwater resources and hand-pumps<br>Africa's new mobile network architecture can be used to link human development and natural development by reducing risks |
| Decentralizing solutions for rural water supply under climate change (Nkem et al., 2011) | Rehabilitation of small dams in rural areas for adaptation to climate change will ripple over time and bring development in different areas and to the nation in general |

NTU: nephelometric turbidity unit
CFU: colony forming unit

focused on decentralizing solutions for rural water supply under climate change, the findings suggested that rehabilitation of small dams in rural areas for adaptation to climate change would ripple over time and bring development in different areas and to the nation in general in Togo (Nkem et al., 2011).

*Water Quality*

Studies focusing on water quality were five in total. In a study carried out in Tshaada in rural South Africa, the findings indicate that the microbiological quality of the permeate was within recommended and acceptable limits of the WHO and South African standards for drinking water quality (Molelekwa et al., 2014). Still on water quality, a study conducted in South Africa indicated that endotoxins were detected only in river water, and at widely varying concentrations (Fosso-Kankeu et al., 2010). In another study with the same focus in Northern Ghana, study findings showed that mortality and fertility transitions were not dependent on the socio-economic status or the drinking water source (Engelaer et al., 2014). Another study conducted in South Africa on water quality proved that the only filter that produced safe drinking water was the silver-impregnated porous pot (Mwabi et al., 2013). In a study on water quality problems and management, findings showed that up to 27 per cent of boreholes in the study area had poor or marginal water quality (Odiyo & Makungo, 2012).

A first indicator of the quality of water supply services is the continuity of service. In rural areas, continuity is expressed by the ratio of water points out of order, or by the average time per year or per month that a water point is unusable. In low-income sub-Saharan countries, analytically, over one-third of the rural water supply infrastructure is neglected. A second indicator of quality is the compliance with microbiological water norms. WHO and UNESCO recently developed a Rapid Assessment of Drinking-Water Quality (RADWQ) survey method. On average, in developing countries, compliance with the WHO norms is close to 90 per cent for piped water, and between 40 per cent and 70 per cent for other improved sources. No national or regional data have been published yet (WHO/UNESCO, 2010).

*Water Security*

Studies focusing on water security also featured in the review. These studies were two in total. In a study on water security and food security in

South Africa, perceptions on water security were observed to have a positive impact on household food consumption per adult equivalent (Sinyolo et al., 2014). In another study with examples from Kenya, findings indicated that water services could be improved by good governance of groundwater resources and hand-pumps (Hope et al., 2012).

*Water Access*

In the reviewed literature, there was only one global study conducted on water access in Africa. This was done by WHO and UNICEF. The results indicated that about 84 per cent of the populations without access to an improved source of drinking water live in rural areas. Although 73 per cent of rural dwellers have access to an improved source of drinking water, only 30 per cent have access to piped water in the home. In addition, sub-Saharan Africa had a challenge in water accessibility (WHO & UNICEF, 2006).

*Water Policy*

A study conducted in South Africa's Thukela River Basin in KwaZulu-Natal province focused on inclusion and representation issues in Water User Associations (WUAs). It found that the newly established WUAs institutions had not been successful in contributing to transformation in the Thukela River Basin and had instead increased inequality in inclusion and representation in WUAs (Kemerink et al., 2012). A case study is presented below to show the opportunities and challenges of rural water policy and management.

**Case Study 8.1 Managing Water Supply in Rural Areas of Oyo State, Nigeria**

This study was published by Gbadegesin and Olorunfemi (2012). The aim of the study was to determine the extent to which stakeholders were willing and able to adopt and implement sustainable, cost-effective and environmentally friendly management options for water resources in selected rural areas of Oyo State, Nigeria. The study was conducted in three local government areas of Ibarapa, Afijio and Lagelu. Data was collected using focus group discussions, in-depth interviews, questionnaire survey and review of literature. The questionnaire was administered to 200 respondents.

The key finding of the study was that water supply management in Oyo State was facing a lot of problems, leading to slow development. The challenges included a lack of a vibrant policy in the water supply sector; political challenges related to appropriate pricing and equitable allocation of water; and low knowledge base of the different stakeholder groups about the technological, socio-economic and ecological dimensions of water resources management. Given these challenges, the study concluded that the existing policy to supply water through boreholes, especially in situations where there was no regular electricity supply to power the machines in the rural areas studied, was counterproductive. Though the study indicated that rain water was a major source of water in all the rural communities studied, it can be seen from the findings that the policy context to bring about changes to improve the supply and distribution of water through technology is not yet in place.

The results of this study indicate that a lot needs be done in rural Nigeria in order to ensure stakeholder participation and also to have policies that support water supply instead of being counterproductive. Rural Nigeria is representative of most rural areas in Africa, and therefore, we can use this case study to understand issues of water supply management in rural Africa. An issue that emerges from this study deals with capacity building and management of water resources. Another very crucial issue in rural water management is the knowledge base in relation to the socio-economic, technological and ecological dimensions of water resources management.

*Community Participation*

The review identified two areas whose focus was community participation. The first one was on community participation during project planning and implementation, where the findings confirmed that less than half of the interviewees had never been involved in water projects before (Thwala, 2010). In another study, called the Citizen Voice Project, water service delivery levels were found to be extremely low (Hemson and Buccus, 2009). In addition, the said project, 'Citizen Voice', did not bring about an immediate improvement in people's lives.

*Others Areas of Focus*
Other areas of research focus are summarized as follows:

- There was one study on water law where the study revealed that the Roman water law vested ownership of water resources in colonial rulers. The colonial legacy was still hidden in the reforms strengthening the permit system. In addition, African governments needed to recognize all plural water laws (van Koppen et al., 2014).
- In a study conducted in Tanzania on risk management, WaterGuard was selected as the preferred method through SDM model (Arvai & Post, 2012).
- The study focusing on the efficiency evaluation of urban and rural municipal water services was a comparative study whose findings indicate that the rural municipality exhibits decreasing returns to scale in all cases of scale inefficiency. In the study focusing on pump-priming payments, the findings suggest that the payments are dependent on service delivery (Brettenny & Sharp, 2016).

It is evident that the three major areas of focus in the studies were water supply, water quality and community participation in rural water management. Water supply was a focus in six studies, water quality in five studies and community participation in two studies.

## Conclusion

A number of studies on rural water have been done in Africa. Although most of them are based in sub-Saharan Africa, the majority of the 21 studies examined in this chapter focused on South Africa. The findings have indicated that there are many areas of research in rural water planning, including water quality, water supply, water security, water access, as well as water policy and community participation. Different conceptual and theoretical frameworks have been used in an attempt to understand rural water dynamics in Africa. A variety of methods have also been employed in these studies for data collection. Overall, the studies show that there still exist many challenges in rural water development that need urgent attention.

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CHAPTER 9

# Health

*Peter Mala*

## Introduction

Health care delivery in sub-Saharan Africa (SSA) has evolved from traditional approaches to modern Western approach to health services. Hundreds of years before the arrival of Western colonial governments, health care in SSA was organized around traditional health care providers (Waite, 2000). At the beginning of the nineteenth century, with the onset of colonialism, the introduction and expansion of modern health services to the local population was driven by the establishment of health facilities in rural areas by Christian missionaries. This expansion was aided at a later stage by the expansion of the health workforce through the introduction of local African health workers who had returned from the Second World War; these African soldiers were trained in basic medical skills as part of the war effort (Bruchhausen, 2003; Dube, 2009). Since gaining independence, local leadership in SSA countries has prioritized health; the sector has received increased budgetary allocations, more health facilities have been constructed, and medical training institutions have been established to address health workforce needs of the countries in the region (Wamai, 2009).

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In more recent times, the SSA health service delivery landscape has evolved considerably. The changes have been driven mainly by prolonged pressure of poorly performing local economies and budgetary constraints; increased demand for health services from expanding populations; increased prevalence of non-communicable diseases (NCDs) with the growth of the middle class, changing lifestyles, and dietary habits; and mismanagement of limited local revenue by the political class. The region has witnessed multiple health care delivery solutions and policy initiatives; most of the initiatives have been external in origin as part of the broader global health initiatives or donor requirements for financial assistance. They include global declarations such as Millennium Development Goals (MDGs), Sustainable Development Goals (SDGs), and universal access to health care. Further new funding arrangements have emerged to complement traditional funding mechanisms, such as bilateral arrangements with traditional high-income donor nations, and funding from the World Bank and the International Monetary Fund. These new global actors in SSA health financing include the Bill & Melinda Gates Foundation, Gavi Alliance, and Global Fund. In this chapter, results of a synthesis of a comprehensive review of health care delivery research in SSA are presented. The chapter also presents evidence on health care delivery in rural Africa.

## Methods

A comprehensive literate review was conducted. A total of 367 publications that satisfied search criteria were retrieved and reviewed. The studies are drawn from diverse sources: journal papers, working papers, reports, book chapters, and conference papers. In selecting these studies, only those with the main focus on at least one or more of the SSA countries or a subregion of SSA were included in the final analysis. Studies that interrogated health care delivery issues relevant to SSA but lacked specific focus on SSA or on at least one of the SSA countries were excluded from the analysis. Only journal publications and book chapters were included in the final analysis; commentaries and letters to the editors were excluded. A total of 54 publications were included in the final analysis.

Once all the relevant studies were retrieved in hard copies, each study was scrutinized and relevant information was extracted and summarized in a data extraction matrix (Table 9.1). Variables extracted included: author(s) and publication date; type of article, whether empirical study or review; theoretical or conceptual model used in the study; main objective of the

**Table 9.1** Summary of research on health care delivery in Africa

| *Author* | *Theory* | *Method* | *Scope* | *Main argument/finding* |
|---|---|---|---|---|
| Abdulraheem, Olapipo, and Amodu (2012) | – | Literature review | Health planning | Training, information sharing, and continuous dialogue are some of the interventions that could enhance the utilization of primary health facilities by rural communities |
| Adedini, Odimegwu, Bamiwuye, Fadeyibi, and De (2014) | – | Cross-sectional study | Health planning | Health care access barriers increase childhood mortality |
| Adwok, Hope, and Kearns (2013) | – | Review | Health planning | Declining health indicators in African countries can be attributed to the neglect of public health systems through underfunding and loss of health care workers to better-funded donor projects and migration to developed countries |
| Ayernor (2012) | – | Qualitative study | Health services | Non-communicable diseases (NCDs) will have significant health and economic implications for the individual, family, and country |
| Carapinha, Ross-Degnan, Desta, and Wagner (2011) | – | Cross-sectional study | Health financing | There is a need for government commitment and donor support to expand medicines coverage through insurance systems |
| Chimezie (2015) | – | Review | Health planning | Failure of primary health care (PHC) shows that African countries need to adopt health delivery models that are responsive to local and emerging health needs |
| Chuma, Musimbi, Okungu, Goodman, and Molyneux (2009) | – | Cross-sectional study | Health financing | Failure to fully implement user fee policy in Kenya is evident |

(*continued*)

**Table 9.1** (continued)

| *Author* | *Theory* | *Method* | *Scope* | *Main argument/finding* |
|---|---|---|---|---|
| Daniels, Sanders, Daviaud, and Doherty (2015) | – | Qualitative | Human resource | Staff costs and retention challenges are limitations for deployment of community health workers (CHWs) to deliver integrated community case management (ICCM) |
| de-Graft Aikins et al. (2010) | – | Literature review | Health services | There is an urgent need for primary and secondary intervention and for African health policy-makers and governments to prioritize the development and implementation of chronic diseases policies |
| de Maeseneer and Flinkenflogel (2010) | – | Lecture | Health workforce | The need to link medical education to practice should be a key feature of a socially accountable faculty, especially in Africa, where the main focus is on specialty practice in central hospitals in big cities |
| Doherty et al. (2010) | – | Quantitative and qualitative | Health planning | There is a need to gradually integrate vertical interventions within routine PHC through broader health system strengthening |
| Ejughemre (2013) | – | Literature review | Health financing | Gradual exit from donor funding can avoid crippling countries' ability to be self-sufficient and self-reliant |
| Essomba, Bryant, and Bodart (1993) | – | Literature review | Health planning | Health planning reforms must be based on analysis of existing health services and respond to broad issues, such as the economy |
| Etyang et al. (2014) | – | Cross-sectional study | Health services | Adults in rural Kenya face a combined burden of infectious diseases and NCDs |
| Fink, Robyn, Sie, and Sauerborn (2013) | – | Cluster randomized design | Health financing | The insurance scheme did not have any effect on health outcomes for children and adults, but increased mortality among individuals aged 65 and older |

(*continued*)

**Table 9.1** (continued)

| *Author* | *Theory* | *Method* | *Scope* | *Main argument/finding* |
|---|---|---|---|---|
| Galukande and Kiguli-Malwadde (2010) | – | Review | Health services | There is a need to investigate the efficacy of ultrasound in breast cancer screening and a proposal to lower the cut-off age for mammography to improve access in resource-limited settings |
| Goudge, Gilson, Russell, Gumede, and Mills (2009) | – | Cross-sectional study | Health financing | Free primary care and hospital exemptions provide financial protection |
| Hanlon, Wondimagegn, and Alem (2010) | – | Literature review | Health services | The need and demand for community mental health services are escalating, and access barriers include underfunding, negative attitude towards mental health, and competing priorities |
| Hendriks et al. (2012) | – | Cross-sectional study | Health services | Hypertension was the most frequently observed risk factor for cardiovascular diseases (CVDs) in both urban and rural populations |
| Hoque, Hoque, and Kader (2008) | – | Cross-sectional study | Health services | There is low uptake of pap smear and low knowledge of cervical cancer prevention and risk factors |
| Jeppsson, Birungi, Stergren, and Hagstr (2005) | Embedding and disembedding theory | Qualitative study | Health planning | The author argues that the increasing disengagement of the central levels of the Ministry of Health from the local community can undermine effective and equitable health service delivery |
| Kabatereine et al. (2010) | – | Review | Health planning | Successful establishment and running of an integrated neglected tropical diseases (NTDs) control programme hinges on effective partnership and implementation of a stepwise and evidence-based approach |

(*continued*)

**Table 9.1** (continued)

| *Author* | *Theory* | *Method* | *Scope* | *Main argument/finding* |
|---|---|---|---|---|
| Kevany et al. (2012) | – | Cross-sectional study | Health financing | Utilization of health services is strongly associated with the socio-economic status (SES) and the employment status |
| Kironde & Kahirimbanyi (2002) | – | Prospective study | Health planning | Community-based directly observed treatment (DOT) produces outcomes that are equivalent to the other treatment options for new patients and is superior to self-administration of drugs |
| Leighton (1996) | – | Review | Health financing | The author presents a number of strategies that African Ministries of Health have used to overcome the principal obstacles to achieving health financing reforms |
| Mafuva & Marima-matarira (2014) | – | Literature review | Health services | South Africa has made significant process towards professionalization of traditional medicine compared with Zimbabwe |
| Makaula et al. (2012) | – | Qualitative study | Health planning | Community participation based on the community-directed intervention (CDI) approach is a realistic means for increasing accessibility to vital health interventions at community level |
| Mamo, Seid, Adams, Gardiner, and Parry (2007) | – | Review | Health services | Community-based care and education, primarily driven by health officers or nurses, is an effective and cost-efficient method for managing chronic diseases |
| Marschall and Flessa (2011) | Data envelope analysis (DEA) model | Cross-sectional study | Health governance | Decision-makers should improve the demand-side barriers in access to health care |
| Mashego and Peltzer (2005) | – | Qualitative | Health services | People's own experiences have the potential to bring into focus problems that can influence their satisfaction with health care |

(*continued*)

**Table 9.1** (continued)

| *Author* | *Theory* | *Method* | *Scope* | *Main argument/finding* |
|---|---|---|---|---|
| Mayosi et al. (2009) | – | Qualitative | Health services | Morbidity and mortality from NCDs are rising in all strata of South African society, and similar observations have been made in East and West Africa |
| McCord, Liu, and Singh (2013) | – | Cost analysis | Human resource | Countries wishing to develop CHW strategy should undertake a costing exercise to determine the budget for deployment of CHWs |
| McPake (2013) | – | Qualitative | Health workforce | Investment needs to be made in pay and recruitment, and the government also needs to ensure that conditions of employment do not worsen for rural areas |
| McPake (1996) | – | Qualitative | Health planning | The policy of granting autonomy to national-level hospitals as part of health reforms is guided neither by systematic conceptual rationalization nor by published implementation experience |
| Mladovsky, Ndiaye, and Criel (2015) | – | Qualitative | Health financing | Interconnected social values of voluntarism, trust, and solidarity were employed by stakeholders to expand community-based health insurance (CBHI) population coverage in Senegal |
| Mutale, Ayles, Bond, Mwanamwenge, and Balabanova (2013) | – | Cross-sectional study | Health workforce | Determinants of motivation vary by gender, type of health worker, and time in post |
| Oyaya & Rifkin (2003) | – | Qualitative | Health system | Health service delivery will continue to deteriorate unless a combination of neoliberal market approaches of the health system and poor governance are addressed |

(*continued*)

**Table 9.1** (continued)

| *Author* | *Theory* | *Method* | *Scope* | *Main argument/finding* |
|---|---|---|---|---|
| Pillay (2011) | – | Cross-sectional study | Health workforce | There is a lack of management capacity within the public health sector |
| Ridde (2011) | – | Review | Health financing | With most funding agencies in favour of abolishing user fees, the relevance of user fees policy is being reconsidered in West Africa |
| Sahn and Bernier (1995) | – | Qualitative | Health financing | The structural adjustment programme in Africa did not reduce public health expenditure |
| Schreuder and Kostermans (2001) | – | Qualitative | Health planning and financing | The study makes a case for integrated vertical and horizontal PHC planning and financing as the best option |
| Scrubb (2011) | – | Review | Health system | The study shows how a combination of lingering apartheid policies and neoliberal ideology led to the growth of the private sector and limited access for majority blacks, who rely on the public health services, and the need for redistribution of health workers, and increased funding of the public health servicies |
| Somdyala, Bradshaw, Gelderblom, and Parkin (2010) | – | Cross-sectional study | Health information | The study identified difficulties in maintaining a cancer registry in a rural setting and determining the true incidence of cancer in rural areas |
| Tanser and Le Sueur (2002) | – | Literature review | Health information | Application of geographical information system (GIS) is relevant to monitoring diseases with strong environmental links, such as vector-borne diseases |
| Van Damme, Kober, and Laga (2006) | – | Review | Health system | There is a need for novel systems to support chronic care and large-scale prevention, as ART (antiretroviral treatment) transforms HIV into a chronic disease requiring lifelong follow-up |

(*continued*)

**Table 9.1** (continued)

| *Author* | *Theory* | *Method* | *Scope* | *Main argument/finding* |
|---|---|---|---|---|
| van der Hoeven, Kruger, and Greeff (2012) | – | Cross-sectional study | Health services | Urban participants were more likely to prefer a private doctor, while rural participants were more likely to prefer a health clinic |
| van Dijk et al. (2009) | – | Cross-sectional study | Health system | Even though rural children are responding well to HIV treatment, access and nutrition should be improved to ensure optimal and long-term outcomes |
| Versteeg, Toit, and Couper (2013) | – | Qualitative | Health system | In order to improve rural health care, there is a need for equitable financing for rural health care provision, management of health workers' appointments based on appropriate skills and experience, and transformation of the organizational culture |
| Wamai (2009) | – | Literature review | Health system | Strengthening the health system will determine Kenya's progress in disease control and improvement in health care |
| Wang et al. (2015) | – | Quantitative | Health financing | Even in a context where essential care for chronic non-communicable diseases (CNCDs) is supposedly free of charge at the point of use, out-of-pocket (OOP) expenditure imposes a considerable financial burden on rural households |
| Wiseman (2005) | – | Qualitative | Health financing | The introduction of user fees at community level was the Bamako initiative's most problematic proposition |

study; methodology used; focus of the study; and main argument or finding of the study. The main focus of each of the studies was derived from analysis of the main objectives, main arguments, and key findings of each of the studies. These were then examined for commonalities. Studies on planning approaches such as primary health care (PHC) and vertical selective programmes were grouped under one thematic area, referred to as health planning, while those studies on how health care is paid for or funded were grouped under health financing. Studies on specific health service delivery types or issues (e.g. chronic diseases) were placed under health services.

An iterative process was followed whereby some thematic areas were sometimes merged, new ones created, and studies reclassified until a satisfactory level emerged from the process. The emergent themes therefore are not a result of predetermined classification criteria; they represent a level of satisfaction with the iterative process followed to allow these themes to emerge from the studies reviewed.

## Results and Discussion

### *Study Designs*

Among the 54 studies reviewed (Table 9.2), 26 (37 per cent) had lead authors from SSA, with South Africa accounting for most studies (eight studies) compared with other SSA countries. The rest of the studies (63 per cent) had lead researchers of non-SSA origin. Contribution of the research community in other SSA countries is still low.

Among the 54 studies included in the review (Table 9.2), 37 (68 per cent) of the studies were reviews, 15 (28 per cent) were cross-sectional studies, one study used cluster randomized design, and one was a cost analysis study. Majority of the studies were reviews; this perhaps represents a significant research gap. Given that SSA has been at the forefront of the introduction of many types of new approaches to health care delivery, these initiatives and their outcomes have presented opportunities for rigorous research, which the research designs among most of the studies reviewed found to be inadequate so far.

### *Theories and Conceptual Models*

Only two studies had an explicit theoretical or conceptual model specified out of the 54 studies reviewed. One of the studies used Giddens' theoretical

**Table 9.2** Design characteristics of studies reviewed

| *Study focus* | *Study type* | | | *Conceptual/theoretical model specified* | | *Total* |
|---|---|---|---|---|---|---|
| | *Cross-sectional study* | *Review* | *Others* | *Yes* | *No* | |
| Health planning | 2 | 7 | – | – | 9 | 9 |
| Health financing | 4 | 8 | 1 | 1 | 12 | 13 |
| Health system | – | 5 | – | 1 | 4 | 5 |
| Health services | 6 | 12 | – | 1 | 17 | 18 |
| Human resource | 3 | 4 | 1 | – | 8 | 8 |
| Health information | – | 1 | | – | 1 | 1 |
| Total | 15 | 37 | 2 | 3 | 51 | 54 |

concepts of disembedding and embedding (Giddens, 1990) to analyse how the Ministry of Health of Uganda has performed in delivery of health services to local communities. Jeppsson et al. (2005) argue that while the Uganda Ministry of Health endeavours to technically engage with local communities, it has to simultaneously overcome disembedding forces exerted upon it by attempts to strengthen relationships with expert global health partners. The net effect, according to Jeppsson et al. (2005), is that most post-colonial ministries of health in SSA are not effectively embedded in local communities, with negative consequences on health service delivery. The second model used in the studies' reviews is the data envelop analysis (DEA) model to determine the efficiency of delivery of PHC services in Burkina Faso (Marschall & Flessa, 2011). The model measures the degree of success with which an organization uses its inputs and resources to produce a given outcome in order to improve the ratios of inputs and outputs.

Considering the fact that some of the solutions that have been introduced in the region have never been tried elsewhere, the dearth of theoretical conceptualization in SSA health research studies represents a major gap in scientific rigour in SSA health research. There is a need to identify where translation and implementation issues of the many solutions really are, as well as their relevance to the needs of the region.

### *Service Delivery Focal Areas in Empirical Research*

The review identified six broad research themes in the 54 studies reviewed: these included health planning, health financing, health services, health

system, human resource, and health information. These themes are presented in this section.

*Health Planning*

The review identified comprehensive and vertical approaches as the dominant health service delivery models in SSA research studies. Within a month, 11 articles were retrieved on the subject. Five of them focused on comprehensive PHC approaches, four articles addressed vertical selective interventions and the need for integration, and two addressed limitations of selective approaches. However, none of the studies specified any conceptual models or theoretical frameworks in their analyses.

Among the five articles on PHC experiences in SSA, none of the studies specified either a conceptual model or a theoretical framework. All of the five articles reviewed addressed contributing factors to failure or successful implementation of PHC. According to Chimezie (2015), PHC failed in Africa due to a lack of leadership and poor management, poor funding, shortage of drugs, inadequate health workforce, and a lack of health-promoting amenities in rural areas. Chimezie also argues for an alternative health services delivery model that is better suited to the local context and emerging health needs in Africa, without going into specifics of how to do this.

Essomba et al. (1993) examine challenges of PHC implementation in Cameroon and successful implementation through decentralization of decision-making to the districts and the communities. Similarly, Abdulraheem et al. (2012) describe Nigeria's failure to implement PHC due to a lack of management structures at district level, a lack of involvement of community members, and limited health infrastructure in rural communities. Coovadia, Jewes, Barron, Sanders, and McIntyre (2009) credit post-apartheid government with the successful implementation of PHC, which had been largely ignored by previous governments. While Schaay and Sanders (2008) highlight the dominance of the private sector, Pillay (1993) points out the distrust between the state and most rural black communities as one of the key challenges encountered in the local context of South Africa.

Six publications have highlighted shortcomings of selective approaches and potential benefits of the integration of horizontal PHC approaches and vertical disease-specific approaches. The experience of six SSA countries (e.g. Ethiopia, Madagascar, Tanzania, Uganda, Zambia, and Zimbabwe) with child health days (Doherty et al., 2010) illustrates

distortions and disruptions caused to the broader health service delivery by vertical interventions, leading to a reduction in the performance of other priority health interventions and diversion of critical health staff. Adwok et al. (2013) examine the negative impact of selective approaches on equally important health service delivery priorities; they argue that declining health indicators in African countries can be attributed to the neglect of public health systems, though underfunding and loss of health care workers to better-funded donor projects are also part of the reasons for this decline.

Doherty et al. (2010) argue that the downside of vertical interventions can be addressed through integration within the broader PHC. Similarly, Schreuder and Kostermans (2001) argue for the need for both sides of the vertical–horizontal divide to get together and weave the horizontal and vertical fibres into a sustainable web of an integrated approach because each approach contributes in its own way towards improving health. According to Makaula et al. (2012), vertical programmes have a better chance of success if beneficiary communities are engaged in them right from their inception. Kabatereine et al. (2010) examine challenges of integrating a vertical programme within existing health structures, such as difficulties in assigning leadership and handling resentment often associated with restructuring.

The review findings show that a comprehensive PHC and selective vertical approaches have dominated the SSA planning discourse and practice for more than three decades, with mixed results. However, only a limited number of studies on comprehensive PHC and selective vertical approaches identified specifically focused on SSA. Further, the studies identified were largely descriptive in nature, and most of them lacked depth and rigour in theoretical conceptualization necessary for reshaping health planning discourse and practice in the SSA context. With the persistent debate about which approach is better, whether none of them is good for the SSA context, or a more integrated approach is needed, and that there have been nearly 30 years of experimentation with mixed results, the lack of sound scientific evidence to inform the discourse and practice is a glaring omission on the part of the research community, especially those in SSA research institutions.

*Health Financing*

The literature shows how approaches to health financing have evolved in SSA. According to Mwabu (1998), the question of how to pay for health

care was particularly controversial in the 1980s and early 1990s. Multiple financing models have been attempted with mixed results. The review identified cost sharing, free market, and public-funded health financing as some of the main health financing mechanisms that have been implemented to varying degrees in SSA.

**User Fees**

Free health care policy of post-independence Africa was largely abandoned with the economic crisis of the 1970s and 1980s. Gilson and Mills (1995) examined the SSA experience with the introduction of user fees. They described the contribution of the economic crisis of the 1980s and early 1990s, economic stagnation, coupled with sustained population growth, to the erosion of the ability of governments to allocate adequate funding for the health sector. Wiseman (2005) describes the donor-driven inception of the Bamako initiative of 1987 and the introduction of user fees for sustainability of PHC; he argues that the prominent role given to user fees at community level was the initiative's most problematic proposition. Sahn and Bernier (1995), on the contrary, argue that structural adjustment did not reduce public health expenditure, and that equity concerns about the poor regarding out-of-pocket (OOP) payments are often overstated. Leighton (1996) described obstacles to the successful implementation of cost recovery, and strategies to overcome them; the obstacles include reforming civil service, building political consensus on priorities, strengthening management capacity, and overcoming bureaucratic constraints.

Goudge et al. (2009) examined the effect of free primary care services and fee exemptions on financial protection of households and access; the findings showed that these measures alone are not enough to improve access, as getting exemptions was difficult and distances from health facilities were long; more exemptions and outreach services may be necessary to improve access. Similarly, in Zimbabwe, Kevany et al. (2012) found that poorer members of society in rural areas very rarely utilized health facilities due fees for the service and associated cost of transportation.

McPake (1996) examines the aspect of the health sector reform that aimed at cutting public health spending by granting large university teaching hospitals greater autonomy from the Ministries of Health and responsibility for the generation of their own finances. Hanson et al. (2002) also examine the impact of granting financial autonomy to hospitals in Uganda and Zambia.

### User Fees Reduction and Removal

Ridde (2011) argues that one of the key failures of the Bamako initiative user fee model was the fact that equity for the worse-off was neglected in its interpretation and implementation; he points out the importance of removing cost barriers in order to expand access to health care in SSA. A study on Kenya's experience showed that the policy was yet to be fully implemented in practice, demonstrating the need for careful planning when deciding on how to reduce or abolish user fees (Chuma et al., 2009). Similarly, in Malawi, with free health care policy, difficulties are encountered by rural households, which incur large OOP payments for their health care (Wang et al., 2015). A study by McPake et al. (2013) attempted to demonstrate a relationship between the elimination of user fees and the impact on health workers; the authors caution about possible negative consequences of user fees removal, including increased workloads for health staff, loss of user fee revenue for allowances for health workers, and interruption of supplies of health care inputs due to the increased demand, and the need for careful consideration and inclusion of human resource needs in cost removal polices.

Ejughemre (2013), while acknowledging that the SSA countries witnessed a large influx of donor funds, particularly in response to the MDGs initiative, argues that a gradual exit from donor funding for health is needed to enable countries to achieve self-reliance when the donor funds come to an end.

### Insurance

One study in Burkina Faso found that a community-based insurance scheme had some positive impact on catastrophic health expenditure, but lacked any positive impact on health outcomes; it led to higher mortality among the '65 years and older' age groups due to a number of factors. These factors included unaffordability by households and avoidance of chronic diseases by health providers, who were receiving capitation funds of the scheme (Fink et al., 2013). Carapinha et al. (2011) focused on the scope of medicine coverage in private and public insurance schemes in selected countries in SSA; the study found that the coverage is limited and fraud is a major problem in medicine coverage design. Mladovsky et al. (2015) examine the uptake of a community-based health insurance scheme in Senegal; the main reasons for low coverage included a lack of subsidy for staff salaries, weak governance

structures, respect for community norms and values, clear national policies, and engagement of care providers.

*Health Services*

Bangdiwala, Fonn, Okoye, and Stephen Tollman (2010) highlight challenges involved in coping with emergences of NCDs in SSA while the unfinished agenda of infection, malnutrition, and maternal complications persists. According to Ayernor (2012), NCDs are two times higher among the rural population compared with the urban population in SSA. Despite growing evidence that urban and rural populations suffer from the same diseases, and in some instances, the rural population is more affected, the majority of rural health services consist of basic health services, which include immunization, antenatal clinics, postnatal clinics for children, and treatments for basic health conditions and injuries. Chronic diseases are not actually being addressed and diagnostic services are inadequate. de-Graft Aikins et al. (2010) stress the growing burden of chronic infections/diseases in rural Africa and the lack of appropriate services. These include HIV-related diseases, pregnancy-related disorders, and the increasing incidence of NCDs and injuries (de-Graft Aikins et al., 2010; Etyang et al., 2014).

Other leading NCDs among rural populations in Africa include hypertension and diabetes (Hendriks et al., 2012; Mayosi et al., 2009), oral health problems and arthritis among older adults in rural areas (Ayernor, 2012), and cancer, the incidence of which is rising (Somdyala et al., 2010). Given limited access to mammograms in SSA, Galukande and Kiguli-Malwadde (2010) propose the use of ultrasound in breast cancer screening in resource-limited settings and a lower cut-off age for mammography screening. de-Graft Aikins et al. (2010) note that African health policy-makers and governments should prioritize chronic diseases policies; these should include strategies for community participation in the prevention of NCDs, such as community volunteer groups, community advocacy groups, mass media, and institutions (e.g. churches, schools).

Mamo et al. (2007) describe a successful community-based care for chronic diseases in Ethiopia. According to their study, community-based care and education, which is primarily driven by health officers or nurses, is an effective and cost-efficient method for managing chronic diseases in rural areas. Hanlon et al. (2010) carried out a study that focused on community-based mental health care delivery mechanisms in South Africa.

It consisted of a combination of specialist outreach teams and the integration of mental health care into PHC. The findings showed an increasing need and demand for community mental health services. In his proposition of community participation in delivery of tuberculosis treatment, Kironde and Kahirimbanyi (2002) argue that this can serve to address inadequate health infrastructure, insufficient level of decentralization, paucity of health workers, and financial resources. According to Mashego et al., (2005), other factors that affect the utilization of health services include drugs availability and perceived quality of health service delivery. Two studies further highlight the challenge of sustaining community participation in health service delivery while balancing cost, especially when incentives are involved (Kironde & Kahirimbanyi, 2002; McCord et al., 2013).

A study in rural southern Zambia (van Dijk et al., 2009) examined distant health facilities and found poor roads as the main obstacle in accessing these facilities, especially during rainy seasons; 90 per cent of HIV-infected children travelled more than one hour to reach the clinic and more than one-quarter travelled more for than five hours. In South Africa, the government has addressed the challenge of distant health services by providing transport to cancer centres, since some of the patients travel 200–700 kilometres to reach the specialist care facility (Somdyala et al., 2010). Van der Hoeven et al. (2012) highlight differences in rural and urban health experiences, and according to their findings, rural populations are more likely to experience cost barriers to health services.

*Culture and Health*

Three articles that were reviewed examined the influence of traditions and culture on rural health planning. Cultural and ethnic diversities influence community participation in health care because of the relationship between culture, health, and development (Takim, Gever, & Pefun Joshua, 2013). Culture also affects health outcomes; Adedini et al. (2014) found increased infant mortality with wife seclusion cultural practices widely practised among the Hausa community in Nigeria.

According to Marschall and Flessa (2011), conservative rural communities may not patronize health facilities that are not sensitive to their cultural values. For example, Haile and Guerny (2000) observed that cultural views such as the one that considers human reproduction as a natural process that should not be interfered with using artificial methods and also a lack of involvement of men who are responsible for making reproductive

health decisions constitute a significant barrier to effective delivery of family planning in rural areas of Africa. Hoque et al. (2008) discuss the lack of culturally appropriate health information, especially on more sensitive rural health issues such as reproductive health as a barrier to the uptake of pap smear test for cervical cancer.

*Health System*

Travis et al. (2004) accurately predicted that the MDGs would not be met by 2015 by developing countries because of the focus on vertical programmes and the neglect of investment in health systems. He argued that if the health system is lacking in capabilities such as health workforce, drug supply, health information, and health financing, it may not respond to opportunities presented by selective programmes. Some of these subthemes were identified in the literature reviewed.

Oyaya and Rifkin (2003) describe the gaps between policy formulation and implementation and identify a number of obstacles that should be addressed in order to close the gaps. These gaps included identifying and managing critical policy processes, and building institutional capacity to undertake the associated tasks. According to Versteeg et al. (2013), rural health care is understaffed and poorly managed in South Africa. In order to improve rural health care, therefore, there is a need for equitable financing for rural health care provision and management appointments based on appropriate skills. Scrubb (2011) highlights the effect of political ideology on health systems. According to him, the inability to adequately address the HIV/AIDS epidemic in South Africa may be explained by the still-existing apartheid ideologies in the local health system.

*Health Information*

Health information tools such as geographical information system (GIS) for spatial modelling of disease epidemiology can address current disease burden estimation gaps in SSA (Tanser & Le Sueur, 2002). One study based on South Africa's experience highlights how the lack of appropriate information technology to capture and process the cancer cases in rural settings is affecting the quality of cancer registries in rural areas (Somdyala et al., 2010).

*Health Workforce*

Africa comprises some 11 per cent of the world population and 25 per cent of the global burden of disease, but hosts just 4 per cent of the global

health workforce to address this burden (Bangdiwala et al., 2010). According to de Maeseneer and Flinkenflogel (2010), training of medical doctors should focus on those most in need. They argue that linking education to practice should be a key feature of a socially accountable faculty. Van Damme et al. (2006) cite the lack of human resources as having hampered progress in HIVAIDS prevention and treatment in SSA. Bangdiwala et al. (2010) suggest that emphasis should be placed on mid-level and low-level health care workers, as they are unlikely to migrate. McCord et al. (2013) also propose deployment of CHWs in SSA on a national scale.

Daniels et al. (2015) illustrate how staff costs and retention challenges pose limitations for deployment of CHWs for delivery of community intervention. Three studies examined factors that affect the retention of health workers in rural areas (Erasmus & Blaaw, 2011; Grobler et al., 2009; Mutale et al., 2013). The factors they identified included a lack of equipment in health facilities, poor quality of life, and a lack of housing as some of the disincentives among doctors and nurses. Pillay's study (2011) on the analysis of management capacity in the public health sector in South Africa identified significant skill gaps among nurses in management position.

## Conclusion

The chapter has shown that a significant amount of research has addressed health delivery in SSA. However, researchers of SSA origin accounted for only 37 per cent of the studies reviewed. External researchers from outside SSA accounted for the research activities in SSA. This is consistent with observations from previous studies (Sall, Lebeau, & Kassimir, 2003; Tijssen, 2007), which have shown very low contribution of SSA to global scientific research. This should be a cause for concern; it appears that the owner of the proverbial pinching shoes who should know best where the shoe hurts has not shouted loud enough in the realm of scientific research. Perhaps the marginal place of the SSA researcher and the fact that external sources of the often unsuitable health solutions are also the dominant player in the SSA research arena could explain why health delivery solutions introduced in SSA have not been subjected to the desirable level of critical, theoretical, and conceptual scrutiny, as these findings have shown.

A number of reasons have been advanced for the low contribution of SSA to global scientific research; these include poor investment in innovation and development by SSA countries and deinstitutionalization of

PhD studies in the region (Quintana & Calvet, 2012). The research space in the region is characterized by poor working environment, low pay, a lack of equipment, and poor retention of researchers (Tijssen, 2007). These findings underscore an urgent need for a paradigm shift among SSA leaders and policy-makers. There is a need to recognize that the region's health delivery challenges stand a better chance of being solved through innovative solutions generated by local researchers with better appreciation of the context. Furthermore, unless SSA health care delivery is anchored on research and innovation, desired levels of development in health care delivery in the region will not be realized. This calls for deliberate and sustained investment of local resources in research by SSA countries.

Regarding areas of focus of the research studies reviewed, health services accounted for most of the studies, with health care delivery for the increasing burden of chronic diseases in rural areas featuring most prominently. The findings reflect the increasing global focus on chronic diseases in the region (de-Graft Aikins et al., 2010) and the increasing gap between the burden of chronic diseases among rural populations and the lack of relevant services (Kane, Landes, Carroll, Nolen, & Sodhi, 2017). Historically, health services for chronic diseases have been provided in secondary and tertiary facilities in urban centres, which are not readily accessible to rural communities. Most rural communities in SSA lack doctors and largely depend on primary care facilities for basic care and preventive services, such as immunization and antenatal care.

Health financing was the second most researched area, followed by health planning. Even though participation of researchers from other disciplines, such as economics, may explain the large amount of health financing research, attention given to health financing in SSA research is understandable, given the sustained dependency of the region on donor funding for health. Further, since the disruptive effect of the structural adjustment of late 1980s and the end of public-funded health care delivery, and subsequent experiments with various funding models in the region, the findings show that an ideal funding model for SSA is far from being realized. Regarding research on health planning in SSA, despite the large interest generated by vertical and horizontal health planning models over the past two decades, the findings showed that very little empirical research has addressed these subjects in the context of SSA. Perhaps as a result, a repetitive pattern of old planning and financing solutions being replaced by old approaches that were considered to have failed in past was

observed. This represents a significant research gap and poses the risk of perpetuation of failure in health service delivery propositions for SSA.

Overall, the studies lacked scientific rigour; the majority did not include any conceptual or theoretical models. This level of research was missing in the studies reviewed, whether at the level of design or at the inception stage of the health care delivery and financing models proposed, or at the operational research level during implementation in the diverse socio-economic contexts of SSA countries. Underlying assumptions of these propositions require rigorous empirical validation. This level of research rigour is needed to avoid the perpetual circle of introduction and reintroduction of ill-proven health delivery and financing solutions often observed in SSA.

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CHAPTER 10

# Physical Activity

*Fletcher Njororai and Wycliffe W. Simiyu Njororai*

## Introduction

Physical activity (PA) is a health-enhancing behaviour with many benefits to an individual. Regular PA has been shown to reduce the risk for a range of chronic diseases (Amusa, Toriola, & Goon, 2012; Dvorak, Fuller, & Junge, 2012; Ferreira et al., 2006; Strydom, 2013). Among the young people, PA offers prospects for building strong bones, healthy joints, a strong heart, and a good mental health and prevents today's major public health concern—obesity (Amusa et al., 2012; Kohn & Booth, 2003). Despite these health benefits, many people, especially the young ones, are not engaging in recommended levels of PA so as to maximize these benefits.

Physical inactivity has been associated with the Western, affluent, and industrialized societies (Aarts, Schuit, Van de Goor, & van Oers, 2011; Dvorak et al., 2012), with serious problems and several unfavourable health consequences. However, similar negative consequences are reported to be on the increase in Africa. There is increasing evidence showing that high levels of physical inactivity is becoming a major lifestyle among adults and children throughout Africa (April, Kolbe-Alexander, Draper, & Lambert, n.d.; Dumith, Hallal, Reis, & Kohl, 2011; Dvorak et al., 2012; Guthold, Ono, Strong, Chatterji, & Morabia, 2008, 2011; Strydom, 2013). This chapter summarizes the evidence on PA in Africa and related

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aspects of health promotion through intervention strategies to promote PA at national and community levels.

## Methods

Peer-reviewed published articles on PA interventions around the world, and particularly pertaining to Africa, were searched in electronic databases. These included Medline, CINAHL, Sport Discus, Health Source, Health Reference Centre, and Academic Consumer Health. The keywords used in the literature search included physical activity, African countries, health promotion, and empowerment. The search strategy was restricted to English-language papers published in peer-reviewed journals between 2003 and 2013. In addition, a review of the official documents from UN organizations such as the World Health Organization (WHO) and the United Nations Educational, Scientific and Cultural Organization (UNESCO) were also sought to obtain a broader range of information on African countries, as well as academic presentations at conferences.

Initially, titles and abstracts of studies uncovered by the electronic searches via databases were examined on the screen. Papers which could not be excluded on the basis of the title and abstract were obtained in full and reviewed by the two authors for suitability for inclusion. Over 1569 titles showed up, out of which the titles and abstracts of 120 articles were initially reviewed, yielding 50 that were printed and examined further. Twenty publications (see Table 10.1) were found appropriate, based on sample characteristics or nature of study, conceptual approach, study type, data collection method, study focus, findings, and conclusions/recommendations, for deeper conceptual, methodological, and contextual analysis.

## Results and Discussion

Table 10.1 shows a summary of the reviewed publications, including the author(s), sample characteristics or nature of study, title of the article, conceptual approach, study type, data collection method, study focus, findings, and conclusions/recommendations.

### *Study Designs*

Out of the 20 studies reviewed, four focused on the worldwide PA trends (Dumith et al., 2011; Guthold et al., 2008; Micheli et al., 2011; Wang & Lobstein, 2006); two (Heroux et al., 2013; Onywera et al., 2013) dealt

**Table 10.1** Summary of research on physical activity

| *Author (year)* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study type* | *Data collection method* | *Study focus* | *Findings* | *Conclusions and recommendations* |
|---|---|---|---|---|---|---|---|---|
| Wang and Lobstein (2006) | Publications between 1980 and 2005 | Worldwide (15 African countries covered in the study) | World Health Survey | Meta-analysis | Survey | Obesity prevalence worldwide | Childhood obesity/Overweight on the increase worldwide; exceptions found in infants and preschool children in lower-income countries | Effective programmes and policies needed at global, regional, and national levels |
| Heroux et al. (2013) | School aged children from three countries | Canada, Mexico, and Kenya | Physical activity (PA) transition | Comparative study | Survey | Obesity prevalence in Canada, Mexico, and Kenya | Kenya had the lowest obesity levels (0.9 for boys and 2.8 for girls) compared with Mexico and Canada; Kenyans had highest aerobic levels | Obesity levels vary as per transition stage of each country |
| Ferreira et al. (2006) | Publications between 1980 and 2005 | Not applicable | Ecological model | Meta-analysis | Survey | Environment and PA | The home and the school key to PA participation; support of significant others; low crime rate | Further research should aim at longitudinal and intervention studies and use more objective measures of PA and its potential (environmental) determinants |

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**Table 10.1** (Continued)

| *Author (year)* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study type* | *Data collection method* | *Study focus* | *Findings* | *Conclusions and recommendations* |
|---|---|---|---|---|---|---|---|---|
| Kerr, Rosenberg, and Frank (2012) | Publications up to 2010 | Not indicated | Ecological Model | Meta-analysis | Survey | Environment, PA, and health | The built environment is key in promoting or inhibiting PA in older adults; creating and preserving walkable communities is a means to reduce the risk of chronic diseases and maintain improved public health and quality of life; design of the physical environment in which older adults live and the level of access to transit service determine the level of accessibility the elderly have to important destinations such as shops, services, and places to recreate. When supportive features are prominent in places where older adults live, they can remain active and independent | Planners should be prepared to respond with design solutions that will make destinations safely accessible on foot or by transit for this rapidly growing segment of the population |

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**Table 10.1** (Continued)

| *Author (year)* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study type* | *Data collection method* | *Study focus* | *Findings* | *Conclusions and recommendations* |
|---|---|---|---|---|---|---|---|---|
| Sinnett, Williams, Chatterjee, and Cavill (2011) | Evidence-based report | United Kingdom | Socio-ecological | Report | Evidence-based report | Walking environment and investment | The benefit of investments in the walking environment is improved health from increased PA; evidence from UK and international studies report significant potential health benefits from relatively minor investments; the improved travel experience of users of a walking environment; all the evidence reviewed of evaluations of walking environments showed positive cost–benefit ratios, of up to 37.6; the highest value for money transport projects are smarter choices, cycle and pedestrian schemes, local safety schemes, and some bus schemes. This suggests that investment in the walking environment is likely to be at least, if not better, value for money than other transport projects | Makes the case for investment in the walking environment. It has set out the evidence on the benefits of walking-friendly places, and identified their cost-effectiveness. It has also presented a number of case studies of successful schemes which have been tested and evaluated |

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**Table 10.1** (Continued)

| *Author (year)* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study type* | *Data collection method* | *Study focus* | *Findings* | *Conclusions and recommendations* |
|---|---|---|---|---|---|---|---|---|
| April et al. (n.d.) | Evidence-based report | Africa | Socio-ecological | Report | Documentary review | Inactivity, obesity, initiatives, and Africa | The socio-ecological model illustrates the interrelationship between the individual and their environment; the social environment includes community norms and values, regulations, policies, and culture; some of the determinants and barriers to healthy behaviours are shared by the community as a whole; there is a need to approach health promotion on all levels in order to increase effectiveness; evidence shows high levels of physical inactivity among adults and children throughout Africa; high levels of obesity exist, and non-communicable diseases (NCDs) prevalence shows signs of increase due to competing agendas and barriers of PA which exist at each level of the social environment; high levels of physical inactivity can only be addressed by targeting interventions at each level of social environment; for this to be effective, it will require custodians at community, workplace, and policy level to promote PA and not just medical practitioners; a network involving custodians at all levels would further improve the efficiency of PA promotion throughout the social environment | Barriers to PA exist on all levels of the social environment<br>In order to combat physical inactivity, strategies and initiatives need to be implemented on all levels<br>Policy/Environmental interventions; workplace interventions; community interventions |

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**Table 10.1** (Continued)

| *Author (year)* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study type* | *Data collection method* | *Study focus* | *Findings* | *Conclusions and recommendations* |
|---|---|---|---|---|---|---|---|---|
| Aarts et al. (2011) | Four medium-sized Dutch municipalities | The Netherlands | Delphi method | Interview | Survey | Activity-friendly environments for children, policy | Cultural/Community acceptability, political feasibility, and cost feasibility were considered the most important feasibility aspects; Delphi studies yielded 16 feasible policy measures aimed at physical and social environmental correlates of PA among children; less drastic policy measures were considered more feasible, whereas environmental policy measures were considered less feasible | The Delphi technique can be a useful tool in reaching consensus about feasible multi-sector policy measures. The study yielded several feasible policy measures aimed at physical and social environmental correlates of PA among children and can assist local @@policy-makers in designing multi-sector policies aimed at an activity-friendly environment for children |

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**Table 10.1** (Continued)

| *Author (year)* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study type* | *Data collection method* | *Study focus* | *Findings* | *Conclusions and recommendations* |
|---|---|---|---|---|---|---|---|---|
| Dvorak et al. (2012) | Evidence-based report | Mauritius | Community education | Intervention programme | Outcome report | Delivery of health education and PA | The pilot study produced an 18 per cent absolute increase in post-intervention health knowledge across the health messages, which was equivalent to a 26 per cent relative increase against the children's baseline knowledge level; while the nationwide study produced a 14 per cent absolute increase in the post-intervention health knowledge across the health messages, equivalent to a 22 per cent relative increase against the baseline knowledge level. The implementation of the '11 for Health' programme was considered to have met the objectives set out at the beginning of the project | The strategy used to implement the '11 for Health' programme in Mauritius has already been transferred to three other African countries (Botswana, Malawi, and Namibia), namely, a tripartite collaboration between FIFA/F-MARC (FIFA Medical Assessment and Research Centre), the country's football association, and the government's Departments of Health, Education, and Sport, with the country's media used to increase the public's awareness of the programme |

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**Table 10.1** (Continued)

| *Author (year)* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study type* | *Data collection method* | *Study focus* | *Findings* | *Conclusions and recommendations* |
|---|---|---|---|---|---|---|---|---|
| Micheli et al. (2011) | Experts' viewpoint | Worldwide | Educational/ Ecological | Document review | Policy overview | PA and fitness in children and youth | International Olympic Committee (IOC) also acknowledges the need to care for possible health problems of active individuals; international sports federations should be encouraged to more actively participate in providing solutions to the serious health risks and societal costs of inactivity; the Olympic Movement will continue to serve athletes, the world's youth, and society at large for decades to come; all sectors and all levels within governments, international partners, civil society, non-governmental organizations (NGOs), and the private sector have vital roles to play in shaping healthy environments and contributing to the promotion of PA; ecological approaches that integrate interaction across all levels of government, schools, the community, individuals, and the settings in which they (the individuals) spend their time may be key to successful and sustained implementation | It is incumbent on these entities to pursue the goal of improving and protecting the health of children and youth through PA. The international policy framework exists to guide action, and now it is upon organisations and governments to ensure that PA receives adequate attention and resources to meet the great challenges identified |

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**Table 10.1** (Continued)

| *Author (year)* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study type* | *Data collection method* | *Study focus* | *Findings* | *Conclusions and recommendations* |
|---|---|---|---|---|---|---|---|---|
| World Health Organization (2008) | Evidence-based report | Developing countries from Asia, Africa, and South America (African region had Mauritius and South Africa) | World Health Survey | Systematic review | Policy overview | PA interventions | PA interventions carried out in developing countries include strategies to raise awareness of the importance and benefits of PA; educate the whole population and/or specific population groups; conduct local PA programmes and initiatives; build capacity among individuals implementing local PA programmes through training of potential programme coordinators; create supportive environments that facilitate participation in PA; and give recognition/awards | Important factors which contributed to good programmes included high-level political commitment/guiding national policy, funding, support from stakeholders, and a coordinating team. Other important factors are clear programme objectives, integration of PA within other related interventions, multiple intervention strategies, targeting of the whole population as well as specific population groups, clear identity for the programme, implementation at different levels, implementation within the 'local reality', leadership, dissemination of the intervention, evaluation and monitoring, and national PA guidelines |

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**Table 10.1** (Continued)

| *Author (year)* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study type* | *Data collection method* | *Study focus* | *Findings* | *Conclusions and recommendations* |
|---|---|---|---|---|---|---|---|---|
| Bailey, Hillman, Arent, and Petitpas (2012) | Experts' viewpoint | Not applicable | Human capital model (HCM) | Report | Authoritative opinion | Conceptualization of PA, personal and social change | Human development next was conceptualized according to six different domains of 'capital': (1) physical, (2) emotional, (3) individual, (4) social, (5) intellectual, and (6) financial, based on extended iterative quantitative and qualitative methods. Each of these six domains defines a set of resources that underpin human well-being and success | The HCM makes clear the beneficial outcomes of PA arising from investment in terms of both quality and quantity of life; the scope of this investment (across six capital domains) is much broader than what is normally considered with regard to PA promotion for all. Ultimately, the HCM is a call to consider investments in PA as powerful catalysts for personal and social change |

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**Table 10.1** (Continued)

| *Author (year)* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study type* | *Data collection method* | *Study focus* | *Findings* | *Conclusions and recommendations* |
|---|---|---|---|---|---|---|---|---|
| Chau (2007) | Review of community programmes | Australia | Social capital and community | Report | Survey | PA, community and social capital | Community-based PA programmes have the potential to make positive impacts on participants, as well on the communities in which they live. Elements of social capital may be built through PA initiatives and PA participation to strengthen communities; findings indicate that PA interventions are effective in building social capital and community strength; sport and recreation activities in communities are associated with numerous social benefits, including improved self-esteem, greater community identity, increased community cohesion, and support among players and non-players. Sport and recreation programmes have also been linked with reductions in antisocial behaviour and crime | Engage people from the community and build partnerships between businesses, councils, government and NGOs to collaborate and cooperate to promote and participate in PA; recognise different interests and abilities in the community and provide opportunities for different types of involvement in programmes, including physical, social, and cultural activities; empower community members to manage programmes to encourage ownership and sustainability; target community groups that are more disadvantaged and less likely to be active; ensure that programmes are culturally specific and sensitive; provide local facilities as gathering places for activities; conduct periodic surveys for feedback |

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**Table 10.1** (Continued)

| *Author (year)* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study type* | *Data collection method* | *Study focus* | *Findings* | *Conclusions and recommendations* |
|---|---|---|---|---|---|---|---|---|
| Bloemhoff (2010) | University students | South African | Descriptive paradigm | Self-administered questionnaire | Survey | PA levels | Results revealed that 33 per cent of students are inactive, irrespective of race and gender. Gender is a consistent and strong correlate of overall PA. Males are highly significantly ($p < 0.01$) more physically active than females and this difference becomes more evident in vigorous exercise. In contrast to previous studies, this research found that black students demonstrate significantly higher ($p < 0.05$) levels of PA than white students, and that black males have significantly higher ($p < 0.05$) PA levels than their white counterparts. White female students demonstrated the lowest PA (42.4 per cent) | Further research focusing on environmental determinants and the role of PA specialists in higher education, as well as intervention studies rather than descriptive studies, were recommended |

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**Table 10.1** (Continued)

| *Author (year)* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study type* | *Data collection method* | *Study focus* | *Findings* | *Conclusions and recommendations* |
|---|---|---|---|---|---|---|---|---|
| Hoehner, Brennan, Brownson, Handy, and Killingsworth (2003) | Conceptual frameworks | Not applicable | Ecological Model | Conceptual analysis | Qualitative study | Approaches to promote active community environments | As the fields achieve greater collaboration, cross-sectional designs will appear, particularly limited in their ability to assess the interrelationships among the built environment, residential choices, travel behaviour, and PA behaviour; working with city agencies, transit agencies, and others to identify planned 'interventions' may assist researchers in implementing alternative study designs; encouraging funders to support qualitative studies may help to expand data collection techniques; moving beyond cross-sectional studies will be crucial for advancing the research so as to build more convincing evidence about the community and/or environment's role in influencing active living | In light of the unacceptable levels of inactivity and associated health and economic consequences, reducing latency period should be a top priority for public health officials, urban planners, and transportation engineers in their pursuit of enhanced community environments and quality of life |

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**Table 10.1** (Continued)

| *Author (year)* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study type* | *Data collection method* | *Study focus* | *Findings* | *Conclusions and recommendations* |
|---|---|---|---|---|---|---|---|---|
| Onywera et al. (2013) | School-aged children from three countries | Canada, Mexico, and Kenya | PA transition | Comparative study | Survey | Childhood obesity prevalence in Canada, Mexico, and Kenya | Findings showed that 25.6 per cent of Canadian children were overweight or obese, compared with 35.7 per cent and 5.6 per cent of Mexican and Kenyan children, respectively. Results indicated that 41.2 per cent of the Kenyan children were underweight compared with 10.9 per cent and 6.4 per cent of Mexican and Canadian children, respectively. Mexican and Kenyan children were more physically active than Canadian children, accumulating an average of 15,757 ± 5565, 15,605 ± 5963, and 10,730 ± 3969 steps per day, respectively | This inter-country comparison shows that childhood overweight and obesity levels are lowest and PA levels are high in Kenya, a country at an early stage of the PA transition. Further research using more representative samples is recommended |

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**Table 10.1** (Continued)

| *Author (year)* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study type* | *Data collection method* | *Study focus* | *Findings* | *Conclusions and recommendations* |
|---|---|---|---|---|---|---|---|---|
| Dumith et al. (2011) | Prevalence of physical inactivity | Worldwide (had 19 African countries) | World Health Survey | Comparative study | Survey | Worldwide prevalence of physical inactivity | The crude worldwide prevalence of physical inactivity was 21.4 per cent (95% confidence interval [CI] 18.4–24.3), being higher among women (mean = 23.7 per cent, 95% CI 20.4–27.1) than among men (mean = 18.9 per cent, 95% CI 16.2–21.7). It ranged from 2.6 per cent (in Comoros) to 62.3 per cent (in Mauritania), with a median equal to 18 per cent. After weighting for the total population of each country, the worldwide prevalence of physical inactivity was 17.4 per cent (95% CI 15.1–19.7)<br>There was a positive association between the Human Development Index (HDI) and the prevalence of physical inactivity (rho = 0.27). Less developed countries showed the lowest prevalence of physical inactivity (18.7 per cent), while physical inactivity was more prevalent among the most developed countries (27.8 per cent) | One out of five adults around the world is physically inactive. Physical inactivity was more prevalent among wealthier and urban countries, and among women and elderly individuals |

(*Continued*)

**Table 10.1** (Continued)

| *Author (year)* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study type* | *Data collection method* | *Study focus* | *Findings* | *Conclusions and recommendations* |
|---|---|---|---|---|---|---|---|---|
| Guthold et al. (2008) | Worldwide variability in physical inactivity | Worldwide | World Health Survey (19 African countries) | Comparative study | Survey | Data on the prevalence of physical inactivity | Country prevalence of physical inactivity ranged from 1.6 per cent (Comoros) to 51.7 per cent (Mauritania) for men and from 3.8 per cent (Comoros) to 71.2 per cent (Mauritania) for women. Physical inactivity was generally high for older age groups and lower in rural as compared with urban areas | Overall, about 15 per cent of men and 20 per cent of women from the 51 countries analysed here (most of which are developing countries) are at risk for chronic diseases due to physical inactivity. There were substantial variations across countries and settings. The baseline information on the magnitude of the problem of physical inactivity provided by this study can help countries and health policy-makers to set up interventions addressing the global chronic disease epidemic |

(*Continued*)

**Table 10.1** (Continued)

| *Author (year)* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study type* | *Data collection method* | *Study focus* | *Findings* | *Conclusions and recommendations* |
|---|---|---|---|---|---|---|---|---|
| Guthold et al. (2011) | 22 African countries | Africa | World Health Survey | Comparative study | Survey | Chronic disease risk factor surveillance | Overall, 83.8 per cent of men and 75.7 per cent of women met WHO PA recommendations (at least 150 minutes of moderate activity per week or equivalent). Country prevalence ranged from 46.8 per cent (Mali) to 96.0 per cent (Mozambique). PA, both at work and for transport, including walking, had large contributions to overall PA, while PA during leisure time was rare in the @@analyzed countries | PA levels varied greatly across African countries and population subgroups. Leisure-time activity was consistently low. These data will be useful to inform policy-makers and to guide interventions to promote PA |
| Onywera et al. (2012) | Rural and urban kids in Kenya | Kenya | PA transition | Cross-sectional study | Survey | Childhood obesity and physical inactivity | Rural Kenya (RKEN) children were more physically active than their urban Kenya (UKEN) counterparts, with a mean average steps per day (± SE) of 14,700 ± 521 vs. 11,717 ± 561 ($p < 0.0001$) for RKEN vs. UKEN children, respectively. Around 62.5 per cent of the UKEN children spent 0 hours per week playing screen games compared with 13.1 per cent of UKEN children who spent more than 11 hours per week playing screen games. Seventy percent of UKEN and 34 percent of RKEN parents reported being more active during childhood than their children | Results of this study are indicative of a PA transition in Kenya. Further research is needed to gather national data on the PA patterns of Kenyan children to minimize the likelihood of a public health problem due to physical inactivity |

(*Continued*)

**Table 10.1** (Continued)

| *Author (year)* | *Sample characteristics* | *Geographical unit* | *Theoretical framework/ model* | *Study type* | *Data collection method* | *Study focus* | *Findings* | *Conclusions and recommendations* |
|---|---|---|---|---|---|---|---|---|
| Strydom (2013) | Review of journals on South Africa | South Africa | Wellness continuum | Review of literature | Analytical study | PA, health, and well-being | Results indicated that in 2006, 74.6 per cent of individuals over all ethnic groups did not participate in PA, the most inactive groups being the Coloured (84.8 per cent), followed by the Asian (75.6 per cent), black (75.0 per cent) and white (74.6 per cent) groups. When the age pyramid for the South Africa population is analysed with projections to 2050, the large portion of elderly people becomes evident. The fastest-growing segment of the population will be the age group of 80+ years, which will grow at an estimated rate of 77 per cent and 79 per cent for the male and female groups, respectively. This significant number of elderly people may lead to major escalation in health care cost, which may cripple the health care budget | In conclusion, therefore, it is clear that physical inactivity poses a major health risk to the South African population, and with the projected increase in the older age category, which is more prone to various health risks, this scenario asks for timely intervention at various levels, starting from children to the elderly |

with three countries, Canada, Mexico, and Kenya; one was based in the United Kingdom (Sinnett et al., 2011); one in Kenya (Onywera et al., 2012); two in South Africa (Bloemhoff, 2010; Strydom, 2013); two in Africa (April et al., n.d.; Guthold et al., 2011); one in Australia (Chau, 2007); one in selected developing countries from Asia, Africa, and South America (WHO, 2008); one in Mauritius (Dvorak et al., 2012); one in the Netherlands (Aarts et al., 2011); and four did not apply to a specific geographical region (Bailey et al., 2012; Ferreira et al., 2006; Hoehner et al., 2003; Kerr et al., 2012).

In terms of study type, three used meta-analysis (Ferreira et al., 2006; Kerr et al., 2012; Wang & Lobstein, 2006), four were commissioned reports (April et al., n.d.; Bailey et al., 2012; Chau, 2007; Sinnett et al., 2011), five were comparative studies (Dumith et al., 2011; Guthold et al., 2008, 2011; Heroux et al., 2013; Onywera et al., 2013), and one study each using the following: interviews (Aarts et al., 2011), intervention programme (Dvorak et al., 2012), systematic review (WHO, 2008), document review (Micheli et al., 2011), self-administered questionnaire (Bloemhoff, 2010), conceptual analysis (Hoehner et al., 2003), cross-sectional study (Onywera et al., 2012), and review of literature (Strydom, 2013). Twelve of the 20 reviewed works derived their data from surveys: Aarts et al. (2011), Bloemhoff (2010), Chau (2007), Dumith et al. (2011), Ferreira et al. (2006), Guthold et al. (2008, 2011), Heroux et al. (2013), Kerr et al. (2012), Onywera et al. (2012, 2013), and Wang and Lobstein (2006). One was an evidence-based report (Sinnett et al., 2011), one documentary review (April et al., n.d.), one outcome report (Dvorak et al., 2012); two policy overviews (Micheli et al., 2011; WHO, 2008), one authoritative opinion (Bailey et al., 2012), one qualitative study (Hoehner et al., 2003), and one analytical study (Strydom, 2013). There were therefore diverse study designs, geographical scope, and approaches that shed light on the state of PA and health, particularly in Africa.

### *Theories and Conceptual Models*

The main conceptual models used in the studies were PA transition (Heroux et al., 2013; Hoehner et al., 2003; Micheli et al., 2011; Onywera et al., 2012, 2013), ecological/socio-ecological model (April et al., n.d.; Ferreira et al., 2006; Kerr et al., 2012; Sinnett et al., 2011), Delphi method (Aarts et al., 2011), community education (Dvorak et al., 2012), WHO's World Health Survey/worldwide trends (Dumith et al., 2011;

Guthold et al., 2008, 2011; Wang & Lobstein, 2006; WHO, 2008), human capital model (HCM) (Bailey et al., 2012), social capital and community (Chau, 2007), wellness continuum (Strydom, 2013), and descriptive paradigm (Bloemhoff, 2010) (see Table 10.1).

The predominant approaches were the ecological model and the WHO's World Health Survey. However, the overriding purpose for the promotion of PA, irrespective of the conceptual differences, is the enhancement of human capacity. It is therefore vital that we discuss PA from various perspectives, including community/ecological, social capital, and the HCM, as well as the best-practice approaches based on the World Health Survey/worldwide trends. This is done while acknowledging that African countries are undergoing a PA transition as exemplified in the studies by Heroux et al. (2013) and Onywera et al. (2012, 2013).

PA is a behaviour that is associated with individual, social, and economic factors, as well as with the physical environments in which individuals live (Chau, 2007). With the increasing levels of obesity and non-communicable diseases (NCDs), there is increasing attention given to the relationship between PA and community factors and the potential health benefits for individuals, as well as for the community as a whole (Chau, 2007). In Africa, the concept of community is strong and therefore any planning for development has to factor it in the strategies for implementation of programmes.

Paronen and Oja (1998, p. 14) define community by identifying the six main features it should possess:

1. A community is typified by membership; that is, its members have a sense of identity and belonging.
2. A community consists of common symbol systems, such as similar language, religion, and practices.
3. Community members share norms and values.
4. They have a sense of mutual influence, whereby they influence and are influenced by each other (reciprocity).
5. A community is characterized by shared needs and commitment to meeting those needs.
6. Community members typically share an emotional connection, such as common history, mutual support, and similar experiences.

Furthermore, a community may be defined not only by geographical boundaries (e.g., neighbourhood), but also by characteristics such as ethnic

background, employment sector, lifestyle, and age (Chau, 2007). According to Chau (2007), a 'strong community consists of members and stakeholders who understand the community's social, economic and environmental assets and who work together to ensure the sustainability of resources, as well as working with more disadvantaged community populations to achieve minimum standards across the community' (p. 4). The concept of community empowerment is vital to the understanding of the paradigm of social capital. Social capital has been defined by Putnam (1993) as 'networks, norms and social trust' that enable people to coordinate and cooperate to achieve shared goals (p. 35). Berkman (2000) described social capital as a measure of social cohesiveness, while Kawachi, Subramanian, and Almeida-Filho (2002) consider it material or psychosocial resources available to individuals and society through social relationships. Baum (1999) defined it as the way in which society members may be supported to access other forms of capital, whether it be economic, cultural, or symbolic.

From these varied definitions of social capital, the underlining features include participation in networks, trust, cooperation, social norms, and reciprocity (Chau, 2007). Social capital encompasses the ideas of community development and empowerment, which are critical in planning for community transformation. It is a concept that practitioners, researchers, and PA personnel can utilize in building stronger communities, while decision-makers may use it to build stronger communities, as there is evidence demonstrating an association between the different aspects of social capital and PA (Chau, 2007). Indeed, social capital has been linked with a reduced likelihood of being physically inactive during leisure time.

Some evidence indicates that having greater social participation is associated with a reduced likelihood of having low levels of PA (Chau, 2007; Lindstrom, Moghaddassi, & Merlo, 2003). Communities that are characterized by social networks, including friends or family who are supportive or with whom to participate in PA, or neighbours with recreational facilities, are more likely to exhibit higher levels of PA (Chau, 2007; Ferreira et al., 2006). Other social benefits of higher levels of PA at the community level include reduced crime and improved perception of safety, which attract higher participation by youth and children as parents are more willing to let them out. According to Lumeng, Appugliese, Cabral, Bradley, and Zuckerman (2006), parents of children who are not overweight perceive their neighbourhoods as significantly more safe compared with parents of children who are overweight, whose children also spent less time in structured activities after school. However, having a sense of com-

munity cohesion and a collective sense of safety alleviates fear of crime, thereby allowing for more outdoor activity.

Other aspects of social capital include characteristics of the built environment and neighbourhoods in which communities exist. It has been suggested that living in walkable neighbourhoods (for instance, those with higher residential density, land use mix, street connectivity, better aesthetics, and safety) has been found to be related to greater PA engagement compared with living in less walkable areas (Berke, Koepsell, Moudon, Hoskins, & Larson, 2007; Salens, Sallis, Black, & Chen, 2003). Leyden (2003) suggests that residents of neighbourhoods identified as more walkable have reported feeling more connected with their community, and are more likely to know their neighbours and be engaged with local-level government. But according to Chau (2007), there is still debate regarding the relationship between the environment in which individuals live and their PA levels. Some evidence suggests that the environment in which people live is an important determinant of participation in PA, independent of individual characteristics, while other findings suggest that leisure-time PA is not determined by neighbourhood characteristics. Indeed, it is doubtful whether having access to community parks and facilities has an association with PA levels.

Evidence from community-based PA initiatives suggests that providing social support is effective for increasing PA levels and the frequency and amount of time spent engaged in PA (Fisher & Li, 2004; Kahn et al., 2002). On the contrary, Booth, Owen, Bauman, Clavisi, and Leslie (2000) suggest that social network characteristics, such as the number of people in the network and the frequency of contact, are associated with participation in PA. This network is likely to spur more formation of new groups, thereby encouraging health-promoting behaviours. Bayly and Bull (2001) report that in an Australian community-based walking group programme, walking group members not only increased their PA engagement, but also benefitted from closer interpersonal relationships with other group members, greater feelings of belongingness and connectedness with their local community, and participating in community events such as charity drives.

From the foregoing, PA has the potential to facilitate community building and strengthening by encouraging greater participation and contributing to the social capital in communities. According to Chau (2007), community-based PA interventions show promise in fostering social connections, cooperation, reciprocity, collective identity, and trust in the community. These studies on intervention suggest that the direction of

the relationship may be through promoting PA to increasing social capital. However, beyond the social empowerment, there is the ultimate need to invest and equip the individual, hence the new conceptual framework for planning for PA and health as an investment for personal and social change (Bailey et al., 2012). This is the HCM, which includes the following elements as stipulated by the authors:

1. Physical capital: The direct benefits of PA to physical health and human function, including the prevention and mitigation of NCDs and conditions, such as heart disease, diabetes, cancer, and obesity (Bailey et al., 2012).
2. Emotional capital: The psychological and mental health benefits associated with PA, including increased levels of self-esteem and self-efficacy, reduced depression and anxiety, reduced social isolation, and a greater ability to process stressful events (Bailey et al., 2012).
3. Individual capital: The elements of a person's character, for example, life skills, interpersonal skills, and values that accrue via participation in play, sports, and other forms of PA. Reported benefits in this area include teamwork, cooperation, moral and social responsibility, and resilience (Bailey et al., 2012).
4. Social capital: The outcomes that arise when networks between people, groups, organizations, and civil society are strengthened because of participation in group-based PA, play, or competitive sports. This domain of capital includes the development of both pro-social behaviours and social inclusion through participation in PA (Bailey et al., 2012).
5. Intellectual capital: The cognitive and educational gains that are increasingly linked to participation in PA. This feature of capital focuses particularly on the effects of regular exercise on cognitive functioning, on subject-specific performance at school, and on general academic achievement (Bailey et al., 2012).
6. Financial capital: Gains in terms of earning power, job performance, productivity, and job attainment, along with reduced costs of health care and absenteeism/presenteeism (i.e., lower productivity among those who are 'present'), which are linked to regular PA participation (Bailey et al., 2012, p. 1053).

This Human Capital Model (HCM) therefore emphasizes the six domains that need to be taken care of, as they underpin the totality of human well-

being and success (Bailey et al., 2012). The shortcoming of this model is that it focuses entirely on the individual, yet for one to develop fully and holistically, the physical environment in which they function has to be conducive, hence the emphasis on the socio-ecological approach.

Studies by April et al. (n.d.), Ferreira et al. (2006), Hoehner et al. (2003), Kerr et al. (2012), and Sinnett et al. (2011), all emphasize a socio-ecological conceptualization of PA and its promotion in the community. The interplay between the built environment, residential choices, travel behaviour, and accessibility to social utilities is vital in any attempt to understand and promote PA levels. According to April et al. (n.d.), the socio-ecological model illustrates the interrelationship between the individual and their environment. In this regard, the social environment includes community norms and values, regulations, policies, and culture. Some of the determinants and barriers to healthy behaviours are shared by the community as a whole. There is therefore a need to approach health promotion on all levels in order to increase effectiveness.

According to April et al. (n.d.), evidence shows high levels of physical inactivity among adults and children throughout Africa, leading to high levels of obesity. It is also apparent that NCDs prevalence shows signs of increase due to competing agendas and barriers of PA which exist at each level of the social environment. High levels of physical inactivity can only be addressed by targeting interventions at each level of the social environment. For interventions to be effective, custodians at community, workplace, and policy level need to work together to promote PA, and not just medical practitioners. This network, involving custodians at all levels, would further improve the efficiency of PA promotion throughout the social environment.

### *Obesity Prevalence and Physical Inactivity*

It is evident that obesity is on the rise worldwide (Amusa et al., 2012; April et al., n.d.; Guthold et al., 2008; Heroux et al., 2013; Onywera et al., 2012; Wang & Lobstein, 2006; WHO, 2008). Although it is not a major crisis in the less developed countries compared with the more developed ones, it is noticeable that obese and overweight cases are increasing in Africa, too (Amusa et al., 2012; April et al., n.d.; Guthold et al., 2008; Heroux et al., 2013; Kamau, Mwangi, Njororai, & Wamukoya, 2011; Onywera et al., 2012, 2013; Wang & Lobstein, 2006; WHO, 2008).

According to April et al. (n.d.), high levels of obesity exist and NCDs prevalence show signs of increase due to competing priorities and barriers of PA. Similarly, Wang and Lobstein (2006) agree that childhood obesity and overweight cases are on the increase, even though infants and preschool children are an exception in low-income countries. A study by Heroux et al. (2013) which compared obesity levels in Kenya, Mexico, and Canada confirms that obesity levels were still low (0.9 for boys and 2.8 for girls) in Kenya. Despite these findings for Kenya, data presented by April et al. (n.d.), Bloemhoff (2010), and Guthold et al. (2008) show that there is an increasing trend of inactivity among youth in Africa. This is a worrying trend, as inactivity could precede an increase in overweight and obesity cases unless intervention measures are put in place early enough. However, it should be pointed out that comprehensive and detailed data on the reality of PA levels in Africa are lacking (Guthold et al., 2008, 2011; Wang & Lobstein, 2006).

Tables 10.2 and 10.3 show the physical inactivity rates for men and women in selected countries of Africa. According to Guthold et al. (2008), data for physical inactivity were derived from the World Health Survey to estimate the prevalence of physical inactivity for the populations of 51 countries, as well as for different subgroups across the countries. The term 'physical inactivity' was measured by whether or not a person engaged in PA. In this case, PA was assessed using the short form of the validated International Physical Activity Questionnaire (IPAQ), in which respondents are asked to report the number of days and the duration of the vigorous, moderate, and walking activities they undertook during the last one week (Guthold et al., 2008).

Tables 10.2 and 10.3 reveal that the level of physical inactivity is close to or above 50 per cent for both men and women in Mauritania and Swaziland. Other countries such as Congo, South Africa, and Namibia are also experiencing high levels of physical inactivity. These data show that there is a need for intervention if the problem of inactivity is to be resolved before it turns into an obesity pandemic, as in Western countries. According to April et al. (n.d.), high levels of physical inactivity can only be addressed by targeting interventions at each level of the social environment. According to Ferreira et al. (2006, p. 129), 'understanding the environmental factors that are associated with physical activity in youth is needed to better inform the development of effective intervention strategies attempting to halt the obesity epidemic'.

Aarts et al. (2011) state that 'next to individual characteristics, physical and social environmental characteristics, such as access to recreational

**Table 10.2** Prevalence of physical inactivity for men in selected African countries

| *Country* | *Prevalence* | *Country* | *Prevalence* |
|---|---|---|---|
| Comoros | 1.6 | Senegal | 16.5 |
| Burkina Faso | 7.3 | Zimbabwe | 16.6 |
| Malawi | 8.4 | Mauritius | 17.5 |
| Ghana | 8.8 | Chad | 18.5 |
| Zambia | 8.9 | Congo | 27.3 |
| Kenya | 9 | Namibia | 31.8 |
| Ethiopia | 9.5 | South Africa | 44.7 |
| Cote d'Ivoire | 11.3 | Swaziland | 49.1 |
| Mali | 11.9 | Mauritania | 52.6 |

Source: Guthold et al. (2008, p. 489)

**Table 10.3** Prevalence of physical inactivity for women in selected African countries

| *Country* | *Prevalence* | *Country* | *Prevalence* |
|---|---|---|---|
| Comoros | 3.8 | Mali | 21.1 |
| Burkina Faso | 9.5 | Zimbabwe | 22.1 |
| Kenya | 11.2 | Chad | 24.4 |
| Zambia | 13 | Senegal | 24.5 |
| Malawi | 14.3 | Congo | 32.2 |
| Ghana | 15.4 | South Africa | 47.6 |
| Côte d'Ivoire | 17.3 | Namibia | 48.6 |
| Ethiopia | 17.7 | Swaziland | 56.4 |
| Mauritius | 18.1 | Mauritania | 72 |

Source: Guthold et al. (2008, p. 490)

facilities, traffic situation, social safety, and social cohesion, are related to children's physical activity behaviour such as outdoor play, sports participation, or active commuting to school' (p. 1). This therefore calls for interventions at community, workplace, and policy level to promote PA, and not just medical and health practitioners. There is a need for a network involving custodians at all levels to improve the efficiency of PA promotion throughout the social environment.

The need for collaborative efforts to facilitate and promote PA is made more urgent given the spiralling costs of health care due to the prevalence of both communicable diseases and NCDs, which are compounded by the high levels of poverty in many African countries. The implications for local

health services in countries that are experiencing an increase in physical inactivity and obesity levels therefore include the development of obesity-related chronic diseases in later adolescence and early adulthood. The costs for such an eventuality are difficult to estimate. However, planning for this disease burden needs to be undertaken urgently, with emphasis being placed on preventive measures, as for most African countries, the costs may not be easily absorbed into the domestic economy (Wang & Lobstein, 2006). Thus, the numerous health benefits of PA and its declining levels in Africa, and indeed around the globe, have elicited PA to be described as a 'whole-of-community concern', with the potential to deliver benefits not only to public health but also to other sectors outside of health, including transport, sport and recreation, urban planning, and education (Shilton et al., 2001).

PA and sports participation are essential for our health and well-being. PA is for an individual a strong means for the prevention of diseases and for nations a cost-effective method to improve public health across the population (WHO, 2003). There is a significant increase in the global burden of NCDs, such as cardiovascular diseases, cancer, obesity, diabetes, and chronic respiratory diseases. Due to epidemiological transition, there is evidence of the burden of NCDs increasing in developing countries across all socio-economic levels. The increasing global epidemic of these diseases relates closely to respective changes in lifestyles, mainly in tobacco use, physical inactivity, and unhealthy diet. Unhealthy diets, caloric excess, inactivity, obesity, and associated chronic diseases are the greatest public health problem in most countries in the world.

Overall, as reported by WHO (2003), physical inactivity is estimated to cause 1.9 million deaths globally. Globally, physical inactivity causes about 10–16 per cent of cases each year of breast cancer, colon and rectal cancers, and diabetes mellitus, and about 22 per cent of ischaemic heart disease (WHO, 2003). The risk of getting a cardiovascular disease increases up to 1.5 times in people who do not follow minimum PA recommendations. Bearing in mind the increasing rates of physical inactivity in some African countries, the dire consequences of cardiovascular diseases are a huge threat. This imminent health challenge is likely to affect all facets of life and therefore community participation in forestalling it is critical.

Socialization, context, and patterns of PA acquired during childhood and adolescence may, among other things, contribute to the lifestyle of active and healthy life, or lack of it, across the lifespan. Individual, community, or population health is determined greatly by multidimensional

factors, including social factors such as poverty, income inequality, education, employment, housing, gender, and social capital. These factors, also known as social determinants of health, produce widespread inequities in health within and between societies. Strategies to improve the quality of life, health, and development should be tailored to the diverse and evolving contextual, economic, political, and sociocultural needs of each country (Bloom, n.d.; Sport and Health, n.d.; Ziraba, Fotso, & Ochako, 2009).

Physical inactivity is considered a primary risk factor contributing to the global increase in chronic diseases; therefore, PA can play a critical role in slowing or preventing the onset or spread of chronic diseases, reducing their social and economic burden, and saving lives (Sport and Health, n.d.; WHO, 2003). PA and sports provide individuals of all ages and communities with a wide range of physical, social, and mental health benefits, and help in developing self-efficacy, which could translate into strategies to improve diet, reduce violence, enhance functional capacity, promote social interaction and integration, and discourage the use of tobacco, alcohol, and drugs (Sport & Health; WHO).

PA includes a wide range of activities than sport alone and these include different forms of work, walking, running, domestic tasks, cultural activities such as dancing, and organized sports, which is one of the most powerful means of engaging people, social mobilization—a forum for communication, education, and empowerment of individuals and communities. Promotion of PA for health and development should therefore embrace various dimensions of PA for varying populations and contexts.

### *Built Environment and Intervention Programmes*

Among the reviewed studies, Aarts et al. (2011), April et al. (n.d.), Chau (2007), Dvorak et al. (2012), Ferreira et al. (2006), Guthold et al. (2008, 2011), Hoehner et al. (2003), Kerr et al. (2012), Micheli et al. (2011), Wang and Lobstein (2006), WHO (2008), Sinnett et al. (2011), and Strydom (2013), all agree that there is a need for intervention to address not only the prevalence of obesity and overweight cases, but also the emerging trend of inactivity. According to Ferreira et al. (2006), to address inactivity, the focus should be on the home and in the school. In this regard, the built environment is vital in promoting or inhibiting PA involvement. Kerr et al. (2012) also emphasize that the design of the physical environment in which people live and access to key service destinations are vital considerations in policy formulation and intervention

strategies. Sinnett et al. (2011) provide evidence from Great Britain on how investment in PA-promoting infrastructure has overwhelmingly improved the economic and well-being of the people in selected small cities. According to these authors, 'evaluations of walking environments showed cost-benefit ratios of up to 37.6 per cent'. A similar approach is advanced by Aarts et al. (2011) based on a case study in the Netherlands. The authors emphasize cultural and community acceptability, political feasibility, and cost feasibility as vital considerations in formulating and implementing policies to promote physical and social environmental correlates of PA among children, youth, and adults.

Chau (2007) advocates for engaging people from the community so as to build partnerships between businesses, councils, government, and non-government organizations (NGOs) in order to collaborate and cooperate in promoting PA and participating in it. The collaboration enables community members to recognize different interests and abilities in the community and provide opportunities for different types of involvement in programmes, including physical, social, and cultural activities. Chau also recommends empowering community members to manage programmes to encourage ownership and sustainability. In this regard, policies should target community groups that are more disadvantaged and less likely to be active, ensure that programmes are culturally specific and sensitive, provide local facilities at gathering places for activities, and conduct periodic surveys for feedback so as to improve the programme offerings.

In the African setting, the built environment can be perceived both as a facilitator and as a barrier to PA participation. April et al. (n.d.) lists some of the key barriers, such as road safety and neighbourhood crime. However, there are also opportunities for PA, including walking to recreational facilities that are nearby, such as school playgrounds; common life activities such as cycling and walking paths; and walking to bus stops and shopping centres. However, more studies are needed to explore the reality of PA patterns in most African studies, as it is apparent that only countries such as South Africa, Mauritius, Kenya, Ghana, and Nigeria have attracted scholarly attention to PA and the corresponding emergence of cardiovascular diseases as a major public health concern (April et al., n.d.; Onywera et al., 2012, 2013; WHO, 2008). In South Africa, for example, NCDs account for 37 per cent of deaths in the country. In addition, 57 per cent of South African women and nearly 30 per cent of men are either overweight or obese (Kolbe-Alexander, Bull, & Lambert, 2012). According to Kolbe-Alexander et al. (2012), only 36 per cent of men and 24 per cent of women report sufficient levels of daily health-enhancing PA, while a third

of youth report insufficient levels of PA. These conditions could be prevalent in other parts of Africa, thus the need for more locally generated research findings.

### *Public Policy to Increase Physical Activity*

Diet, PA, and obesity are three risk factors that are separate but closely intertwined and should therefore be considered both alone and in concert when one thinks of health promotion and empowerment in the twenty-first century (WHO, 2009). Taken together, the convergence of a poor diet, an inactive lifestyle, and obesity is a lethal combination to health, increasing the risk of developing a long list of chronic conditions, including cardiovascular disease, diabetes mellitus, and cancer, as well as metabolic syndrome, gall bladder disease, osteoarthritis, and others, which are now on the increase in Africa (WHO, 2009).

Indeed, obesity is rapidly rising in developing countries and is affecting women more than men. In South Africa, for example, 57 per cent and 30 per cent of women and men, respectively, are either obese or overweight. In Mauritius, the 2009 data shows that only 16.5 per cent of people aged 25 to 74 years undertake sufficient vigorous or moderate PA to meet the national guidelines of 30 minutes of exercise each day, with 23.2 per cent being for men and only 10.95 per cent for women (Mauritius, n.d.). There is a remarkable difference between men and women. According to April et al. (n.d.), certain cultures do not look favourably on women engaging in PA. This could therefore be a major social barrier to PA, which in turn requires policy intervention, as well as public education measures, to shift this traditional perception.

In the African context, there is need to combat the rising levels of physical inactivity and formulate strategies that need to be put in place at various levels of society. According to April et al. (n.d.), the possible policy options should target policies on environmental, workplace, and community interventions. The other major point of emphasis is the need to promote physical education (PE) as well as sporting activities in institutions of learning. The physical and social environments should thus be structured to promote physically active living.

The positive health effects of changing the built environment through land use redesign to promote PA are remarkable and constitute a fascinating area where disease prevention planning intersect (Perdue, Stone, & Goslin, 2003). According to Halpin, Morales-Suarez-Varela, and Martin-Moreno (n.d.), effective policies to increase PA in a community involve

changing the planning and development strategies of the physical environment to include design elements that take into consideration the distance from residential areas to stores, workplaces, schools, and recreation areas; the continuity and connectivity of sidewalks and streets; aesthetic and safety aspects of the physical environment; policies such as zoning regulations, building codes, and builders' practices; and other governmental policies.

At the local level, selected changes, including roadway design standards and environment, can enhance PA. Design components include improved street lighting, infrastructure projects to increase the safety of street crossings, the use of traffic-calming approaches (e.g., speed bumps, traffic circles), and enhancement of street landscaping (US Department of Health and Human Services, 2009). This new public health approach to rural and urban planning is of crucial importance and could have important repercussions in population health, particularly for those who cannot or do not find opportunities to follow an exercise regimen.

### *Community-Based Programmes for Increased Physical Activity*

Various reports (Chau, 2007; Community Builders, 2007; Frank & Smith, 1999) suggest that the following elements are important aspects of programmes that aim to empower communities:

1. Connecting the social, cultural, environmental, and economics spheres in the community
2. Improving the quality of life of community populations and gaining mutual benefit among community members
3. Creating opportunities and encouraging community members to participate in community activities, from employment to social events to civic duties
4. Empowering communities and helping them to take advantage of opportunities and to take shared responsibility for their well-being
5. Recognizing the diversity of interests within a community and how that may affect capacity building
6. Engaging people from the community, government, and private sectors to work together to address community issues, solve problems in their community, and achieve common goals

According to the US Department of Health and Human Services (2009), highly visible, broad-based, multicomponent strategies can also work to

increase PA in a community, particularly through education, communication, training, and public awareness campaigns. The goal is to make PA easy and desirable by increasing the social component of exercise and providing education on its positive health effects at the various community constituents. A simple example of an effective way to increase the ease and desirability of PA is to use various community gathering points to disseminate the information, such as local market centres, worship places, public meetings, and government offices. For children and adolescents, school health education and enhanced PE curricula (including more time spent on moderate-to-vigorous exercise) can contribute to improved health awareness and physical fitness (US Department of Health & Human Services, 2009).

Community leaders from diverse backgrounds, including community development officers, can contribute by political advocacy, raising population awareness, and helping to increase access to existing exercise facilities in schools and other recreation outlets. One of the advantages of social capital planning for PA participation is the inclusion of the social element in activities. According to Halpin et al. (n.d.), interventions that create and maintain supportive relationships for behaviour change can include setting up a buddy system and making contracts with others to complete specified levels of PA, or setting up walking groups, sports teams, or other groups, which provide friendship and support.

Adopting and disseminating existing evidence-based clinical practice guidelines for increasing PA are also effective (US Department of Health and Human Services, 2008) in guiding participation. The following are the guidelines that have been recommended as minimum levels of PA for different age groups of any population:

1. Children and adolescents: 60 minutes (1 hour) or more of PA per day is recommended, including aerobic activity, muscle strengthening, and bone strengthening.
2. Adults and older adults (65 years and older who are generally fit and have no limiting health conditions): 150 minutes (2.5 hours) a week of moderate-to-vigorous activity spread out during the week for at least 10 minutes at a time, including aerobic activity and muscle strengthening.

Indeed, and this is prevalent in African countries, activities as simple as walking and gardening provide a level of PA sufficient to achieve health benefits. Above all, any initiatives to promote PA and health must focus

on implementing behaviour change programmes adapted to each individual. One of the community intervention programmes that leverage sports to empower youth is the Mathare Youth Sports Association (MYSA) in Kenya. MYSA was started in 1987 as a self-help youth programme that linked sports with various community service activities, including environmental cleaning, HIV awareness campaigns, and female empowerment. According to April et al. (n.d.), the MYSA programme has evolved to serve about 20,000 young people. This programme has now become a renowned youth serving organization that promotes sports for development. Similar programmes have sprung up around Kenya, and in Africa.

### *Examples of National Physical Activity and Health Initiatives in Africa*

The WHO (2008) identified Mauritius and South Africa as some of the countries in Africa that have initiated national programmes for the promotion of PA through their experience and progress in implementing PA interventions on a large scale. These initiatives are a pointer to what African countries can do to empower their citizens in terms of PA and health promotion.

*Mauritius*

According to WHO (2008), the Mauritian government launched a three-year National Plan of Action on Physical Activity (2004–2006) in 2004. The action plan was prepared by the Ministry of Health and Quality of Life. The National Plan was developed in line with the Global Strategy on Diet, Physical Activity and Health. Its overall objective was to foster a culture of PA and to promote PA practice in Mauritius. Mauritians were urged to undertake some form of PA for at least 30 minutes daily. The implementation of the National Plan culminated in developing a 'National Action Plan on Physical Activity 2011–2014', whose vision is '[t]o make Mauritius a physically active and healthy nation'. The specific goals were to increase and maintain adequate levels of health-enhancing PA for all people, to contribute to the prevention and control of chronic NCDs, and to contribute to the achievement of optimal health for all Mauritians (Mauritius, n.d., p. 8). Several PA intervention strategies were planned within the implementation of the initial National Plan. The following are some of the strategies:

1. Community-based activities (e.g., setting up local health clubs and health tracks) to provide opportunities to the Mauritian community, including specific target groups (e.g., NCD patients) to practise physical activities regularly.
2. Information, education, communication activities, and a media campaign to create awareness of the need for practising physical activities. This includes a media strategy using various media (e.g., television, radio, newspaper inserts, video films, posters, pamphlets), as well as the broadcasting of morning shows on television to train the population on techniques for the practice of physical activities at home.
3. A national awareness campaign to mobilize the population and stress the importance of physical activities. In line with WHO's 'Move for Health' Day, the awareness campaign comprises mass demonstration sessions on the practice of physical activities and the organization of an Annual Physical Fitness Day.
4. Capacity building of health professionals, teachers, and education officers, as well as other trainers, to provide them with specific skills to practice PA. This occurs through training-of-trainer (TOT) courses on PA, training programmes on physical fitness counselling, and the inclusion of physical fitness education in the training curriculum of health professionals.

Funding for the implementation of the PA interventions came from several ministries (particularly the Ministry of Health and Quality of Life) as well as from WHO. A Task Force on Physical Activity was set up by the Ministry of Health and Quality of Life, including representatives from various ministries, NGOs, and private sector organizations, to coordinate the intervention strategies (WHO, 2008). This earlier programme has now been succeeded by the 'National Action Plan on Physical Activity (NAPPA)', which covers a period of four years, that is, from 2011 to 2014 (Mauritius, n.d., p. 8). Accordingly, the objectives of the NAPPA included:

1. to increase the level of adequate PA in adult male population from 23.2 per cent to 35 per cent by 2014;
2. to increase the level of adequate PA in adult female population from 10.9 per cent to 20 per cent by 2014;
3. to raise awareness and knowledge of the health benefits of PA in the adult population;

4. to raise awareness and knowledge of the health benefits of PA and increase the level of PA in the school-going population;
5. to increase awareness of the importance of PA among key stakeholders;
6. to implement transport and land use policies that create appropriate conditions for safe walking and cycling;
7. to ascertain commitment of ministries and local authorities to increase recreational facilities for PA; and
8. to conduct research and national monitoring of levels of PA using standardized surveillance tools.

The 2011–2014 plan utilized the SMART (Specific, Measurable, Achievable, Relevant, and Timely) approach in implementing the Action Plan. Looking at the plan, one can notice the incremental benefits from previous national initiatives. Some of the specific infrastructural developments include the following:

1. The Ministry of Health and Quality of Life had set up a Task Force in December 2002 in order to make recommendations for the promotion of PA in the Mauritian population. In June 2003, the Task Force submitted its report, which also included a draft policy on PA. Subsequently, a National Action Plan on Physical Activity for the 2004–2006 period was developed. Some of the accomplishments include setting up health clubs equipped with treadmills for public use throughout the island. PA programmes promoted in the health clubs include yoga, aerobic dance, and Tai Chi. These activities are presently carried out in 54 sites in the community. The Ministry of Health and Quality of Life also hired personnel to supervise the physical activities in its health centres. The community health nurses also regularly give talks on the importance of PA and healthy lifestyle in primary schools as a component of the school health programme. The Health Information Education and Communication (HIEC) Unit also conducts such talks in secondary schools and community settings and produces health education material on diet and exercise. NCD patients are briefed appropriately by doctors, NCD nurses, and dieticians during clinics. In 2005, a media campaign was carried out on NCDs which included the production and broadcasting of one TV and two radio spots on PA (Mauritius, n.d.).

2. The Ministry of Education and Human Resources (MOE&HR) runs 63 state secondary schools, out of which 30 schools have a gymnasium/multipurpose hall (27 have gymnasia and 3 have multipurpose halls). These schools have sports facilities such as football grounds, volleyball, basketball, handball pitches, and so on. The students use these facilities during school hours and the general public have access to some of the facilities after school hours, subject to certain conditions. This approach of joint use of the school sports facilities by both the students in schools and the community is a model worth replicating in other countries of Africa. It is also instructive that the plan emphasizes physical and health education in schools, where such discussion is allocated 75 minutes per week in all primary schools (Mauritius, n.d.):

    (a) In all secondary schools, 80 (two classes of 40 minutes each) minutes are allocated to each class weekly for PE lessons. All state secondary schools and state colleges are serviced by at least one qualified Education Officer for the teaching of PE. Monitoring is done by PE organisers. The school curriculum for PE includes lessons on minor games, kids' athletics, simple physical activities, and breathing exercises. To ensure PE is taken seriously, the MOE&HR embarked on a pilot project in 14 secondary schools from January 2010 for the introduction of PE as an examinable subject at School Certificate/O Level in 2011. The Ministry, in collaboration with other stakeholders, organizes activities on related issues such as nutrition, sports medicine, diet, obesity, and NCDs, besides sports competitions/activities. Health clubs have been set up in most of the 67 state secondary schools and in 77 out of 109 private secondary schools throughout the island. The Mauritius Institute of Education offers full-time and part-time Diploma in PE, full-time and part-time Bachelor of Education in PE, and a Post-Graduate Certificate in PE. The University of Mauritius runs a diploma course in Sports Science and Recreational Management, with an intake of 30 students every two years. It is therefore apparent that PE and other health-promoting PA are emphasized at all levels of learning, from primary schools to university in Mauritius, through this new initiative (Mauritius, n.d.).

3. The Ministry of Gender Equality, Child Development and Family Welfare operates through a network of 16 women's centres across the country. The activities offered at the centres include yoga, aerobics, gym, weight management, healthy eating, and self-defence. Notable achievements include the fact that to date, 11,000 women have benefitted from the courses/activities and 16 Women's Sports Associations (WSAs) have been launched in the women's centres to specifically address the issue of obesity and physical fitness among women. The sports and physical activities conducted include petanque, volleyball, badminton, Tai Chi, walking, keep-fit exercises, table tennis, and swimming. Additional benefits include a National Awareness Campaign held yearly in four regions of the island to encourage women to be members of WSAs; equipped keep-fit corner under a gym instructor at various sites; training programmes on 'Healthy Eating and Nutrition' in 25 women's centres, targeting 500 women in general per year; 30 weight management clubs set up to target overweight or obese adult women less than 55 years of age; an annual National Sports Day; and inter-centre competitions in various sports disciplines (Mauritius, n.d.).
4. The Ministry of Youth and Sports has set up swimming pools which are at the disposal of the general public and where swimming classes are held under the supervision of qualified instructors. These swimming pools target those aged 16 to 80 years. Also, outdoor physical activities for the youth, such as trekking, are organized regularly. Women in rural areas are also encouraged to participate in sports and leisure activities organized by the Ministry. The Ministry also conducts ToT courses in yoga, Tai Chi, and aerobic dance in youth centres across the island (Mauritius, n.d.).
5. The Ministry of Environment has created health tracks in various parts of the island, which are widely used by Mauritians. These tracks provide an opportunity to the population to indulge in physical activities such as jogging and leisure walks in a natural environment (Mauritius, n.d.).
6. The Ministry of Social Security and National Solidarity has the following facilities: 56 social welfare centres equipped with sports and related facilities throughout the island and which are at the disposal of different age groups; 16 day care centres for the elderly, where physical fitness equipment is made available; 17 gym clubs for different age groups for the promotion of physical fitness and healthy

lifestyles; 20 health and nutrition clubs operating at the social welfare centres. Regular physical activities such as walk for health, yoga, and Taekwondo are carried out at all the social welfare centres (Mauritius, n.d.).

7. The Sugar Industry Labour Welfare Fund, which also operates under the aegis of the Ministry of Social Security, runs more than 120 community centres that offer facilities such as volleyball grounds, petanque courts, equipment, and table tennis tables for the practice of PA. Courses are offered in karate, taekwondo, and yoga. Facilities are extended to health clubs for senior citizens and women. Activities such as family jogging, indoor and outdoor games, and national community games are organized in collaboration with other ministries and NGOs on a fairly regular basis (Mauritius, n.d.).
8. The Municipality of Vacoas/Phoenix runs16 gymnasia in different localities within its catchment area that are open to the public for indoor games. It has 11 football grounds equipped with lighting facilities put at the disposal of clubs in the respective localities. It also offers facilities for the practice of yoga, aerobic dance, and karate. Two omni-sports complex have been opened at Phoenix and Paillote for the benefit of the inhabitants. Recreational parks have been set up in different regions of the town, where jogging can equally be practised (Mauritius, n.d.).
9. All municipalities and district councils have playgrounds for football, volleyball, and petanque, which are open to the general public. Some of them have health tracks as well. Many offer courses in yoga, aerobic dance, and modern dance. The municipalities of Quatre-Bornes, Beau-Bassin/Rose-Hill, Vacoas/Phoenix, and Port Louis all have gymnasia. The district councils have an impressive number of sports infrastructures that they manage, which include football grounds, volleyball pitches, petanque courts, and children's play area. Recreational parks are also available (Mauritius, n.d.).
10. The Public Officers Welfare Council, under the aegis of the Ministry of Civil Service and AR, organizes recreational, sporting, and leisure activities amongst others for public officers, thereby providing them with opportunities to maintain their physical fitness and also enabling them to practise their favourite sports activities (Mauritius, n.d.).

For Mauritius, the setting up of proper infrastructure was one of the key determinants in the promotion of PA in the country. As indicated above,

a number of Ministries and local governments invested in this national action plan in the form of manpower capacity, community mobilization, media, and other activities (Mauritius, n.d.). This programme envisaged that evaluation was to be an ongoing monitoring of the processes and outcomes of actions for the promotion of PA, which is necessary in order to examine programme success and to identify target areas for future plans of action. Outcome evaluation is carried out through national surveys and monitoring systems by including standardized measures of PA. Process evaluation records implementation and includes documentation of types of programmes and actions, for example, mass media campaigns, dissemination of educational materials to schools and worksites, provision of local PA programmes, and provision of training sessions. Indicators to monitor the progress of activities have been developed (Mauritius, n.d.). Whereas there is evident improvement in the provision of programmes, personnel, and infrastructure (Mauritius, n.d.), it is still too early to know how it has impacted the PA patterns of the people. The proactive approach to PA and health in Mauritius has also attracted the attention of the Federation of International Football Associations (FIFA).

According to Dvorak et al. (2012), a pilot study on 'planning and implementing a nationwide football-based health-education program' produced an 18 per cent absolute increase in post-intervention health knowledge across the health messages, which was equivalent to a 26 per cent relative increase against the children's baseline knowledge level; while the nationwide study produced a 14 per cent absolute increase in the post-intervention health knowledge across the health messages, equivalent to a 22 per cent relative increase against the baseline knowledge level. The implementation of the '11 for Health' programme was considered to have met the objectives set out at the beginning of the project. Given the success of the '11 for Health' programme in Mauritius, a programme similar to this one has already been transferred to three other African countries (Botswana, Malawi, and Namibia). The success of the programme is attributed to the tripartite collaboration between FIFA/F-MARC (FIFA Medical Assessment and Research Centre), the country's football association, and the government's Departments of Health, Education, and Sport, with the country's media used to increase the public awareness of the programme. Thus, Mauritius, as a country, has embraced an aggressive approach to increase the level of PA as well as the general health knowledge by its citizenry. However, it is still too early to know the impact on PA behaviours of the people.

*South Africa: Vuka South Africa—Move for Your Health Campaign*

South Africa is one of the African countries with high levels of physical inactivity and obesity levels. According to Strydom (2013), 74.6 per cent of South Africans do not participate in any PA. In 2005, the Minister of Health launched the Vuka South Africa—Move for Your Health campaign. 'Vuka South Africa—Move for Your Health' means 'Wake up, South Africa, move for your health'. The campaign was initiated at a time when the policy environment was conducive for adopting the 'Move for Your Health' concept in South Africa (Strydom, 2013; WHO, 2008). For example, in 2005, Healthy Lifestyles programmes within the National Department of Health established a multisector task team comprising governmental departments, NGOs, and private sector organizations which began the process of developing the healthy lifestyle strategy for South Africa. The strategy has five key components: healthy nutrition, promotion of PA, tobacco control, responsible alcohol consumption, and promotion of safe sexual behaviour (WHO, 2008). This forms part of the government's Strategic Priorities for the National Health System 2004–2009, which emphasizes the importance of promoting a healthy lifestyle, including regular PA and the prevention of obesity.

'Vuka South Africa—Move for Your Health' sets a good example of a nationwide campaign for PA and health in the African continent (WHO, 2008). The objective of the programme is to promote sustainable PA initiatives around the country. The groups targeted for the ongoing campaign to promote regular PA included children and youth, adults, and older adults. The programme is promoted in a variety of settings and is geared towards 'empowering' existing initiatives. The core message of 'Move for Your Health' is to encourage individuals to accumulate 30 minutes of moderate PA on most (at least five) days of the week, in line with the WHO global recommendation.

To enhance chances of success, South Africa embraced a partnership approach in implementing 'Vuka South Africa—Move for Your Health'. The National Department of Health is the leading agency responsible for coordinating the campaign, together with an inter-sector task team. Other key stakeholders committed to campaign implementation come from academic institutions and the business sector, as well as the National Department of Education and the Department of Sport and Recreation. To facilitate effective implementation, national and local workshops with international facilitators were held around the country. The workshop attendees represented different constituencies, including the local and

national media (radio, television, print), for purposes of information dissemination.

To date, there has not been any feedback to the programme's overall impact (Strydom, 2013). This is despite having an evaluation framework developed to examine, for example, accredited PA programmes under 'Move for Your Health', awareness of 'Move for Your Health' campaign messages, and prevalence of PA behaviour. The projects spent more than half a million South Africa Rand on branding and promotion of the launches of the activities in 2005. In addition, in-kind contributions, such as time and resources for health risk screening, were provided by more than 30 organizations, NGOs, and tertiary institutions.

Together with the 'Vuka South Africa—Move for Your Health', work began in 2004 on the development of a Charter for Physical Activity, Sport, Play and Well-being for All Children and Youth in South Africa (Youth Fitness & Wellness Charter) (Strydom, 2013). It was initiated by the University of Cape Town's Medical Research Council's (MRC) Research Unit for Exercise Science and Sports Medicine (ESSM), in collaboration with governmental organizations, NGOs, educational institutions, and the private sector. The Charter is a broad statement that provides a philosophical underpinning for the development of policies and guidelines to promote PA, sports, and play among South Africa's children and youth, with a particular emphasis on equity, diversity, and nation-building.

The Charter was adapted through a consultative process involving more than 200 individual partners and stakeholder organizations, and has undergone eight revisions since October 2004. An implementation campaign schedule aimed at performing the following three tasks: educating governmental departments, schools, parents and care-givers, communities, and health services about PA, nutrition, and wellness; facilitating interventions that are already in place; and providing a support base for intervention programmes in schools and private-service providers. The implementation phase was piloted in 2006.

Thus, the 'Vuka South Africa—Move for Your Health' campaign demonstrated that it has had an inter-sector impact. Subsequent to the 'Move for Your Health' workshop in September 2005, Sport and Recreation South Africa presented the programme to Sport and Recreation provincial coordinators, who are based in all the nine provinces and who have access to the wider rural communities across the country. The programme thus elicited participation around the country, involving different organizations and persons with diverse backgrounds. The media, on its part, played

a crucial role in the dissemination of information and education. Some of the highlight events included community walks, TV exercise programmes, radio discussions, health walks in provinces, physical activities at schools, soccer matches with older citizens and people with disabilities, workshops on lifestyle-related chronic diseases, as well as mass aerobic demonstrations and nutrition exhibitions. The health walks and community-wide screenings for obesity, hypertension, high cholesterol, and diabetes, conducted by Health Department staff and partners, became an integral part of all national campaigning and health awareness days (WHO, 2008).

Although the main campaign launch took place in Alexandra, eight of South Africa's nine provinces celebrated 'Vuka South Africa—Move for Your Health' on 30 May 2005. The provincial activities ranged from fun walks in various communities, to PA and health educational presentations, to soccer games for older adults and people with disabilities. Subsequent to the launch, the Department of Health has integrated a 5 km health walk and PA promotion into the overall Healthy Lifestyle campaign. Various nodal points and cities, particularly those in the rural and peri-urban communities, were identified by the Department of Health for either a day- or a week-long screening and broad health promotion activities. Other government departments such as Sport Recreation South Africa have continued to promote mass participation in physical activities and sports, thereby promoting activity as part of their function. For example, Soul City, a media-based health promotion initiative included PA posters and education in newsletters, which are distributed to more than 1000 Soul Buddyz clubs, which promote health and well-being among school youth (WHO, 2008).

Other programmes that have been launched in South Africa include the Charter of Physical Activity, Sport, Play and Well-being for All Children and Youth in South Africa, together with the Youth Fitness and Wellness Charter launched in 2004 (Strydom, 2013), and a government-imported sport development programme from England and Australia (Burnett, 2006). Empirical evaluations for these programmes have been published, showing that the outcomes of these programmes provided a positive impact on social markers within the community regarding health, well-being, and self-worth; environment; education and training; economy; and crime and security (Burnett, 2006). According to Burnett (2006), the programmes impacted on human and community development, yet many challenges still remain, such as inadequate resources and marketing and managing expectations of 'easy' access to a professional career in sport,

among others, to meaningfully contribute to sustainable human development. In like manner, the Vuka SA campaign provided an opportunity for various governmental departments and stakeholders to work together with the aim of increasing PA in the country. However, the implementation of the programme has been sporadic since 2007.

According to Kolbe-Alexander et al. (2012), monitoring and evaluation of the programme activities have not been systematic and are limited, and as a result of this, there are no current measures of national or regional reach and impact. It appears that there is a need for a consultative national plan for the promotion of PA throughout the implementation process. Although the programme is laudable, especially in the initial stages of bringing together different stakeholders, there is a need for more coordinated efforts in streamlining the policies and implementation of the PA programmes. According to Strydom (2013, p. 988):

> In the light of the discussion regarding the impact of ageing, NCDs, and physical inactivity (hypokinesis), it is of paramount importance that we should echo and embrace Vuka South Africa—Move for your health. The strategic objective of the National Sport and Recreation Plan (NSRP) for South Africa, viz. to improve the health and well-being of the nation by providing mass participation opportunities through active recreation, is indeed a wake-up call which cannot be ignored by leaders at all levels in this country. However, successful implementation thereof requires dedication and acceptance of responsibility together with the will and thrust to 'make things happen; These challenge political- social- academic- professional people and volunteers to be willing to 'walk the extra mile'. As discussed, many endeavours to tackle the idea of health improvement have already emerged in South Africa, with various levels of success.

## Conclusion

It is noteworthy that there is a rising worldwide attention to NCDs that has attracted a lot of peer-reviewed publications on NCDs at the global level. However, there is still limited research on the NCDs in Africa and a lack of a detailed analysis of what interventions are being put in place to prevent the surge. More research is definitely needed on high-priority interventions on PA and health promotion, including the related aspects of obesity and dietary patterns in Africa. However, the examples drawn from Mauritius and South Africa reveal their national commitment to

prevent the citizens of these countries from falling prey to the hitherto Western lifestyle diseases. For the rest of Africa, there is a need to heed the warning and embark on programmes to sustain PA levels, promote health practices, and empower the local communities to take charge of their own health for the good of the individuals, the communities, and the countries of Africa as a whole.

It is important that African countries strive to promote the maintenance of a healthy energy balance among the people. In this regard, families, schools, and communities must ensure that all people have the educational, dietary, and PA resources to pursue this task successfully. Additionally, health care professionals must be prepared to treat obesity and partner with community resources to facilitate normal growth and development, as well as healthy psychosocial function. Research on the prevention, early intervention, and treatment of overweight and obesity persons should assume high priority, given the high prevalence of obesity and its health consequences elsewhere in the world and the emerging trends in Africa.

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# Index





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