April 2007

THE KUGERIA WOMEN WATER PROJECT: A MIXED-METHODS EVALUATION OF A WOMEN’S MICRO-INITIATIVE PROJECT

MaLinda Nanetté Hill-Schmidtke

University of Nebraska - Lincoln, mhill51109@aol.com

Follow this and additional works at: http://digitalcommons.unl.edu/cehsdiss

Part of the Education Commons

http://digitalcommons.unl.edu/cehsdiss/7

This Article is brought to you for free and open access by the Education and Human Sciences, College of (CEHS) at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Public Access Theses and Dissertations from the College of Education and Human Sciences by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.
THE KUGERIA WOMEN WATER PROJECT:  
A MIXED-METHODS EVALUATION OF A WOMEN’S MICRO-INITIATIVE PROJECT

by

MaLinda Nanetté Hill-Schmidtke

A DISSERTATION

Presented to the Faculty of
The Graduate College at the University of Nebraska
In Partial Fulfillment of Requirements
For the Degree of Doctor of Philosophy

Major: Human Sciences
(Child, Youth and Family Studies)

Under the Supervision of Professor John DeFrain

Lincoln, Nebraska

May 2007
Disclaimer

This dissertation was sponsored by the 2001 Ruth St. John Federation Award, which is given by the Federation of American Women’s Clubs Overseas (FAWCO). The views in this dissertation do not necessarily represent those of FAWCO or its member chapters.
Acknowledgements

A person does not sit down and simply write a dissertation. It is a journey not taken alone, but with the assistance of many people. For all those who have helped me, a simple thank you would not suffice, because the sacrifices on your part have been so great. I am grateful that the Goddess has put many people in my life who care so much about me and who have given so much. Thank you Goddess for this blessing

I want to thank my husband, Friedhelm Schmidtke and my son, Ole Tarik Pearson Schmidtke. It has been an extremely rough, seven years. You’ve seen me at my best and worst, yet you love me unconditionally. Thank you for the support and love, my two handsome, strong, and loving men. And yes, Tarik, you will see your mummy standing up more and not just lying in a horizontal position on the bed.

For my foster parents, I have had three sets of luck: The Grahams, the Pearson, and the Hurts. To the Grahams, thank you for taking that toddler in and spoiling her beyond reason. The Pearsons: Lonnie, I miss you like crazy especially when you drove me to university. Eleanor, you taught me to read, and this dissertation is the fruit of that labor of love. The Hurts: John, thanks for taking me to Butler University and showing me what was possible. Irene, when all the neighborhood kids beat me up and called me a sellout, you gave me the courage to continue. For my sisters and brothers, you all have inspired me and made me want to reach higher and do better. Research finds that family is highly correlated to a student’s success. This statement is supported, because without my family, I know that I could not have survived the emotional torrents, which were a part of my studies.

I want to thank my supervising professor, Dr. John DeFrain. About ten years ago, a young, inexperienced student came into your office, upset about her prospects of not getting a
Ph.D. You saw the potential in me that many didn’t, and you had the experience and patience to bring that potential out. Thank you for giving me a chance of a lifetime and for believing in me. For my dissertation committee: Drs. Rochelle Dalla, Cody Holлист, Daniel Wheeler, and Ruth Xia, thank you for your time, advice, and words of encouragement. Your dedication to my studies has made me a better researcher.

For this dissertation, math, statistics, and the research process presented obstacles, which many helped me to overcome. To Dr. Günther Marxen and Bernd Weiß of the University of Cologne, to Dr. Helmut Barth, Peter Bender, and Willy LeGrand of FH Bad Honnef-Bonn, to Dr. David Admiraal and Andy Dwyer of University of Nebraska-Lincoln, to Monica Pacheco-Fabig of UICN, and to Patricia Darvis of UNESCO-IHE, thank you all for your generous time that you spent with me, explaining the intricacies of your specialized areas.

I have my girlfriends, who have assisted me in this quest: Barbara Bonner, Sarah Cüceoglu, Helga Faus-Deichsel, Ana Lis Garmendia de Hüschelrath, Britta Günther, Mary Mwikali Swars, Rose Mary Overstreet, and Chana Thompson-Fritzinger. Girlfriends, what can I say? Whenever, I needed anything: a babysitter, a shoulder to cry on, proof reading, sounding board, or just a simple hug, you were there for me. Thanksgiving dinner does not show enough gratitude for all the things you have done for me. You are a fantastic group of women, whom I love and admire.

I also want to send special thanks out to Majel Barrett Roddenberry, Michael Dorn, and Marina Sirtis of Star Trek. I would not have the skills or the courage as a writer had you not given me my first opportunities as a reporter many years. Thank you for your letters over the years and for asking about my welfare.
Finally, I want to thank Susan Korte and the Kugeria Women Group. Without you, this dissertation would not be. Susan you showed me a group of wonderful women, who deserved to have their history told. To the Chairperson Sophia Mashamba, thank you for allowing me to come and see the marvelous work you have done. To Stella Karimi, you are my Kenyan mother. You treated me like your daughter with hospitality and generosity. I cherish the time I spent with your children and you, and I can’t wait to return, as my name, Njoki, means. For the members of the KWG, this dissertation is dedicated to you. I hope that it adequately shows your achievements. You are leading Kenya, and you are Kenya’s future. To the women of the KWG, continue to lead, to believe, and to succeed.
Abstract
THE KUGERIA WOMEN WATER PROJECT:
AN EVALUATION OF A WOMEN’S MICRO-INITIATIVE PROJECT

MaLinda Nanetté Hill-Schmidtke, Ph. D

University of Nebraska, 2007

Advisor: John DeFrain

The Kugeria Women Group (KWG) of Murinduko, Kenya, founded in 1989, built an 11-kilometer water pipeline to provide potable water. Almost 20 years later, the pipeline is still providing water to over 300 families and is considered an example of a successful women’s micro-initiative. The two major goals of this dissertation were: 1) to investigate the organizational structures to determine which elements aided KWG in its successfully maintaining a water pipeline, and 2) to analyze KWG’s water consumption to ascertain if KWG stayed within its own pre-described regulations.

Result Mapping found the KWG’s success is an outcome of using a variety of paradigms: 1.) communication approach, 2.) community empowerment, 3.) the performance measurement system, 4.) the gender approach and women’s cohesions, 5.) the transparency and accountability, and 6.) health and sanitation and water conservation. Result Mapping also showed negative impacts, which were the high cost of joining the pipeline and the increased differences between the haves and have-nots.

Paired sample t-tests revealed 1.) a significant increase in the amount of water used in a drought year when compared to a normal year (p < .001), and 2.) no significant differences in the amount of water used during the dry and rainy seasons for both the drought and normal year.

The results of the ANOVAs showed 1.) no significant differences among the FOUNDERS, FIRSTWAVE, and SECONDWAVE in mean annual water use for a drought year, and 2.) a significant difference in water used by the FOUNDERS and FIRSTWAVE (p < .05) and FOUNDERS and SECONDWAVE (p < .01) for the mean annual water use for a normal year. For a drought year, findings supported the members adhering to the water consumption rules; however, for a normal year, FOUNDING members overused the water source. Combining
qualitative and quantitative analysis, the KWG received a final grade of $B$ for its successfully maintaining the pipeline and good governance.
Table of Contents

Disclaimer i
Acknowledgements iii
Abstract vi
Table of Contents viii
List of Tables xii
List of Figures xiiii
List of Abbreviations and Acronyms xvi
Chapter I: Introduction 1
   A Simple Introduction 1
   This is Kugeria 7
Chapter II: Literature Review 11
   Why Research a Water Pipeline? 11
   Water as a Human Right 12
   Sustainable Development 14
   Practical Solutions 16
   Africa and Underdevelopment 17
   From Micro-Finance to Micro-Initiative: A Solution to Poverty 20
   Kenya: Past and Present 21
   The Role of Women in Kenya’s Development 24
   Ensuring the Success of Projects 26
Chapter III: Methodology 32
   Purpose Statement 32
Why a Mixed-Methods Approach? 33
Research Design 36
Data Collection Procedures 46
Participants 47
Research Ethics 47
Limitations 49
Dissertation Design 51

Chapter IV: Findings 52
Welcome to Murinduko: An Introduction to KWG and Kenya 52
Q1 Participant Information: From Rags to Riches 58
Q2 Lifestyles before the KWG Pipeline: Miles to Walk 64
The River and the Well of Sorrow: A Day in the Life of a KWG Member 66
Q3 Beginning the Water Project: Experiencing the Rupingazi River 77
The Failure of Teithia-Teithia 81
Q4 KWG Water Project Membership: Establishing the KWG 85
Q5 Fundraising and Financing: If You at First Don’t Succeed, Try, Try Again 97
Q6 Building the Pipeline: By the Sweat of Our Brow 102
Q7 Quality of Life: Health as a Gift from God 112
Q8 Water Conservation: Are We Getting It Right? 126

Chapter V: Discussion and Recommendations 140
Q1 Participant Information: People and Culture 140
Q2 Lifestyles before the KWG Pipeline: Oral Histories 144
Q3 Beginning the Water Project: Oral Histories and Documenting the Project 147
Appendix E: Executive Summary  288

Appendix F: Map of Mugambaciura and Murinduko, showing Pipeline and Feeder Lines.  297

Appendix G: Map of Mugambaciura and Murinduko, showing 11 kilometer Pipeline  299
List of Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>Questions 1-3 on Health</td>
<td>118</td>
</tr>
<tr>
<td>Table 2</td>
<td>Questions 4-5 on Health</td>
<td>119</td>
</tr>
<tr>
<td>Table 3</td>
<td>Questions 1-2 on Ecology and Conservation</td>
<td>121</td>
</tr>
<tr>
<td>Table 4</td>
<td>Questions 3-4 on Ecology and Conservation</td>
<td>122</td>
</tr>
<tr>
<td>Table 5</td>
<td>Questions 5-7 on Ecology and Conservation</td>
<td>123</td>
</tr>
<tr>
<td>Table 6</td>
<td>Question 1 Comparing Means of a Drought and a Normal Year</td>
<td>133</td>
</tr>
<tr>
<td>Table 7</td>
<td>Question 2 Comparing Means of the Rainy Seasons in a Drought and Normal Year</td>
<td>134</td>
</tr>
<tr>
<td>Table 8</td>
<td>Question 3 Comparing the Dry Seasons in a Drought and Normal Year</td>
<td>135</td>
</tr>
<tr>
<td>Table 9</td>
<td>Question 4 ANOVA Comparing Mean Annual Water Use for Drought Year 2000</td>
<td>137</td>
</tr>
<tr>
<td>Table 10</td>
<td>Question 5 ANOVA Comparing Mean Annual Water Use in a Normal Year 2003</td>
<td>139</td>
</tr>
<tr>
<td>Table 11</td>
<td>The KWG Water Tariff System</td>
<td>167</td>
</tr>
<tr>
<td>Table 12</td>
<td>Iterative Solutions of Energy Equations</td>
<td>184</td>
</tr>
<tr>
<td>Table 13</td>
<td>Multipliers for Service Providers and Population</td>
<td>207</td>
</tr>
<tr>
<td>Table 14</td>
<td>Communication Approach</td>
<td>210</td>
</tr>
<tr>
<td>Table 15</td>
<td>Community Empowerment Approach</td>
<td>213</td>
</tr>
<tr>
<td>Table 16</td>
<td>Performance Measure Approach</td>
<td>215</td>
</tr>
<tr>
<td>Table 17</td>
<td>Gender and Women’s Cohesion Approaches</td>
<td>218</td>
</tr>
<tr>
<td>Table 18</td>
<td>Transparency and Accountability Approach</td>
<td>221</td>
</tr>
<tr>
<td>Table 19</td>
<td>Water Conservation &amp; Health and Sanitation</td>
<td>226</td>
</tr>
</tbody>
</table>
Table 20: Negative Impacts

Table 21: Report Card for Kugeria Women Water Group Water Pipeline
List of Figures

Figure 1: Two Newborn Children  2
Figure 2: Founding Member with Grandchildren  11
Figure 3: Broken Water Meter  32
Figure 4: My Map of Kenya  52
Figure 5: United Nation’s Map of Kenya  54
Figure 6: My Host Mother’s Homestead  60
Figure 7: The Granary and Men’s Sleeping Quarters  61
Figure 8: The Newly Built Water Tank  62
Figure 9: Bridge over the Rupingazi River  66
Figure 10: Two Boys at the Well  68
Figure 11: Girl with Jerrycan on the Path to the Rupingazi River  77
Figure 12: Woman with Produce Crossing the Rupingazi River  79
Figure 13: KWG Meeting at Murinduko Primary School  85
Figure 14: KWG’s Governing Board  94
Figure 15: Church Jumbo Sale  97
Figure 16: Keeping the Record Straight  101
Figure 17: Cleaning Intake  102
Figure 18: Removing Sediment  110
Figure 19: Murinduko Dispensary  112
Figure 20: Murinduko Dispensary’s Waiting Room  113
Figure 21: A Healthy Three-Generation Family  117
Figure 22: Picture Perfect  124
Figure 23: The Revenue Clerk 127
Figure 24: The Simplicity of Transparency and Accountability 129
Figure 25: The KWG Management Committee 152
Figure 26: Revised Management Committee 153
Figure 27: Traditional Tribal Rule 157
Figure 28: Transparent Committee Structure 158
Figure 29: How a Request Is Voted On 160
Figure 30: How a Suggestion, Resolution, or New Regulation is Passed 161
Figure 31: How a Dispute is Resolved 162
Figure 32: Savings Scheme for KWG 165
Figure 33: Murinduko Primary School 168
Figure 34. The Kugeria Women Salon 169
Figure 35: The KWG Projects 170
Figure 36: Costumers Queuing for a Cut 171
Figure 37: The KWG Timeline of Events 177
Figure 38: Problems of the Pipeline 180
Figure 39: Irrigation of Field 200
Figure 40: A Broken Air Ventilator Pipe 202
Figure 41: The KWG’s Six Approaches to Success 232
Figure 42: Groundbreaking Dedication for New Holding Tank 243
Figure 43: Group Photo of KWG Members at Dedication 244
Figure 44: Completion of the Granite Walls 247
Figure 45: Completed Holding Tank 250
### Abbreviations and Acronyms

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACFOA</td>
<td>Australian Council for Overseas Aid</td>
</tr>
<tr>
<td>AID</td>
<td>Agency for International Development</td>
</tr>
<tr>
<td>AWCC</td>
<td>American Women’s Club of Cologne</td>
</tr>
<tr>
<td>DESA</td>
<td>Department of Economic and Social Affairs</td>
</tr>
<tr>
<td>DSW</td>
<td>Deutsche Stiftung Weltbevölkerung Weltbevölkerung</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
</tr>
<tr>
<td>FAWCO</td>
<td>Federation of American Women’s Clubs Overseas</td>
</tr>
<tr>
<td>GP</td>
<td>General Practitioner</td>
</tr>
<tr>
<td>IRC</td>
<td>International Water and Sanitation Centre</td>
</tr>
<tr>
<td>KES</td>
<td>Kenyan Shillings (official currency of Kenya)</td>
</tr>
<tr>
<td>KWP</td>
<td>Kugeria Women Project¹</td>
</tr>
<tr>
<td>KWS</td>
<td>Kugeria Women Salon</td>
</tr>
<tr>
<td>KWWP</td>
<td>Kugeria Women Water Project</td>
</tr>
<tr>
<td>MP</td>
<td>Member of Parliament</td>
</tr>
<tr>
<td>NATO</td>
<td>North Atlantic Treaty Organization</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-governmental Organization</td>
</tr>
<tr>
<td>OECD</td>
<td>Organization for Economic Co-operation and Development</td>
</tr>
<tr>
<td>MDGs</td>
<td>Millennium Development Goals</td>
</tr>
<tr>
<td>MP</td>
<td>Member of Parliament</td>
</tr>
<tr>
<td>UN</td>
<td>United Nations</td>
</tr>
<tr>
<td>UNDF</td>
<td>United Nations Development Fund</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations International Children’s Emergency Fund</td>
</tr>
</tbody>
</table>

¹ The words, Kugeria Women Project, do not take on the possessive form based on the organization’s tradition.
USAID  United States’ Agency for International Development

WHO   The World Health Organization
Chapter I

A Simple Introduction

My introduction to the Kugeria Women Group (KWG) came in an around-about fashion. After trying for some time, my husband and I were blessed with a wonderful son, Ole Tarik Pearson Schmidtke, who was born on March 6, 2001. Although he was six weeks premature, he was a millennium baby – born with all the privileges the Western world had to offer. This highly-desired, only child had access to top medical care at birth, a designer pram, a cupboard filled with toys, clothing and nappies, and most importantly a loving family. Tarik, whose name meant *Evening Star*, would grow up in the lap of middle-class luxury thanks to his parents, who are an engineer and teacher, respectively.

Prior to Tarik’s birth my husband, Friedhelm Schmidtke, gave me a book published by *Geo*, the German equivalent to National Geographic, entitled *Menschenkinder [Human Children]* by Wieland, Frommann, Künzing, & Neumann (1999). The book, which was commissioned to celebrate the six billionth child born on the planet, followed three children from Germany, Kenya and Vietnam for one year during their first year of life. Having studied sociology, I was fascinated by the individual stories, especially of Francis, who was nicknamed *Boss* because as a baby with a strong pair of lungs, he got his way. Born in Kenya, Boss was one of nine children living on a small farming plot in absolute poverty.

The contrasts between Boss’s world and my son’s world were great. Although Boss was growing up in a loving extended family, poverty, famine, and illness were ever-present threats to his family and to him. *Menschenkinder* made clear the limited opportunities this Kenyan child had through profound pictures of his everyday life, which gave dignity to the humble existence of his being.
Figure 1. Two Newborn Children

Note. A picture of Boss from Menschenkinder by J. Wieland, A. Künzig, and A. Neumand, 2000, p. 43. Copyright 2000 by Geo im Verlag Gruner + Jahr AG & Co. Tarik photographed by Friedhelm Schmidtke. Photo used by the permission of the photographer. Tarik’s christening invitation, featuring Boss showed the stark contrast between the two children who were born 18 months apart in Kenya and Germany. Tarik’s bassinet represented one year’s wage for an upper middle-class Kenyan family while his two Steif® lambs illustrated a half year’s wage for a day laborer.
Like many Westerners, I wanted to help Boss with a donation. An opportunity presented itself in the early spring of 2001 when our child was to be christened. Shortly before the christening, our pastor inquired if any of the participating families had organizations they would like to submit to receive the goodwill offering. After allowing some time to lapse for the parish members to respond (I didn’t want to appear overbearing as I was an American living in Germany), I wasted no time explaining Boss’s story. Several of the parents had even read Menschenkinder, and they quickly agreed to participate if I would be the one to ring Geo to make the arrangements.

Contacting the publisher proved somewhat difficult. Many weeks passed without a written response, and I began to think Boss’s donation might not become a reality. Finally, shortly after Easter, I received a call from the editor of Geo. He apologized for the delay in responding to me, explaining that he received hundreds of emails and the really important ones he answered personally! I still remember his words, “This is your lucky day, Frau Hill! The translator for the project lives in Frankfurt, very close to you. Her name is Susan Korte, and she will be happy to accept your donation for Boss. She travels regularly to Kenya and keeps in touch with this special project. I’m sending you her details.” I was so excited that I didn’t even get his name (Redaktor [Editor] geo.de, phone conversation, May 2001)!

Susan Korte, a native of Kenya who resides in Germany, welcomed my call. A graduate of Organ State University with a BA in Nutrition and Home Economics, Susan was the official coordinator and translator for the Geo photo shoot, which took place in the village of Masalala, Kenya, where Boss and his family lived. Later when Geo Headquarters was inundated with requests to assist Boss, she was given the responsibility of coordinating and managing the
project. Susan had also worked for Deutsche Stiftung Weltbevölkerung (DSW) as the Kenya coordinator and for ARCOTRASS GmbH, an NGO, which specialized in development projects.

Prof. Dr. med. Rolf Korte, Susan’s husband, was two time president of the German Society for Tropical Medicine and International Health (DTG), honorary professor at Justus-Liebig University, and past president of DSW. Currently, he is the director of International Cooperation and Programmes for the Germany Society for Technical Cooperation (GTZ).

Susan explained that Menschenkinder had become one of Geo’s best-selling books. Many people had purchased it, had read about Boss’s plight, and had made donations. This was still the case two years after the book had been published! The result was that Boss was well looked after with a small bank account, which we could pay into. Because of this, she asked whether our church would also like to donate to the Murinduko dispensary (clinic) and KWG women’s groups? In this way, many would profit from our generosity. My church agreed, and on Pentecost a contribution of DM 500 (USD 300 or KES 30,000), a small fortune for a village family, was to be sent to Kenya (S. Korte, phone conversation, June 2001).

When Susan returned from Kenya in January 2002, she rang me to give an update on her visit. She did not find me in good spirits. Through my husband’s employer, we had been trying to relocate from Germany to the U.S. in order to finish my dissertation and advance my husband’s career. I had also received a scholarship from the Federation of American Women’s Clubs Overseas (FAWCO) that would help finance my education. All plans were canceled: Ford Motor Company, my husband’s employer, lost a major lawsuit to Firestone (Kumar, 2001), and the horrible events of September 11, 2001 temporarily cancelled business travel plans for the Company, including those of their European subsidiaries. During this period, cutbacks were the
norm. Traveling was done only if it was critical to the business goals. There were no funds for a young family wanting to travel to the U.S. to advance their careers.

I asked Susan if she knew of a project, which I could research for my dissertation. I had a scholarship for USD 3,000. FAWCO promised to hold the money for two years if I could find with a new research project. Susan chuckled and in her wonderful Kenyan accent asked, “Oh, MaLinda, do you really want to go to Kenya? I had no idea you were so interested in Kenya” (S. Korte, phone conversation, January 2002).

My love of Kenya began during my childhood when I watched the film, *Born Free* (Adamson, McGowan, & Hill, 1966). I was intrigued by the plight of Elsa, the lion, but also by the Kenyan people who wanted to rescue Elsa. The lessons of the importance of preserving nature were not wasted on me – my ten years as a Girl Guide stemmed from my love of nature. My hunger for learning about Kenya was further fueled by *Mutual of Omaha’s, Wild Kingdom* (Meier & Perkins, 1963) and *Big Blue Marble* (Fownes & Berman, 1974). These family television programs introduced nature and culture to its viewers. Kenya was frequently shown, and I secretly dreamed of visiting the country one day.

My foster parents, who had participated in the Civil Rights movement, also had a huge influence on me. They did not allow my siblings and me to forget our African ancestry. Marcus Garvey’s attempt to return to Africa was discussed (UCLA African Studies Center, 2007). Although my foster parents did not support mass migration as Garvey did, they did believe in a pilgrimage to Africa and frequently donated money and clothing to support African charities.

I also had studied about Africa at university. Although I majored in German – my uncle married a German, who taught me the language – I had a good number of electives on the African Diaspora and African history with emphasis on the slave trade, the Nile Valley and
Sudan. Finally, my sorority, Delta Sigma Theta, supported several initiatives in Africa. Therefore, my dream of going to Africa was life long.

On a more personal level, I wanted to do a practical dissertation, which would be useful to someone. I remember when I was working on my M.A. in sociology and on a Patricia Roberts Harris fellowship and was asked to tidy up the department’s library. With dust cloth and polish in hand, I tackled cleaning the bookshelves. I was astonished to find literally hundreds of dissertations, yellowing under many years of dust. One student had written a thesis and a dissertation; both were two volumes and were untouched! Many works were excellent; a few had distinguished themselves and were published. But the majority remained on the shelves and did not make an impact. This saddened me, because I knew how hard the students worked on their projects. The truth of the matter was that such research helped the students achieve their educational goals, but not necessarily make a contribution to society. Although my dissertation might sit on a shelf somewhere, I wanted it to make a difference in someone’s life. Thus, going to Kenya would fulfill a personal goal of researching something that would be meaningful and helpful to others.

Susan listened to me and responded, “Well, if you are so determined to go and are serious, I have just the project. It does not involve Boss, but a rather remarkable group of women in Kenya. They are the Kugeria Women Group, and they built a water pipeline in Murinduko, Kenya. I have been working with the project for many years, and it is a very successful micro-initiative. We need someone like you to look at the project, to document its existence, and to make a fair evaluation. Plus, your church gave a donation toward the dispensary.”

“Ku-gee-ri-a,” I say, tripping over the words slightly.
“It is Kikuyu for ‘let us try.’ You should come to me for tea, and I will tell you all about these women if you are up to the effort,” Susan explained (personal communication, January 2002).

“I shall try and give my best effort,” I replied. When I finished talking with Susan, I knew that I had found my project.

This Is Kugeria

Nature produces water free of charge, yet many Kenyan women must pay a high price by spending over 50% of their time fetching it (Deutsche Stiftung Weltbevölkerung [DSW], n.d.; Palmberg, 2005). Imagine walking for hours to receive one’s free contribution. On the other hand, time is money, and time lost is calculated into material loss. The Kugeria Women Group of Murinduko, Kenya quickly understood this simple economic lesson. They wanted potable water for their households, which would free them of the time consuming and physically demanding burden of retrieving water.

Founded in 1989, The KWG was formed to solve the issue of access to safe drinking water (DSW, n.d; Palmberg, 2005). The KWG was officially registered as an organization at the Kenya Social Services in July 1990. The founding members of the KWG consisted of about 60 families who came together after earlier attempts led mainly by men had failed (S. Korte, personal communication, April 2002). These projects had been unsuccessful, especially for women and children. One project wound up providing water to rich farmers who lived uphill. Families and farmers who lived downhill in a more arid climate received little or no water (M. Hill, field notes, August 2003).

Another project had no consumption controls, allowing participants to abuse the system. Funding, which had been allocated for this project, was also mismanaged. Mediation by
participants and the disenfranchised, who were mostly women, failed. The project soon fell apart (M. Hill, field notes, August 2003).

The KWG was well aware of these problems and wanted to find a solution to their water problems. Such an opportunity presented itself in the late 1980s. The United Nations (UN) had just ended its *Decade of the Woman* (Buvinić & Yudelman, 1989) and was supporting women’s micro-initiatives. It had become common knowledge that the large-scale agricultural and water projects of the past were not resolving the issue of access for the common person. Women and children were no better off years after various initiatives.

Investigation found that women, not men, were responsible for water access and the subsistence farming that kept families healthy (Miller & Yeager, 1994). Therefore, it was not large-scale projects that would make a difference, but grass-roots projects aimed at a specific segment of the society.

Having heard of these developments, KWG decided to build their own water pipeline. Fortunately for the women, they had luck on their side. Rolf and Susan Korte had a keen interest in the KWG, where Susan had a home and her sister lived. They acted as advisors, giving guidance and counseling. The KWG’s luck was strengthened by the democratically elected chairperson of KWG, Sophia Mashamba, and her dedicated management committee.

Building a water pipeline is no easy task. Unity was of the utmost importance. Without it, the project would most certainly fail. The Kortes and the NGOs that supported the project stressed this to the women’s initiative, which agreed on this strategy among others. The founding of KWG in 1989 was based on the principle of unity (S. Korte, personal communication, September 2002). Once this decision was taken, the group began to solicit funding for the pipeline. Over 30 letters of inquiry and applications were sent requesting
funding. Many rejection letters were received until 1990 when the *United Nations Development Fund (UNDF): Africa 2000* responded positively to their request.

The original pipeline had a total cost of KES 2.7 million (USD 35,000). Africa 2000 first gave KES 1.2 million in 1991 for materials such as pipes and cement. The KWG was to provide the labor costs. Unfortunately, this was not enough money, as the original budget was too low. An additional KES 1.5 million were needed. KWG members banded together, raising by themselves KES 42,000 to purchase more pipes. In addition, supporters of the project gave also. Gerhard Arnold of Germany donated 360, 6-inch pipes. A grant from DSW followed in that they aided the Murinduko Dispensary, a projected supported by KWG. This lessoned the KWG’s financial responsibility towards the dispensary.

In 1993, *United Nations Development Fund: Africa 2000* recognized the validity of the project and the many strengths of KWG. They revised the original budget, providing an additional KES 1.2 million. This allowed the final phase of the project to be completed: the last kilometers of pipeline were laid, and meters were purchased for the families in order to control consumption (S. Korte & S. Mashamba, personal communication, fall 2002).

On August 20, 1994, five years after the project was begun, the Kugeria Women’s Water Project was opened by chairperson Mashamba and Chief Eratus Kiboro (Wetu, 1994). With the assistance from the Kortes, Mr. Arnold, Deutsche Stiftung Weltbevölkerung (DSW), and the United Nations Development Fund: Africa 2000 Network, KWG were able to provide water to 120 families. The completed pipeline was 11 kilometers long, and received its water from the Kii River, which is sustained by clean, melted snows from Mount Kenya (M. Hill, field notes, August 2003; Palmberg, 2005). The KWG had organized itself well. It had a democratically-elected governing board, a constitution, two technicians for maintenance, a revenue clerk for
receiving water fees and, most importantly, a bank account with Barclay’s Bank located in Embu Town, Kenya (M. Hill, field notes, August 2003). A small group of women were running a water works. What an incredible story!

Having read about their efforts, I became more determined to become a part of this project. However, I did not know fully what my role should be. This project was up and running and didn’t need my help. Susan viewed the situation differently when we met for tea.

“MaLinda, there is the issue of transparency. The project needs someone to write about it. Show people that it is, indeed, functioning well. This needs to be reported to the United Nations, so they can replicate it at other sites. Do you know what type of potential there is for people in Africa? The KWG needs you. Go collect your statistics and get the word out,” replied Susan.

“I need a game plan. I just can’t traipse down there, putting my nose in other people’s business.” I replied.

“You’ll think of something,” she told me. “You social scientists always do.”
Note: A founding member with her two grandchildren stands proudly before her water tap, which is in her kitchen garden. Older members who helped to build the pipeline are seeing the positive effects of their efforts in that their children and grandchildren have sound health, primary education, adequate clothing and good nutrition. For these reasons, the study of the pipeline is vital to further assist others in achieving a basic standard of living.

Chapter II: Literature Review

Why Research a Water Pipeline?

On March 17, 2005, the United Nations began *The International Decade for Action Water for Life, 2005-2015* program (United Nations [UN], 2005a). Five days later, *World Water Day* was celebrated, which called on the international community to increase its efforts in providing water and sanitation to the world’s citizens. Under the Commission for Sustainable 

---

2 All photographs were taken by the author unless otherwise noted.
Development and in association with the Millennium Development Goals (MDGs), *Water for Life*’s objective is to reduce the number of people without safe drinking water by 50% at the end of the water decade in 2015 (UN, 2005a). The program was designed to provide *practical solutions* to the issues of obtaining water. It also encouraged the participation of women in water initiatives. Kofi Annan, UN Secretary-General, stated, “This is an urgent matter of human development, and human dignity. Together, we can provide safe, clean water to all the world’s people. The world’s water resources are our lifeline for survival, and for sustainable development in the twenty-first century” (UN, 2005a, ¶ 3). *Water for Life* and Kofi Annan point to two major reasons for researching a water pipeline: supporting sustainable development and practical measures to finding drinking water. I would also like to provide another reason for researching a water pipeline: water should be seen as a human right.

**Water as a Human Right**

When a country is founded, the distribution of its natural resources is seldom put in the constitution. For example, the United States Declaration of Independence (Wikipedia.org, 2006) states that men have a right to “...Life, Liberty and the Pursuit of Happiness” (¶ 18). The use of America’s resources was not mentioned or regulated until 1849 when the Department of the Interior was created (United States Department of the Interior, 2007). This was followed by legislation that regulated American’s natural resources and created Yellowstone National Park (Kline, 2000).

In the United Nations Charter, Article 55 stated:

> With a view to the creation of conditions of stability and well being which are necessary for peaceful and friendly relations among nations based on respect for the principle of equal rights and self-determination of the peoples, the United Nations shall promote:
a. higher standards of living, full employment, and conditions of economic and social 
   progress and development:

b. solutions of international economic, social, health, and related problems; and
   international cultural and education cooperation; and

c. universal respect for, and observance of, human rights and fundamental freedoms for 
   all without distinction as to race, sex, language or religion. (UN, 2005b, ¶ 55)

By supporting higher standards of living, water can be interpreted as a human right, as it falls 
under the domain of higher living conditions.

The Geneva Convention, which was formulated to protect soldiers and civilians during 
wartime, also supported water as a human right, more precisely, drinking water. Protocol II, Part 
4, Article 14, which was added in 1977, states:

It is therefore prohibited to attack, destroy, remove, or render useless for that purpose, 
objects indispensable to the survival of the civilian population such as food-stuffs, 
aricultural areas for the production of food–stuffs, crops, livestock, drinking water 
installations and supplies and irrigation works. (ICRC.org, 2005, ¶14)

The United Nations Charter and Geneva Convention represented legally binding 
documents, which participating countries have signed. There are also non-legally binding 
document such as The Universal Declaration of Human Rights and the Stockholm Declaration, 
which protects earth’s natural resources for all to use. The United Nations also recognized water 
as a human right in its declaration at Mar del Plata during the United Nations Water Conference 
(UN, 1977).

With regard to water as a human right, Scanlon, Cassar and Nemes (2004) 
argued:
The explicit recognition of water as a human right could represent a usable tool for civil society to hold governments accountable for guaranteeing access to water of sufficient quality and quantity and assist governments to establish effective policies and strategies.

(p. 24)

The authors further stated that when water is seen as a human right, it could be used to increase sustainable development. Water solutions could be approached on a holistic level in which practical solutions – not full-scale technological advancements – may be used.

Sustainable Development

Ascroft and Masilela (1994) defined development as how a person or country gains the tools necessary in order to acquire basic amenities. Development is based on need. If a person is hungry, she will develop the means to feed herself. If a person is without shelter, he will develop the means to create a haven. Hope (1984) stated that development’s aim was holistic and encompassed political, cultural, economic, gender and environmental aspects, to name a few.

Lancaster (1999) saw aid in terms of economic development and wrote: “It [economic development] has been used . . . to include the achievement of an array of conditions, such as high levels of per capita income, broad access to social services, political empowerment, human security, and gender equality” (p. 14).

Agunga (1997) stated that the word development has now been replaced by the words sustainable development. He argued that development and sustainable development are synonymous. One cannot have one without the other. Sustainable development is defined as “. . . how governments, ministries, bilateral and multilateral agencies, and nongovernmental organizations working in concert with each other, can create the environment for beneficiaries to develop themselves” (Agunga, 1997, p. 7). Thus, sustainable development means a partnership
among a variety of groups to assist in achieving a long-lasting goal. This goal can be used to solve problems at both the grass-roots and global levels.

What is unusual about the words sustainable development is that it embraces development regardless of a country's economic position. The words are used to define development in developed nations (the Western world i.e. Western Europe, Japan, and North America), in developing nations (formally the Third World nations), and in emerging nations (the former East Bloc countries or the South Pacific). Sustainable development can fall under a wide umbrella from manageable, ecologically friendly-agricultural initiatives in Eastern Europe to an infusion of funds in order to provide for a long-term clean water source in the Western world (Agunga, 1997).

However, are such terms necessary? Let us look at the term, developing nation. Agunga (1997) wrote that this term dated back to the Cold War and that it came about after NATO countries defined themselves as the First World, and the East Bloc (the Communist Bloc) as the Second World. The Third World was given to the remaining countries, but was later changed to the politically correct and more accurate developing nation.

As I think about this division, I see it is a very ethnocentric view of the world: an us versus them mentality, which was an artifact of the Cold War. It disregards cultures that are hundreds or thousands of years old, and it supports the notion that such countries have little to offer. It also implies that the West is better off.

When both Romania and Kenya need water, are they both not needy? Many countries that belonged to the former East bloc still have pockets of poverty that rival Africa. Likewise, the US has many communities that still do not have access to water or sanitation. The term developing nation takes into account the north/south and east/west division of the earth. It
recognizes that both developing and developed countries have issues that must be solved in regard to poverty. Developing nation also recognizes gains made in the economy, health, education and welfare of both developing and developed nations. Thus, the words do not stigmatize developing nations nor does the term allow developed nations to believe that they do not have issues at home, which must be dealt with.

Practical Solutions

When talking to Susan Korte (personal communication, December 2002), she stressed the need for finding practical measures to solve Kenya’s water problems. She defined practical solutions as:

. . . things done in the everyday life or a common-sense approach to problem-solving.

You know, MaLinda, practical solutions have nothing to do with being educated or not. It is about necessity and ingenuity bringing about a change with the help of the very people wanting to be helped. (M. Hill, personal communication, December 2002)

Susan had articulated what Jallow and College (1990) wrote about in their article on floods and droughts. They said that traditional approaches to tackling hazards, which have been used successfully for many generations, were ignored. These approaches were thought of as unproven. The Western approach, which is not only capital intensive but manipulates the environment, was preferred, based on the assumption that Western ideology and technology are better. After many failures of Western ideology in developing countries, people are now seeking practical solutions and are beginning to listen to indigenous people on what their needs are and how they approach problems such as droughts and floods.
Africa and Underdevelopment

It is very easy to give reasons why one should study the development of a water pipeline, but one must also look at the factors that brought the Kugeria Women Group together. For these women, there was the issue of underdevelopment, which was defined by Frank (1969) as the lack of access to drinkable water, health care, education and housing. Although there are many reasons why Africa is underdeveloped, Abraham (1995) points to these main issues: a) domestic forces of underdevelopment, b) the economic sphere, c) physical infrastructure and services, and d) mismanagement by the bilateral and multilateral organizations and their recipients.

Domestic forces of underdevelopment refer to elected leaders failing to adhere to democratic principles and failing to respond to the wishes of the popular vote. Abraham (1995) wrote that Africa has had a succession of democratic leaders who became autocratic. Regarding the economic sphere, reasons for underdevelopment are poor agricultural growth, a decline in industry, and an increase in population. Physical infrastructure and services refers to poor investment in roads, health, education, and welfare. By failing to invest in its people, countries have remained underdeveloped.

Mismanagement by the World Bank, bilateral and multilateral organizations, recipient countries, and leaders is a final reason given for underdevelopment. Developing countries take on debt in order to increase their economic output. However, greed and corruption, mismanagement on both sides by lender and borrower, lack of transparency and accountability, and eroding economies make repayment impossible. The solution in the past has been to take out more loans. In the 1980s, lending countries began to realize that progress was not being made, and they tightened their purses due to public outcry. The truth of the matter is that both lending and borrowing countries were negligent in their duties to ensure repayment that was equitable.
In Western countries, if a person defaults on a loan, he does not receive more money until his credit is cleared. If this principle had also been used, developing countries might have been better off (Abraham, 1995).

Lancaster (1999, p. 36) stated that foreign aid, which is defined as “... transfer of concessional resources from one government to another...was depended on the aid recipient adhering to the agendas of the donating countries.” For example, France and the United Kingdom gave aid under the conditions that the recipients supported the teaching of the French and English cultures and languages. If a country failed to do so, the result was no aid and underdevelopment. The system also favored former colonies, leaving many needy countries without options.

Borgin and Corbett (1982) argued that underdevelopment is a result of the super powers using Africa as a political pawn. The former Soviet Union stood behind Angola and Uganda while the United States and United Kingdom supported Kenya, Nigeria, and Liberia. These countries were supplied with weapons and goods in return for using their lands for military exercises and training. The pot was sweetened by the extensive aid pumped into the economies of the respective countries. After the Cold War ended, aid ceased and underdevelopment ensued.

The KWG is well aware of these issues. My host mother stated:

We know of the troubles [of underdevelopment]. When I was a girl, we had British rule. Under the British, only those families who were loyal to the crown prospered. When Mau Mau happened, there was so much chaos and little development. Then Moi came, and we prospered, but somehow it all turned bad because now we are in debt. (M. Hill, field notes, August 22, 2003)
Finally, Crew and Harrison (1998) stated that underdevelopment was a reflection of unequal division of power within the very organizations, which were to assist in development. Women were only a fragment of the workforce in bilateral and multilateral organizations. Because there was an under representation of women in key leadership position, gender issues could be and were circumnavigated when key issues were discussed. Furthermore, these organizations supported technical knowledge in development, which has been seen as a male domain, over practical innovations, which has been considered as a female domain. In fact, it was found that women’s development projects were usually referred back to the traditional women’s sphere of the family, which often did not include economic initiatives rather health and social services.

Having visited Kenya and spoken with a wide variety of individuals, I believed that I came to understand the various positions reasonably well. When the British Armed Forces pulled out of Masai lands due to reductions in its military budget, many of the Masai children who were of mixed parentage –a scandal to some – were left behind without adequate education and/or support from their fathers. The situation was made worse by reports of rapes and abuse by the soldiers. The Masai women wanted compensation for their children, including paternity tests. Although it is very controversial in light of Kenya’s sovereignty, some women even requested that a contingent of soldiers be left behind to ensure economic stability in the area (Kenya National Television, 2003). For the Masai, the pullout of the British Armed forces was seen as the British not keeping their word when in terms of aid, as there was a long standing contract between the Kenyan and British governments. Furthermore, the situation was made worse when British soldiers neglected the children that they had fathered.
From Micro-Finance to Micro-Initiative: A Solution to Poverty

The National Bank for Agriculture and Rural Development of India defined microfinance, as “the provision of thrift, saving, credit and financial services and products of very small amounts to the poor in rural, semi-rural, and urban areas for enabling them to raise their income levels and improve their standard of living” (Singh, 2004, ¶10). Micro-finance revolves around small loans some as little as a few dollars to help get poor people started in business. Unlike lending from a bank, micro-finance works on a much simpler basis. Loans are made without collateral, complicated contracts, or co-signers. A micro-loan can come from a bank, private individual, a lending society made of citizens, the government or NGO. Generally, micro-loans must be paid back, but some organizations do not have this requirement (Singh, 2004).

For this dissertation, the Kugeria Women Water Project is called a micro-initiative in order for it not to be mixed up with micro-finance schemes. On many levels, the KWG meet the requirements for receiving a micro-loan: living below the poverty line, rural location, and wanting to raise the standard of living (Singh, 2004). Although the amount of money the women received was donated, the grants from the NGO’s cannot be considered micro-loans, because the amount donated was over KES 2.7 million.

The term micro-initiative was chosen because it can literally be translated into meaning small business. The KWG began as a women’s savings society, which later developed into a midsize business, supporting other initiatives. Micro-initiative pays homage to both the women’s humble beginnings and micro-finance, which tenants the KWG used to employ its project.
Kenya: Past and Present

One topic, which has not yet been discussed, is Kenya’s colonial past. The United Kingdom gained control over Kenya in 1895 after the Berlin Conference divided East Africa up among the European states. In 1920, the United Kingdom made Kenya a British crown colony and began to deny Kenyans their rights. The highlands, the most fruitful lands, were given to British colonists, displacing Kenya’s largest ethnic group, the Kikuyu (also called Gikuyu). Kenyans were banned from government, shut out from participating in cash crops such as coffee, used as forced labor, and held on reserves (Library of Congress: Federal Research Division, 2005).

It should be noted that in many British colonies, especially in the Caribbean, slavery was banned and civil liberties slowly reinstated in 1807 (Farrell, 2007). In Africa the British continued to enslave and subjugate indigenous people well into the 20th century. *Unofficial slavery* continued in Africa at this time although the United Kingdom had officially banned slavery (Ogot & Ochieng’, 1995). It is British rule that many Kenyans blame for their underdevelopment, stating the system instilled a system of preferred economic treatment for Whites and Asians, which is still prevalent today. It is this inequality that brought about the rise of the Mau Mau.

Because of British dominance, confrontation between the British and Kenyans erupted. Mau Mau, an indigenous independence movement, was born in 1945. For seven years, they made a show of force despite being defeated by the British in 1952. Clough (1998) wrote that Mau Mau, as a movement, can be seen from two perspectives: that of the British, and that of the Mau Mau freedom fighters. From the British perspective, Mau Mau was a band of terrorists, who instilled race hatred, who used oaths to indoctrinate its members, and who killed its own
people as well as colonists. The Mau Mau viewed themselves as freedom fighters, seeking to restore traditional order back to their lands after British rule destroyed their once-prosperous country. Unfortunately, the British acted with such cruelty that despite putting down the Mau Mau rebellion, they had to relinquish power to the Kenyans. Further pressure came from African colonies demanding their independence along with human rights and self-determination (Clough, 1998).

On December 12, 1963, Kenya became an independent state with Jomo Kenyatta, a British-educated Kikuyu, as its leader (Klugman, Neyapti, & Stewart, 1999). Kenyatta, who is known as the Father of the Nation, undertook extensive land reforms, buying land from white settlers in order that Kenyans, especially displaced Kikuyu, could settle. The 15-year rule of Kenyatta saw prosperity for Kenya. Thanks to British rule, there was a strong Kenyan and British middle-class and a well-planned infrastructure. Many peasants, including Mau Mau fighters, were able to return to their lands and begin earning a living from their land – something that they had been denied under British rule.

Unfortunately, the Kenyatta government was seen as corrupt, enriching the Kikuyu people while other ethnic groups suffered (Miller, & Yeager, 1994). Kenyatta also became an autocratic leader, changing the constitution to favor his party. While assassination of the opposition has not been directly associated with the late president, many believe Kenyatta was in some way responsible for many of the political deaths between 1968 and 1978.

The presidency of Daniel arap Moi from 1978-2002 saw growth and stagnation. Between 1971-1981 the GNP grew 6% annually (Library of Congress: Federal Research Division, 2005). However, the 1980s and 1990s saw stagnation, which was to Moi’s political decisions. He made Kenya a one-party state. After a coup by the Air Force, he prosecuted 1,000 people without due
process. As human rights violations mounted, lenders and donor organizations refused to give aid. The World Bank withheld USD 5 billion in credits (Sobania, 2003). This led to Kenya being unable to establish programs for economic development and translated into hard economic times.

In the 2002 elections, Moi supported Uhuru Kenyatta, son of Jomo Kenyatta, to retain political power. The strategy did not work and Mwai Kibaki became president (Sobania, 2003). Based on democratic elections that were mostly free of corruption, Kibaki’s presidency has opened the way for lenders and donors to reinvest in Kenya.

At the time of my visit, the Kenyans that I met viewed Kibaki very positively. He was praised for introducing free, universal primary education for grades 1-8. This was a significant achievement because previously parents had to pay school fees for their children to attend school. Naturally, girls had fewer years of education or were sacrificed for their brothers.

A second element of development that I noticed was the discussion of corruption. Kenyans wanted a reduction in government crime. At the time of my visit, the Kenya Parliament was introducing a bill in which Members of Parliament (MPs) were to identify where they had obtained their wealth. There was much opposition by the middle and ruling classes, but the common people supported this because they wanted to stop criminal activity and corruption. Transparency and accountability became the focus of attention by government and the people (M. Hill, field notes, August 5, 2003).

In conclusion, by looking at Kenya’s history, there is support for the argument that Kenya’s underdevelopment is based on a combination of factors: colonialism, mismanagement by Western banks, and poor leadership by NGOs, indigenous people, their government and
foreign governments. After over two decades of underdevelopment, Kenya is now looking for ways to increase its standard of living.

The Role of Women in Kenya’s Development

My host mother insisted that I read an autobiography of one of the Mau Mau fighters. When I finished, I discussed it with her. I had one gripe: there was only one line speaking about Kenyan women, and how they assisted in the development of their country. My host mother, who was a child during the Mau-Mau uprising, smiled at me and said: “We were there – believe me. We donated food, cooked, and hid our fighters. Sometimes these things don’t need to be in books if you know in your heart what really happened” (M. Hill, field notes, August 2002). This story demonstrates Kenyan women’s early participation in their country’s independence. It also shows how women’s contributions are often overlooked or underestimated. Despite this, my host mother knew her role in history and had a positive view of women’s contributions.

From a historical perspective, my host mother informed me that Kenyan women always had a place in history that reflected their traditional roles. She explained that Kenyan women are the backbone of the family. They are responsible for cultivating their small farms and looking after their children’s health, education, and welfare. In times of war, drought or hunger, it is the woman who must deal with family problems, as the man is usually off finding work or may be unable to assist the family. Therefore, women are highly valued because they provide the labor for the shamba (farm), look after their families, and are turned to in time of difficulty (M. Hill, field notes, August 10, 2003).

The World Bank (1990) estimated that Kenyan women performed about 85% of all farm work. Women were also responsible for finding water and fire wood. In short, women’s high level of responsibility put them on an almost equal economic footing with men. That is, women
were able to enjoy many of the economic benefits that they reaped, and their farming activities brought hard currency into the house. The World Bank (1990) also reported that the Kenyan government realized this and decided to include women in water development projects.

However, many Kenyan women still live difficult lives. For every KWG member who had a water tap in her garden, there were at least eight who did not. One day my host mother took me to the river, where most women got their water. Although I only had my backpack, I was hard-pressed to make it up the steep climb of the Rupingazi River’s (also called the Ravingoshi River) banks. Climbing down takes little effort, but climbing back up – leading livestock, carrying a child on one’s back, and balancing a water container on one’s head – takes a great deal of effort. I had considerable respect for my African sisters performed this feat at least two to four times daily (M. Hill, field notes, August 13, 2003)!

Because there is inequality and poverty, there is still a need to support women’s involvement in development. In a speech to the Commission on the Status of Women, Kofi Annan (UN, 2005c, ¶ 13) stated: “If we are to change the historical legacy that puts women at a disadvantage in most societies, we must implement what we have learned on a greater scale.” He continued: “. . . invest in infrastructure to reduce women’s and girls’ time burdens. What are the prospects of girls and women who are forced to spend half of every day gathering water, fuel, and other necessities?” The General Secretary supported women’s inclusion in the development process through access to reproductive care, property ownership, and education. The United Nations sees women as the key to reduction of poverty if they are empowered and given the tools to work within society. This policy has been supported by the UN Charter and by Decade of Women 25 years ago (UN, 2005c).
Buvinić and Yudelman (1989) stated that women should be encouraged to participate in three forms of development projects: micro-enterprise projects that give credit to women as vendors, or artisans, income-generating projects that are designed to bring poor women into the economic system, and vocational education or training that would have a long-term impact. The authors also reported that women had a much higher repayment rate for start-up loans: 90% of women who received loans paid them back. This is followed by an overall default rate of less than 15% when one considers late payment or non-payment (Buvinić & Yudelman, 1989). Therefore, women were seen as good investments on the micro-economic level.

Ensuring the Success of Projects

Prof. Dr. Korte informed me, “For every project that has succeeded, there are at least a dozen projects that have failed” (personal communication, April 2003). His remark reflects the scope of the problem: development projects are incredibly difficult to maintain. Earlier it was previously mentioned that poor governments, mismanagement and corruption were reasons for the failure of development projects. Furthermore, many projects failed to ask the indigenous populations what they really needed.

However, when the people are asked what they want, success is obtainable. Success can be based on communication, which is defined as, “a process which participants create and share information with one another in order to reach a mutual understanding” (Rogers, 1983, p. 29). Agunga (1997) argued that development projects should use the communication approach to ensure a project’s success. The communication process consists of a change agent, i.e., an NGO or aid assistant, the recipients, and a facilitator who connects the two. The facilitator helps to ensure open communication. It is this open communication that ensures a project’s success as both parties have an equal stake in the project. This is seen as an advantage. A disadvantage is
that agencies are less able to fulfill their own agendas, and progress may be hindered due misunderstandings.

Another approach to making a program a success is community empowerment. Thomas (1985) defined community empowerment as, “that process of learning how to fish. The first step in learning is psychic ownership of self and of personal potential [owing the capacity to act, rather than to be acted on]. A second step is the acquisition of resources in the environment, including developing a capacity to be active, cohesive and effective as communities” (p. 25). The community empowerment approach was developed mainly to help the poorest of the poor obtain entrance into the economy. Many scholars dislike community empowerment because it has not proven to be successful since its results are not quantifiable. Yet, at the grass-root level, empowerment is the tool most often used to motivate people for change.

Aid agencies and NGOs such as United States Agency for International Aid (USAID), use “a comprehensive performance measurement system (PMS) to measure the success of a program (Kumar, 1995, p. 82). PMS is defined as:

. . . essentially a data collection and analysis system for measuring the performance of a program with reference to the program’s stated objectives. It involves the following steps: a) analysis of the goals and objectives of the program, which should be measurable, b) identifications of a set of indicators to measure performance, c) establishing of a data-gathering system to collect indicator data form program records, surveys, agriculture censuses, and occasionally, direct observation methods, and d) analysis and interpretation of performance data and communication of the findings to the program manager. (Kumar, 1995, p. 83)
PMS uses mainly qualitative data, because such data are usually what aid agencies take most seriously. The success rate or result is usually referred to as outcomes, which have an impact on the quality of life or a variable being measured. The following logic is used to describe PMS (Kumar, 1995, p. 85):

\[\text{Inputs} \rightarrow \text{outputs} \rightarrow \text{effects} \rightarrow \text{impacts}\]

One advantage to PMS is that it supports the developed world’s assumptions of what a successful program should be by using quantifiable data and textbook examples. That is, results can be conceptualized, meaning one can readily see, for example, if a farmer grew more corn within a given year. Another advantage is that results or impacts can be monitored over generations (Kumar, 1995).

Yet, relying on quantitative data is also a disadvantage. Many developing countries do not have the qualified personnel or agencies to carry out quantitative projects, and they must rely on outside agencies. This raises the cost of evaluating a program. When a survey was taken, researchers missed deadlines, sampling procedures were poor, or the variables were inappropriate. Finally, much qualitative data were lost. Failure to speak with key benefactors often has led to project failures (Kumar, 1995).

Despite its shortcomings, PMS can be very beneficial in asking the pertinent question “Is the project successful?” It also supports accountability and transparency by validating or invalidating data through tried methods.

A further reason for the success of a project is women’s cohesion within small groups. Buvinić and Yudelman (1989) wrote that the strengths of women’s organizations are:

1. [They] are effective in reaching poor women.
2. [They] encourage women’s participation and decision-making.
3. [They] provide supportive environments that encourage the learning of non-traditional skills, both technical and managerial.

4. [They] allow poor women to “catch up” without male competition and graduate formally into the economy. (p. 45)

Using this scheme, women have been able to ensure the success of their micro-economic projects. However, there are also disadvantages to this approach. Because of their gender and social status, women have limited access to the market economy, education, and raw materials. Sadly, women’s organizations often sit on the fringes of their community, are not taken seriously, and are only tolerated by the men.

Transparency and accountability are reasons for the success of a project. “Transparency denotes free access to governmental political and economic activities and decisions. Accountability entails a state of being held responsible, by both its people and its elected bodies, for choices and actions” (Shende & Bennett, 2004). This definition can be easily transferred to NGOs and community organizations. Accountability means maintaining an organization in which its staff and structure can be easily accessed, accounted for and understood. Those in positions of authority are held accountable for their actions.

Transparency and accountability came about after a) decades of fiscal turbulence and mismanagement, b) the globalization of world economies and the need for the developed and developing worlds to demonstrate success of their projects, c) the withdrawal of government support in development projects, d) the separation of funding partners from governments, and e) the emphasis on prudent macro-economic management so that results are improved and secured (Shende & Bennett, 2004).
According to UNPD (2004), *Anti-Corruption: Practice Note*, corruption must first be dealt with in an organization by a) decreasing opportunities for corruption by simplifying procedures and regulations, b) improving financial management and controls for stronger oversight, c) supporting the legislation and judicial process, and d) educating the younger generations towards a responsible citizenry (pp. 9-10). Once this is done, transparency and accountability can be achieved by a) establishing independent investigators, prosecutors and adjudicators, b) strengthening and ensuring independence and accountability of the judicial system, c) integrating transparent mechanisms, and d) developing effective complaints mechanisms and procedures for appeal (p. 10). Although the UNDP’s *Anti-Corruption Note* is aimed at state and national governments, the principles can be applied to running businesses at both the micro and macro levels.

Zoller (2003) from the Australian Council for Overseas Aid (ACFOA) wrote that transparency and accountability would come about through good governance when the democratic model was supported not only by NGOs and by the people within these organizations, along with the various countries and peoples being served. He warned that just because there was a democratic model present, it did not mean that the underrepresented, i.e., the poor or minorities had, proper representation. Corruption appeared when people, especially the poor who may be the majority, lacked proper representation. The rich took advantage of the situation because of their education and their ability to navigate the system. Thus, the rich’s needs were considered despite the poor being in the majority. Zoller (2003) continued, stating that “. . .where there is a lack of freedom of organization, assembly and expression, there is virtually no scope for civil society to demand transparency and accountability” (p. 2). Therefore, transparency and accountability go hand-in-hand with democracy.
Once transparency and accountability are achieved, one must look at whether a program has achieved some success. When doing a qualitative analysis, Stufflebean (2001) wrote that a program’s success was based on the outcome of answering typical evaluation questions such as:

What is the program in concept and practice? How has it evolved over time? How does it actually operate to produce outcomes? What has it produced? What are the shortfalls and negative effects? What are the positive side effects? In what ways and to what degrees do various stakeholders value the program? . . . What parts of the program have been successfully transferred? How does this program compare with critical competitors? (pp. 34-35)

For a quantitative analysis, the following questions would be asked, “Did the test performance meet or exceed pertinent norms? Did tested performance meet or exceed standards? Where does a group’s tested performance rank compared with other groups? Is a group’s present performance better than a past performance?” (Stufflebean, 2001, p. 45).

In the literature review, I attempted to give a brief analysis of Kenya’s past history to explain its current situation. Water is a human right that every individual is entitled to. Yet, this is not the case for the majority of Kenyans. Colonialism and mismanagement of resources by indigenous Kenyans have made it necessary for grassroots organizations to assume the role of municipal water supplier. One of these organizations, the Kugeria Women Group has become successful as the community water supplier. Models and theories of communication, community empowerment, women’s cohesion, transparency, and accountability and good governance through the democratic process have been discussed to explain KWG’s success.
Figure 3. Broken Water Meter

A broken water meter is seen as a financial loss to KWG, because water use cannot be monitored. The meter was replaced. Unfortunately, this is not the case in many situations.

Chapter III: Methodology

Purpose Statement

This dissertation addresses the issues of organizational structures, good governance, and water management within the Kugeria Women Water Project (KWWP), which is a micro-initiative of the Kugeria Women Group (KWG). The purpose of this dissertation is to provide a process-based evaluation on the KWWP. Using a mixed-methods analysis, this dissertation incorporates interviews and statistical analysis to research the following issues:

1) The oral history of the organization and its members,
2) The structure and organization of KWG,
3) The democratic processes,
4) Water use and water conservation through the analysis of meter readings, and
5) whether the project can be considered a success or failure

The primary data set are the interviews; the secondary data set, which is used to substantiate the findings of the primary data, is the statistical analysis of the water meter readings. Because of the failures of past projects, the KWWP needs to be evaluated in order to establish which processes are necessary to ensure the sound running of a community project. This will not only be helpful to KWG, but it will also be helpful to people wishing to replicate the project.

Why a Mixed-Methods Approach?

As I began this project, my main concerns were for practical application and clarity for both the layperson and the social scientist. For the layperson who may read this dissertation, it was important that she received a clear picture of how one can organize a water project for her community. For the social scientist, I wanted to further supplement my qualitative findings with the quantitative analysis in order to increase reliability and validity of my findings.

There was also the problem of receiving limited information about the Kugeria Women Group before I started my research. In developing countries, things do not always run smoothly. This can make the best-planned research scheme – regardless of whether it is qualitative or quantitative – irrelevant or inappropriate. I needed a methodology that would take these realities into account. I knew that I could interview the women and that I would return with a fair amount of qualitative data. On the other hand, I wanted to substantiate the interviews by incorporating a second research methodology. However, I didn’t know 1) if I could use the responses on the questionnaire to run a statistical analysis, 2) if I could get water meter readings, or 3) if the KWG
had kept any records on their pipeline. Therefore, I had to be pragmatic and employed a mixed-method approach.

Mixed-method research design was defined by Greene, Caracelli, and Graham (1989) as, “. . . employing qualitative and quantitative methods” (p. 255). Creswell (1994) stated that mixed-method research, “. . . uses multiple methods of data collection and analysis” (p. 174). Tashakkori and Teddlie (1998) drew on Creswell and refined their definition: “These are studies that are products of the pragmatic paradigm and that combine the qualitative and quantitative approaches within different phases of the research process” (p. 19). Because of the uncertainty of my research, I preferred Tashakkori and Teddlie’s viewpoint, since their definition allowed the researcher to decide which paradigm would be used during the various stages of the research.

Using both qualitative and quantitative methodology to help gain a valid and reliable perspective of the KWG is known as triangulation. In their groundbreaking article on research assessment issues, Campbell and Fiske (1959) were credited with developing triangulation to insure variance was based on a trait and not the method used during research. This is called the validation process, which is used to ensure validity and reliability. Campbell and Fiske’s (1959) definition of validity and reliability stated, “Reliability is the agreement two efforts to measure the same through maximally similar methods. Validity is represented in the agreement between two attempts to measure the same trait through maximally different methods” (p. 85). With this Campbell and Fiske (1959) supported the use of multiple methods to verify an outcome.

Incorporating Campbell and Fisk’s research Green, Caracelli, and Graham defined triangulation as; “. . . [the] use of multiple methods, with off-setting or counteracting biases, investigation of the same phenomenon in order to strengthen the validity of inquiry results” (p.
The researchers not only provided a definition of triangulation, but also divided it into five categories:

1. Triangulation seeks convergence, corroboration, and correspondence of results from the different methods.
2. Complementarily seeks elaboration, enhancement, illustration, clarification.
3. Development seeks to use results from one method to develop the other.
4. Initiation seeks to discover paradox and contradiction.
5. Expansion seeks to extend the breadth and of inquiry by using different methods for different inquiry components. (Green, Carcelli, & Graham, 1989, p. 259)

According to the authors, triangulation was developed as a tool in which research could be expanded upon, corroborated, and clarified. Within my dissertation, there were multiple questions on water use that needed to be substantiated. By employing triangulation, I was able to combine methodologies in order to verify my findings. The qualitative data analysis was a tool that assisted me in pinpointing key themes on the history, organizational structure, and water consumption of the KWG. Once these themes were organized into a cohesive structure, I was able to formulate hypotheses, which were used in my quantitative analysis.

My desire to serve two different audiences could be problematic and might prove to be difficult. The qualitative and quantitative paradigms goals are conflicting, and paradigm wars – the polemic between the two camps – have been raging for over four decades. Reichardt and Rallis (1994) wrote, “Each tradition views the other negatively, perhaps even as fatally flawed” (p. 9). The authors point out that in qualitative research the researcher’s evaluations can be flawed through consciously misrepresenting the data or failing to see alternative explanations.
Likewise, quantitative researchers can misrepresent outcomes by re-adjusting statistical outcomes or ignoring important variables, which are not quantifiable.

I was aware of these dangers when I had first started my research. If one remained a purist and used only one paradigm, the possibility of making mistakes in reliability and validity is reduced to the confines of that particular paradigm. If one combines two paradigms, the possibility of making such mistakes might decrease, because there was an opportunity to see the results of two different methods and to compare them.

It is not my intention to become entangled in the paradigm wars. However, as a researcher, I would be negligent in my duty not to mention these issues. Since Campbell and Fiske’s seminal study, the social sciences have enjoyed a plethora of mixed-method approaches, which have increasingly been recognized as an acceptable framework of research methodology (Creswell, 2003). Since then, the paradigm wars have declared a truce – both hostile and friendly, depending on the particular researcher – in which many can work (Reichardt & Rallis, 1994).

Research Design

My research goal was to evaluate the overall progress of the KWG. An evaluation model, which best fits my framework, was the case study evaluation. Stufflebeam (2001) defined this model as:

... in-depth description, analysis, and synthesis of a particular program or object. The study looks at the program in its geographic, cultural, organizational, and historic contexts, closely examining its internal operations and how its uses inputs and processes to produce outcomes. It examines a wide range of intended and unexpected outcomes. It looks at the program’s multiple levels and also holistically at the overall program. It
characterizes both central and dominant themes and variations and aberrations. It
examines beneficiaries’ needs and the extent to which the program effectively addressed
the needs. (p. 34)

Because I did not know what to expect in Kenya, I produced a lengthy questionnaire with open-ended questions. The original questionnaire had ten sections with an average of 15 questions. For this dissertation only the eight questions below were used (see Appendix D on page 272 for complete questionnaire):

1. Participant information (people, culture, and social statistics)
2. Lifestyle before the KWG Water Project (oral histories)
3. Beginning the water project (the establishing of the KWG)
4. KWG Water Project membership (group organization)
5. Fundraising and financing the water project (financial strategies and organization)
6. Building the pipeline: the physical labor (oral histories)
7. Quality of life (intended and unintended outcomes)
8. Water conservation (quantitative analysis of water use)

The research questions were formulated based on conversations with Susan Korte and correspondence from KWG’s chairperson. They not only addressed some of the many issues KWG wanted to understand more accurately, but also looked at issues that I thought were significant to the research.

My research strategy was based on Tashakkori and Teddie’s (1998) Sequential QUAL-QUAN analysis (QUAL-QUAN), which borrows heavily from Patton’s pure and mixed form studies. Using naturalistic inquiry Patton (1990) applied these methods to collect data and perform content analysis. At the same time, Patton would collect quantitative data. This design could
also be done using the deductive paradigm. Tashakkori and Teddie (1998) furthered Patton’s model by sequencing the research steps. The results were a more concise research strategy. I applied the following steps of Sequential QUAL-QUAN to my research:

1. collection of data,

2. data analysis in which outcomes were formed based on association with a group or theme,

3. formulation of hypotheses which are based on quantitative data analysis,

4. quantitative data analysis

5. corroborating both quantitative and qualitative analysis, and

6. extrapolating conclusions.

For questions 1 through 8, steps 1 through 3 were used. Question 8 was the only one in which all six steps were applied.

Morgan (1998) wrote of the priority decision. This is the decision of the researcher to choose between a primarily qualitative or quantitative research methodology. My research relied heavily on qualitative data: interviews, participant observation, letters, and field notes. Thus, the qualitative data was my primary data source. The secondary data source was the statistical analysis, using t tests and ANOVAs.

I analyzed the 33 interviews that I held in order to discuss questions 1-8, using narrative inquiry. Clandinin and Connelly (2000) defined narrative inquiry as using stories to explain phenomena. It combines the use of theory, the people who are telling the stories and who represent a particular culture, and the researcher and her role as observer. In narrative inquiry, a story, in this case the women’s interviews, is analyzed to explain outcomes. These outcomes may or may not support a particular theory and may or may not lead to furthering theory. What
is important is defining a particular phenomenon and explaining, using the narrative, why it has
cURRED and what its relevance is.

I suggested five models and theories: communication, community empowerment,
women’s cohesion, transparency and accountability, and good governance through the
democratic process. By using the interviews, I established:

1. a description of who and what the KWG was,
2. a history of the pipeline
3. an outline of how KWG’s governing board works and its transparency and
   accountability policies, and
4. an outline on its water policy.

Once these themes were established, I began coding the data. I first used NVivo 2.0
Research Software (OSR International, 2003). The lengthy questionnaire with its various section
was transformed so that each question had its own number. Based on this number, it belonged to a
particular grouping. This was done for each of the 33 cases. Variables such as age and
occupation were also added to this list in order that I run statistical analysis. I then created a case
file with each case getting its own file, so that I could keep the individual members separated.
Trees (nodes with names) were attached to the files, so that they could be viewed in the toolbar
and organized.

The second step was to run a search. If I wanted answers to particular questions, I simply
put the question number in the search, and quotes from the participants were displayed.
Variables such as age were put through the statistical package to find the average age of the
participants. The best responses were then taken to answer the questions. Next, I used words
such as Rupingazi River, well, water conservation, and water meter readings to generate quotes
on particular themes. Many times the results were overwhelming, because the word was alluded to so often. When this occurred, I attempted to reduce the number of answers by looking only at particular questions or using another word. These words were also put into a subject index, which could be accessed and crossed referenced.

In the second year of writing my dissertation, I bought a new computer that refused to transfer the files from my old computer. Fortunately, I had already printed out all the interviews, which I had spent a great deal of time reading. This did not present any hardships. I simply turned to the paper and scissor method. Each interview was given a color and printed only on its assigned color. Using the question number, answers were cut out and laid on the floor to be studied. This old fashioned method was great, because I became better acquainted with each case, and the colored paper acted as names, allowing me to better recognize responses. I then sorted the answers, using the slips of paper.

Not only did I look at the questions necessary for my research, I also developed a file for negative impacts, first in the software, applying the same methods used for the questionnaire, and later using paper and scissors method. The negative impacts file also received its own tree and later answers were given numbers much like the original data, so that they could be easily accessed.

The data coding approach, which best describes the above process, is thematic analysis. Using Boyatzis’ (1998) positivist empiricist paradigm as the basis for their definition, Braun and Clark (2006) stated that thematic analysis was, “. . . a method for identifying, analyzing, and reporting patterns (themes) within data. It minimally organizes and describes your data set in (rich) detail” (p. 79). The steps of thematic analysis are 1) familiarization with the data set
[reading and transcribing text], 2) generating initial codes, 3) searching for themes, 4) reviewing themes, 5) defining and naming themes, and 6) producing the report (Braun & Clark, 2006).

In the Findings section, the answers from the questionnaire were used to formulate the various themes on the KWG. For example, one theme that came out of the discussion of fetching water at the river was how ill tempered everyone was (reviewing themes). This led to me looking for more stories and identifying them (defining and naming theme), which I extrapolated on in the Discussion section (producing the report).

Thematic analysis has advantages and disadvantages. The tool is easily used by neophyte researchers, its methodology is simply to apply, similarities and differences are readily seen. The disadvantages are that it is not acknowledged by many researchers as a valid research tool, its flexibility in analytic options can turn into a hindrance by making the choices too broad, and it has limited interpretive powers in regard to description.

Analytic induction was used to verify the various approaches and theories in this dissertation. Taylor and Bogdan (1984) defined analytic induction as finding a fit between data and explanation. It is used to identify universal claims and casual laws and can be especially helpful in finding problematic cases. It advantages is that it is a good fit between data and explanation of phenomena. Because this can lead to a circular pattern in a discussion, it is also a disadvantage. The steps of analytic induction are simple: 1) give definition of the phenomenon to be explained, 2) formulate a hypothesis, 3) study a case to see if it can be applied to the hypothesis, and 4) if hypothesis does not explain case, reformulate hypothesis (Taylor and Bogdan). These steps are repeated until all hypotheses are adequately tested. In the Discussion section, I used analytic induction to bring together the various approaches and the explanations given by the participants. One should also note that in the Findings section only the findings
were cited. No recommendations or discussions were held. This was reserved for Discussion section, which addressed each of the eight questions in detail.

Turning to the analysis of quantitative data for question 8 on page 37, members were asked a series of questions on water conservation. One of the most important questions was monthly water use. Participants were asked what was their average amount of water used per month and if they followed the guidelines set up by the KWG. Based on members’ responses, a series of t tests and ANOVAs were run to compare means for a normal rain fall year and a drought year. Meter readings for all members were taken from the account books of the KWG. Technicians working for the KWG entered meter readings monthly for each member. The president, treasurer, or revenue clerk kept the ledgers with the meter readings. (M. Hill, field notes, August 2003).

Five questions were posed:

1. Is there a difference in mean annual water usage between a drought year and a normal year?
2. Looking at the rainy months only, is there a difference between a drought year and a normal year in water usage for this period?
3. Likewise, looking at the dry season only, is there a difference between a drought year and a normal year in annual water usage for this period?
4. Looking at the member groups – Founders, First Wave, and Second Wave – is there a difference in annual water usage among the three groups for a drought year?
5. Looking at the member groups – Founders, First Wave, and Second Wave – is there a difference in annual water usage among the three groups for a normal year?

The variables are:
Three separate, paired-samples t-tests were run to compare water consumption, using the variables of DYMEAN and NYMEAN, RAINY2000 and RAINY2003, and DRY2000 and DRY2003. The DYMEAN and NYMEAN were the mean annual water use by participants for a drought year and a normal rainfall year. RAINY2000 and RAINY2003 were the average amount of water used over a period of three months during the rainy season, while DRY2000 and DRY2003 were the average amount of water used over a period of three months for the dry season. Because water meter readings were entered into the ledger based on each family having a number, it was easy to pair the two groups for the comparison of means. The KWG used 20
units per month as the maximum amount of water each family should use. This measure was employed to see if members were over using the water.

Two, repeated-measures analysis of variance (ANOVA) were used to compare the variance within groups for 2000, a dry year and 2003, a normal rainfall year for the three levels of membership. The three levels were FOUNDERS, FIRSTWAVE and SECONDWAVE. Levels were based on when members joined the KWG. The dependent variable was the water meter readings.

As there were many broken meters and missing data, only members who had entries for eight or more of the twelve months were taken. This substantially reduced the group size for 2003, a normal year, but not for 2000, a dry year. The group size was reduced mainly because of broken meters.

I have decided to use the confidence intervals of .001, .01, .05, and .10. My decision was based on the limited work done on water projects and the wish not to discredit a finding, which may lie outside the traditional .05 confidence intervals. Although APA (2001) recommended using only one confidence interval (.05 is most favored) for a paper or research project, the organization acknowledged this as traditional thinking and understands that a researcher may even pick a confidence interval as high as .15 or .30 if she chooses.

My final question looked at whether the KWG could be considered a successful project. Quantifying qualitative analyses can be difficult. The job is made easier through Result Mapping. Reed, Cheadel and Thompson (2000) defined Result Mapping as, “. . .designed to enable programs to be judged on the quantity and quality of the results they produce, collecting both key process data as well as tapping into the potential impacts the program is likely to produce” (p. 74). Key process data refers to the journals, histories, experiences, life stories, and
interviews collected and analyzed by the researcher to determine an impact of a program. Impact refers to if a particular goal or objective was achieved and at what level.

After studying Louis Guttman’s mapping sentence methodology, Kibel (2007, ¶ 10) formulated his own Results Mapping form:

[who] [did what] [for whom] [at what level] [with what resulting score].

The author then added scores from a result ladder, a metric with raw scores from one to six. Kibel (2007a, ¶ 11) wrote that an evaluation of a program or interview later received points, which was later modified, “. . .on who provided the service. . .who received the service. . .and the number of persons involved in the exchange.” These points are added up and are used to toward an evaluation.

There are several advantages and disadvantages of Results Mapping. One advantage is that once the method is known, Results Mapping is rather easy to employ. A second advantage is that participants have a voice in defining an outcome for a project. A disadvantage is the possibility that Results Mapping can reduce the participant down to one-dimensional people with pat responses. A second disadvantage is a program or researcher may only highlight positive sides of a program or outcome (Kibel, 2007a). Results Mapping has now been integrated into Journey Mapping: a collection of the best stories into a personalized journey of an individual (Kibel, 2007b).

In the Literature Review, Stoffelbean (2001) cited a long list of questions to establish the success of a program’s transparency and accountability. From these questions, I will look at the following:

1. Do the members of KWG understand the general rules of their organization in regard to the judiciary system?
2. Do the members of KWG understand the basic rules for water management and conservation?

3. Are the goals and ideals of KWG being achieved?

4. Is the system relatively transparent?

5. Are members held accountable?

These questions were assigned a value ranging from one to seven based on the how important the question was to the program. Although five questions had been asked, there was a possibility that for each category additional questions were formulated. For example, question 1 looked at both the judiciary system and how the KWG was internally organized. A table or figure was produced to explain the Result Mapping scores outcomes.

Data Collection Procedures

The KWG coordinated the interviewing of their members. They made the decision of whom I was to visit. I agreed to this after a conversation with Susan Korte. She informed me that the KWG was accustomed to having visitors since completing their pipeline, and enjoyed showing visitors what they had achieved. I was advised to follow the women’s instructions for I must respect their domain. When I spoke with the chairperson in June 2003, she also agreed to this plan, as my visit occurred during the harvest month of August 2003. Many women were out in the fields working or at the market selling their produce. With KWG coordinating and escorting me to the various homesteads, I would increase my chances of fulfilling my research objectives. The KWG helped me interview 33 (16.5%) of its 200 members, along with technicians, dispensary staff and beauty parlor employees. This was no easy task! Murinduko, Kenya was in the Highlands southwest of Mt. Kenya. It had no paved roads. As it was on the equator, the sun shone for only 12-14 hours a day. Homesteads were clustered in groups of
three-to-four houses, but were several kilometers apart. At most, I could visit two homesteads a day.

While in the field, I interviewed participants, making notes on the questionnaire and recording the interviews. These interviews were later transcribed, and a copy of each interview was put into a notebook. Because the interviews were structured, the text could be analyzed according to question numbers and grouped accordingly. Despite the interviews structure, many times I asked for additional explanation, following important cues or asking the participants to elaborate on an idea. These interviews were later typed up and reviewed by me. I twice employed translators to better understand what the participants were saying when I returned from the field.

I also had a field book in which I wrote my personal memories and daily impressions. In addition, I wrote home to my husband and sisters, telling them of my experiences. These letters were later returned to me and proved a useful source of information.

Although I was worried that the KWG would only show me the middle to upper class homesteads, this was not the case. The majority of members were farmers or lower class; only a few members belonged to the upper class, which included teachers, shopkeepers, or electricians.

Participants

Interview participants were KWG members. To become a member, one could join at the time of founding or pay for a water tap after the pipeline was built. All members were females, had access to water, and had paid their water bills regularly. Interviewees were chosen based on their being at home on the day I was in their area.
Research Ethics

My visit was announced to KWG almost four months in advance of my arrival at their general assembly. The KWG integrated me within their workday by allowing me to accompany members and observe their normal routine. Once we arrived at the homestead, the interviews took place. KWG members were asked if they wished to be interviewed and signed a consent form (see Appendix for questionnaire) by thumb printing, writing their names or drawing their mark. There were no secrets about who I was or my motives. My observations were all overt.

I established a very warm and loving relationship with my host mother and the chairperson. I assisted my host mother with the daily chores: feeding the chickens, collecting eggs, shucking corn, butchering chickens, tying up the goat, fetching milk, and watering the cow. In exchange for having me as her guest, my host mother received from me KES 10,000 (USD 125), plus a gift of cloth, medicines, and some toiletries.

During the day, I was on the road. The KWG members cooked for me. A day’s wage of about KES 150 (USD 1.75) was paid to the member directly for a meal. Approximately, USD 400 (KES32,000) of my scholarship was donated to the KWG. The money was divided equally among the organization’s three projects: the water pipeline, the dispensary (clinic), and the beauty salon.

I gave generously to the project from their economic perspective, because I did not want to be viewed as not contributing to the KWG’s welfare. Furthermore, having a guest is expensive, and I didn’t want my hosts to view me as greedy, ignorant, or uncaring in regard to their financial situation. I also believed that it was ethically correct to do so. In my research ethics course in Family and Consumer Sciences, a great deal of time was spent lecturing on the role of the researcher toward her subjects. The Tuskegee Syphilis Experiment and the Nurnberg
Trail were given as examples of how scientist had caused grave harm to their subjects and the community. I learned that a researcher could not approach a community without thinking about what she could give back. To do so, would be to continue the long history of misconduct by researcher, which needs to end.

There were problems with money: many people thought I would pay more than the local market value. When this occurred, I felt overwrought, because I, too, was struggling to disperse my limited founds equitably. The funds, which I brought, were either donated by FAWCO or personally earned. Although I did not say it, I resented some individuals viewing at me as being able to drive their household economies. Thankfully, the chairperson saw to it that prices were fixed or agreed upon before payment was made, saving me the embarrassment of being thought of as Microsoft Chairman, Bill Gates.

Limitations

As I was in the field, I experienced a number of difficulties:

1. Over 20 different languages are spoken in Murinduko with Swahili and Kikuyu being the most common. Because of this, along with the fact that many women were working, I had a new translator every third day. It was not possible to retain the same translator. This was a decision made by the women’s committee. Twice I had inexperienced translators and had to patiently wait for the next person, hoping the new person would be better. When this happened, I spoke with the chairperson. To save face, we agreed to continue with the inexperienced translator, while the chairperson tactfully found me another translator. Translation also meant that answers were kept very brief. This strategy may have lost some vital information.
2. When I first started this project, I asked Prof. Dr. Rolf Korte if I should use a feminist perspective. “Du spinnst! [You’re crazy]” he replied. “Leave such things to the Kenyans themselves. People only wind up putting their values on to the natives.” This was very good piece of advice. It made me recognize that although I have African ancestry, I am culturally and ethnically different. I was raised far from my continent of origin with different norms and values. My values are that of middle-class Black Americans crossed with a heavy German influence. In fact, my culture and upbringing clashes at times with the very people I am trying to assist and study. Yet we have a common goal of bringing relief to the homeland.

3. When the aim is to help and not hinder a program, this can create a bias. I desperately want to see Kugeria become a successful entrepreneurship. My position is much like a loving parent who is reluctant to see fault in her child. I recognize this and hope to report my findings with limited or no bias.

4. I visited Kenya for one month in August 2003. Considering that many researchers spend years with participants, this is a very short time in which to get an impression. However, a month is a long period for evaluation when one thinks that many projects are evaluated in three days. I do plan visiting the project in 2008 and keep in regular contact through emails, letters and phone calls.

5. I relied on KWG members to translate and to guide me through the area. The chairperson informed me that the project was used to receiving visitors because of its success. I understand the women put their best foot forward. To compensate for this, I would be extremely polite and would cross-examine them until I felt they were being truthful. In the first interviews, I noticed that no members would speak ill of
their neighbor or talk about any of their problems. Answers such as, “We all got on well or there were few troubles” were quite common. In order to get around this, I would a) talk about my own experiences with FAWCO and AWCC, and how disputes were settled, b) tell a parable, c) reword the question, and asked it later within the conversation, and e) listen to the women, and remain patient and friendly, as kindness and listening were valued over getting a quick answer. These things helped me in getting around formulated answers.

Dissertation Design

Chapter I introduces reasons for researching Kugeria Women Group. Chapter II reviews the relevant literature, while Chapter III describes the methodology used. Chapter IV will discuss the findings of the questionnaire, and Chapter V will give recommendations. Chapter VI will answer the question on the success of the project, and the Epilogue gives an update on the KWG.
Susan Korte sent me this map with a gold star and directions to Murinduko, Kenya. I phoned to get more explicit directions, which I wrote down on the map.

Chapter IV: Findings

Welcome to Murinduko: An Introduction to KWG and Kenya

I was a bit anxious about traveling to Africa. I did not actually know where Murinduko was. None of the library maps or ones on the Internet showed the small town. I had to be happy with a gold star stuck on a map, compliments of my friend Susan Korte. However, everything else was well organized: flights, itinerary, and pickup from Kenya International Airport by driver, James, who had a taxi service and was recommended by the Kortes. As I was traveling alone, James was my lifeline. He greeted me with a hand-made sign, and I gave him a traditional European greeting, a kiss on both checks, which I was to learn later, was taboo. One doesn’t kiss strangers. A handshake was enough.
James whisked me quickly out of the airport. He declared it an unsafe place with pickpockets and riff-raff who were waiting about to take advantage of newly arrived tourists. On our way to Murinduko, he explained the lay of the land in his beautiful Kenyan accent. “Where you are going, you won’t have any problem. The people know one another. But the big city, now that is a problem. There are so many poor people and more come every day. So it is always better to have an escort.” I inquired about the new government, wasn’t it making Kenya a safer place? After all, the elections had been democratic and fairly won, with little reporting of misconduct.

“It is getting better here. There is great hope amongst the people, and we hope that Kabuki will do what Moi and Kenyatta didn’t: reduce corruption and improve our lives.” I smiled at this comment, and we continued to discuss Kenyan politics, education, and the economy for six hours until we arrived at Murinduko. When we parted, James wished me well: “You know what has changed most in Kenya? A few years back, I would have never told you my opinion of this government. Freedom of speech was not allowed. People kept their thoughts to themselves, but now it is different. There is hardly any fear.” He let me out of the car, “Welcome to Murinduko!” (M. Hill, field notes, August 2003).

I got out of the car and took in my surroundings. Murinduko was in the lowlands of the Highlands, southeast of Mount Kenya (see Figure 1 below). The soil was deep red and the vegetation an emerald green. A dirt road wound its way past my host mother’s house. Maize was drying in the fields. My host mother’s homestead consisted of a neatly-painted light green wood house on a cement foundation. It reminded me of my grandmother’s house in central Tennessee. Beside it, there was a smoke house, which was made out of traditional red brick
from straw and dung, painted with ashes. A granary (storage house for corn, millet, and rice) completed the small homestead.

![Map of Kenya](http://www.irinnews.org/pdf/map/Kenya.pdf)

**Figure 5.** United Nation’s Map of Kenya


Copyright 2005 by The United Nations Department of Peacekeeping Operations: Cartography Division. The author modified the map to show Murinduko, Kenya.

I arrived at my host mother’s house just as the sun was setting. About 20 women were waiting for me. They broke out in song, singing and clapping. I was totally overwhelmed because I didn’t expect such a large welcome. The household furniture was on the front lawn in a semi-circle. Not knowing what to do, I went around and shook everyone’s hand. I embraced the chairperson and my host mother. It was a very emotional moment in my life. I had come home to Africa, and the women met me with joy and song. I was crying because from the very beginning the Kugeria Women Group made me feel at home. They sent me a message that I belonged here and was greatly needed.
Mukimo, a mixture of mashed potatoes, spinach, beans, corn, and chicken was served chicken, mashed potatoes, and corn, followed by freshly brewed tea with milk and sugar. I was cautious and didn’t eat my fill. The party went on until 20:00. I tried to help clean up, but the women would have none of it. In Kenya, there is no electricity, and everyone must work on the shamba (farm). Bedtime is very early, around 21:00. The guests who attended my welcoming party all lived within walking distance of one-to-three kilometers away. Although this is not much, I learned that a trek home in the dark could be dangerous. One couldn’t see the ground. Many women carried flashlights to assist them. Some went without and risked taking a nasty fall.

Several days later, the chairperson appeared. I wanted to see the school, so we walked together with my host mother.

“I shall call you Njoki (pronounced na-jŏk'-ĕ), MaLinda,” she told me. I liked the name immediately and asked what it meant.

“It means To Come Again.”

“That is a very strange name,” I replied.

“Well, we want to give you a name that has meaning. We hope that you come again.”

“I’m here. I hope to come back,” I told her.

There was silence between us for some time. I usually am a motor mouth, but I stopped talking. The chairperson had something important to say to me, and finding the right words was difficult.

“You know, we have had visitors before. A girl came here and stayed half a year. She was with the United Nations, but we haven’t seen or heard from her for over a year.” The
chairperson was silent for a few minutes and let her words sink in. We stopped in the road and looked at each other.

At that moment, I remembered two important relationships in my life: my mother and my sorority. Whenever my sisters and I would do something wrong, my mother would go into her speech about right and wrong. The simple speech went this way: “There is right, and there is wrong. You girls should know that by now. You should know the difference between right and wrong.”

As a member of Delta Sigma Theta Sorority, I thought on the sorority’s motto: *One Mission, One Sisterhood: Empowering Communities Through Committed Service* (Deltasigmatheta.org, 2007). Delta Sigma Theta is a philanthropic organization – not a social sorority. Members are taught that commitment to the sorority or any organization should not be taken lightly and should be made, taking into account the time one actually has to give to an organization. One should not make a commitment if one does not have any intentions of fulfilling one’s obligations. For many philanthropic organizations, these words ensure that over a lifetime the organization will have the long-term commitments from its members in the form of financial support or volunteering. Although not every member adheres to this principle, success of the organization is guaranteed because members give back over their life times.

I chose my words carefully: “My professors taught us that it is unethical to do research and use the people for our own means. We are to help the people – not use and abuse them.” There was a tinge of anger in my voice because I had vowed to myself not to misuse these women. Yet, someone came and did just that.

The chairperson showed grace and diplomacy when she spoke about the situation. “So many have come here, and we have had very little from it. Yet, there is much to be done.” Her
statement left room for a dialogue, and she was silent afterwards. Many people dislike silence; however, in Kenya it is part of the language. The silence is used for contemplation and gives the listener time to make a decision. Such a decisions does not necessarily have to come quickly.

In business, Americans demand what they want and put it in writing. In Kenya, this is not the practice: there is not a longstanding legal tradition based on Western practices. Tribal law and tradition are still used to settle disputes. One is subtle in making a request. There is respect for authority and status. It is an approach in which both partners save face. The chairperson wanted to save face for all involved. She wanted to protect her group and allow me to do my research.

I quickly realized that my research was not only to evaluate the pipeline, but also to improve the quality of life for Kugeria. One of the scariest things is to make a commitment that one may not be able to fulfill. I was terribly afraid. I am one of those people who believe even if a person does wrong and no one sees it, God, the Goddess or the powers that be see it. Evil comes back on a person who has done wrong. I took the plunge:

“What can I do?”

“Let me think, Njoki,” the chairperson said, as we arrived at the school.

“I promise to come again and to help you any way I can,” I said.

“That is nice,” she replied.

I arrived at the school. I had a promise to keep. I didn’t know what was needed, only that I should come again. At the school, my translator was waiting for me to take me into the field. It was time to begin my fieldwork.
Q1 Participant Information: From Rags to Riches

One day I was talking with my host mother about some of my findings. I noticed that the women I interviewed had different physical builds and that no one religion dominated, as there was a church every few kilometers.

“Njoki, we don’t all come from here. We settled here many years ago. There are so many tribes: Kalenjin, Kamba, Kikuyu, Luhya, Luo, Meru, Masai. . . There are many others. No one group has a majority. At first things were hard. There was no water. Everything was dry. We all had to carry water. This brought us together. This is one reason why it was easier to work together. We all had the same situation and no one had the upper hand,” she responded.

My host mother spoke of the Million Acre Scheme (1960 to circa 1989), in which land was purchased from the European farmers and African bourgeoisie and returned to indigenous peoples (Ogot & Ochieng’, 1995). The scheme assisted in settling landless Kenyans after independence. It is highly respected by the indigenous populations because it made many people who were dependent on Europeans for their livelihood economically independent once again.

Because of my earlier research, I had been very careful not to ask KWG members about their ethnic origins, afraid that I might offend my guests. Over 40 different tribes are represented in Kenya, making up 99% of the indigenous population with the remaining one percent of non-African descent. The tribes with the greatest representation are Kikuyu (22%), Luhya (14%), Luo (13%), Kalenjin (12%), Kamba (11%), Kisii (6%), and Meru (6%) (CIA, 2005).

The Kenyans are very sensitive about past ethnic politics, which enriched certain groups while exploiting others. Under President Jomo Kenyatta, a Kikuyu, a policy of forgive and forget was established. However, the policy soon showed flaws with the best jobs, lands and contracts going to the Kikuyu people (Clough, 1998). President Moi, a Kalenjin, reversed the
Kikuyus’ good fortune. Under Moi, the tribe was disenfranchised, hunted down, murdered, and made landless. This was particularly true during the elections of 1992 and 1997 when Moi used tribalism – appealing to Kenyans’ tribal loyalties – to maintain power through fraudulent elections (Mwakikagile, 2001). As previously stated above, I did not ask for members’ ethnic affiliation. I chose not to ask rather than be seen as making a tally of who might be more successful.

However, I did ask about religious affiliation. “Yes, church is very important to us. Religious freedom is something highly valued. There is even a woman who has founded her own church. We like this freedom,” my host mother informed me.

Religion plays an important role in Kenyans’ lives. My host mother and I went to services regularly. I found that church is not only the social hub but also where fundraising for various projects took place. There was either a bazaar for selling poultry, produce, and handcrafts, or a communal meal.

My findings show 12 members (36%) are Catholic; eight members (24%) belong to the Anglican Church of Kenya, and three members (9%) are from the National Independent Church of Africa. For the category of other, nine members (24%) belong to one of the many religious organizations such as Pentecostal Evangelistic Fellowship of Africa (PEFA) or Church of Christ. Two members did not report their church affiliation. All members reported going to church at least once a week.
My host mother tidies up her front yard. The main house, which stood on a cement foundation and was made of wood with a tin roof, had two bedrooms, a kitchen, and living room. The smoke house or cooking house, in the background, was made with traditional straw bricks, dung and ashes. It stands well away from the main house in case of a fire. As my host mother was a teacher, her homestead represents a typical residence of the middle class.

The subject turned to poverty. I wanted to know how many people were living in absolute poverty. My host mother explained, “That I don’t know, Njoki, but I do know when we came this was all just hills. We built this land up to what you see now. There were no houses – nothing was here. You got your plot of land and slept outside. You call it safari. Now, things are different. We are not rich. Many have little, but most have what they need to live.”

“You are well off,” I said.

My host mother, who was snapping beans, smiled and shook her head from side to side in embarrassment. To admit something like that would be bragging. She was silent for a while, “I
61
have my family and my shamba. That is all I need.” I admired my host mother. She could
answer most of my questions, but she taught me patience. She made me wait for the answers.

Figure 7. The Granary and Men’s Sleeping Quarters
The granary, which was used to store corn and wheat, stood across from the house and well away from the smoke
house. The men’s sleeping quarters is where my host mother’s two grown sons who were both bachelors lived. It is
traditional for men and women to have their own sleeping quarters in Kenya.

The ages of the 33 KWG members interviewed ranged from 25 to 87 with 49.6 being the
average age. The average member has 5.5 children living at home. Her household has three
generations of family members. This may include grandparents, parents, children, in-laws,
aunts, uncles, cousins, and foster children. Three members had co-wives (polygamy). When one
looks at the statistics for family planning from 1970-1990, the national average fell from eight
children per household in 1970 to fewer than five children in 1990 (“The World Factbook”,


2005; Library of Congress, 2005). Currently, families have between three to five children.

KWG Members have on average fewer children, taking the average age of the members into consideration.

*Figure 8. The Newly Built Water-Holding Tank*

Members of KWG are encouraged to build water-holding tanks. My host mother had just completed hers upon my arrival. This tank can hold about 10,000 liters of water, had a cement and granite foundation, and was made of waterproof cement.

The average Kugeria woman owns 10.5 acres of land with 7.3 people living on the homestead. All participants stated that they owned their land. Twenty-five members (76%) stated that either the land was held jointly with their husbands or in their husband’s names. Three members (9%) lived on the property of the husband’s father. Four members (12%) were
widowed and stated that they owned their land – not their sons! One member (3%) was divorced and owned her own land.

When I asked my host mother why so many people were debt free, she explained, “Most plots are small and can be paid off in five to seven years. Plus the interest rates are not all that high.” I thought about this, and it made sense. Two acres of land cost about KES 300,000 [USD 3,800] (field notes, August 10, 2003). Taking the average income of KES 88,000 (USD1,100) into consideration (Library of Congress, 2005), a farmer could pay this sum back within seven years with an interest rate of one or two percent.

The most-mentioned occupation is farmer with 28 participants (85 %), claiming this status. Four members (12%) are schoolteachers, and one is a shopkeeper (3%). The average years of education is 6.8 years of school. Only three members (9%) had never been to school, while 14 members (42%) had completed grade eight or higher.

The KWG has a solid rate of education in comparison to Kenya’s educational statistics. In 2002 less than 50% of the population completed primary school (grades one thru eight), less than 23% finished secondary school, and less than 10% finished college (Library of Congress, 2005). From these 14 members who have completed the eighth grade, all have their A-level (high-school diploma) and six have college degrees, which represents 18% of the members.

Beans, maize, and bananas are the favorite crops grown by KWG members. Ninety-seven percent of the participants (32 members) plant beans, 93% (31 members) plant maize, 36% (11 members) plant bananas, and 30% (10 members) plant potatoes or yams. All members stated that they rotated their crops and tried to plant a variety of foods. Finally, 18% (six members) have coffee as a cash crop, 12% (fours members) plant cotton, and 9% (three members) plant tomatoes.
Members were very proud of their livestock, which included cows, oxen, chickens, sheep and ducks. Families favored chickens and cows. Twenty-three members (70%) own at least one cow. Of these 23 members, 17 members (78%) have two or more cows. Twenty-three members (70%) have chickens. Of the families raising chickens, there is an average of 10.3 hens per household. Goats rank third as the favorite livestock with 21 members (63%), having an average of 2.9 goats per family. Five members (15%) have oxen with 1.4 oxen per family. One member has seven sheep while two members own ducks (no number was given).

From an outsider’s perspective, KWG members appear to have a comfortable lifestyle. They own their farms, have livestock, and have good educations. The pipeline has, indeed, brought prosperity to them. Palmberg (2005) even estimated their income to be twice the national average. However, one should not forget that KWG members have a very difficult occupation: farming. Farmers are at the mercy of natural catastrophe. When I spoke to the women, they understood how precarious their situation was. Adejo stated, “It only takes one bad crop or a drought. When this happens, I may have to cut my water off because I can’t pay. Water is life, but life here is a struggle” (M. Hill, field notes, August 2003).

Q2 Lifestyle before the KWG Water Pipeline: Miles to Walk

I strapped on my backpack to hike the three kilometers to the chairperson’s house, where I would be spending several days. She asked me how my research was going. “Very slow,” I replied. “No one seems to remember any stories about what went on before the pipeline. It is as if they all have amnesia. If things continue to go on like this, I will have tapes full of silence.” I kicked a stone in frustration, as we walked down the dirt road.

“Oh, Njoki, don’t take our silence as holding back information. You see, life was very hard before water came. It is not that people don’t want to remember [what happened]. Rather,
remembering brings back memories of the struggle. It was a very difficult time for us here. Many women’s lives were the watering hole. It consumed our whole being. ”

I suddenly felt embarrassed. I thought of my foster father, who never spoke of WWII. After his death, my sisters and I learned that he was a much-decorated soldier. I was still upset about him not saying a word until the chairperson spoke to me. I realized it was too difficult for my father to speak. “Am I asking too much?” I asked her.

“Give the women time. If they have anything to say, it will come,” she advised me. She stopped and pointed in an easterly direction. “On a clear day, you can see Mount Kenya from this spot.”

I squinted my eyes and said, “I guess today we can’t see it.” Clouds checkered the sky and the sun was setting.

“We’ll try again tomorrow,” she said. For some reason, I was no longer worried about getting answers to my questions. Something told me they would come if I waited and was patient.
Figure 9. Bridge over the Rupingazi River

Makeshift bridge over the Rupingazi River: A person’s feet remained dry, but one must possess the skill of a tightrope walker to cross it.

The River and the Well of Sorrows: A Day in the Life of a KWG Member

I sat in the garden of one of the KWG’s oldest members, the past vice-chairperson, age 87. Her homestead is almost empty, save a cow and a few scattered chickens. The fields are well-tended. Her family members were off working and would come by to check on the elderly lady. My translator, one of two technicians employed by the KWG, brought me to meet this highly esteemed member. Not to visit her would be disrespectful. She was not only the KWG’s founding vice-chairperson, but she was also the chairperson of the building committee that built
houses in the area two decades earlier. She held much influence within the community and sat rocking slightly on her chair. When she spoke, it was in a soft voice:

We got our water from the well. The head of the village came from Nyeri and asked where we obtained water for building houses. We told him from the river, and he decided to help them build a well. People who are not KWG members and their cows use the well now. This was earlier [1980s]. For my family, water was not far away. It was only five minutes away. But the climb was bad. I got old. It was a big problem for me to go up and down the hill because I was getting old. This is how it was before the pipeline. (M. Hill, field notes, August 11, 2003)

The past vice-chairperson finished by putting her hand on her cheek and looking at the ground. She sighed heavily, “It was difficult.” When she said these words, I felt that no manner of words could describe what the women had gone through and what many women are still going through. It was like a stone had hit my chest and the wound had never healed, so heavy were her words.

Difficult is how most members described their lives. From 33 members only, 7 members (21%) had access to the well mentioned by the past vice-chairperson. The remaining 26 members (79%) had to fetch water from the Rupingazi River. On average, the women and children had to walk two kilometers to the river. To and fro, as it was called by members took about one-and-a-half to two hours and had to be done up to four times a day.

Fetching water was considered women’s and children’s work. I was told that men only went to the river when wives were ill or had just given birth (M. Hill, field notes, August 2003). Likewise, when a boy reached the age of 12 years, he no longer went to the river. Children usually came from school and headed straight off to the river to fetch water. The whole process consumed people’s entire lives.
Figure 10. Two Boys at The Well

Two boys wait at the well (in background) to fill their jerrycans. They will wait for about an hour for their cans to be filled. On this day, they were first in line and did not have to wait.

When it comes to the men, there is a general stereotype that African men allow their women to do the most difficult work of fetching water, raising the children, paying children’s school fees, and tending the fields. In short, the African men have an easy time of it.

Traditionally, African society is a hunting and gathering society. Men hunted and owned cattle, and the women gathered grains and milked the cows while looking after the children and the elderly. Men owned the land and cattle on it. Women’s traditional duties included fetching water and working the land. In fact, the work was made easier because there were extended families or polygamy, which has since been made illegal, to get the job done (M. Hill, field notes, August 2003).
Today, hunting and gathering societies are finding their traditional lives in transition. Men as well as women must increasingly migrate to the cities to find work. The Department of Economic and Social Affairs of the United Nations Secretariat (DESA) cited the economic globalization of world markets, changes in Western demographics that is aging and is pulling workers from more populated developing countries, the communication revolution (Internet, cell phones), and growth in transnational communities in which people hold multiple passports and international work permits (UN, 2006, p. 7). In addition, crop failure caused by long-term drought, population explosion and an over-saturated local economy are fueling migration (M. Hill, field notes, August 2003). DESA reported that in 2000, 51% of all migrants were men and the remaining 49% were women and girls. Depending on the country, the out migration of men and women can be as high as 69% for men, as found in Mexico and 61% for women, as found in the Philippines (UN, 2006, p. 9).

For Kenya, it was estimated that 47% of all rural households are migrant households, meaning the men had left their families to seek work elsewhere. Of these rural households, 27% named women as heads of the households (Thomas-Slayter & Rocheleau, 1995, p. 14). Looking at Francis Mutia “Boss” David (the catalyst for this dissertation), his family’s story supported these statistics. Not only did his father work as a gardener in Nairobi to provide for his family, but his second oldest sister, Mwongeli, had also quit school and worked as a maid (Wieland et al., 2000). These arrangements left Susan Mbilis, Boss’s mother, alone at home with eight of her nine children.

Thomas-Slayter and Rocheleau (1995) wrote:

Evidence from the cases presented in this volume suggest that in the context of uneven power relations, men’s and women’s roles continue to be renegotiated, based on a logic
of flexible complementarity [the ability to achieve a goal within specified cultural or gender norms] with frequent instances of overlap and changing boundaries. (p. 13)

Like many women in Africa, Susan Mbilis’ only solution was to cope with the situation and take on all the daily tasks: the difficult farm work, paying school fees and raising her children.

To outsiders, African women appear to being doing all of the work. This is a myth. African women may stay home to look after home and hearth, but African men also have their set of responsibilities. Although African men appear to be free, they are expected to hand over the bulk of their paychecks to their wives and families. Woe is the man who gambles away his wages and does not take care of his responsibilities. Fatima told me:

He would go to the city, work for weeks, and come home with nothing in his pocket.

Now, mind you, he had two wives and seven children. It was scandalous how he treated us. My father and uncles would not have it. They went to the village chief, the matter was discussed, and a plan was hatched. It took two more years, but he learned that he was not to come home without the children’s school fees, a bolt of cloth for each wife, and seeds for planting. He also had to contribute to his widowed grandmother who raised him. He had responsibilities, and the community made sure that he saw to them. (M. Hill, field notes, August 2003).

This is an extreme example, but in the end, the husband provided. What I found about men working away from home was that it was not the amount they contributed, but rather that a person made the contribution on a regular basis. The majority of migrant husbands and wives take their familial responsibilities very seriously and make their contributions. The United Nations (2006) estimated that wages from abroad contribute up to 35% of the cash flow into local economies for many developing countries.
Looking at the developed countries, while visiting Lincoln, Nebraska, I came across an interesting headline in *The Lincoln Journal Star*: “Role reversal: More women becoming main breadwinner” (Selvin, 2006, p. 2A). The United States Census Bureau data revealed that 25.3% of women in married households earn more than their spouses. The article went on to state that slightly over half of all medical and law students were women. Thirty-two percent of women in the 25-29-age category earned a bachelors degree while only 25.5% of men in this age group held such degrees (Selvin, 2006, p. 2A). Men who had wives and made less income even opted to stay home to look after the children.

Previously, men would have lost face if their wives earned more money than they did. For many societies this is still true. However, Selvin’s article did not belittle the men for making less, rather it supported the men, especially if they took on childcare and household responsibilities. The new global market dictates that couples use *flexible complementarity* to negate the sticky issue of income and chore assignments.

If developed societies can increasingly accept that women may earn more than men and that their education puts them in this position, than it most also accept the fact that developing societies must apply the same concepts to their circumstances. That is, in developed society it is perfectly normal for men to go on business trips or live away from home for long or short periods in order to provide for the family. Their wives are left at home to look after the families. Likewise, this is true of African families. Susan Mbilis must cope with the situation just like her counterparts in developed countries. To say that African women do all the work and that African men allow this situation is a misnomer. It is also wrong to say that men who earn less than their wives are lazy, are freeloaders, and have lost face.
Returning to my findings on life before the pipeline, the women defined their lives as
difficult.

**Adejo:** My life was affected. There was no continuity of working on the farm because of water.

* * * * *

**Chausiku:** I would spend the whole day getting water – eight hours. I would get up at 6 a.m. and do my housework. At 8 a.m. I would fetch the water.

* * * * *

**Dakima:** My days were tiring because there was no water. After that, I would go to the farm. Later I would go again. I used to do the housework at night after carrying water.

* * * * *

**Faizah:** The whole day was wasted fetching water. There was nothing else you could do. No sooner had you gotten water, than you had to go back. It weighed heavily on my mind – the whole day. You could only think of water being scarce. I would go to bed very late and not get any sleep because I only thought of going for water.

* * * * *

**Xedi:** I wasted a lot of time [at the well] because there was a queue and very little water was available. It was even worse because there was no river around.

* * * * *

**Siada:** You went to bed at midnight or worse when there was no water at all at the well. Fetching water made hygiene and raising animals nearly impossible:
Fadhili: Living was very bad because we were getting water from a far distance, and I was not able to do any work at home. I wasted a lot of time. The animals did not have enough water. The children did not have water for bathing.

* * * * *

Ituri: We had a lot of problems. We had no drinking water, no water for livestock, and no water for washing and bathing. The children would go to school without bathing. We walked long distances every day to fetch water.

* * * * *

Siada: The crops died; the animals died when there was no water

For the teachers, life was doubly hard:

* * * * *

Rhehama: I got up at 5 a.m. and went to bed at 11 p.m. I had to go twice to get water before going to work.

* * * * *

Host Mother: At the well, you had to stand many hours in line, because the water was slow. This was tiring. I tried to sleep while on my jerrycan (water container). Many times there were fights. I tried to stay neutral and hold onto my dignity. I am a teacher and had to set an example.

Fetching water also brought on many other problems, particularly with children. While a majority of members (70%) stated they left their children with husbands, grandparents, siblings, or neighbors, there was still a shortage of childcare especially for small children:
Yambura: I had three small children who could not all carry containers of water. I locked the younger children in the house when I went to the river, because there was no one to take care of them.

* * * * *

Zubeda: I carried the baby in front of me with 20 liters of water on my back, because I could not leave her at home.

* * * * *

Chane: A mutungi [water container] was on my back, my child on the front and the cow beside me. I had no one to help me because my husband was away in Kiambu.

* * * * *

Faizah: One day I came home to find the children fighting. There was nothing to do but make them come to the river, too.

Yet, taking the children to the river was dangerous:

Chane: One day I was at the river and the monkeys came and ran away with my clothes. A monkey fears a man and will run away. When a man came, he threw a stone and the clothes fell down. You had to look for someone to look after your baby because at times the monkeys could carry your child away.

* * * * *

Gheche: A lady came to the river to wash her clothes. She laid her baby down. She looked up, and the baby was gone. The river had gotten it.

The Rupingazi River was the river of sorrow. Almost all the women had sad stories to tell about the river:

Mumori: One day I went to bathe, and a body floated by.
Faizah: That river was no good. It was a place of gossip and slander. We would go down there and gossip, and from this, ill will came about. It was terrible: neighbor against neighbor.

The well could be even more difficult especially if there was little or no water:

Taabu: A person could sit for almost a day for one container of water.

* * * * *

Siada: Time was lost at the well. It took too long and too many people stood about.

One would think that the well would be a safe haven, but this was not the case. The well was even more sorrowful than the river. The most often told story was the death at the well. I heard it six different times during my interviews:

Chane: People were fighting at the well. They had a queue; the person who came earliest is the one who was first. The well was on someone’s shamba and he was an enemy with another person. He had been preventing the wife of this person from fetching water there. One day in the early morning they started quarreling, shouting and abusing each other. There were the two men and their wives. The children also got involved and they started throwing stones at each other. The man who was preventing the woman from fetching [water] was killed. He died on the spot before he could be taken to hospital.

In conclusion, participants describe an extremely long workday for women and children. Women rose early to fetch water. They returned home to cook and to prepare children for school. Once the children were gone, mothers fetched water again and attempted to complete farm work on the shamba, if time permitted. The children returned from school to fetch water with their mothers. Small children were left at home, were left with relatives, or were taken to
the river with their mothers. Both women and children had to carry water. Men who were often away working in the cities only went occasionally when a wife was incapacitated. Teachers had the double burden having a full-time jobs and fetching water before and after work. Both the river and well presented a threat to personal safety. Children drowned, bodies were found, gossip was widespread, monkeys stole clothing, and a fight claimed a life.

When I asked the former vice-chairperson to sum up her experience of fetching water, she looked at me and simply stated, “That river and well were no good – for nobody!” It was no wonder that the women wanted a change.
Q3 Beginning the Water Project: Experiencing the Rupingazi River

The members had told me so much about the Rupingazi River that I wanted to see it for myself. Twenty-five members (76%) reported the Rupingazi as being their main source of water while five members (15%) used a well and three members (10%) used pumps or bore holes.

![The Valley of the Rupingazi](image)

*Figure 11. The Valley of the Rupingazi*

Looking down into the Valley of the Rupingazi from the main footpath to Embu Town. The river presented a difficult physical obstacle in fetching water.

My host mother and her good friend decided to take me down to the river, but warned me of the difficult terrain. I had already become acclimated to the Highlands, which are 200-1,200 meters above sea level. After one week of research, I could keep in step with almost anyone.
Believe me, people were fast walkers, putting in 10-20 kilometers each day simply by going into town or walking to work or school.

I strapped on my backpack and tied up my Meindl trekking boots. The Rupingazi River is only about three kilometers from my host mother’s house. We covered the distance in less than 30 minutes. About one kilometer from the river, I noticed that the foot traffic picked up. Women and children with water containers greeted us, as we got closer to our destination. Livestock followed their owners at a slow pace.

Figure 11. Girl with Jerry can on the Path to the Rupingazi

A teenage girl with a plastic jerrycan carried across her shoulders goes to the Rupingazi to fetch water. Her sister who was three years younger in the background also had the same size jerrycan.
The path we were on was well-worn, but extremely steep. The Rupingazi literally cut a deep swath through the Highlands. It felt like viewing the Colorado River from the Grand Canyon. People stood above on overhangs, looking out onto the sight of the river. In fact the descent to and ascent from the Rupingazi was similar to the hike my husband and I had made to Phantom Ranch in the Grand Canyon. The hike down, although rocky and steep, was very easy. However, the hike back up was the most difficult because one is climbing up instead of walking down.

Figure 12. Woman with Produce Crossing the River

A woman with produce on her back crosses the Rupingazi at one of its low points, where the river is not deep, but the current is extremely swift.
We arrived at the banks of the river just a little winded. I was treated to background information from my host mother:

This is where it all started. Njoki, you make this climb – *to and fro* – several times a day and you would wish you had a tap or a pump just to make your life easier. It was this work that made us [KWG] want to work together. [She pointed]. Look at the current. It is swift. Look at the water. It is not clean. People from up river and Embu Town dump their waste in it. People cross here, but it is dangerous as there is no bridge. The only bridge is in Embu Town. I show you a makeshift bridge down river. The river is low now, but it can become full. That is when it is dangerous to cross or to wash in it. Yet, many do this.

If I were a tourist, the Rupingazi River would look picturesque to me. Children and women created lovely images in their traditional clothing, as they went about their chores. Yet, there was a real danger: the river reeked, rubbish floated in it, and the color was a dubious brown. I could see why the women wanted to find a way to have their own fresh water source.

After a break, we began to slowly walk up hill. I had to stop and take a drink of water after walking 600 meters. I was breathing heavily and had broken a sweat. My backpack felt as thought it weighed a ton. Despite owning an excellent pair of hiking boots, I was having difficulties, stepping over rocks and debris which had moments earlier been no problem. The women laughed and poked fun at me, stating that I had been spoilt by my fine city life. I took it in stride, but I had much respect for them and told them so. We stopped three times before we got to the top, mostly because of me. It is true that the valley in which the Rupingazi flows is not comparable in height or grandeur to the Colorado River and the Grand Canyon, but both treks demand conditioning of the mind and body. Such treks are not to be taken lightly.
That climb taught me so much, but mainly it showed me the struggle of everyday life these women had. I had a two-liter water can, my writing materials, a first-aid kit, and a few rations in my backpack. It all weighed less than five kilos, but I was knackered at the top. I couldn’t see myself with a child on my back and a cow in tow. No, I take that back . . . I could see myself with my boy, Tarik, and a plastic jug on my head. I would have made it because necessity dictated it so. I mentally kicked myself for being such a fatalist.

“Njoki, come along. If we hurry, we can empty your can and come back to get water again.” I looked at my host mother with disbelief on my face, using my arm as a towel. Was she serious or was this Kenyan humor?

“I’ll tell you what we are going to do. We are going to call a meeting and build a water pipeline,” I stated with earnest humility.

The women broke out in laughter. “Njoki, this is what we said after such a climb everyday.”

The Failure of Teithia-Teithia

On Mondays and Thursdays I received a translator or translators. This was done because I came during the harvest month of August. Many people were in the field and could only spare a few days away from their farms. Today, I was introduced to the representatives of two electoral areas for the KWG. The two women would show me around for the next days and would be my translators. What was wonderful about these two women was that they were my age, and both had attended secondary school. They also aided me in translation, because they spoke six languages between them. The two friends were also very instrumental in helping me to understand what Teithia-Teithia was.
“Mama Robert [this is a form of addressing a woman who has a son], what is this Teithia-Teithia? Whenever I ask, people mention it and cluck their tongues,” I inquired as we walked along the road to the dispensary, which the KWG sponsored.

“Ah, ye oh, ye oh!” Mama Robert shook her head and looked at her best friend as if I said something wrong.

“It was a disgrace,” began Mama Sampson

“It was a huge failure,” added Mama Robert.

“What was it? I don’t see it.”

“Look there! Just beyond those trees and you will see the result of many years of hard effort,” replied Mama Robert.

I looked to where she was pointing. A sign hung half-heartedly on a metal mast proclaiming the Teithia-Teithia Water Management Program. I walked to the fence and peered over – nothing.

“I don’t see anything,” I answered and looked to her for further explanations.

“Teithia-Teithia, which means help-help, started in the early 1980s when we were young women. There was much talk about bringing water to the Highlands. Men came and collected money and made many promises, but nothing came of it,” Mama Sampson explained.

“When we help you with your translations, we will make sure you understand Teithia-Teithia,” said Mama Robert.

When I surveyed the women and asked them why they organized, the name Teithia-Teithia was mentioned by 27 members (81%), as one of the reasons for creating the KWG. The remaining 6 members (19%) referred to failed attempts to dig wells, to build pumps, or problems at existing wells, water holes or rivers.
Members described Teithia-Teithia as a program that had gone bad:

**Gheche:** The men came together and formed a group. They collected money and made all kinds of promises. The women were the community members. We did all the community work.

* * * * *

**Patanisha:** Teithia-Teithia was so mismanaged. There was bickering amongst the men. The work did not get done and the money disappeared. Only a few people got water and these were the rich farmers.

* * * * *

**Wambui:** We waited and hoped that Teithia-Teithia would give us water. We went to the chief to ask for help, but this did nothing. We even purchased materials hoping the work would go faster, but we got nothing.

* * * * *

**Chausiku:** Teithia-Teithia failed because it was mismanaged all around. No one was held accountable for anything. The men could not unite on anything.

* * * * *

**Dura:** Many times we [women] were not asked what we wanted. We were excluded, but we needed the water, especially for the children.

In its aftermath, Teithia-Teithia left members feeling betrayed, excluded and disenfranchised. People even lost their modest earnings:

* * * * *

**Faizah:** We lost everything to that [Teithia-Teithia] crazy scheme. We had nothing to start over with. We had to ask relatives for money. We lost face.
After Teithia-Teithia no one was willing to start another project. However, the problem of where to find water was still there. It would not go away:

**Mumori**: Where to find water was a daily problem. I could buy a barrel of water, but that cost me 20 shillings every week. It was expensive to buy water. Where was I to get this money? I couldn’t always ask my husband. Time at the well cost, too.

* * * * *

**Member 1**: The search was the worst in the dry season. The well took too long. The pump was broke. The Rupingazi was too shallow to get good drinking water from. Yet, people did not give up their hope of trying another project:

**Chairperson**: There was so much failure, but we did not give up hope that another project could be started.

* * * * *

**Siada**: The people wanted something – anything to help with the fetching of water. Teithia-Teithia will never be forgotten, but there was always the hope that something like or better than Teithia-Teithia would come along.

Despite the bad experience with Teithia-Teithia, the failure of the project taught the women a vital lesson:

**Gheche**: I am a simple woman, but I did not want to participate in another failure. The need for water was too great. I thought if I have another chance, then I would work better with the organizer and try not to waste anyone’s hard-earned money, because it only brings about ill will.
Chausiku: We agreed amongst ourselves to do everything we could to ensure that the project was a success. That meant no bickering, no fighting, and no cheating your neighbor.

Figure 13. KWG Meeting at Murinduko Primary School

KWG members assemble at Murinduko Primary School for its bi-monthly meetings. Attendance is mandatory and all must wear uniforms.

Q 4 KWG Water Project Membership: Establishing KWG

From 1976-1985, the United Nations celebrated *The Decade for Woman* (Pietilä & Vickers, 1990). The main purpose was to target women in developing countries and give them the tools to improve their health, educational, and sanitation needs through a series of programs. As with many development projects, the program participants did not feel the effects until the late 1980s when sustainable development grants from the Africa 2000 Network and Africa 2000
Initiative were distributed. The KWG submitted a proposal to the Africa 2000 Network for a development grant. Because the KWG was a women’s initiative and because the organization represented a minority group, the UNDP supported their request for assistance with a development grant.

S. Korte: After the many failures of other projects, my husband and I suggested to the women that they try to start their own project. There was money for it after all. This is when we came upon the UNDP (S. Korte, personal communication, December 2002).

* * * * *

Chairperson: Oh, yes, we approached the Kortes, asking for help. We heard that there was funding for women if we would only be courageous enough to take it. However, the women needed more than courage to start, as the application process was a great hurdle:

Host Mother: Njoki, don’t think for one moment we were given everything. Each year we would fill out numerous applications that were more often rejected than accepted.

* * * * *

S. Korte: In the beginning, we must have filled out over 20 applications for different organizations – most of which were turned down. You know, MaLinda, competition is very tough for the limited amount of funds that are out there. And each year those funds get smaller and smaller. Receiving a grant is like winning the lottery (M. Hill, personal correspondence, December 2004).

The application process also has special problems:

Chairperson: Without outside help, especially from people like the Kortes and you, we would not be able to manage. It takes an enormous amount of time and knowledge to
complete an application. A person must really have a keen eye to answer questions correctly, because the reviewers look at everything. This whole process can be overwhelming when one is just a simple farmer.

Once the application process had been initiated, there was the problem of convincing the women to start another water project:

**Chairperson:** I had to do a lot of talking because all the previous projects had failed. The hurt and disappointment were just too much.

* * * * *

**Aming’a:** How do you convince someone that something is to succeed? It was just horrible. No one wanted to believe in the project. But I believed and in my heart and this is what saved us all – that and God’s blessings.

* * * * *

**Bula:** I would say to the women; “Mama Lemuel, come along with me and let’s see if we can get water together.” I would coax and plead. Yes, I was a bit of a nuisance. I had to be to get water.

Women also got their husbands’ involvement and approval:

**Faizah:** Nothing makes a husband want to cooperate more than when his wife is ailing and on sickbed. The children are hungry and thirsty – crying from need. The husband has to go to and fro. He makes that trip and he suddenly understands why we need a tap. There was no protest.
Yambura: My husband said that trying is the same as gaining; we had to try until we succeeded. He did not have any problems, because he also used to participate in fetching water.

* * * * *

Fadhili: We argue over many things, but in this argument [about whether to participate in the new water scheme] he was gentle as a lamb.

A few members were very strategic in getting what they wanted and employed their families to help them out:

Faizah: A few nights of sleeping by himself without his family changed his mind.

* * * * *

Siada: He came home and nothing was done. He would demand why, and I said I was fetching water. The children supported me in this. Mind you, they had to hide their smiles.

* * * * *

Xedi: My son has much respect for his mother. My mother-in-law talked about how wonderful her life would be if she had tap water. Her late husband provided her with lots of children and a farm, but her son would give her water.

* * * * *

Taabu: I am the second wife, so I went to the first wife who went to our husband.

* * * * *

Ghalyela: The firstborn girl is his favorite and is very clever. She was first girl in her class and then she slipped to seventh. She said she slipped because of fetching water. My husband’s pride was hurt. He gave his consent; she was first again in the next term.
Of the founding members, all stated that they had the support of their husbands and extended family members. Some gave their support more quickly than others, but in the end, the men saw the benefit of supporting their wives.

The women also turned to their religion to find the strength to begin another project:

**Faizah:** I prayed all day to God above.

* * * * *

**Meuindi:** What could we do, but put our faith in God.

* * * * *

**Yambura:** I believed in God and then in myself. I knew God would give me strength to work hard.

Once the women had the cooperation of their families, they began to organize themselves.

**Chairperson:** I remember our first meeting. We were only a handful of women, sitting on the field outside of the primary school. Yet, word got out. Our numbers grew to include about 40 women; later we were over 60 women. Some stopped coming because they felt we were talking rubbish. That is how deep the wounds were, but in the end we had a group of over 50 members who were willing to participate.

* * * * *

**Former vice-president:** It all happened rather slowly. We say *polepole*. It means slowly or to slow down. First, we came together as a small group of women, and then we talked with the Kortes. We had to get ourselves situated and that was not easy. This is when talk of the democratic process began. People came to explain how to form a committee and how to make sure that things ran fairly. There was conservation
education for us, too. We learnt about planting banana trees to catch water and how to stop erosion by simple trench digging and planting crops.

**Xedi:** We would spend hours on the field – just discussing problems. For example, it was made clear from the very beginning that if a woman wished to participate, she could – no matter her people [ethnic group, clan or tribal affiliation]. There was to be no favoritism. Another issue was that of the work of digging trenches and laying pipe. It should be done in a fair manner. You could do it yourself, send a family member in your place to do your work or pay to have the work done by a day laborer. However, there was to be no bribing the chairperson or others to get around the work. Besides, most had to do the work themselves because money was short.

* * * * *

**Patanisha:** Now, mind you, many thought we were sitting on that field doing nothing but gossiping. This was simply not true. We were encouraged by our advisors to form a committee to supervise the running of the club. Each region had to have representation [a representative]. Then there was the important discussion of money, and how it was to be taken care of. We needed a bank account. We needed a treasurer that could be trusted. For many of the women, this was their first time ever making such decisions. It all went very slowly, because people had to be made to understand what was going on.

* * * * *

**Siada:** Many [women] had to learn about the democratic process. Too often, we [women] were told by our elders [husbands, fathers, uncles and chief] how to vote. This
time we could vote ourselves because it was our women’s group. We learned what to look for in a woman: honesty, education . . .

Thus, the founding of KWG was a slow process. Members had to be educated in the democratic process, environmental conservation, and basic business management. When basic education was completed, the women went about selecting a chairperson and a committee.

**Chairperson:** We were told that in order to be taken seriously, we had to come up with our own constitution, select a committee and representatives. The UN and other donor organizations look highly favorable on this.

* * * * *

**Yambura:** They told us to keep it [the constitution] simple, so everyone could understand the rules. Our committee structure is also simple. When we had a meeting, we decided early on [in our founding] that all minutes would be read at the meeting so people understood what was going on. This takes a lot of time, but it shows the women they are not being cheated. The meeting always starts with the reading of the minutes, corrections if need be, old news, new business, and the next meeting.

* * * * *

**Host Mother:** The first constitution was written by hand and had twelve rules (see Appendix C on page 269 for By-laws). Later, there were other rules that came about, such as if you are late [to a meeting], you pay a fine. If you are not sick and don’t come to a meeting, you pay a fine. If you don’t wear your uniform, you pay a fine. If you don’t pay [your water bill] on time, there is a fine. After four months of not paying your water bill, the tap is turned off. These things seem everyday to you, but they are important in running our business. The women take the water group seriously. Attendance is high
every meeting. Fines are a source of revenue, but account for very little of our income, because the women take their responsibilities seriously.

Indeed this was the case. Of the 33 members, I interviewed, 22 members (67%) can recite at least six of the original 12 by-laws. Eleven members (33%) know all the laws in order! Group organization and structure were also understood. With the exception of two elderly members, the remaining women can recite the names of the governing board and who the district representatives are.

Although many of the women did not understand group dynamics and structure, Kenyans have an oral tradition that aids them in comprehending their world.

**Adejo:** There is the chief. I call her so because she is the daughter of a great chief. The chief is the chairperson. She is the head of our group. Then comes the vice-chairperson. She is the heir apparent, second born. Then there is the revenue clerk, treasurer, and secretary. They make up the chief’s counsel – her most important and most trusted women. Then there are representatives – the chief’s best warriors. They look after each district in the chief’s lands.

* * * * *

**Eshe:** There is the chairperson, the vice-chairperson, the secretary, the treasurer and the revenue clerk, plus the representatives. Everyone has her function. The chairman is to run the meetings. She stays neutral unless she is asked to break a vote. The vice-chairperson acts as the chairperson when she is not there. The treasurer pays the bills and keeps the books. She collects the money from the revenue clerk, who has to have an accounting certificate. The secretary takes the notes at meetings. She is also very important, because she writes everything down that happens. The representatives look
after their district. If there is a problem, they take it to the board or to the chairperson if necessary. They report who is ill, who was born, and what problems there are with the members. Oh yes, then there are the technicians. They are employed by us to make repairs and take meter readings. They are the only men in the KWG. They cannot vote! They are our employees!

* * * * *

**Uhuru:** There are elections, and these are held every year for the board. Names are given on the ballot for the candidate and then there is a vote by each member. When a woman is chosen for an office, she cannot turn it down. That is part of our constitution. No one is allowed to shirk her duty to the group.

* * * * *

**Faizah:** If there is a problem – member against member – someone informs the chairperson. She listens to the problem. She makes a decision with the members, who have to agree. Later, the representatives check up on the women to see if everything is running smoothly. The representatives report to the chairperson. There are problems, but the word of the chairperson is final. The representatives ensure that things run smoothly. The chairperson is the chief. Her word is respected. For us, this is democracy. Everyone has a fair say and is listened to. A solution is found that can sometimes be beneficial to everyone involved.

* * * * *

**Patanisha:** We wanted to open a beauty salon. We first discussed this among ourselves. Then we went to our representatives. They took it to the board meeting. After many months of discussion amongst the women, the representatives and the committee, the
women voted at a committee meeting on whether to open a beauty salon. It was agreed, and now we have a beauty salon. It taught us a lot about how the democratic process could work positively. The beauty salon is a huge investment and a big risk that the majority was willing to take a chance on.

Figure 14. KWG’s Management Committee

The 2003 Management Committee: The chairperson is in the second row, third from the left while my host mother is in the first row, fourth from the left.

Many members had great respect for the Chairperson who had been in her position since the start of the pipeline. I inquired if this was a problem.
Gheche: No, it is not a problem. The chairperson won not because she is the chief’s
daughter, but because she is well-respected and has the right attributes, which are really
difficult to find. She represented what a good president ought to be. She has led us well.

* * * * *

Host Mother: She is respected and instrumental in maintaining this project. Without her
many will not follow. In a sense, she is the project, because she keeps us going. She is
firm with us women. She is also just.

* * * * *

Chane: Our democracy is a mixture of old and new ways. The old way is that a chief
rules until the end of his life or he selects his successor. The new way is that we elect a
president. The chairperson is chief, but she is also democratically elected. Sometimes a
chairperson needs to be a chief. That is our democracy. Democracy needs a chief, too.

* * * * *

Chairperson: It was never my intention to stay in this position for so long, but I cannot
decline if I am elected. This is in our constitution. Yet, I know that it is not good to stay
too long. There are several women who would make a good chairperson and I have been
saying for sometime now that I want to step down. KWG is a great love and a great
responsibility.

Yet, I was curious to see if there was a little disgruntlement within the group. After all,
strife, even among the closest of friends, was inevitable and no one is perfect.

Fadhili: Most members who are unhappy with how things are run have the good sense to
keep their mouths shut.
**Gheche:** Njoki, are you looking for things to write about us that are bad, because if you are, there aren’t that many unhappy people.

* * * * *

**Mumorí:** Those people who were unhappy with the chairperson are those who did not believe in getting water. Now they are jealous of our hard work. They didn’t believe, and now they have no water.

* * * * *

**Siada:** If you are the chief [chairperson] you are not going to make nice politics all the time. That is why the chief is the chief. Her word is final. Somehow you must find happiness in what she is saying, otherwise you are just making trouble for everyone.

I found that the women are well-organized. Most understand the group and organizational structures, the voting process and the by-laws.
Figure 15. Church Jumbo Sale

A Church Jumbo Sale at the Anglican Church of Kenya in Murinduko, which my host mother attended. The KWG also had similar jumbo sales to raise funds for its pipeline.

Q5 Fundraising and Financing: If You at First Don’t Succeed, Try, Try Again

Once the women had the cooperation of their families and had elected a management committee, they began to organize fundraising events:

Hakima: My husband raised the money to participate through a loan from the *muhigaia* [a teachers’ society].

* * * * *

Ituri: We would hold a *harambee* [market to raise funds]. Each member would bring something to sell such as maize, chicken, sugar cane or beans.

* * * * *

Sufar: We held *jumbo* sale (an auction) to raise the money.
**Faizah:** I first went to my husband and he gave me KES 20 and then I went to my father and my father-in-law. They all gave money. Sometimes, if money was short, my husband would sell a goat or chicken. I’d sell beans or make a basket.

* * * * *

**Chairperson:** We started with every woman contributing KES 20 each month. We had an account and that money was put aside. Later, we raised that amount to KES 500 and then KES 1,000. When the money owed was very high, a person could pay in installments.

Fundraising was the most difficult aspect because of limited funding from the members:

**Omondi:** We had to be really careful not to ask for too much, because many of the women did not have a lot to give. Saving took a long time.

* * * * *

**Treasurer:** You must remember that these women do not have a lot of money. There is a saying, ‘a chicken in every pot,’ and that is how they saved: a chicken for the pot of the KWG and a chicken for their pot.

While the women were saving for their pipeline and organizing themselves, they were also applying for government assistance.

**S. Korte:** The women didn’t suddenly have the millions of shillings needed to build the pipeline. Things went slowly at first. They started to save. For our part, we started to look for grants. We applied to so many organizations until one [Africa 2000] said yes. But that didn’t end our problems because the money needed was not there at first. The project was stalled many times because there was not enough money to carry out the essential tasks.
Chairperson: We had to show African 2000 that we had the funds. When we first approached them, we had saved over KES 75,000. They agreed to give us the funding, but it was too little. We saved again and raised another KES 50,000. The donations came in from Mr. Gerhard Arnold, who donated pipes, and the Kortes gave as well. In the end, God blessed us with another grant from Africa 2000, which saw the utility of our project. This took over three years, and you can believe how many people came and went in this time. Many didn’t have the patience for saving, but for those who did, it was well worth the wait.

* * * * *

Yambura: Financing went like this: We first brought with us KES 20 to every meeting we attended. This became KES 2,000. We each were asked during the years to meet our pledges: KES 20 or KES 1,000 or KES 2,000. Then we were each asked to do communal work. Communal work is labor for the project. No one could get out of doing communal work. The difference between the founding members and the new members is that we worked as pipe layers and cement mixers to build the pipeline. We worked off the debt, but the new members have to pay KES 23,000. This is a lot of money to pay, but they did not have to lay the pipes. They profit from our work. KES 23,000 was the sum we calculated for our work.

Once the financing the project had begun, there were other aspects, which needed to be taken care of: the project encompassed more than just collecting money and depositing it in the bank.

Chairperson: It is easy to say, “Let us build a pipeline,” but to do so is an immense undertaking. We had to contact the Kenyan water authority to get a permit to build the
pipeline. We had to ask farmers if we could build on their land. We had to pay an engineer to make drafts of the pipeline, connectors and holding tanks. Although many of our people are skilled, we had to hire a builder who knew about pouring cement. All these things cost money. We couldn’t pay all at once. We paid as we went along – pole pole.

* * * * *

**Njarira:** Njoki, saving [finance] and education go hand-in-hand. On one side we saved, and on the other we spent time educating the women. The Kortes, the water ministry, the UN people and so many others spent time talking to us and explaining to us what we had to do. We learned the difference between a grant and a loan. We learned about interest rates. We learned about being fair and honest. We also were taught about water conservation and health.

* * * * *

**Fadhili:** There was so much need. We formulated a plan for Murinduko School to get water. We needed a dispensary [clinic] to aid with the sick. All these things needed to be financed and paid for. In our talks, we had to think out a plan of how to pay all these things. Then there were the workers. The project couldn’t run itself. We had no choice but to employ people. Budgets were made for these things and they had to be approved and looked after.
Figure 16. Keeping the Record Straight

Using slips of paper that act as sales receipts, a member of the Anglican Church of Kenya keeps a record of what was donated and sold by the members at the jumbo sale. The KWG has had great influence on outside organizations’ accountability. I was told that earlier such records were not kept until a KWG member insisted upon it. This has helped to reduce misuse of funds within the church as well as prohibited the church from over burdening an all ready financially limited congregation.

The KWG began its savings plan by first requesting that each member make a small monetary donation at meetings. Later, the organization increased the amount due. To offset costs, communal work was done instead of paying cash. Members who joined after the completion of the pipeline had to pay a flat start-up fee, which took into consideration the founding members’ labor and cash contributions. Plans were made to hire the necessary personnel, to bring water to Murinduko School, and to open the dispensary. Africa 2000, Gerhard Arnold, Water Ministry, and many other donors allocated money, materials, educational courses, and/or personnel.
Intake, located in the Highlands on the Kii River, is cleaned by day laborers hired by KWG. The grate has been removed, and one can see the head of a young man in the opening, leading to the canal. The man without a shirt to the left and the technician on his knees act as lifeguards. The water is a cool 15º C! KWG representatives to the right oversee the work.

Q6 Building the Pipeline: By the Sweat of Our Brow

During my stay, one of my favorite things to do was to take a weekly field trip. I loved visiting the women and walking from homestead to homestead, but the routine got boring very quickly, as many of the answers given by the members were the same (this is the downside of research that professors never warn students about; they make it sound so exciting and romantic). I had begged the chairperson to allow me to go to Intake, where the water pipeline started, and we quickly came up with a scheme to get me there. I would pay for transport, which was very costly. At the same time, a cleaning crew would accompany me and would be my protection. Once there, I could take pictures to my heart’s delight and return.
Field Trip Day arrived, and I skipped to Murinduko School like a child to get my transport. A pick-up truck with benches awaited us. The chairperson and I climbed into the back of the truck followed by six young and very handsome warriors, two technicians from the KWP, and two representatives. We were going to the Highlands. Intake was located at Muthigi Town, where the Kii River flowed into the Rupingazi River. A few kilometers south of Muthigi Town was Kiambui Village. The break-pressure tank, which aided in the flow of water, was located there as well as St. Augustin Primary School (schools were used landmarks since there are no signs).

About 20 minutes into our trip, the chairperson disembarked at Embu Town. She informed me that she had to go to Nairobi to speak with government officials, but the two representatives would look after me. I gave her money to buy my host mother a gift of cloth. We continued our journey. The representatives proved to be a wealth of information.

**Mama Thomas**: Njoki, we are riding up to the Highlands, but our people had to walk this entire distance, carrying six-inch steel pipes that were several meters long. You see the road is rocky and hilly. It goes through Njukini Forest. It was dark and many didn’t have torches [flashlights or lanterns]. It was very frightening. You see, there are still many dangerous, wild animals here: monkeys and panthers [see Maps of the Murinduko in the Appendixes F and G on pages 297-300].

**Mama Peter**: The trip here is what made it difficult for us. From Muthingi Town to Mugambacıura Village, where the Main Water Tank is, is over seven kilometers. The pipes and the cement, everything had to be carried up to the Highlands. We went every morning we went up-up-up the hills. We walked slowly – two women to a pipe. The men also helped. A strong man could carry one pipe, but if he were wise, he’d find
someone to carry with, too. We always started our journey before sunrise and came home when it was dark.

MaLinda: How did you get your farm work done or cook?

Mama Thomas: Sometimes, we cooked a meal before leaving, and we took drink and something to eat. Many people just had one meal before they went, while others had much less. Sometimes we would start a fire to keep warm and make tea. We did not work every day. In this way, we could plan who would help out and who would look after the *shamba* and the family. All the women had to take part in building the pipeline, or they had to send someone in their place.

MaLinda: It is so green and beautiful here that it is difficult to imagine that it was dangerous.

Mama Peter: Oh, the Highlands are a thing of beauty. It is one of the most fertile areas in all of Kenya [Mama Peter said this with much pride in her voice]. During the fight for independence, the Highlands were much fought over. The English had this land for themselves. There is coffee, tea, rice and cotton here. The water flows like God’s mercy.

Mama Thomas: You will see all of this. We will be going to Intake. There, we will lift the grate and clean the soot and sediment out of the main intake canal.

MaLinda: A canal! I thought it was just a feeder pipe [the women laughed at me].

Mama Peter: Oh, Njoki, you know nothing about building a pipeline. The river had to be diverted to make a canal of cement in which the water flows. It is not a canal, like the great Suez Canal; rather it channels water from the river into a cement trough, which flows into the main pipeline. At Kiambui Village, the break-pressure tank uses gravity to pull the water down hill. It uses a terrace system to oxygenize the water, and there is also
a filter to clean it of debris. As the water comes from Mt. Kenya, it is clean. We would like to purify it, but there are no funds for it.

MaLinda: What are some of the stories you have of that time?

Mama Thomas: I can only say this: we all worked hard, by the sweat of our brow. It was so hard that I actually slept in the next morning. The children had to come get me out of my bed. The last-born thought I had died for I had not awakened when she called. The first-born had to comfort her and tell her that I was just too tired to rise. But this is not what I remember the most about this time.

MaLinda: What do you remember most?

Mama Thomas: When the pipes came in their containers, the people really believed that we would be successful in making water come to Murinduko Village. People began to believe us when they saw the water pipes.

Mama Peter: And there was such a cry of joy! I cried out, “Praise God to the fullest for he has made this thing possible! Lah, lah, lah, lahl“ [This was a happy sound she made rolling her tongue; it can be used in both times of sorrow and gladness].

Women told me many stories about the building of the pipeline. Their stories and numerous themes: their belief in God and themselves to prevail, the physical hardship of building the pipeline, the following of rules and regulations by members, the devotion of their families to the project, and the obstacles that were created by other people who were trying to hinder them.

Fadhili: I spent just as much time on my knees praying as I did in the field toiling.
Njarira: What got me through? My belief in God and daily prayer.

* * * * *

Uhuru: I had a lot of faith. It was only after the completion of the project that I looked back and marveled at how it all happened. There was a period when we had no funds – nothing was going on. We had only covered about eight kilometers of land. The pipeline is over 11 kilometers. This time was very discouraging because I was on the receiving end of some very unkind gossip. People wanted to lay blame, and they accused me of misappropriating funds. It was just an awful time that we all had to get through.

* * * * *

Zubeda: One evening, it was very late; we were coming back from a meeting. A member stepped on a sharp object and hurt herself badly. We thought about what to do, and it was decided to take her to Murinduko for treatment. Then we took her back home. By the time I got home, the cows were still out, and I had to bring them in after such a full day. It was times like these that we prayed.

* * * * *

Aming’a: Nature was the biggest obstacle we faced. We had to build in the rainy season. The road was muddy; we were wet from rain. But the work had to go on. There was no helping it.

* * * * *

Ituri: It was not work for the weak: carrying the pipes from the Lowlands to the Highlands, digging the trenches, laying down the pipe, and covering the trenches with earth. It was a time when fortitude was needed
**Wairemo:** I was lucky. The family stood behind me: husband, first-born to the last-born, my mum, my mother-in-law and father-in-law. They were there for me. Most families worked this way. Not to do so meant failure.

* * * * *

**Adejo:** The chairperson asked her husband to give a stern talk to the men. In this way, she was very clever. She got help on both sides. The UN and other agencies stressed this as well. Although this was a project run by women, the men had to help, because they too would benefit. Yes, a good talking to the husbands made things much easier.

* * * * *

**Siada:** It was very hard for the men. A man was head of the project before the chairperson. He had to step down because the UN would not give him the money. It was a situation that caused much grief and embarrassment.

* * * * *

**Faizah:** The men were at times worse than the women. They kept saying that we would not make it, that we would not get water. They kept discouraging us. We continued to work until the men finally realized that the women were going to succeed.

* * * * *

**Eshe:** We had to show up whenever there was communal work to be done. If a woman couldn’t make it, then she could send a family member. This family member had to be over age 14. No children were allowed to do the work. If we did not pay attention to these rules, there was a small fine. The only time you could not show up for communal work was if you were truly ill and almost on your deathbed.
**Gheche:** There was a woman who sent her child to do her work. Now, this was not breaking the rules, but the child seemed very young. The Chairperson was called to see him and sent him home after realizing that he was underage. He cried, because he wanted to help his mother who was ill, but rules are rules. He was too young to work, and it was not right of this woman to send him.

The obstacles of building the pipeline tested members physically and spiritually. They were all too aware of community scrutiny, but worked for a common goal. The newly formulated rules and regulations were tested. The chairperson proved to be a formidable woman and ensured that the rules were upheld despite some hardships endured by certain members.

Construction of the pipeline began in 1991 and was completed by 1994. The chairperson was the first to receive water out of recognition of her hard work. On that day, a celebration was held.

**Dura:** We jumped and sang. This was the happiest day because we could see that what we wished for had come true. From this day, it was only a matter of time before everyone else had water, too.

* * * * *

**Bahati.** I sang and sang and wept with joy. Words cannot say how happy I was, but God knows and understands.

* * * * *

**Mwaikali:** When the water was connected, I spent the first night filling my barrel and jerrycans. My husband and children laughed at me. They said, “Mummy, it will be there tomorrow.” I didn’t believe it. I got up the next morning and turned on the tap to have a look-see. It was there, but I did not breath easy for several months. You know, Njoki, I
am still living as if I have to go to the river at any moment. So deep is that worry of fetching water.

Yet, the hard work began when the pipeline was finished:

Chairperson: The real work came after the pipeline was finished. For example, people in the Highlands caused all manner of problems. There was a man, and the pipeline went through his property. Suddenly, there was no water. People came to me to settle the problem. I went to get the chief and the assistant chief. Together, we went with the police to see this man. The women of the KWG came as well. He had broken a very expensive pipe [six-inch main pipe]. We talked for a long time; the women had a sit-in on his property until he saw what he had done was wrong. He was fined and had to fix the pipe. This news spread. The people realized that the pipeline was not their private water reserve. This is one of many stories. It seemed that we had barely got the pipeline running when we had a major repair bill. Building the pipeline was difficult, but after all our troubles, we now have a new set of problems: We must now maintain the legacy that we built.
Sediment is removed by day laborers from Intake before the gate is raised. Sediment and rubbish blocking the gate are two reasons for poor water flow or no water coming from the taps. It was the first work opportunity for the young man, age 16, with his foot on the cement wall. He planned to pay for his schoolbooks with his wages.

Returning to my trip to Intake: I watched the young men pull up the grate and hop into the frigid waters of the Kii River, wearing nothing but cut off jeans and t-shirts. They were fearless as they shoveled the rich sediment aside. One young man even dived into the channel against the current to make sure that the bottom was actually cleared. I marveled at their bravery. The two representatives watched the men do the work while the technicians gave instructions for clearing. When a break was called, I spoke with the technicians.

**MaLinda:** What type of problems are you experiencing?
Technician 1: Building was the easy part. There are many technical issues. For example, what happens when everyone gets up in the morning and turns on the tap at the same time? There is no water. If there is sediment blocking the grate at Intake, there is no water (for an explanation of this problem see Figure 38 on page 180). We don’t have phones or cell phones, so we have to make a long trip that takes a day to see what is wrong. The KWG gives us bicycles, but the trip is very laborious. The trip here is for routine maintenance. We try to keep the pipeline running efficiently.

Technician 2: We must inspect the pipeline to make sure there is no damage. We also enter the meter readings to control usage. Right now, we have many broken meters, because of age. Things don’t hold up forever. If there is a problem, we also have to try to determine if a broken pipe or meter was an accident or someone was at fault. Neighbors often do devilish things because of the water. We take these problems to the chairperson, who finds a solution.

Technician 1: The pipeline is a source of much joy. Look at these young men [who are cleaning intake]. The pipeline gives them a chance to earn a little pocket money and to feed their families for a day. The school [Murinduko School] has fresh water. It employs many people. Much good has come out of it. Yes, the building of the pipeline was a difficult task, but it was well worth it.
Q7 Quality of Life: Health as a Gift from God

I sat in the Murinduko Dispensary (clinic) speaking with the nurse on duty. I had just given her a ballpoint pen with my university name on it. Word spread like wildfire, and soon many of her colleagues came by for their complimentary gift (Susan Korte told me of this simple need, and I came prepared with about 50 pens). It seemed that pens were in short supply and welcomed. I warned the nurse that the pens often fell apart because the plastic was very cheap. She smiled at me slyly, and with practiced skill she disassembled the pen, jammed it with a piece of paper and re-assembled the treasured item. The cartridge sat tight in its casing and ready to write. The nurse had shown ingenuity and had used common sense to solve a problem.
I learned that ingenuity and common-sense approaches prevailed at the Murinduko Dispensary, which is supported by the KWG. The dispensary also received funding from Deutsche Stiftung Weltbevölkerung, which supported its planned parenthood program. The head nurse took me through the fine facility. By Western standards, the facility was bare, but for a rural area, where the next hospital was in Embu Town or the next district, the dispensary was a great source of relief. Children were immunized for free or a small fee against childhood diseases, a planned parenthood program was in full swing, nutrition-education posters were on the walls, and AIDS education rounded out the program. The dispensary had electricity, a solar panel, and a refrigerator to store essential medical supplies.

Figure 20. Murinduko Dispensary Waiting Room

The waiting room of the Murinduko Dispensary is located outside under a terrace. Visitors cannot help but notice the sign for condoms! Health posters in the background warn of AIDS, spousal abuse, malnutrition, and malaria.
KWG supported the dispensary by paying for a nurse, looking after the bookkeeping, and supplying water.

MaLinda: What are your greatest problems?

Nurse: Right now, we do not have enough [birth] pills, so we may be looking at another increase in births in several months.³ We are teaching the women to abstain, to use condoms and to use the rhythm method. Some even go back to traditional remedies, but that is somewhat dangerous, because of the failure rate. It is very difficult. Next to this problem is AIDS, but many do not wish to talk about these issues. We are doing a health campaign to inform the people about these dangers. This is in all the schools. We are trying to get the word out.

MaLinda: Aside from AIDS, what other diseases exist?

Nurse: Malaria and water-borne illnesses are great problems. Before the pipeline was built, the situation was unbearable. People would go down to the river, where the mosquitoes lay their eggs, and bathe. They would not only get malaria, but also diarrhea and stomach ailments. The children were the most afflicted because they drank tainted water. The Teithia-Teithia rate was very high. It is different now. Although not everyone has clean water, the number of illnesses has declined.

MaLinda: How do you deal with malaria and diarrhea?

³ Dr. Korte informed me that the shortage of contraception was caused by a change of administration after presidential elections in the US. The new government was slow to mandate aid to developing countries. He had displayed diplomatic tact toward me about the situation. At the time of my visit, the Bush Administration had withheld aid to the UNFPA for the second year in a row, with allegations that the UN used the money to support forced abortions and sterilizations in China. Through a rigorous investigation from the UN and outside agencies, these allegations were found to be false. Despite these developments, the Bush Administration has refused to send the support, stating that the UN’s report was insubstantial. The worldwide effect of the Bush Administration’s stance is an estimated two million unwanted pregnancies, 800,000 induced abortions, 77,000 infants and children’s death, and 4,700 maternal deaths (Kennedy, 2007, ¶1-19).
Nurse: Before the dispensary came about, many simply just died of both diseases. When a person is diagnosed with malaria, they are given tablets. We also have traditional teas that work very well. For diarrhea, we have a simple solution: water with sugar and salt [see Gerlin & Bronstein, 2006 article on diarrhea].

MaLinda: You are kidding me. That is the recipe?

Nurse: Yes, it works really well if it is at the early stages. You see, we don’t have the necessary storage for drips (infusions), so this is the common-sense solution to big problems.

MaLinda: What other problems do you have? I see malnutrition posters everywhere.

Nurse: Yes, that is true. Not all the families have been blessed with good health. There are many who suffer. We have porridge, which we give the children if things become bad. But for KWG participants and those who have water, these problems occur very seldom. Water, if it is managed properly, helps to eliminate many of these woes. Water means good health and a good diet. Good health is a gift from God.

MaLinda: So you are saying that KWG members are healthier?

Nurse: It makes sense. When you go to the farms, look at things more closely. Their children are not listless. You are greeted with happy faces. They employ the lessons we teach in the dispensary.

MaLinda: Such as?

Nurse: They are to boil their water before drinking. If they use rainwater from the roofs, they are to cover it so it does not attract insects. This protects them from water-borne illnesses. Many women have a kitchen garden. We teach them to try to stay away from monoculture. They are to plant tomatoes, spinach, yams, and beans. This is healthier.
The UNPD, KWG and the government teach this in many of their programs. I know that KWG has had extensive education on these matters.

MaLinda: Yes, the chairperson told me. Do you also teach them about ecology?

Nurse: No, we don’t do that, but the UNDP taught it when they were here. You know ecology and health go together. One cannot have one without the other.

MaLinda: What do you mean?

Nurse: The land feeds us. If we don’t take care of it, we become ill. An outhouse cannot be close to a water source. A water source must be planted with trees to catch and clean the water and protect the land from erosion. Crops must be rotated and varied. These are simple things to do in order to protect the health of people. For you, this may not be a new idea, but for many people without the means to get information, this is revolutionary and can change their entire lifestyle.

Using the information I gained from the conversation with the dispensary nurse, I began to look at the farmsteads differently. When on a visit, I looked to see if the place was tidy, if the tap was turned off or if there were a variety of plants in the kitchen garden. I already had a long list of questions that I had formulated to ask the participants, but talking with the dispensary nurse helped to focus my questioning. She pointed to important information on health and ecology that were taught by many NGOs. She described what was taught by government officials, NGOs, and health officials. In short, there was a basic education program, teaching the people about good hygiene, health, water conservation, and AIDS. Most lessons were basic and reinforced set rules and regulations that are considered universal: water should be boiled before drinking and to protect a watering area, vegetation should be planted.
Figure 21. A Healthy Three-Generation Family

Three generations stand before the family cow. Although the extended family has always existed in Kenya, it was very rare that families experienced more than two generations. Because of increased health benefits, the water pipeline has made it possible for parents to live to see their grandchildren and great-grandchildren.

Although I had already formulated questions on health and conservation, I used dispensary nurse’s advice and narrowed to the main points that I thought were the most important to the project. My goal changed: I wanted to see if the women understood what was being taught at meetings. Using information from the dispensary nurse, I formulated questions on health and conservation. The following questions were asked about level of the participants’ health:

1. Has the overall health of the family members improved?

2. What diseases have been reduced?
3. What diseases have remained?

4. How does one prevent the spread of disease?

5. How has the quality of life improved since getting water?

Tables 1 below and Table 2 on pages 119 show the outcome to my questions.

<table>
<thead>
<tr>
<th>Questions 1-3 on Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Questions</td>
</tr>
</tbody>
</table>

1. Has overall health of family members improved?
   - Yes: 27 (82)
   - No: 3 (9)
   - No change: 3 (9)

2. What diseases have been reduced?
   - Malaria, diarrhea, worms, typhoid, and cholera: 24 (73)
   - Colds, pneumonia, and flu: 5 (15)
   - Backache, leg pain, and skin disease: 3 (9)
   - Malnutrition: 1 (3)

3. What diseases have remained?
   - Malaria, diarrhea, worms and cholera: 22 (67)
   - AIDS: 8 (24)
   - Some diseases cannot be eradicated: 3 (9)
Table 2

**Questions 4-5 on Health**

<table>
<thead>
<tr>
<th>Questions</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. How does one prevent the spread of disease?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boiling water</td>
<td>18</td>
<td>55</td>
</tr>
<tr>
<td>Washing and keeping self and surroundings clean</td>
<td>9</td>
<td>27</td>
</tr>
<tr>
<td>Latrine (outhouse) is safe distance from house</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Keep away from open/contaminated water</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Use mosquito net</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>5. How has the quality of life improved since getting water?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More time for farm, business, or home</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>More time for family and friends</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>Better mental and physical health</td>
<td>6</td>
<td>18</td>
</tr>
<tr>
<td>Help children with schoolwork</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Eat regularly or more often</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>More time for self</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Better personal hygiene and cleaner surroundings</td>
<td>3</td>
<td>9</td>
</tr>
</tbody>
</table>

Participants were very knowledgeable about their health and how water had improved their lives. The themes that came up the most often were improved physical and mental health, more free time, a happier family life, and improved nutrition.
Adejo: I am happier. My aches are gone, and I can look after my family better. I even have time to sit and think for myself.

* * * * *

Juma: I am not tired. The burden of going to the river is now gone. It is a great release for me. Yes, those days are thankfully over.

* * * * *

Sufar: I can go to church now and see my friends. The days of spending all my time at the river are over. I can help the children with their homework or work an extra plot of land to gain some pocket money.

* * * * *

Omondi: In the old days, we were sick. The children were sick, my husband was sick and the parents [in-laws] were sick. It was such a tragedy and loss of time. Water has given us good health.

Turning to conservation, the following questions were asked:

1. How is water conserved during a drought?

2. How is water conserved during a season of normal rainfall?

3. How does a member prevent wasting of water?

4. What is done with dirty water?

5. Is the participant aware of land conservation?

6. What methods of land conservation are used?

7. What did the research observe during visitation on the homestead?

Tables 3-5 on pages 121-123 display the findings for questions on conservation.
### Table 3

*Questions 1-2 on Conservation*

<table>
<thead>
<tr>
<th>Questions</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. How is water conserved during a drought?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adhere to rules set by KWG</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>Save water in tank or water drum</td>
<td>8</td>
<td>24</td>
</tr>
<tr>
<td>Water during the morning or at night</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Use standardized pipes, meters, and gate valve</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Fix leaks and breaks immediately</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>No response</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>2. How is water conserved during a season of normal rainfall?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fill tanks, containers and water drums</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>Adhere to rules set by KWG</td>
<td>7</td>
<td>21</td>
</tr>
<tr>
<td>Use rainwater</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Keep tap closed</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Fix leaks and breaks immediately</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Water in morning or at night</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>No response</td>
<td>3</td>
<td>9</td>
</tr>
</tbody>
</table>

*Note.* Three elderly women were unable to answer many of the questions properly.
Questions 3-4 on Conservation

<table>
<thead>
<tr>
<th>Questions</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>3. How does a member prevent wasting water?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adhere to rules set by KWG</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>Urge family and friends to use tap carefully</td>
<td>9</td>
<td>27</td>
</tr>
<tr>
<td>Water during the morning or at night</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Use standardized pipes, meters, and gate valve</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Fix leaks and breaks immediately</td>
<td>2</td>
<td>7</td>
</tr>
<tr>
<td>No response&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>4. What is done with dirty water?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water garden, mango trees and banana trees</td>
<td>26</td>
<td>79</td>
</tr>
<tr>
<td>Cleans latrine (outhouse)</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>No response&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3</td>
<td>9</td>
</tr>
</tbody>
</table>

<sup>Note:</sup> <sup>a</sup>Three elderly women were unable to answer many of the questions properly.
### Table 5

**Questions 5-7 on Conservation**

<table>
<thead>
<tr>
<th>Questions</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5. Is the participant aware of land conservation?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>30</td>
<td>91</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>No response</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td><strong>6. What methods of land conservation are used?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant banana trees around tap</td>
<td>26</td>
<td>79</td>
</tr>
<tr>
<td>Rotate crops/no monoculture</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>No response&lt;sup&gt;a&lt;/sup&gt;</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td><strong>7. What did the research observe during visitation on the homestead?</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tap in garden surrounded by vegetation</td>
<td>31</td>
<td>91</td>
</tr>
<tr>
<td>Latrine is far from house or water source</td>
<td>31</td>
<td>91</td>
</tr>
<tr>
<td>Container under the tap</td>
<td>28</td>
<td>85</td>
</tr>
<tr>
<td>Homestead is tidy and clean</td>
<td>31</td>
<td>91</td>
</tr>
<tr>
<td>Crop diversity</td>
<td>20</td>
<td>61</td>
</tr>
<tr>
<td>Leaky or broken tap</td>
<td>9</td>
<td>27</td>
</tr>
<tr>
<td>Large-scale irrigation of farm</td>
<td>5</td>
<td>15</td>
</tr>
</tbody>
</table>

*Note: *Three elderly women were unable to answer many of the questions properly.*
Participants had a good understanding of water and crop conservation. They needed no prompting to answer questions, and they often gave lengthy responses.

Figure 22. Picture Perfect

The Rupingazi River had many picturesque places to photograph, but no one wanted to return to its banks to fetch water.

One theme that was not included as part of water conservation was the treatment of neighbors. Many people replied that they were not to turn on their taps too long as to deprive their neighbors in the Highlands or Lowlands of water. Water conservation and being neighborly are concepts, which are bond to each other.
**Host Mother:** The people are very conscious of saving water and are very careful. In the Highlands, the water is plentiful, and in the Lowlands, water is scarce. The people know they are not to cheat their neighbor by turning on the tap all day and preventing them from getting water. Hoarding water is not only hurtful to the neighbors, but wasteful. Few people have a tarp or cover over their tank or barrel. When it is hot, people may lose water.

**Taraji:** We are told to police each other and be vigilant. In this way, we save water. A broken tap – by accident – can spell disaster for all of us. Everyone has to eat and have a livelihood. Only through cooperation and conservation of water can this happen.

**Faizah:** When Teithia-Teithia was running, it was neighbor against neighbor. It got very mean. People in the Highlands had all the wealth and all the water. We in the Lowlands were starving. People were killed over this. Now, we have learned to conserve our land and our water. This project has brought needed dignity. It has taught us how to preserve our future.

Finally, all the participants wanted more water. When asked, everyone wanted to be able to farm more land, to build a dwelling/business or to send their children to high school or university. All participants were aware that the water had to be conserved properly. Several participants were disappointed in neighbors who were using the water for large-scale agriculture. They knew it was tolerated and the users paid for it, but it did not sit well with participants. Many recognized their privileged position and tried to be examples. No one wanted to return to the river to fetch water, as the participant below states.


**Aming’a**: Returning to socialize or to fetch water at the river is like wishing to go back to Egypt after going to Canaan.

**Q8 Water Conservation: Are We Getting It Right?**

The chairperson, the revenue clerk, my host mother, who is the treasurer, and I are sitting in my host mother’s living room. The revenue clerk had stopped by to deliver the weekly revenues and to recount the money – part of the system of checks and balances. As they counted the money, I had an opportunity to look at the ledger: a large book with meter readings, bills paid, and bills opened. There were 225 families, which included the 25 families waiting to be connected. Of the 200 families with connected water, 168 (84%) had punctually paid their monthly utility bill (there were still several days to go before the fine period began). Of the wait-listed families, ten (40%) had fully paid for their connections and 15 (60%) had passed the halfway mark (field notes, August 19, 2005).

I then took note of the water-meter readings. Although there were entries on how much each family used, there were no statistics on monthly water usage for the group as a whole. I enquired about this:

**MaLinda**: Why are there no monthly averages for the water?

**Chairperson**: We can calculate an average, and we do so when we need it for the government or an application for a grant, but it takes a great deal of time and patience.

**Revenue Clerk**: It is also fraught with problems. We have to be careful [when entering in the numbers] as I only have a simple calculator. It doesn’t do higher maths.

**Treasurer**: We use our eyes a lot in our work. By just taking a careful look at the entries, we can see who is being overly greedy with water or who might be irrigating a field. It is very easy to catch: just look for any number above 20!
The revenue clerk sits in the small building, which is owned by KWG. She holds regular office hours and is on the payroll of KWG.

Following the treasurer’s advice, I found many broken meters or no report of water meter readings for July 2003. Weren’t they afraid of over-using the available water and what about fixing those broken meters? Yet, every household had made the minimal payment of KSH 23 (the price has since been increased to KES40) for the basic connection.

**Chairperson:** You are a very clever. You have spotted two issues that are troubling us: broken meters and overuse of water.

**Revenue Clerk:** There are a great many rules. Even though there may not be a working meter, we send out a technician to make sure that people have not tampered with the
pipes or water taps. If they haven’t, we must assume there is an equipment failure and only charge them the basic fee.

MaLinda: What about the overuse of water?

Chairperson: At the moment, we tolerate it as long as they pay their bills at the end of the month (see Table 11 on page 167). It is very difficult to put one’s foot down because we are taking away someone’s livelihood. People tend to become very belligerent and hostile if they feel put upon. The whole situation can be very debilitating especially when there are children to be schooled and fed.

MaLinda: Debilitating is not the word! The water that is over-used in this one month is enough to include additional families. I could make you a chart to show you what I mean.

Chairperson: I’m very keen to find out how much this is in certain periods. I am also interested in the overall picture as well. There are some groups who will go over the amount, but what is important is the group as a whole. Are we within or outside our limits?

MaLinda: I’d say outside, but there really needs to be a statistical analysis of the whole year.

Treasurer: You know, Njoki, right now you are seeing red, but what is important to us is the overall application. July is just one month. What about the whole year or the rainy and dry months?

Chairperson: I agree with the treasurer. These things are very important to know, especially if we want to apply for more funding. Perhaps, things are not as bad as they seem if you look at them carefully (M. Hill, field notes, August 21, 2005).
The ledger of KWG: in order to do the bookkeeping, the revenue clerk possesses only a ledger, an ink pen, a calculator, and receipts. The system is very easy to follow with accounts owed and paid. Each family has their own number so that payments are not mixed up.

Several days later, I visited the revenue clerk in her office. She once again showed me the ledger and we discussed water issues.

**MaLinda:** What information would you like to have from the ledger?

**Revenue Clerk:** What we talked about at the treasurer’s house was very important. We need to know what is our overall water use and if we are following the rules that we learned on water management.

**MaLinda:** I notice that there are no names on the ledger. How do you know which families are overusing?
**Revenue Clerk:** I have a book with the names of the individual families. The numbers protect the identity of the families when people come to pay. However, I can tell you which group a family belongs to.

**MaLinda:** How is this done?

**The Revenue Clerk:** The first name is, indeed, the chairperson because we connected her first. The first 55 members are the original members with the largest group joining after we had built the pipeline. The last group are the ones who are waiting to be connected.

**MaLinda:** Show me the cut-off of each group, and I will mark it on the meter readings, so there are three different groups. This will be good so I can compare founding members with new members.

**The Revenue Clerk:** What else do you need?

MaLinda: Several days ago, we took a sample of meter readings, so I need the water-meter readings for a drought year and a normal year.

**The Revenue Clerk:** The last three years have been considered drought years. I will give you the meter readings for 2000 as it is the latest information, but you must wait until this year (2003) is finished to have a normal year.

**MaLinda:** That is even better because I can have the computer look at a sample group.

**Revenue Clerk:** You also saw how many people are using too much water. Can you do this for both years? It would be interesting to see how much water is being over-used.

**MaLinda:** Yes, that should be no problem, as the computer can simply pick this information out for me. What do you need from me so that you can get me the meter readings?
The Revenue Clerk: Send me paper and I can write things down in my free-time here in the office.

MaLinda: That is no problem and I’ll send you international postage stamps so you won’t have to worry about the expense of posting. When will you be able to send it?

The Revenue Clerk: Unfortunately, we don’t work during Christmas, as there are crops and it is a major holiday. It will be toward the end of January.

MaLinda: That is fine, because I need time to translate my interviews (M. Hill, field notes, August 22, 2003).

* * * *

Five questions are established based on the conversations I had with the chairperson, the treasure and the revenue clerk:

1. Is there a significant difference in mean annual water usage between a drought year (DYMEAN) and a normal year (NYMEAN)?

2. Looking at the rainy months only, is there a significant difference between a drought year (RAINY2000) and a normal year (RAINY2003) in water usage for this period?

3. Likewise, looking at the dry season only, is there a significant difference between a drought year (DRY2000) and a normal year (DRY2003) in annual water usage for this period?

4. Looking at the member groups: FOUNDERS2000, FIRSTWAVE2000 and SECONDWAVE2000, is there a significant difference in annual water usage among the three groups for a drought year?
5. Looking at the member groups: FOUNDERS2003, FIRSTWAVE2003 and SECONDWAVE2003, is there a significant difference in annual water usage among the three groups for a normal year?

For Question 1, the null hypothesis is formulated as:

\[ H_0: \text{There is not a significant difference in mean annual water use between a drought year of 2000 (DYMEAN) and a normal year of 2003 (NYMEAN).} \]

\[ H_0: \mu_{DYMEAN} = \mu_{NYMEAN} \]

The alternative hypothesis states:

\[ H_1: \text{For KWG members, there is a significant difference in mean annual water use between a drought year (2000) and a normal year (2003).} \]

\[ H_1: \mu_{DYMEAN} \neq \mu_{NYMEAN} \]

A paired sample t-test was conducted to compare mean annual water use for a drought year (DYMEAN) and a normal year (NYMEAN). There is a significant difference in the amount of water used between DYMEAN (M = 24.12, SD = 16.27) and NYMEAN (M = 19.16, SD = 12.11), t(92) = 2.66, p < .01. Therefore, I fail to accept the null hypothesis. Table 6 on page 133 displays the findings for Question 1.
**Table 6**

**Question 1: Comparing Means of a Drought and a Normal Year**

<table>
<thead>
<tr>
<th>Year</th>
<th>Pairs</th>
<th>df</th>
<th>M</th>
<th>SD</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>DYMEAN</td>
<td>24.12</td>
<td>16.27</td>
<td>2.66***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NYMEAN</td>
<td>19.16</td>
<td>12.11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>93</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note: For this dissertation, p values are *p < .10, **p < .05, ***p < .01, and ****p < .001.*

For Question 2, the null hypothesis is formulated as:

\[ H_0: \text{There is not a significant difference in water use between a drought year (RAINY2000) during the rainy months of March, April and May and a normal year (RAINY2003) during the rainy months of March, April and May.} \]

\[ H_0: \mu_{RAINY2000} = \mu_{RAINY2003} \]

The alternative hypothesis states:

\[ H_1: \text{There is a significant difference in water use between a drought year (RAINY2000) during the rainy months of March, April and May and a normal year of 2003 (RAINY2003) during the rainy months of March, April and May.} \]

\[ H_1: \mu_{RAINY2000} \neq \mu_{RAINY2003} \]

For Question 2, a paired samples t-test was conducted to compare water use between a drought year (RAINY2000) during the rainy months and a normal year (RAINY2003) during the rainy months. There is no significant difference in the amount of water used between RAINY2000 (\( M = 21.65, SD = 19.27 \)) and RAINY2003 (\( M = 19.31, SD = 17.59 \)), \( t(86) = \)
Therefore, I fail to reject the null hypothesis. Table 7 below shows the findings for Question 2.

Table 7

<table>
<thead>
<tr>
<th>Year</th>
<th>Pairs</th>
<th>df</th>
<th>M</th>
<th>SD</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAINY2000</td>
<td>21.65</td>
<td>19.27</td>
<td>1.059</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAINYY2003</td>
<td>19.31</td>
<td>17.59</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>86</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note. There is no significance difference between the two groups.

For Question 3, the null hypothesis is formulated as:

\[ H_0: \text{There is not significant difference in water use between a drought year (DRY2000) during the dry months of June, July and August and a normal year of 2003 (DRY2003) during the dry months of June, July and August.} \]

\[ H_0: \mu_{DRY2000} = \mu_{DRY2003} \]

The alternative hypothesis states:

\[ H_1: \text{There is a significant difference in water use between a drought year (DRY2000) during the dry months of June, July and August and a normal year of 2003 (DRY2003) during the dry months of June, July and August.} \]

\[ H_1: \mu_{DRY2000} \neq \mu_{DRY2003} \]

For Question 3, a paired samples t-test was conducted to compare water use between a drought year (DRY2000) during the dry months and a normal year (DRY2003) during the dry
months. There is no significant increase in the amount of water used between DRY2000 (\(M = 26.20\), \(SD = 25.67\)) and DRY2003 (\(M = 20.96\), \(SD = 18.34\)), \(t(90) = -1.059, p < .116\). Therefore, I fail to reject the null hypothesis. Table 8 below shows the findings for Question 3.

### Table 8

**Question 3: Comparing the Dry Seasons in a Drought and Normal Year**

<table>
<thead>
<tr>
<th>Year</th>
<th>Pairs</th>
<th>df</th>
<th>M</th>
<th>SD</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRY2000</td>
<td></td>
<td></td>
<td>26.20</td>
<td>25.67</td>
<td>1.59</td>
</tr>
<tr>
<td>DRY2003</td>
<td></td>
<td></td>
<td>20.96</td>
<td>18.34</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>91</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: There is no significant difference between the two groups.

For Question 4, the null hypothesis states:

\[ H_0: \text{During the drought year of 2000, there is not a significant difference in mean annual water use among the FOUNDERS2000, FIRSTWAVE2000 and SECONDWAVE2000}. \]

\[ H_0: \mu_{\text{FOUNDERS2000}} = \mu_{\text{FIRSTWAVE2000}} = \mu_{\text{SECONDWAVE2000}} \]

The alternative hypothesis states:

\[ H_1: \text{During the drought year of 2000, there is a significant difference in mean annual water use among the FOUNDERS2000, FIRSTWAVE2000 and SECONDWAVE2000}. \]

\[ H_1: \mu_{\text{FOUNDERS2000}} \neq \mu_{\text{FIRSTWAVE2000}} \neq \mu_{\text{SECONDWAVE2000}} \]

A one-way, between-groups analysis of variance was conducted to explore mean annual water use among KWG’s members during a drought year. Members received water management
education at three different points in time. The FOUNDERS2000 received water management education from the UN and Kenyan government in 1987. FIRSTWAVE2000 was educated by the FOUNDERS2000 and joined between 1992-1999, and SECONDWAVE2000 were educated by the FOUNDERS2000 and FIRSTWAVE2000 and joined between 2000 and 2003. There is no significant difference in the amount of water used among the three groups in the mean annual water use \[ F(2, 181) = 2.09, p = .13 \]. The effect size, using eta squared, is .023 and is considered a small effect. Post-hoc comparisons using the Tukey honesty significant difference comparison (Tukey HSD) indicates the mean score for FOUNDERS2000 (M = 18.67, SD = 10.31) is not significantly different from FIRSTWAVE2000 (M = 23.11, SD = 18.69). Likewise, there is no significant difference between FOUNDERS2000 and SECONDWAVE2000 (M = 26.47, SD = 14.00). There is also no significant difference between FIRSTWAVE2000 and SECONDWAVE2000. Therefore, I fail to reject the null hypothesis. Table 9 on page 137 displays the findings for Question 4.
Table 9

*Question 4: ANOVA Comparing Mean Annual Water Use for Drought Year 2000*

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>df</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOUNDERS2000</td>
<td>41</td>
<td>2</td>
<td>18.67</td>
<td>10.31</td>
</tr>
<tr>
<td>FIRSTWAVE2000</td>
<td>109</td>
<td>23</td>
<td>23.11</td>
<td>18.69</td>
</tr>
<tr>
<td>SECONDWAVE2000</td>
<td>31</td>
<td>26</td>
<td>26.47</td>
<td>14.00</td>
</tr>
<tr>
<td>Total</td>
<td>181</td>
<td></td>
<td>22.68</td>
<td>16.50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>$\eta^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1124.52</td>
<td>562.26</td>
<td>2.09</td>
<td>.023</td>
</tr>
<tr>
<td>Within Groups</td>
<td>47850.60</td>
<td>268.82</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tukey HSD

- FOUNDERS2000 = FIRSTWAVE2000
- FOUNDERS2000 = SECONDWAVE2000
- FIRSTWAVE2000 = SECONDWAVE2000

*Note:* There is no significance difference between the two groups.

For Question 5, the null hypothesis states:
$H_0$: During the normal, rain fall year of 2003, there is not a significant difference in mean annual water use among the FOUNDERS2003, FIRSTWAVE2003 and SECONDWAVE2003.

$H_0$: $\mu_{\text{FOUNDERS2003}} = \mu_{\text{FIRSTWAVE2003}} = \mu_{\text{SECONDWAVE2003}}$

The alternative hypothesis states:

$H_1$: During the normal, rain fall year of 2003, there is a significant difference in mean annual water use among FOUNDERS2003, FIRSTWAVE2003 and SECONDWAVE2003.

$H_1$: $\mu_{\text{FOUNDERS2003}} \neq \mu_{\text{FIRSTWAVE2003}} \neq \mu_{\text{SECONDWAVE2003}}$

A one-way between-groups analysis was conducted to explore mean annual water use among KWG’s members during a normal year. Subjects were divided into three groups, as in question four. There is a significant difference in the amount of water used among the three groups at the $p < .01$ level in mean annual water use [$F(2, 109) = 5.06$, $p = .01$]. The effect size, using eta squared, is .085 and is considered a medium effect. Post-hoc comparisons using the Tukey HSD test indicates the mean score for FOUNDERS2003 ($M = 25.63$, $SD = 16.29$) is significantly different from FIRSTWAVE2003 ($M = 17.11$, $SD = 10.93$). Likewise, there is a significant difference between FOUNDERS2003 and SECONDWAVE2003 ($M = 16.89$, $SD = 11.31$). There is no difference between FIRSTWAVE2003 and SECONDWAVE2003. Therefore, I fail to accept the null hypothesis. Table 10 on page 139 displays the findings for Question 5.
Table 10

Question 5: ANOVA Comparing Mean Annual Water Use of Normal Year 2003

<table>
<thead>
<tr>
<th>Groups</th>
<th>N</th>
<th>df</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOUNDERS2003</td>
<td>30</td>
<td>2</td>
<td>25.63</td>
<td>16.29</td>
</tr>
<tr>
<td>FIRSTWAVE2003</td>
<td>55</td>
<td></td>
<td>17.11</td>
<td>10.93</td>
</tr>
<tr>
<td>SECONDWAVE2003</td>
<td>27</td>
<td></td>
<td>16.89</td>
<td>11.31</td>
</tr>
<tr>
<td>Total</td>
<td>112</td>
<td></td>
<td>19.34</td>
<td>13.11</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>η²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1621.67</td>
<td>810.84</td>
<td>5.06**</td>
<td>.085</td>
</tr>
<tr>
<td>Within Groups</td>
<td>17468.55</td>
<td>160.26</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tukey HSD

FOUNDERS2003 > FIRSTWAVE2003***
FOUNDERS2003 > SECONDWAVE2003**
FIRSTWAVE2003 = SECONDWAVE2003

Note: For this dissertation, p values are *p < .10, * *p < .05, * * *p < .01, and * * * *p < .001.
Discussion

Q1 Participant Information: People and Culture

The information collected on the Kugeria Women Group provides me a snapshot of the average member. This member is 49.6 years old and has 5.5 children. The average family size is 7.3 members and is multi-generational. The member lives on a homestead of 10.5 acres, which is jointly owned by both husband and wife. The family has a house made of brick and cement or a traditional dwelling of earthen bricks, dung, and ashes. In addition to the house or dwelling, there is also a granary (storehouse) and smokehouse (cooking house). This married member identifies her occupation as a farmer and has 6.8 years of education. She is a Christian and attends church services on a regular basis. She owns livestock: cattle, oxen, chickens, goats, or sheep. She spends only a few minutes fetching water, because there is a tap on her land. In short, a KWG member is prosperous.

Oduor-Noah and Thomas-Slater (1995) wrote of a prosperous family in South Kamwango, Kenya, “The more prosperous homes are characterized by a sturdy house in good repair with a metal roof, several cattle (perhaps even a grade cow), furniture, the capacity to hire laborers, and a nonagricultural source of cash income” (p. 169). The average family has, “. . .adequate land to meet the needs of the household and keep a few cattle. For cash, they depend on limited returns from the sale of some crops, from casual labor, or from trading undertaken by the women” (Oduor-Noah & Thomas-Slater, 1995, p. 169). A poor household was described as,
“...[supporting] large families on two hectares or less without a major source of outside income. They are unable to keep cattle, cannot afford to hire oxen and plow, and therefore must dig the land with hoes” (Oduor-Noah & Thomas-Slater, 1995, p. 169).

Of the 33 KWG members, four stated their occupation as schoolteacher, putting them into the upper-socioeconomic category. These families also had houses with a foundation and a tin roof. Of all the families visited, only four could potentially be considered poor. One member was extremely old and frail with most family members living in the towns and cities. These family members stopped by and sent money to support this elderly member. The remaining members’ shambas were so ill kept that one wondered if the women had not attended the basic education courses on hygiene given by the KWG and the dispensary. The remaining women can be classified as average households.

Although proud of their accomplishments, many members did not like to show off their prosperity, believing that other people would hex them or destroy their small gains.

**Siada:** I must be careful and stay humble. No one ever knows who will go to the shaman and do evil.

---

**Xedi:** There was this family and they were very prideful, then the first wife up and dies, followed by a child. This was truly a bad omen and a warning to us to be careful.

---

**Host Mother:** I share my water in times of need. One never knows what the neighbors think. I try to be careful, because sometimes people do not understand that I cannot always give. If people have too high of an expectation of one or if I don’t come through, it can become a very dangerous situation for me. Yes, I must be careful of my actions.
At the start of my research, I believed that KWG members were very wealthy in comparison to their fellow farmers. A trip to Nyeri to a wedding changed this impression. Nyeri has a number of tea plantations and has a higher annual rainfall. The farms of Nyeri are just as prosperous as those of Murinduko, because of their excellent location in the Highlands. KWG members appear to represent the average farmer rather than the socioeconomic elite.

It is true that KWG members have education above the national standard and fewer children (CIA, 2005) and they belong to the heeled working class. However, there is a stereotype of African continent is often portrayed as poverty stricken with a diet of incessant wars and famines that keep the continent from developing. In this portrayal, there tends not to be a middle class, and the working class is just eking out a living on unfruitful lands. Whatever gains KWG or any other project has made, is negligible, because according to the media, these gains will be wiped out in the next round of catastrophes.

Gbemisola Olujobi (2006), a Nigerian who holds the Pulitzer Fellow at the Annenberg School of Communication, wrote that Western media’s over-emphasis on Africa’s soiled laundry is known as disaster pornography. Africans defined disaster pornography as, “…the Western media’s habit of blackening out Africa’s stock markets, high rises, internet cafes, cell phones, heart surgeries, soaring literacy and increasing democratization, while gleefully parading her genocides, armed conflicts, child soldiers, foreign debts, hunger, disease, and backwardness” (¶ 2). The barrage of unbalanced reporting has overlooked progress such as free primary education in Kenya, which allowed 1.1 million children to attend school again, the reduction of poverty in Mozambique from 70% to 55%, or the reduction of HIV in Uganda from 20% to 6.5% (Olujobi, 2006, ¶ 50-53).

Reasons given for disaster pornography run the gambit. By playing the
hardship card, there is the belief that Western governments will contribute more in the areas of financial investment and foreign aid. The issue of the West’s dependency on Africa for its diamonds, steel, gold, oil, gas, cocoa, sugar, and coffee are downplayed. Likewise, Africa’s historical significance to the world in regard to her global labor contributions, to being the cradle of civilization, and to being a major link in solving the global warming puzzle are negated.

Finally, Charles Stith, former US ambassador to Tanzania, was more direct:

One thing blocking a fuller perception of Africa’s progress may be implicit racism.

There is a historic framework that by definition sees Africa and Africans as inferior and negative and makes most stories about the continent negative. By contrast, China has problems, but we see and hear other things about China. Russia has problems, yet we see and read other things about Russia. That same standard should apply to Africa. (Sith as cited by Olujobi, 2006, ¶ 70)

Western media’s obsession with disaster pornography has either backfired or has been a success – depending on how one looks at the issue. Financiers refuse to invest in unstable markets, and governments won’t give aid to countries they see as being poorly managed. This has helped the West keep its dominance over Africa and carry on with its partisan politics. On the other side, many African nations along with their traditional Western partners and their new business partners from China, India and the South Pacific, have begun to rebuild and re-invest the continent.

Micro-initiatives such as the KWG are foundations of learning the entrepreneurial skills. By supporting this project, the UN, Deutsche Stiftung Weltbevölkerung, and other donors have aided Kenya in establishing a working and middle class, which can be tapped in the future. Despite the hardships of farming, KWG members represent the new middle class, better stated,
lower-middle class of Kenya. For the KWG, receiving aid has reduced poverty and taken them away from becoming another disaster pornography headline.

Q2 Lifestyle before the KWG Water Pipeline: Oral Histories

The members viewed the Rupingazi River and the well as their nemesis. The Rupingazi was disliked because of:

1. the long hike to and fro, carrying heavy containers,
2. contaminated water that contained human and chemical waste,
3. the likelihood of people, especially children, drowning or falling into the river,
4. the possibility of being attacked by wild animals, and
5. socially unacceptable behavior such as gossiping and fighting.

The well had an equally bad reputation for the following reasons:

1. a fight that ended in the death of a person,
2. the long wait to fill a jerrycan or container, and
3. time lost waiting in the queue.

Of the 33 members interviewed, seven members (21%) have access to the well while the remaining 26 members (76%) use the river. The trip to and fro took up to two hours and was made on average three to four times a day. This meant women were spending four hours to eight hours fetching water per day. Children – especially young girls – helped to fetch the water. Boys would assist until the age of 12, and men who often left the village to work in the cities would only aid if a wife was ill or had an infant.

Although the research took place in India, Verhagen, James, van Wijk, Nanavatty, Parikh, and Bhatt (2004) support the findings on time spent retrieving water. Findings showed that women spent on average three hours per day completing this task. Additionally, daughters
logged about 90 minutes; sons contributed 15 minutes, and husbands did the least with only 12 minutes. A family with two children and two adults toiled for five hours a day, obtaining water with mothers and daughters contributing the most work (Verhagen et al., 2004, pp. 19-21). This time increased when the number of family members increased.

The World Water Vision (1999), a NGO which specializes in water consultation, had similar findings. Not only did women and girls spend up to eight hours per day hauling water, but they also carried up to 40.8 kilos (89.76 pounds) of water on their heads, back or hips (World Water Vision, 1999, p. 10).

Childcare and child safety were an additional problem. Parents would a) take children with them to the river and risk drowning, b) leave them unattended at home or c) leave them in the care of older siblings or adult relatives. Because of this situation, women got very little done and were physically exhausted.

Whittington, Mu and Roche (1989) found that the time lost retrieving water from a well was estimated to be the same cost of a day laborer. People invested so much time getting water that the costs were calculated into wages lost had they gone to work that day. During my visit to Kenya, a day laborer cost KES 200 ($2.50) at the peak season. This is an incredible amount of money lost when one considers that women had an even lower gain on their return: the water collected hardly satisfied their basic needs for food preparation, livestock, washing and bathing.

Unfortunately, there was very little choice but to go to the well or river, as other alternatives were too expensive. The women spoke of water-vending services. A water truck delivered water to the *shambas*, but cost KES 20 in the rainy season and as much as KES 60 in the dry season. A family received a barrel of 200-250 liters, which would last them about a
week. A second alternative was a private pump. Here the individual was charged by the jerrycan (15-30 liters). This cost about KES 5-10 (M. Hill, field notes, August 13, 2003).

**Chairperson:** I only used the barreled water after my pregnancy, because the cost was too much.

* * * * *

**Fadhili:** Naturally, everyone wants to have water delivered to their *shamba*, but it gets to be very expensive. I found myself working or lending myself out just to buy water. That wasn’t good because I was always worried about where I was going to work to earn my water money.

Many viewed water-vending services critically, especially in times of drought or high demand.

**Mumori:** Oh, it was terrible in the dry season. The vendors would set their prices so high. It cost a small fortune to get a drink of water. One day, a vendor came along. A woman wanted to trade eggs for water. Before the dry season, it was ten eggs for a jerrycan. Now, this fool wanted 40 eggs. The woman was enraged, so were many others. It came to blows, and the man lost all his water and the woman lost all her eggs! I said to myself, “We must get water in order to stop people from using us.” Those scoundrels robbed our dignity and tried to take our meager earnings.

Whittington, Lauria, Okun, & Mu (1988) reported that water vendors usually sold good quality water, but at monopolistic prices. Water vending benefited the economy, vendors seldom became wealthy because of high transportation costs. They also provided a much-needed services when the government or the community could not. However, Whittingen et al. (1988) also wrote that the government and private water projects were well within their rights to halt
water-vending services when prices skyrocketed, quality was poor, or monopolistic practices limited free trade or hurt the community.

Q3 Beginning the Water Project: Oral Histories and Documentation of Project

In addition to the drudgery of hauling water, the failed Teithia-Teithia water project was mentioned by 27 members (81%) as one of the main catalysts for participating in KWG. The government funded the project, and the district water officer helped the community build the pipeline. The uncompleted pipeline began in the Highlands and was supposed to reach the village. The women cited the following reasons for the failure of the project:

1. no delivery of water,
2. mismanagement of funds,
3. disputes between committee members and customers,
4. exclusion and disenfranchisement of women,
5. betrayal of community trust by chiefs and committee members,
6. no material gain or improvements in the quality of their lives,
7. loss of money and/or face, and
8. misuse of water by members living in the Highlands.

The Teithia-Teithia project incited much bitterness, especially the relationships between community leaders and people in town. It also created a classic north/south split. People living in the Highlands (north) prospered while people living in the Lowlands (south) remained poor.

**Uhuru:** The water was available for only one year: 1986. My family had paid a lot of money for our water right and had bought pipes to connect to our house. We tried to find out why the pipes had not been laid to our house and were told first to go to the committee members, and they sent us to the chief. No one had answers. We were told to
look for alternatives after all we had done. We along with others felt cheated, because we knew there was water. People in the upper region [Highlands] were misusing the water. They would dam up the water, grow bananas, and irrigate their fields to feed their cows while we were here without even water to drink or cook with.

In 1998 the World Bank reported that 40% of all projects built during The Water Decade (1981-1991) were no longer in use after being completed. Reasons for their failures were attributed to the lack of community participation and to the failure of the technologies used. Merrey and Baviskar (1998) wrote that irrigation and water projects were not successful, because organizers did not consider the role of women who were employed as farmers and irrigators on family plots. Thus, key players were excluded. Findings from this dissertation show that women do consider themselves as farmers and practice the profession.

Finally, World Water Vision (1999) reported that projects failed because a) funds were misappropriated, b) water fees were not collected, and c) the was a lack of community participation. The first two reasons are self-explanatory. When one speaks of lack of community participation, one mostly thinks women are excluded from the process. World Water Vision (1999) stated that projects failed whenever *men and women* placed a low value on a project’s purpose or viewed the project as being initiated without their input.

For example, a water project solely ran by women was undermined by the men who chose not to pay the water bills, because they felt that in the men’s absence (many had left home to find work) the women were usurping their authority. Because of the lack of participation by men, the women followed the men’s lead and the project failed. Likewise, the Teithia-Teithia project, which was run solely by men, failed because it excluded many of the women and because it did not take into consideration the feelings of the whole community.
Q4 KWG Water Project Membership: KWG Membership Participation

With the failure of Teithia-Teithia, the women were urged by the Kortes to pursue a project of their own. The beginning of the KWG was difficult, because many women did not want to participate in another water project that might fail. Members who wanted access to water started an all-out campaign to recruit participants. After much talking, a little over 50 participants founded the KWG. Before the women began the water project, they formulated a strategy to get the support of their families and the community.

Wives first sought the permission of their husbands, father-in-laws, uncles, and elders. Many women immediately received permission from their spouses and families, while other women had to use devious and clever means to persuade their families to allow them to participate. When seeking support women stressed:

1. the benefits that both the family and children would have,
2. the lessening of the burden of carrying water for both men and women, and
3. the economic and social benefits, such as the ability to grow food or the social gratification one receives when one is able to save face or provide for the family.

Although the Kortes stressed the project would be run by women, the women took the gender approach to help solve a community dilemma of no water.

The Gender Approach

In sub-Saharan Africa, women account for 54% of laborers in the field of agriculture. In Kenya, women not only were the main laborers, but they also managed two-fifths of all the farms (Mehra & Esim, 1998).

The United Nations (1995) predicted that the percentage of women’s participation as farmers or laborers would increase. In Bangladesh, women contributed 80% of the farm labor.
This increase is due to several factors: migration, poverty, and literacy. First, women have increasingly become the head of the household when husbands migrate to the cities or other provinces to find work. Without men to work the field, women have taken over the farms. Second, becoming a farmer contributes to household income, helping keep their families out of poverty. Finally, women are becoming better-educated. This leads to greater economic autonomy from their families and husbands as well as proving women with necessary tools to become businesswomen (Allé, Drevet-Dabbous, Etienne, Francis, À L’Hussier, Chappé, & Verdelhand Cayre, 2000; United Nations 2005d).

With an increasing number of women becoming temporary heads of households and their greater participation in creating income, there is an imbalance in the traditional power structure. On one the one hand, women are expected to maintain the households in men’s absence and support their families until the men return home with financial support. However, when the men come back from work, women are to return to their traditional position, which, in the past, gave men most of the authority. A project executed in the absence of men or women fails.

The gender approach takes into consideration not only women’s needs, but also men’s needs. Bolt (1994) explained:

An underlying assumption of the gender approach is that the community, women and men, are the agents of their own development, with development agencies in a supportive role. Women, in a number of respects a subordinate group, can easily be denied an active role in development processes. The self-determination of the community may then become the self-determination of men. The gender approach means that attitudes, roles and responsibilities of men and women are taken into account, that it is recognized that both sexes do not necessarily have the same access to resources and that work, benefits
and impacts may be different for both groups. The gender approach requires an open-mindedness and aims at the fullest possible participation of both men and women. (p. 2)

The World Bank (as cited by World Water Vision, 1989) stated:

Through their [men’s and women’s] direct involvement in projects, both as beneficiaries and participants, and through adequate planning and designing based on a proper understanding of gender differences, can ensure that projects 1) achieve the immediate purpose and broad social economic goals, and 2) maximize returns on investment in these sectors [water sectors]. (p. 20)

Although the KWG is a women’s organization, they considered the roles of men, their families and their community when beginning the project. The women could not build the pipeline without their husbands’ and families’ assistance or community support. This was the much-needed catalyst to get the project supported and started.

Secondly, when the KWG was established, no woman was denied membership because she did not have the necessary social standing, money, or material standing (land ownership). The women embraced the diversity of Murinduko. Tribal, religious, and ethnic affiliation were put aside in order to meet the overall goal of gaining access to water.

Finally, the women had established goals and clear guidelines for the project to succeed:

1. to build a water pipeline,
2. to attend meetings regularly,
3. to treat fellow members with dignity and respect, and
4. to pay membership fees regularly and to provide labor for the pipeline.
Group Organization

KWG began to organize after a series of meetings. The first meetings were with their principle advisors, the Kortes, who told the women to select a committee and to formulate a constitution. Later, the United Nations Development Project, *Deutsche Stiftung*, Africa 2000 Network, and the Kenya Department of Water held meetings on a) democratic elections, b) group organization, c) transparency and accountability, d) conservation of the land, e) planned parenthood, and f) health and nutrition. Figure 25 below shows the committee organization.

![Figure 25. KWG Management Committee](image)

The committee is made up of an executive board with six electoral area representatives
and one co-opted member, who represents new members’ interests. The revenue clerk reports to the treasurer. The chairperson presides over the executive board, and her vote is used as a tiebreaker. All executive board members and representatives report directly to the chairperson.

However, when discussing the group organization with the chairperson, I found that I had erred in my original assessment. The committee is made up of the 13 members from the electoral areas, including the co-opted member. These members fill all positions, including the position revenue clerk. Communication flows in both directions, i.e., information is exchanged among the committee members and the chairperson. Figure 26 below demonstrates the new committee.

![Diagram of the Revised Management Committee]

*Figure 26. Revised Management Committee*
Figure 25 represents a *traditional line structure* in which each committee member and area representative report directly to the chairperson (Boone & Kurtz, 1996). It has a clear chain of command and is considered ideal for small businesses, because decisions can be made quickly by either the executive board when all are present, or by the chairperson who has special privilege to make quick decisions when necessary if the board cannot meet.

The *matrix structure* is represented in Figure 26. Its structure is a little more complicated. With six members working as both area representatives and committee members, the organization structure, although simplified, is more complex, because members are taking on responsibilities for multiple jobs and may have to report to more than one supervisor (Boone & Kurtz, 1996). This has both positive and negative effects. With members multi-tasking, decisions can be made more quickly. Members still report directly to the chairperson, who has overall authority. However, they are also held accountable by the chairperson for decisions they have made while on their own or in the field. Because they take on multiple roles, it can cause frustration dealing with the many roles and expectations of supervisors and community members (Boone & Kurtz, 1996).

Although the KWG conforms to a modern organizational structure, members still believe in *authoritarian organizational structure*. The word of the chief is the law, which all must obey. This traditional style is paternalistic with the most senior male president or family member making most decisions (Damachi, 1978). Obedience is mandatory, and a decision is not to be challenged by staff. Workers have little say, because they are inexperienced in the running of the company, which is treated like a family member. Authoritarian rule does not allow for group input or taking responsibility for one’s actions, since the senior male makes the important
decisions. Although it favors family members in promotion, the staff, which is loyal to the company, has some job security because of the paternalistic role of the boss (Damiachi, 1978). Authoritarian organizational structure has worked, because in the past few people had the education or the business experience to challenge the business structure. Therefore, the most senior male was viewed as being the most able to make important decisions.

In her review of management leadership styles in Africa, Ndongo (1999) found that the authoritarian management style was the most pervasive in Africa. Poverty, allocation of scarce resources, and group solidarity were given as reasons for this organizational structure. Although external goals may not be met, a leader might rule by force, or a manager may concern himself with what is considered trivial matters, the authoritarian management style was accepted because of cultural norms (Ndongo, 1999). Africans do realize the need for risk taking and the democratic process; however, in some communities and business, authoritarian rule is still wanted. KWG members considered their chairperson the chief:

**Fadhili:** At times, the chairperson must be the chief. It is expected.

* * * * * *

**Meuindi:** No one would respect the chairperson if she were not the chief and could not lead.

* * * * * *

**Bula:** It is her duty to take things into her hands and make the decisions. Even with education, people expect this. She would lose face to do any less.

A member described the authoritarian organization style of the chairperson or chief:

**Uhuru:** The chief is to make the decisions. She is surrounded by the people of the village. She has advisors who counsel her. These are her committee members. Her best
warriors are the district representatives. The people are the workers of the village, and we are to obey the word of the chief.

Figure 27 on page 157 shows KWG’s organizational structure for traditional rule. Instead of using a series of lines and boxes to document organizational structure, I selected circles. I found that the chairperson and the various committee members tried to strike a balance between traditional and modern organizational methods. Circles represent the harmony in which the KWG attempts to work.

The chief (chairperson) rules or presides over the organization. The advisors and elders (executive committee, NGOs, and sponsors) advise the chief. The chief’s decisions are enforced by her bravest warriors (district representatives), while the people (KWG members) are expected to obey the laws and be loyal. Although the executive board and the chairperson are democratically elected, the authoritarian leadership and management styles are respected and wanted by the KWG members.
The simplicity of the explanation given by Uhuru led me to consider a final organizational chart. Figure 27 reminded me that perhaps I was making things too complicated. One prerequisite for transparency is that the organizational structure be understood by the layperson (UNPD, 2004). Figure 28 below represents a simplified organizational structure, which is not too difficult to understand. I opted not to use extensive diagrams, as they often can be confusing. The figure demonstrates how elections are held and how a management committee is formed.
After the committee was selected, the by-laws were formulated. The by-laws consisted of 15 regulations that:

1. state the goal of the KWG,
2. announce meeting times and place,
3. define a dress code,
4. outline the management committee,
5. call for yearly elections,
6. regulate meter and pipe size,
7. outline payment schedule and disconnection terms,
8. state reimbursement scheme for committee members,
9. established standing fees and connection fees,
10. opened a bank account,
11. required communal work and participation, and
12. employed technicians for maintenance of the pipeline.

The by-laws did not include regulations on how to obtain a majority vote for a new regulation or project. Yet, I was told this was a rather simple process:

**Kemzie:** We wanted to open a beauty salon. We went to our represent to make this request. We wanted to have a small loan to pay for the building and the goods. The representative went to the committee meeting and it was discussed at meeting. At the meeting, we voted on it and money was provided for a beauty salon.

* * * * *

**Chairperson:** It takes a majority vote to elect a new committee. Likewise, if we want to buy land or build, we must also vote. Naturally, there are some decisions that must be made quickly, and there is no time to ask all the women. I then ask the committee members, and we try to settle the issue. I break a tie vote.

Normally, disputes between members do not reach the chairperson; however, if they do, members have asked for a dispute to be settle with the representative bringing the issue to the chairperson. This is also a very easy to understand

**Juma:** The representatives are the eyes and ears of the chairperson. They keep her updated and inform her.
Bula: Once two people were fighting over nonsense. The chairperson came and heard both of their stories. She made a decision. She sent her representatives to see if the rules were followed. People obey. It is an embarrassment if the chief has to come by again.

Figure 29 below shows how a request is communicated to the representative and later how that request is voted on at the bi-weekly meetings. Passing a resolution takes the traditional majority vote by KWG members. This is a globally accepted procedure used by democratic governments and organizations (United Nations, 2007). If emergency situations require quick decisions, the management committee votes on them, or the chairperson makes a decision.

Robert Rules of Order (Robert, 2000), a book on parliamentary procedures, supports such action as long as it is supported within the by-laws.

Figure 29. How a Request Is Voted on
When a resolution is voted on, there are three outcomes: it fails to receive a majority vote, it passes with a majority vote, or there is a tie, which the chairperson breaks. Figure 30 below shows how this process works.

**Figure 30. How a Suggestion, Resolution, or New Regulation Is Passed**

Many times there are disputes or conflicts among the KWG members. When this happens, the chairperson listens to the dispute and makes a ruling, which is to be followed. The chairperson will send the district representatives to follow-up on the dispute. The district representatives will report back to the chairperson with a progress report. Figure 31 on page 162 displays how a dispute is reconciled.
Figure 31. How a Dispute Is Resolved

Recommendations

For Question 4, the following recommendations are made:

1. Although the overlap of duties by committee members and representatives is done for simplification, KWG has enough women who are qualified to take on these positions. Separate the representatives from the committee members. This will bring the total committee members to 19 and ensure there are enough qualified people to do the job of the committee.

2. Although the education of the revenue clerk and the treasure were not fully discussed, it is recommended that these two positions be held by people with experience and education in bookkeeping or in finance if it has not already the case.
3. Regarding the revenue clerk and treasurer, it is recommended, if funding allows, that these two individuals be taken from outside the KWG and represent an independent company in order to ensure accountability.

4. The by-laws must be extended to include regulations on voting, the committee’s emergency voting plan, organizational structure, and how to ensure accountability.

5. To ensure transparency, clear guidelines must be given on how the club must function in case of an emergency or passing of key personnel. A nomenclature must be established and made known, regarding how power will be passed on.

Q5 Fundraising and Financing: Financial Organization

Once members had selected a management committee, KWG began the difficult process of raising funds. Money was tight, meaning that members could not pay a lump sum for their taps. Therefore, financing the pipeline began with a simple strategy of contributing KES 20 every month. This sum was then raised four times over the years with the highest dues ending with KES 2,000. Members and their families participated in the building of the pipeline, exchanging their labor for materials. From 1989 until 1994, members contributed to the savings fund to build the pipeline and performed the necessary manual labor. Their savings were then combined with funding from UNPD and private donors such as Gerhard Arnold and Dr. and Mrs. Rolf Korte. Today, if a new member applies for a tap, the cost is calculated at KES 24,000, which takes into account the fees raised by the members, their time and labor.

Members raised the required funds through:

1. *muhigaia* (the teachers’ society),

2. *harambee* (the market),

3. *jumbo* sale (an auction),
4. selling of animals and produce, and

5. lending or donating by family and friends.

Raising the funds was a family affair. Parents, grandparents, in-laws, aunts, uncles, and children all participated in meeting the goals that were set by the KWG. The sole source of income for many families is farming, followed by working as day laborers. Only a few families had outside incomes, i.e., were employed as teachers or shopkeepers. Of the 27 participants who were married, only five husbands were not farmers. Figure 32 on page 165 shows the amount of money collected and the length of time needed by a family to meet the goals.

The women first began saving for their pipeline and then they began the process of applying for financial assistance (S. Korte, personal correspondence, December 2003). Only after years of saving, could they apply for any type of assistance.

A key consideration that was paramount to the building scheme was the ability of the participants to pay and the amount of time needed to raise such funds. The KWG wanted the system to be impartial to all participants and took into consideration the socio-economic situation of its individual members.

measures for household water charges. Equity means that every member has legitimate access to safe drinking water. Economic efficiency is bringing water to a household in the least costly manner. Environmental effectiveness refers to the sustainable use and protection of water and the environment (OECD, 2003). With regard to equity, the KWG’s long-term saving strategy provided the members with a fair way to pay for their water supply.

The organization also displayed an understanding of one of the main reasons why a project fails: insufficient financing. Katko (1986) wrote that in 1971 the World Health Organization (WHO) surveyed Africa and the Americas to determine constraints in water supply. The WHO (as cited by Katko, 1986) reported, “. . . the insufficiency of trained personnel,
limitations of funds, shortcoming in operation and maintenance, and inadequate cost-recovery from customers. . .’ as barriers that prevented projects from becoming realities (p. 232). When a survey was taken 15 years later, many of the same issues were still to be found, including the lack of organizational and managerial skills (Katko, 1986).

The KWG was lacking in all these areas at the beginning. However, over the course of planning for the pipeline, the KWG was advised by the government and NGOs in order to overcome these deficiencies. Much thought was given to a cost-recovery scheme, which all members could afford. To achieve this, the KWG was advised to use water meters (S. Korte, personnel communication, December 2003).

Using water meters has several advantages. If the meter is not tampered with, it is a fair measure of recording water consumption. Meters can also help monitor overuse of the water source. Finally, the water used can be calculated into a tariff, which is payable by the customer (Lauria & Cizerle, 1992). Although meters are relatively expensive in their maintenance and upkeep, the KWG decided that this cost was worth it, because it assisted in collecting water revenues and aided in keeping members honest (Chairperson, personnel communication, August 2003).

Once it was decided to use meters, a tariff system was devised in which the ability to pay did not place too much burden on the participant. In developed and developing countries, which have established water services, the government or water authority provides waivers, discount tariffs, vouchers, or monetary assistance to pay for the water. Water tariffs are based on either the amount of water used and/or a person’s income (OECD, 2003).

The KWG, as the water service provider, decided on a block tariff system. A block tariff establishes payment based on a price for a set amount of water, usually one cubic meter or 3,000
liters (Lauria & Cizerle, 1992). As the amount of water increases, so does the price. Twenty units of water are equal to 20,000 liters of water. The basic charge is KES 40 each month. If a member goes over the units allowed, the basic charge is assessed with each unit over the basic charge multiplied by KES 5 for 21 to 50 units, by KES 10 for 51 to 100, and by KES 20 for 101 or greater. If a person used 38 units, the following calculation would be used:

\[
\text{(Total units used}=38) \quad \text{– (Basic charge of 20 units)} = 18 \text{ Units over}
\]

\[
\text{(Basic units = KES 40) + (Units over or 18 x KES 5 or KES 90) =}
\]

\[
\text{Total charge} = \text{KES 130}
\]

Table 11 below shows the block tariff system established by KWG and charges calculated per number of units used.

<table>
<thead>
<tr>
<th>Number of Units</th>
<th>Basic Charge</th>
<th>Units Used</th>
<th>Calculation of Charges</th>
<th>Total Charge</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-20</td>
<td>KES 40.00</td>
<td>20</td>
<td>KES 40.00</td>
<td>KES 40.00</td>
</tr>
<tr>
<td>21-50</td>
<td>KES 40.00</td>
<td>38</td>
<td>KES 40.00 + (18 * 5)</td>
<td>KES 130.00</td>
</tr>
<tr>
<td>51-100</td>
<td>KES 40.00</td>
<td>70</td>
<td>KES 40.00 + (50 * 10)</td>
<td>KES 540.00</td>
</tr>
<tr>
<td>101+</td>
<td>KES 40.00</td>
<td>120</td>
<td>KES 40.00 + (100 * 20)</td>
<td>KES 2,040.00</td>
</tr>
</tbody>
</table>

The water tariffs have ensured that KWG has a constant flow of income. If a meter reading cannot be taken or if the meter is broken, the basic tariff of KES 40 is paid. Broken meters are to be replaced or repaired immediately when possible.
Because the KWG has regular income, it can employ staff and give a small remittance to committee members for their time and missed work when they meet. The KWG staff includes two technicians (both male) and the collections officer. The technicians earn about KES 3,600 per month and the collection officer, who is part-time employee, earns about KES 1,100. Committee members are reimbursed a day wage of KES 100 for monthly meetings (M. Hill, field notes, August 2003).

Figure 33. Murinduko Primary School

Murinduko Primary School is supplied with water from the pipeline. The stone foundation under the trees is where the washbasins with water taps are located.
Kugeria Women Salon was one of the first micro-initiatives that KWG invested in. Although KWG does not own the building, it did extensive repairs, which it paid out of the treasury, in order that the building have water and electricity.

A second benefit of having a reliable source of income is the ability to sponsor projects that are important to the community. The KWG provides water to Murinduko School. The nurse supervisor runs the Murinduko Dispensary. The KWG manages the funds collected at the dispensary for the population project, which was financed by the Deutsche Stiftung Weltbevölkerung. They also have two small business initiatives. The Kugeria Grazing Women encourages cattle breeding. It has an independent committee of seven members that is not part of the elected committee. The Kugeria Women Beauty Salon is the KWG’s first attempt at running a small business. It has an interim committee, which is elected yearly. If the salon is a success, it will be given its own committee. Figure 35 on page 170 displays the KWG’s projects.
In conclusion, the KWG financed its pipeline by coming together and pooling their resources. Money was saved each month and increased at regular intervals in order to accumulate more funds. Once there were enough funds, the KWG applied for assistance. After the project was underway, the KWG was able to finance a series of projects supported by the revenues from the water pipeline.
Figure 36. Customers Queuing for a Cut

Customers wait their turn at Kugeria Women Salon, which is extremely popular at holiday time and for weddings and funerals. KWG has high hopes for their first micro-initiative, as the start-up was costly.

Recommendations

The KWG has done a commendable job of achieving its goal of a water pipeline. From a very small group of less than 60 women, the organization has grown to include over 300 members.\(^4\) By supporting, the Murinduko Dispensary, Murinduko School, micro-initiatives and employing outside members, the KWG has established itself as a leader in the community with a vision for the future. To add to these achievements, the KWG has kept itself financially solvent.

However, one problem that I see with the project is the start up fee for new members. In the beginning, the KWG did not want to exclude anyone from participating and from obtaining water. They wanted to ensure equity and fairness. Unfortunately, a project that started with this

---

\(^4\)Susan Korte informed me in an email from March 2007 that membership has risen to include 300 families.
principle is now unobtainable for non-members. The fee of KES 24,000 (roughly 25% to 75% of yearly income for a farmer), although valid, now presents a major obstacle for the poorest of the poor. The scarcity of the water and the necessity to ensure that the KWG is reimbursed for its hard work are at odds with the socio-economic status of many Kenyans. This situation is not lost on the members:

**Chairperson:** Our greatest wish is to build a second pipeline because there is now not enough water to go around. We have had to stop accepting new members because the system was not designed to meet the demands of so many. Imagine when one gets up to wash or cook, and there is no water, because everyone has turned the tap on at the same time [Figure 38 on page 177 explains this phenomenon]. Likewise, the poor have no water, as they cannot afford it. It is a regrettable situation.

Building a second pipeline would not be a wise decision, since a new pipeline is out of their reach with their current financial situation. However, this did not dissuade both the chairperson and technicians of having recommendations to solve this issue:

**Chairperson:** Next to a second pipeline, we would really like to have a holding tank to help in times of a drought. It is not as costly, but would give relief to the situation

* * * * *

**Technician:** Right now there is only one main tank at Mugambaciura Village [see Appendixes F and G on page 297-300]. If there were a second holding tank in Upper Kugeria, it would relieve the pressure on the main tank. This would reduce greatly the effect of not having water at particular times of the day, and we could also save water for a drought.

It is recommended:
1. that a water tank (pressure tank) be built to reduce pressure on the system,
2. that a water-vending service based on a sliding scale be considered, so that the poorest of the poor can get clean water, and
3. that the KWG monitor the situation to observe where water savings techniques and devices can be further installed.

Q6 Building the Pipeline: The Physical Labor

In high-school English class, the themes of the classic novels could be divided into three categories: man against nature, man against society, and man against self (I was always miffed at the use of the word man as if Jane Eyre were, indeed, a man instead of a woman.) For the KWG, the oral histories took on these same themes.

The KWG against nature saw the women and their families struggle against the elements to build the pipeline with few tools. Transporting the pipes and digging the trenches were done by manually. The pipeline is 11 kilometers long; however, many families walked over 20 kilometers to deliver the pipes to their assigned destinations and to ensure that they were at the building site on schedule (M. Hill, field notes, August 20, 2003). The tasks were made more difficult by inclement weather and difficult terrain. While the rainy seasons exposed the members to the elements, clearing the forest and laying the trenches opened the earth with her muddy waters.

The poor attitude of some of the men presented the classic example of woman against society. Unlike some West African cultures with well-documented matriarchal societies (Macdonald, 2006), Kenya is a patriarchal society, which has possibly lost its ties to the matriarchal societies of the Embu and Mbeere, because colonialism and colonial education has
forced Western standards upon the society (S. Korte, personal communication, April 19, 2007; Chega & Sifuna, 2006). Grandfathers, fathers, uncles, and brothers dictate the politics of the day, although this view is changing quickly. What has given women the upper hand in this water project is that they are responsible – not the men – for the retrieving water.

When the men failed in organizing a proper water scheme, women came forward to give it a try. However, this was done with much chastising from the men, as their pride had been hurt. The men first attempted a boycott. They spoke ill of the women, they told them the project would fail or they simply kept silent, silence as a weapon (M. Hill, field notes, August 16, 2003). Only after the chairperson’s husband convinced the senior male members, were the women able to work in relative peace. This peace was soon to be tested when a male broke a main pipe, causing much damage and provoking strife. Eventually, the full cooperation of the men was gained.

For many women, the pipeline was the first major undertaking of their lives. They doubted their own ability to complete such a gigantic task. To overcome their fears and doubts about themselves, many turned to prayer. Members prayed constantly and even had talks with God. To lift their spirits, songs were sung during the work. As the completion of the pipeline neared, so did their belief in themselves. The women stopped fighting their inner demons and began to believe in the possibility of a better future.

Two other themes that came out of building the pipeline were community participation and following set rules. Earlier, it was stated that a gender approach took into consideration both women’s and men’s positions. The KWG understood that the men had to play a major role in building the pipeline. The coordination of the men was paramount to the success of the project. Men not only volunteered for the mandatory communal work, but they also were hired as day
laborers to help build the water tanks, mix cement, lay the foundation and do the mortaring. It was also the men who allocated household resources to the pipeline, because they usually had a greater cash flow than spouses. Without men’s labor the project would have failed. Men and women were assigned their separate spheres of work for the project. In short, the women depended on the men’s physical strength to build the pipeline. Each gender did what he or she did best: the women looked after the financial management and hired the personnel, while the men provided the labor and technical assistance. It is a classic example of separate spheres uniting to achieve a goal.

The story of the young boy sent home from work demonstrated the commitment the KWG had to following the rules. Child labor is strictly frowned upon by the United Nations and most NGOs. Children under 14 are considered minors and unfit for work (Chairperson, field notes, August 10, 2003). For this reason, they were turned away from the project. Although the Kenyans have their own ideas on childhood, the western idea of a labor-free childhood was reinforced during the project. The pipeline has not only relieved the women of the drudgery of fetching water, but it has also given children the opportunity to have to play and to do their homework.

When Did This Happen?

Until now, there has been little discussion of actual dates as milestones for when the pipeline project. In the West, dates play an important role in marking achievements over a lifetime. However, this appears to be otherwise in Kenya. Dates are not so important as the event itself.

MaLinda: When was the pipeline finished?
**Member:** Oh, that was a glorious day after the dry season [with excitement in her voice].

**MaLinda:** That would be in which year?

**Member:** We had just harvested the corn. We made *japatté* (a flat bread) with tomatoes and rice.

Imagine having this conversation a half dozen times. I thought I was bit daft after awhile, for obviously I couldn’t ask questions properly until my translator told me that Swahili had limited tenses.

**Technician:** Njoki, do you know that traditional Swahili has only *today* and *the past*.

**MaLinda:** How would that work? How do you know if something happened last week or two years ago?

**Technician:** It is a feeling, something is true or it is not true. It has happened or it has not. However, I am told that the Chinese have a similar problem with verb tenses.

I took this conversation into consideration. Although I asked about a specific time, I no longer awaited a date. However, the historian in me yearned for a time line. In my mind, dates make an event more tangible and give validation to an event. So after much inquiring and investigation, I developed the following Figure 37 on page 177 to satisfy my inner yearning for dates.
Although I did not give the full date for the completion of the pipeline, August 20, 1994 is considered the anniversary. Unfortunately, I was not able to collect many dates. This was due to the time constraints of my visit, and the fact that I spent most of the time interviewing with the women. If I were a KWG member, I would simply go to a meeting and ask to have the record read to me, as is the tradition. This takes a long time, but eventually one would learn the precise dates.

Figure 37. KWG Time Line of Events
Technical Problems

One issue that has been mentioned several times in this dissertation is that of water suddenly not being available to the customers. There are several technical aspects of this problem that need to be shared with the reader.

The pipeline is 11 kilometers long and made of steel pipe, which is six inches in diameter. Each house has PCP pipe that is two inches in diameter and runs from the main pipe to the tap in the garden. This PCP pipe can either be a few meters to over several kilometers away from the main pipe. All pipes are underground as not to be exposed. Each house has a water meter.

Unlike a city water distribution system that can be made up of a series of dams, electrical generators, and canals, the KWG uses a gravitational system in which the earth’s gravity is used to bring water to the houses. There are no generators and dams; rather a canal diverts water from the Kii River at Intake.⁵ The water flows down hill to Breakpoint, where it is oxygenated and filtered. From Breakpoint, the water runs into the six-inch main pipe, which uses two-inch PCP pipes to bring water to the taps. The water is not treated with chemicals. However, it is allegedly some of the cleanest water in the country, as its source is the melted snow from Mount Kenya (Technician, field notes, August 19, 2003).

The most common reasons people do not have water are:

1. sediment clogs Intake,
2. grate at Intake is blocked,
3. sediment clogs Breakpoint,
4. filter at Breakpoint is stopped up,

---

⁵ Intake and Breakpoint are considered geographical locations by the Kenyans and are used as reference points when giving direction. Therefore, I chose to capitalize these words.
5. house in Highlands obstructs pipe,
6. house in Lowlands obstructs pipe,
7. houses in Highlands and Lowlands use tap at the same time,
8. sediment in pipe,
9. leak or fracture in the pipe, and
10. low water level of the Kii River [see Figure 38 on page 180] (Technician, field notes, August 19, 2003).

In short, pipe capacity is insufficient, because of human inferences and ecological challenges.

There is also the division between the Highlands and Lowlands. Individuals who live up in the Highlands are more likely to receive water all year as compared to if people who live in the Lowlands. In the Highlands, one is closer to the water’s source versus the Lowlands.

In 2002, the decision was taken not to enroll new members. However, in recent emails, I was informed that for 2007, the membership is around 300 families, up 34% since my last visit (S. Korte, personal correspondence, January 15, 2007; March 2007).

Because of the many members, the KWG and its technicians are very vigilant. My trip to Intake was not only to look at the source, but also to observe the regular maintenance of the pipeline. The technicians also stopped the truck several times to inspect the woods and fields, where the pipeline was buried. They were looking for signs of tampering by animals and human. Without a good maintenance structure, the project is doomed, and the members are not properly served.
Figure 38. Problems of the Pipeline

1. Sediment clogs Intake
2. Grate is blocked
3. Sediment clogs Breakpoint
4. Filter is clogged
5. Houses turn on tap at same time
6. House is in Highland
7. House is in Lowlands
8. Sediment in pipe
9. Leak or fracture in pipe
Likewise, the KWG enforces the rules when it comes to broken pipes and/or illegal tapping. The local chiefs, police, and chairperson are involved. The law is enforced and fines range from KES 1,500 for a pipe broken accidentally to KES 4,000 and/or jail time for a pipe broken intentionally, illegal tapping, or sabotaged (Chairperson, field notes, August 2003, 2003).

Some may think that the decision to not take on new members is unfair, especially since the project was designed to assist poor families in receiving potable water. The problem is one of availability. A common question that is often posed, “Is there enough water to service more members?”

For this question, I went to see Professor David Admiraal in the Department of Civil Engineering at the University of Nebraska-Lincoln. Nebraska was experiencing one of its coldest days on the day of my visit, February 24, 2007 with a very balmy 18°C outside, making me wish that I were in the Highlands, which have temperate weather all year. This was my second meeting with Dr. Admiraal’s office. When I visited him a year before to discuss water conservation, I did not have some much needed data. This time around, I had that information, which included the description of the pipeline (length, pipe dilatometers, etc.). We sat together, and Dr. Admiral explained to me in layman’s terms, why there was a shortage of water.

I wanted an expert in the area of civil engineering to illustrate water dynamics, because there is a need for this information by the KWG and other organizations, which are interested in building a pipeline. The first question that needs to be asked before building is, “Is there enough water?” Without answering this vital question, there is no need to start building, as a water source must be reliable throughout the year (D. Admiraal, personal lecture, February 24, 2007).

To begin the process of finding out how much water there is, one must estimate how

---

6 I would like to thank Professor David Admiraal for the time he took to review this section and to explain and to perform the calculations.
much water is needed for the households. Let us assume that a house needs 20,000 liters a
month, using 224 houses that were connected to the main pipe. The total requirement would be:

\[(20,000 \text{ liters per month}) \times (224 \text{ houses}) = 448,000 \text{ liters per month}\]

This number must be changed into \( Q \) or how many liters per second must be discharged from the
pipeline.

\[Q = \left(448,000\right) \times \left(\frac{1}{30 \text{ days}}\right) \times \left(\frac{1}{24 \text{ hours}}\right) \times \left(\frac{1}{3,600 \text{ sec.}}\right) = \frac{1.73L}{s} = \frac{1.73 \times 10^{-6}}{1000L/m^3} \]

From here, there are several assumptions, which are to be made about the pipeline and the
geography of Murinduko. I say assumptions, because much of the information was given to me
verbally. The diameter of the main pipe is six inches, the material of the main pipe is
commercial steel, the length of the pipeline is 11,000 meters for all houses, the average daily
temperature is 20°C, and the change in elevation from where the pipe begins to where it ends is
500 meters (D. Admiraal, personal lecture, February 24, 2007; Technician, personal
 correspondence, August 2003).

Once our assumptions are made, the energy equation is employed. This is made up of
pressure \( P \), velocity \( V \), elevation, weight per volume of meter \( \gamma \), gravitational acceleration
\( g \), head losses \( h_f \), length \( L \), diameter of pipe \( D \), friction factor of pipe \( f \), pipe roughness
\( \varepsilon \), viscosity \( \nu \), and Reynold’s Number \( Re \). The energy equation formula is:

\[\frac{P_1}{\gamma} + \frac{V_1^2}{2g} + Z_1 = \frac{P_2}{\gamma} + \frac{V_2^2}{2g} + Z_2 + hf \]

Assuming that the two ends of the main pipeline can be treated as reservoirs, pressure and
velocity at the end are negligible or cancel out, leading to:

\[h_f = Z_1 - Z_2 = 500 \text{ meters}\]

The head loss \( h_f \) is equal to:
Two additional properties needed are pipe roughness for commercial steel ($\varepsilon$) and viscosity of water ($\nu$). These are taken from the table for commercial steel, and the table of water properties in *Fluid Mechanics with Engineering Applications* by Finnemore and Franzini (2002). Pipe roughness and viscosity are:

$$\varepsilon = 0.046 \text{ or } 4.6 \cdot 10^{-3} \text{ cm and } \nu = 1.0 \cdot 10^{-6}$$

In an email from March 3, 2007, Professor Admiraal wrote:

> The head loss equation, given above, is solved using an iteration technique that requires the use of the Moody Diagram to determine the friction factor. Pipe velocity is guessed, allowing the Reynolds number and relative roughness to be calculated. Then friction factor can be determined from the moody diagram. Finally, the friction factor is entered into the head loss equation to provide a new estimation of pipe velocity. This process is repeated to convergence. (¶ 8)

Therefore, pipe velocity equals 2.91 meters per second. Discharge is then:

$$Q = V_p A = 2.91 \frac{m}{s} \left( \frac{\Pi}{4} \ast D^2 \right) \text{ or } 2.91 \frac{m}{s} \ast \frac{3.14}{4} \ast \left( 0.153 \right)^2 = 53.5 \frac{l}{s}$$

The result shows that the six-inch pipe can deliver 53.5 liters per second. This is well over the estimated 1.73$^3$ liters per second needed for the houses. Table 12 on page 184 shows the iteration technique used above. However, other considerations need to be made.
### Table 12

*Iterative Solution of Energy Equation*

<table>
<thead>
<tr>
<th>$V$</th>
<th>Re $= \frac{V_p D}{\nu}$</th>
<th>$\varepsilon / D$</th>
<th>$f$</th>
<th>$V_p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.0 m/sec</td>
<td>$\frac{2.0 \cdot 0.15}{1 \cdot 10^{-6}} = 300,000$</td>
<td>$3 \cdot 10^{-4}$</td>
<td>0.017</td>
<td>2.83 m/sec</td>
</tr>
<tr>
<td>2.83 m/sec</td>
<td>$\frac{2.83 \cdot 0.15}{1 \cdot 10^{-6}} = 433,000$</td>
<td>$3 \cdot 10^{-4}$</td>
<td>0.0165</td>
<td>2.91 m/sec</td>
</tr>
<tr>
<td>2.91 m/sec</td>
<td>$\frac{2.91 \cdot 0.15}{1 \cdot 10^{-6}} = 445,000$</td>
<td>$3 \cdot 10^{-4}$</td>
<td>0.0165</td>
<td>2.91 m/sec</td>
</tr>
</tbody>
</table>


Along with the ten reasons pipe capacity is insufficient, there are many additional reasons that were found in this study:

1. The drought increased water consumption by up to 32%.
2. About 30% of the members are irrigating their lands.
3. Within the last three years, there was a 34% increase in membership.
4. Although construction for the pipeline was completed in 1992, building started in 1991, making the pipeline over 16 years old.
5. Water is lost to broken meters, which are also due for an overhaul. These meters represented over 50% of those owned by members in 2003.

In short, just because water is there, does not make it available. The reality of people turning on their taps and nothing coming out is not a myth, but a re-occurring experience:
**Ghalyela:** It only happens now and then – I get up in the morning and the tap is simply dry. Nothing comes out. I go to my neighbor and she has the same problem. On that day, we were not affected, but if it happened over several days, we would have to make the trip to the river again.

Is a second pipeline reasonable? Lauria and Cizerle (1992) discussed the issue of high demand in villages. They recommended that water project committees either add on to their existing pipeline or begin a rationing program. They calculated that an addition to a pipeline would not cost more than 35% of the original price.

These estimates may sound very low; however, they are not reasonable, because the people of Murinduko are earning developing country wages in a market that charges first-world prices. Even adjusting the original price for inflation, one would need more than KES 3.6 million (USD 47,250) plus additional funds to replace all meters and broken pipes. This would place the cost of the pipeline up to KES 5.7 million ($75,000).

**Recommendations**

In question 6, it was recommended that a holding tank (pressure tank) be built to aid in water supply and that the KWG watch for wasting of water within the system. These recommendations can also be applied here along with the following:

1. Water meters should be replaced to ensure that the system is not over taxed, and
2. Water rationing should begin immediately to reduce the pressure on the aged system. Building a tank and purchasing new meters are very costly; however, rationing water and preventing waste within the system are practical solutions. Water conservation will be further discussed in Question 8.
Q7 Quality of Life: Intended and Unintended Outcomes

For Question 7, two issues were of importance: quality of life and conservation. Findings show that members’ overall health has improved, that water-borne diseases have been reduced, and that members have more free time to spend with family and friends. In the area of conservation, members demonstrate a good understanding of water conservation by irrigating only at designated times, planting trees and keeping kitchen gardens, and following simple sanitation rules. This was the intended outcome of the program.

The findings in this dissertation are supported by similar research on gender approach, water and health. van Wijk-Sojbesma (1998) found water projects, which involved a gender approach, have longer sustainability and were more effective than those that do not. The author also found that sanitation projects that were not supply driven, but invested in personnel and were supported by the private sector, had a greater likelihood of success because of the high level of personal involvement. The report also cited a positive correlation between improved sanitation and hygiene.

Verhagen et al. (2004) reported on the quality of life of women and families with access to clean water. Not only were there improvements in health, nutrition and free time, but there was also an improvement in the women’s social position within society. Women who had access to water had more personal freedom in terms of going out, especially alone. School attendance of children also improved, and women began to make more decisions on purchases of livestock or goods.

Unfortunately, with all the good news, there is some bad news. UNICEF (2006) reported that both Kenya and Malawi experienced within the last few years an outbreak of cholera. Kenya has been slated as being on track to provide potable water to its population. From 1990 to
2004, the country went from 45% of its population having adequate water to 61%.

Unfortunately, Kenya is losing the sanitation war. In this same period of time, sanitary conditions went from 40% to 43%, giving Kenya the poor grade of *not being on track* to reach the United Nations’ Millennium Development Goal [MDGs] (UNICEF, 2006, p. 14).

AIDS, debt, declining aid, and rising income gaps between developed and developing countries were reasons given by Vandemoortele (2005) as to why countries failed to meet MDG’s water and sanitation goals. However, all is not lost. Vandemoortele (2005) wrote that improvements came about when countries began to settle their own goals at the regional level. Greater autonomy by regional players may increase the likelihood of meeting the MDGs.

This brings me to an unintended outcome of the KWG. By maintaining the pipeline, the KWG is one of the few privatized water organizations in Kenya. Despite its many problems, it is seen as a good example of how a water project should be run. It is very clear that in Murinduko a small group of women are indeed meeting the MDGs for sanitation and water. When I talked to the chairperson, I found that I was not the only person to pay the KWG a visit:

**Chairperson:** We get visitors very often. Last year a girl came to stay with us for a half a year. She worked for the United Nations. We also received visits from people who are trying to start projects similar to ours. We try to accommodate these visitors as best we can. Our only regret is that many come, take our advice, but do not help us any further.

Despite our success, there is still need here (field notes, August 2003).

These exchanges are important to the community and to the KWG for they help bring about a dialogue, encourage the exchange of ideas, and cement national and international friendships.

A second unintended outcome of the project was the increased knowledge of free enterprise, which raised the members’ self-esteem. When I asked members how they felt about
KWG membership, many spoke with pride and showed confidence that they may not have had without the project:

**MaLinda:** Do you feel that the KWG has improved your understanding of how a business is run?

**Wambui:** Oh, yes, indeed. I am now considering how to run my own business. It has taught me about keeping the numbers tidy. How to be fair. It is very uplifting to know that I am part of such an organization.

* * * * *

**Mwaikali:** The KWG is a good example of Kenyan enterprise, because we are able to teach others about water. It has helped people to improve themselves and make us more independent. It has not only improved our health, but also our business sense.

* * * * *

**Fadhili:** We know what the world thinks of us. Much of our problems is a question of education. With education we can become better people and take pride in ourselves. KWG is a positive example of what we can do for ourselves if the world helps us.

Finally, the last unintended outcome is that of the dispensary, which is supported by the KWG. The dispensary provides basic health, nutrition, and family planning education. The KWG is responsible for its bookkeeping and received a grant by Deutsche Stiftung Weltbevölkerung to support its planned-parenthood scheme. The KWG was entrusted with the running of the dispensary based on its organizational skills. One of the basic tenants of any business is to expand and diversify its holdings. The KWG has done this within the community and not only has the Dispensary as its project, but also Murinduko School and the KWG Salon.
Recommendations

The KWG has shown good progress in maintaining sanitation standards and providing water to its members. It is also responsible for the dispensary and the beauty salon. National and international visitors seek out the advice of the KWG, making it not only a community leader, but also an international leader. With so many undertakings, it is recommend that the KWG not expand into any more enterprises until it is able to find more qualified members to take over key positions and can provide an additional pipeline or reduce water consumption. In terms of its current policy, the KWG should enforce its current practices in order to ensure the future of the organization.

Q8 Water Conservation: Quantitative Analysis of Water Use

For Question 1, the results of an increase in participants’ water use by 20.6%, using the mean of 20 during the drought year, are not surprising. Duke and Ehemann (2001) predicted urban households would increase their water consumption by 47% during a drought year. Much of this increase came from watering gardens and lawns. Likewise, farmers increased their water usage substantially by irrigating their crops, sometimes as high as 65% (EPA, 2006). When the KWG is compared these examples, the group falls below the averages set. Some of the main reasons for the increase in water usage by the KWG members are irrigation of the kitchen garden, sharing water with family and neighbors, watering animals, and building dwellings.

Mwaikali: We are taught not to irrigate our fields with the water, but we are allowed to have a small kitchen garden, which provides food for the family during the drought.

* * * * *

Ghalyela: The drought is hard. Many suffer. I try to be fair to those who don’t have water and give them water when I can. I can’t give them a whole barrel, but a jerrycan so
the children have something to eat and drink. This goes on until it rains. You know if you are selfish with the water, this is seen as bad and people will do things against you [put a spell on the individual or curse her] or maybe break your pipe and blame it on another. Being selfish is not worth it.

* * * * *

**Collection Officer:** Whenever you see meter readings over 200, the people usually are building a house or making bricks for a house. It is one of the most expensive undertakings a family has. Naturally, people save for this and build at one time. The dry season is good for house building to make sure the bricks are dried properly.

* * * * *

**Juma:** The animals must be looked after. If I lose my cow, then we are done for. If my chickens die, then I don’t have an income. How am I to pay the credit back or the children’s education?

Yet, many members were aware of waste or breaking of the rules:

**Adejo:** There are some members who have grown rich and irrigate their fields – even during a drought. They don’t irrigate in the morning or evening or follow the rules.

* * * * *

**Wairemo:** What am I to do? If I don’t water my fields, then I don’t have anything to sell. Some people think that I have grown rich, but this is not the case. The children must go to school. Yes, it is breaking the rules, but we [she and husband] pay.

This member showed some remorse for breaking the rules, but was adamant about continuing to use the water to irrigate her fields. Often, the idea to engage in large-scale agricultural projects came from husbands:
Siada: The husbands have a hand in this, too. They see the water and what it can do for the family. There are no other jobs around but farming. This is our livelihood. I must let my husband use the water for our family as he sees fit. I must respect his wishes. Through these actions, wives allow their husbands to break the rules although they know it is wrong.

Turning to Question 2, despite using slightly more water in the drought year, there was no difference in water usage during the rainy months for the normal and drought year. Murinduko is located in the Highlands and precipitation for this period is between 100-400mm per square meter (safari.com, 2005). Likewise, the snows from Mount Kenya begin to melt and run into the Kii River, which supplies the pipeline with fresh water (Technician, field notes, August 7, 2003). During this time, many KWG members try to conserve or collect water for the future:

Patanisha: The rainy season is when we try to not use water and fill our barrels and water tanks. The committee encourages us to fill our water tanks during this period because water is so plentiful. It makes good sense and we try to do it.

* * * * *

Chairperson: The women are very keen on saving water during this time and are told to water their gardens with rainwater. Rainwater is also used for cooking and bathing. Many women even have runners going from their home’s roofs to barrels or storage tanks.

Yet, the rains came late during the drought year and people used piped water to irrigate their gardens.
Bula: That year [2000] was a trying year. We planted. Then the rains came late in April, and there were no rains at the beginning of the wet season. Then the last month of the wet season we got rain again, so I was turning the tap on and off to the tune of the rain. Yet, I still tried to save water when I could. The rains came and I filled every barrel I had.

If there is an abundance of water during the rainy season, the dry season presents another problem. The Horn of Africa experienced drought from 1998 and lasting until 2003 (Bell, Harper, Schnell, et al.; 2000; Lawrimore, Halpert, Bell, et al., 2001; Chairperson, field notes, August 2003). Drought is defined as, “. . . a normal amount of water is not available to satisfy an area’s usual water consuming activities” (Kenney, Klein, & Clark, 2004, p. 78). During the long drought, famine reached Masai land, located in northeastern Kenya, which is semi-arid. The Masai lost many of their cattle and were forced to accept aid. Unfortunately, the same drought forced the Masai into the big cities such as Nairobi and Mombassa, where their cattle grazed on the grasses of the public parks (“The Washington Times,” 2006). The same drought struck the Highlands including Murinduko.

In Question 3 there was a 25% (using the mean of 20) increase in the amount of water used during the dry months of 2000 in comparison to the dry months of 2003. Despite this increase of water, there was no significant difference between the two years. According to Mays (2001), the demand for water will increase with the onslaught of a drought or natural catastrophe and will not taper off unless demand exceeds the available water source, leading to little or no water. This phenomenon exists the world over and affects both developed and developing countries.
**Hakima:** Drought is drought. We are no different than people in other areas. We turn the tap on and use it because there is no alternative. When I do this, I try to conserve water. I must watch my purse too because if there are no crops, I can’t pay the KSH 20 for the water I do use.

* * * * *

**Vice-Chairperson:** We lecture the women and try to encourage good water management during drought, but it is so tempting just to turn on the tap. Many times there is no water because the pressure is low or we turn on the tap all at once.

Despite the drought, participants are very conservative in their use of water. Duke and Ehemann (2001) predicted an increase of 47% more water being used during a drought in households. Furthermore, city and town water commissions call for a 30% decrease in water usage by its people during drought. Farmers tend to increase their water usage up to 67% during drought, and they are encouraged to water their crops less and at certain hours during the day to reduce their water usage (EPA, 2006). Although the KWG increases its water use by 25%, it is still far below the predictions of Duke and Ehemann (2001) or the EPA (2006). This reflects positively on the group, because there is a general belief that developing countries are more wasteful with their natural resources as developed countries (S. Korte, personal correspondence, December 2003).

Question 4 was designed to look at the differences among the FOUNDERS, FIRSTWAVE, and SECONDWAVE. There are no significant differences among the various groups. However, I would like to comment on Question 4.

It is to be noted that the FOUNDERS received extensive education from the United Nations Development Fund and *the Deutsche Stiftung Weltbevölkerung* on building and
managing a pipeline along with water and ecological conservation. They also created the KWG constitution and government. The FOUNDERS took their newly-acquired knowledge and educated all subsequent groups. Both old and new members are expected to understand the KWG by-laws and water conservation. In fact, much information on project management and water conservation is repeated at bi-weekly meetings to reinforce what members have already learned, so that no misunderstandings arise (M. Hill, field notes, August 14, 2006).

During the drought year, FOUNDERS used significantly less water than the FIRSTWAVE or SECONDWAVE. Reasons given for the good performance by the FOUNDERS were high community expectation and wanting to be a good leader.

**Electoral Representative:** I am a representative and people look up to me. I must follow the rules. If I don’t, I can’t expect the others to do so.

**Eshe:** I am a teacher and must show by example. The children look up to me and even the elderly look toward me [for leadership]. It would not be right if I ignored the rules of water management.

* * * * *

**Ituri:** I must keep my dignity within the community by being an example. Otherwise, the people will not respect me.

A second issue, which was discussed, was where a person lived. The founding members tended to live in the upper Highlands, where their pipe was closer to Intake (origin of the pipe leading to the Kii River) and where the rainfall is heavier. The Highlands also have better access to the run-off from snows and rains.
**Chairperson:** Some of the founding members live higher up, and it rains more there. It was the first lands that were settled when land was distributed. Therefore, they may use less water than those living lower down. Therefore they may need less water during a drought (field notes, August 16, 2006).

* * * * *

**Xedi:** The Highlands are better land – more productive. We here in the lowlands have a lot of problems with access.

Xedi’s problem with access hit on another important issue: cutting off the neighbors by turning on one’s tap, despite not needing additional water. If too many members turn on the tap, the water pressure is lowered and water does not flow (Engineer, August 10, 2003):

**Anonymous:** Oh, yes, it can be dreadful and uncharitable. The members who live uphill and who have been here longer can actually prohibit the members who live downhill from getting water just by turning on the tap. It also means that people downhill will usually let their taps run longer to insure they get enough water. When this happens, we try to send word that we are getting no water. If it is a drought, Lord have mercy on those who live on the lowlands or have no holding tank. The water is nil.

Yet, why do younger members ignore the rules? They still are using more water. FIRSTWAVE and the SECONDWAVE show an increase of water of 15% and 32% over the 20 units during a drought year. The chairperson stated that newer members who just bought into the pipeline tended to have younger families and were more inclined to irrigate their fields. Newer members also had little or no wealth/income, because of purchasing water rights or family responsibilities.
Chairperson: Young families are very vulnerable. Several go into debt to purchase a tap. The tap will not be turned on until it is fully paid for. If they borrow the money, they must have some kind of scheme to pay it back. The burden increases when there are young children who need their school fees paid or if there is no dwelling or house. All these things increase the use of water (field notes, August 21, 2006).

This sentiment was heard several times when interviewing with families. Younger families tended to be more vulnerable and drought threatened their existence. The water tap increased the ability to sustain one’s existence and was used accordingly. The fact that the FIRSTWAVE uses less water than the SECONDWAVE supports the idea that the time of joining or one’s place in the life cycle (younger versus older family) may have an influence over the amount of water used.

Yet, one sees a reverse of this process in Question 5 for the normal year. The FOUNDERS use 33% (using the mean of 20) more water than the FIRSTWAVE or SECONDWAVE. Therefore, there is a significant difference in the amount of water used by the founders when compared to the FIRSTWAVE and SECONDWAVE during a normal year. This is startling because there is a perception that there is a high commitment by the FOUNDERS to obeying the rules.

One reason for this increase could be that the FOUNDERS are trying to replenish the money they lost during the drought. The FOUNDERS are more inclined to have the children through school or houses built, because they are older. That means during the drought they may have had a small reserve of money to fall back on. This reserve is now depleted and the FOUNDERS must also turn to farming to earn the money that the drought took. Although the
FOUNDERS did lead by example during the drought, they also broke the rules for the same reasons as the newer members during the normal year.

A second reason for the increase of water is the refilling of water tanks. When I visited the FOUNDERS’ homes, many of them had cement holding tanks that held up to 10,000 liters of water, or barrels that held between 50-250 liters of water. The FIRSTWAVE and SECONDWAVE were less likely to have holding tanks, because of limited resources. In order to fill the holding tanks, the water usually came from the tap, but it was also not unusual for rainwater to be collected from the roof. Barrels were used extensively as rainwater collectors, although some families filed the barrels with tap water. The holding tanks also represented a major investment and needed to be replenished after the dry season or drought. This means that a family needed to use about 60 units of water to fill the depleted tank, representing three months of water (field notes, August 15, 2006). This was confirmed during interviews:

Adejo: I like to fill my tank over the course of two or three months, so as to not use too much water. This way, my bill is not too high. Some families fill their tanks all at once if they have the shillings.

Although the FOUNDERS make up the majority of those who are over-using water, the problem is not only endemic to them. In the rainy month of April 2000, of the 164 participants who gave a meter reading, 50 (30.5%) participants used more than the 20 recommended units. For July 2000, of the 179 meter readings, 70 (39.1%) members were over the limit. I then took a closer look at how much over-use was going on.

Using Duke and Ehemann (2001) drought prediction of a 47% increase in water use for households, I established five groups of users: normal users (use less than 20 units or under the allotted amount), moderate users (21-30 units or 50% more water), heavy users (31-40 units or
51 to 100% more water) extreme users (41 to 50 or more units or 100%), and extremely heavy users (51 units upward or over 101%). I chose to use households, because Murinduko is considered a town and the people are only supposed to water their kitchen gardens. They are not to be involved in large-scale agricultural projects. For this discussion, the data were not cleaned, as I was only looking at monthly water use. Data cleaning refers to leaving out specific participants because they had eight or less meter readings over the one-year period. The months of April and July were chosen, because they are the middle month, representing the peak of the wet and dry seasons.

Of the 227 participants for the month of April 2000 (drought year), 114 (69.5%) are normal users. Seventeen members (10.4%) are moderate users, 7 (4.25%) are heavy users and 7 (4.25%) are extreme users, and 19 (11.6) are extreme heavy uses.

For the month of July 2000, only 179 of the 227 participants had meter readings. 109 participants (60.9%) are normal users. Seventeen members (9.4%) are moderate users, 17 (9.4%) are heavy users, 7 (4%) are extreme users, and 29 (16.2) are extremely heavy users.

Taking into consideration that there was a drought in 2000, there are still 50 (30.5%) of participants who are over using the water in April, and 70 (39.1%) members in the month of July. This means that the participants’ water use increases during the dry month by about 30%.

The findings for the normal year of 2003 were similar. Of the 227 participants who had meter readings for April, 124 members had entries in the ledger. Ninety (72.6%) were normal users. Nineteen members (15.3%) were moderate users, 9 (7.3%) were heavy users, and 2 (1.6%) were extreme users, and 4 (3.2) were extremely heavy users.

For the dry month of July 2003, 137 of the 227 members had meter readings. Seventy-three (53.3%) were normal uses. Twenty-two members (16%) were moderate users, 16 (11.7%)
were heavy users, and 13 (9.5%) were extreme users, and 13 (9.5) were extremely heavy uses. From the above data, this means that 34 (27.4%) members used too much water in the rainy season with 64 (46.7%), using too much water in the dry month. For the July 2003 – a normal year, there was even an increase in the amount of water that was used. This represented almost half of the participants. A further surprise was that the water used in a dry month during a normal year was more than a dry month during a drought year.

Turning from people to the amount of water used, I looked at how much water was being consumed by the participants during this time. Excluding the normal users, a total of 1,741 units were used for April 2000, 2,346 units for July 2000, 475 for April 2003, and 1,428 for July 2003. By dividing the number by 20 units, one can easily see the amount of families that could be respectively served each month: 87, 117, 24, and 71. Although the amount of water decreases for a normal year, the numbers revealed that participants were indeed using the water for agricultural purposes, which is a violation of the guidelines. This was supported by the participants’ interviews and is tolerated.
A farmer irrigates his/her field. Although field irrigation is prohibited, large-scale irrigation is tolerated as long as the member pays for the water used. This field contained feed for cows. Irrigation represents a good income for KWG, but it also robs needy families of joining KWG and having potable water.

However, to use the water in such a way does bring on unhappiness and jealousy:

**Jubulila:** They are growing rich while we are suffering (field notes, August 28, 2003).

* * * * *

**Chairperson:** This [points to farmer irrigating his field] is tolerated, but I know many people are unhappy with the situation, and this brings about much jealousy (field notes, August 21, 2003).

It is understandable that members use more water in the dry season or when there is a drought. However, these results support the belief that about a one-third of the members is indeed involved in agricultural farming – regardless of the season or if there is a drought. The
main mission of the project is to support families’ well-being and not large-scale agricultural projects!

Finally, I wish to discuss water meters. In the methodology section, I discussed how the data were cleaned and analyzed. One issue that came up was that many water meters were not functioning. This problem was especially acute for 2003, a normal year. Of the 225 participants who were registered in the log book, only 112 members fulfilled the requirement of having their meter read eight or more times. This represented only 49.7% of the total members – less than half the total membership!

Members cited the age, defects and breakdowns of the meters for not being:

**Aming’a**: My meter is old, so it no longer works. It must be changed, but there are no funds for this. I still pay basic rate fee.

* * * * *

**Dura**: From the very beginning, the dial did not go around, although a technician had visited several times.

* * * * *

**Wambui**: We thought the meter was clogged; we took it apart. Alas it had just broke down.

Yet, the members understood that the meters needed to be repaired and that a defective meter costs initiative money:

**Treasurer**: If it has been proven that the meter has not been tampered with, then the member pays a basic fee. It is a loss, but what can we do?

* * * * *
**Njarira:** It is not collecting the fees that set us behind: it is the unpaid water. We could use the money for many things.

*Figure 40. A Broken Air Ventilator Pipe*

Next to a broken six-inch main pipe, a broken air ventilator pipe represents a major repair. The chairperson and I stumbled across this break when we noticed a cow standing by the puddle, which had formed around the air duct.

The following conclusions can be drawn:

1. For Question 1, comparing a drought year with a normal year, participants use more water in a drought year.

2. In Question 2, comparing the rainy seasons in the drought and normal year, there is no difference in water use.
3. For Question 3, comparing the dry season in the drought and normal year, there is no difference among participants in the drought year.

4. In Question 4, the FOUNDERS there is no difference in water in the drought year than FIRSTWAVE and SECONDWAVE.

5. For Question 5, The FOUNDERS use more water in the normal year than FIRSTWAVE and SECONDWAVE.

6. Depending on the time of year, 10% to 30% of the participants are using the water for irrigation or agricultural projects.

7. The amount of water used in agricultural projects could serve numerous families.

8. Broken meters prevent revenues from being collected.

Recommendations

With the exception of drought, the overall consumption of water by participants stays within the guidelines, which were established. This means that the group as a whole is performing well. When one looks more closely at who is over-using water, it is found that some individuals are using too much water for irrigation. This water should be used for people instead, as the original goal was to serve people’s basic needs – not their pocketbooks.

Both developed and developing countries are under great pressure to reduce their water consumption by as much as 30% per household (EPA, 2003). Although developing countries tend to use less water per household than developed countries, there still is a need to emphasize the reduction of water in order to serve more families.

Along with rationing with meters, Lauria and Cizerle (1992) recommended a) rationing with flow restrictors, b) enforcement of rules, d) rationing by unplanned shortages, and d) rationing by planned intermittent supply. Flow restrictors, which slowdown the amount of water
being released, can be purchased for as little as a few dollars. A committee or individual can encourage enforcing rules by ensuring that people stay within their limits and that if they, don’t are fined accordingly.

Rationing by unplanned shortages refers to capacity deficits. When water flow is low due to low pressure or there is no water because of drought, people begin to change their behavior. They use less water, begin to store it, or turn on the tap in the evening or during off hours. Rationing by planned intermittent supply means that the water authority or water commission plans when, where, and how much water is allowed to be released.

Practical approaches include a) donated part of profits (1-10%) from crops to the KWG, b) a community pump for water distribution during time of drought, and c) a pay increase of 3-7%. Observation showed that KWG members are very sensible when it comes to distributing the wealth. They provide water for the school in Murinduko at under the market value. This project is highly esteemed by the community and reduces the ill feelings within the community.

If farmers are getting rich off the crops, then they should also think of how the community views them. They should also make a contribution – not just in terms of repaying the water, but in their profit as well. In this way, the money can be taken to upgrade or continue KWG’s projects.

Many members admitted to giving relatives, friends, and the less fortunate water during the drought. These actions raised their own water bill. By having a community pump, water can be rationed off at two liters per person per household. The project can also be sponsored with the contributions given by the farmers. In this way, the KWG can more closely monitor water consumption, the distribution of water, and the population without water. KWG members are
also not constantly put upon. Another benefit is that the needy are not forced to go to the rivers, which increases the level of contamination and diseases.

Finally, an increase of the price of water is needed. KWG increased the basic price from 20 KES to 26 KES in 2003. The current, basic charge for 2007 is KES 40 (S. Korte, personal communication, March 2007). However, this was only done for the basic charge. Although it is not the wish of the KWG to cause financial hardship to its members or interfere with family enterprises, the members must be made to understand how serious the overuse of the water source is. Irrigation is not to be tolerated, and it is not a right. By watering one’s fields, one is denying other family’s access to water.

It is hoped that these recommendations can be applied. Some recommendations such as flow restrictors are a serious financial investment, while others such as a community pump can be fulfilled by distributing water at the school. Regardless of how the KWG wishes to resolve its problems, there are practical solutions, which can improve conditions.
Chapter VI: Conclusion

Is KWG a Success?

In the literature review, the discussion evolved around the various theories needed to determine if a program is a success. Five paradigms were discussed:

1. Agunga’s (1997) communications approach
2. Thomas’ (1985) community empowerment approach
3. USAID’s performance measurement system [PMS] (Kumar, 1995)
4. The gender approach and women’s cohesion (Buvinić & Yudelma, 1989)
5. Transparency and accountability (UNPD, 2004; Stufflebean, 2001)

The literature review did not give a preference to any one paradigm, because the dissertation used a mixed-methods approach to look at the factors that made a successful program.

To determine which factors were associated with success, Results Mapping, an evaluation tool, was used. Results Mapping (Reed, Cheadle, & Thompson, 2000) is a process in which a series of outcomes are evaluated, ranking these outcomes in importance and assigning them a numerical value. The equation for Results Mapping is:

\[(\text{activity impact level} \times \text{service provider multiplier}) + (\text{activity impact level} \times \text{target population}) = \text{evaluation score}\]

\[(1 \times 3) + (2 \times 3) = 9\]

For activity impact level, a scoring system from 1 (low) to 7 (high) was assigned an activity (Reed, Cheadle, & Thompson, 2000). Activities are carried out by service providers who are to distribute information to the population. Reed, Cheadle, and Thompson’s multipliers for service providers and target population was used for scoring. Table 13 on page 207 shows the scoring system. For this dissertation, the reader will see the number for service provider change on each table.
This is based on who did the teaching or distribution of data: an individual, small group, or the entire club membership. When I began reading through the interviews, I looked for themes that participants frequently spoke about. For example, it was found that members could recite the by-laws. Understanding the rules would receive an activity impact level of seven, as it aids in
transparency and accountability. The by-laws were written by the founding members, who were about 60 women in the beginning. This would get a score of three. The target population for the by-laws is much bigger and includes the 224 KWG members. The target population receives a score of seven. Putting the information into the equation, one would have the following outcome:

\[
\text{(activity impact level} = 7) \times (\text{service provider multiplier} = 3) + (\text{activity impact level} = 7) \times (\text{target population} = 7)
\]

\[ \text{evaluation score of 70} \]

The number for the activity impact level will always be the same. Seven is the highest number and has the greatest impact. Seven also means that an activity has achieved a positive outcome. A score of one means the impact was not great, and the results are negligible.

The numbers for the service provider and the target population are different. The service provider is the person or persons who are distributing information. For example, when I use a service provider number of three, this can be interpreted as only certain people or the management committee is providing a service or education. Likewise, target population refers to all the people who may receive the information. For this report, this includes KWG members and their families, or a little over 2,000 people.

All numbers are added together for a score. Interpreting the scores is very simple: either one receives points or does not. One can also count the percentage of activities, which fall into the activity impact level (Reed et al., 2000). A low impact is activity levels one through two, mid-level impact is three through five, and high-level impact is six through seven.
The next question is, “Is there a fear of stacking the deck in favor of a program?” The answer is, “Yes, there is.” However, as a researcher who is supposed to be unbiased, one must also think about how to use Results Mapping to show negative impacts. For my research, I will first concentrate on the positive outcomes, and later I will address the negative outcomes.

Let us return to the literature review, where I discussed what makes a successful project. The communications approach stated that there needed to be an NGO or aid assistant, recipient, and facilitator. The KWG is the recipient, UNDP was the NGO, and the Kortes were the facilitators or the party that brought both the KWG and the UNPD together. From my interviews with the chairperson, I also found that there was an ongoing process of applying for funding either by the KWG, a facilitator such as the Kortes, or a third party. Communications about the KWG were furthered when guests and potential sponsors visited. Many times these guests and potential sponsors could not assist the KWG; however, good has come out of the encounter, because the KWG started to have name recognition within its district. From its association with the Deutsche Stiftung Weltbevölkerung, it was recognized as a successful project by the Kenyan and European newspapers (DSW, n.d.; Palmberg, 2005) and by FAWCO (2003).

Within the KWG, the bi-weekly meetings enhance communication. Here, the women are not only updated on issues regarding the pipeline, but they are also informed about new techniques in agriculture, health education, and water conservation.

Table 14 on page 210 reveals the outcome for the communication approach. Activities one through four received high-impact scores. It is the communication within the KWG that brings positive results in terms of water conservation, disease prevention, and most importantly, adhering to the rules and regulations of the organization. Activities five through eight received
<table>
<thead>
<tr>
<th>Activity</th>
<th>Target Population</th>
<th>Results</th>
<th>Activity Impact Level</th>
<th>Service Provider Multiplier</th>
<th>Activity Impact Level</th>
<th>Target Population</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. KWG holds open dialogue with its members.</td>
<td>KWG</td>
<td>T &amp; A</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>98</td>
</tr>
<tr>
<td>2. Members are routinely informed of new programs and opportunities.</td>
<td>Community</td>
<td>T &amp; A</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>70</td>
</tr>
<tr>
<td>3. New knowledge on HES, agriculture, and water conservation is exchanged regularly.</td>
<td>KWG Community</td>
<td>Community Awareness</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>9</td>
<td>84</td>
</tr>
<tr>
<td>4. KWG holds open dialogues with the government and NGOs.</td>
<td>Community Project Support</td>
<td>Community Awareness</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>9</td>
<td>84</td>
</tr>
<tr>
<td>5. KWG promotes itself and its works.</td>
<td>KWG Project Support</td>
<td>T &amp; A</td>
<td>5</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>70</td>
</tr>
<tr>
<td>6. Applies for grants and funding.</td>
<td>KWG Community</td>
<td>Project Support</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>7</td>
<td>50</td>
</tr>
<tr>
<td>7. Seeks partners, sponsors and donors.</td>
<td>KWG Community</td>
<td>Project Support</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td>8. Hosts guests, sponsors and donors.</td>
<td>KWG Community</td>
<td>Project Support</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>5</td>
<td>40</td>
</tr>
<tr>
<td><strong>Total Points</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>536</strong></td>
</tr>
</tbody>
</table>
mid-impact scores, because the outcomes are more difficult to measure. The KWG plays hosts to many guests, but only a few people are able to contribute to the organization. Likewise, winning a grant is important. However, receiving funding is much like winning the lottery: it happens very seldom, or in the KWG’s case, it has happened sporadically over the years.

From the many interviews, findings show by using the communication approach the results are a) transparency and accountability, b) community awareness, and c) project support/project funding. The majority of the members who were interviewed show a good understanding of the by-laws and demonstrate community awareness. Finally, the KWG uses facilitators and outside partners to continue to apply for funding and to improve its programs.

Thomas’ (1985) community empowerment approach basically states if a person teaches people to fish, they will have a skill for life. This goal is obtained by first recognizing one’s personal potential (no longer accepting the role of the victim) and by gaining access to resources within the environment in order to have development capacity.

Through the educational process from the UN, the Kenyan government, and the Deutsch Stiftung für Weltbevölkerung, the KWG learned valuable lessons on the democratic process, self-government, microeconomics, business management, and health education. These lessons were not only applied to running the KWG, but were also used to aid the dispensary, Murinduko School, and to form two micro-initiatives: Kugeria Grazing and Kugeria Beauty Salon.

During interviews and visits to the various homesteads, the women showed their pride in their achievements. Well-groomed kitchen gardens and fields, lodging with metal and plastics roofs, and healthy families greeted me. Although there is the constant threat of drought, there was also the knowledge that it would not leave one entirely ruined, because of the availability of water. People appeared mentally healthy, and the overall atmosphere was very positive.
Table 15 on page 213 demonstrates the results of the community empowerment approach. Naturally, the resource that the women have is the pipeline, which has been scored with a seven followed by the KWG’s role as a facilitator. The self-esteem and empowerment of people received a score of six. Scoring the topics proved to be very difficult. On one hand, there is the organization and its resources, and on the other hand, there are the people and their resources. I chose to score the resources higher, based on the common assumption that resources equal power.

Building the pipeline was given a mid-level score of five. I did this because of the time that had elapsed since building the pipeline took place. It was only the original 57 families that participated in building of the pipeline. Although this knowledge is transferable, especially when maintaining the pipeline or building water tanks, only this group had the actually knowledge of the skills to build.

Results show that by using the community empowerment approach, the KWG members experience:

1. fair access to water, a natural resource,
2. communication with their spouses, the organization, and the community,
3. increased self-esteem, personal confidence and growth,
4. material gains and wealth, and
5. education through the practical experience of building the pipeline.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Target Population</th>
<th>Results</th>
<th>Impact</th>
<th>Activity</th>
<th>Service Provider</th>
<th>Activity</th>
<th>Target Population</th>
<th>Results</th>
<th>Impact</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fair Access</td>
<td>Community</td>
<td>7</td>
<td>7</td>
<td>KWG</td>
<td>Community</td>
<td>Communication</td>
<td>7</td>
<td>4</td>
<td>9</td>
<td>112</td>
</tr>
<tr>
<td>Development capacity</td>
<td>KWG</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>9</td>
<td>KWG</td>
<td>Community</td>
<td>7</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>KWG</td>
<td>Community</td>
<td>7</td>
<td>4</td>
<td>Communication</td>
<td>7</td>
<td>KWG</td>
<td>Community</td>
<td>7</td>
<td>7</td>
<td>87</td>
</tr>
<tr>
<td>Development capacity</td>
<td>KWG</td>
<td>7</td>
<td>4</td>
<td>7</td>
<td>9</td>
<td>KWG</td>
<td>Community</td>
<td>7</td>
<td>4</td>
<td>87</td>
</tr>
<tr>
<td>Communication</td>
<td>Community</td>
<td>6</td>
<td>4</td>
<td>Self-esteem</td>
<td>6</td>
<td>KWG</td>
<td>Community</td>
<td>6</td>
<td>4</td>
<td>87</td>
</tr>
<tr>
<td>Increased both members' and</td>
<td>KWG</td>
<td>6</td>
<td>4</td>
<td>Power</td>
<td>6</td>
<td>KWG</td>
<td>Community</td>
<td>6</td>
<td>4</td>
<td>87</td>
</tr>
<tr>
<td>non-members' self-esteem</td>
<td>KWG</td>
<td>6</td>
<td>4</td>
<td>Sharing</td>
<td>6</td>
<td>KWG</td>
<td>Community</td>
<td>6</td>
<td>4</td>
<td>87</td>
</tr>
<tr>
<td>Both men and women have</td>
<td>KWG</td>
<td>6</td>
<td>4</td>
<td>Personal and Material Gains</td>
<td>6</td>
<td>KWG</td>
<td>Community</td>
<td>6</td>
<td>4</td>
<td>87</td>
</tr>
<tr>
<td>been empowered by</td>
<td>KWG</td>
<td>6</td>
<td>4</td>
<td>Education</td>
<td>5</td>
<td>KWG</td>
<td>Community</td>
<td>6</td>
<td>5</td>
<td>75</td>
</tr>
<tr>
<td>participating in the pipeline.</td>
<td>KWG</td>
<td>6</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The experiences gained from</td>
<td>KWG</td>
<td>5</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KWG empowering people to improve</td>
<td>KWG</td>
<td>5</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>their lives.</td>
<td>KWG</td>
<td>5</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participation in the pipeline has</td>
<td>KWG</td>
<td>5</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>given both men and women new</td>
<td>KWG</td>
<td>5</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>skills.</td>
<td>KWG</td>
<td>5</td>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Points</td>
<td></td>
<td>524</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The community empowerment approach is vital, because it also facilitates important political dialogues between the KWG and the community. That is, within the community the KWG respects the key players who are leaders and who are vital to the community’s existence. This can be seen in the story of the broken pipeline in which the area chiefs, the KWG, and the police worked together to find a solution.

USAID’s performance measurement system [PMS] (Kumar, 1995) requires that a program’s objectives be analyzed, that these goals and objectives be quantifiable, and that the data be analyzed. The KWG had as its main goal to provide potable water to its members. The additional goals the organization has were a) to impose the use of water meters on its members, b) not to overuse water during a normal year or drought, c) to maintain a solvent business and staff, and d) to build a second holding tank.

Table 16 on page 206 shows the KWG’s objectives. The primary objective was to provide water. From here, other goals were established such as the KWG paying its employees on time and members paying their water bills on time.

One may notice that all ten activities received a seven. This was done, because of the importance each of these activities has had on the success of the overall program. A successful program hits its goals, which are interconnected to each other.

It may also be noticed that activity six has been given a negative rating. This was based on the fact that although the KWG used less water in the drought, the amount of water that was consumed was so great, as to provide many families with water. During the dry month of July 2000, 2,346 units were used. This represents 117 families who could have had water, but did not. If a goal is not met, then there should be no points awarded.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Target Population</th>
<th>Results</th>
<th>Activity Impact Level</th>
<th>Service Provider</th>
<th>Activity Impact Multiplier</th>
<th>Target Population Level</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The KWG provides water on time to its members.</td>
<td>Families</td>
<td>Service</td>
<td>7</td>
<td>4</td>
<td>7</td>
<td>9</td>
<td>91</td>
</tr>
<tr>
<td>2. The target population is served.</td>
<td>Families</td>
<td>Service</td>
<td>7</td>
<td>4</td>
<td>7</td>
<td>9</td>
<td>91</td>
</tr>
<tr>
<td>3. Meters are read on time.</td>
<td>Families</td>
<td>S, T and A</td>
<td>7</td>
<td>2</td>
<td>7</td>
<td>9</td>
<td>77</td>
</tr>
<tr>
<td>4. Members pay bills on time.</td>
<td>Families</td>
<td>S, T and A</td>
<td>7</td>
<td>8</td>
<td>7</td>
<td>9</td>
<td>119</td>
</tr>
<tr>
<td>5. Annual water usage does not go over established norms for a normal year.</td>
<td>Families</td>
<td>Service T and A</td>
<td>7</td>
<td>8</td>
<td>7</td>
<td>9</td>
<td>119</td>
</tr>
<tr>
<td>6. Water usage does not go over established norms for a drought year.</td>
<td>Families</td>
<td>Service T and A</td>
<td>7</td>
<td>4</td>
<td>7</td>
<td>9</td>
<td>-91</td>
</tr>
<tr>
<td>7. The pipeline is kept in good running conditions.</td>
<td>Families</td>
<td>Service</td>
<td>7</td>
<td>3</td>
<td>7</td>
<td>9</td>
<td>84</td>
</tr>
<tr>
<td>8. Employees are paid on schedule.</td>
<td>Employees</td>
<td>T and A</td>
<td>7</td>
<td>3</td>
<td>7</td>
<td>3</td>
<td>42</td>
</tr>
<tr>
<td>9. Bookkeeping is run in an orderly fashion.</td>
<td>KWG</td>
<td>T and A</td>
<td>7</td>
<td>2</td>
<td>7</td>
<td>9</td>
<td>77</td>
</tr>
<tr>
<td>10. Bank account is maintained.</td>
<td>KWG</td>
<td>T and A</td>
<td>7</td>
<td>2</td>
<td>7</td>
<td>9</td>
<td>77</td>
</tr>
<tr>
<td><strong>Total Points</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>686</td>
</tr>
</tbody>
</table>

Note: *S is the abbreviation for service. T and A is the abbreviation of transparency and accountability.
Water conservation is an important goal to meet. To give points when this goal has not been met is detrimental to this evaluation.

In the methodology section, I stated my intentions were not to get into the quantitative-qualitative polemics on which methodology was better. By analyzing the water data using SPSS, the statistics have helped to better interpret if the KWG was a success. It has also assisted in establishing whether the KWG’s goals were being met. Furthermore, organizations such as USAID and the UN rely on such data to help them better assist the very people who need aid. The statistical data show that the KWG is, indeed, meeting its goals in most areas.

The gender approach requires that both men and women participate in a project. It is inclusive rather than exclusive. The KWG used the gender approach suggested of the Kortes and UNDP. The KWG is a women’s initiative that relies on the women, their spouses and families, and the community to help its organization. Both men and women were responsible for building the pipeline, both genders helped make key decisions to support the initiative, and both genders have profited from the results. By using the gender approach, traditional hierarchies were respected, which lead to both men and women being more willing to support the organization. The KWG also employs men as technicians and day laborers to maintain the pipeline. This employment brings a welcome source of income to families.

Women’s cohesion (Buvinić & Yudelma, 1989) supports women’s decision making, encourages their participation, provides a supportive environment for learning, and allows women to catch up to male competition so that they can enter the formal economy. For many women, the pipeline is their introduction into the formal economy, albeit on the microeconomic level. Much education went into the training of the women, so that they were able to participate fully in running their organization.
Table 17 on page 218 shows the findings for the gender and women’s cohesion approaches. Successful outcomes were a) equitable distribution of resources, b) equal opportunity to participate for the various social and ethnic groups, c) respect for tradition, d) community outreach, e) happier and healthier families, and f) introduction into the formal economy. Activities one through five received high outcome scores; activities six through seven received mid-outcome scores. This was done, because the original goal was to have access to potable water – not to enter the formal economy or gain knowledge. Therefore, activities six through seven can be considered unintentional, positive outcomes.

A note on women’s roles: Murinduko is still a traditional village, where each ethnic group respects the tradition in which they were raised. The reader should not assume that because a water pipeline has been built, all gender issues have disappeared. This is not the case. Many women still live in fear that their husbands will take a second wife, that the land they live on will be taken from them if their husbands or eldest son dies, or that they might experience some traumatic abuse at the hands of their husbands, fathers, grandfathers, or uncles. These fears are multiplied by crop failure, which leads to famine, and the spread of diseases, especially AIDS and water-borne illnesses, because one is not able to purchasing medication and condoms due to lack of money. Although the pipeline has increased women’s awareness on many levels, it still does not improve the situation for poorly educated women and girls. Few women in Murinduko actually have the freedom to leave on their own accord.

What the pipeline has done for women and their families is make them more valued members of the community. By *more valued*, I mean that they are making an important contribution, which is respected by both genders.
Table 17

*Gender and Women’s Cohesion Approaches*

<table>
<thead>
<tr>
<th>Activity</th>
<th>Target Population</th>
<th>Results</th>
<th>Activity Impact Level</th>
<th>Service Provider I Multiplier</th>
<th>Activity Impact Level</th>
<th>Target Population</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The KWG integrates both men and women into their programming.</td>
<td>KWG and Community</td>
<td>Equitable Distribution</td>
<td>7</td>
<td>3</td>
<td>7</td>
<td>9</td>
<td>84</td>
</tr>
<tr>
<td>2. The KWG integrates people of all social and economic standing into their organization.</td>
<td>KWG and Community</td>
<td>Equal Opportunity</td>
<td>7</td>
<td>3</td>
<td>7</td>
<td>9</td>
<td>84</td>
</tr>
<tr>
<td>3. The KWG demonstrates an understanding of social, cultural, economic, and gender hierarchies.</td>
<td>KWG and Community</td>
<td>Respecting Tradition</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>9</td>
<td>84</td>
</tr>
<tr>
<td>4. KWG uses its knowledge of gender hierarchies to run its program for the advantage of all.</td>
<td>KWG and Community</td>
<td>Community Outreach</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>9</td>
<td>84</td>
</tr>
<tr>
<td>5. Women’s cohesiveness is used to run the KWG.</td>
<td>KWG</td>
<td>Community</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>9</td>
<td>72</td>
</tr>
<tr>
<td>6. Women are encouraged to educate themselves in non-traditional areas.</td>
<td>KWG Families</td>
<td>KWG</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>9</td>
<td>75</td>
</tr>
<tr>
<td>7. Women participate in the formal economic sector.</td>
<td>KWG</td>
<td>Intro to Form. Econ.*</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>9</td>
<td>75</td>
</tr>
</tbody>
</table>

**Total Points** 558

*Note:* *a* Introduction into the formal economy.
This contribution cannot be overlooked or made insubstantial. It is this fact that makes conditions easier for men and women to work together on the pipeline. Men value the contribution of the pipeline, which both genders help to construct. Based on this contribution, men value and appreciate their wives more, leading to a more equitable relationship. Men still hold the power in key decision-making, but through the pipeline, women have earned a higher status, leading to more power for women within the relationships.

I experienced this first hand when visiting the homesteads. When interviewing the women, the husbands were often there. They would sit near their wives and smile and shake their heads up and down in time to the conversation. The husbands would, “Eeh,” and “Ahh” (a form of agreeing) at the answers the wives gave. Not once during the interviews did I meet a husband who would not allow his wife to participate. Although I was not privy to how the married couple communicated before the pipeline, I took the husbands’ supportive behavior toward their wives, as a positive sign of what the water pipeline did to their relationships.

If I felt that a member was being extremely shy, I would try to meet her on the road to make sure her answers were correct or see if she had anything to add. The stories that were told were mostly of their husbands acting belligerent and not wanting to support the initiative at the beginning, stories that might embarrass the husbands if told to a stranger.

Of all the theories mentioned, transparency and accountability can be considered the two most important elements of a program. To help establish transparency and accountability, the UNDP’s (2004), Anti-Corruption: Practice Note stated that an organization or government must reduce the opportunities for corruption, support the legislative and judicial process, and educate the younger generations to become responsible citizens. This was to be done by establishing independent investigators for accountancy and a simplified judiciary program.
Stuffelbean (2001) had a more practical approach to transparency and accountability by asking key questions such as, “What are a project’s goals, what are the positive and negative outcomes, and how does the program operate to succeed?” For quantitative analysis, questions such as, “How does a test group compare to others, and how did the test group measure up to other programs of the same caliber?”

Looking at Table 18 on page 221, the transparency and accountability approach taken by the KWG are shown. The three most important outcomes are transparency and accountability of the organizational and financial structures, financial responsibility by the members, and understanding the democratic process. Two-thirds of the activities listed received a score of seven for the impact level. The remaining one-third received a score of six.

For activities four and five, negatives scores were given because the KWG did not meet the criteria. It is important that the KWG have outside auditors and that they hire a revenue clerk and/or treasurer who is independent of the organization. When I visited Murinduko, I learned that the current treasurer whose duties included payroll and collecting membership fees and revenue clerk whose duties included keeping the water ledger and collecting water fees were a vast improvement over previous members, who had made several serious errors in the accounts. Although there was improvement in the situation, this may not be so in the future.

Yet, transparency and accountability cost money. One of the biggest issues of transparency and accountability is the cost factors related to good governance, which is defined as methods government or society use to manage resources and to distribute power (UNPD, 1997). The World Bank (1999), ACFOA (2003) and UNPD (1997) call for better governance through democratic reform, outside controllers, and more stringent laws, but they often fail to address the issues of what all these costs.
Table 18

*Transparency and Accountability Approach*

<table>
<thead>
<tr>
<th>Activity</th>
<th>Target Population</th>
<th>Results</th>
<th>Activity Impact Level</th>
<th>Service Provider Multiplier</th>
<th>Activity Impact Level</th>
<th>Target Population</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Member understood legislative and organizational processes</td>
<td>KWG</td>
<td>Dem. Proc.&lt;sup&gt;a&lt;/sup&gt;</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>84</td>
</tr>
<tr>
<td>2. The democratic process is adhered to.</td>
<td>KWG</td>
<td>Dem. Proc.</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>84</td>
</tr>
<tr>
<td>3. The KWG has balanced books and transparent accounts.</td>
<td>KWG</td>
<td>T and A</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>84</td>
</tr>
<tr>
<td>4. The KWG allows for outside audits of bank accounts.</td>
<td>KWG</td>
<td>T and A</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>-84</td>
</tr>
<tr>
<td>5. The KWG has improved financial management controls.</td>
<td>KWG</td>
<td>Financial Responsibility</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>-84</td>
</tr>
<tr>
<td>6. Members understood the consequences of not paying water bill or committing illegal acts.</td>
<td>KWG</td>
<td>Financial Responsibility</td>
<td>7</td>
<td>5</td>
<td>7</td>
<td>7</td>
<td>84</td>
</tr>
<tr>
<td>7. Members understood organizational and legislative processes.</td>
<td>KWG</td>
<td>Dem. Proc.</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>72</td>
</tr>
<tr>
<td>8. Grooming of future committee members is a priority.</td>
<td>KWG</td>
<td>Dem. Proc.</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>72</td>
</tr>
<tr>
<td>9. Member knew when water fees, fines, and dues were owed and how calculated.</td>
<td>KWG</td>
<td>Fin. Resp.&lt;sup&gt;c&lt;/sup&gt;</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>72</td>
</tr>
</tbody>
</table>

**Total Points** 564

*Note.* <sup>a</sup>The abbreviation for democratic process is Dem. Proc. <sup>b</sup>The abbreviation for transparency and accountability is T and A. <sup>c</sup>Fin. and Resp. is the short form for financial responsibility.
Brett (2003) discussed these issues in his article on the participatory theory of managing development projects in developing countries. Participatory theory focuses on how disadvantaged members of society influence decisions that affect them by interacting with the development of a project. Brett (2003) reviewed dozens of development projects that failed because of poor governance and lack of transparency and accountability. For projects that failed, it was found that a) the agency itself was inefficient, b) recipients had to adhere to the agency’s agenda, c) participatory levels among recipients were low, and hierarchies ignored, and d) financial obligations of the micro business were so great as to make the project ineffective.

The cost factor of good governance should be taken into consideration by the KWG. True, there is a need for outside administration, but the organization must look at:

1. the percentage of there budget or revenues that can in actuality be allotted towards good governance,
2. the reputation of the company or organization that will handle the audits: is the company bonded, and does it have a good track record?
3. the quality and quantity of services provided: money for value based on hours worked and services delivered,
4. long-and-short-term results of having good governance, and
5. if the financial commitment, which may turn into a sacrifice, is worth it over the long term.

The women of the KWG have governed themselves extremely well over the years. The KWG has been in existence for almost 20 years, and their methods seem to be effective. However, with the dramatic increase in the number of families who are receiving water, it is now time to
plan for the long-term success of the project. The pipeline should continue to serve the next
generations. This can only happen when good governance is in place and maintained over time.

Members also voiced their concern about the eventual retirement of the current
chairperson. Many felt that she could not be replaced and worried about her successor, and what
would happen to the club. I talked to her about these two pressing issues:

I have told the women that I cannot go on forever. They know that I will only stay one
more year. I have my eye on several women who have fine qualities to lead, but our
main problem is that of education. The majority of our members do not have the
education it takes to perform the chairperson’s job. This and the fact that I cannot decline
office if elected, are the main reasons why I have stayed in the position so long. There
are also some very fine candidates, but they do not have the status [that of the daughter of
a chief or high ranking government official]. This is a problem since all sides must
accept the chairperson. Then there is the treasurer. She is doing an excellent job, but she
has been ill lately. The people who follow us will have a difficult time of it. They must
convince the people they are capable, they must keep financial matters in hand, and they
must both lead well and be strict with the ladies, because if they are not, then the
members will not respect them, and the KWG will cease to exist. All our hard work will
be for want.

The chairperson was well aware about the KWG’s dilemma. She was actively looking at
possible candidates and understood the difficult task of naming a successor. Her greatest
obstacle was the lack of education that many members failed to have. We spoke about these
issues, and I made the following recommendations:
I know that it would be a difficult burden for the KWG, but would it be possible for you to sponsor a girl who is studying bookkeeping at one of the Kenyan universities or colleges? She would then have to spend five or six years working in return as the revenue clerk. Or you could have two chairpersons: one who is respected and is considered the chief, and one who is clever and is dealing with the financial matters, the government and visitors.

The chairperson was very gracious and said she would consider my recommendations.

I have since been informed by Susan Korte (personal communication, February 21, 2007) that a new chairperson, whom I interviewed, has been elected. When I heard this news, I practically danced with joy. Earlier, I wrote about how the KWG preferred authoritarian leadership and wanted a chief. They have strong social bonds that are based on tribal customs. Respect comes out of tradition and is based on heredity. This concept is in contrast to democracy, which at times rejects nepotism, tribalism or leadership based on heredity.

As the CEO of the KWG, the chairperson has taken a significant step by handing in her resignation. She is taking a risk. This is something Africans are not used to doing. Blunt and Jones (1992):

\[
\ldots \text{studies confirm a pattern whereby senior African managers seldom display their leadership by undertaking administrative reforms. Such conservative behavior is understandable because taking the lead in reforming any organization involves, ‘some form of risk taking or at least perceived risk taking.’ This is ‘the last type of managerial behavior to be encouraged by the kind of autocratic culture which appears to be typical in many African organizations. (83) }
\]
Like the Queen Elizabeth II of England, the chairperson could go on forever, as long as the people were happy. However, she did not do this. She used her traditional authority to ensure that the democratic principles that were taught were also enforced. She understood when her reign was over. Ndongko (1999) also wrote on risk-taking by Africans:

Despite their common aversion to risk taking, many African managers appear to realize that taking risks is essential for their success. Lenard (1988), for example found this to be true in his study of four successful Kenyan managers. He found that these managers shared a number of qualities: ‘professional competence and integrity, access to donor resources, skills at maintaining staff quality and commitment through the trials of Africanization.’ (¶ 78)

The chairperson’s resignation represents an opportunity in which the KWG can employ its years of training to continue the success of the club. By resigning, the chairperson is encouraging the remaining members to take an active part in the future of the KWG. The women have been trained in the fundamentals. They must now employ what they have learned and take on the responsibility for good governance.

Stufflebean (2001) asked an important question of a successful program, “What has it produced?” (pp. 34-35). Some of the most significant outcomes of the pipeline are the improvements in health and sanitation, and water conservation. Table 19 on page 226 illustrates the outcomes of the water pipeline. Of the 11 outcomes, almost three-quarters fall under water conservation and the remainder under health and sanitation. About 80% of the activities are scored as high impact. For activities two and four, points were deducted because the rules and regulations were not followed for water conservation.
Table 19

Water Conservation, and Health and Sanitation

<table>
<thead>
<tr>
<th>Activity</th>
<th>Target Population</th>
<th>Results</th>
<th>Activity Impact Level</th>
<th>Service Provider Multiplier</th>
<th>Activity Impact Level</th>
<th>Target Population</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Water saving devices or techniques are used on member’s homestead.</td>
<td>Families</td>
<td>Conservation</td>
<td>7</td>
<td>3</td>
<td>7</td>
<td>8</td>
<td>77</td>
</tr>
<tr>
<td>2. Members do not over-use water during the dry season.</td>
<td>Families</td>
<td>Conservation</td>
<td>7</td>
<td>3</td>
<td>7</td>
<td>8</td>
<td>-77</td>
</tr>
<tr>
<td>3. Members do not over-use water during the normal season.</td>
<td>Families</td>
<td>Conservation</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>8</td>
<td>66</td>
</tr>
<tr>
<td>4. Large-scale irrigation is not tolerated.</td>
<td>Families</td>
<td>Conservation</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>8</td>
<td>-66</td>
</tr>
<tr>
<td>5. General improvements in health have been noticed.</td>
<td>Families</td>
<td>Health and Sanitation</td>
<td>6</td>
<td>3</td>
<td>6</td>
<td>8</td>
<td>66</td>
</tr>
<tr>
<td>6. Tap is surrounded by vegetation.</td>
<td>Families</td>
<td>Conservation</td>
<td>6</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>55</td>
</tr>
<tr>
<td>7. Vegetation is planted on homestead to prevent large-scale erosion.</td>
<td>Families</td>
<td>Conservation</td>
<td>6</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>55</td>
</tr>
<tr>
<td>8. Kitchen garden planted for emergencies.</td>
<td>Families</td>
<td>Conservation</td>
<td>6</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>55</td>
</tr>
<tr>
<td>9. Latrine (outhouse) is located away from the house.</td>
<td>Families</td>
<td>Health and Sanitation</td>
<td>6</td>
<td>3</td>
<td>7</td>
<td>8</td>
<td>74</td>
</tr>
<tr>
<td>10. Monoculture is not used on homestead.</td>
<td>Families</td>
<td>Conservation</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>8</td>
<td>55</td>
</tr>
<tr>
<td>11. Homestead is neat and tidy.</td>
<td>Families</td>
<td>Health and Sanitation</td>
<td>5</td>
<td>8</td>
<td>4</td>
<td>8</td>
<td>72</td>
</tr>
</tbody>
</table>

Total Points 575
The International Decade for Action, ‘Water for Life’, 2005-2015 (UN, 2005a) is part of the United Nation’s millennium development goals (MDGs). Vandemoortele (2005) wrote that to achieve the MDGs, one would have to:

achieve gender equality, halve the proportion of people suffering from hunger; guarantee that all children complete primary school; reduce by two-thirds a child’s risk of dying before age five; cut by three-quarters the mother’s risk of dying from pregnancy-related causes; and halve the proportion of people without access to safe drinking water. (pp. 1-2)

The KWG is well on its way to achieving many of the goals mentioned by Vandemoortele. This is especially true in the area of water conservation. The organization has worked ceaselessly to ensure that members build holding tanks, plant nutritionally sound crops, control erosion, and stop preventable diseases such as water-borne illnesses.

By providing water, KWG is also ensuring its members economic success. This is an important outcome to development projects, according to the UNDP (1997). The UNDP theorized that if an organization has good governance, then economic prosperity will be one of the positive results. It went on to state that sustainable development was also a product of economic success and good governance. Countries and organizations cannot expect to grow if there is an imbalance.

Returning to Vandemoortele (2005), he predicted that although there was a slump in meeting the MDGs in the 1990s due to declining foreign aid, high debt in developing countries, and AIDS, the outlook for the new millennium is positive. Vandemoortele (2005) pointed out that more developing countries are becoming independent from developed countries, and are increasingly taking on their social and financial responsibilities. Furthermore, developed
countries are not only taking on more responsibility for the harm, which they have caused
developing countries, but they also are becoming more prudent in regard to good governance and
aid accountability, which they give to developing countries. When this is done, both developed
and developing countries become more responsible.

Because of these developments, improvements by developing countries should be looked
at on a country-by-country basis – not using the traditional yardsticks of the past, such as
comparing a developed countries income with a developing country (Vandemoortele, 2005). A
developing country will always lose regardless of gains made, because a developed country’s
wages are only a fraction of a developed country. By looking at a country-by-country basis,
projects such as the KWG are able to show their achievements. In closing, Vandemoortele
(2005) wrote, “It is pessimism, skepticism and cynicism that are the three worst enemies of the
global anti-poverty agenda. Its three best friends are, first, the space to adapt and tailor global
targets to the national context . . . an explicit focus on equity . . . [and] a quantum leap in
imagination” (p. 10).

I would be biased as a researcher if I only spoke highly of the subject. One outcome,
which I have already spoken about, was the fact that the KWG’s founding principle of providing
affordable water to the members of the community is no longer applicable. Table 20 on page
229 documents the project’s negative outcomes. Three-quarters of the activities deal with fair
access to water, while one-quarter focuses on the distribution of water during the drought. All
are scored as high-impact activities, with negative points given instead of positive.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Target Population</th>
<th>Results</th>
<th>Activity Impact Level</th>
<th>Service Provider Multiplier</th>
<th>Activity Impact Level</th>
<th>Target Population</th>
<th>Total Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative impact points</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. The initial start-up is unobtainable by poor families.</td>
<td>Community</td>
<td>Fair Access</td>
<td>7</td>
<td>3</td>
<td>7</td>
<td>9</td>
<td>-84</td>
</tr>
<tr>
<td>2. Poor families are excluded, based on price.</td>
<td>Community</td>
<td>Fair Access</td>
<td>7</td>
<td>3</td>
<td>7</td>
<td>9</td>
<td>-84</td>
</tr>
<tr>
<td>3. Few options for water are given, especially during a drought.</td>
<td>Community</td>
<td>Distribution</td>
<td>7</td>
<td>3</td>
<td>7</td>
<td>9</td>
<td>-84</td>
</tr>
<tr>
<td>4. Water has increased the awareness between the haves and have-nots.</td>
<td>Community</td>
<td>Fair Access</td>
<td>7</td>
<td>3</td>
<td>7</td>
<td>9</td>
<td>-84</td>
</tr>
<tr>
<td>Total Points</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-336</td>
</tr>
</tbody>
</table>

| Bonus Points | | | | | | | |
| 5. The KWG uses pipeline to full capacity. | Community | Conservation | 7 | 3 | 7 | 8 | 77 |
| 6. Additional families added as customers. | Community | Fair Access | 7 | 3 | 7 | 8 | 77 |
| Total Points | | | | | | | 154 |
To say that the KWG has acted negligently in light of these problems would be unfair.

In fact, the opposite is true: the organization has expanded the pipeline to include almost 300 families – an increase of about 30%. The pipeline is working to its maximum capacity, and as we found in Question 8, the water that is available is limited. The chairperson stated it perfectly:

> Many people think that we are very ignorant of the plight of others. This is not true. I am well aware of it, because I see it every day. Do you not think it pains me to see my neighbor make the trip to the river or well everyday – her children in tow? Or an old woman who has worked hard all her life, struggle up a hill with a jerrycan? Knowing that many can’t afford water is a heavy burden. I thought that my life would be easier, but then I saw all of those who don’t have water. Then I am asked for something I cannot give. Moses led his people to the Promise Land, but the troubles of the Chosen People were far from over. I understand Moses very well.

Because the pipeline is working to its maximum capacity and because the KWG allowed more families into the organization, the KWG was awarded 100 bonus points based on these facts.

Table 21 on page 231 calculates the letter grade for the KWG. As one can see the organization received a grade of B. The Kugeria Women Group can consider their water pipeline project a success. Although they have been docked points for negative impacts, transparency and accountability, water conservation, and health and sanitation, all other grades are excellent. Communication, community empowerment, PMS, gender approach and women’s cohesion, and transparency, and accountability are the strengths of the project. These strengths carry the project, making it a good example for the community. Despite the problems, the women should be extolled for their accomplishments. Maintaining the pipeline is no small feat, considering the conditions in which the women must work.
Table 21

Report Card For Kugeria Women Group Pipeline

<table>
<thead>
<tr>
<th>Approaches</th>
<th>Earned Points</th>
<th>Possible Points</th>
<th>%</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>536</td>
<td>536</td>
<td>100</td>
<td>A</td>
</tr>
<tr>
<td>Community Empowerment</td>
<td>524</td>
<td>524</td>
<td>100</td>
<td>A</td>
</tr>
<tr>
<td>Performance Measurement System</td>
<td>686</td>
<td>868</td>
<td>79</td>
<td>C</td>
</tr>
<tr>
<td>Gender Approach and Women's Cohesion</td>
<td>558</td>
<td>558</td>
<td>100</td>
<td>A</td>
</tr>
<tr>
<td>Transparency and Accountability</td>
<td>564</td>
<td>720</td>
<td>78</td>
<td>C</td>
</tr>
<tr>
<td>Water Conservation, and Health and Sanitation</td>
<td>575</td>
<td>718</td>
<td>80</td>
<td>B</td>
</tr>
<tr>
<td>Negative Impacts Points(^a)</td>
<td>-336</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Bonus Points(^a)</td>
<td>154</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Total Points/Final Grade(^b)</td>
<td>3,261</td>
<td>3,924</td>
<td>83</td>
<td>B</td>
</tr>
</tbody>
</table>

*Note. \(^a\)As negative impact points and bonus points are seen given as an award or a reprimand, they were not graded. \(^b\)Final grade calculated as 3261/3924=83%.*
The KWG has a successful project because it has learned how to integrate six vastly different approaches to support its pipeline, as Figure 41 below shows:

![KWG's Six Approaches to Program Success](image)

**Figure 41. KWG’s Six Approaches to Program Success**

The KWG’s pipeline represents a well-planned program that demonstrates a keen understanding of:

1. community structures and hierarchies,
2. obligation toward its goals and commitments,
3. fulfilling administrative duties,
4. understanding of the democratic process,
5. responsibility towards community outreach, and
6. empowerment of both men and women.

By using vastly different approaches, the KWG has shown its mastery of the principles, which the UN, *Deutsche Stiftung Weltbevölkerung*, FAWCO, and other NGOs use as their basis for rewarding grants. The KWG’s water pipeline supports the thesis that if an organization follows established guidelines from reputable agencies, then success is imminent (UNDP, 1997).

These six approaches are interconnected and work together to show a complete picture of the pipeline. This picture illustrates both the positive and negative outcomes that are associated with the program. It also gives a more balanced interpretation of the program. There is suffering in Kenya, but the suffering has been reduced. For a small group of women in Murinduko, the suffering has been replaced with hope for the future. Thus, there is good news from Africa instead of the steady diet of disaster pornography.
Epilogue

Promises to Keep

I returned from Kenya in September 2003. Like many travelers, I had fallen in love with Africa upon my one of my first visits. My enthusiasm ran high. It still does. I talked to everyone who would listen about my amazing trip. Remembering my promise to the chairperson, I was determined to obtain funding for the program. I first turned to the AWCC, which gave a small donation that I sent straight off to the Kortes. Not satisfied with the donation, I asked our president if our chapter could sponsor the project for a Development Grant from FAWCO. I was surprised at the reply:

President: MaLinda, I have some good news and some bad news. The bad news is our chapter will not sponsor a project or scholarship candidates this year. Our chapter has been extremely lucky in receiving FAWCO Awards. AWCC has received over USD 15,000 in scholarships and grants within the last five years. I was at nationals last year, and although no one held it against us, there was a bit of disbelief about the success of the club in winning so many grants. After all, we are only a small group of 100 women compared to chapters in London and Frankfurt with thousands of members. Our chapter also wants to make a sizeable donation, so that we can offset what we have received from the foundation. The good news is that we can sponsor the project in two years.

MaLinda: But these women don’t have two years to wait. They’ve just experienced another drought, and they can’t afford to build a second pipeline.

President: It is not that I don’t think the project deserves a chance. I just want to ensure that we give other chapters fair access to the funds.

MaLinda: Our chapter has won fairly; we haven’t stuffed the ballot box.
President: We’ve won, because we have an advantage over other chapters in terms of writing grant proposals and filling out scholarship applications.

MaLinda: Yes, I get your point. Our club members have an edge that the others don’t, but we can’t change that or can we? [Something told me the all-important request was about to come up. It always does with volunteer clubs.]

President: Well, for starters, we can hold grant and scholarship writing courses here in Cologne and maybe invite the women from Bonn, Düsseldorf, and Frankfurt. And then at nationals, maybe you could do the same there. It would also be good to present your findings at nationals, so the women can see that the scholarship money you won has been well spent.

On one hand, I wanted to cry. My beloved program had to wait, because our club was too successful. On the other hand, FAWCO was not a me-phi-me organization. It was established so that women who lived abroad could help each other (FAWCO.org, 2007). I thought back on my sorority’s motto: One Mission, One Sisterhood: Empowering Communities Through Committed Service. There was no way out of it; I had to make a commitment for the long term in order to help the KWG. The president of AWCC, the chair of the charity committee, and I began the process of setting up workshops to aid members in filling out scholarship and grants forms.

As I had two years to wait, I went about the business of seeking aid money. And business it was. My first experience of making a presentation was disastrous and proved how inexperienced I was at fundraising. A local perish had been willed money to aid in philanthropic projects. I got wind of this and quickly made a Power Point Presentation on my beloved project.

---

7 Me-phi-me (me for myself) is a slogan used by many fraternities and sororities to express the selfishness of an individual member towards fellow members, the community, or society.
I filled out the forms (in German) and sat in a cold church with ten other competitors. I was sixth on the agenda. The five people before me were professional lobbyists for their organizations. Presentations were to be kept to seven minutes. These professional lobbyists used Quick Time Windows for movies, PPT, and Leica professional slide shows. The needy jumped out at the viewer in multi-color sight and sound. These images I will never forget. It made my seven-minute slide show look like a kindergarten drawing. I could only offer original research with five pictures.

I looked about and spotted a woman in an Armani suit, which made my three-year-old Calvin Klein look like ten-year-old rags. The sound of a squeaking door signaled the slipping out of the church of a very rotund, middle aged housewife with a silk headscarf. Wasn’t she number seven, after me? I would have gone after her, but I was next in line and didn’t want to lose the opportunity to present.

What could I say after five presentations that were professionally done? I was tongue tied and stammered through my presentation like a high-school freshman. Later, when refreshments were served, I made a quick escape, shaking the right reverend’s hand and thanking him, using the German formal Sie. A month later, I received the first of many rejection letters. The funding had gone to – surprise – one of those professional lobbyists. I had just learned my first lesson: the poor are a business, and their organizations have a set of professional pimps, who pimp their projects. I learned on that night: it ain’t easy being a pimp. As for the use of the word pimp, that was what I was told by a reviewer, “Frau Hill your project is all very nice, but you must really learn how to pimp your project better.”

---

8In 2006, the song, “It’s Hard Out Here For a Pimp” by Jordan Houston, Paul Beauregard, and Cedric Coleman won an Oscar for best song, popularizing the word pimp. Although very crass, the word has slipped into every day-vocabulary use. “To pimp oneself” literally means to improve one’s appearance or to sell oneself better (wikepedia.com, 2007).
What could I do? I didn’t have a professional media company that could go down to Kenya and film my project to ensure its success. I quickly changed strategies and sat down with my mentors who were professional businesswomen. Six people went through my slide show and offered their advice. Slides were rearranged and speeches rewritten. I became a professional pimp on a modest scale, with 25 good slides and tons of information! You want to know how many children die of water borne diseases. Ask me. I could give you a good run down. I still can today.

Despite my upgrade in my presentation skills, success did not come. My biggest defeat came on a miserable, rainy day in October 2004. A friend who worked for the same financing company as Tiger Woods informed me that Germany’s largest bank was giving away micro credits. The big time! I only wanted €3,000 to build a water tank for the women – it was not as if I were asking for €1,500,000 to build a second and third pipeline. The chairperson sent me a proposal for material costs, my statistics purred like a kitten, and my Power Point Presentation sang and danced.

I was also ready, having spent 15 hours braiding my hair, painting my nails, and practicing to answer coolly, when confronted with difficult questions. I was known to be the typical loud American, who spoke her mind and didn’t mince words. Diplomacy and tact were not known to be my forte, but for the eight minutes I would be a goodwill ambassador. I prayed to all I knew – my family and friends, Nelson Mandela, Jimmy Carter, Ghandi, Kofi Anan, MLK, Jr., Bill Gates, and Oprah Winfrey – to get a water tank built: “Please people show me the tact and diplomacy that you display so well in your lives.” The day finally came, and I remember during the middle of my pitch this simple conversation:
CEO: Frau Hill, your project seems financially feasible. How much are you looking to borrow?

MaLinda: As the Euro is very high, the project could get by with €3,000. Naturally, this sum could be rounded up to €4,000. However, I am of the understanding that winning requests under €10,000 are given grants, which do not have to be repaid.

CEO: That is very true, but we are looking for major investments in Africa, which will have substantial returns within 10 to 15 years of our investment.

MaLinda: The women want to build a second pipeline. The original cost was USD 35,000 [then €37,000]. The price has doubled since then and would stand at about USD 75,000 (then €82,000) [chuckles were to be heard at the conference table, which told me I had already been written off].

CEO: Frau Hill, using an interest rate of 6.5%, how long would it take the women to pay back $75,000.

MaLinda: Many years, they are paying about 50 cents a month for basic charges.

CEO: I see, so our money would be poorly invested.

MaLinda: Oh, no, the €4,000 would be put to work in a proven project. By increasing the infrastructure now, you will be able to invest later. It would take 20 to 40 years for this region of Kenya to develop into a mid-size, modern metropolitan area. We would both be well into retirement before any actually wins could be realized, Sir.

CEO: If your project cannot pay back the loan, what other collateral does your organization have?

MaLinda: Pigs, cows, and sheep –
CEO: So you have nothing. [This was the write-off, because he closed the KWG’s file and pushed it across the table, but I couldn’t allow him to have the last word – the CEO had just hurt my pride.]

MaLinda: Sir, it is my understanding that your bank took a €49 million loss in university school loans, because students who are unemployed defaulted. Furthermore, Stern magazine wrote that about 7% of these students didn’t need the loans, but received them. They went on holiday and bought cars [this got nervous giggles, but I suddenly had the board’s attention.] I would like for you to know that the KWG would employ over 20 youth and day laborers to build the water tank, would purchase building materials from local, national and international distributors, and would use the tank to lessen the drought for citizens. Furthermore, the skills learned by the youth assist them in getting construction jobs in the booming towns of Nairobi and Mombassa. I assure you that if you invest in our project, the money would be well spent. No one would be going on holiday or buying cars. The people would be tending their fields and discussing new ways to make a profit.

CEO: You are determined, aren’t you Frau Hill?

MaLinda: Thank you for the compliment. I am happy you noticed [big smile].

I left that room, wanting to cry. In fact, I did just that. I got on the elevator of the high rise, punched the observation deck, got off, and asked directions to the WC. I just wanted to build my water tank and had blown it, because I was indignant that a CEO had written me off in the middle of my presentation. Plus, I used the company’s own bad press against them. Major taboo! A tap on the WC door got my attention. Blowing my nose and wiping my face, I was
about to open the stall door, when that same rotund face that I saw at the church looked over the
WC wall. We both broke out laughing and came out of our stalls.

I learned that Helga (name changed) had a small project much like mine in Egypt.
Women had come together to dig trenches from the Nile to their houses. The water went into a
series of filters, taking out the major contaminants. Helga and her husband, an Egyptian, went
every holiday to assist these women. Because they were retired, Helga and her husband applied
for money at numerous charities. On the day we first met, she had become a grandmother and
left to see her grandchildren. She gave me some very sound advice:

**Helga**: First, don’t cry over what that CEO said. He has notoriously poor manners. You
should see him at teas. He has an ego, which would make Klitchko [a boxer] look like a
pussycat! This being Germany, no one knows what any organization gives, and rumor
has it that they use the €10,000 as bait in order to see what projects are out there, and
where the investments are. Normally, the big investors come through the front door, but
there is a lot of money to be made with small projects. What is difficult for that poor
chap is he has to listen to the likes of us. You will get your grant. It will come.

**MaLinda**: I am so dumb, and I lost my temper.

**Helga**: Oh, *mein Kind* [my child], a project that is worthy will get the funding. We are
two simple teachers among people who spend their whole lives selling their projects.
These committees know when people are being sincere. They don’t give money away
like in the old days. It was falling from heavens then. Be yourself and stay true to your
project. Look at me. I am a converted Muslim. I wear a headscarf when I am in the
presence of men. That alone disqualifies me as being *backwards*. One CEO’s face went
red when I told him I spoke good German because I was a German! If you love your project, you must kiss a lot of toads before the prince gives you the golden ring.

Helga and I had coffee, and she reviewed my presentation and gave it her approval. Although my presentation was not as professional as some of the competition, it did something that many failed to do: it answered the vital questions on the application and presented the findings at a level that did not insult people’s intelligence.

Furthermore, Helga’s information was very important. First, there has been a general change in how banks, governments and NGOs view development projects. Today, financial security or having a tangible asset is a prerequisite for obtaining a loan. This very fact disqualified many small projects that request funding. The KWG did not have a solid financial portfolio with a gold mine, oil well or access to chemicals or minerals. This translated to no funding.

Second, developing countries and grassroots organizations must learn how to function in the business world. Although livestock is traded on the stock markets in developed countries, this cannot be a consideration for micro-businesses with little or no collateral. My comment about animals was well meant, but misplaced. Kugeria Grazing Women would have to be developed with at least 100-200 animals on a working farm to even be considered for a loan of €75,000. Business is business and when big business cannot see a profit.

Finally, it would be necessary for me to rethink the kinds of organizations, which might be interested in investing in the KWG. Getting support from an NGO or a club was more likely than a global corporation. True, I had done my homework, but the reality of the situation was that despite this fact, I was ill matched for some of the organizations that I had picked. The bank
was the exception, because everyone pitched there. The water project was more appropriate for small clubs (*Vereins*) or traditional organizations such as the Lions Club or Rotary Club.

Every now and then I hear from Helga. I continued applying for grants for the KWG, but my family (my boy was now five), my work, and my studies, left little time for me to devote to KWG.

Two months after meeting Helga, I received a call from the AWCC’s new president. She reminded me that the waiting period was over and that it was time to present my project to the AWCC so that the executive committee could take a vote to sponsor my project at nationals. But I still had reservations:

**MaLinda:** Thank you, for your wonderful invitation, but what about the competition? I don’t want to seem like I am forcing my project down people’s throats.

**President:** MaLinda, the rules state that a project, which is sponsored by national chapter must first be supported financially at the local level before going to nationals. From what I understand, a portion of your scholarship went to support the KWG, and AWCC made a donation two years ago. We have not sponsored any projects since then, because we wanted to send money to the nationals, which we did. Now, we don’t have a project to sponsor. You’re it! According to the rules, we can’t sponsor anything else because we didn’t support any other project other than the KWG.

What do children say to their inept parents when they are annoyed, “Duhh!” In my running about, I had forgotten the fine print. FAWCO, like the government or an NGO, wanted certain guarantees, too. The organization wanted people who were involved in projects to be acquainted with their work. People were used as a form of financial security.
Not wanting to waste this opportunity, I met with AWCC’s the chair of the charity committee, Michelle Miller, who was a lawyer. We also worked together for the same university, although in different departments. I spent many hours writing the grant proposal. Michelle was the proofreader and person whom I bounced ideas off. What Michelle Miller brought to the grant-writing process was her abilities to argue logically, to point out deficits within a discussion, and to be patient enough to know that a grant proposal is not written overnight, but over days and weeks.

![Image of people standing in a field](image)

**Figure 42.** Groundbreaking Dedication for the New Holding Tank

The 2005 management committee and technicians stand for a photo at the dedication of the holding tank. Photographer unknown. All photos are used with the expressed permission of KWG.

We also complemented each other. I knew the human and technical aspects of the project. I was the social scientist or the voice of the heart. Michelle was the traditional researcher or the voice of the law. She kept my request on track without playing violins. She
understood that before the court of law, a person is either innocent or guilty – there are no gray areas. She applied this same thinking to grant writing: either the project was qualified or it wasn’t. These are critical factors to know when formulating a grant proposal. After weeks of writing, we sent our 15-page document off to nationals.

I had fallen behind in my correspondence with the KWG, because of all the work I had to do: my family, my job at university, and my dissertation. There was also mentoring women for AWCC who wanted to apply for scholarships and grants. I along with past recipients held a yearly workshop and spent endless hours on the phone answering questions or on the Internet reading applications. My promise to help the KWG was not turning out well. One of the last letters, which the women received from me, told them that they would not get funding for two

Figure 43. Group Photo of KWG Members at Dedication.

Photographer unknown. All photos are used with the expressed permission of KWG.
years. I was also very much ashamed of my poor performance on the grant circuit. There was no good news, so I simply didn’t write. I told Susan Korte of my problems:

MaLinda: The women must think terribly of me. I’ve done all that I can, but nothing seems to turn out well. Plus, I haven’t written in months.

Susan: MaLinda, you must remember something: the women are used to waiting. They understand that these things take time. The pipeline took many years to build. Nothing happens overnight. We don’t have magic wands and spells to make things right. This isn’t a Disney movie. You write those women, and they will be happy to hear from you. Remember there are so many people who visited those women and didn’t do anything for them. They will be happy to hear from you. Write them and let them know you are thinking about them.

I did just that and penned an upbeat Christmas letter, but I didn’t speak of my failures – it hurt too much. After Christmas, I received a lovely letter from them. The chairperson was very happy to hear from me and wanted to know when I was coming for a visit! I smiled inwardly. Why was I so consumed with failing when the KWG was happy with the simple act of kindness that a letter brought?

Time was slipping away. I had visited the project in August 2003. 2005 was upon us and there was no grant money in sight until March 2005 when the AWCC scholarship chair rang me:

Scholarship Chair: MaLinda, have you gone online to look at the scholarships and grants?

MaLinda: No, should I? Did I miss something? [I had just pulled an all nighter grading papers.]
Scholarship chair: You won kiddo! Not only that our chapter won another scholarship!

Your project is set up with a $3,000 grant to build the tank!!!

MaLinda: AHHHHHHHHHHHHH!

When I get excited, I flip out and yell and scream. The scholarship chair loves to tease me by saying she was deaf for several hours after our conversation. FAWCO had awarded the KWG The Skills for Life Development Grant of US$3,000 to build their water tank (fawco.org, 2007). The award was for KWG, but supported their work with youth, mostly young men, who were to learn how to build a water-holding tank. Good news travels fast, and I called my host mother’s son who had a cell phone so he could inform his mother.

One would think that once there was money to build, then the problems would go away. This is not the case. We found that transferring such a small sum of money was actually very costly: 10% of what was to be sent! I shook my head in disbelief. Banks were making money off of non-profits. $300 to transfer $3,500 was the going rate. These banks are not helping developing countries; they are ripping them off. It is up to the non-profits to stand up to the banks or find alternative solutions. Using the diplomatic tact that I had learned through presenting, FAWCO’s treasurer and I requested that the transfer fee be waived or decreased. The original fee was reduced to three percent or $90, which was paid by nationals.
Figure 44. Completion of the Granite Walls

Day workers and hired youth stand on the completed granite wall of the holding tank. Like my host mother’s tank, it is sturdily constructed: solid waterproof cement foundation and granite walls, which will also be covered with waterproof cement. When completed, the structure will even be capped using cement to prevent evaporation. Photographer unknown. All photos are used with the expressed permission of KWG.

The worst was not over. The original budget for the holding tank was calculated correctly and inflation did not bring up the price. What put the KWG behind in their budget was that the US dollar had fallen against all world currencies because of the war in Iraq. Even against the Kenyan shilling, the dollar was worth ten percent less, meaning that the women had less purchasing power. In short, KWG had less money, but they still had to build: FAWCO had a use-it-or-lose it clause for grants. If an organization is given money, it must be spent on the specified project.

I was going crazy. The women were about $2,000 short. I spent a lot of time praying that all would work out. Susan Korte called me to pep up my spirits with news from KWG.
Susan: Well, MaLinda, the KWG has received the funds. The chairperson walked all the way into Embu Town on three separate occasions to check to see if the money arrived and it has. They’ve started building, and things look like a construction zone. They are really going at it.

MaLinda: That is great, but I thought the funding was not enough to start building.

Susan: Oh, MaLinda, those women are very clever. They prayed and saved over the two years that it took to get this grant. They are very good at both, you know. When the money was there, they saw that they must build. It was the encouragement that they needed to start. The budget will be very tight, but they will survive. Plus, the holding tank is so important to the welfare of the whole project.

MaLinda: That is wonderful.

Susan: MaLinda, the women want to know when you will return. There is the business of celebrating you know. It is traditional for them to slaughter a goat or sheep. You must go back, as your nickname deems it.

The Chairperson wrote on August 3, 2005:

Dear Njoki:

I hope you have already heard from Susan that we received the funds. We are really grateful. We promise that we shall meet all requirements, as you suggested to us. We are now forwarding some of the documents you wanted (receipts for materials and building permits). The construction is already in progress and we shall be soon sending photographs. Waiting to hear from you soon.

I remain yours faithfully,

Chairperson
PS You must come for a visit when the tank is finished.

Two years after my visit, I had kept my promise to help the KWG build its water tank. In return, the KWG upheld its good governance practices. Every cent of FAWCO’s money was accounted for with receipts. For Christmas, the KWG sent me a beautiful color picture of the committee members before a completed holding tank. It was immense, with a capacity to hold over 150,000 liters of water. Other pictures showed the construction from start to finish.

At FAWCO’s 75th anniversary celebration held at the Berlin Hilton Hotel in March 2006, I was given seven minutes to present my project to the executive committee and FAWCO representatives from throughout the world. The KWG had the distinction of being the first project in which an academic scholarship was used to research an organization that later applied for a Development Grant. With so many projects not producing outcomes, FAWCO was extremely grateful to see their hard-earned dollars at work. Just like the women of the KWG, FAWCO must also hold charity sales, auctions, and bake sales to support its many projects in the world. Both organizations have much in common: dedication to humanitarian causes and serving the community.
With completion of my studies in Child, Youth and Family Studies, I hope to further assist the KWG in its goals. My objective is to get a second pipeline built. For me, the KWG has become a labor of love. I also want to do my Kenya name of Njoki, justice and return to Murinduko, where there is much to celebrate.
References


Palmberg, E. (2005, June). Teach a Woman to Fish…And everyone eats. Why women are key to fighting global poverty [Electronic version]. *Sojourners Magazine*, 34(6), 29-34.


Appendix A: IRB Forms
November 20, 2006

MaLinda Nanette Hill
Dr. John DeFrain
Wismarer Weg 8
Niederkassel-Luisdorf, Germany 53859

IRB# 2006-10-063 EX

TITLE OF PROJECT: Kugeria Women Water Project 2003/08/010

Dear MaLinda:

This letter is to officially notify you of the approval of your project by the Institutional Review Board (IRB) for the Protection of Human Subjects. This project has been approved by the Unit Review Committee from your college and sent to the IRB. It is the Board’s opinion that you have provided adequate safeguards for the rights and welfare of the participants in this study. Your proposal seems to be in compliance with this institution’s Federal Wide Assurance 00002258 and the DHHS Regulations for the Protection of Human Subjects (45 CFR 46) and has been classified as exempt.

Date of EX Review: 10/1/06

You are authorized to implement this study as of the Date of Final Approval: 11/20/06. This approval is Valid Until: 11/19/07.

This project should be conducted in full accordance with all applicable sections of the IRB Guidelines and you should notify the IRB immediately of any proposed changes that may affect the exempt status of your research project. You should report any unanticipated problems involving risks to the participants or others to the Board. For projects which continue beyond one year from the starting date, the IRB will request continuing review and update of the research project. Your study will be due for continuing review as indicated above. The investigator must also advise the Board when this study is finished or discontinued by completing the enclosed Protocol Final Report form and returning it to the Institutional Review Board.

If you have any questions, please contact Shirley Horstman, IRB Administrator, at 472-9417 or email at shorstman1@uml.edu.

Sincerely,

Dan R. Hoyt, Chair
for the IRB

Shirley Horstman
IRB Administrator

209 Alexander Building West / 312 N. 14th Street / P.O. Box 880408 / Lincoln, NE 68588-0408 / (402) 472-6965 / FAX (402) 472-6048
December 12, 2006

MaLinda Nanette Hill
Dr. John DeFrain
Wismarer Weg 8
Niederkassel-Lulsdorf, Germany 53859

IRB# 2006-10-063 EX

TITLE OF PROJECT: Kugeria Women Water Project 2003/08/010

Dear MaLinda:

The Institutional Review Board for the Protection of Human Subjects has completed its review of the Request for Change in Protocol submitted to the IRB.

1. It has been approved to change the telephone reminder for the survey (last contact with respondents) to an email reminder.

This letter constitutes official notification of the approval of the protocol change. You are therefore authorized to implement this change accordingly.

If you have any questions, please contact Shirley Horstman, IRB Administrator, at 472-9417 or email shorstman1@unl.edu.

Sincerely,

Dan R. Hoyt, Chair
for the IRB

Shirley Horstman
IRB Administrator

cc: Faculty Advisor
Appendix B: KWG Approval Letter
Dear Madam,

YOUR STAY WITH KUGERIA WOMEN GROUP

I'm pleased to inform you that we reviewed your CV and letter requesting a research period staying with Kugeria Women group. I have consulted with the women and I'm happy to inform you that they have accepted to stay with you in the group and give their contribution to your research where they can. Please inform us when you will be coming and how you we can assist you reach where we live. Waiting to hear from you soon.

I remain

Yours faithfully
Sophia Mushamba
(Chairperson K.W.O.G.)
Appendix C: KWG’s By-laws
KUGERIA WOMEN WATER PROJECT

BY LAWS

1. The project shall be run by women only.

2. The project members shall hold monthly meetings at Mugambaciura primary school grounds every second Friday of the month starting at three 3 p.m.

3. Punctuality shall be observed strictly.

4. Every member shall put on the green and white project's uniform during meetings.

5. There shall be a management committee of thirteen members consisting of:
   - a chairperson
   - a secretary
   - a treasurer
   - a vice-chairperson
   - a vice-secretary and
   - seven other members.

6. There shall be two committee representatives elected from every one of the six project regions.

7. Election shall be held once every year after members confirm the account report of the year.
KUGERIA WOMEN WATER PROJECT

BY LAWS

1. The project shall be run by women only.

2. The project members shall hold monthly meetings at Mugambaciuwa primary school grounds every second Friday of the month starting at three 3 pm.

3. Punctuality shall be observed strictly.

4. Every member shall put on the green and white project's uniform during meetings.

5. There shall be a management committee of thirteen members consisting of
a chairperson
a Secretary
a Treasurer
a Vice-Chairperson
a Vice-Secretary and
seven other members.

6. There shall be two committee representatives elected from every one of the six project regions.

7. Election shall be held once every year after members confirm the annual report of the year.
Appendix D: Questionnaire and Informed Consent Letter
Participant Information

Participant Number:

Name:

Age:

Marital Status:

Spouse’s Name:

Number of Living Children:

Deceased Children:

Names of Children:
Participant Information Con’t.:

Occupation:

Head of Household:

Religion:

Years of Education:

Size of Homestead:

Ownership of Homestead:

Use of the Homestead:

Presence of Animals?

Questions on Lifestyle Before the KWG Water Project!

1. Describe your life before the water project.

2. What was your day like?

3. How was work divided in the household?

4. Who cared for the children?

5. Before receiving your water main, where was water obtained: purchased, river, own well or other?

6. In the past, how far must you walk to get water?

7. How long did it take you?

8. Per day, how long did you spend searching for water?
9. What were some of the problems to finding water?

10. What did you do in times of drought?

**Questions on Beginning of the Water Project**

1. When did you begin to wish for piped water?

2. What factors made you think that water pipeline was needed?

3. Who did you discuss your wishes with?

4. How did these people respond?

5. What type of support did you get from family and friends?

6. Did you ever try to get government involved?

7. What resources did you have to build a pipeline?

8. What resources were available from the government?

9. Were there any other projects attempted?
Questions on Building the Pipeline: The Fundraising

1. How was it decided, how to go about raising money?

2. How was it decided which role each woman played?

3. How did you as an individual raise money?

4. How did you raise money as a group?

5. How did you raise money from outside agencies?

6. To which agencies did you apply for aid?

7. How much did each member have to contribute in monetary funds?

8. How many work hours did each member have to contribute in physical labor?

9. How many hours did you volunteer to work?

10. How many hours did you volunteer to raise money?
Questions on KWG Water Project Membership

1. What was the main reason why you began to participate in KWG?

2. When did you join the KWG Water Project?

3. Why did you decide to join in building the water pipeline?

4. What was your role in the decision making process?

5. How did you help in organizing the project?

6. How were household responsibilities managed?

7. How was childcare managed?

8. How was your own housework and job managed?

9. How did you convince your spouse/father/uncle to allow you to participate in the water project?

Questions on Building the Pipeline: The Physical Labor

1. When did the group start building the pipeline?

2. When did you (individually) begin working on the pipeline?
3. How long did it take to build the main pipeline?

4. How long did it take to get to your homestead?

5. How was it decided, who received water first?

6. How did group plan out the responsibilities of each member?

7. What types of jobs were to be done?

8. Who/what other groups or persons (relatives or friends) helped you?

9. Did you ever think the project would not be finished?

10. How did you feel about failing?

11. What made you continue?

12. How did you motivate yourself?

13. How did you motivate your friends/others?

14. What was your biggest obstacle: people or nature?

15. Were there group conflicts?

16. Did you promote harmony among the member? How?
17. How did you work out group conflicts among the members?

18. Were there conflicts between KWG and the community?
19. If so, how did you promote harmony between KWG and the community?

20. How did you work out conflicts between KWG and the community?

21. When did you realize the project was becoming successful?

22. Describe the turning point!

**Questions on Financing**

1. How was a price for water access determined?

2. Why did you decide on the use of water meters?

3. How is the price of water calculated?

4. How much water is allowed per family?

5. How much does water cost you per month?

6. What percent of your income is spent on water each month?

7. How is your water bill paid: monthly, quarterly or annually?
8. What is done when a customer is late or truant?

9. Who collects the water fees?

10. How do you ensure the money is not misused when collected?

11. How do you ensure that the money is well managed?

12. How does a woman become a part of the project?

13. What is her initial start up fee?

14. Aside from fee-paying customers, how else do you raise funds

15. Is there an active search for sponsors or supporters?

16. If so, how is that money used?

17. Does the committee invest money for the future?

18. If so, how is the money invested?
Questions Concerning Quality of Life

1. How is your life different now that you have water?

2. What is your day like now that you have water?

3. Do you have extra time?

4. If yes, what do you do with the extra time that you have?

5. Do you have more time for family and friends?

6. Do you have more time for your business or farm?

7. Have other concerns replaced the concern for water?

8. What are these concerns?

9. Is having water a financial burden or hardship?

10. Do you have to give up other things to have water?

11. Do you miss the social life you had when searching for water
12. Do you believe that the water project reduces illness?

13. Have you noticed an improvement in your health?

14. Have you noticed an improvement in your family’s health?

15. Has illness decreased in the family?

16. What type of illnesses has decreased?

17. If illness has not decreased, what illnesses have increased?

18. Have you been able to increase agriculture production?

19. Have you been able to increase business production?

20. Do you miss searching for water?

21. Do you miss the time spent with friends while searching?

22. Overall, do you feel that your life has improved?

Questions on Water Conservation

1. Has there been water conservation education given by KWG?

2. If yes, describe what it is.

3. How does the KWG plan the use of water?
4. How is the use of water decided (committee, individually)?

5. Are you happy with how water is conserved?

6. What is done in times of a drought?

7. What is done in times of abundance?

8. What are the short term plans (less than one year)?

9. What are the long term plans (more than one year)?

10. What is the average amount of water used per month?

11. How is water conserved in your home?

12. How do you prevent the wasting of water?

13. What are the uses of water in your home?

14. What is done with used water?

15. How would you divide up the uses under: bathing, cooking, cleaning and drinking?
16. How do you coordinate water use with your neighbors?

17. Would you like to have more or less access to water?

18. Aside from the mentioned activities, what may you not do with water?

19. In general, are you happy with how the water conservation is working?

Miscellaneous Questions:

1. There have been other water projects. Can you recall them?

2. Were they successes or failures?

3. Why do you think that KWG have been so successful where others have failed?

4. Why is it so important to run such a water project?

5. How do you feel about KWG?

6. Do you feel that KWG is a positive example of African initiative?

7. There is a stereotype that Africans are poor business people. How do you feel when you hear this?
Miscellaneous Questions, con’t.:

8. Do you feel that KWG has improved your business understanding?

9. Does working on KWG encourage you to improve in other aspects of your life?

10. If yes, what aspects?

11. What have been some of the positive benefits?

12. What have been some of the negative aspects?

13. Tell me a memorable story about your participation in KWG.

14. If you had to do it all over again, would you?

15. Tell me a memorable story about your participation in KWG?
Dear KWG Members:

This is an Informed Consent Form for Interviews on KWG. You are invited to participate in this research study. The following information is provided in order to help you make an informed decision whether or not to participate. If you have any questions please do not hesitate to ask.

You are eligible to participate because you are a member of the Kugeria Women Water Project (KWG).

The purpose of this study is to gather the personal experiences of KWG members regarding how the water pipeline was built, organized and maintained.

Participation in this study will involve one to two three hour interview sessions. The participant will be asked her participation in the building of the water pipeline.

There are no risks or discomforts with this research.

You may find the interview process enjoyable, and it may give you further insight regarding yourself and others in your position. The information gathered in this study may improve the quality of life for further generations.

All information provided will be treated confidentially. The information obtained in this study may be published in academic journals, a dissertation, research papers, appear in the mass media such as internet or television, presented at conferences, but your identity will be kept strictly confidential if you desire.

You are free to decide not to participate in this study or to withdraw at any time without adversely affecting your relationship with the investigator or her university. Your decision will not result in any loss of benefits to which you are otherwise entitled. You may ask any questions concerning the research before agreeing to participate or during the interview.

If you have any questions about your rights as a research participant, you may contact the University of Nebraska-Lincoln Institutional Review Board, at 001-402-472-6965.

You are voluntarily making a decision whether or not to participate in this research study. Your signature or thumbprint certifies that you have decided to participate having read and understood the information presented. If you desire, you will be given a copy of this consent form to keep.

Sincerely,

MaLinda Nanette Hill, Principle Researcher

_____ The researcher may use my real name in her findings.
The research must use an alias in her findings.

Signature of Research Participant

Thumbprint of Research Participant
Appendix E: Executive Summary
Purpose

The Kugeria Women Group (KWG) of Murinduko, Kenya, founded in 1989, built an 11-kilometer water pipeline to provide potable water. Almost 20 years later, the pipeline is still providing water to over 300 families and is considered an example of a successful women’s micro-initiative. The two major goals of this study were: 1) to investigate the organizational structures to determine which elements were used to aid the KWG in its successfully maintaining a water pipeline, and 2) to analyze the KWG’s water consumption to ascertain if the KWG stayed within its own pre-described regulations. These questions were explored by using in-depth interviews of the participants and statistical analysis, applying t-tests and ANOVAs.

Methods

In August 2003 data were collected from 33 members of the KWG and 11 KWG personnel. Members were chosen for interviews based on their availability when the researcher visited their homesteads. The personnel were interviewed, because they held key positions in the organization or were employed by the KWG. The interviews lasted two to four hours with open-ended questions, using a questionnaire that the researcher had developed. The interviews were then reviewed to find key concepts and themes on group structures, the democratic process, knowledge of KWG’s rules and regulation, and water conservation.

The researcher received water meter readings for a drought year (2000) and a normal rainfall year (2003) from the revenue clerk. Using SPSS, mean annual water use during a normal and a drought year was compared, implementing paired sample t-tests. The members were then put into three categories: FOUNDERS, FIRSTWAVE, and SECONDWAVE, to look at group differences in water consumption using ANOVA. Because of the number of broken meters, only
members who had eight or more readings for each year were considered. Therefore, group size varied from as low as 87 for the paired sample t-tests to as high as 181 for the ANOVAs.

After reviewing both the qualitative and quantitative data, Results Mapping was employed to evaluate the successfulness of the KWG’s water pipeline.

Findings

The KWG employed a variety of paradigms to successfully run their program. These were 1) communication approach, 2) the community empowerment, 3) the performance measurement system, 4) the gender approach and women’s cohesion, 5) transparency and accountability, and 6) health and sanitation and water conservation.

The communication approach allowed KWG to maintain an open dialogue with its members, the community, NGOs, and the government. The spoken word was the medium that the organization uses the most. At meetings, minutes were read, regulations were repeated, and new information was added so that members could understand what was being discussed, and how the organization’s business was run. Information was often repeated so that it was learned and maintained. Members assisted this process by reiterating pertinent information to members and acting as informants. The outcome showed that the KWG members were very knowledgeable about their organization’s by-laws.

By allowing members and their families to participate, the community empowerment approach assisted in maintaining the established hierarchies and ensured support of the community. Community empowerment allowed people to take responsibility for their actions and to make key decisions concerning their community. It also involved both men and women designating key goals. Improved self-esteem and learning new skills were the results of the
empowerment approach. By employing community empowerment, findings pointed to high self-esteem and a willingness to follow set rules.

*Performance measurement systems* involved the use of quantitative data analysis to investigate if an organization has met the goals set by the government, NGO or sponsors. PMS is mandatory for program evaluation if an organization wishes to apply or to maintain its funding. For this research SPSS was applied to investigate water consumption. Paired sample t-tests were run to compare mean annual water use between a drought and a normal year, for the rainy seasons in a drought and a normal year, and for the dry season in a drought and a normal year. Findings showed:

1. a significant increase in the amount of water used in a drought year when compared to a normal year ($p < .001$),
2. no significant difference in the amount of water used during the rainy season for a drought year and a normal year, and
3. no significant difference in the amount of water used during the dry season for a drought year and a normal year.

The ANOVAs looked at group differences among the members. The results found:

4. no significant differences among the FOUNDERS, FIRSTWAVE, and SECONDWAVE for the mean annual water use for a drought year, and
5. a significant difference in water use by the FOUNDERS and FIRSTWAVE ($p < .05$) and FOUNDERS and SECONDWAVE ($p < .01$) for the mean annual water use for a normal year. There was no difference in water use between FIRSTWAVE and SECONDWAVE.
For the t tests, members used more water during a drought year, but did not use more water during a normal year. Research indicated that during a drought water consumption could increase up to 45% (EPA, 2007). The KWG’s consumption rate was below this standard with a 31% increase during the drought. When looking at the rainy and dry seasons of a drought and a normal year, no differences in water consumption were seen, meaning that KWG’s water consumption remained constant during season changes.

The ANOVAS found no differences among three groups during a drought. This is a positive outcome, because it shows that each group, regardless of when the members join, adhered to the regulations for water consumptions during a drought. However, the FOUNDERS used significantly more water during a normal rainfall year than FIRSTWAVE or SECONDWAVE. Although the FOUNDERS adhered to the rules for a drought, they tended to overuse water during a normal period.

The KWG employed the gender approach and women’s cohesion to run its internal and external affairs. The gender approach allowed the women to include men in the participation of the water organisation, while also securing the interest of the women and the poor. Women’s cohesion allowed women to educate and empower themselves. The outcome of the gender approach and women’s cohesion were a) introduction into the formal economy through the pipeline, b) integration of all social, economic and ethnic classes, and c) better education of women in the democratic process, health, and water conservation.

Transparency and accountability formulated the rules and regulations for good governance of an organization. The KWG formed its own by-laws, which were enforced through a system of monetary fines. They also had good organizational structure to govern their organization, to settle disputes, and to deal with the community when issues arise. Good
governance meant that the KWG was financially stable, paid its employees on time, and supported a variety of community initiatives. Through organizational transparency and accountability, the KWG has remained successful, because it has adhered to long-supported guidelines.

Although improved water conservation, and health and sanitation were not key goals that KWG was striving for, they were important outcomes and approaches, which the organization has supported. Potable water meant an improvement in the overall quality of life. To prevent contamination of the water source and to prevent water misuse, a water conservation program was undertaken. This lead to improvements a) in the families’ health due fewer water-borne diseases, b) to increased sanitation with outhouses located away from water source, and c) to crop rotation that supports increased ground fertility.

Negative impacts were also investigated. Findings showed that for an average family, joining the pipeline had become financially impossible due to the price of the connection fee, which represented almost two year’s income. This has increased the awareness between the haves and have nots, causing jealousies among those who are less fortunate.

Employing Results Mapping, a point system was set up for each of the above-mentioned categories. Points were awarded if the KWG met the requirements. In the case of negative impacts, points were taken away. Extra credit points were given to the KWG for using the pipeline to its maximum benefit and allowing the maximum number people to participate. Results Mapping awarded the KWG a grade of $B$ for its progress and considered the pipeline to be successful.

Recommendations

The KWG has much to be proud of. The water pipeline has been running for almost 20 years, which is a commendable when one thinks about the many projects that have failed. The
organization has administered good governance practices, which enforces that its participants follow set standards. Community health, sanitation, and conservation has improved through education supported by the KWC. Finally, the KWG was able to incorporate the participation of both genders and people from a variety of social strata into its organization. This has empowered people and increased their self-esteem.

KWG has done an excellent job. If the organization wishes to remain in top form, internal and external weakness must be addressed. The following recommendations have been made:

1. Although the overlap of duties by committee members and representatives is done for simplification, the KWG has enough women who are qualified to take up these positions. Separate the representatives from the committee members. This will bring the total committee members to 19 and ensure there are enough qualified people to do the job of the committee.

2. It is recommended that people with experience and education in bookkeeping in finance hold the two positions of revenue clerk and treasurer, if it has not been already done.

3. Regarding the revenue clerk and treasurer, it is recommended, if funding allows, that these two individuals be taken from outside the KWG and represent an independent company in order to ensure accountability.

4. The by-laws must be extended to include regulations on voting, the committee’s emergency voting plan, organizational structure, and how to ensure accountability and transparency.

5. To ensure transparency, clear guidelines must be given on how the club must function in case of an emergency or passing away of key personnel. A
nomenclature must be established and made known, as to how power will be passed on.

6. One workable solution for families without water is a water-vending service that is based on a sliding scale so that the poorest of the poor can get clean water during difficult times.

7. It is recommended that a second pipeline be built to accommodate the users.

8. As the cost of a pipeline is beyond reach, it is recommended that a holding tank or pressure tank be built to assist with demand.

9. Water meters should be replaced to ensure that the system is not over taxed.

10. Water rationing should begin immediately to reduce the pressure on the aged system.

11. With so many undertakings, it is recommend that the KWG not expand into any more enterprises until it is able to find more qualified members to take over key positions and to provide an additional pipeline or reduce water consumption.

12. Lauria and Cizerle (1992) recommended a) rationing with flow restrictors, b) enforcement of rules, d) rationing by unplanned shortages, and d) rationing by planned intermittent supply.

13. If farmers are getting rich off the crops, then they should also think of how the community views them. They should also make a contribution – not just in terms of repaying the water, but in their profit as well. In this way, the money can be taken to upgrade or continue the KWG’s projects.

14. It is recommended that a community pump be established, where water can be rationed off at two liters per person per household.
15. It is recommended that an increase of the basic water price be made in order to meet the overhead costs.

16. Large-scale irrigation should be prohibited.

17. Rules for water use should be enforced, not only during a drought but also during a normal year for all members.

18. It is recommended that the agreed-upon 20 units of water be enforced to support water conservation and to ensure the availability of water.

Conclusion

The KWG’s survival depends upon the long-term maintenance of its water resources, which are the keys to its economic success. The above recommendations should not be seen as unrealistic goals, but advice that may increase the success of the pipeline for future generations. The KWG has shown itself to be a cooperative organization that is keen on using current practices as tools for improvement. I hope this executive summary will provide further information for the success of the KWG.
Appendix F: Map of Mugambaciura and Murinduko, showing pipeline and feeder lines. Maps were commissioned by the author and are copyrighted by Tourist Maps, Ltd. of Kenya.
Appendix G: Map of Embu and Murinduko, showing the eleven-kilometer pipeline. Maps were commissioned by the author and are copyrighted by Tourist Maps, Ltd. of Kenya.