

DESIGNS FOR A WORLD THAT WORKS FOR ALL

Solutions & Strategies for Meeting the World's Needs

Volume II



by **Medard Gabel and**
The Global Solutions Lab

DESIGNS

FOR A WORLD THAT WORKS

FOR ALL

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The Global Solutions Lab

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INTRODUCTION

Global Solutions Lab*

What you are about to read is the product of many young people from around the world.

This book represents the work of hundreds of young people from five continents and 40 countries. They came together each summer and worked extraordinarily hard on understanding what the most pressing problems facing their world are, and even harder at designing solutions

Design science is the organized use of imagination and science to develop innovative and viable solutions to critical real-world problems.

and strategies for eliminating these problems.

This book was developed over a period of 16 years (2005–2020). It would not exist if not for some extraordinary people at the United Nations who provided their input, guidance and feedback along the

way. These people took time out of their busy schedules and provided not only the guidance but also the inspiration that was needed to complete our tasks. They are listed above in the Acknowledgements.

The youth who participated in the programs that produced this book were part of the *Global Solutions Lab*. These Labs are ongoing and take place each June. Other *Global Solutions Labs* take place during the school year. The *Global Solutions Lab* is a workshop where the tools of design science are used by groups to collaboratively develop creative solutions to global and local problems, and strategies for the implementation of those solutions.

These particular Labs are focused on developing solutions and strategies for reaching the UN's Sustainable Development Goals¹ and were held each summer between 2005 and 2020. Each year's Lab focuses on a specific topic, such as poverty, food, energy, health care, education, climate change or environmental sustainability.

These *Global Solutions Labs* have taken place in New York at the UN and the UN International School, in Philadelphia at Chestnut Hill College and at the University of North Carolina in Asheville. They are put on by three organizations—BigPictureSmallWorld, Global

*Note: Originally called the Design Science Lab, the name became Design Science: Global Solutions Lab from 2010–2014. It was changed to Global Solutions Lab in 2015. Throughout this book, the name has been changed to Global Solutions Lab for consistency.

Education Motivators, and EarthGame.²

The goals of the Lab included:

- Develop strategies for meeting the basic human needs of everyone in the world
- Learning about the Sustainable Development Goals, their usefulness to the world, and how we can use them to make the world a better place
- Developing viable strategies for achieving one or more Sustainable Development Goals
- Develop strategies for meeting the basic human needs of everyone in the world
- Learning design science and how to apply it to global and local problems
- Increasing our understanding of global dynamics, world resources, human trends and needs, and options for humanity's success
- Increasing the public's understanding of these issues through disseminating the strategies as widely as possible
- Serving as an incubator and growing force for developing and disseminating design science techniques for complex problem solving and development of viable solutions to the worlds problems
- Learning a methodology for changing the world.

Attending the Labs are groups of college and high school students and professionals ranging in age from 16 to 55 with the average age of 22. Labs run for one to two very intense weeks, where participants learn and apply the concepts and tools of design science as they develop their strategies to achieve the Sustainable Development Goals (SDGs). The participants are briefed by UN staff from the UNEP, UNDP, UNICEF,

The work of the Global Solutions Labs are focused on demonstrating how, using present day technology, known resources, and limited financial wherewithal global and local problems can be solved in sustainable and affordable ways. The overall strategies developed by the participants of the Lab, as will be seen in this book, are more than the sum of their parts. Together, they describe a world where the basic human needs of all of humanity are met, the Earth's environmental life support systems are allowed to regenerate, and the world is safe and secure from war and crime.

WHO and others on the SDGs, their context, history, measurement, the progress made so far, and strategies in use for reaching them. An introduction to design science, *Design Science Primer*, is then provided. Lab participants typically work ten to twelve hours a day on developing their solutions. On the last day of the Lab, participants go to the UN where they conclude the Lab with a presentation of their work to, and feedback from, UN staff, as well as corporate and foundation executives. An overview of this work is what is presented in this book.

The ideas and words describing the strategies are those of the Lab's participants. I (Medard Gabel) edited for consistency and filled in a few spots here and there where appropriate. Each chapter is different and reflects the team or individual that developed it, as well as the nature of the problem or issue being addressed.

Designs for changing the world— Design Science

Design Science is a methodology for changing the world. It involves the application of the principles and latest findings of science to the creative design and implementation of solutions to the problems of society. It is a way of recognizing, defining, and solving complex problems that is based on innovation and thrives on transparency. It takes a whole systems, global, anticipatory and regenerative approach that fosters creative collaboration and synergy in the development of comprehensive solutions to both global and local problems.

Unlike many planning and political processes that compartmentalize issues and seek to develop solutions in a vacuum, Design Science stresses comprehensive thinking based on a clear understanding of the state of the world, available resources, appropriate technology, culture, environmental constraints, and the interconnections between world problems and opportunities. The Design Science planning process provides a framework for devising solutions to current problems as well as anticipating future needs.

Design Science is also different from other problem solving and planning methodologies in its comprehensive, anticipatory, inclusive, and transparent approaches to the development of solutions. It takes a “whole to particular” approach that is both global in perspective and in its examination of options. It seeks to build capacity rather than merely

solve problems, and to develop solutions that are transformative rather than merely the reforming of already inadequate systems. It is informed by a moral vision that places a priority on designing ways of meeting unmet basic human needs in ways that are environmentally sustainable and socially just.

The core of this approach to problem solving and planning is both a concern with whole systems—the whole Earth, the entire history of the

If a problem can't be solved as it is, enlarge it.

—Dwight Eisenhower

planet, the global economy, all of technology, and all of humanity, both those living now and those yet to be born—as well as a recognition that everything is implemented locally, and that the “whole” is merely the context for the local. Design science has both a global perspective and a local focus. It recognizes that it is the local upon which the success or failure of a particular design solution will thrive or die.

Design Science is *comprehensive*, in that it starts from the whole system and works back to the special case. It deals with all facets of a problem including the larger system of which the problem is a part; in this sense, design science seeks to build capacity, not just solve problems. It is *anticipatory*, in that it seeks to recognize the threats coming down the pike before they arrive full blown on an unsuspecting or ill-prepared society; and it deals with the way things are going to be when the solution is going to be implemented, not just the way things are in the present. It is a *design* strategy, in contradistinction to a political or ‘let’s pass-a-law-and-change-human-behavior’ approach; it seeks to change the larger system of which the specific problem is a part through the introduction of innovative artifacts or policies.

This “comprehensive anticipatory design science” is at least as much a perspective on the problems of the world as it is a methodology for tackling those problems. When applied to contemporary problems, it can lead to strikingly fresh insights and solutions.

Design science is a tool that is based on a global perspective and a systems approach to the problems of the world. It assumes that globalization has made the world an ever more interconnected whole, and any successful problem solving of society’s systemic ills needs to be an approach that is global, comprehensive, visionary, and based on science, not politics, ideology, or wishful thinking. The entire world is now the relevant unit of analysis, not the city, state, or nation. We are

onboard, as Buckminster Fuller pointed out, “Spaceship Earth,” and the illogic of 200+ nation state admirals all trying to steer the spaceship

We need to focus on creating wealth, not just reducing poverty. Development, not growth is our goal; we need to transform society, not just enlarge it.

in different directions is made clear through this metaphor—as well in Fuller’s more caustic assessment of nation states tending to act as “blood clots” in the world’s global metabolism.

The design science process is augmented by vast quantities of statistical information about the state of the world, its resources, human trends, needs, and technology. With the advent of personal computers and the Internet this information became almost universally available—and with it, design science found its perfect complement. Coupled with the tools of the information age, design science gains the power to reach its potential. The Internet has not leveled the global playing field so much as expanded it, and the good-ol’-boy-status-quo-maintaining political process can now be subverted by a process that brings Thomas Jefferson into the twenty-first century.

In Fuller’s words, design science is a process where individuals or teams of people can “make the world work, for 100% of humanity, in the shortest possible time, through spontaneous cooperation, without ecological offense or the disadvantage of anyone.”

Making the world work for 100% of humanity reflects Fuller’s global perspective as well as his values. We are not here just to make ourselves rich, famous, or top consumer of the day or decade, or here just for the 5% living in our part of the world; we are here for all humanity. The “spontaneous cooperation” is instructive in light of the previous discussion. The phrase does not read, “make the world work for 100% of humanity through a central government, or through enforced coercion by a strong military” but through cooperation that arises from a fundamental transparency of society and its needs. If everyone knows what the situation is, has a clear vision of what should be and what needs to be done, we cooperate to get it done—as we do as a society in times of emergency.

Fuller said:

I am enthusiastic over humanity's extraordinary and sometimes very timely ingenuities. If you are in a shipwreck and all the boats are gone, a piano top buoyant enough to keep you afloat that comes along makes a fortuitous life preserver. But this is not to say that the best way to design a life preserver is in the form of a piano top. I think that we are clinging to a great many piano tops in accepting yesterday's fortuitous contrivings as constituting the only means for solving a given problem.

Design science is a method for developing the life preserving and enhancing solutions to society's problems.

The *Global Solutions Lab* uses the principles and methodology of design science and applies them to developing comprehensive strategies for the solution of global problems, primarily under the aegis of the United Nation's Sustainable Development Goals. The Design

Science/Local Solutions Lab takes an identical approach but the focus is on solutions that are to be locally implemented.

In summary, design science is a problem solving and strategic design and planning process based on the following "big picture" assumptions and design protocols:³

- *Wholeworld*—The whole world is now the relevant unit of problem solving; problems need to be seen from a global perspective.
- *Long-term*—The long term is the framework in which we must operate; given this perspective, prevention, rather than treatment or cure, is the logical and most economical option.

**A map of the world
which doesn't include
Utopia isn't even worth
glancing at.**

—Oscar Wilde

**You can no longer save your family,
tribe or nation. You can only save the
whole world.**

—Margaret Mead

- *Think Comprehensively*—Framing problems in their widest possible context helps see upstream interconnections and causative factors that can impact downstream problems and options.
- *Everybody wins*—Solutions with winners and losers are not sustainable.
- *Transparency* is key; solutions that don't make their assumptions and true costs and impacts visible to everyone are not sustainable.
- *Capacity, not problems*, is the focus; we need to see "problems" not as something that needs to be "solved," but as a symptom of something larger—the need to enlarge the capacity of a system; we need to focus on creating wealth, not just reducing poverty.
- *Needs as markets*—the world's needs are real or potential markets; problems are unmet needs that can often be met through creative products matched to the real needs of real people; poverty is a mandate for design and entrepreneurial innovation and creativity, not just government intervention and paternalistic imposition of top down "solutions."
- *Design replaces politics*; design sees what is needed, not what is just expedient or politically easy, and figures out how to make it happen; design starts with a vision of what is needed, not what is popular; it seeks to find or design an artifact that solves a problem or builds the capacity of a system in such a way that the source of the problem is eliminated.
- *More with less* is the design ethic; getting ever-higher performance out of every gram of material and erg of energy invested in every function performed by our human-made life-support is critical to making the world's limited resources meet the needs of our growing population and to reducing our impact on our environment.
- *Biology replaces mechanics*; viewing the world as a living system fosters a respect for a problem's complexity, an awareness of the context or environment in which it is embedded, and the possible solutions that can result in strengthening the health of the system and the elimination of the problem.
- *Development, not growth* is our goal; we need to transform society, not just enlarge it.
- *Respect Gestation Rates*—everything has its own gestation rate, and working with these is essential, whether it is the growth and development of a technological option or societal change.

The fundamental difference between creating and problem solving is simple. In problem solving we seek to make something we do not like go away. In creating, we seek to make what we truly care about exist.

—Peter Senge

- *Scalability* is essential; if a solution to a problem, or a product or service for a market cannot be scaled up from the prototype stage to wide spread adoption and use, it is still born.
- *Look for the trim-tab*—Small and strategically placed interventions can cause large-scale and profound change; find the design leverage points where a small amount of change can bring about large impacts.
- *Preferred state planning*—what we want and where we want to be in ten years is more important than what the problem is right now; the vision of the ideal is more important and powerful than reacting to what is thought possible given current limitations; perspective adds opportunity, vision drives action; resources follow vision. The design science process begins with a vision

SUSTAINABLE DEVELOPMENT GOALS



statement of where we *want* the world to be. This vision of the preferred future is based on and informed by an ethical view of what should be, and then transformed through comprehensive design into an economically compelling solution.

Global Preferred State

Strategies for achieving the Sustainable Development Goals and Preferred State

As listed in the above assumptions and protocols, the Design Science problem solving process begins with a vision of how the world should be. This vision is usually specific to the general issue or problem being addressed, such as poverty, food and hunger, energy supply, education and the like. It is often helpful though to begin the design process with a broader preferred state for the whole world that encompasses the well being of all the world's life support systems. The following is such a global preferred state:

All of humanity—every child, woman, and man in every country in the world—has, on a sustainable basis,

- Abundant supplies of nutritious and culturally appropriate food.
- Adequate housing complete with sanitation facilities and clean running water.
- Abundant supplies of energy that are clean, safe, and affordable.
- Access to local comprehensive health care and the latest advances of medical science.
- Access to education, so that literacy is universal, as are opportunities for advanced (college level) education; access to the Internet is universal.
- Access to communication and transportation facilities that are readily available and affordable, so that anyone can communicate with anyone else on Earth who wants to be communicated with, and people can travel anywhere they want to go.
- Access to employment opportunities and fulfilling work—including vocational alternatives, re-training, and on-the-job-training—are available to all.

-
- Access to open borders, free of trade and emigration restrictions, subsidies, and other barriers to market-driven economies.
 - Access to information so that all public negotiations (for example, labor contracts, legislation, and government contracts), accounting practices, and elections are transparent and open to inspection by anyone at anytime.
 - Access to decision making, so that all citizens have a significant role in decision-making processes that affect their lives, and each lives in a peaceful, democratic, secure and safe world that is free from crime, terror, and nuclear, chemical, and biological weapons.
 - Access to a clean, healthy environment that is free of toxic wastes, pollution of all kinds, soil erosion, and damaging industrial and agricultural practices.
 - The biosphere and its resources are self-regenerating, with humans cooperating to ensure this.
 - Biodiversity is increasing throughout the world.
 - Around the globe, strong social incentives foster democracy personal initiative, trust, cooperation, respect, and love—and discourage all forms of torture, degrading treatment, and punishment.
 - Access to an independent and impartial tribunal to which each person is entitled, on an equal basis; each person has the right to nationality and to perform public service in one's own country.
 - Access to rest and leisure.
 - Access to special protection, care, and assistance for mothers and children.
 - Freedoms of speech, of the press, and of religion are the rule everywhere.
 - All forms of prejudice—against another's ethnicity, race, religion, origins, gender, age, sexual preference, or income level—are gone.
 - Every culture and nation respects and celebrates the unique value of all others, and provides strong social supports for individuals, families, and communities.
 - The arts in all forms are widely appreciated and cultivated.
 - Spiritual growth and fulfillment is the norm for all humans.⁴

OVERVIEW AND PROBLEM STATE

Context/World Systems

In a very real sense the state of the world today is the preceding Preferred State with a negative qualifier attached. That is, all of humanity does *not* have “abundant supplies of nutritious and culturally appropriate food and clean water”; they do not “live in more than adequate housing complete with sanitation facilities and clean running water,” etc.

In addition, and more specifically, the world today is characterized by⁵:

- 1 billion people are not adequately nourished or face the specter of hunger
- 884 million do not have access to clean water
- 1.6 billion people are without access to adequate sanitation
- 2 billion people are inadequately housed; 600 million live in urban slums
- 100 million people are homeless
- 800 million to 2.5 billion people have no access to essential health services
- 10 million children under 5 die from easily preventable causes each year
- 42 million people who die from curable infectious and parasitic diseases each year
- 40 million people are infected with the AIDS virus
- 300 million people seek treatment for malaria each year
- 2 billion people are infected with tuberculosis
- 900 million adults are illiterate
- 100 million children are not in primary school
- 1 billion people are without access to electricity
- 3 billion people are without access to adequate supplies of energy
- 1.2 billion people live on \$1.00 per day or less
- 2.8 billion people live on less than \$2.00 per day
- 40 million children are laborers
- 50 million people are refugees or displaced
- 7 million tons of carbon are added to atmosphere each year

- 2.5 billion tons of topsoil are eroded from world croplands per year
- 6 million acres of desert land are formed annually by mismanagement
- 15 million acres of forest are destroyed each year

Endnotes

- 1 For more information on the Sustainable Development Goals, see <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>
- 2 The 2005–2007 Labs were also put on in cooperation with the Buckminster Fuller Institute. For more information on these organizations, see: <http://www.bigpicturesmallworld.com>; <http://www.gem-ngo.org/> and <http://www.bfi.org>
- 3 *Regenerative Development* <http://www.designsciencelab.com/resources>
- 4 The description of the future was synthesized over a twenty-year period from over one thousand groups of anywhere from 30 to 250 people each in size. Each group answered the question: *What do you want the world to look like in twenty-years?* Adding the members of all the groups together resulted in over 200,000 people combining their collective expertise to answering that question.
- 5 For footnotes on each of the numbers, see: http://www.bigpicturesmallworld.com/war-peace/context_chap1.shtml



PART I

**EDUCATION
FOR ALL
FOR LIFE**

Mastering the art of writing, Karachi, Pakistan.

UN Photo/John Isaac

EDUCATION FOR ALL FOR LIFE

***Strategic Summary:** Achieve universal primary education and 100% literacy by 2015, and provide affordable access to secondary, tertiary, and lifelong educational opportunities by 2030 through a combination of low-cost, mass produced “school-in-a-box” programs; community Internet hubs; mobile educational resource vehicles; wi-fi educational linkages and programs; sustainable technology for turning educational institutions into energy, food, and water producers; and a global coordinating agency that makes all the preceding available.*

“If you think education is expensive, you should try ignorance.”

—Derek Bok

Introduction

The education work of the Global Solutions Lab was focused on demonstrating how, using present day technology, known resources, and limited financial wherewithal, illiteracy could be eliminated between now and 2015 (thereby achieving the Millennium Development Goal #2: Universal Primary Education), as well as providing affordable access to secondary, tertiary, and lifelong educational opportunities by 2030.

The overall strategy developed by the education teams in the Labs consisted of an interrelated multiple-part plan that, when aggressively implemented, would have a profound impact on the world. The results would include over 850 million people no longer suffering from illiteracy; as well as improved health, productivity, and longevity; higher employment and incomes for those in most need; and a world that is safer, more secure, stable, and immeasurably richer as more and more people become better and better educated and are able to participate in the creation of wealth.

The parts of this strategic plan are:

- **School-In-A-Box 1.0, 2.0., and 3.0**
- **WE CAN: Worldwide Educational Cooperative for All Nations**
- **School Community eHub**
- **eMobile Educational Resources**
- **Wi-Fi for Education**
- **SEED: Synergetic Educational Experience and Development and Sustainable Schools**

The following pages describe these strategies.

Why Education?

The essence of education is empowerment. Without access to the global informational environment a person is denied access to many forms of power that

can lead to self-, family-, community-, and global-improvement. Literacy is the key to opening the doors needed for economic, social, and personal health and well-being. Although great strides have been made in the last 50 years, the global education situation is stained by the existence of 850 million people who are illiterate and over 100 million children who are not in primary school.

**“Enlighten the people generally,
and tyranny and oppressions of
body and mind will vanish like evil
spirits at the dawn of day.”**

—Thomas Jefferson

State of the World Education System

The work done by the education teams at the Global Solutions Lab is embedded in a context of the global conditions surrounding the world's population and the global educational system that supplies that population with its education. The following basic facts lay out this context:

- World population in 2010: 6.8 billion
- 850 million people are illiterate; 95% of those people are in developing nations; 75% of these live in Sub-Saharan Africa and South and West Asia
- 70% of these people are women; they entered the twenty-first century unable to read a book or write their names¹
- Over 1.5 billion adults are functionally illiterate
- Over 100 million children are not in primary school; 133 million young people cannot read or write (this is about 20% of the total number of children in this age group globally)
- There is a shortage of necessary school supplies, buildings, and teachers
- Girls make up 54% of the children without access to education, the majority being in Sub-Saharan Africa and South Asia; in those two regions alone, 87 million children are out of school
- Failure to achieve gender equality in education by 2015 will contribute to over 10 million unnecessary child and maternal deaths over the next decade



- Many schools in the poorest regions of the world do not have separate toilet facilities for boys and girls. This situation is a serious impediment for young girls and their attendance at school
- 250 million children between the ages of five and fourteen work in developing countries—at least 120 million on a full time basis. 61% of these are in Asia, 32% in Africa, and 7% in Latin America. Most working children in rural areas are found in agriculture; urban children worked in trades and services, with fewer in manufacturing, construction, and domestic service. In extreme poverty situations, families lose money if their children go to school instead of working²
- 4 to 5 billion people are without access to secondary, tertiary, and continuing education
- There are approximately 1.3 billion students enrolled in some form of school around the world (683 million students in primary education; 503 million students in secondary education; 132 million students in tertiary education)

“As literacy increases, the need for leaders decreases.”

—Buckminster Fuller

- There are approximately 54 million teachers in primary, secondary, and tertiary schools around the world
- Teachers in parts of Africa are being paid the same now as they were 1975 (and given inflation, the net amount is considerably less than they were receiving in 1975), and cannot support their families
- About 70% of the poor live in rural areas. Education is an essential prerequisite for reducing poverty, improving agriculture and the living conditions of rural people, and building a food-secure world. Children’s access to education in rural areas is still much lower than in urban areas, adult illiteracy is much higher, and the quality of education is poorer
- There is prejudice and hate embedded in some curriculums around the world. In many countries where international tensions are present, extreme political opinions are expressed in curriculums
- A small proportion of nations currently include environmental awareness in their curriculum
- Existing school buildings are energy inefficient or lacking energy resources entirely.

Why This Needs To Change

- HIV/AIDS infection rates are double among young people who

do not finish primary school. If every girl and boy received a complete primary education, at least 7 million new cases of HIV could be prevented in a decade (given current relationships between education and HIV infection rates).

- Education is a key economic asset for individuals and for nations. Every year of schooling lost represents a 10 to 20% reduction in girls' future incomes. Countries could raise per capita economic growth by about 0.3% per year—or 3% in the next decade—if they simply attained parity in girls' and boys' enrollments.
- Failure to educate girls and women perpetuates needless hunger. Gains in women's education contributed most to reducing malnutrition between 1970-1995, playing a more important role than increased food availability.³
- Achieving universal primary education will not only reduce the spread of AIDS and of other preventable diseases, but also contribute to reducing environmental damage, empowering girls, reducing child mortality, and improving mental health, as well as help lift people out of poverty by providing children “with choices and opportunities to create a better life for themselves.”
- Enrollment in school is directly proportional to life expectancy at birth. Years spent in school and literacy rate is also directly proportional to life expectancy at birth. Therefore, increasing enrollment and years in school will lead to increased life expectancy.
- Education is for life. The purpose of education is for life, liberty, and the pursuit of happiness—as well as economic well-being, health, democracy, and the empowerment of people. One of the primary elements of a true, functioning, representative democratic republic is that its citizens are well informed.

World Education System Preferred State

By 2015, 100% of humanity will have access to primary education and there will be 100% literacy in all nations. This includes not only literacy in one's own native tongue but also in at least one major language enabling people to communicate on an international basis.

By 2030, 100% of humanity will receive a full primary education for free and have affordable access to secondary, tertiary, and lifelong education; in addition, they will have:

- Universal Internet access

- Affordable access to study internationally and to study other cultures from their own location
- Affordable transportation to attend the schools of their choice
- Schools within a close proximity to students
- Schools that play a vital part in the community; that provide essential services where needed; that are suppliers of energy, water, and food to the community (rather than just consumers)
- Schools that are built with and powered by renewable resources
- Access to sports and the equipment needed to participate in sports
- Affordable access to educational resources and materials such as books, textbooks, computers, and advanced global library systems
- Access to cultural institutions
- Access to international press
- A peaceful and secure environment
- Gender appropriateness (different bathroom facilities for boys and girls)
- Access to healthcare facilities on campus
- Teachers who are well paid and respected members of the community
- Teachers and administrators who have global access to all educational resources; and who exchange education information readily
- Curriculum that:
 - Is hate-free, unbiased, and contains opposing viewpoints
 - Is interactive and relevant to community and cultural needs (things learned can be applied in real life to benefit the community in such areas as health, environment, food production, energy use)
 - Accommodates different styles of learning
 - Is globally centric (students learn about their region in the context of the entire world); contains environmental education in a global context
 - Promotes creative exploration in arts and music
 - Promotes compassion for oneself and others
 - Promotes critical thinking skills
 - Contains vocational training
 - Is universal; culturally appropriate yet contains globally adhered to standards
 - Promotes physical as well as mental growth
 - Promotes extracurricular activities relevant to the community
 - Helps children come out of school responsible and aware citizens with skills that will allow them to secure meaningful jobs and to be fully included and engaged in society.

Strategic Vision: Education For Life

As documented above, there are many things wrong with the current educational systems of the world—as well as important directions to move that system towards. How can we get from the present to the preferred future? What needs to be done to eliminate illiteracy and make the advantages and prerogatives of life-long access to education available to everyone in the world?

In short, how can we increase the health, longevity, productivity, economic well-being, and political enfranchisement of all the people of the world by increasing the world’s access to education?

The following is one strategy for doing this that was developed by the participants of the Global Solutions Labs.



Two school children of Bhutan. UN Photo/John Isaac

World Education System Preferred State Timeline

2010

2015
100% literacy

2030
100% access to secondary
& tertiary education



Endnotes

- 1 Details of this strategy can be found at <http://www.dslnc.bigpicturesmallworld.com>
- 2 Further details of this strategy can be found at <http://www.dslnc.bigpicturesmallworld.com>
- 3 <http://www.Firstmilesolutions.com>

A black and white photograph of four young girls sitting on the floor, huddled together and reading books. They are wearing traditional Pakistani clothing, including headscarves and patterned dresses. The girls are focused on their books, and the scene is set in a simple, possibly classroom-like environment.

STRATEGIES:

- 1. School-In-A-Box**
- 2. WE CAN: Worldwide Educational Cooperative for All Nations**
- 3. School Community eHub**
- 4. eMobile Educational Resources**
- 5. Wi-Fi for Education**
- 6. SEED: Synergetic Educational Experience and Development**
- 7. Education for Everyone**
- 8. All Knowledge, All People, All the Time**
- 9. Elima Sasa Hivi Project**
- 10. Educator Training Connection Program**
- 11. Worldwide Education (WWE)**

School-girls in a reading class, Karachi, Pakistan.

UN Photo/John Isaac

1. SIB: SCHOOL-IN-A-BOX

By Kristina Mader, Fabiola Carrasco, Daniel Eida, Zane Kripe, Priyanka Pandit, Xena Parsons, Lexi Quint, Zoe Richards, Heath Robbins, David Walczyk

Strategic Summary: *The core of this strategy¹ is an enhanced version of an artifact developed by UNICEF called “School-In-A-Box.” UNICEF’s basic School-In-A-Box (SIB) was developed for disaster relief situations where a community’s school was destroyed. The box was packed with school supplies, laminated lesson plans, and teacher materials. The lid of its packing case transforms into a blackboard. In the hands of a local teacher, it enables a school to re-open or to be opened. Such a box, as is and in our more enhanced versions, would provide one of the key ingredients needed to eliminate illiteracy throughout the world.*

Purpose

The purpose of the SIB is to provide universal access to education for all 100+ million primary aged children not in school. The distribution of such a “quick fix” solution, while simultaneously paying special attention to the educational needs of girls and the community, as well as providing a framework of support to teachers, and the inter-linking of communities, will go a long way towards eliminating illiteracy and providing universal access to primary education.

School-In-A-Box 1.0 Contents:

- Basic Essential Learning Tools (B.E.L.T.)
 - Laminated student packets (for basic reading and math)
 - Rulers, protractors, pencils, paper, multiplication tables
 - Blackboard (lid of box turns into blackboard)

School-In-A-Box 2.0 Contents:

- All the above, plus
- Girls Education Tools (G.E.T.)
 - *Gender Focused Learning Methods*
 - *Peer-to-Peer Tutoring Program*
 - *Leadership Development*
 - *Financial Empowerment*
- Health & Sanitation Awareness Materials
- Malaria Deterrence Tools
- Practical & Community Learning Materials

- Laptop computer/Cell phone
- Teacher/Facilitator Instruction Manual

School-In-A-Box 3.0 Contents:

- All the above, plus
- Internet access
- Ongoing training and access to educational materials, provided by WE CAN

The more advanced versions of the SIB (versions 2.0 and 3.0) are intended for immediate use in some areas that are ready for them, and for later use in areas that first receive SIB 1.0.

Schools-In-Boxes

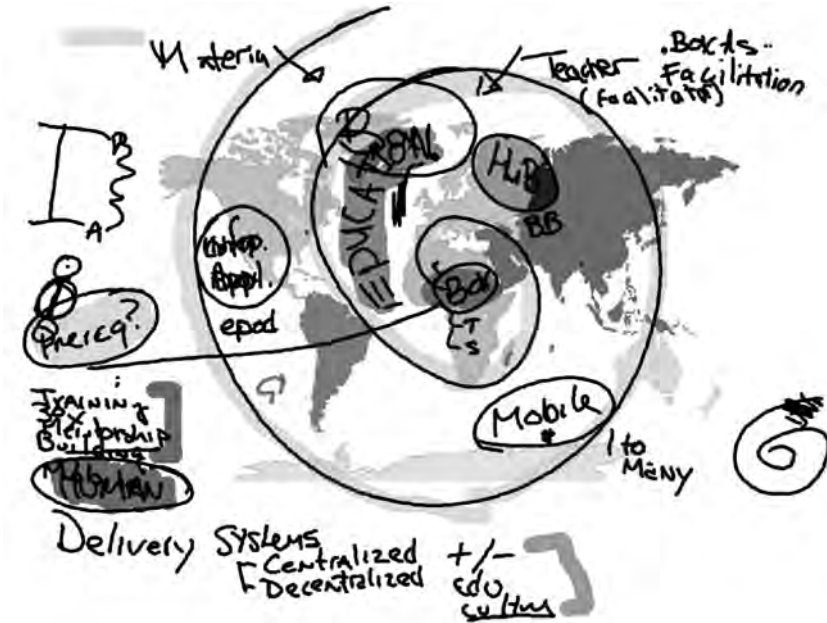
Because every locality is different it is assumed that a one-size-fits-all School-In-A-Box approach will not be an efficient, effective, or sustainable solution. Therefore our strategy calls for a series of Schools in a Box approaches.

The first SIB is almost identical to UNICEF's model. It is the bare minimum that a school needs to get started. It is intended to address the literacy needs of the 100+ million children, living mostly in Sub-Saharan Africa and Southeast Asia who are out of and/or do not have access to school. The most important function of the box is to serve as a quick fix in a rural village or urban setting, filling in as a short-term primary educational system. It directly addresses access to primary education, but not in a permanent manner.

SIB 1.0 is the first step in capacity building within a village, allowing it to move on to more permanent facilities, mobile options, and technological solutions, which are decided upon by the community and fill their specific needs.

SIB 2.0 has more components, including supplemental modules that address girls' education and environmental literacy. SIB 2.0 provides instructions on how to deal with different learning styles, leadership development, application of practical skills, and girls' empowerment.

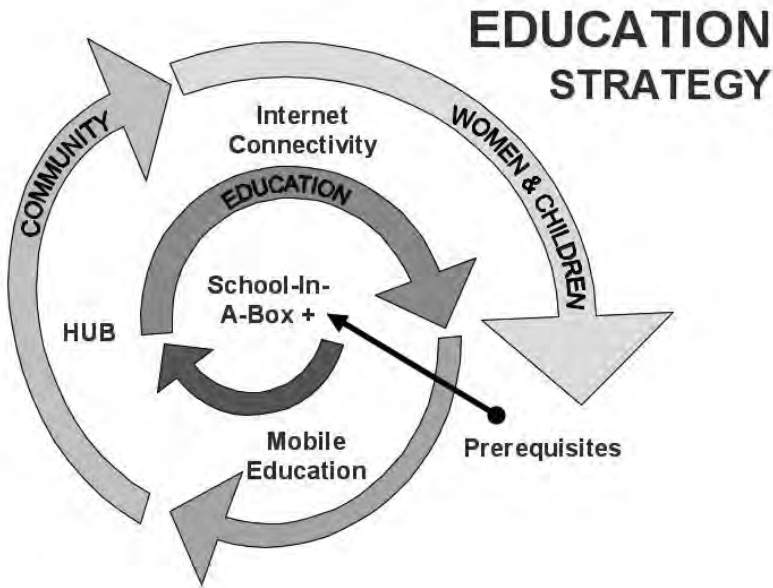
SIB 3.0 contains further educational modules plus a personal computer. This SIB also emphasizes community participation, enabling community leaders to dictate their own development priorities.



Schools-In-Boxes Programs

Community involvement has proven to be crucial in any development program, and that is central to the SIB strategy. In order for the SIB Program to be successful, the community needs to dictate the direction of the education within the community, and specifically address the basic needs of children in the area. To assist in this, some important programs to include are parent-teacher conferences, community centoring, as well as curriculum development workshops.

The SIB strategy combines aspects of UNICEF's School-In-A-Box program, the UN Girls Education Initiative (UNGEI), models of peer coaching, global volunteer programs, HIV/AIDS awareness campaigns, the latest mobile education technology, and basic development assistance into a comprehensive "quick fix" for villages who have satisfied their basic hierarchy of needs (food, water, shelter), but are still without sufficient primary education.



SIB Costs and Funding

Cost

The current standard UNICEF SIB (SIB 1.0) costs \$476 per unit. Each unit will meet the educational needs of 80 children. To reach 100 million children currently out of school in the developing world would take roughly 1.25 million of these units for a retail cost (mass production will result in considerably lower costs) of about \$600 million.

Adding to the basic SIB 1.0 to create the SIB 2.0 and SIB 3.0 programs will add the following additional costs:

- \$50 for HIV/AIDS, gender empowerment, environmental and other subject information/instruction curriculum materials
- \$200 for laptop or cell phone with solar charger
- \$8.60 for mosquito nets
- \$125 for teacher training

for a total cost of \$860 per SIB 2.0 and 3.0 units. To reach 100 million children with this program will cost \$1.07 billion.



Funding

Funding for the SIB Program would come from a variety of sources. In addition to funding from national governments, UNICEF, UNESCO, and UNDP, SIB programs would be funded by grants and innovative private sector contributions.

An example of the later is an arrangement with UPS and/or other package delivery companies wherein they would deliver the SIB package to the appropriate village or urban school in the developing world and in return they would offer the rest of their customers the option of donating a small percentage of their shipping fees to the SIB Program. For example, UPS ships 14.8 million packages daily. An optional donation of 50 cents per package would generate over \$2.7 billion per year (assuming a 50% participation rate).

School-In-A-Box Curriculum



Endnotes

- 1 Further details of this strategy can be found at <http://www.dslnc.bigpicturesmallworld.com>

2. WE CAN: WORLD EDUCATIONAL COOPERATIVE FOR ALL NATIONS

By Patricia Major, Sarah Hausman, Reo Jones, Alex Mackay, Charvee Patel

WE CAN¹

WE CAN seeks to provide an education hub for teachers, students, administrators, policymakers, and others from around the world to work together to achieve universal literacy, enhanced educational opportunities, and greater international collaboration and cooperation. WE CAN's comprehensive website will serve as the organization's 'base of operations,' providing intellectual and physical resources to individuals and other organizations.

In addition, the School-in-a-Box (SIB) Program is delivered, administrated, and improved by WE CAN. This global coordinating organization performs a number of tasks in addition to overseeing the SIB Programs.

WE CAN's purpose is to make the world's vast educational resources available to the teachers and students of the entire world.² They will do this by providing regular mail, telephone, and website access to all educational resources, including those of all existing agencies, providers of supplies, and information. (It will also include SEED catalogue information and ordering links. See Strategy 6, p. 178.)

WE CAN's website will provide increasingly more services, including an equipment and supplies exchange, a supplies/tools/technology store that offers sliding-scale discounts, a teleconferencing link, downloadable software, and links to online classes.

WE CAN will also offer free telephone support for educators, providing information about available resources. All available information will be accessible on the WE CAN website, for those with access to the Internet. (The telephone network will include native-language-speaking operators who will have access to the website, and who can then assist callers by conveying information that the operator locates through the website.)

WE CAN services will include the following:

- Coordination and delivery of SIB Programs
- Customizable and adjusted SIB solutions for regional education efforts
- Distribution of SIB and other educational supplies and information

- Internet (and other), portals to educators, students, administrators, media
- Thematic entry points for topics such as school sustainability, curriculum, educational tools, educational programs, etc.
- Methods for cooperation between existing agencies, countries, school districts, teachers, and students
- A website in several languages that provides:
 - Teleconferencing communication between agencies, school districts, teachers, and students
 - Online meetings, classes, and training sessions
 - Funding and scholarship information
 - New tools and technologies information
 - Downloading of free software and publications
 - Ordering of supplies
 - Global and regional announcements of educational events
 - Crisis reporting and coordinated requests for assistance
 - Job postings
 - Links to other resources
 - Contact directory by agency/country/region/subject area/topic and any other subsets that may be useful.

WE CAN Funding

WE CAN startup funding will be provided by philanthropic organizations, universities, sister cities cooperation, and private sector investment. Private sector revenue from fees for services will provide overhead and operating costs. School supply companies (including textbook providers, Staples, Microsoft, Apple, etc.) will provide revenue as a percentage of sales they receive as a result of WE CAN's global marketing efforts.



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MUNDO	УКРАЇНСЬКА	SRPSKI
BRASIL	TIẾNG VIỆT	বাংলা
ROMÂNĂ	INDONESIA	SOMALI

Emergency need bulletins:

Four schools were burned in Somalia yesterday (Need for 4 groups of 30 students each) benches, basic supplies. [more](#)

Flooding shorted out the existing Internet. [more](#)

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Mock-up of Webpage for WE CAN

3. SCHOOL/COMMUNITY eHUB

By Fabiola Carrasco, Daniel Eida, Zane Kripe, Priyanka Pandit, Xena Parsons, Lexi Quint, Zoe Richards, Heath Robbins, David Walczyk

eHub³

Another part of the overall *Education for All for Life* strategy is the use of schools as community education hubs. The goal of this strategy is to extend the educational process from just school-age children to the entire community. The School/Community eHub would bring education to people, formally and informally, throughout the life span and regardless of location (urban to rural) and development level.

Part of the process of the eHub would be an educational needs assessment that would determine what subjects were wanted and needed by the community. The primary delivery of educational content of the eHub would be via the Internet.

The School/Community eHub would be a “permanent” or fixed part of a community. For communities that could not be reached with this strategy, there would be the traveling educational resource center described below.

Advantages and Effects

- Reach small and dispersed communities
- Continuous education
- Accessibility
- Community involvement
- Community development
- Relevance
- Training for local needs
- Flexibility
- Up to date resource sharing
- Cost effective
- People driven design

4. eMOBILE EDUCATIONAL RESOURCES

By Fabiola Carrasco, Daniel Eida, Zane Kripe, Priyanka Pandit, Xena Parsons, Lexi Quint, Zoe Richards, Heath Robbins, David Walczyk

Mobile Access to Education⁴

Yet another part of the overall education strategy is the use of mobile schools and training facilities. If people cannot get to conventional educational facilities, a mobile form of those facilities can go to the people. In Curitiba, Brazil, retired buses are used as mobile training centers. Curitibaans pay \$1.00 to take courses in auto mechanics, electricity, typing, hairdressing, artisan work, etc., in these mobile classrooms. At the end of these courses students are placed in jobs throughout the city or they often start their own businesses.



Right: Pedal-powered mobile libraries bring books to neighborhoods without libraries.

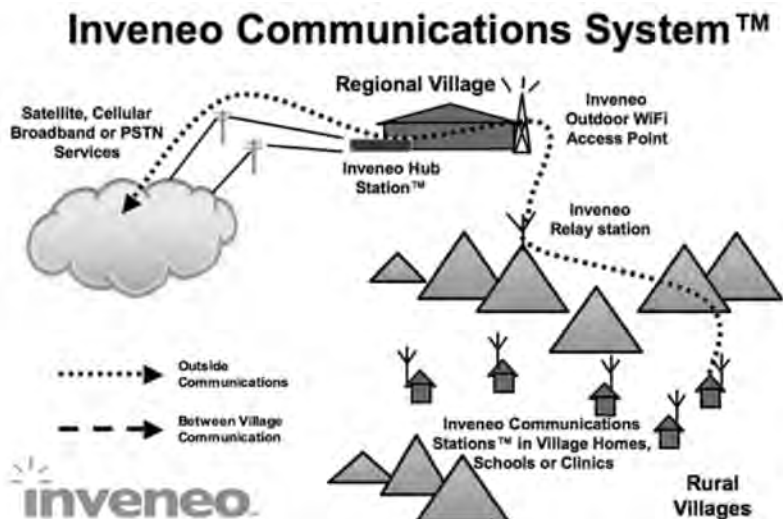
5. WI-FI FOR EDUCATION

By Priyanka Pandit, Fabiola Carrasco, Daniel Eida, Zane Kripe, Xena Parsons, Lexi Quint, Zoe Richards, Heath Robbins, David Walczyk

A key component of the *Education for All for Life* strategy is getting universal Internet access. One current technology for doing this is Wi-Fi, a wireless Internet access system. The *Wi-Fi for Education* strategy is intended to provide Internet access for everyone in the world. Its goals include providing Internet access (email plus phone service) to 4 billion people, living in the developing world, for \$1/month—and to use the Internet as a medium for education as well as commerce, telemedicine, communication, etc.

Global Wi-Fi Costs⁵

There are a variety of technologies and associated costs for achieving universal Internet access. Costs range from \$500 per village⁶ to \$1,000 per village to set up a wi-fi infrastructure (\$341 million to \$638 million for all of India's rural villages), to \$2,000 for a village-wide solar powered communications station.



6. SEED: SYNERGETIC EDUCATIONAL EXPERIENCE AND DEVELOPMENT

By Reo Jones, Sarah Hausman, Alex Mackay, Patricia Major, Charvee Patel

Sustainable Schools⁷

One of the goals of the SEED program is to increase the sustainability of the schools of the world. This includes the efficient use of energy, water, food, and other resources. It would provide a *SEED catalogue* to schools throughout the world (distributed with the help of WE CAN—see Strategy #2, p. 172). This catalogue would enable schools to learn of and to obtain energy conservation and production equipment, water catchment systems, food production systems, and other tools, equipment and facilities that will increase the school's use of sustainable technologies, decrease the school's ecological footprint, and increase its role as a net producer of energy, water, and food in its community.

SEED is designed to enhance existing science and environmental science curricula and provide curricula in places where none currently exists by encouraging hands-on learning experiences for students around the world. The basis of the SEED program is the SEED catalogue, a kit consisting of educational tools and resources designed to allow teachers and their students to create school and community gardens, design and build sustainable classrooms and school buildings from locally available materials, and involve the broader community in efforts to bring about a more sustainable world through education and action. This kit and the resources it includes will allow students and teachers to learn by doing.

The SEED catalogue makes environmental science curricula, green building, renewable energy, and other projects accessible and available to primary and secondary students globally at any level of need. SEED will work in partnership with WE CAN, ensuring that materials are available via the WE CAN website and telephone services.

Example of what the SEED catalogue includes

- Horticultural kits with a list of necessary tools and instructions for gardening and growing herbs, fruits, vegetables, and trees
- Greenhouse construction templates and materials
- Green-school building design strategies and materials

- Energy-saving and energy-creating strategies and materials
- Cogeneration and district heating and cooling systems
- Local educational project opportunities with a SEED supporting organization
- Biofuels kits, tools, and instructions
- Green buildings blueprints
- Building energy management systems
- Recyclable materials use
- Environmentally friendly cleaners
- Environmentally friendly refrigerants
- Energy efficient cooling systems
- Water efficient systems, including composting toilets, grey water systems, rainwater collection



Example of hands-on environmental educational experience.

Possible collaborators with SEED include

- WE CAN
- Individual city, state, and national governments
- UNEP, UNDP
- Alliance to Save Energy—green-school construction plans
- Architecture for Humanity—school plans
- The Collaborative for High-Performance Schools (CHPS)—green-school construction
- Energy Foundation—funding for sustainable-energy technologies and local projects
- Energy Star—renewable and energy saving products
- Green Building Supply—building materials, environmentally friendly cleaning materials
- The Green Engineer—sustainable design consulting
- Green House Mega Store—international greenhouse building supplies and templates for school projects, horticulture tools
- Potential collaborations and projects with universities and colleges

Results

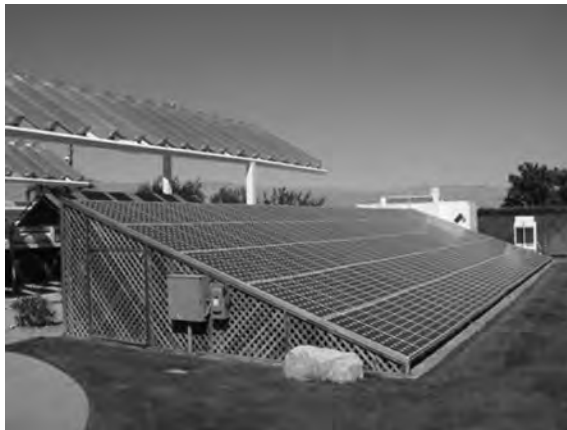
- Schools become local producers of food and promote energy efficiency as a way of saving both energy and money
- Students and teachers collaborate in environmental education and community building
- Encourages a global network of educational cooperation

One of the goals of the SEED Program is to have schools become sources of food, energy, and water rather than just large consumers of these resources.

The SEED Program will assist schools in rural areas to outfit a small farm (one to two hectares) adjacent or nearby the school for students to help farm. Part of the curriculum will be the teaching of the latest resource-efficient farming techniques to students.

In malaria-infested areas, one crop could be chrysanthemums, (which could be sold as feed stock for the production of the anti-malaria pesticide pyrethrum; see Health Strategy #3, p. 278). In all areas, vegetables and fruit will be produced to provide children (and in some food-short areas, their families) with fresh produce.

Urban schools would use the same principle as the rural schools but would use solar panels to produce energy, rather than farms that produce food. Any energy produced that is above that needed by the school will be sold to nearby residences and businesses.



Solar energy facilities powering a school in Nigeria.

RECAP OF STRATEGIES 1–6

Cost

To implement all the strategies outlined above will cost \$10 to \$15 billion per year for ten years. The variable costs are a function of varying costs of implementation according to location and chosen strategies.

- The School–In-A-Box program costs are approximately \$1 billion per year for 10 years.
- The WE CAN: World Educational Cooperative for All Nations program costs are approximately \$500 million per year for 10 years.
- The School Community eHub program costs are approximately \$200 million per year for 10 years.
- The eMobile Educational Resources program costs are approximately \$500 million per year for 10 years.
- The Wi-Fi for Education program costs are approximately \$1 billion per year for 10 years.
- The SEED: Synergetic Educational Experience and Development program costs are approximately \$50 million per year for 10 years.

The total costs of all these programs are \$3.25 billion per year for ten years. The additional costs of achieving universal primary education by 2015 can also be inferred by examining the average (per-pupil) costs of primary education today, and multiplying this cost by the number of primary school-age children not in school (100 million). Since this unit cost varies substantially across regions (and across countries within regions), the resulting global estimate varies between \$10 billion and \$15 billion, depending on whether regional, national or global averages are used.¹

Funding

In addition to the UPS partnership program described above in the SIB strategy that could bring in over \$2.7 billion per year, there are other sources of funding for the educational initiatives described here. Assuming that the amount needed is \$3.25 billion per year, there is a need for less than \$1 billion if the package delivery strategy is successfully implemented. This additional amount (or more) could come from government, philanthropic, and additional private enterprise sources.

The incentives for increasing educational funding from these sources are substantial. There is a direct and strong correlation between

increased literacy and elevated worker productivity and higher GNP.² Along with higher productivity comes higher incomes. One Organization for Economic Cooperation and Development (OECD) study points to a doubling of income for those who complete secondary education over those who do not finish.³ Annual return on investments in education for successful students range from 6.5% to nearly 17% in developed countries.⁴ Life expectancy, infant mortality, and income per capita are all improved by education.⁵ Economic growth and lowered fertility rates also result from increased education.⁶

In addition, governments have other compelling and cost-effective incentives to increase educational funding as the following figures make clear: 47% of the dropouts (in US schools) left school because classes were not interesting; more than 50% of those incarcerated are high school dropouts (in some regions this figure is as high as 85%); it costs \$23,200 to jail one inmate per year; it costs \$10,000 per school student. If students can be kept from dropping out of school the odds of their staying out of jail increases. Given the relative costs of jailing someone versus educating them, it is clear that the socially, morally, and economically wiser strategy is to invest more in education.

Summary

In summary, the educational strategies outlined above, if implemented aggressively, will enable the world to eliminate illiteracy, achieve universal primary education for all (thereby achieving the Millennium Development Goal #2), provide access for everyone in the world to secondary, tertiary, and lifelong educational opportunities—thereby increasing economic productivity; overall health and longevity; personal, community, and country-wide well-being; as well as increasing participation in local, regional, and global problem solving, governance, and democracy.

The return on investment for such a series of global and local strategies, in the short and long term, would be huge. The total cost for the educational strategies is less than the cost of two B2 bombers,⁷ or what citizens of the US spend on t-shirts each year.⁸

Endnotes

- 1 These figures are close to those obtained by UNICEF in their “minimum global estimate” of \$9.1 billion
- 2 Literacy correlates with cereal yields: 0.653; literacy with GNP/capita: 0.584; literacy with calorie consumption: 0.672. Correlations were done in the software program Global Data Manager. Literacy rate is from Central Intelligence Agency, *World Factbook 1989* (Washington, D.C.: CIA, 1989). GNP/capita is from The World Bank, pp. 178-179.; cereal yield is from World Resources Institute, pp. 278-279.; calorie consumption is from FAO, pp. 291-292; infant mortality and life expectancy are from *World Population Data Sheet 1990*. Also see The World Bank, *The Contributions of Education to Economic Growth: International Comparisons*. World Bank Reprint Series, No. 320 (Washington, D.C.: The World Bank, 1985), where it is pointed out that four years of primary education is associated with an average increase in farm productivity of 10% or more.
- 3 “Income by educational attainment,” (*The Economist*, June 23, 2001, p. 104).
- 4 “Returns to education,” (*The Economist*, November 2, 2002, p. 96)
- 5 Literacy with infant mortality: -0.815 ; literacy with life expectancy: 0.822. Correlations were done in the software program Global Data Manager. On average, each additional year of schooling is associated with a decrease in infant mortality rate of approximately nine per 1,000; K. Hinchliffe, *The Monetary and Non-Monetary Returns to Education in Africa*. The World Bank Education and Training Series, Report EDT46 (Washington, D.C.: The World Bank, 1986).
- 6 “No school, no future,” (*The Economist*, March 27, 1999, p. 45).
- 7 Center for Defense Information, <http://www.cdi.org/issues/aviation/B296.html>
- 8 *State of the World 2004*, (Washington D.C., Worldwatch Institute, 2004 p. 163).

7. EDUCATION FOR EVERYONE

By Andy Cavatorta, Anne Loyer, Annika Semmler, Elke Esmeralda Dikoume, Natasha Cline-Thomas, Rafi Pelles, Theodora Filip, Rachel Wong

Strategic Summary: *The Education for Everyone group developed a strategy that employs education and community-involvement in school construction, operation, and maintenance to address poverty from the ground up, providing opportunities for children and future generations. One of the largest barriers to school attendance for children in less developed areas of the world is the distance they must travel to get to a classroom. This plan has local communities construct their own schools, built with local materials and powered by small-scale wind and solar technologies.*

Present State of the Global Education System

- Over 100 million children in the world do not have access to education.¹⁸
This silent emergency has a real and immediate effect on the capacity of countries to make inroads into poverty and on citizens' ability to realize their rights. Education, especially of women and girls, is the single most powerful weapon in the fight against poverty
- Adult Literacy Rate—Sub-Saharan Africa (SSA): 62%; World: 78%
- Adult Literacy Parity (females as percentage of males)—SSA: 76%; World 86%¹⁹
- Orphans and vulnerable children—estimates vary but there are approximately 13 million orphans, with the majority of them living in SSA
- Disabled children—World Bank recently estimated that nearly 40 million of 115 million out of school children are disabled²⁰
- Children in rural, hard to reach areas (including pastoralist communities) constitute most of the out of school children.
- Costs of schooling—the lack of enrollments in primary education is often attributed to the cost of schooling, both direct and indirect costs, or opportunity costs. Direct costs include: school fees, uniforms, school supplies, transportation and food. Indirect costs include: child labor, distance to school

- School fees—as a direct or indirect cost—are an impediment, particularly for girls and other disadvantaged children, from enrolling and regularly attending school
- Cultural or family perceptions about the value of basic education vary.

Preferred State of the Global Education System

Everyone in the world has:

- culturallly appropriate education
- the knowledge they need for their communities to thrive based on their own standards
- communities are as self-sufficient as possible
- people are healthy and have access to healthcare
- the society the community is a part of has a sytem of justice and individuals are aware of their rights
- people are able to participate in the world beyond their immediate communities—regionally, nationally, and internationally
- all female children have an education
- all members of the community have better business opportunities, resulting in a living wage
- there is gender equality in earnings, job opportunities, and inheritance, property, and other rights

Everyone in the world has access to education about the following:

- **SELF-SUFFICIENCY:** Shelter, Sanitation, Technological Self-sufficiency, Solving local problems, Health Practices, Resource Self-sufficiency/knowledge, Connected/Access to information, Creation of a better sustainable world, Effective local medicine
- **JUSTICE:** Human Rights Awareness, Empowerment/Equality for women, Local laws awareness

“Only a person who is aware that he or she has rights can better strive for those rights, whether it be the right to a job, to obtain adequate food, shelter or medical care, to participate actively in political life, or to benefit from the progress of science and technology”

—UNESCO Director-General Koïchiro Matsuura

- **HEALTH:** Family Planning, Disease, Sanitation, Health Practices, Effective local medicine
- **BASIC EDUCATION:** Reading, math, health, history, global awareness, money management.

Strategy

This plan of educational development addresses all of the Sustainable Development Goals by providing the education needed to allow individuals to move out of poverty, to meet their basic food, health and sanitation needs, and to build sustainable environments from which they can share their intellectual, cultural, and material resources with the global community.

This plan develops an educational system made of self-sustaining, self-replicating schools; an online knowledge network; and a project-based, adaptive curriculum.

At the center of this plan is a self-sustaining demonstration school in each region. This school will feature:

- Energy self-sufficiency. The school will generate energy to meet its electricity needs. This will be produced from local renewable energy sources or imported photovoltaic cells. Energy generation will be demonstrated in classes for adults and children. This will encourage the community to develop similar methods for meeting their individual energy needs.
- Increased food self-reliance. The school will generate food to support a school lunch program. A demonstration farm will be an integral part of each demonstration school. One of its goals will be to allow adults and children to develop new methods of food production suited to their region. The farm's output will feed the students.
- A demonstration metal and woodworking workshop will allow students and their families to learn and share different skills. It will come with construction plans and blueprints for the creation of tools necessary for food production and the building and maintenance of power generation equipment such as simple windmills. The workshop will also be able to be used for the building and maintenance of tools for building construction. This knowledge and set of tools can then be used on outside projects in the community, and to create the tools necessary to build future schools.
- The school building itself will be a demonstration in building methods suited to the local region, where passive heating and cooling are

designed into the building. The design of the building will reference local architecture—so that it takes advantage of any techniques that may have been developed for that climate, and fits into the cultural and physical landscape. As the school grows, each addition can be the basis for a class project.

- The school will be connected to the Internet. Through a satellite link to the Internet, and a local network of \$100 laptops, the students and teachers will have access to outside expertise on all projects they decide to undertake. All the farming and community building experience from the Millenium Villages Project and similar efforts can be fed into the system, as well as access to regional agricultural exchanges.

Replication

Our model school can accommodate up to 500 students. It would be staffed by 10 teachers and 10 teachers-in-training. The schools would incorporate working examples of ideas and techniques that benefit the whole village. Each school will contain many resources and services that add wealth to the village in the short and long term.

The intention is that each school would be replicable. Groups of 10 teachers train alongside established teachers for one year and then move on to start schools of their own. Each school would produce a new batch of trained teachers every year. Since each school has a fabrication shop of tools that can be used to work with wood, metal, and other raw and recycled materials, that the shop and all its tools can be used to create the core of a new shop. Teachers will also be trained to direct the construction of their own school.

Network

A web-based educational network will connect all schools and contains educational materials that can be downloaded and used in the schools. The network will be designed to enable and foster a participatory sharing and creation of culture and knowledge. The content of the Education for Everyone educational network would be open-source, much like a wiki. Its users (teachers, students, villagers, administrators) are expected to be contributors, so they are invested in the process. This will help the content to adapt, evolve, and grow. It will also help to ensure that it's relevant to its users.

Phase I: Planning (Months 0–6)

1. Initial Staff: Program Director + 10 teachers + 10 teachers-in-training + Educational Consultant + Systems Administrator/Data Analyst + School Construction Manager/Engineer + Architect (sustainable, vernacular architecture)
2. Set up teacher training program
3. Locate 10 schools in 10 different regions or climates (as in the Millennium Village Project model)
4. Purchase/obtain land in each community for school location
5. Community Meetings + School Design and Curriculum + Parent-teacher meetings + Youth Advisory Committee meetings + Plan incentives for girls
6. Design school lunch program
7. School design and review
8. Design farming plan
9. Set up Internet connection plan and service

Phase 2: Construction (Months 7–12)

- Gather/Create building materials from local sources
- School Construction using local materials, with energy supplies, water collection, water storage and sanitation
- Demonstration Farm planting
- Set up shops for basic wood and metal fabrication
- Build two windmills (one for electricity for computers, and one for water pump)
- Build water pump for irrigation and sanitation
- Weekly community meetings to review progress
- Purchase computer equipment for first ten schools (10 computers)
- Set up satellite or other appropriate devices for Internet connection
- Set up teacher training and professional development
- All teachers report back daily on their progress via a Webpage
- Provide contributing information from teachers, villagers, students (through teacher until 1 lap top per child reached).

Phase 3: School Start Up (Months 13–18)

- Demonstration Farm – agriculture class
- Demonstration windmill – design and build windmill
- Demonstration Sanitation – design and build water system

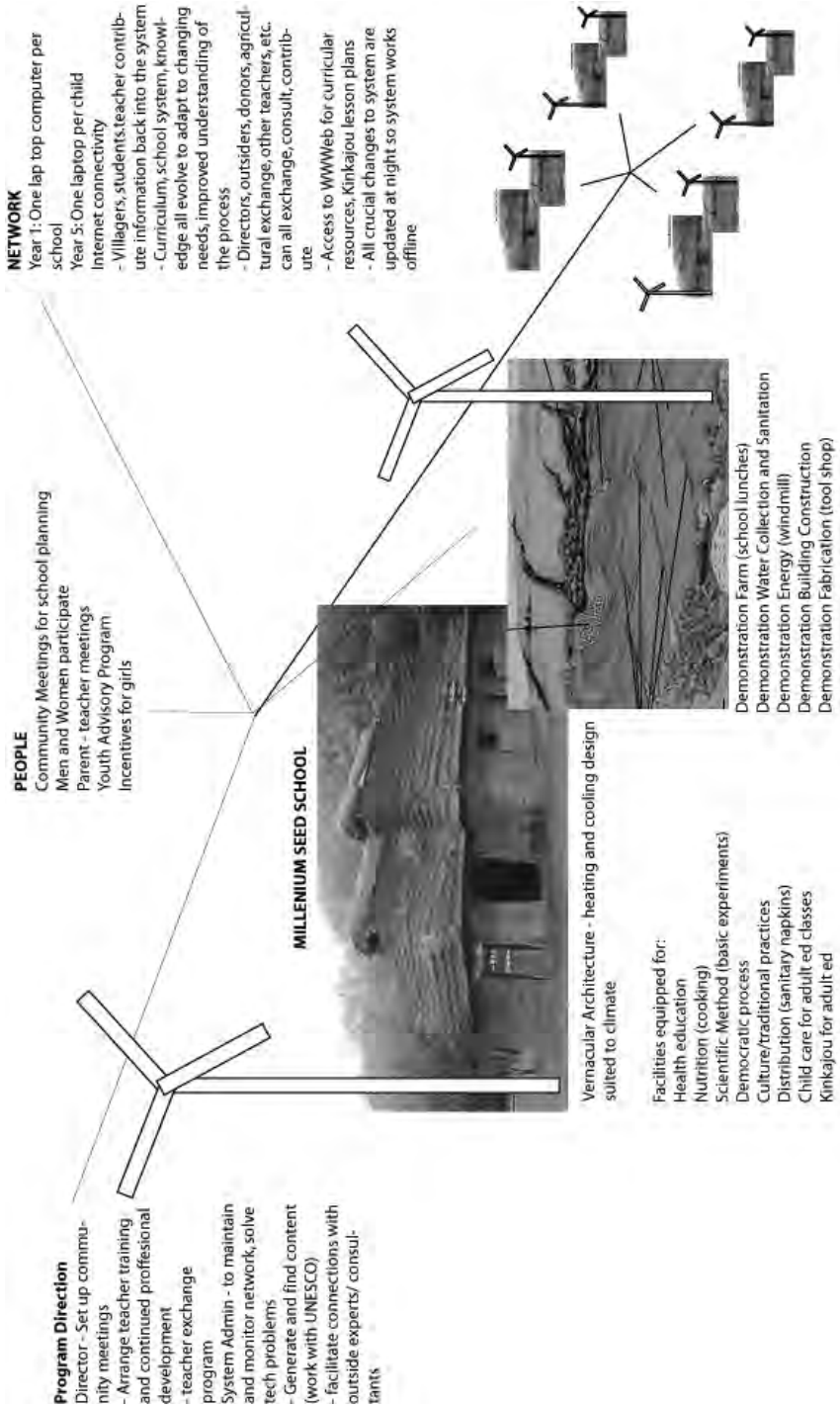
-
- Demonstration Fabrication (tool shop) – build capacity for future projects
 - Curricular adaptation to student needs; in consultation with student Advisory Committee
 - Next round of teachers-in-training hired
 - Data collection for reporting return on investment (students impacted, quality of life issues affected, skills acquired)
 - Grow network by adding students using \$100 laptop.

Phase 4: School Replication (Year 2)

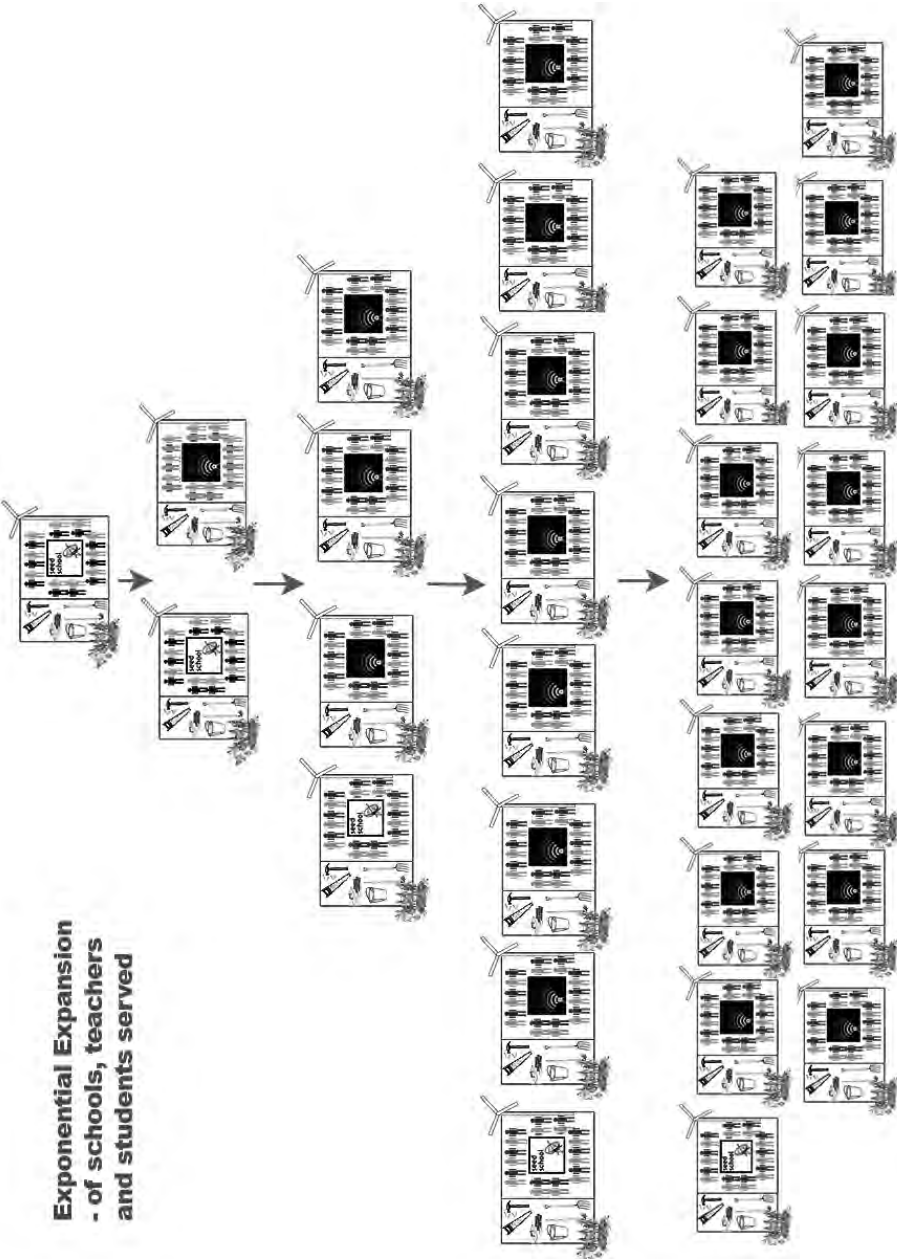
Repeat of phase 2 & 3 with teachers-in-training now acting as teachers, with a new batch of teachers-in-training acting as assistants.

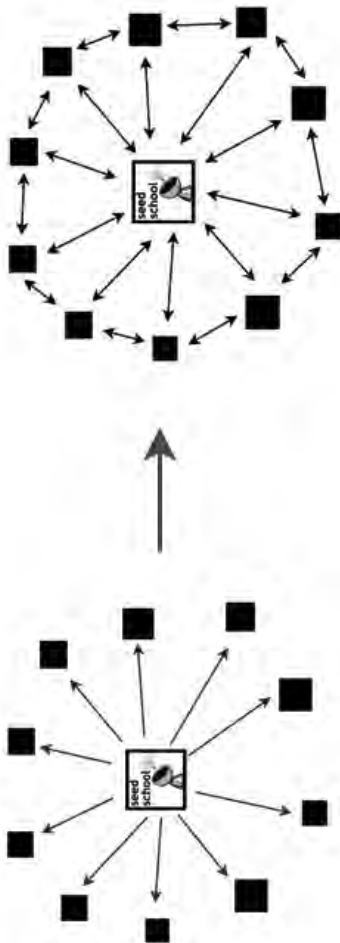
COSTS				
	ongoing	start up next 10 - per school	ongoing - next 10	
start up costs				
teachers (10 per school)	10000	5000	10000	5000
staff (3)	3000	1000	1000	
seed & fertilizer	300	100	300	100
tools	500	50	200	50
computer	300		300	
internet connectivity	1450	1200/yr connection	200	
computer	300	50	300	50
lunches (\$37/kid/year - 500 kids)	1850	925	1850	925
windmill	100		100	
1 laptop per child		685000		6850000
	17800	692125	14250	6856125
for 10 years		6921250		68561250
Total	75514550			
TOTAL	75,514,550			

Costs associated with the program.



Exponential Expansion
- of schools, teachers
and students served





Initially information would flow from seed school to next generation schools. Soon all schools would be contributing to the network. Information sharing will grow regionally, across all of Africa, and with the global community.



8. ALL KNOWLEDGE, ALL PEOPLE, ALL THE TIME

By Rebecca Berkowitz, Saroj Humagain,
Iwanka Kultschycky, Brandin Watson,
Darlene Williams



Strategic Summary: *High quality, affordable education on any subject at any time in any place can be made accessible to poor people in developing countries as well as the wealthy in the developed world through existing telecommunications technology. Instead of school in a classroom, telecommunication devices make possible school in your hand. These devices, coupled with a central access site that is a free call in, can raise the level of knowledge in the world by providing “just in time” information to people in need throughout the world.*

Introduction—Problem State

Literacy—“An estimated 776 million adults – or 16% of the world’s adult population – lack basic literacy skills. About two-thirds are women. Most countries have made little progress in recent years. If current trends continue, there will be over 700 million adults lacking literacy skills in 2015.”¹

Digital Divide—19% have easy access to fixed telephone lines; 61.1% have mobile cellular telephone subscriptions; 6.1% Fixed broadband subscribers; 5.0% Mobile broadband subscriptions; 23% used the Internet at the end of 2008.²

“On current trends, despite important progress, by 2015 at least 30 million children in some of the world’s poorest countries will still be out of school. Education is absolutely central to achieving all of our development goals—we know that progress in education is a vital tool in making progress in poverty reduction, health and nutrition. And education will be the only way to deliver sustainable change, opportunity and hope for all the world’s children. At this time of global downturn, we cannot forget our promises to build a better future for them. The price of failure is simply too great.”

—Gordon Brown, UK Prime Minister

Failure to effectively share critical information not only between ourselves but between successive generations threatens everyone. Ignorance leads to crime, violence, wars and environmental destruction. Conversely, knowledge leads to commerce, sharing, peace and sustainability.

The global problem state for education and communication is characterized by:

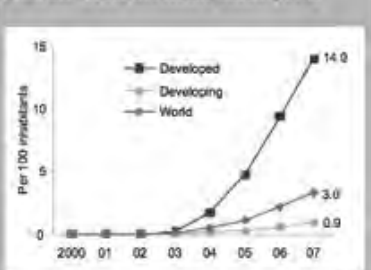
1. Inequality in educational access based on, or as a result of, bias because of income, gender, age or social standing
2. High levels of student related debt needed to pay for higher education
3. Lack of qualified teachers and other educational professionals
4. Lack of administrative transparency
5. Lack of world unity in highly valuing education
6. Unmet basic needs of students
7. Lack of safety
8. Inadequate infrastructure such as broadband internet, devices, roads, water and electricity

As communication technology advances, the world is becoming more global. However, due to slow diffusion rates of technology many local communities do not have access to the global community which would provide communities with education to help meet essential and immediate needs within the community.

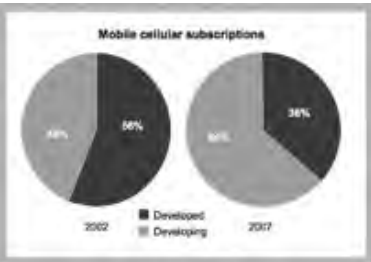
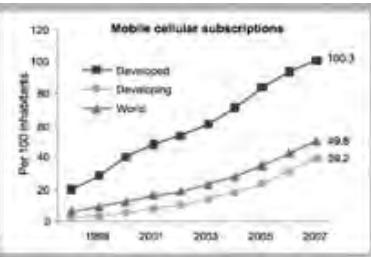
HDI rank	Adult literacy rate (% aged 15 and older)		MDG Youth literacy rate (% aged 15–24)		MDG Net primary enrolment rate (%)		MDG Net secondary enrolment rate ^a (%)		MDG Children reaching grade 5 (% of grade 1 students)		Tertiary students in science, engineering, manufacturing and construction (% of tertiary students)	
	1985– 1994 ^a	1995– 2005 ^c	1985– 1994 ^a	1995– 2005 ^c	1991	2005	1991	2005	1991	2004	1999–2005 ^a	
Developing countries	68.2 ^a	77.1 ^a	80.2 ^a	85.8 ^a	80	85	—	53 ^a	—	—	—	—
Least developed countries	47.4 ^a	53.4 ^a	56.3 ^a	65.5 ^a	47	77	—	27 ^a	—	—	—	—
Arab States	58.2 ^a	70.3 ^a	74.8 ^a	85.2 ^a	71	83	—	50 ^a	—	—	—	—
East Asia and the Pacific	—	90.7 ^a	—	97.8 ^a	—	93	—	89 ^a	—	—	—	—
Latin America and the Caribbean	87.6 ^a	89.9 ^a	93.7 ^a	96.6 ^a	86	95	—	68 ^a	—	—	—	—
South Asia	47.8 ^a	59.7 ^a	60.7 ^a	74.7 ^a	—	87	—	—	—	—	—	—
Sub-Saharan Africa	54.2 ^a	59.3 ^a	64.3 ^a	71.2 ^a	52	72	—	26 ^a	—	—	—	—
Central and Eastern Europe and the CIS	97.5	99.1	—	99.6	90	91	—	84 ^a	—	—	—	—
OECD	—	—	—	—	97	96	—	87 ^a	—	—	—	—
High-income OECD	98.9 ^a	99.1 ^a	99.4 ^a	—	97	96	—	92 ^a	—	—	—	—
High human development	—	94.1	—	98.1	93	95	—	—	—	—	—	—
Medium human development	—	78.3	—	87.3	—	87	—	—	—	—	—	—
Low human development	43.5	54.1	55.9	66.4	45	69	—	—	—	—	—	—
High income	96.4 ^a	98.6 ^a	99.0 ^a	—	—	96	—	91 ^a	—	—	—	—
Middle income	82.3 ^a	90.1 ^a	93.1 ^a	96.8 ^a	92	93	—	70 ^a	—	—	—	—
Low income	51.5 ^a	60.8 ^a	63.0 ^a	73.4 ^a	—	81	—	40 ^a	—	—	—	—
World	76.4 ^a	82.4 ^a	83.5 ^a	86.5 ^a	83	87	—	59 ^a	—	—	—	—

Source: *Human Development Report 2007/2008: Fighting Climate Change: Human Solidarity in A Divided World*, UNDP Table 12, p. 287

Chart 2.5: Mobile broadband subscriptions



Source: ITU World Telecommunication Indicators database



Digital Divide

“The debate is no longer whether to use information and communication technologies (ICT) in education in Africa but how to do so, and how to ensure equitable access for teachers and learners, whether in urban or rural settings.”³

”Failing to recognize and remedy women’s severe under-representation in the development of ICT and related policies, regarding both access and leadership, limits our ability to advance our global society. ICT allows women to increase participation in political social and economic arenas and support empowerment for themselves, their families and their communities.”⁴

Strategy

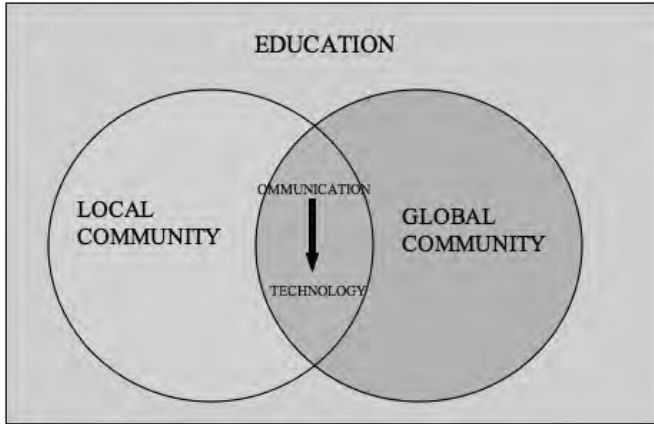
OUR PLAN: Use the already existing communications technologies and current trends to build educational capacity.



UNESCO School in a Box



School In Your Hand



ALL KNOWLEDGE

What is it?

An application that people can download to their mobile devices with content spanning the full range of human knowledge: Primary, Secondary, Tertiary, Life Knowledge.

How does it work?

Creates a portal that allows access to a network of educational multimedia files. Links content to participants enabling them to consume, produce, rate, and review.

Preferred State

1. 100% literacy
2. Access to education based on interest and ability not dependent on financial status
3. Available to all regardless of age, gender or social status and incorporates intergenerational learning
4. Ensure that all people complete a full course of formal education
5. Formal education includes the potential for global experience through Internet connection
6. Adapts to emerging challenges of people to maintain the preferred direction.
7. Provides equal and easy access to information for all participants
8. Increases transparency and accountability
9. Increases nutrition and health through education

- 10. Multilingual
- 11. Increases social and gender equality
- 12. Increases knowledge of human rights.

Strategy—All Knowledge, All People, All the Time

Global Education Preferred State

- Free education for all
- 100% literacy
- Affordable and accessible communication for all
- Synergize rate of change with communication technologies and education at a ratio of 1:1
- All knowledge is accessible to all humans all of the time via:
 1. An omnilingual educational network
 2. Trained mentors within each region to help people access technology and cultivate learning
 3. Help centers for technology
 4. Reiterative assessment techniques for the system.

Examples

- Smartphones—3G networks
- AMA—Med School applications
- Khanacademy.org
- Open Course Ware (OCW)
- DIY network—<http://www.instructables.com/>



Mobile Phone Use World Wide



“Today, there are more than 3.3 billion mobile-phone subscriptions worldwide, which means that there are at least three billion people who don’t own cell phones, the bulk of them to be found in Africa and Asia. Even the smallest improvements in efficiency, amplified across those additional three billion people, could reshape the global economy in ways that we are just beginning to understand.”

—The New York Times, 2008



The strategy will use the following artifacts to reach the preferred state

- Option A: Create or expand sector(s) within the United Nations i.e. ITU
- Option B: Public sector, i.e. Government develops, implements and fosters the global education network
- Option C: Private sector, i.e. Company develops, implements and fosters the global education network
- Option D: Social sector, i.e. NGO develops, fosters and implements the global education network
- Option E: Interdependence of above entities model.

This entity will consist of

- A qualified research team to design an accessible and flexible educational network
- A software engineering team to build it
- Graphic design work to make it attractive
- Administrative staff to oversee operations
- Maintenance staff to keep it healthy
- Community liaisons to market the system and get the community on board as both consumers and producers of educational content
- This entity needs to be able to operate in an environment that is by and large continually supportive of open education. It requires current trends to continue in mobile broadband penetration and electric grid expansion in developing countries. It also requires governing educational policies that allow technology to be the mover and the shaker of education
- A private company or NGO developing, fostering, and implementing the worldwide education network.

8-Year Plan

- 2010—Have support and direction of US leadership
- 2011—Buy In of UN/Civil Society
- 2012—Support and Contribution of interested States Members of the UN
- 2015—Implementation of objective
- 2017—Actualized network community via education/communication hand held devices.

Present System



Preferred System



Endnotes

- 1 UNESCO, Education for All Monitoring Report 2009
- 2 "Measuring the Information Society"—The ICT Development Index, 2009 Edition
- 3 <http://www.rocara.org/ChangingMindsets/>
- 4 World Summit on the Information Society—Geneva 03-Tunis 05 <http://www.itu.int/wsis/index.html>

9. ELIMU SASA HIVI PROJECT

LEVERAGING TECHNOLOGY TO PROVIDE QUALITY, ACCESSIBLE PRIMARY EDUCATION FOR ALL

By Margaret Lovallo, Danielle Radacosky-Pentoney, Sushil Pakhrin,
Charlie Sheldon

Strategic Summary: *The Elimu Sasa Hivi (Swahili for “Education Right Now”) Project focuses on improving primary education in rural Sub-Saharan Africa. By merging mobile technology based micro businesses and associated micro-lending with mobile device based educational content, a scalable primary education platform can be created that is community owned and operated, socially and economically sustainable, empowering to educators and easier for governments and NGO organizations to track and evaluate in rural communities.*

Present State— Primary Education in Sub-Saharan Africa

Sub-Saharan African Primary School education is arguably the worst in the world. This presents a huge hurdle to national development. As of 2006 only 24% of primary age children had access to primary education and completion rates are the lowest in the world for primary school.



Preferred State

The preferred state to the current condition of primary school education in Sub Saharan Africa is one where:

- All children have access to education—where there is a 100% rate of enrollment for boys and girls
- All children have access to the highest quality of education, no matter where they are living
- All children complete primary school and enroll in secondary school
- Teachers receive more than adequate compensation for their work.



Strategy

Aligning Information Communication Technology and Rural Education Pilot Program: Burkina Faso Elimu Sasa Hivi

The *Elimu Sasa Hivi* strategy for reaching the above preferred state includes the formation of a partnership of the government of Burkina Faso's Department of Education, a cell phone manufacturing company such as Nokia, and UNESCO.¹ This partnership would offer subsidized and discounted cell phones to teachers and schools throughout Burkina



Faso through the Burkina Faso telecommunications company Lazara.

Lazara is a very successful reseller of used mobile phones in Burkina Faso. This partnership and rural education support program would be publicized throughout Burkina Faso, and after the prototype is up and running, outreach would be to other parts of Africa. The first part of the publicity and educational program would use local radio stations.



Another component of the *Elimu Sasa Hivi* strategy would be the provision of cell phones to educators in rural parts of Burkina Faso through a micro-lending institution similar to the Grameen Bank of Bangladesh. These phones would be for both education uses in the rural classroom as well as for income production for the teacher. Income would come through the sale of time on the phone to other members of the community who do not as yet have telephone service.

3. Create Economic Opportunities for Teachers and Others

Provide the teacher with Grameen Bank style micro-finance to start a 'Phone Lady' business with other people in the community to support the school and assist with reporting.

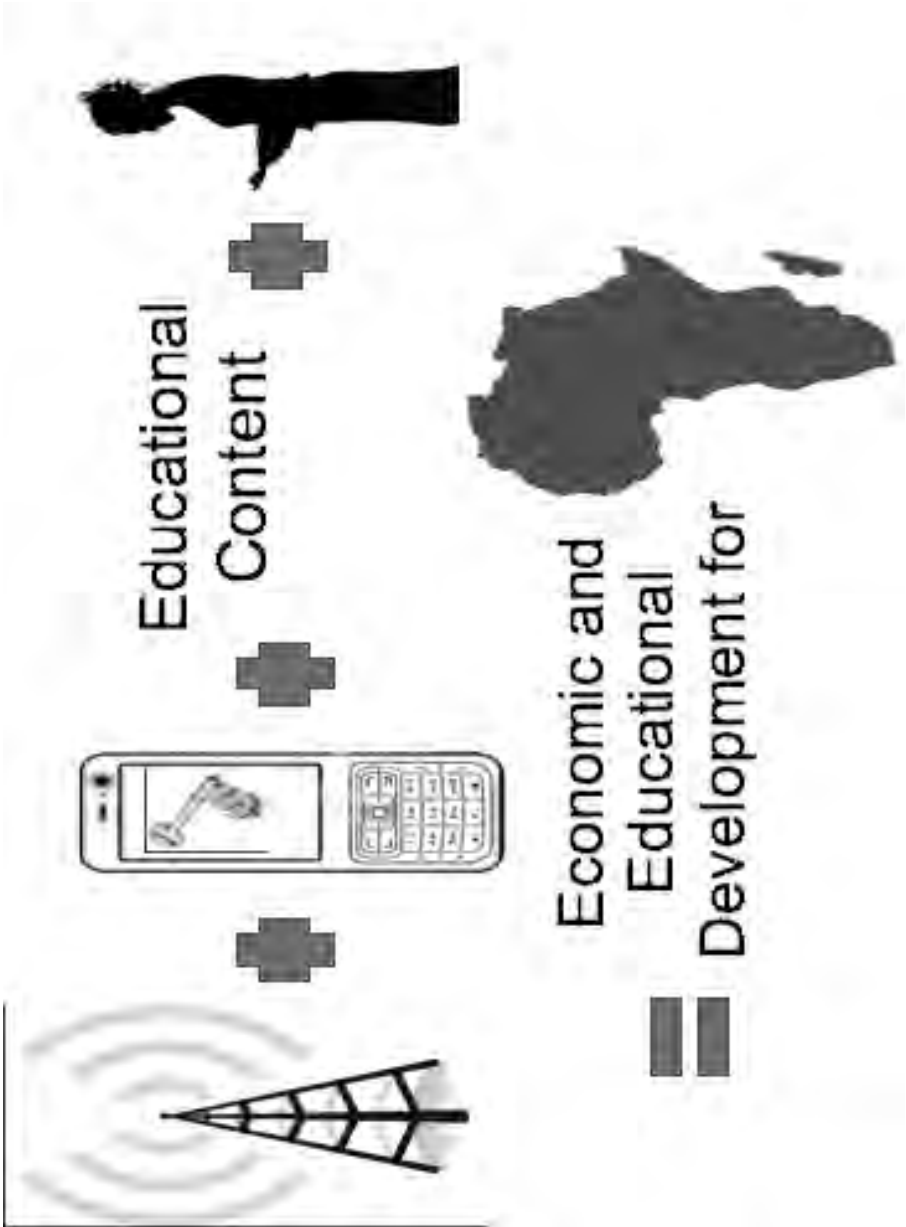
4. Increase Education Infrastructure

Allow flexible brokering of phone services for educational infrastructure improvements.

5. Self-Replication

Syndicate the project through the combination school-phone shop which accesses mobile teacher training content (TESSA- Teacher Education Sub Saharan Africa).²

The phone provides communication to teachers so they can contact other areas, other families, and reach other teachers thereby alerting them to the program.



Improving Primary
Education by
Merging Micro
Business, Mobile
Technology and
Education



Benefits of the Elimu Sasa Hivi Project

Benefits for Teachers

- Income generation via rural phone access rental
- Support for family from extra income
- Increase stature and respect for education, and teachers within village
- Access to educational resources
- Decrease need for travel to head office
- Ability to discuss and establish best practices with other teachers participating in the program
- Become technologically proficient.

Benefits to Community and School

- Accurate reporting of school conditions resulting in better aid allocation
- Positive role models
- Opportunity for village to invest in school in exchange for mobile airtime
- Connectivity for village to assist in checking crop statistics, receiving health information, communicating in emergencies and general economic development

Benefits for Hand Set and Service Providers

- Access and potential first goer in emerging market
- Quick way to educate community on technology and develop market
- Brand awareness

Benefits for Governments

- More accurate educational statistics via sms services like chipata
- Direct line of communication to villages for emergencies and management efforts
- Supports economic development
- Stream rich e-learning content for both teacher training and classroom learning
- Pico projectors market could reach 30 million units by 2012³
- Open educational resources
- Mobile assisted language learning (MALL)⁴
- Qimo 4 kids & blackboard.Com for mobile
- E-learning via Kenya Institute of Education (KIE)

Endnotes

- 1 Plan, "Plan and Nokia partnership annual report 2009" http://plan-international.org/files/global/publications/about-plan/Plan%20Nokia%20Partnership%20Annual%20Report%202009%20-%20part_1.pdf
- 2 TESSA- Teacher Education in Sub-Saharan Africa. <http://www.tessafrica.net/>
- 3 Business wire -Pico-Projector Market Could Reach 30 Million Units by 2012 According to the '2008 Pico-Projector Market Segment Analysis'. <http://www.highbeam.com/doc/1G1-175628297.html>
- 4 George M. Chinnery, Goin to the Mall: Mobile Assisted Language learning (University of Maryland Baltimore County, 2006), 9-16. <http://lilt.msu.edu/vol10num1/pdf/emerging.pdf>

10. EDUCATOR TRAINING CONNECTION PROGRAM

By Andrew McGregor, Rusudan Chitashvili, Abdualлах Alsutlan, Cole Whiteley

***Strategic Summary:** There is an opportunity now to provide high quality, universal education to everyone in the world by utilizing smart phones as an infrastructure for delivering knowledge and continuing, vocationally relevant education. By utilizing smart phone connectivity and access to knowledge (especially in Africa where infrastructure is a particularly severe hindrance), it is now possible to vastly improve the quality and reach of education by providing peer-to-peer mentorship and continuing education to both established teachers and community members who wish to serve the role as educators.*

Introduction

“Education is the most powerful weapon which you can use to change the world.”

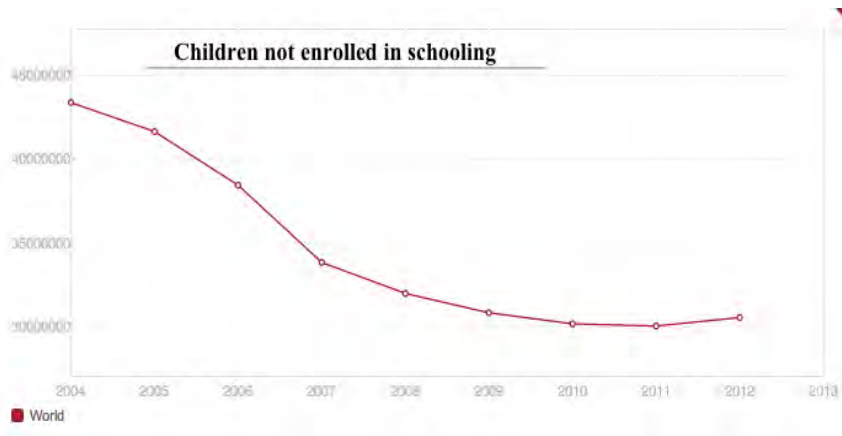
—Nelson Mandela

Problem State

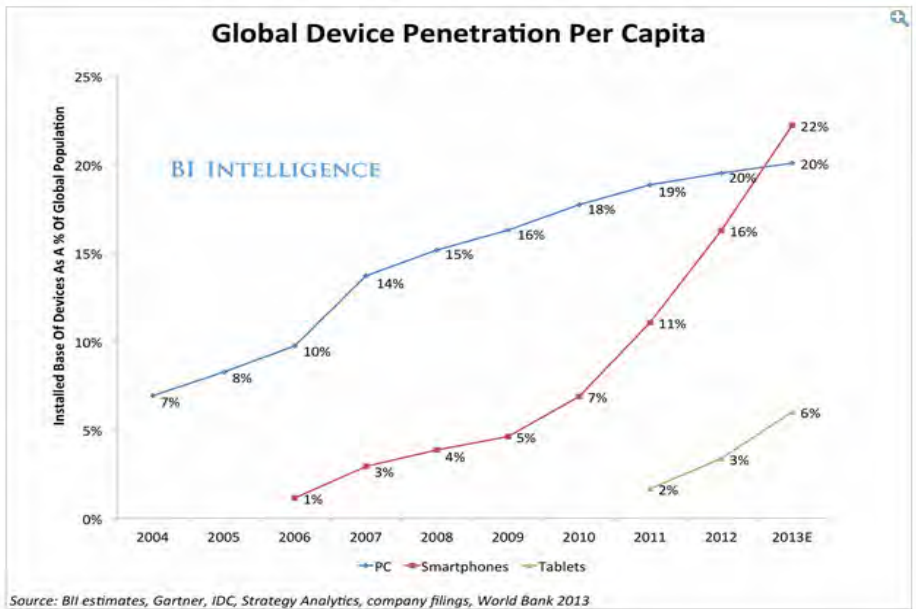
Education, a human right, is not available to everyone, and does not meet the standard of quality that should be globally assured for our world to have a promising future.

Currently there are an estimated 30 million children not in primary

Figure 1: Children Not Enrolled in School. World Bank Data Collection



school in the world. Along with this problem, there is a need to enhance the quality of teaching.¹ There is no *global* training program for teachers by other teachers. Such a program would help assure that teaching materials are used in a relevant and effective manner. In addition, learning goals vary widely across different countries and schooling districts. There is also a lack of funding to provide everyone with adequate schooling. The costs to parents in many parts of the world to send their children to school are too high for everyone to receive an education.



Preferred State

The preferred state is where everyone in the world has access to low cost, high quality education—and one aspect of this “high quality” are gifted, enthusiastic and well trained teachers. In addition, the education system should be *global*, and function as a *learning system* (meaning that it is constantly improving). It needs to be set up in a way that allows teachers from around the world to learn from each other. There needs to be cooperation and collaboration between teachers all over the world so that teaching methods are constantly improving. In addition, everyone

in the world needs to have access to vocationally and culturally relevant education.

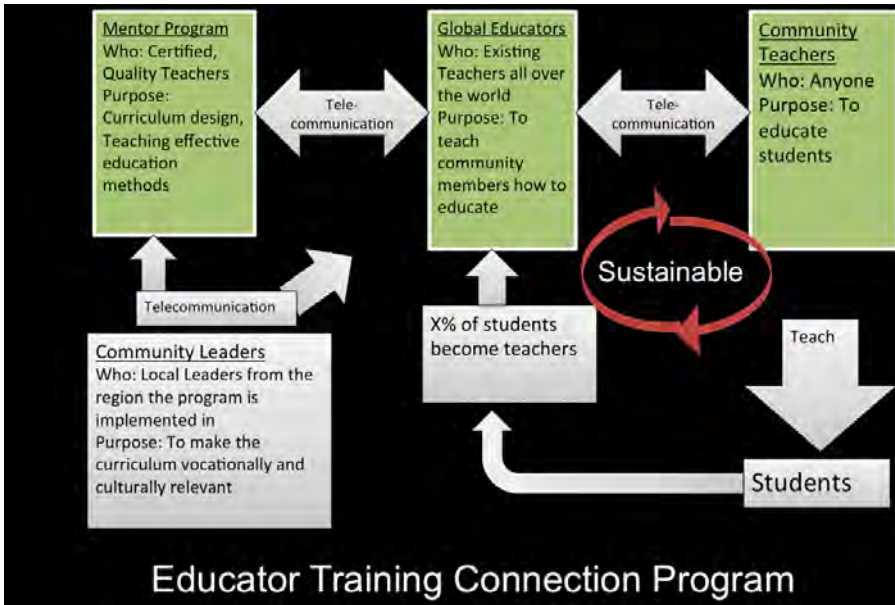
Strategy: Technological Infrastructure

The *Educator Training Connection Program* (ETCP) will lower overall costs and raise the quality of education. It is centered on utilizing current technology and technological infrastructure, as well as teacher-to-teacher connections.

Our strategy utilizes technology that already exists in the majority of the world to make global education for all a reality. Currently, the smartphone is one the fastest penetrating devices on the market, with the number of smartphones sold last year reaching around 1 billion. As you can see from the above graph, the smartphone device has reached close to 25% of the global population by 2013. By 2015, this figure is expected to be well over 30%. If the smartphone market continues to increase at the exponential rate it is expected to, then nearly every human will have access to a smartphone by 2020. This means that there is about to be massive technological infrastructure available to everyone, and our strategy will take advantage of this.

Smart-device technology has already been put into use for educational purposes. Online courses such as those of the Khan Academy have already become the single largest class in the history of education. There are numerous interactive educational games and tools such as apps like Dropbox that are being used to assist students in their learning. These tools are already tried and tested and are being used effectively to enhance learning around the world. Further more, there already exist methods to transform any smart phone into a small screen projector for under \$5 U.S.², enabling these devices to be used to educate multiple students at the same time. The smartphone and its accompanying apps and technology enhancements could replace textbooks and chalkboards, thereby making the learning experience more interactive, involving, less costly and of a higher quality.

By using the technological infrastructure that is rapidly developing globally, and that has the capability to be used to augment education everywhere, there is the potential to achieve the goal of global, high quality, low-cost education. *However, for there to be high quality education, there needs to be high quality educators.*



Strategy: Teacher Resource Enhancement

The above illustrates the *Educator Training Connection Program* plan for training individuals interested in learning to be a better teacher. As you can see from the graphic, our program consists of three main groups; the *Mentor Program*, the *Global Educators* and *Community Teachers*, with another group titled “Community Leaders”, that will be addressed later.

The *Mentor Program* consists of vetted teachers who have demonstrated their outstanding success in teaching. Candidates for the Mentor Program will be evaluated through student and peer reviews, their educating experience and student success. These “great teachers” will be the core of the Mentoring Program. They will develop a teacher-training program, its learning goals, methods of instruction, and a timeline for the student teachers to reach their graduation and diploma. The Mentors will function as educators, teaching other individuals how to be effective in teaching, and sharing schooling techniques that help assure the quality of education.

The *Global Educator Program* will consist of any teacher, anywhere in the world who joins the *Educator Training Connection Program*. These teachers serve the purpose of teaching other people teaching

techniques, as well as serving as references for the education that the *Community Teachers* (see below) will be conducting. They will be teaching the learning goals designed by the Mentors to the Community Teachers, and making sure that they are taught well.

The *Community Teachers* are a group that consists of anyone, anywhere, that desires to educate themselves and a group of their peers. These individuals will use the learning goals provided by the Mentor program, as well as the teaching techniques taught by the Global Educators to step into the role of being a teacher and educate their peers.

These three groups interact with each other so that they can deliver high quality education anywhere in the world. The interaction takes place entirely through smartphone teleconference and messaging. There are also several applications of the smartphone that enable the communication to happen more effectively; editing of lesson plans through programs such as Google Drive, having video lessons through an application like Skype. Overall the communication between the groups will be achieved by taking advantage of the already existing and expanding infrastructure of smart phones.

Community Educators

The result of the interaction of the three groups is that a single individual somewhere in the world with the desire to educate their peers has the means to do so. With well balanced learning goals created by a team of highly trained educators, the *Community Educators* will be able to teach classes that include all the necessary knowledge needed to receive a diploma that shows students have achieved mastery of basic education. However, the standard of what is “necessary knowledge” changes throughout the world. This is addressed by the fourth group, the *Community Leaders*.

These individuals are cultural figures that hold a position of respect in an area in which the program is being implemented. This group communicates with the *Mentors* and the *Global Educators* (once again through smartphone apps) to make sure that the learning goals and method of teaching is both culturally and vocationally relevant. An example would be if this program were implemented in rural Thailand, one of the largest exporters of rice in the world. A community leader could inform the Mentors of the importance of rice farming in the area, and educate the Mentors and the Global Educators about the rice farming techniques that are used in the area. These could then be

included in the learning goals and lesson plans, therefore making the education relevant to the community and tailoring the education to the local job market to ensure post-education employment. The Community Leaders could also make the learning more culturally relevant by giving feedback on lessons. Not only does the inclusion of this group serve to make the education more relevant and culturally sensitive, but also to assist the acceptance of the program, as the area being served will have more involvement in their children's education.

Sustainability

Another aspect of this program is its sustainability. By facilitating the learning of how to teach through the program, we are training individuals to become teachers outside of the program. Not only does this help individuals become full time teachers, but it also enables the number of Global Educators to be continuously growing. By educating an individual on how to be a teacher, and offering a role of a Global Educator, the program expands continuously. As students of the Community Teachers see their peers be educated by the program, become a teacher and have more job opportunities, this may inspire additional students to become teachers and join the program.

Strategy: Limitations and Capabilities

This strategy makes possible and facilitates connections between teachers and students around the world through the use of cutting edge, but proven and ubiquitous technology. It aims to reduce or eliminate the need for many teaching materials, thereby cutting the cost of schooling by nearly 30%³. The program has two main capabilities—to augment existing school systems, and/or to create new school systems.

Every nation has an education program, and in that program there already exists infrastructure. The implementation of the *Educator Training Connection Program* will lower the overall costs of this educational program, as well as increase its quality. Connecting teachers to share teaching methods is beneficial in any schooling system, but to do so on an international level will increase the quality of learning around the world and in synergistically important ways. By implementing this strategy to already established schooling systems around the world, new teachers or teachers in under-funded schooling districts could replace the Community Teachers group. The resources of the Global Educators and Mentor program can be used to improve

teaching skills. The reallocation of schooling funds from the purchase of textbooks to the purchase or subsidization of smartphones would prove beneficial, as the smartphones have more versatility and application in and outside the classroom.

Using this strategy for creating new schooling systems would be beneficial as well, as a physical school building is not required for this program to work. As already noted, smartphones have the capability to project video as well as play sound. With a smartphone and a few supplemental apps and projection capabilities, students and teacher only need a meeting space in which they can conduct lessons. Given that smartphones are increasing in capability and decreasing in price every year, our strategy has long-ranging potentials.

The Global Educators become the most important part of creating a new school system. Their role would be to teach an inexperienced individual how to teach as well as oversee the education process to make sure that the school is being run in an efficient manner. An additional benefit of this strategy is that if the area doesn't have adequate sanitation, food, shelter, or water, then the program could be adjusted to educate individuals on how to combat these problems.

Endnotes

- 1 UN, Draft 0 of Sustainable Development Goals, <http://sustainabledevelopment.un.org/focussdgs.html>.
- 2 Osterweil, Danny. "\$5 Smartphone Projector." Web log post. *MAKE*. N.p., n.d. Web. 31 July 2014.
- 3 "SCHOOL-BASED SEXUALITY EDUCATION PROGRAMMES: A Cost and Cost-Effectiveness Analysis in Six Countries." *A Cost and Cost-Effectiveness Analysis in Six Countries* (n.d.): n. pag. *UNESCO*. United Nations Educational, Scientific and Cultural Organization. Web.

11. WORLDWIDE EDUCATION

(WWE): COMMUNITY BASED EDUCATION–LEARNING CENTERS

By Edmond Mbadu (DR Congo), Maxwell Adew (Ghana), Charles Kuvuna (DR Congo)

***Strategic Summary:** Literacy is the foundation of sustainable development, democracy, and general well-being. This strategy presents a way of reducing illiteracy through the use of prefabricated learning centers that allow students to learn to read, write and use mathematics. In addition, students learn computer skills, leadership and entrepreneurship.*

Why Education?

What is the point of education, what is it about education that makes it so special? The reality about education that many do not realize is that it is the main pillar for sustainable development not only for a country, but also for the entire world. In a world where tyranny and chaos seem to be on the increase, and differences and appearances overshadow the unalienable rights of humans, education is the best remedy for this situation. The words of Thomas Jefferson capture it best: “Enlighten the people generally, and tyranny and oppressions of body and mind will vanish like evil spirits at the dawn of the day”. Nelson Mandela goes even further by pointing out how it can be limitless in empowering anyone: “Education is the great engine of personal development. It is through education that the daughter of a peasant can become a doctor, that a son of a mineworker can become the head of the mine, that a child of a farm worker can become the president of a great nation.”

Many problems plague the world today, from poverty and hunger, to the risk of the complete destruction of planet Earth. To face these problems efficiently, education can't be ignored, in fact, it must have priority over nearly everything else. Education is the essence of empowerment, and when people are empowered they have the possibility to sustain themselves and achieve more.

Preferred State of Worldwide Education

Given the present state of global education, a preferred state would be one in which:

- 100 percent of humanity is literate; that is, everyone can read, write, use arithmetic, computers and other basic means to understand, communicate, gain useful knowledge of the dominant symbol systems of a culture.
- The educational system is free for elementary, primary, secondary and tertiary students everywhere in the world
- Everybody has an equal opportunity of attending school and learning relevant skills for a better life
- Education is community based
- Everybody has access to excellent, well trained, well paid, responsible teachers as well as safe and state-of-the-art schools, lab equipment, texts and Internet connection
- Courses are taught in languages best understood by the communities in which they are taught (i.e. in a community's native language)
- Foreign languages are taught to all.

Present State

Strategic Plan: How Do We Change What Is to What We Want?

In our strategic plan to meet the educational needs of the world and to reach the Preferred State we outlined above, we propose:

Where are we today?

Adult Literacy Rates (UNESCO)



Figure 1 Adult literacy rates around the world

[Source: World Literacy Rates. http://en.wikipedia.org/wiki/File:Literacy_rate_world.PNG. Retrieved 13 April 2012]

About 57 million children worldwide are not enrolled in primary school.

Report from UNESCO and Save the Children (2011)



- Children and adults who are affected by educational challenges are involved in the design and implementation of the educational process
- Regional training programs are developed and play a key role
- Marginalized people and places are focused on first
- Low-energy using, sustainable information communication technology infrastructure is used. For example, low energy DC power systems reduce the energy wasted by AC/DC inverter-based systems. This technology allows deployment of information communication technology and related systems in a fully off-grid configuration using direct and stored power from renewable energy sources.

Learning Centers

A *Learning Center* is a place where everybody comes and cultivates their knowledge in different areas. It can be science, languages, music, etc. As such, Learning Centers are the core component of community based education.

Who can be a teacher in a Learning Center?

Being community education based, a teacher will have to possess a mastery in the subject he or she teaches, but also will be helped by students who have relevant experience or have completed the class earlier.

Community Learning and Service

Another feature of the Worldwide Education Initiative's Learning Center is that students will be required to participate in the community by serving a minimum of two years in an area linked with the development of the community. In that regard, a Learning Center is more flexible than a regular classroom, because it offers more, and gives the opportunity to everyone to follow their interests. This requirement of a Learning Center provides people who are not in the traditional age range of school (second chance education) a better environment to learn and help the community.

Current Prototypes

Prototypes in various places of the world serve as reference for what is described here. The prototypes used here are in use in The Democratic Republic of The Congo (Kuvuna Leadership Academy¹), and from Ghana (Tech4Ghana²)

The Learning Centers have the following activities:

1. Computer literacy and advanced technology training
2. Entrepreneurship, innovation, creativity, leadership training
3. Academic mentorship
4. Open Online Courses from institutions of higher learning throughout the world
5. Community Service Involvement

The above activities take place in a prefabricated, modular, mobile solar powered Information Communication Technology (ICT) classroom system (pictured below³).



The parts of the system that we are proposing are shown above and listed below. The above chart illustrates:

Extreme Low Energy Infrastructure

- Load evaluation calculated based on 40 tablet devices
- 6 x PoE interface for interactive screen
- Network switches
- 24 x LED lights
- Very small aperture terminal infrastructure (VSAT),
- 2 x 65" Digital Interactive Screens
- DC Air Conditioning Unit

The system includes:

- 15 x 250 W Flexi Solar Panel (for high risk applications)
- 3 x 4.8 KW extreme low energy (battery management system)
- 6 x 8-port extreme low energy (power distribution units)
- 1 charge controller
- 2 interface (available for interactive screen)
- 2 network patch panel

- 24-port & leads
- 2 x 19" mobile display unit & power distribution unit mount
- 24 DC LED Light Switches
- 1 DC air conditioning 48V
- 10 x 4-Port USB charging stations (for tablets)
- 1 remote monitor package

The customized Android tablet is loaded with a digital curriculum with function such as:

- Module 1: Getting Started
- Module 2: The User Interface
- Module 3: Customizing and Settings
- Module 4: Web browsing
- Module 5: App's & Widgets
- Glossary
- Microsoft Word, Excel and Power Point
- Essential Courses (includes themes and activities using Flash, Microsoft Word, Excel, PowerPoint, Outlook and Internet Explorer)
- Supplementary Courses (include themes and activities using Flash, Microsoft Word, Excel, PowerPoint, Outlook and Internet Explorer)

What and Why?



In addition, the Learning Center is equipped with a Prowise digital interactive learning solution. (Prowise are market leaders for online education software and multi-touchscreens. Prowise Presenter is hardware independent, online education software with cloud storage.⁴) The Prowise user community is growing at an increasing rate. Over 600,000 lessons are stored online and there are over 190,000 registered users.

Prowise Intuitive Software

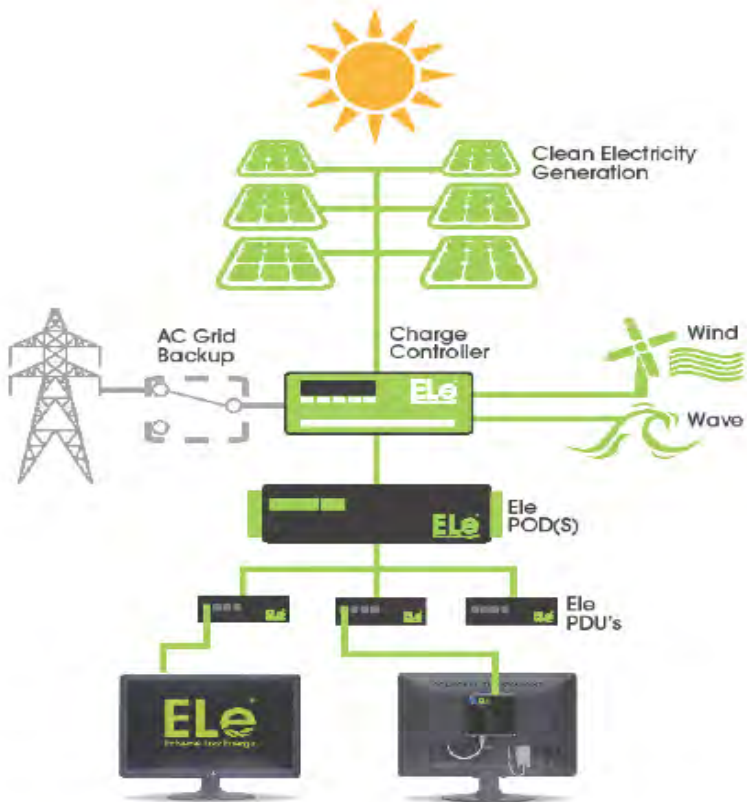
The Prowise Presenter allows the user to create lessons in a user-friendly way. It comes with over 200 development tools and has separate areas for Primary, Secondary and Higher education. In addition, Prowise Presenter is cloud based, which allows users to access their lessons from anywhere, anytime.

With ProQuiz you can create a quiz instantly, share with the class, see the results immediately and import this into an excel file.⁵



The Next 5 Years—Strategic Development

- The *Worldwide Education Initiative* calls for the development of more Learning Centers, primarily in centers of high illiteracy and poverty. These Learning Centers will, in turn:
- Provide “Second Chance Education” (continuing education or adult education) for those with low or no basic skills
- Tackle the barriers that limit access to secondary school for many students
- Make the education and training needs of disadvantaged young women a high priority
- Harness the potential of technology to enhance opportunities for young people



Conclusions

The *Worldwide Education Initiative* strategy is designed to increase opportunities for youth to obtain employment by providing IT and multi-media training. It will also develop and provide entrepreneurship and self-employment business management skills. In addition, it will:

- Develop a youth empowerment and leadership training program to facilitate interaction and communication
- Establish community centers for children and young people programs
- Develop entrepreneurial opportunities for the youth to generate income by utilizing the computer, multi-media or business skills that they have acquired through ICT programs
- Employ alumni of these ICT centers and programs as youth coordinators or trainers, allowing them to pass on their skills and act as positive role models for new participants.
- Develop an innovative and interactive adult ICT training program to reduce illiteracy and promote global learning
- Support public initiatives, policies that encourage good education for all
- Eliminate child labor and exploitation of minors that limit their access to education.

Endnotes

- 1 www.kuvunafoundation.wordpress.com
- 2 <http://www.tech4ghana.org>
- 3 Modular Transpack Building, length 20ft ; includes internal finished white veneer walls and ceiling, insulated floor, walls and roof. Buildings are flat packed and not erected. Windows 8 x glazed uPVC windows with tilt and turn mechanism, lockable aluminum roller shutters; doors 2 x external doors 875 x 2125mm; floor cement compound chipboard; facilitator & student benches.
- 4 <https://www.prowise.com/en/presenter-software/proconnect/> and
- 5 <https://www.prowise.com/en/presenter-software/proquiz/>
www.kuvunafoundation.wordpress.com

12. EDUSHE

By Ashaq Malik (India), Emily Saunders (USA), Jawaria Ali (Pakistan),
with report written by Emily Saunders and Jawaria Ali

Strategic summary: *Education is the key to solving the world's problems and transforming our society from its path towards destruction to one of sustainable abundance for all. Given the level of illiteracy, its \$1.5 trillion annual cost to global society, and the lack of accessible, affordable and effective education in the world, there is a critical need for a tool that can meet the world's widespread needs for effective education. A smart phone and computer application that meets the educational needs of women—and which once established there can be rolled out to other population groups—meets this need.*

“The world is in a race between education and catastrophe.”

—H.G. Wells

Introduction

Envision a world where both men and women are equal and empowered. Where poverty and hunger are eliminated. A world in which polluting emissions are eliminated and cities are sustainable. A world where people are healthy. All this begins with education. To reach the populations most in need by doing more of the same will not work. If we are to win the race Mr. Wells refers to, we need to move quicker than doubling down on educational methods that don't work, and are excessively expensive, ineffective and gender biased. A solution that gets around these limitations is a smart-phone and computer app developed primarily to meet the educational needs of women.

The focus of such an app would be to educate people about the Sustainable Development Goals (SDGs) for the world and their country, as well as provide a basic education. Education in today's world needs to be more than just the rudimentary ability to be “able to read and write.” Education needs to be more than eliminating illiteracy. According to the latest statistics from UNESCO, 86% of the individuals over the age of 15 are considered literate.

That rate needs to be reduced to zero and we need more informative metrics than “ability to read and write”.

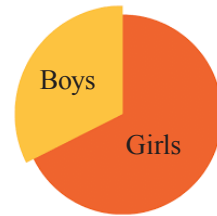
Problem State

Two-thirds of the world's illiterate population are female. Only 39% of rural girls attend secondary school. According to UNESCO, children that are born to illiterate mothers are 50% less likely to survive past the age of 5 years. Currently, there are 439 million women who are unable or have difficulty reading text messages and prescriptions and filling out forms.

Preferred State

A preferred state to the current world is where everyone in the world, both those alive now and those of future generations, would have accessible, good quality, affordable, bias-free, useful, and diversified education. A preferred state that meets these criteria is one that:

- Achieves 100% literacy globally
- Is open, accessible and offers useful education for everyone; all races, ethnicities, genders, occupations and ages
- Offers diversified and quality education focused on not just reading literacy but technology, math, science, health, peace, history, business, economic and governance
- Is safe and secure educational system that does not place students, teachers or families in any threatening situation that could undermine their well-being
- Is affordable for all. Minimally, primary education is free globally, and higher education is affordable for all, with no one turned away from any education for lack of money
- Requires basic scientific and health/hygiene education for all.



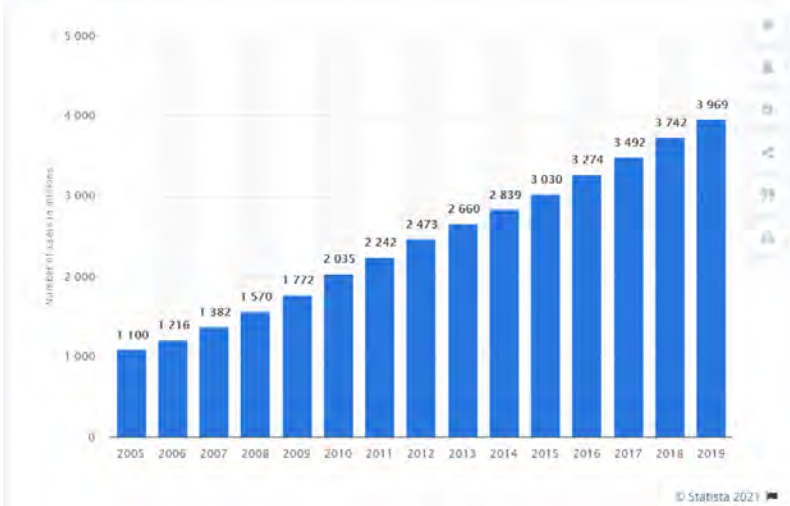
Design Plan/Strategy

The current state of the world and data illustrates that a large majority of illiteracy and lack of educational opportunities stems from a lack of access by women to education. Further problems in education, health, and sustainable living arise from this lack of education for women.

A resource that is readily available, or projected to be increasingly available in the near-future that could be used to successfully deal with this situation, is the internet. As is shown by the graph, internet usage has been steadily increasing over time. It is projected that there will be 6 billion Internet users by 2022 (75 percent of the projected world population in 2022 of 8 billion).

Chart 1

Number of internet users worldwide from 2005 to 2019
(in millions)



The EduShe App

The EduShe strategy calls for the development of an app whose primary goal is to educate women around the world. Its aim is to provide what is necessary to educate women globally, and then a secondary initiative of making this app-based education available for all ages and genders.

The EduShe app will begin with a focus on girls and women's education, empowerment and provision of opportunities. The app will be a collaboration between world organizations and governments and not restricted to any one region or government.

Collaborative Apps

There are already a few apps available in the world that do some of the things EduShe seeks to do. The strategy presented here will include access to these other apps within its frame work. For example, the EduShe app will include the *SDGs in Action* app, which is a social media platform that informs people about the SDGs and encourages them to take action to help achieve a sustainable



development goal. Another app included is the #Global Goals app, that aims to educate and empower people related to the Sustainable Development Goals. EduShe will partner with a variety of organizations to assist in future designs and development as well as making the app globally accessible.

App Content

The app will have different learning levels, languages, and a focus on girls and women's educational needs—as well as use the Sustainable Development Goals as a platform for teaching about many subjects of vital interest and use around the world (including poverty, food, health, water, shelter, and other SDGs subjects). Learning levels will be determined by literacy level, interests and age. Each level will include region appropriate incentives. For example, those in impoverished nations will receive access to food, meals, tools or utensils for producing food, and other valuable-to-the -region rewards for satisfactorily completing a level. In addition, they will receive access to the next level, and additional rewards.

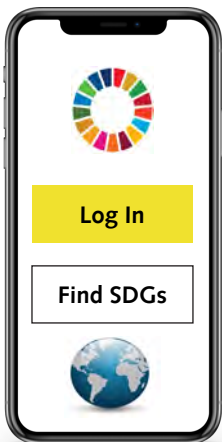
In developed countries incentives would be matched with area-appropriate needs, such as paid internships, cultural exchanges, and further educational opportunities and trainings. Other incentives include training for women to begin start-ups/home-based jobs, paid storytelling and success stories, competitions, surveys, etc., as well as, e-books or mobile phones and other prizes to those completing a level of education.

This brings up an important design feature of the EduShe strategy. *Women* need to be in charge of the picking of rewards and incentives to ensure that such rewards are not used by a patriarchal society to control women.

The EduShe app will include modules on learning math, science, history, religion, health and hygiene, as well as language, the SDGs, and topics determined by the women users of the app. In addition to this curriculum, there would be access to e-libraries, music and connections to mentors.

The EduShe app will have content including (but not limited to):

- List of courses, certifications, incentives and rewards
- Employment options, such as *Work from Home* (WFH), for housewives/women
- List of e-libraries/e-labs



- Music of peace, harmony, women empowerment and chosen by users
- World cultures information/classes
- World religions information/classes
- World Geography
- Language Classes
- Links to employment opportunity sites
- Nonviolent conflict resolution/Peace education
- Basic health and hygiene information and classes
 - Social contacting options/forums and blogs
 - Games for learning problem solving, differing perspective, options
 - Awareness about SDGs/UN
- SDGs indicators, actions and opportunities
- Incentive based quizzes and interactive simulations on harmony and peace and implementing the SDGs
- All UN Member states/country pages
- National, regional and local data, information, government

Resources Needed

In order to make our app accessible the user will need access to a computer or smartphone and Internet. According to the World Bank, “Only about 35% of the population in developing countries have access to the internet (vs. about 80% in advanced economies),” but this relatively low percentage is growing rapidly. [NOTE: for what year is this 35% statistic? How has it changed in the last 5 years?] It would be ideal for every household to have access to wi-fi and the technology to access the app, but here are currently low-cost technologies for local wi-fi propagation that can be used until Internet access is universally available. As Chart 1 makes clear, there were already 3,900 million internet users worldwide in 2019. That number is well over 4 billion in 2021.

The EduShe strategy needs researchers, teachers, education experts, digital entrepreneurs and innovators. It needs market research and diligent observation of educational trends and technologic developments. Appropriate content needs to be constantly developed added, and revised. Partners and sponsors need to be cultivated and secured—as do the most important group—EduShe’s users. Critical to the app’s success will be regular feedback and suggestions for improvements, additional courses and other additions from users.

Timeline

The first 6 months a team of researchers and web designers/developers will develop the app and its prototype's content. Along with sponsors and partners it will determine the first markets and target audiences. Next steps would be to pitch the EduShe application to additional funders and organizations, as well as the research team working with web developers, programmers and designers to generate the next version of the EduShe app. This version of the app would be rolled out to 2-3 countries where test runs would be carried out. After these pilot tests are run, and user surveys are conducted to determine desired additional content and features, and bugs are fixed, the app will be launched globally for all women and made available on all mobile and other devices.

Within 2 years the app will have a major upgrade where it will be updated, bugs fixed, and new features and user-suggested content and incentives added. This growth would be assisted by additional sponsors and partners. During this stage EduShe will also provide training for women to enter careers and for support in their home life.

EduShe is projected to be fully sustainable and self-sufficient within 5 years with revenue coming for the continued upgrading of the app coming from country governments and international agencies who are responding to the cost/benefits of the app's success in eliminating illiteracy and raising the standards of living for women, their families, and the communities and societies of which they are a part.

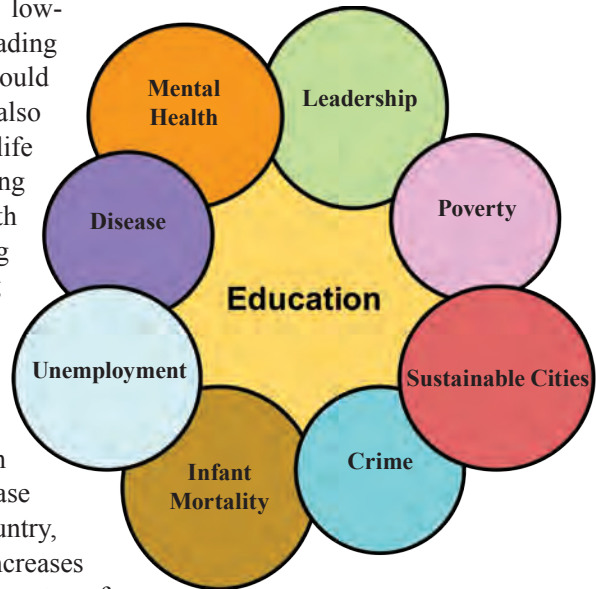
The all-inclusive version of the app will also be rolled out in the third to fourth year. This will be aimed at all genders, ages and populations. At the 5-year mark EduShe will consistently provide universally available, free of cost, diversified education.

Impacts

The benefits of women's education will include, besides lower illiteracy, lower infant mortality, increased life expectancy, increased physical and mental health, increased economic opportunities for women, their families and the society within which they live, greater decision-making power with their households, increased gender parity and the decrease in the under-utilized resource half of society, and increased social well-being.

In addition there will be a positive impact on climate change as well as other sustainable development goals as more women are empowered to play larger roles within society. For example, “evidence from 25 developed and developing countries indicates that countries with higher female parliamentary representation are more likely to set aside protected land areas.”

Education is tied to many SDGs and overall impacts in many fields of life. An increase in education results in a decrease in poverty. It was found that if all students in low-income countries had basic reading skills, 171 million people could escape poverty. Education also directly impacts the quality of life of a people and helps in making cities more sustainable, with more educated people having better chances at finding jobs and thereby not only reducing unemployment, but also directly contributing to the country’s economy. This is indicated by statistics such as how for every 10% increase of female students in a country, the gross domestic product increases by 3%. Linked to both higher rates of employment and more sustainable living



is a decrease in crime rates. Crime can also be directly linked to the lack of education, as research indicates prisoners that are illiterate are more likely to reoffend upon release. In addition, more accessible basic healthcare education and sanitation knowledge can help children survive past the age of 5 years.

Cost/Funding

According to the World Literacy Foundation, illiteracy costs the global economy \$1.5 trillion annually¹. The budget for EduShe is a tiny fraction of what is being wasted every year due to illiteracy. The return on the investment to make EduShe operational would so large as to make it a compelling choice in a rational society.

The EduShe app will be developed by tenders via standard methods at the lowest possible rates, and be available free of cost to the end users. To obtain the necessary funds for the EduShe budget developers will rely on the generosity and collaboration of sponsors and investors, as well as partnerships and strong collaborations with the United Nations and other national and international bodies for implementation of our strategy at the national and local level.

Initial Budget

Approximate cost of app development	\$100,000
Content Research	\$250,000
Media publicity	\$50,000
Advocacy and promotions:	\$100,000
Staff and travel	\$500,000
Incentives	\$1,000,000
(with another \$1,000,000 of merchandise donated)	
Total cost:	<u>\$2,000,000</u>

How You Can Get Involved

We urge individuals, civil society and local communities to encourage and increase the use of the EduShe app as the widespread use of it ensures that it is accessible and becomes mainstream. With its use comes connection between areas and people – in addition to all the benefits presented above. Businesses, government and philanthropic sponsors, international agencies, and NGOs can partner with us and help the outreach of the EduShe app both financially and otherwise.

Endnotes

- 1 World Literacy Foundation, www.concernusa.org

General References

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<https://www.broadbandsearch.net/blog/internet-costs-compared-worldwide#post-navigation-0> <https://www.unwomen.org/en/news/in-focus/commission-on-the-status-of-women-2012/facts-and-figures>



PART II

**GLOBAL
HEALTH
FOR ALL**

Context/State of the World Health System

The global health system is characterized by the following problems. It:

- Does not provide full medical coverage to everyone in the world
- Lacks good disease prevention education and has inadequate delivery of preventative medicine (vaccines, vitamins, medications)
- Lacks adequate hygiene
- Is overly-reliant on treating illness/disease rather than the prevention of disease
- Does not provide maternal health care and information to all
- Does not deal with inadequate sanitation, which leads to waterborne disease.

Global Health System Preferred State

By the year 2030, 100% of humanity will have access to basic health resources, health education, and a healthy social environment. In addition, known curable diseases will be eradicated, and everyone will have access to the following resources and services: potable water, sanitation, food supplies adequate to maintain good health, pre- and post-natal care, medical facilities, and medicines.

A health provider administers an injection to a baby at a health clinic in Kandahar, Afghanistan. Clinics such as these have increased the percentage of the population with access to basic health services in Afghanistan, from nine percent to eighty-five percent in four years.

21 April 2008

Kandahar, Afghanistan



STRATEGIES:

1. Hooked-Up HealthHuts
2. Cambodia Water Network
3. Eradication of Malaria: Flower Power
4. The World Healthcare Program

1. HOOKED-UP HEALTHHUTS

By Erica Kane, Erica Jain, James Lual, Kevin Dye, Eric Fedus, Chuck Michelson

There is a large global population that does not have access to accurate and reliable health information or care. This is the case in developed countries as well as developing, but is more extreme in developing parts of the world.

Hooked-Up HealthHuts are designed to deal with two fundamental problems of the health system:

- Lack of access to accurate medical information and health education, and
- Lack of communication between healthcare centers, providers, and contributors

HealthHuts are designed to provide access to an almost unlimited amount of health information and create a nation-wide (and eventually global) network of clinics, hospitals, and other forms of patient care.

“Every year the world’s poorest children are robbed of an estimated 130 million years of healthy life.”

—WHO, The World Health Report

HealthHuts are interlinked kiosk-type computer

terminals where people can access health related information in an easy to use and intuitive manner. They are designed to address the lack of health information, and other health related problems. One use of HealthHuts would help users learn what might be wrong with them and how their health problem could be treated. Users would describe their symptoms and receive possible health remedies that are available locally and non-locally. They would be advised how to prevent their malady as well as how to treat it. They would be advised to seek treatment at the nearest clinic if the malady was beyond self-medication. Emergency medical information would also be available.

HealthHuts will be part of a network connecting HealthHut kiosks to clinics and hospitals that can provide for more thorough patient care for serious afflictions.

HealthHuts will help adults and children in rural villages learn about health in general, their health in particular, and health care options. One of the goals is that people will learn how to take better care of themselves.

Entire villages will have access to health information that will lead to decreased mortality rates, better health, and increased productivity. A global network of HealthHuts and more advanced health care delivery units will enable HealthHuts to communicate with clinics and hospitals for efficient service. They will also allow for patient-to-patient communication so that people with similar health problems can communicate with each other.

The primary manifestation of the Hooked-Up HealthHuts strategy is the use of computer stations at public central kiosks, as in the picture on p. 272.

“A state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity.”

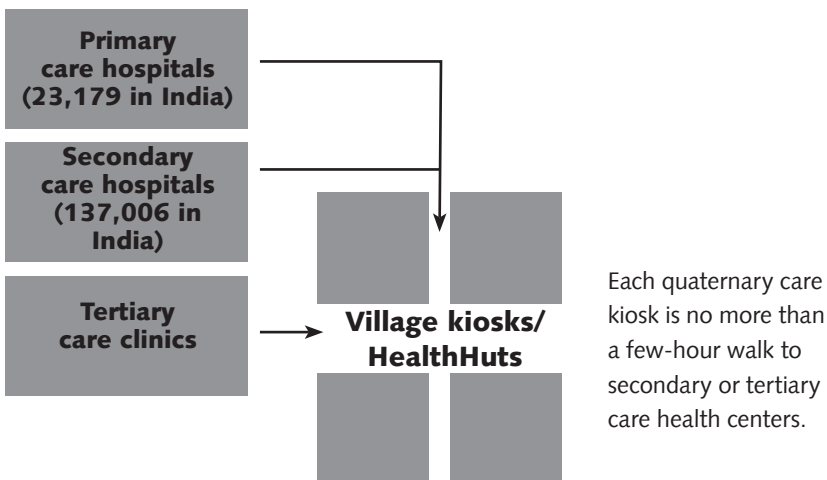
—WHO definition of health

HealthHut Costs

To install two million HealthHuts in villages and urban neighborhoods around the world where health care coverage is sparse to nonexistent would cost the following:

- 1 HealthHut Kiosk unit: \$400
- 2 million HealthHut units: \$800 million
- Annual maintenance: \$50 million
- Network maintenance: \$50 million
- HealthHut content maintenance: \$300 million
- Total start up costs: \$1.15 billion
- Annual costs (for maintenance, additional kiosks, and expansion of services): \$500 million

Countrywide Healthcare System Schematic





HealthHut in Senegal

These so-called ‘hole-in-the-wall’ HealthHuts are run off of solar power. They provide children and others the opportunity to learn computer skills without training, while obtaining valuable health related information.¹





Young and old alike access health information and instructions and summon mobile emergency units. Information is illustrated, animated, and interactive. There are spoken instructions, visual maps, and directions to nearest clinic.

Another design is this earth brick building made from local ground. The cost is about \$2,000 per hut and comes with educational multimedia software, Internet connection, and a direct line to the nearest health clinic. Local companies have donated computers for this setup.



Endnotes

¹ Dr. Sugata Mitra, NIIT, World Bank

2. CAMBODIA WATER NETWORK: BRINGING CAMBODIA CLEAN WATER

By Jareb Gleckel, Ali Montes, Ben Cohen, Kevin Dye, Eric Fedus, Chuck Michelson

There are over one billion people in the world without access to clean drinking water. Cambodia is one of the worst areas when it comes to such access. The percent of Cambodians with access to potable water and improved sources of drinking water remains startlingly low despite the presence of abundant supplies of water, most notably Lake Tonle Sap (The Great Lake of Cambodia).

Many people are getting drinking water from unsanitary rice paddies, ponds, and similar sites. The contamination of these sites is due to insecticides and fertilizers, plus animal and human feces. Lack of proper sanitation facilities impacts the cleanliness of the water supply and is a main contributor to the high rates of infant mortality and morbidity.¹

According to UNICEF, 70% of Cambodians (or 9.7 million people) do not have a reliable source of clean drinking water. In rural areas 26% have access to safe drinking water; in urban communities, it is 54%. As would be expected, this lack of access to safe water results in a high infant mortality rate as well as acute respiratory infections like pneumonia, malaria, measles, and dengue fever. In addition, the most common ailment that afflicts tourists is diarrhea, directly stemming from the polluted water. This impacts the economy by lowering the amount of money the country can earn through tourism.



Poverty and Hunger in Cambodia

Preferred State

The goals of the Cambodian Water Network include achieving the following by 2015:

- Provide all Cambodians with a clean, safe supply of water
- Assist in establishment of sanitation infrastructure
- Purify the abundant sources of polluted water present in Cambodia
- Create additional employment
- Increase environmental awareness in Cambodia
- Facilitate a stronger, more independent economy
- Build a self-sufficient government/private enterprise initiative that generates economic development revenue from outside the country (and is a model for other countries).



Polluted waters of lake Tonle Sap during the high water season

Cambodian Water Network Plan

This three-stage strategy calls for 1) setting up a series of water purification plants (financed by the World Bank and private enterprise which will have a 50% equity stake in the new water company), that 2) sell 50% of the water from these plants to Singapore as bottled water (which is facing a serious bottled water shortage), and 3) using 50% of the revenue from these sales to finance the construction of additional water purification plants and sanitation facilities. The other half of the revenue will go to the private enterprise and its stockholders, to pay back the initial start-up costs and provide a fair return on their investment.

The first step is to set up filtration plants in three scattered areas in Cambodia: the tip of Lake Tonle Sap where three rivers branch off, and in two other cities at the intersections of rivers and roads that can be used for transport purposes (see map). A pump and filtration plant would also be set up in the capital Phnom Penh along the Mekong River. A bottling plant will be built and the water from this factory will be shipped by rail to a port on the Gulf of Thailand and then shipped by boat to Singapore.²

Other markets for Cambodian bottled water include Bangkok whose nearly 9 million people³ and large tourist industry are in need of bottled water. Another market is more developed nations such as Australia, Japan, and the USA. By exporting bottled water, jobs are created and revenue is obtained to fund the provision of clean water and sanitation facilities to all of Cambodia—thereby improving the overall health of Cambodia.

Costs

Startup:

- Water pumping and filtration plant: \$3.4 million⁴
- Bottling Factory: 5-gallon bottling facility; 1,200 bottles/hour
29,000 bottles/day; 10.5 million/year; 144,000 gallons/day = \$2 million
- **Subtotal: \$5.4 million**

Ongoing:

- Labor: 500 workers at \$2/hour, 8 hours/day, 340 days/year
= \$2.7 million/year
- Transportation: \$3,000 per trip (1 trip/week) = \$156,000/year
- **Subtotal: \$2.85 million**

Startup and first year operating costs total: \$8.25 million

Revenue:

- \$4 per 5-gallon bottle
- 5 million bottles/year (50% of total output; other 50% goes to meet domestic water needs) = \$20 million

Revenue total: \$20 million/year

Funding Partners

- A major water distribution corporation such as Nestle
- The World Bank, Asian Development Bank
- Governments

Endnotes

- ¹ 74 of 1,000 children die during infancy (one of the highest rates of infant mortality in the world).
- ² By 2011, the bottled water supply to Singapore from the Malaysian government will be cut off if a price for bottled water is not agreed upon. Singapore is actively looking for alternative suppliers.
- ³ World's Largest Urban Areas [Ranked by Urban Area Population] http://www.mongabay.com/cities_urban_01.htm
- ⁴ Based on a prototype facility built in Georgia, USA

3. ERADICATION OF MALARIA: FLOWER POWER

By Jai Lakhanpal, Taylor Zuccolotto, Kevin Dye, Eric Fedus, Chuck Michelson

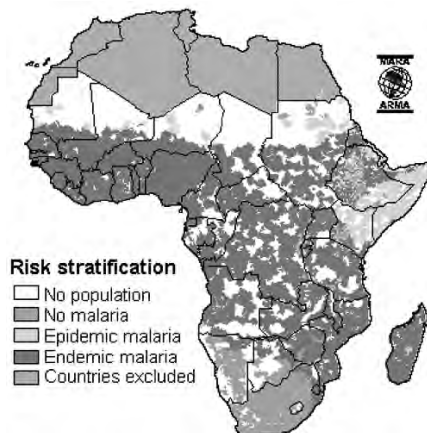
Malaria is a life-threatening parasitic disease transmitted by mosquitoes. 41% of the world's population lives in areas where malaria is transmitted.¹

² There are 300 million cases of malaria each year resulting in 1 million deaths. 90% of these deaths occur in Africa, mostly in young children (only 41% of children under 5 years of age have access to anti-malarial drugs).³ Every 30 seconds a child dies of malaria. Malaria also impacts the economy. For example, in Africa, malaria causes an estimated loss of \$12 billion per year.⁴ The indirect costs of malaria include lost productivity or income associated with illness or death.⁵

The average cost for potentially life-saving treatments of malaria are estimated to be US\$13¢ for chloroquine, US\$14¢ for sulfadoxine-pyrimethamine, and US\$2.68 for a 7-day course of quinine.⁶ Although these costs appear low, providing these treatments for 300 million people proves extremely costly (\$39 million for chloroquine treatment, \$42 million for sulfadoxine-pyrimethamine treatment, and \$804 million for a 7-day course of quinine) and well beyond the means of the health care systems and resource-short governments in malaria-afflicted areas.

Preventing malaria through the control of the mosquito that delivers the disease is a more cost-effective means of reducing the negative impacts of malaria. The strategy outlined below will also result in additional benefits to local economic development and the reduction of poverty.

Malaria epidemics in Africa



Flower Power Strategy

The Flower Power strategy is a four-stage effort that involves the widespread production of the natural malarial mosquito controlling pesticide pyrethrum (derived from chrysanthemum flowers, and a relatively safe, non-harmful to mammals pesticide) by small, village-based subsistence farmers in many African countries. This provides an additional market and income for one of the poorest segments of African society. Along with the use of pyrethrum-laced bed nets to keep mosquitoes from biting while asleep, this strategy is designed to eliminate the most devastating impacts of malaria in Africa.

The strategy starts off with a series of farmer education posters, pamphlets, and demonstration farms that teach the best practices for growing the chrysanthemum flowers needed for the production of pyrethrum. This will be accompanied by a government backed guaranteed market for the next ten years' annual harvests of chrysanthemum flowers. With government incentives, the SC Johnson Company (or other private companies) will invest in the building of two or more plants in Africa to process the flowers into pyrethrum. This public-private partnership will increase the revenue of small farmers throughout many countries of Africa, guarantee a steady and dependable supply of chrysanthemum flowers for pesticide production, generate employment opportunities, and increase the availability of pyrethrum for use in fighting malaria and other mosquito-borne diseases. Tax revenues from the production and sale of pyrethrum will be used to implement the use of the pyrethrum, malaria education, and the purchase of mosquito killing bed nets.

The goals of this strategy include:

- The complete eradication of malaria and other mosquito-borne diseases from Africa by 2030
- Promoting the use of pyrethrum and pyrethroids in areas where malaria and other mosquito-borne diseases are prevalent, in order to eradicate these diseases by 2030
- Promoting the learning of the proper ways of treating and preventing malaria and other mosquito-borne diseases
- Stimulating the industry of safe insecticide production in Africa thereby creating increased employment
- Promoting production of drought resistant chrysanthemum flowers, thereby providing increased economic security for small African farmers

- Promoting the use of insecticides for the protection of crops in order to increase food production, thereby reducing hunger
- Creating a partnership with private enterprise; specifically the pesticide producing company SC Johnson⁷ in order to support the growth of insecticide production in Africa.

Cost

The costs of the Flower Power Malaria Eradication strategy include:

Seeds

- Chrysanthemum seeds cost approximately \$440 per hectare (52,000 seeds are used per hectare)
- To cover 66,000 hectares will cost \$29 million per year

Irrigation pumps

- To irrigate the 66,000 hectares will take approximately 22,000 foot-powered micro-irrigation pumps at a one-time cost of \$2.2 million.⁸ Installation (\$2 million) and annual maintenance (\$2 million) will run another \$4 million per year.

Total seed and pump cost: **\$35.2 million**

Total annual costs, if seeds are paid for by government: **\$33 million**

Total annual costs, if seeds are paid for by farmers: **\$2 million**

Endnotes

¹ <http://www.cdc.gov/Malaria/facts.htm>

² Malaria Facts. National Center for Infectious Diseases, Division of Parasitic Diseases. Atlanta: Center for Disease Control and Prevention, 2004. 26 June-July 2006.

³ Malaria in Africa.” Roll Back Malaria. Roll Back Malaria, WHO. 26 June-July 2006. <http://www.rbm.who.int/cmc_upload/0/000/015/370/RBMInfosheet_3.htm>

⁴ “Economic Costs of Malaria.” Roll Back Malaria. Roll Back Malaria, WHO. 26 June-July 2006 <http://www.rbm.who.int/cmc_upload/0/000/015/363/RBMInfosheet_10.htm>.

⁵ Ibid

⁶ Ibid

⁷ The SC Johnson Company has been a producer of a commercial aerosol insecticide, Raid, since 1956. The active ingredient of this Raid is the natural insecticide pyrethrum.

⁸ Average size of small farm is 3 to 4 hectares, therefore 22,000 pumps are needed for 66,000 hectares; Each micro-pump costs \$100, therefore total cost is \$2.2 million

4. THE WORLD HEALTHCARE PROGRAM

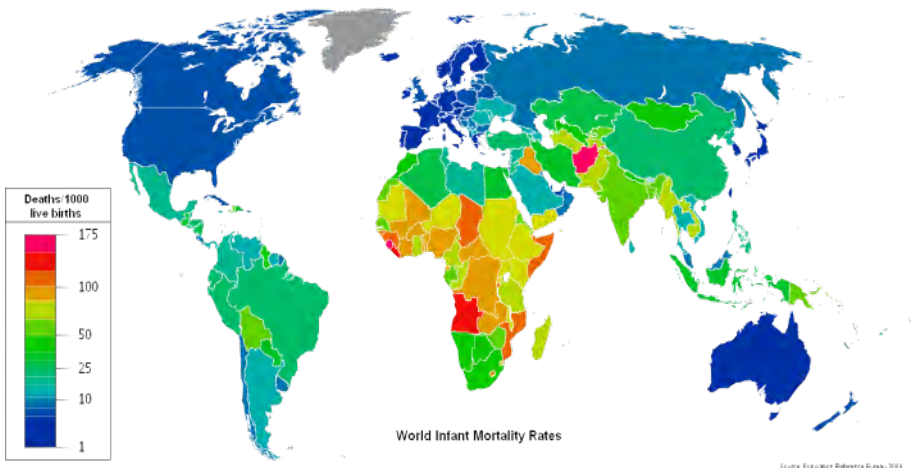
By Nikita Bhatia, Anna Sugrue, Tamar Badridze

Strategic Summary: *Access to medical care is a basic human right. Unfortunately in today's world that right has become a luxury. As of 2013, 1 billion people do not have access to basic healthcare. Due to this, infant mortality and maternal mortality rates are high, family planning is not available, and preventable diseases spread and kill at high rates. The World Healthcare Program proposed here is a new sub-sector of the World Health Organization (WHO), designed to control hospital quality, globalize access to health resources, and increase access to basic healthcare. The goal of the program is increase access to basic healthcare and set the groundwork for sustainable healthcare infrastructures in developing nations. Attaining these goals benefits the health of an individual—but in addition, healthier citizens means more working citizens, contributing to the local and global economy, and buttressing a more sustainable future for all*

Problem State

Currently, 1 billion people do not have access to basic healthcare.¹ 2.98 million people die each year due to vaccine-preventable diseases². Mothers and children are especially affected by healthcare gaps. 6.6 million children under the age of 5 die each year³. Only 35.3% of childbirths are assisted by medically trained personnel in the poorest countries⁴, even though 15% of births have complications.

Figure 1: World Infant Mortality rates



93% of the world's disease burden comes from low-income countries. In these developing nations, there is a severe lack in functioning medical facilities and well-trained medical professional. For example, in Africa, there are only 2 physicians for every 10,000 people while in Europe there are 32 physicians per 10,000 people⁵

One reason the spread of disease and infant and maternal mortality rates are so high is due to lack of sexual and sanitary education, as well as unsanitary and poorly equipped hospitals. Though currently there are international hospital accreditation standards that exist to certify hospitals and increase their sanitary and medical quality, many of these standards, like ISO, are either too strict or too expensive for low-income nations to abide by. This results in poorly equipped and barely functional hospitals in many developing nations.

Preferred State

Our strategy's goal is to increase access to high quality basic health care in developing nations. Similar to the new 2015 UN Sustainable Development Goals, we are striving to attain a healthy life for 100% of the people in the world. This means seeing that 100% of children are vaccinated, 100% of childbirths are assisted by a trained medical professional/midwife, 100% of people are given basic sexual education, and the number and quality of medical personnel and medical facilities is increased—resulting in maternal health increases, infant mortality rates decrease, and the international disease burden significantly lowered.

Strategy

Our strategy is called the *World Healthcare Program*. An outline of the program is below, followed by an explanation of each item

The *World Healthcare Program* is a potential new sub-sector of the World Health Organization. Its primary function is the institution of:

1. A hospital accreditation system with hospital quality standards that current hospitals must meet in order to keep their doors open, and future hospitals must meet in order to open their doors at all
2. An international "Sister Hospital Program"—that connects hospitals in the developing world that cannot meet the Hospital Quality Standards to teaching hospitals in the developed world that can:
 - a. Provide many or all of the resources the developing hospital needs to meet standards,
 - b. Send resident doctors to work in developing nations for 6-12 month periods, expanding upon pre-existing loan-forgiveness incentives. (Explained below)

3. Recognition of excellence from the UN WHO for hospitals in the developing world who successfully participate in the “Sister Hospital Program”
4. Encouragements for developed countries to provide tax-breaks to participating institutions
5. The distribution and upkeep of mobile clinics that provide basic health care and health education to under serviced areas
6. The distribution and upkeep of motorcycle clinics⁶, smaller scale mobile clinics with off-road capabilities equipped especially for giving birth
7. The development of a basic emergency medical response systems in developing nations, piggybacking on the rapidly expanding mobile phone market and connected to the motorcycle clinics
8. A database connected with the mobile clinics, where traveling technicians record and track health trends in their respective areas.

The *World Healthcare Program* consists of two main branches: an international branch and a local or grassroots branch. The first is the Hospital Quality Standards

The Hospital Quality Standards is an international document and certification process a hospital must pass in order to open its doors. Standards would include: minimum amount of beds in a facility, minimum amount of medical professionals on hand, list of required medicines and equipment, etc. Hospitals that are unable to meet Hospital Quality Standards would be paired with hospitals that can meet the quality standards through the Sister Hospital Program. Sister Hospitals in developed nations would supply developing hospitals with the resources they need; increasing health care quality in developing nations regardless of the nature of their national healthcare system. Doctors in Sister Hospitals would also have an exchange program, potentially connected to preexisting programs such as Doctors Without Borders and Barefoot Doctors, to help train doctors, staff facilities, and extend the reach of health services beyond the hospital. The doctor exchange connects the international branch of the World Healthcare Program to the second branch—the local or grassroots branch, our mobile clinic program

Mobile clinics are small, low-cost vans, trucks, or motorcycles that spread access to healthcare and health education to remote areas. The van model has been tried many times internationally, each trial accompanied by a success story. One example is an NGO in India called the Smile Foundation, which sends vans to rural villages in India, providing free healthcare services to over 200,000 previously un-served people. Mobile



clinics are equipped with basic medical instruments (bed, latex gloves, antibacterial soap, gauze, stethoscope, blood pressure pump, etc.) and basic medicines (vaccines, prenatal vitamins, etc.) and require only 3 staffers (a driver, a doctor, and a translator/educator). Our mobile clinic will provide routine checkups, primary care, and vaccinations to promote preventative care and decrease the mortality rate due to preventative diseases.

While patients are waiting to be treated, an educator will teach basic sanitation and sexual education in a waiting area. Each mobile clinic will also have a tablet where patient data will be stored. That tablet will send and receive information in areas with cellular access. Telemedicine techniques are also encouraged in covered areas.

The other basic, more affordable option is the motorcycle clinic. A motorcycle with a hospital bed sidecar would operate as an emergency midwife service, allowing a midwife to enter a village and assist a birth. A simple cellular emergency medical response system would be established to connect the motorcycle clinics to locals, piggybacking on the rapidly expanding mobile phone market

Every certified hospital in areas recognized as underserved would be required to implement at least one mobile clinic in their hospital.



Cost

A recent mobile clinic program in the United States cost around \$560,000 to design and implement. It resulted in hospitals in the area saving \$20 million a year due to the mobile clinics dealing with preventative healthcare and routine checkups. The calculated return on investment was 36:1

In the developing world, many of the functions of this type of clinic could be handled by a fully equipped medical motorcycle and sidecar. The cost for such a vehicle is approximately \$13,000.

Action Plan

Our plan would be implemented in several stages. First, the World Health Organization or a similar global health organization would have to set up the World Healthcare Program and set the World Hospital Quality Standards. This would take from six months to one year, if it was green lighted from the highest levels

Next, the Sister Hospital Program would be prototyped. One hospital in the developed world and one hospital in the developing world would be paired. The developed world hospital would use the Hospital Quality Standards to check what the developing world hospital needs. Both hospitals would work to get the developing country hospital to reach these quality standards. At the same time, hospital inspectors would be sent out to see which hospitals in the developing world require the most help in reaching the Hospital Quality Standards, and those hospitals will be given priority in the Sister Hospital Program. Additionally, one mobile hospital and one emergency midwife service program will be implemented and prototyped. This process will take 1-2 years.

After analyzing what worked and did not work in each respective program and making any necessary changes, these programs will be implemented on a large scale. More hospitals will be chosen in the developing world and prestigious teaching hospitals—such as university hospitals in the United States—will receive international recognition (from the United Nations) after they work with a sister hospital to reach the Hospital Quality Standards. The large-scale implementation of the World Healthcare Program will take 5-10 years

The action plan will require partnerships and cooperation from several organizations on global, national, and grassroots levels. It will need the United Nations, through the World Health Organization, to promote the World Healthcare Program as well as assist in developing a World

Healthcare Program sub-sector or department to establish the World Hospital Quality Standards. Businesses can partner with the World Healthcare Program to sponsor individual hospitals in the developing world and assist them in reaching the World Hospital Quality Standards. Foundations can assist the World Healthcare Program by partnering with university hospitals and developing world hospitals to establish and encourage the Sister Hospital Program. Additionally, foundations can work on grassroots levels to fund the mobile clinics and emergency midwife systems. Further, we would call upon individual volunteers to work as drivers, Emergency Medical Technicians, nurses, and doctors to strengthen and support our programs

Conclusion

By implementing the World Healthcare Program many of the healthcare problems in the world would be reduced or eliminated. By implementing the Hospital Quality Standards, the quality of hospitals would increase, as would the number of physicians in these areas due to the Sister Hospital Program and the doctor exchange program. Additionally, through the mobile clinics, access to health services would increase, and through the midwife emergency system, the infant and maternal mortality rates would decrease. Further, through the sexual health and sanitation education that will be taught while patients wait for the mobile clinics, access to family planning will increase, the rate of STI's will decreased, unplanned pregnancies would decrease, and the spread of disease would decrease. Our program would enable millions of human beings to live, work, play, and help build a more sustainable future.

Endnotes

- 1 Health for All Everywhere factsheet. <http://universalhealthcoverageday.org/downloads/uhc-day-toolkit-en.pdf>
- 2 <http://www.chop.edu/service/parents-possessing-accessing-communicating-knowledge-about-vaccines/global-immunization/diseases-and-vaccines-a-world-view.html>
- 3 <http://www.data.unicef.org/child-mortality/under-five>
- 4 http://www.who.int/reproductivehealth/publications/maternal_perinatal_health/2008_skilled_attendant.pdf
- 5 http://apps.who.int/iris/bitstream/10665/81965/1/9789241564588_eng.pdf?ua=1
- 6 <https://openideo.com/challenge/maternal-health/concepting/motorcycle-clinic>

5. THE WELL-BEINGS PROGRAM FOR MENTAL HEALTHCARE

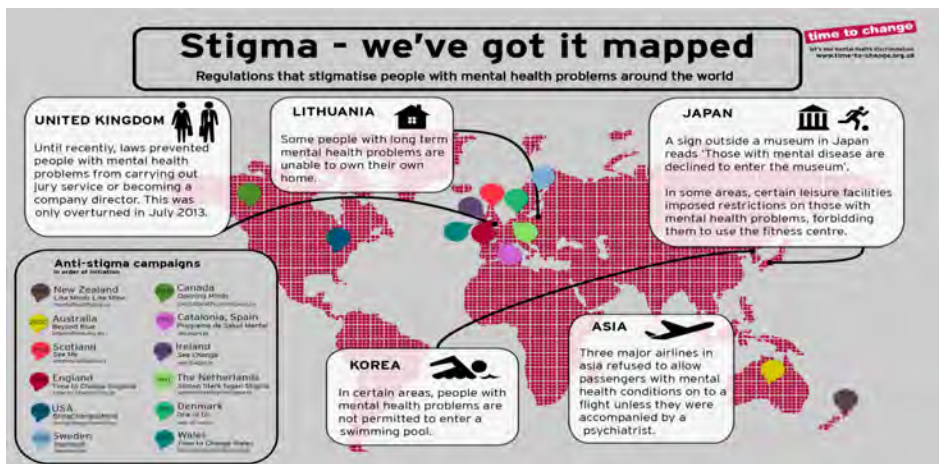
By Fatemah Peeran, Jawaria Ali Khan, Michelle Asim, Jordan Wienles, Mariam Javakhishvili¹

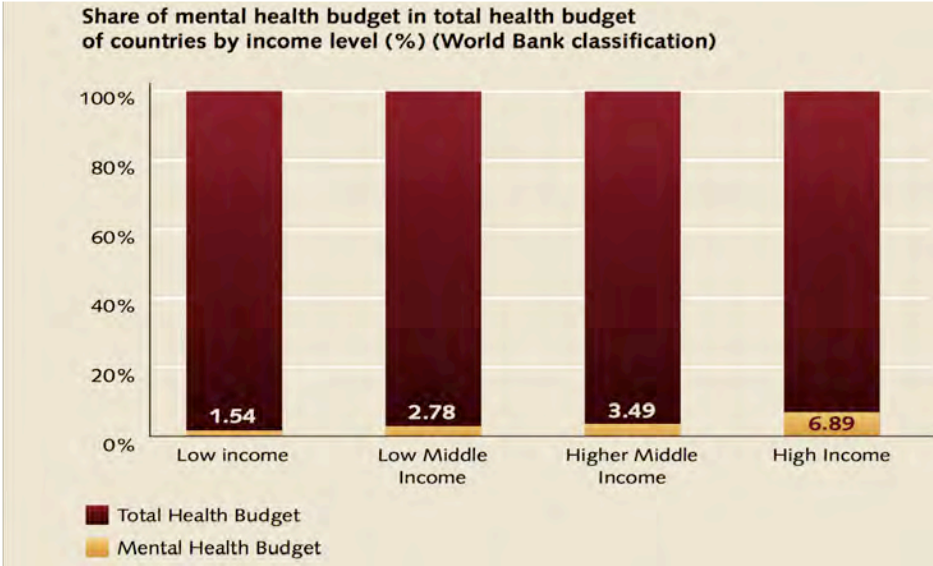
Strategic Summary: Despite the progress in the field of psychology, mental health and mental health issues still remain a stigma in society, an un-prioritized problem and an un-tackled challenge. As of 2017, 64% of the youth in the United States of America with major depression do not receive any mental health treatment. That means that 6 out of 10 young people who have depression and who are most at risk of suicidal thoughts, who face difficulty in interpersonal relationships, and who struggle with their academic life do not get the treatment that is needed to support them.² And this is just in America, one of the most developed nations of the world. One can only imagine what the statistics will be for a developing or underdeveloped nation.

The Well-Beings team have come up with a program which aims to tackle some of the issues mental health faces on a global scale. The program is designed to help reach the United Nation's third Sustainable Development Goal of Good Health and Wellbeing. The focus is on mental health as it is key to a better life, a more constructive and productive society, and for the planet as a whole.

Present State

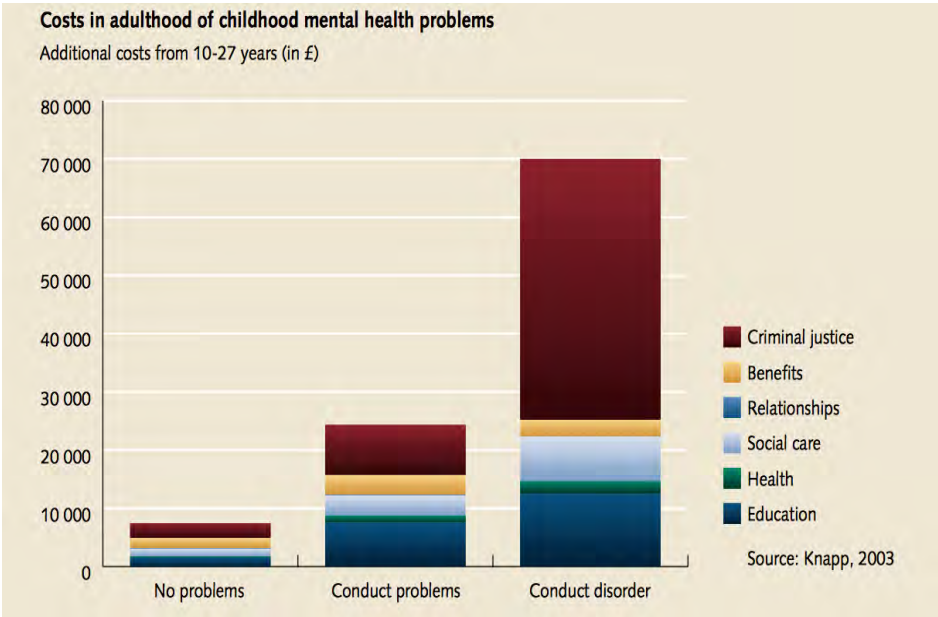
Unfortunately, as vital as mental health is, there are taxing barriers and challenges we are facing when trying to improve the mental health of society members. One reason for this is due to ambiguities in mental





health treatments. Mental health professionals across the globe not only have differing constructs of what defines a mental illness or disorder, but they also face challenges in regards to the culturally-specific and sensitive ways to deal with them.

One of the large-scale issues mental health professionals, and people, face all across the globe is the stigma surrounding mental



health and mental illness, that is primarily due to the lack of education and awareness about mental issues and disorders. For example, you will have places akin to Japan wherein a sign outside a museum reads ‘Those with mental disease are declined to enter the museum’. It does not help the person afflicted with a mental disorder nor the society, when such discrimination and ostracizing occurs. Stigma not only impedes patients from improving their mental health, but it also keeps mental-health professionals from advancing their treatments and therapies.

Another pressing issue when it comes to mental health is the inaccessibility of mental health services, such as the unavailability of mental healthcare givers, facilities, transportation, etc. Moreover, regardless of the growing attention that mental health is receiving, mental healthcare services and facilities that exist today are still very expensive as compared to other health services. According to the World Bank, less than 7% of the total health budget of countries is spent on mental health by those with high income, and for those of middle class or low income the percentage is drastically less.

Ironically, the lack of proper mental healthcare services and neglecting individuals’ mental health can result in expensive repercussions later on in life. Such repercussion range from the monetary investment that goes into the criminal justice system for mentally unstable and unhealthy criminal offenders, to broken relationships, raising tensions, and uncivil behavior between community members that degrade to destroy the social fabric that holds society together. The lack of due attention to mental health results in what we see prevalent in numerous communities today: a dysfunctional and regressive community, social instability, along with unproductivity in the workplace and educational institutions.

Preferred State

This program aims to have accessible, affordable, and good quality mental healthcare and services for everyone in the world. Our preferred state also includes raising generations of educated and aware citizens of basic mental first aid.

Well-Being Strategy

Our Well-Beings Program is divided into a series of targeted strategic actions which will result in increased individual and societal mental strength, resiliency and well-being.

Strategic Action 1: The Happy Box

The Well-Beings Program calls for the mass distribution of the *Happy Box*. This mental health tool will be distributed to retail distributors

(such as pharmacies, clinics, doctor's offices, hospitals, etc.) where people can pick one up to take to each household. The box will include items such as:

- An encouraging heartfelt letter to the recipient of the box, explaining the Happy Box, mental health, and what to do if facing mental health challenges
- Contact information on counsellors, therapists and mental health professionals in the area and with a brief description about each.
- Venting tips and advice on

how to productively and constructively diffuse and express your stress and anger

- Meditation manuals written and certified by professionals with tips and steps on how to efficiently meditate, and its benefits to stress reduction
- A journal for writing expression
- Inspirational and uplifting quotes printed on bookmarks, stickers and cards
- A list of activities and volunteering opportunities for various age groups in the area
- De-stress dough (and other hand-held “toys” for de-stressing), that are non-toxic and harmful
- Mind stimulating and occupying games such as tetris/candy-crush/crossword games
- Origami paper lantern that can be folded and installed by the Happy Box recipient

Flash-drive with calming music, games and other mental health tools
The Happy Box will be distributed for free. The first version will be for



households. Version two will be aimed at individuals. The box will be re-fillable. Re-fill items will be available for discounted prices at retail stores, with the money used to invest in more Happy Boxes.

Strategic Action 2: Community Events

The best way to tackle stigma, stereotypes and negative connotations about something is to make the issue common, public and have everyone involved and see for themselves what the issue in question actually is. To raise such awareness, our plan calls for community-based events that will get people involved and connected. These community-based events include:

- Workshops at educational and professional sites about mental health
- Activities where people afflicted with mental diseases are the center of attention such as plays, radio shows, videos and films where the actors are mental health patients or individuals with mental health issues. Other community events planned are health carnivals, bazaar's and events with stalls, booths and outlets for people to participate in. One example is an art bazaar where people are given the materials and tools for painting their "disorder." The resulting artworks, if the artist agrees, will be displayed at local venues (churches, libraries, galleries, etc.) and be sold. The proceeds for the sale will go to cover the costs of future community activities.
- Group activities such as meditation classes, exercise groups or outdoor games
- Collaborations with celebrities or influential personalities who will attend events and thereby help de-stigmatize, as well as publicize, market and endorse the health messages and programs.

Strategic Action 3: Public transport

The Well-Beings Program calls for additional stops in public transportation systems that drop people off at mental health clinics. (This aspect of the strategy is because existing public transportation systems in many cities do not have such stops— and it is crucial that people with mental health issues be able to get to mental health care professionals.)

Strategic Action 4: Technological Solutions

In the 21st century, technology plays a central role in our lives. The Well-

Beings Program incorporate technological innovations and devices for the advancement of mental health and well-being, such as:

- “Smart pills” that have minute microchips installed in them that serve as trackers and notify an application that can be downloaded on either the patient’s cellphone, the mental health professional’s or a guardian’s cellphone, or all three. These devices help ensure the patient takes his or her medications and does not skip or overdose. This would be especially beneficial for people suffering from major depressive disorder or such disorders where medicinal aid is necessary.
- “Emergency buttons” can be installed around a community and city at public locations, accompanied by a telecom system to respond immediately to anyone’s emergency where immediate assistance is needed, such as a panic attack.
- A smart phone “HappyApp” will also be made available for free download. Its options will include as much of the information and tools found in the Happy Box as possible, information on the nearest Public/Mental Health service provider or event near the user, and directions for getting there, a breathing and heart rate monitor that records times and geographical areas, and store this information so, for example, a person with a panic disorder can monitor where their panic attacks are most frequent or at what times, and can relay this information to their mental health professional and know which situations they should avoid. The HappyApp will also have a calendar with reminders for appointments and the person’s pill notifications, an map function that displays where the nearest educational mental health workshops are taking place, where mental health professionals and their clinic locations are, their contact information, area support groups that they can opt to join, a schedule for shuttle buses and their daily routes, and a Help Hotline to use for immediate attention or emergency.

Strategic Action 5: Help Kiosks

The Well-Beings Program will install, in areas across a city, a “HappyKiosk.” These are designed like a private telephone booth, have an emergency button, and a screen for video calls to help centers.

Strategic Action 6: Renovating Infrastructure

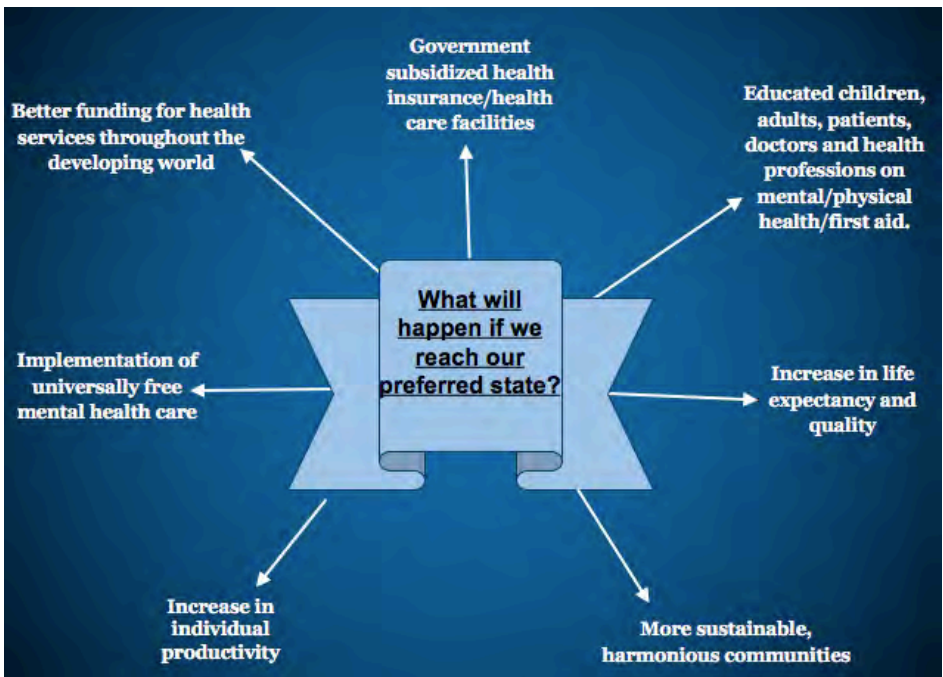
The Well-Beings Program strategy calls for volunteers (either the general

public or people with mental health issues) to make a cleaner and greener environment that contributes to positive mental health and well-being. One such renovation is for mental health facilities, making them more aesthetically pleasing and user-friendly.



Costs

Funding for The Well-Beings Program will come from various sources. National, state and local government investments in its citizen's mental health, happiness and productivity is a primary source— and one



justified by the large payback of a more productive society and reduced long-term health costs.

Other revenue sources include the private sector as well as income from the sale of art mentioned above, fundraiser events and donations. Some parts of The Well-Being Program could be self-sustaining, such as the replacement fee for Happy Box components.

Conclusions and Impacts

Change takes place step by step in the world, and even the most trivial, simplest of details can make a huge difference. The Well Beings Program seeks to set in motion an initial change that the world needs in terms of mental health. As it spreads and grows in depth, a positive ripple of change will occur throughout society.

As The Well Beings Program grows, there will be better funding for health services throughout the developing world, along with implementation of universally free mental health care. This will lead to increase in individual and overall societal productivity. An education system that leads to mental health educated children, adults, patients, doctors and health professions will lead to more sustainable, harmonious, productive and happy communities.

Endnotes

- 1 This chapter written by Fatemah Peeran and Jawaria Khan
- 2 <http://www.mentalhealthamerica.net/issues/state-mental-health-america>

HEALTH FOR ALL FOR LIFE RECAP

Cost

To implement all the strategies outlined above will cost \$1.2 to \$2 billion for start up and \$536 million annually thereafter for maintenance and updating.

The variable costs are a function of varying costs of implementation according to location and chosen strategies.

- The HealthHut program start-up costs are approximately \$1.2 billion, with annual costs at \$500 million.
- The Cambodia Water Network start up cost is approximately \$5.5 million, with annual costs at approximately \$3 million
- The Flower Power program start up cost is approximately \$35 million, with annual costs at approximately \$2 to \$33 million, depending on cost sharing with farmers.

The total start up costs of all these programs is \$1.25 billion. The annual costs are about \$535 million.



An old lady at her window in a Nepalese village. *UN Photo/John Isaac*

Funding

Possible funding for the Health for All strategies include public and private investments at the local, national, and international levels.

One business model, based on Google's use of ad revenue, could generate substantial income for HealthHuts. For example, on the right hand side of each screen on the computer in each of the HealthHuts could be short ads for medications available locally that treat the health concern of the person at the HealthHut. These revenues would go towards the maintenance, updating, and expansion of the HealthHut and their contents. An added expense would be the vetting of the ads placed on the HealthHut screens.

Summary

In summary, the health strategies outlined above, if implemented aggressively, will provide health care coverage to the millions of people throughout the world who currently have little to no access. It will increase the healthcare self-reliance of these people, make them better informed about health, health problem treatments, and health care. The strategies will also reduce the incidence and severity of malaria in the world, and provide a private/public model for clean water provision.



PART III

FAIR ECONOMIC
SYSTEMS/
PARTICIPATORY
GOVERNANCE/
SUSTAINABLE
LIFE FOR ALL



Rural Women Sell Mango and Potato Jam

Women sell mango and sweet potato jam at the food processing shop in Bantantinnting, Senegal.

They produced the jam with a Multifunctional Platform Project (MFP) introduced by the United Nations Development Programme (UNDP), helping women and girls to no longer spend several hours a day gathering firewood or collecting water. MFP is a diesel engine to which a variety of end-use equipment can be attached, including grinding mills, battery chargers, vegetable or nut oil presses, welding machines and carpentry tools.

14 June 2006, Bantantinnting, Senegal

STRATEGIES:

1. Living Wage for All Humanity
2. United Nations Empowered
3. Investing in Opportunities
4. Accounting for the Real World
5. Project Tires on Foot
6. Rebuilding the Lives of Refugees
7. Fast Tracking Poverty Eradication
8. Earth Dashboard
9. WorldGame
10. Surpassing the Digital Divide
11. UVote
12. commUNITY
13. E-LAW: *Earth, Land, Air, Water*—
Giving Voice to the Earth
14. The Bridge to Prosperity: Poverty Solutions

1. LIVING WAGE FOR ALL HUMANITY

By Aruna Arjunan, Zeynep Arhon, Dustin Feider, Don Whilsmith, Mael Jaffres, Kyle Fedus, Lucas McConnell, Angela Fuller, Gonzague de Raulin

Strategic Summary: *The Living Wage group developed a strategy to create 500 million living wage jobs by the year 2015 using a set of economic development strategies designed to exponentially increase wealth throughout the world. The plan has three stages that follow economic development phases, starting with small prototype farms growing the “three sisters” crops (beans, squash, and corn), then moving into production-ready crops such as agave and hemp, and finally moving into larger-scale industrial algae farming to produce byproducts such as ethanol and oil.*

Present State of Employment and the Global Economy

- 19% of world population lives in extreme poverty—1.25 billion people live on \$1/day or less
- 62% of world population lives on \$2 or less a day—2.8 billion people get by on \$2 a day or less¹³
- Poverty is mostly concentrated in Sub-Saharan Africa: 44% of the population there lives in extreme poverty
- Individuals, NGO's and governments tend to focus on symptoms of poverty without looking at the bigger picture
- There are a number of political, social, religious, cultural, environmental, and economic barriers to people-centered, people-powered development in much of the world:
 - **Social**—racism, domestic and international violence, hunger, lack of “win-win” options— general sense of apathy and powerlessness
 - **Economic**—poor health (diseases), unsustainable systems, unstructured economies, shortage of revenue (cash flow), foreign and national subsidies that distort local markets
 - **Political**—corrupt businesses, political instability, lack of stability provided by the “rule of law,” lack of transport (roads and ports)
 - **Cultural**—religious tension, lack of perspective to cooperate
 - **Environmental**—depleted soil, resource competition, industrial pollution and subsequent public health consequences

Preferred State of Employment and the Global Economy

By 2015:

500 million additional people making a living wage.

By 2030:

1.3 billion additional people making a living wage (thereby reducing to 0 the number of people living on \$1 or less per day)

Overall Goals

- A world without poverty
- Everyone has a job with a living wage
- A system that allows big business to create economic value on a local level
- Meaningful employment, and economic evolutionary opportunity (the capacity for personal and regional economic advancement)
- The attraction of global investment
- Creation of family and village level production capacity, employment and a living wage
- A sustainable system of farming which allows for the saving of seeds, continued improvements to the soil, intercropping and mulching.
- An agricultural middle class with small scale organic vegetable farming and algae farming at any scale
- Creation of infrastructure and infusion of wealth spurs additional enterprise.

Phase 1: Regeneration Kit (Farm-in-a-Box)

The initial artifact that will be required is a kit to help the small farmer to develop a small area of land in such a way as to be ever expanding and self-replicating. The farming methods that have been promoted by global trade rules and some economic policies in the less developed world have led, in many places, to degraded soils and polluted water supplies. In particular, the focus on growing cash crops like cotton and raising livestock has led to a number of problems such as:

- loss of forests and grasslands to make room for grazing livestock

or farm plots

- lack of locally edible agricultural products
- deterioration and erosion of soils
- monoculture food production susceptible to disease or attack by pests
- pollution from industrial fertilizers and pesticides

In order to help farmers move away from these destructive agricultural practices, the kit distributed in the pilot portion of this strategy (Phase 1) will be largely focused on revitalizing traditional and cultural practices and imparting knowledge about regenerative, permaculture farming.

Farm in a Box

Beyond instruction the kit will contain basic supplies including the seeds and equipment necessary to begin to implement the program. Through simple design and ingenuity, hand tools such as the rake can be made from local materials. The rake is a tremendous tool for the small-scale farmer. The ability to gather organic material for mulching the land can greatly improve the water retention and the fertility of the soils.

This first phase of the project will be focused on providing the know-how, the money, and the materials to grow three crops—beans, squash, and corn, commonly known as the ‘three sisters.’

The three sisters crops have been grown together for thousands of years by Native Americans and demonstrate principles of permaculture. Not only are these crops nutritious, relatively easy to grow, and beneficial to soils, but they can also be sold on regional and world markets to provide income and a host of employment opportunities (i.e. growers, transportation, supply vendors, etc.).

Phase 2: Hemp Bootstraps

Once a demo project has been successfully set up and at least 30 pilot programs are underway in various villages, the next phase of the project

will be to transition to new crops such as hemp and agave that will provide raw materials for small-scale manufacturing.

In hemp varieties grown for seed or fiber use, the plants are grown very closely together and a



very dense biomass product is obtained that is rich in oil from the seeds and fiber from the stalks. These plants are also low in THC content (EU and Canadian regulations limit THC content to 0.3% in industrial hemp).

Experts estimate that hemp industries could generate \$500 billion to a trillion dollars per year in economic product and benefits—if allowed to flourish without government interference.

Some common uses of hemp include: textiles and fabrics, fiber and pulp paper, rope, twine and cordage, art canvas, paints and varnishes, lighting oil, biomass energy, medicine, food oils and protein, building materials and housing.¹⁴

Phase 3: ActionAlgae

The third phase of this strategy is to expand from the base of subsistence agriculture and the value-added semi-industrial agricultural production of hemp fiber to more information- and resource-intensive algal culture and large-scale manufacturing.

One acre of algal production can yield 136,000 pounds of algae. This can be converted to:

- 3,500 gallons of fuel oil
- 4,500 gallons of ethanol
- 78,000 pound of organic fertilizer¹⁵

Each of these has great value in our current and coming economy. They can be sold by the algae producer/converter in the local, national, and global market.

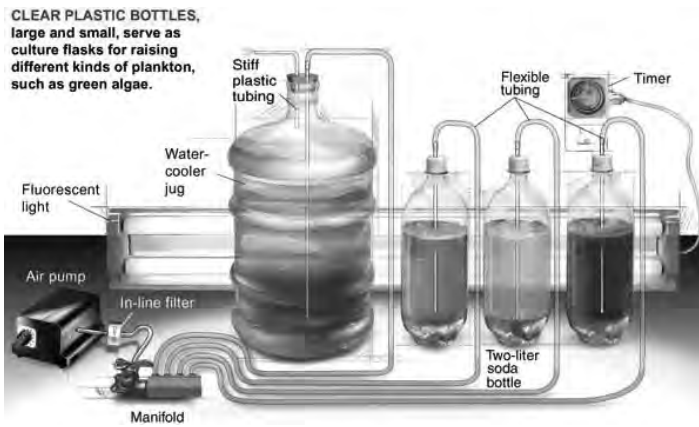
Raising Awareness of Phase 3

- Kick-off meeting, inviting targeted enterprises/donors, leading individuals and press members to listen to ActionAlgae
- Media campaign to be supported with investing enterprise, featuring their logos
- “I Love ActionAlgae” compressed t-shirts to be distributed with selected magazines, supported with advertorials in the same magazines
- Press tours to ActionAlgae towns in Africa
- Trips to ActionAlgae towns in Africa, as a memorable travel experience for adventurers

Benefits of This Strategy

- Family and village level production capacity, employment and a living wage.

- Sustainable methods of farming which allow for the saving of seeds, continued improvements to the soil, intercropping and mulching that retain moisture and improve soils.
- An agricultural middle class with small scale organic vegetable farming and algae farming at any scale.
- The creation of infrastructure and infusion of wealth that spurs additional investment and enterprise.
- Significant improvement of soil quality.
- Additional carbon makes arid soil more fertile and water absorptive.
- Carbon removal from the atmosphere reduces global warming as it sequesters it in the soil.
- It is a model that can be replicated in many places around the world.
- The number one requirement for algae culture is land and labor which is in ready supply in these impoverished rural areas.
- Urban impoverished areas can be also impacted with concentrated farming techniques.



Examples of small scale (above) and large scale (right) algae production.

Estimated Phase 3 Costs and Returns Through 2015

Year	Source	Cost	New Use in Acres	# of People Employed
Year 1 2008	Seed Money	\$ 200,000	Demo Prototype	0
Year 2 2009	Loan	\$ 20,000,000	30 Pilots	150
Year 3 2010	Investment	\$ 60,000,000	20,000	100,000
Year 4 2011	Investment	\$400,000,000	1,800,000	9,000,000
Year 5 2012	Spontaneous	\$10,000,000,000	8,200,000	41,000,000
Year 6 2013	Spontaneous	\$20,000,000,000	11,800,000	59,000,000
Year 7 2015	Spontaneous	\$45,000,000,000	38,200,000	191,000,000
Year 8 2015			39,979,970	199,899,850
		\$75,480,200,000	100,000,000	500,000,000

Resources Needed

Material Resources

“The Regeneration Kit” including:

Seeds for planting (corn, beans, squash, flax, hemp)

1. Agave tissue plugs
2. Fertilizer
3. Piping for irrigation system
4. “Water maker” drip system
5. “How to” manual in local language
6. Rake and other necessary tools

Human Resources

- College Interns
- NGO partners
- UNDP and UNEP
- Local population who are interested in pursuing this option
- Local and national government
- Experts in local climatology, weather patterns, soils, and cropping systems

2. UNITED NATIONS EMPOWERED

By Ross Cameron, Dale Castle, Eric Goldfischer, Joshua Kauffman, Shivani Mathur, Ethan Rosch, Hyoung Suk Seo, Ani Shahinyan

Strategic Summary: *Most of the nations that have signed on to the UN Millennium Declaration—and thereby agreeing to pledge 0.7% of their GDP as development assistance—have not fulfilled their pledge. Incentives for nations to fulfill their pledges and accountability measures for nations that don't are needed. In this plan, only those nations that make good on their pledge of 0.7% GDP to the United Nations will be allowed to bid on development projects—therefore allowing them the opportunity to see an income return on their development assistance investment. The strategy will be aided by the use of advanced project management software currently in use by the US government to track funding vs. results.*

Present State of Global Development

Assistance

- Governments have committed to .7% of their Gross Domestic Product (GDP) to Official Development Assistance (ODA) to fund the UN Millennium Development Goals (MDG) but are not fulfilling these pledges²⁴
- Governments are not held accountable for their MDG funding commitments
- There are no effective tool(s) for accountability
- MDG development funding is currently allocated by member states and not the UN
- There is not enough transparency as to who paid what, for what, and when
- There is not effective or efficient overall organization of the money that goes into MDG programs, nor is there a link between monetary input and project management and evaluation
- There is a lack of awareness of and responsibility for the MDGs in some countries.

The UN Empowerment group identified four overarching reasons why the MDGs are not being achieved, or being achieved more slowly than needed.

1. Poor governance—marked by corruption, short-sighted economic policy choices, and denial of human rights
2. Poverty traps—where local and national economies are too poor to make needed investments
3. Compartmental progress—where progress is made in one part of the country but not in others, leaving sizable persistent pockets of poverty. Even when overall governance is adequate, there are often areas of specific policy neglect that can have a monumental effect on their citizens' well-being
4. All of the above—where all these factors occur together, making individual problems all the more challenging to resolve.

Preferred State of Global Development Assistance

By 2015:

- There is adequate funding to exceed all Millennium Development Goals
- Monies are collected and distributed unconditionally, without political inhibitions/agendas
- All governments will meet the MDG funding of 0.7% or greater of GDP for ODA
- MDG development funding will be monitored solely by the UN
- Transparency = Everyone can see what everybody is doing directly with MDGs.

This is the gap between where we are and where we want to be:

0.37% gap in average country fulfillment
 \$106 billion cash on hand
 \$119 billion of cash missing
 = 0.53 % cash gap²⁵

Attitudes Toward the Amount of US Aid to Africa

"Thinking about the amount you pay each year in taxes, how many of your tax dollars would you be willing to have go to economic and humanitarian aid for African countries?"

\$20

[Actual amount of median taxpayer's tax bill that goes to Africa:]

\$3

"Do you think US aid to Africa should be increased, cut or kept about the same?"

Increased

33%

Kept about the same

46%

Decreased

13%

The chart above shows that people in the US are willing to give more money for global development aid, particularly to Africa.

Strategies

1. ODA Return on Investment (ROI) Motivation Initiative

This strategy, the *Official Development Assistance Return on Investment Motivation Initiative* focuses on providing the UN Development Programme (UNDP) with a sophisticated set of software tools to allow them to manage individual MDG projects, issue requests for proposals (RFPs), and track successes or problems at the project level. These tools would increase the effectiveness of the MDG project and provide donor countries with a window into how their money is being spent and how effectively it is being used.

An important aspect of this strategy is the incentive structure to encourage countries to give the full 0.7% GDP they have pledged. Incentives include:

Transparent management: UNDP prioritizes and manages all MDG projects through the MDG fund

- Request for proposals: The UNDP issues RFPs for needed projects
- RFP eligibility: Only governments who have fulfilled their 0.7% commitments are eligible to bid on the RFPs
- Preferred RFP bid weighting system to foster increased contributions
- The winning government RFP bid gets the right to the contract and recoup some of the money they have put into the fund
- Utilizing their own military industrial machine and/or subcontractors, the MDG Fund money flows back into the economic system of the donor country
- Transparency throughout entire process.

Existing resources the strategy will use:

- UNDP resources such as project management skills and staff, MDG development fund

Resources needed for the strategy:

- one additional project management director
- two additional project staff
- one additional MDG UN public communications liaison
- project management software

2. Lifeline Awareness Initiative

This strategy, the Lifeline Awareness Initiative, focuses on the development and use of a series of informational tools that increase the awareness and transparency of the use of all MDG funding. These tools include the MDG Index and the Lifeometer.

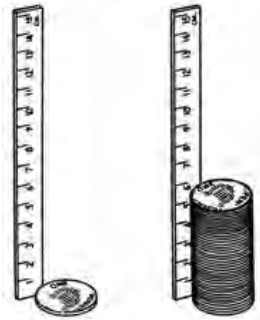
These tools will:

- Increase worldwide media awareness of the funding of the MDGs and which countries have met their MDG funding pledges. The MDG Index and Lifeometer will be prominently displayed on such publicly viewable sites as Google.com, all UN agency websites, the UN Earth Dashboard (see p. 303) and financial pages of newspapers throughout the world.
- The Index and Lifeometer will also be used by existing MDG campaign advocacy groups such as: One.org, Red Campaign, etc.
- The Index and Lifeometer will also be displayed on a large digital billboard outside the UN Headquarters. This display will also feature information showing how close we are to the MDG funding goals with a web address for further information.

Other graphic displays of MDG funding pledges will include:

Coin Stacks

- This graphic will illustrate how little is being asked of a citizen of a country. It will show two stacks of coins—one representing the GNP of a given country, the second showing what 0.7% looks like.



UNTV: In-Sight, In Mind

- This graphic display will be featured on “UNTV”—a new cooperative



One part of the awareness campaign involves raising or lowering the level of countries' flags in front of the U.N. Headquarters based on how much of their aid pledge they have fulfilled.

venture with major television systems throughout the world. Content will be based on MDG successes and needs.

UN Flag Flying

This graphic display will involve the use of the country flags that fly in front of the UN Headquarters in New York City. The flags will be raised or lowered based on how much of their aid pledge they have fulfilled. If a country has fulfilled their MDG pledge, their flag will be at the top of the flag pole. If, for example, a country has fulfilled half of their pledge, the flag would fly at half mast.

Anticipated Impacts of These Strategies

ODA ROI-Motivational Initiative:

- Accountability for auditable funds usage and associated governance.
- Increased MDG funding transparency
- Increased project management capability for UNDP as all MDG initiatives are coordinated through one software management system that has measureable goals, deadlines, and penalties built-in.

Lifeline Awareness Initiative:

- Global media exposure
- Enhanced awareness at citizen level
- Public pressures to achieve MDGs.

Short-Term Implementation Plan

ODA ROI-Motivation Initiative

- Create ODA trust fund managed by UNDP
- Outline duties of enhanced UNDP staffing
- Define qualifications of development projects
- Define qualifications to bid for projects
- Set up system, issue and award bids, monitor progress and results, report results to public

Lifeline Awareness Initiative

- Organize and consolidate data collection
- Network with media for awareness campaign
- Design and implement campaign

Long Term Goals

- Development task forces managed by UNDP
- Infrastructure development process begins
- Global awareness and civil society accessibility 100%

Metrics for Success

ODA ROI-Motivation Initiative

- Initial increase in direct MDG funding
- Decrease in fulfillment gap
- Increase in project management accountability and visibility

Lifeline Awareness Initiative

- Global increase in MDG awareness across all sectors
- Increased citizen to government contact on MDGs
- Increase in individual donations to MDG Fund (governments, corporations, citizens)

What is needed to set this plan in motion and make it real?

- Prototype the ODA ROI-Motivation Initiative:
- Pilot a Performance Management Database (using current off-the-shelf software)
- Test run Request-Life-Cycle
- Create awareness campaign in the lobby of the UN Headquarters (i.e. Coin Stacks) and measure public response with on-site poll.

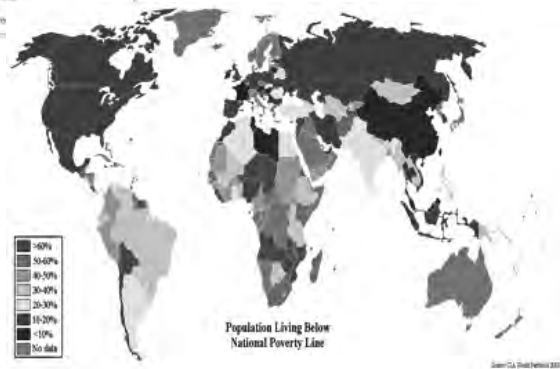
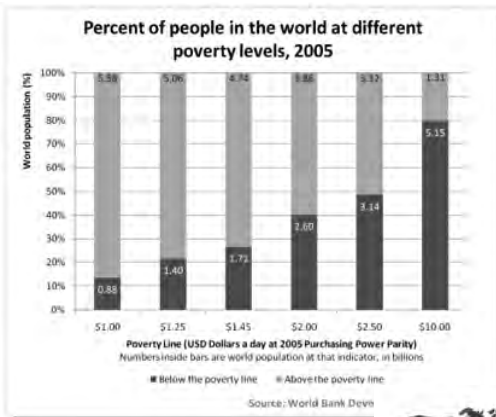
3. INVESTING IN OPPORTUNITIES

By George Pavlosky, Anna Swarbrick, Emmanuel Lagurre, Alexis Baranov

Strategic Summary: *Make credit and training available to low-income people and couple their business with fair-trade organizations that sell their production in wealthy parts of the world.*

Introduction—Problem State

- There are over 3 billion people living on less than \$2.50 per day
- Approximately 80% of poor people lack access to banking facilities
- Loans are rarely reaching the poorest of the poor
- Borrowers are uneducated on business sustainability and unable to rise out of poverty
- Poor villages do not have initial costs to start income generating businesses
- Women do not always have the opportunities to access loans (often due to lack of collateral, land titles, cultural practices)
- Lack of knowledge and access to loans



than \$2.50 a day.

Preferred State

- Those living in abject poverty have access to micro-credit by 2015
- All developing countries have access to low interest micro credit by 2030
- Local village economies are linked to the global markets
- Communities are educated in sustainable business practices
- Women are provided equal business opportunities
- High capital mobility (faster, easier access to loans).



Strategy

Step 1: Form a NGO *Investing in Opportunities* that partners with Ten Thousand Villages/Oxfam to provide business opportunities for crafts **people in deveolping regions of the world.**

Step 2: Progressively expand from 5 villages until all communities in need have access to micro-credit *Investing in Opportunities* works with the community to provide credit, structure and support for the lending process.

Linking Local Communities with the Global Economy

Investing in Opportunities will partner with fair-trade organizations such as Ten Thousand Villages and Oxfam as they have a strong and viable network, expertise in global fair trade with numerous outlets worldwide.

Action Steps

- *Investing in Opportunities* collaborates with Ten Thousand Villages/Oxfam
- Focus on the poorest communities in most need of credit
- Pick 5 communities with growth opportunity
- Inform community on micro-credit and how it applies to them
- Community selects local leader to be chair of micro-credit committee
- Community selects committee
- 2 weeks of training committee



- Committee educates community on micro-loans
- Community applies for loans with support from “Investing in Opportunities” for business ideas
- Committee decides on eligibility
- First loan comprises of \$50 or less with 6% interest
- 20-40% of borrowers produce items to be sold through Ten Thousand Villages/Oxfam
- Loans are paid back, credit is established and an increase of future loans to that member.



4. ACCOUNTING FOR THE REAL WORLD

By Bruce P. Hector M.D.

***Strategic Summary:** Informed consumers make more intelligent choices than uninformed consumers. When given the choice, consumers, in the long run, trend towards environmentally sound choices. Ecolabelling has developed over the last twenty years as a means for consumers to identify products that meet at least some elements of a wide variety of ecological goals and to allow producers to better distinguish their product in the marketplace. These goals and standards vary significantly by product and the potential environmental impact of the product's inherent resource utilization, energy consumption and disposal cost with some factors considerably more important in one industry than in another. This has led to rather specific third party or industry sponsored certification which producers may solicit and receive to enhance their product's customer satisfaction/demand.*

Ecolabels currently provide little direct information on the product label but rather only an acknowledgement of certification. In most cases, rating criteria are available from the certifying agency. Currently over 400 different ecolabels exist in the international marketplace.

In response to this informational void, the author has developed a *Universal Ecolabel* (UE) format to assess the energy, matter and human component for any product or service during phases of production, use by consumer and post use. The standardized format provides transparency, comprehensive analysis and a consistent format for presentation of all data. Inclusion of the information accessible from the product barcode in a format for cell phone or home computer use provides the consumer with the potential to monitor his complete environmental footprint. It additionally allows a method for producers and consumers to distinguish products across multiple industries including those from developing nations. In essence, the UE provides a parallel accounting method for monitoring the finite planetary resources used by humanity in a manner not possible with the current monetary accounting system.

Present State

Despite the availability of eco-labeling on some products, almost all products sold in the global marketplace are purchased without the consumer knowing or having access to information about that product's environmental impact, energy use and the producer's adherence to socially responsible standards.

There are over 400 different labels that in some way assess a particular product's composition or resource utilization.¹ Sometimes there are multiple labels for the same industry. Most have different sponsors and accrediting agencies including producer organizations, consumer groups and independent third party entities. Each is usually only focused on specific environmental issues felt to be relevant to the specific product. No labels measure or even purport to measure comprehensively, the full extent of the product's environmental impact.

Preferred State

A preferred state is one where all products are labeled in such a way that consumers can easily find out the impacts on the environment and society of the product before purchase. This information would be available online and at the point of purchase through a barcode read by a cell phone or other form of handheld computer.

Such a *Universal Ecolabel* would include:


- Provision, by the producer of the product of complete, non-biased, and verifiable information (similar to a food label) on the material, energy and human components used in the production of the product from "cradle to retailer shelf."
- Provision of the similar information on the product's resource utilization and impact during consumer use and post-consumer use stage.
- Provision of this information in a consistent and easy to understand format for every product.

The complexity of industrial processes and materials, as well as consumer ignorance of the environmental significance of production, precludes meaningful presentation of all information during initial phases of implementation. This necessitates a focus on identification of materials/production methods with potential adverse impact on humans, other animals, plants, air, water and ecosystems, the forms of energy used in production, and adherence to a basic set of human rights and worker treatment.

What the Universal Ecolabel is

The *Universal Ecolabel* contains the information described in the below illustration. Each product would be evaluated in three general categories, *Input* (what goes into the making of the product), *Use* (the impacts of the product's use) and *Post-Use* (what happens to the product materials after useful life ends). For each of these categories, there are four measurements of impact: *Matter*, *Energy*, *Human* and *Packaging*.

Figure 1 below shows the basic Universal EcoLabel prototype

	Column A	Column B	Column C
	INPUT	USE	POST USE
Row 1 MATTER	Adverse Effect on: Humans _____ Plants _____ Animals _____ Air _____ Water _____ Ecosystems _____ Recycled matter into (% wt.) _____ Petroleum based (% wt.) _____ Waste Water (gal.) _____ Prod. Waste (%wt.) Upcycle _____ Down _____	Type: _____ Quantity: _____ Single use: _____ Lifetime: _____ Waste water (gal/use): _____	Biodegradable: short term _____ long _____ Technical: Reuse _____ Recycle _____ Return _____ Atmos. Emissions: _____ Waste water (gal.): _____
Row 2 ENERGY	Total Kwh or gallons: _____ % Fossil Fuel: _____ % Nuclear: _____ % Renewable: _____ Production Greenhouse gas (Gg) _____ (t/year)	Kwh or gallons fuel _____ Per Use: _____ Lifetime: _____ Energy Source: _____ % Fossil Fuel: _____ Nuc. _____ Renew. _____ Gg emissions: Single _____ Life _____	Energy Produced (Kwh): _____ Emissions: _____ Energy Use (Kwh): _____ Fossil Fuel _____ Nuc. _____ Renew. _____
Row 3 HUMAN	FL: _____ CL: _____ LU: _____ Dsc: _____ WS: _____ LW: _____ WH: _____ WB: _____	(Determined by Consumer Choice)	FL: _____ CL: _____ LU: _____ Dsc: _____ WS: _____ LW: _____ WH: _____ Community Exposure: _____ Type: _____ Quantity: _____
Row 4 PACKAGING	Matter (% Wt): Petro _____ Org _____ Inorg _____ Energy (% FP) Nuc _____ Renew _____ Human FL: _____ CL: _____ LU: _____ Dsc: _____ WS: _____ LW: _____ WH: _____ WB: _____	Barcode Space	(% Weight): Biodegradable: short term _____ long _____ Recyclable: _____ Return: _____ Landfill or Burp: _____
Row 5 DISTRIBUTION		Human Codes: WH = Working Hours FL = Parent Labor CL = Child Labor LU = Labor Union Dsc = Discrimination WS = Worker Safety WB = Living Wage	Matter Adverse Effect Scale: A = Strong Evidence B = Good Evidence C = Possible Concern D = Low Probability E = No Evidence F = Data Unknown <small>Minimum score required for product to be considered sustainable</small>

Universal EcoLabel prototype

Row 1: MATTER, Column A

The *INPUT, MATTER* box reflects the potential adverse impact of the Materials and production methods on humans, animals and plants, as well as the air, water, and ecosystems. This box also contains the amount of the materials in the product made from recycled materials, the amount made from non-renewable materials (such as fossil fuels based materials), the amount of water needed to produce the product, the waste water released in the process of production and the total waste that results from the product's production. Few consumers are aware of

production waste. For example, it is estimated that for every truckload of new carpet product, there are 32 truckloads of waste². Similarly, there are 4,000 pounds of waste per pound of laptop computer and 100,000 lbs. waste per pound of semiconductor chip.³

Row 1, MATTER, Column B

The *USE, MATTER* box identifies the Materials added during single use by the consumer. This box also contains the product's expected lifespan (single use vs. long-life product), its expected lifetime use of additional materials, if any, and waste water resultant from product use.

Row 1, MATTER, Column C

The *POST USE, MATTER* box describes the fate of the Materials after they are "thrown away." Materials may naturally decompose rapidly or slowly, be returned to the producer, reused or recycled. These processes may result in atmospheric emissions or consume water with the remaining material either burned or dumped in a landfill.

Row 2, ENERGY, Column A

The *INPUT, ENERGY* box identifies the amount of Energy used to make the product, the source of that energy (fossil fuel, nuclear or renewable) and quantity of greenhouse gases emitted during production.

Row 2, ENERGY, Column B

The *USE, ENERGY* box notes the Energy that the product in question needed for both single consumer use and through the product's life. Energy source and greenhouse gas emissions are also noted.

Row 2, ENERGY, Column C

The *POST USE, ENERGY* box reflects the Energy that the product in question uses after it is "thrown away" or in its post-use cycle, including emissions and source. Disposal in some cases may result in Energy production that can be used elsewhere but also emits greenhouse gases.

Row 3, HUMAN, Column A

In the *INPUT, HUMAN* box basic human standards for workers are identified, reflecting all levels of production. These include forced, bonded, indentured or prison labor; child labor; freedom of worker association and collective bargaining; discrimination, harassment and

abuse; work place health and safety; fair wages, benefits and terms of employment; and reasonable working hours.

Row 3, HUMAN, Column B

The *USE, HUMAN* box is identified “determined by consumer choice” since each user is restrained in behavior only by himself.

Row 3, HUMAN, Column C

The *POST USE, HUMAN* box reflects both the workers’ rights of those responsible for product disposition after consumer use and the effect of those activities upon the surrounding community.

Row 4, PACKAGING, Column A

The *INPUT, PACKAGING* box identifies all 3 elements of producer inputs (matter, energy, human) but only for packaging. This is because the production and fate of packaging is usually quite different from the product.

Row 4, PACKAGING, Column B.

The *USE, PACKAGING* box is replaced by a space for the product barcode since packaging is rarely involved in product use and highly variable depending on consumer preference.

Row 4, PACKAGING, Column C

The *POST USE, PACKAGING* box identifies the post use disposal fate of Packaging noting if it is biodegradable, reused or recycled, incinerated or sent to a landfill distinguishing percent of packaging weight to each category.

Row 5, DISTRIBUTION

Products and their composite parts often travel great distances to reach a consumer yet the true cost of that travel is not reflected in the other described elements of the label or any other manner useful to the consumer. Producers send finished products to many different locations and therefore a score for this element cannot be provided until one knows the site of sale. To address this issue and promote a greater sense of purchasing locally, a small global map indicating the site of the production of the product has been added. The map is divided into the 24 time zones by longitude and by latitude into 15 degree segments.

Five latitude sections north of the equator and 4 south of it encompass almost all production zones. Presumably the consumer will know the zone of purchase. All sub-assembly locations are colored yellow and final assembly location colored orange.

OTHER LABEL ELEMENTS—BARCODE

Most manufactured products contain a barcode to provide unique product identification. This is a critical element of the label that is necessary to gain more detailed product information at the purchase site. Using a cell phone application to scan the barcode, the consumer connects to the “cloud” and receives detailed product data. Additionally, this design envisions a technology that allows the consumer to input the barcode of each purchase to a mobile or home computer allowing him to maintain a record of the environmental impact of his lifetime purchases.

Implementation Strategy

Several options exist for implementing the *Universal Ecolabel*. One way would be to have the *Universal Ecolabel* adopted by a major retail chain such as WalMart as a means of distinguishing itself from its competition—with expectation that competing retailers would gradually adopt the same standard. WalMart has indicated its interest in promoting sale of sustainable products and initiated efforts gathering environmental impact information from its supply chain producers as well as redesigning their own retail facilities to save energy and minimize adverse environmental impact.⁴ Provision of comprehensive label information to consumers is consistent with the company’s stated goal of serving consumers in a transparent manner. A retailer of this size has the capability to rapidly complete the research, implement and modify label presentation to best serve its customers.

Another option would be to have a government body, such as China, the United States, the European Union, or an international agency, such as the United Nations, adopt the *Universal Ecolabel* and insist that all suppliers to the government or agency use the label.

A third possibility is publication of a consumer oriented book designed to initiate greater consumer demand for label information on the environmental impact of all products to allow consumers to make informed choices.

Conclusions

Adoption of a labeling process as outlined above has several important implications for rapidly accelerating the movement to sustainable industrial and agricultural processes:

- By enhancing consumer knowledge of the environmental impact of products in a comprehensive transparent format, it will facilitate greater consumer participation in the sustainability movement.
- It will move toward elimination of “green washing” often disguised with certification labels that emphasize one positive product element but overlook other more important negative ones.
- When producers know that consumers are demonstrating concern for more than price, they will begin to focus on production methods that address sustainability issues.
- Comprehensive labeling will expose the practice of “externalizing liabilities” which often compels the public to pay for the adverse effects of producer environmental disregard.
- Petroleum based products will likely have significant detrimental “scores” that will stand out glaringly in contrast to those not using this resource. This will encourage producers to seek more renewable energy sources and non-petroleum based products facilitating preservation of this non-renewable resource for future generations.
- From the consumer perspective, by using a mobile or home computer application to scan all purchases, each consumer can monitor his/her environmental “footprint” in a comprehensive manner. This will facilitate meaningful progressive reduction of one’s adverse environmental impact.
- From a macro economic perspective, current accounting methods only monitor price. This presumes that resource scarcity or consumer preference will lead to price changes reflecting that scarcity or need. The *Universal Ecolabel* represents a potential parallel accounting system that actually tracks the real major components of goods and services. Since the planet only has a fixed amount of these resources, monitoring them to be able to meet the needs of a growing population will become more important. As resources become scarce, the label and personal monitoring become a tool society may even find more useful to base its taxation methods for individuals rather than personal income.

- Lastly, if humanity ever does learn to safely tap the available, vast sustainable energy resources, a system to monitor and account for the finite planetary material resources will be essential to insure all human material needs are met. The *Universal Ecolabel* represents a first step toward resource monitoring and Real World Accounting.

Endnotes

- 1 World Resources Institute, Global Ecolabel Monitor, http://www.ecolabelindex.com/downloads/Global_Ecolabel_Monitor2010.pdf
- 2 Ray Anderson, Interface Floor, UCLA lecture, 2-2010.
- 3 Paul Hawken, Amory Lovins, L. Hunter Lovins, *Natural Capitalism*, Little Brown and Company, New York, 1999, page 50.
- 4 <http://walmartstores.com/Sustainability/>

5. PROJECT TIRES ON FOOT

By Zeynep Arhon

Strategic Summary: *Project Tires on Foot (TOF)* suggests a new source of employment and primary income for the poor, especially those in refugee camps, and envisions that every human being on this planet has at least one pair of shoes: *The TOF Shoe*. The TOF Shoe will be designed by a globally-known designer and produced from scrap tires sourced from a leading tire manufacturer. The TOF shoe will be “manufactured by people on bare feet for themselves and for the rich world” in a branded way, as a source of significant profit. This is about the poor world fighting with poverty with one of the most powerful tool of capitalism: Brand power. This is about getting one step ahead of the current charity paradigm based on the rich producing for the poor and donating a portion of generated revenues. Project TOF can also be used as a platform/tool to boost global awareness about UN Millennium Development Goal #1.

Present State of Global Mobility

As with all basic rights; right-to-mobility is distributed unequally around the world.

In 2002 there were 590 million cars in the world. That is one for every ten people¹⁶

- In contrast, in the Central African Republic, Bangladesh and Tajikistan there is one car for every 2000+ people
- In the poor regions of the world, millions have no access to even the simplest vehicle. Mobility is on foot, sometimes bare foot
- Virgin Galactic prepares itself to send first civil astronauts into space. In a decade of space tourism, each and every human being

MOST AND FEWEST CARS

Rank	Territory	Value	Rank	Territory	Value
1	New Zealand	61.3	191	Afghanistan	0.16
2	Luxembourg	57.6	192	Chad	0.15
3	Iceland	56.1	193	Nepal	0.10
4	Canada	55.9	194	Ethiopia	0.10
5	Italy	54.2	195	Armenia	0.09
6	Germany	51.6	196	Somalia	0.08
7	Switzerland	50.7	197	Myanmar	0.06
8	Malta	50.5	198	Central African Republic	0.05
9	Austria	49.4	199	Bangladesh	0.05
10	Australia	49.3	200	Tajikistan	0.04

passenger cars per hundred people

on the planet at least deserves a pair of shoes

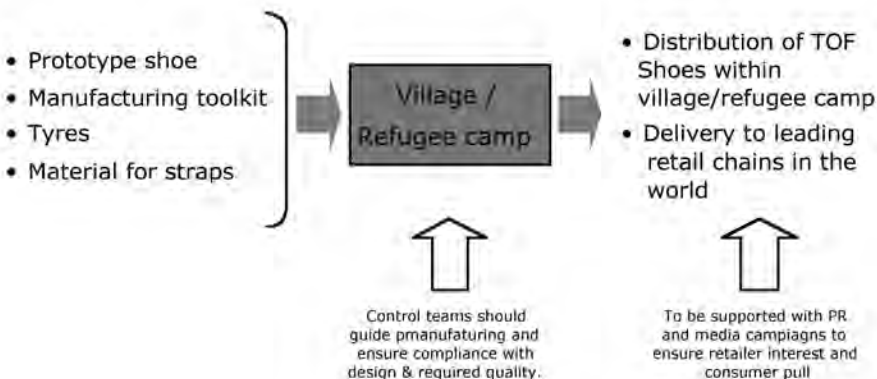
- One of the outcomes of high mobility in the developed world is scrap tires
- Today's technology does not allow for re-use of recycled tire rubber in the production of new tires
- Because of speed, safety and other performance requirements of tires, they need to be made mostly using virgin rubber compound
- Millions of tires find their way to landfills every year
- There are 20.8 million refugees in the world.¹⁷

Solution

Project TOF will make durable, functional shoes from scrap tires. This is not a new idea. It is merely an idea whose time has come. In Germany, after the Second World War, scrap tires were used to make shoes. Scrap tires are still being used for this purpose by outdoor enthusiasts because of their durability. If tires can carry cars, they can easily allow people to walk long distances. In addition, it is relatively easy to make shoes out of scrap tires. A detailed description for one such shoe can be found at: <http://www.hollowtop.com/sandals.htm>

The TOF Shoe will be made out of 100% used materials. The sole will be made of scrap tires. The straps will be made out of used bag handles, car/aircraft safety belts, or the inner tubing of tires. The TOF Shoe will be manufactured by "people on bare feet, for themselves and for the rich world."

Manufacturing Process



Strategy for Implementation

Strong partnerships are required in order to turn Project TOF into reality.

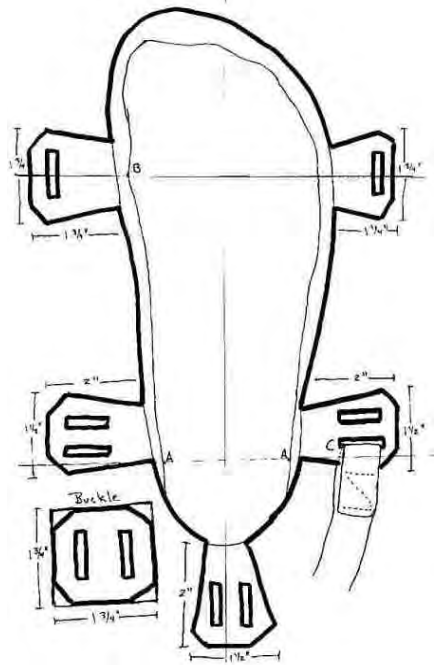
1. The first partnership will be with a leading tire manufacturer. The manufacturer will source scrap tires as the raw material of the TOF Shoe. It is likely that manufacturers will welcome the project since there is no proper/ environmentally-friendly method of getting rid of used tires, which are an environmental hazard in themselves. Partnering manufacturer will be expected to collect back tires from its distributors.

2. The second partnership will be with a world-class designer. The TOF Shoe will be designed by a famous designer, willing to get involved in a cause-related project (i.e. Philippe Starck, Bruce Mau, Ross Lovegrove...etc.). Alternatively, a leading shoe producer (i.e. Nike, Camper, Hush Puppies...etc.) may take over the design process. Partnership with a leading designer/shoe producer will yield an iconic TOF Shoe at minimum cost, and it will maximize the value of The TOF Shoe brand in the eyes of potential consumers.

3. The third partnership needs to be with a strong logistics company. This is to enable the used tires and The TOF Shoe manufacturing toolkits to be shipped to villages/refugee camps that will manufacture the TOF Shoe. The logistics company will also transport manufactured shoes to leading retailers that will sell the TOF Shoe. Ideally, the logistics company would see Project TOF as a corporate social responsibility initiative and assume all or parts of the delivery cost, until the project was able to cover these costs from the sale of The TOF Shoe.

Half of the TOF Shoes manufactured in the first year will go to the village or refugee camp where the shoes are made. The other half will be sold on the international market in brand name retail outlets. The profits will return to the workers who made the shoes.

The TOF Shoes will be a genuine source of profit for refugees, as



they are introduced in leading retail chains in the world (i.e., Ikea, GAP, Sainsbury, stores of the partnering designer/shoe manufacturer, Amazon.com etc.) Once they are available for mass consumption, the shoes will boost public awareness about poverty and UN Millennium Development Goal #1.

Strengths

Everyone will win:

No more bare feet—The TOF Shoe will help the poor travel to water, school, jobs, and back home

- The project will create employment and income opportunities in villages and refugee camps where there is currently little or no economic activity
- The TOF Shoe, if branded effectively, will be a global status symbol among both the wealthy and the poor
- Partnering companies will enjoy high corporate social responsibility (CSR) rating and PR value (Tire producer, designer/shoe manufacturer, logistics company)
- Retailer chains that carry the TOF Shoe will build image and profit
- The environment will win because fewer tires will go to landfills

Project TOF has the potential to attract possible media partners (i.e., TV stations, print media) and minimize announcement costs for demand creation. There is also potential for celebrity endorsement (i.e., actors, musicians, politicians turning into ambassadors of The TOF Shoe by actually wearing them). In time, the project may pave the way for alternative uses of tires in the fight against poverty. For example, tires can be used to build durable housing, refugee camps, social centers, schools, and playgrounds for children.

Finally, the massive outreach and sales of TOF Shoe will boost awareness about UN Millennium Development Goal #1. Each

individual who hears about or buys the TOF Shoe will gain at least some notion of the scale of poverty in the world.



Challenges

Project TOF does not change the fact that tires are environmentally hazardous. It does convert tires into a different material that is friendly with the planet and useful to people without shoes. Even with Project TOF, the world will still have to deal with scrap tires at some point—even if they are in the form of shoe soles.

Once the TOF Shoe gains a certain level of awareness, it is expected to generate significant profit for the villages/refugee camps. However, in order to generate that awareness, media and PR investment is required. UN support may be a way to overcome this challenge. United Nations High Commissioner for Refugees (UNHCR) may be a potential source of necessary funds. UNHCR raises funds through governments, foundations and private donors so that refugees can be assisted immediately with food, shelter and other essentials distributed by the agency's implementing NGO partners. There are 20.8 million refugees in the world and Project TOF may change the lives of some if not all.

Another challenge is to make sure tires are handled properly in villages / refugee camps. If not handled correctly, scrap tires make excellent breeding grounds for mosquitoes. A single tire can be the source of thousands of mosquitoes over the course of a summer and raise the risk of malaria.

Examples of shoes made from scrap tires.



6. REBUILDING THE LIVES OF REFUGEES

By Blaise Glowiak, Samir Musayev, Matthew Omochere, Giorgi Tchiaberashvili

Strategic Summary: *There are 50 million refugees in the world. All of these people are in need of basic human needs and rights. The strategy presented here seeks to transform refugee “holding pens” into education and occupation centers where refugees and their children obtain basic and advanced education and job training as well as conflict resolution*

skills that can be used when they return to their homelands—thereby turning refugees from conflict into agents for peace.



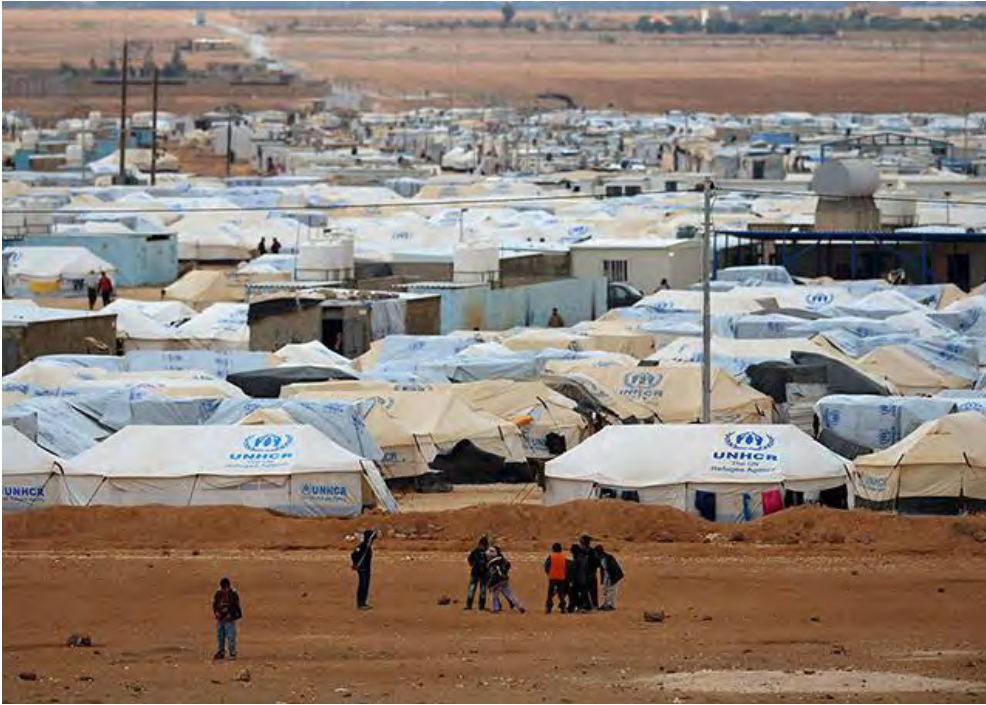
Introduction

“While every refugee’s story is different and their anguish personal, they all share a common thread of uncommon courage: the courage not only to survive, but to persevere and rebuild their shattered lives.”

—Antonio Guterres

Problem State

In 2014 the number of refugees in the world has exceeded fifty million¹. This is the highest it’s been since the end of World War Two. With



conflicts in Syria, Afghanistan, Iraq, Somalia and other parts of Africa, there are more and more people looking for refuge in other countries.

51.2million displaced persons worldwide

- 16.7M refugees
- 33.3M internally displaced persons (IDPs)
- 414,600 refugees return to their homes
- 24,500 separated children applied for asylum
- 32,000 new refugees per day
- About 9 million refugees from the Syrian Civil War

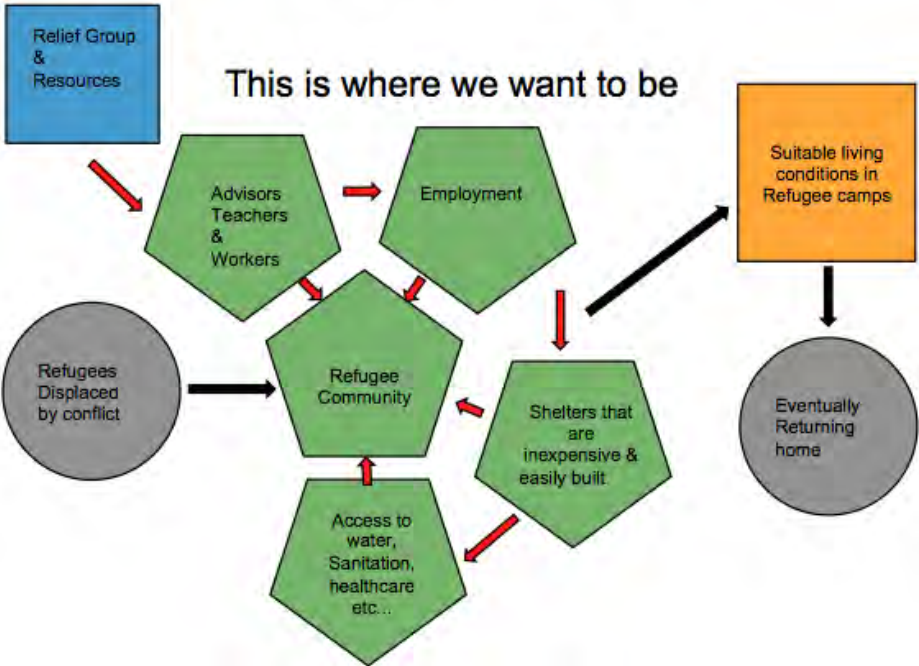
In the refugee camp Zaatari in Jordan there are over 84,000 refugees from the Syrian Civil War. This single refugee camp can be considered the largest city in Jordan. These people in this camp are given basic shelter and food. Refugees are living in what are basically holding pens. Ongoing conflicts prevent their return home. People within the camps gain very little, if anything, that could help them advance in their lives. The strategy presented below is designed to equip refugees with the information and tools needed to rebuild their lives.

Strategy

Our plan is to put in a sophisticated system of education and training into existing and new refugee camps. The implementation of the plan would provide education to children and youth whose education was suspended due to the conflict that caused their fleeing their homes. The children would be placed into classes that take off from where their previous education left off. Adults will be provided basic and continuing education. Adults who have never had or completed school will be able to take classes that will aid them in basic life skills and open them up for more advanced employment opportunities.

The above chart outlines our basic strategy. The refugee community will have its basic human needs met through an infrastructure building program that will employ refugees in the building of shelters and the infrastructure needed to provide water, sanitation and energy. In addition, there will be an educational system set up that will provide children and adults with educational opportunities.

Beyond basic education would be training in specific job areas. These job areas would be those that are essential to the lives of refugees. The jobs would help with rebuilding communities and livelihoods. Examples of study topics include: construction, plumbing, environmental sustainability, money management and other topics such as conflict resolution, and global peace and justice. The intention of topics such as conflict resolution and global peace and justice is to

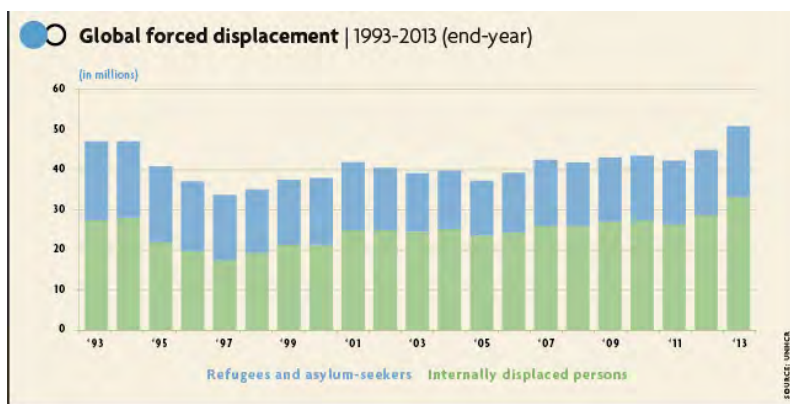


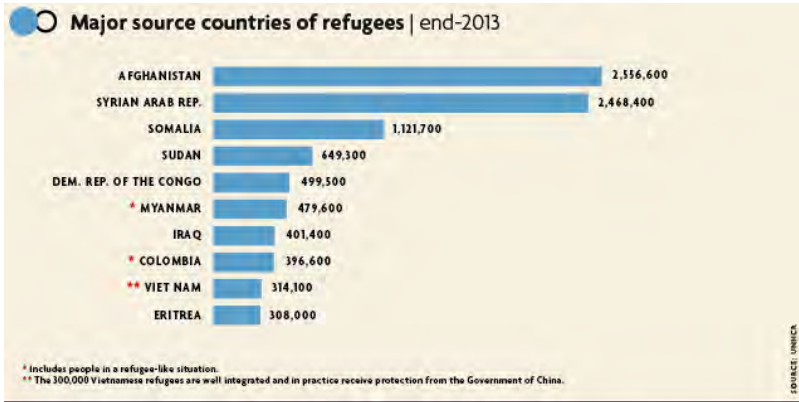
provide refugees with the capability to help resolve conflicts within their homeland. Without resolving the conflict, most of the other training and jobs couldn't be applied. Topics like money management will help refugees set up their own small businesses so they can earn money from different craft skills they might already have or have learned in the refugee camp. Building skills can be used in what was a previous war zone to rebuild structures.

Nearly all of the skills refugees learn in the camp training centers can be used within the refugee communities. For example, people who take part in classes on political negotiation can become representatives of the refugees in front of groups like the government of the host country. Refugees who take part in construction and plumbing training can do work within the camp to meet the basic needs of the refugee community.

A goal of the strategy, and a measure of its success, would be for the refugees to gain employment and to make money so they are, in at least one sense, better off than when they arrived at the camp, as well as better prepared to return to their homelands in better shape than when they left. *Ideally, a person's stint in a refugee camp would be seen as an extended stay in a schools or occupation training center—rather than in a “holding pen” for the unwanted.*

One means of financing this strategy could be through corporate sponsorship. Companies could sponsor refugee communities and have refugees help manufacture their products. Refugees who know how to make crafts and other traditional items could sell these to people in other nations in something similar to the “Ten Thousand Villages” model. The crafts that they sell to people in countries like the United





States could have stories attached to help raise awareness of what refugees face.

Our goal is to arm refugees with the power to rebuild a better life for themselves, their children and their communities.

Simple, inexpensive tent-like structures that are covered in ferro cement that renders them fireproof and more long lasting.





Endnotes

- 1 Global forced displacement tops 50 million for first time in post-World War II era. UNHCR, <http://www.unhcr.org/53a155bc6.html>

7. FAST TRACKING POVERTY ERADICATION MURUTUNGURU VILLAGE, TANZANIA

By Bartolomeo Misana

***Strategic Summary:** We need to pay attention to the poor in their communities if we are to meet their basic human needs. **Community Learning and Development Planning (CLDP)** is an approach to doing this. It emphasizes community dialogue as a central tenet in supporting communities in eradicating poverty and implementing **Community Economic Development (CED)**. Community dialogue is the first activity that takes place before any projects are supported. The village (or urban equivalent) is critical to the definition of a community and is the default unit of count and center of activity.*

In conducting community dialogue, women are the first to convene. They discuss until they agree on priorities they consider critical in their CED efforts. Next, the men do the same. Finally they meet in a plenary session to merge their gender-based priorities into one community version, which becomes the basis of a **Community Future Vision (CFV)** for that community. Projects are then developed to implement the CFV.

Present State of world poverty

Today, the world is divided between rich and poor and the gap between them is increasing. In a world sufficiently affluent to feed and ensure quality life for everybody, some have to starve while others contend with obesity. Twelve infants die every minute¹ from poverty-related causes that could easily be avoided.

Lester Brown says of the environment is true of many other sectors, including poverty eradication:

The question we face is not what we need to do, because that seems rather clear. The challenge is how to do it in the time available. Unfortunately we don't know how much time remains. Nature is the timekeeper but we cannot see the clock²

Preferred State for the world

Our preferred state is that everyone on Earth has access to enough resources for a *sustainable, quality life* in sync with others and the environment for their own good and for the good and continuity of future generations.

Strategy

The strategy for getting to the preferred state focuses on the village (or urban equivalent) as the unit of analysis and action. The following steps summarize the basics of the strategy:

1. A brief meeting to formalize the authorization, process, and relationship happens first.
2. Women and children meet to discuss their development (what development means to them, their strengths, challenges, etc). Each discussion is done first in small groups, by sub-village before compiling a gender or age based community consensus.
3. Men and children also meet, separately to do the same.
4. In a third meeting, the community merges the gender/age-based consensus.
5. A Community Future Vision (CFV) is developed.
6. A Development (Project) Committee is formed by electing sub-village representatives.
7. The committee elects its leaders from its members.
8. Sub villages also form their own committees to be composed of 60% women.
9. The sub village committees and the Village Development committee handle all key community development decisions, plans, funds, activities etc.

The open discussion helps community members sort out real from imaginary needs, rank them, set a Community Future Vision, and define standards, rules, and guidelines to ensure transparency, accountability, and a sense of direction. Honesty is discussed and stressed as a critical condition in the entire strategy.



Murutunguru Development
Committee

In this way we do more than merely consult communities. It is critical to

listen to community members as they argue back and forth among themselves about their own situation until they emerge with a consensus on priorities central to their development, help shape the priorities and then support them in implementing the priorities.

Murutunguru, one of two³ villages in Tanzania to have conducted such community dialogue with support from ICEDS4, identified and ranked 36 priorities:

1. Hospital

- | | |
|--------------------------------|--|
| 2. Water | 20. Working equipment |
| 3. Secondary School | 21. Community safety |
| 4. Micro credit | 22. Experts in various disciplines |
| 5. Small industries | 23. Community Center |
| 6. Road construction | 24. Social services areas to be improved |
| 7. Market place | 25. Revival of industries |
| 8. Electricity | 26. Small businesses |
| 9. A Village Passenger vehicle | 27. Investment |
| 10. Grain mill | 28. Moral values to be improved |
| 11. Leadership to be reformed | 29. Employment opportunities |
| 12. Modern agriculture | 30. Community open market |
| 13. Technical College | 31. Village to be planned |
| 14. Tree planting | 32. Stand for Vehicles |
| 15. Modern houses | 33. Environmental management |
| 16. Telecommunications centre | 34. Sports field |
| 17. Environmental sanitation | 35. Services for people |
| 18. Modern animal husbandry | 36. HIV/AIDS Education with disabilities |
| 19. Filling station | |

The Micro Credit Project

This project is tailored along the highly successful Grameen Bank group lending model of microfinance and local development. Immediately after the community dialogue sessions, community members who had organized themselves into project groups met in separate sessions with

the ICEDS Director. In Murutunguru Village, over 10 groups (50 people) participated in the discussion. The terms for the micro credit loans were discussed at length and agreed upon. Key aspects included:

1. Only residents of Murutunguru Village were eligible to participate.
2. One had to belong to a group of not less than five members to benefit from the project.
3. The principles governing their collaboration (group constitution) had to be written.
4. All group members need to be willing to operate through a bank account (or equivalent).
5. All group members need to be willing to collaborate with ICEDS and other relevant parties for the success of the project.

The initial loan amount of \$250 was then announced to the discussion participants. They were requested to agree on which group would get to benefit from this initial loan. The carpentry group was unanimously approved by the community to borrow the money. Each group member signed a loan agreement which specified the exact amount of money (principal plus interest), to be paid back on a specific date. The loan was to be paid back in six, monthly installments with 2% interest.

Repayment rate was excellent (100%) and always on time. By the end of the loan term, all principle had been paid back with 2% interest. In addition, the group had over \$100 net profit and surplus timber stock.

This impressive Phase 1 performance led to expansion into Phase 2 with a \$2,500 loan from the Ashburn Institute. In Phase 2, forty-five new community members borrowed \$50 each. The existing five individuals borrowed \$100 each, double their earlier loan amount. In this way a total of 27 micro-projects, some of which are highlighted here, were implemented by 50 community members during Phase 2. Repayment rate with 6% interest⁵ was excellent (98%). Again by the end of the loan term, all principle had been





paid back with interest. That money is in safe keeping at the local Savings and Credit Cooperative Society (SACCOS) based at a Teacher Training College in the community.

Further expansion into Phase 3 requires a total of \$6,000. This would enable Phase 1 borrowers to triple and Phase 2 borrowers to double their loan amounts and would also involve seventy new borrowers at the starting level of \$50 each.

The entire project is organized into 8, six-month phases with a total cost of \$114,000, as illustrated in the table below. Full, steady implementation of the entire project would take four years. The community would then be able to support a neighboring village.

Project phases	1	2	3	4	5	6	7	8
Timing	<i>Sept</i>	<i>Apr</i>	?	?	?	?	?	?
Borrowers								
#: existing borrowers	0	5	50	120	190	295	400	540
# of new borrowers	5	45	70	70	105	105	140	140
Total # of borrowers	5	50	120	190	295	400	540	680
Loans (in US \$)								
\$: existing loans	0	250	2,750	8,750	18,250	33,000	53,000	80,000
\$: new loans	250	2,500	6,000	9,500	14,750	20,000	27,000	34,000
Total loans in community	250	2,750	8,750	18,250	33,000	53,000	80,000	114,000
Loans + Interest								
Interest	5	165	525	1,095	1,980	3,180	4,800	6,840
Total \$ in community	255	2,915	9,275	19,345	34,980	56,180	84,800	120,840

Murutunguru Micro Credit Project Plan

Management accountability and transparency are core principles of not just the micro credit project but also of the entire poverty eradication effort. For this reason, a project committee consisting of two (male and female) community members from each of the village's seven sub villages, elected by their respective sub-villages to serve on the committee, was established by the community to oversee project implementation. The committee receives, evaluates and passes recommendations (for modification, or immediate funding) on community members' micro loan applications. The committee's treasurer keeps track of and reports on the functioning of the credit

fund which is managed through the SACCOS based at the Teacher Training College within the Village.

Fueling growth. If another two villages were supported to implement a micro credit project, along with Murutunguru Village, the combined interest raised in the three villages would, after eighteen months, be able to support one more village to start its own micro credit project, relying solely on interest raised in the initial three villages. This would set in motion a self sustaining growth initiative.

Beyond micro credit

Micro credit plays an important part in the effort to implement all the 36 priorities in the chart above, but it is not everything. The community dialogue that set the whole effort in motion is a permanent feature of the poverty eradication effort. It provides the community with a platform to continuously take stock of achievements, make new decisions and set new standards or review existing ones as appropriate. That the community identified these 36 priorities need not preclude the possibility of their coming up with yet another set of equally important priorities. In this way the community becomes an organic entity in command of its future, for the good of all.

Conclusions

While there is no silver bullet solution for eradicating poverty due to the uniqueness of each community, the Murutunguru Village in Tanzania poverty eradication initiative shows that a low cost approach to jumpstarting community development is possible. Community solidarity and mutual understanding are key tenets to the approach.

For the approach to work, there must be a conducive socio-economic environment (minimum functioning rule of law, peace, security). With adequate community preparation and appropriate initial support, chances of success are very high.

Scaling up depends on how well the initial effort is funded. If a three village approach is undertaken, the project can take care of its own expansion in teighteen months. This would be the beginning of a snowball effect since each additional village would mean further interest generated to support yet another village.

Endnotes

- 1 Population Reference Bureau: http://www.prb.org/pdf09/09wpds_eng.pdf
- 2 Lester R. Brown, (2009) *Plan B 4.0 Mobilizing to Save Civilization*, New York, London, W. W. Norton & Co. pp xiii–xiv
- 3 Gwata Village in Kisarawe District, Coast Region, Tanzania was the second village.
- 4 Integrated Community Economic Development (ICEDS) is a non-profit, Non Governmental Organization (NGO) registered in Tanzania to fight poverty.
- 5 At the beginning of Phase 2 community members freely decided to raise interest from 2% to 6%.

8. EARTH DASHBOARD: REAL TIME MONITORING OF KEY INDICATORS OF GLOBAL PROBLEMS AND WELL BEING

“A dashboard is a visual display of the most important information needed to achieve one or more objectives; consolidated and arranged on a single screen so the information can be monitored at a glance.”

—Stephen Few, Information Dashboard Design

By Medard Gabel

***Strategic Summary:** The Earth needs a universally accessible dashboard where government leaders, corporate executives, civil society leaders, students, teachers and the media can easily recognize what is happening **right now** on board “Spaceship Earth.” Just as the dashboard of a vehicle describes the present state of the condition of the vehicle—it’s speed, remaining fuel, engine temperature, etc. —the world needs a similar capability to monitor in real time population growth, energy use, food production and other key indicators of the state of the planet. The **Earth Dashboard**, a forty-foot by eight-foot high-definition video wall installed at major UN buildings in New York, Paris, Geneva, Nairobi, Rome and elsewhere would provide world leaders and others with such a tool. An interactive web site and phone app would provide nearly everyone else in the world with access.*

Introduction—Present State

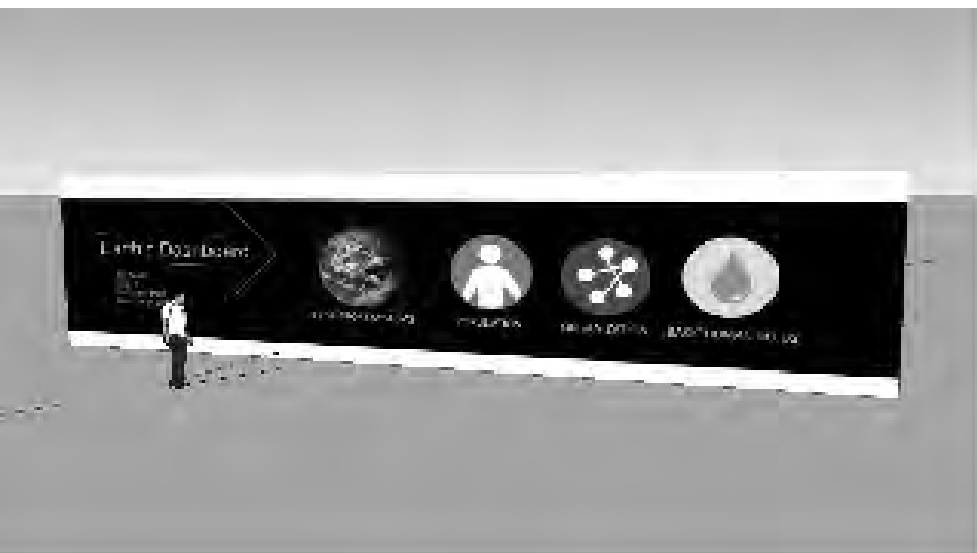
The world has a critical need to see itself as one interconnected whole rather than disparate countries, cities, tribes, cultures, religions or special interests. Without this unitary view of intertwined fates, the parochial trumps the planetary, narrow self-interest bests enlightened self-interest, greed beats generosity—and the world is endangered through short-term and near-sighted thinking and actions. The lessons of history lead to the conclusion that humanity might not survive if these negative conditions win out.

Because of the interconnections of science, technology, economy, culture, environment, problems and options—and the intertwined fate of all life on board “Spaceship Earth,” there is a critical need for a tool similar in purpose and function to a vehicle’s dashboard.

An *Earth Dashboard* is needed so that everyone from UN Representatives and world leaders to students and the general public can get an easy-to-understand fix on the condition of their ship, its resources, problems, crew and passengers. Because we are now, more than ever, one world, we need a one-screen dashboard type of display that shows us the key indicators of our ship. Because of the size and complexity of our ship, an *Earth Dashboard* also needs to be able to zoom in from the whole Earth to the local and to do so in a way that shows links between levels.

If the world had such a dashboard, and this dashboard was available in a highly visible and credible public (and web) location where all could get access and see it, the dashboard would function as a critical source of global visualization. Those viewing the dashboard will come away with an increased and more tangible sense of the whole world, its interrelations, problems, and options. If this dashboard is interactive and involves the viewer, its power and impact will be even greater.

The *Earth Dashboard* would contain a large number meters, gauges, maps, alarms and other data visualization tools that would provide an accurate present state condition of the Earth. Trends and time lines would provide a “rearview mirror” for seeing where we have come from, and data projections into the future would provide a short-range glimpse out the “windshield.” The *Earth Dashboard* will illustrate the present state of the world, in real time.





An *Earth Dashboard* located at the UN (and its web-based version) will be a place where people come from around the world to see what is happening right now on the planet. This will be done through a series of live, real time meters, gauges, trends, maps, maps in time series, viability thermometers and alarms (among many other data visualization techniques) that transform UN statistical data into exciting visualizations. These historical data sets will be supplemented with live feeds from web cams, satellite images and other sources.

What It Could Look Like:



9. WORLDGAME: GLOBAL PROBLEM SOLVING STRATEGIC PLANNING TOOLS

By Medard Gabel

"The only way to understand a problem is to understand the system the problem fits into."

—Howard Odum

***Strategic Summary:** The Earth needs tools that help us see the world from a global perspective, and to recognize, define and solve our problems and reach preferred states that use the whole world as the basic unit of analysis—not the nation state*

*or political ideology. The **WorldGame** is a tool to enable government, corporate and civil society leaders, students, teachers, private citizens and the media to develop and test out alternative solutions to global and local problems. It would encompass a digital inventory of the world's resources, human trends, needs, budgets and technological and policy options, as well as where these resources and needs are located. It would have a series of online strategic planning tools to help the problem solver see the problem they are addressing in a global context, the technological options for solution, impacts and costs. It would allow the problem solver to run simulations of the developed solution(s) implementation and to evaluate resulting impacts.*

Introduction—Present State

We live on a single planet that is divided into over 200 countries, a variety trading blocs, different types of economies, conflicting ideologies, religious and cultural beliefs—along with a scarcity of critical resources that can pit all the preceding against each other in a sometimes life or death struggle. Growing populations and increasing standards of living and expectations for ever higher ones leads to the need for either ever stronger military might to prepare for the eventual Armageddon showdown with the opposite side—or a set of tools that will enable the different countries of the world to cooperate and collaborate on meeting their and the world's needs for a sustainable way of life. Given the destructive might of modern weapons, and their ubiquity, it is imperative that we develop a set of tools that every country, and every problem

solver in the world, has easy access to.

As H. G. Wells pointed out, “*We are in a race between education and catastrophe.*” If we are to avoid losing this race, we will need to harness the creativity of as much of the world as possible. We need tools that illustrate the benefits of collaboration and foster the development of global solutions to global problems in ways that build trust and further collaboration. We need a set of tools that, as Buckminster Fuller said, help the world to “solve the world’s problems in the shortest amount of time, through spontaneous cooperation, without the advantage or disadvantage of anyone, and without harming the environment.”

Preferred State

The *WorldGame* would be such a set of tools. At its foundation would be a complete digital inventory of the world’s resources, trends, human needs and technological and policy options for meeting those needs. Included in the global inventory would be the national expenditures and budgets of every country. This inventory would be coupled to a series of sophisticated mapping and other information visualization tools that would allow the problem solver to see relationships, patterns, opportunities, impacts and costs. These tools would be contained within a strategic planning process that provided function and purpose to the problem solver user.

All of the above—inventory, visualization and strategic planning tools—would, in turn, be embedded in an optional gaming context that provided incentive and rewards for the most creative minds on our planet—the youth of the world—but who are often times those least interested in solving complex basic human need problems because of the perception that such activity is of little use. This gaming aspect of the *WorldGame* would allow the high school student, activist, dissident and policy expert to compete with the real world leaders of the world’s countries. Using the same budgets that countries have at their disposal, the *WorldGame* player would explore and develop more cost-effective, just, abundant and environmentally sustainable paths to the future. Other games and contests to “make the world work for 100% of humanity in the quickest amount of time” would also be featured.

The *WorldGame* would be available online to everyone with Internet access. It would also be located in a physical facility such as the United Nations. The *Earth Dashboard*, or a modified and expanded version of it, (as described earlier), could be a powerful user interface for the

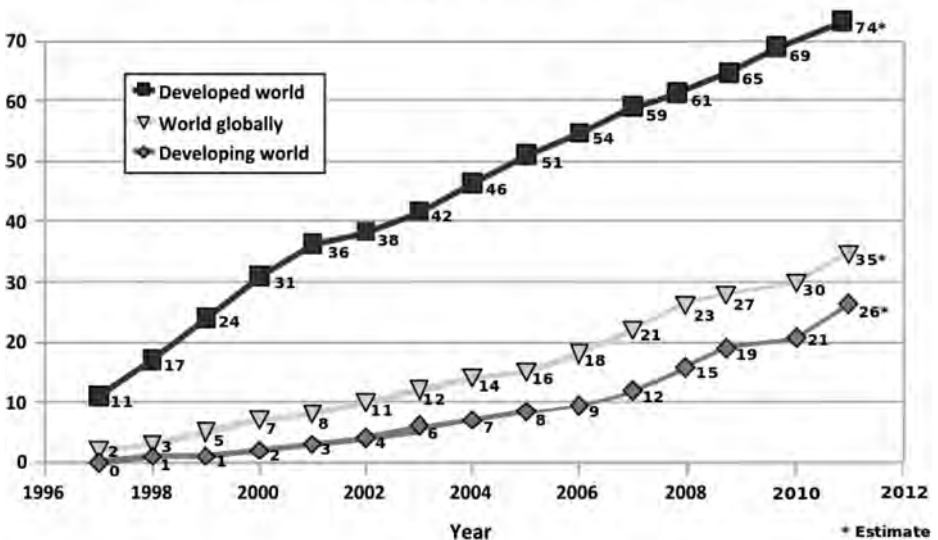
WorldGame. Using the dashboard or Spaceship Earth metaphor, the *WorldGame* can be explained as the control mechanisms for the space craft. The dashboard provides the reading of what is happening right now, trends provide a view out the rearview mirror of where we have been, projections into the future provide a view out the windshield, and the steering wheel, accelerator and brake provide control for determining where the craft is going. The most important aspect of the entire Spaceship Earth and dashboard metaphor is the pilot and their prerogatives and responsibilities. The perception of a threat out the windshield, such as climate change, suggests to the pilot of the craft that evasive maneuvers are in order. In addition to perceived threats to the well being of the spacecraft, the pilot will have a destination or goals where he or she is navigating to. These goals, such as a world free of hunger, are where the WorldGame set of tools will enable the “pilot” to figure out the best course of action.

10. SURPASSING THE DIGITAL DIVIDE

by Sean Powers (USA), Mutuma Thilange (Ghana), Leszek Pochron-Frankowski (Poland), Nino Gagua (Georgia), and Vic Goldsmith (USA)

Strategic Summary: *More people are online today than at any other point in human history. This has resulted in an unprecedented level of access to information resources, but also a sizable gap between digital haves and have-nots. This situation is most pronounced in developing economies. A huge opportunity for development and positive change can be accelerated if more people and communities have access to the resources of the world wide Internet. By providing access to these resources, communities can be assisted in the process of development through facilitation of communication, education, governance, and economic systems.*

Internet users per 100 inhabitants



Problem State/Present State

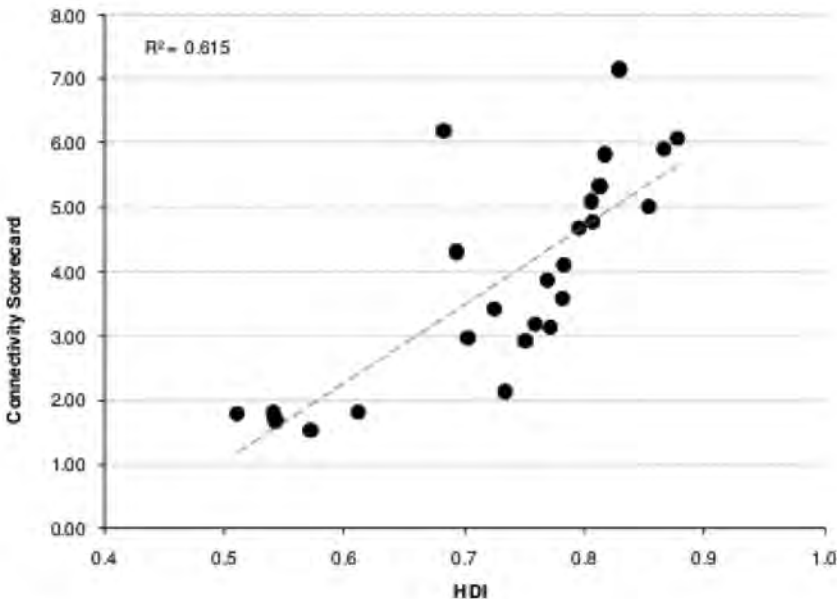
But despite the trend illustrated by the above chart¹:

By the end of 2011, 70% of the total households in developed countries had Internet, whereas only 20% of households in developing countries had Internet access.

- Broadband penetration remains low in some regions, such as Africa and the Arab States, with 0.2% and 2% respectively by the end of 2011.
- Major differences in Internet bandwidth per user persist between regions: on average, a user in Europe enjoys 25 times as much international Internet capacity as a user in Africa.
- The primary obstacle to the spread of this technology is the cost of centralized communication infrastructure. Being expensive to install and maintain, Internet Service Providers have no incentive to fund implementation in poorer or more insecure communities where they could lose the return on their investment.

And where access is available, costs for end-users tend to be prohibitively expensive. In some places a broadband Internet connection can cost more than 100% of monthly Gross National

Figure 4: Correlation between Connectivity Scorecard 2010 and UN Human Development Index — Resource and efficiency-driven economies



Income (GNI) per capita². Beyond this, end-users also lack control of both their network and their terms of service, creating an environment in which connectivity is tenuous, at best.

Preferred State

Information can function as a high-level leverage point. The right piece of data in the right place and time can influence the behavior of the actors involved in a situation, significantly altering the outcome. Knowing the price of a product on the global or regional marketplace, for example, can alter the profits of a transaction. Information, when channeled in the appropriate manner, towards building knowledge, skills, and social feedback, can be a powerful tool in assisting people to improve their living conditions.

Our preferred state is:

- Universal access to the community-building and information tools and resources available on the Internet
- Affordable access/low entry cost for all
- Sustainable, resilient, reliable, modular, expandable infrastructure
- Fully integrated with the global network
- All for the purpose of facilitating development.
- In order to achieve this it will be necessary to construct low-cost communication infrastructures in order to establish connectivity.

Strategy

Our strategy for reaching the above preferred state is low-cost wireless mesh networks. These networks would be deployed, at the start of our strategy, in what are called “informal settlements” (more commonly referred to as slums) in developing parts of the world. They would utilize affordable equipment that would allow the network system to be built out organically, one node at a time, and in an affordable manner whose costs could be covered by the community being reached. Functionally, the resulting network would connect the users to the global Internet, as well as being a local system for communication, governance and economic development.

The equipment for this system is described below:

All wireless devices operating on the 802.11 standard have the capability of operating in two distinct topologies:

Centralized

Operating in Master and Managed Modes, this topology is dependent upon delegating responsibility in a hierarchy of devices. A device running in Master Mode appears as a traditional access point. Clients can then connect to them, and the Master device manages all communications on the network. Client devices are running in Managed Mode. They cannot communicate directly with other clients, only with their associated Master.

Decentralized

Operating in Ad Hoc Mode, every device on the network communicates with all other Ad Hoc devices within range. This topology forms a structure known as a mesh cloud. If a device in the mesh cannot directly communicate with another, it will attempt to forward the data through intermediaries, passing from device to device until a route to the intended destination is discovered. Though previous generations of protocols were clumsy and inefficient at this, new developments like the “Optimized Link State Routing” (OLSR) and “Better Approach to Mobile Ad-Hoc Networking” (BATMAN) protocols significantly improve the process and make large-scale deployments much more feasible.

Networks constructed in this manner have numerous advantages over those using centralized infrastructure. The ad-hoc routing style is naturally adaptive, automatically discovering and self-healing routes as they break. The hardware has lower power requirements, and is generally cheaper as well. These characteristics make decentralized networks much more resilient. In addition, they require less

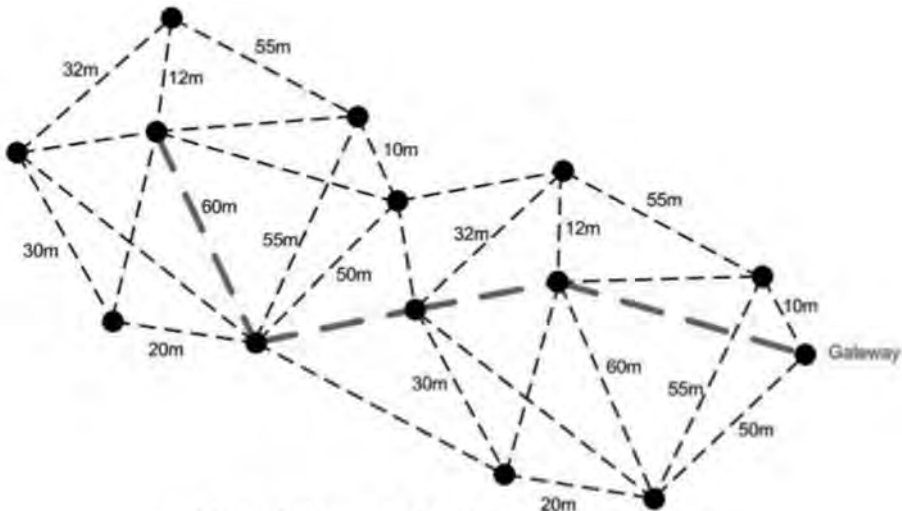


Figure 3: Network plot of mesh with backbone

time and energy investment for construction, scale easily, and offer users a higher level of control.

Components

Access Points, Repeaters

Access points and repeaters form the backbone of the mesh network, acting to connect individual users together. There are a number of existing products that can fill this role, such as the MeshPotato or Meraki's routers. But the lowest cost and most easily accessible solution is provided by Linksys.

The firmware for Linksys' Wireless G router (WRT54G) is built on Linux. Because of Linux's GNU license, Linksys was obligated to release this firmware as open source, and they did that. This opened up a cheap (<\$60 new), off-the-shelf router for experimentation and development by the public.

Since then, a number of new firmware versions have been released for this router, among them solutions for mesh networking. Being a slightly older device, it has a solid foundation for interoperability, and its past popularity opens the possibility of finding it used for significantly less than the retail price.

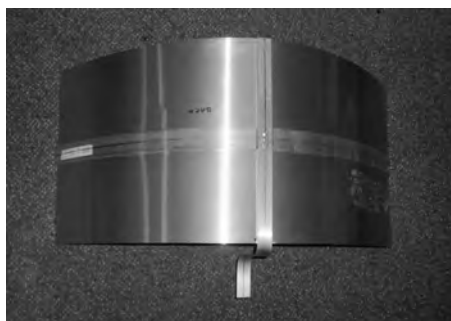


Antennas

Long distance antennas help to extend the possible reach of the network. A simple reflector can increase the range of a device to multiple kilometers. Many designs exist, some of which are very effective at increasingly lower prices.

Linear Focus Parabolic

A linear focus parabolic antenna contains a parabolic curve in two dimensions



only. The result is, instead of a focal point of energy as from a three dimensional parabola, you get a focal line. This decreases the range slightly, but the measurement is still on the scale of kilometers. These can be easily constructed from a parabolic template with a wire frame and reflective material to be attached onto the existing rubber duckie antenna on an access point.



Geodesic Paraboloid

Geodesic geometry can be used to approximate a parabolic form. With the correct measurements, an antenna can be constructed from simple struts, a binding material, and a reflective surface such as aluminum foil or window screen. This sets the price-point very low for a high quality antenna.



Servers, Gateways

Servers act to host services, and Gateways act as a shared connection to the global Internet. Both take the form of computers on the network, and there are low-cost solutions that can serve this functionality.

For example, the Raspberry Pi is a credit-card sized Linux computer that sells for a price of \$35. It plugs into a television for a monitor, requiring only an associated keyboard, mouse, and SD card to operate. It also uses a 700Mhz ARM processor that requires a very small amount of power, small enough to be run on 4 AA batteries.

Existing Networks—Models for Our Work

Athens Wireless Metropolitan Network (AWMN)

The AWMN is the largest working model of this type of system in the world. Covering 9,000 square kilometers, this network effectively serves 5,000 users, with 9,000 more expressing an interest in joining.

FabFi

Operating in both Afghanistan and Kenya, FabFi is building resilient wireless networks using off-the-shelf routers and self-built antennas at a price of about \$60 per node. The network in Afghanistan serves 45 nodes at a speed of 11 Mbps, connecting a hospital, a university, the office of an NGO, and a local village. The network in Kenya serves 50 nodes at a speed of 30 Mbps.

Services

These networks are much more than just physical hardware. They tend to evolve organically, as a function of the need for the network, the cohesiveness of the social bonds of the community, and the value of the services offered.

Although the first two mentioned above are dependent upon pre-existing circumstances, the services we are proposing the community will have considerable influence over. By implementing services that are useful and valuable to the community, we can both incentivize new members to join and push the functionality of the network in positive directions.

Here are some examples of existing services and resources that could be deployed on the networks our strategy is calling for:

Communication

The most fundamental use of this system, these networks can offer communication services to communities that would not otherwise have access to them, such as:

Telephony is a basic functionality that could be provided via Voice Over IP, allowing voice communication with any other phone worldwide. The OpenBTS³ project is also working to create an open source, user-controlled cellular tower. By interfacing with the Global System for Mobile Communication (GSM) standard, any cell phone can be used on the network, integrating with existing hardware at a price point lower than large, industry-controlled cellular towers.





Social networks are a valuable tool for coordination and collaboration. Mesh networks can serve access to the more familiar communities of Facebook and Twitter, as well as decentralized, user-controlled solutions such as Diaspora⁴, a privacy-oriented social network and Open Atrium⁵, a team collaboration oriented social network. Users would also have the ability to publish their own content via blogs and other services.

Governance

The platform created for communication represents one of the most critical facets for a system of truly inclusive, participatory governance. Using these networks as a platform, we can facilitate the creation of these participatory systems, developing the interface between citizens and government.

Discussion between elected officials and citizens can provide valuable feedback for the effective operation of government. Better Reykjavik⁶ is an online community in Iceland serving as a platform for precisely this function. Citizens post their ideas for discussion and debate, and officials draw from those discussions to address issues relevant to their constituency.

Voting is the foundation of any democratic system, and these networks can significantly improve this process. Online voting as a supplement to conventional systems can provide accessibility to remote users, reduce long queues, and help to eliminate intimidation and violence at the polls. Liquid Feedback⁷, an online platform for “Interactive Democracy,” is one example of a service that could be

 The screenshot shows the Liquid Feedback voting interface. At the top, there is a "Voting" header with "Cancel" and "Discard voting" links. Below this is a "Finish voting" button. The main content area is divided into two sections: "Approval (first preference)" and "Approval (second preference)". Each section contains a list of proposals with up and down arrows for voting. The first proposal in the first section is "i108: Dark side of the moon should be illuminated" by Janne P. Hukkinen. The second proposal in the second section is "i111: Moon's dark side should blink in red" by dogrush and Janne P. Hukkinen. Each proposal has a "Show (new window)" link. At the bottom, there are buttons for "Abstention" and "Disapproval".

used for this purpose. It provides a structured interface for proposals, discussion of proposals, and voting within a group.

Education

These networks can be of great assistance to education. They can provide access to educational resources, as well as educators. Video conferencing can bring teachers directly into homes in communities where classroom space is limited, and platforms can be deployed for the generation of content based on local knowledge.



Open Educational Resources like MIT Open Courseware⁸ and Open Yale⁹ publish the content of university quality courses online for free.



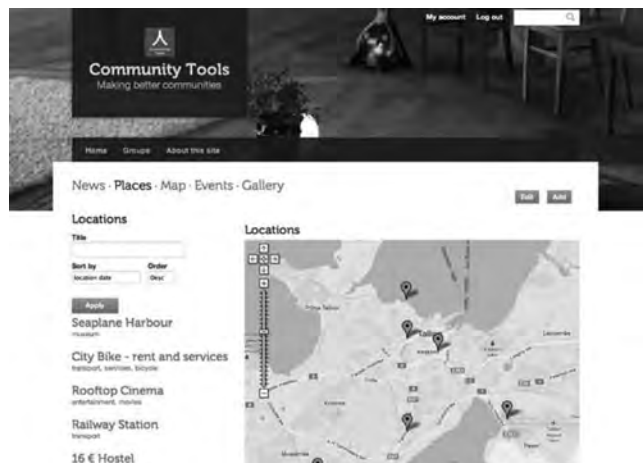
Wikis act as a participatory platform for access to and generation of information resources. Existing Wikis such as Appropedia¹⁰ and Akvopedia¹¹ host content on appropriate technology for food production, water management, sanitation, and other aspects of critical infrastructure.



Digital libraries can be built in places where other options are unfeasible. A number of these already exist, such as CD3WD¹² and Soil and Health¹³, filled with free material relevant to development. Platforms like Scribd¹⁴, an online document database, can be deployed to host these libraries.

Economics

Another valuable function that can be provided is to act as the social foundation for an economic system. In connecting individuals together the network acts as a forum for economic activity, offering a platform for launching businesses and other endeavors.



The **digital agora**, online open and participatory marketplaces similar to the functionality of Craigslist¹⁵, could help to facilitate product, service, and monetary exchange. The decentralized social network server Community Tools¹⁶ contains mapping/geotagging resources, as well as other tools for community organization, that could greatly increase the effectiveness of these marketplaces.



Crowd financing services like *Kickstarter*¹⁷ could be hosted to serve as a launching point for local community projects and businesses.

Alternative currencies can also be deployed on these networks. One example would be *Time Banking*¹⁸, which monetizes time, going around conventional currencies and empowering individuals to exchange existing knowledge and skills.

Implementation

For the purpose of facilitating the adoption of these systems, our strategy proposes an educational program to teach people how to build their own decentralized networks.



The existing community Wireless U¹⁹ provides free access to a curriculum that could be utilized for this purpose. They also provide suggestions for trainers living in various locations around the globe.

In order to gather physical parts for the network, our strategy calls for the creation of a recycling program that reduces rich country waste by sending older hardware to locations across the globe that desire to construct their own network. The strategy also calls for getting tech companies involved, providing incentives such as increasing positive public image and expanding their customer bases.

The most expensive component of this implementation plan is the payment for the initial trainer to start the process. If this role is not occupied by a volunteer (possibly from a tech company or “Internet Peace Corps”), there are a number of possible sources to explore. Governments can invest a tiny fraction of the funds devoted to development of traditional centralized infrastructure into this project.

Corporations could be incentivized to invest for the purpose of expanding their customer base, or serving advertisements. And social, crowd-funding entities like Kickstarter could also play a role.

Dharavi

Our strategy begins with a pilot program at the Dharavi School²⁰ in the slum of Dharavi in Mumbai. This institution already teaches children basic computer literacy. They have access to both power and computers, and our strategy would be a supplement to this already existing structure. One trainer with the hardware to build ten nodes would be sent to Dharavi. Ten students would start an education and training program. Hosting a server at the school, the network these students construct would be put to the purpose of assisting their education. Usage metrics would be monitored to track its evolution, patterns of use, and efficacy.

Following this pilot program, the training would be scaled up to assist other developing communities. As these networks grow to reach a critical mass worldwide, they will function as an open, integrated, resilient and sustainable alternative for access to the global communication network.



Endnotes

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- 2 <http://www.itu.int/ITU-D/ict/ipb/index.html>
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- 19 <http://wirelessu.org/>
- 20 <http://www.dharavishchool.org/>

11. UVOTE: MOBILE TECHNOLOGY FOR CIVIC PARTICIPATION

By Karolyn Wojtowicz, Christine Harb, Shelby Miner, Josh Pang

Strategic Summary: *Success in the information age could be defined by access to and competence in computer technology and digital media. Great potential lays in the ever smaller and ever more powerful devices being churned out by 21st century technology. Smartphones are the current generation of the smallest and the strongest. The smartphone “app” transforms processing power and ubiquitous presence into utility. The power of information technology can enable the most knowledgeable to help the least powerful—in a sense, pairing the straight A student with the failing student. uVote is a mobile phone application that provides an avenue for binary yes/no polling, and in which all of the participants can view results. These results can then be used as aids in making decisions on a variety of levels. For example, the massive government debt in the United States could benefit from such technology that rapidly polled the citizens of the country.*

Introduction/Problem State

Very few people around the world have access to the decision-making processes that governs their neighborhood, state, country and the world. Without such meaningful access, people are alienated from the political process and reduced to apathetic observers or frustrated victims.

Buckminster Fuller proposed a *World Democracy by Electronic Referendum* in his 1973 book, *Earth, Inc.*¹. What he described back then could be functionally achieved via today’s Internet and current information technology. The core idea is to allow any person with Internet access to be their own representative in governmental decision making through a yes/no referendum.

The Internet makes possible a condition where nearly all the information about anything and everything goes to a shared space where anyone can access it. The Internet is always growing to meet new interests and demands. Each person that has access to the Internet has, potentially, access into the minds of the other four to five billion people who have access to the Internet. The *uVote* strategy seeks to harness the collective intelligence, values and vision of all the people who have access to the Internet.

Preferred State

The *uVote* preferred state is one where the people in any given community—be that a neighborhood, city, state, country or the world—have a say in how the scarce resources of their community are allocated, and can participate in making the decisions that impact them are made. In the *uVote* vision, governments are transformed into responsive, transparent and effective decision-making bodies that reflect the values and vision of the people they serve. The *uVote* mobile phone application could spark change by making problems more visible, bringing more focused attention by more people to the problems of society, and through the development of solutions and their approval by those who will be impacted by the outcomes of the decision.

Individuals would gain understanding of what is happening in their government, and government officials would increase their understanding of the people they represent. By allowing more and more people to have more of a say in the governing process, participation and understanding will increase.

Present State

Some countries, such as Estonia, Russia and India, are beginning to implement various versions of the *uVote* strategy. Estonia has utilized new technologies to vote—such as in 2005, when more than nine thousand people participated in the country’s first vote available through an Internet website². Since then, Estonia has become famous in this arena for the efforts made by TeliaSonera, the world’s first company to create a mobile phone voting function that was used in February 2011³. Through both efforts, the numbers of active voters in the country have greatly increased—as well as interest in legislation affairs. Estonia provides an example of how easy it is to introduce voting through wireless technology.

Problem and Present State

The present situation is dire—in too many countries there is a lack of civic engagement, voting turnout, government knowledge of public opinion, and citizen knowledge of issues and government process. For example, voting within the United States presents a good case study of why the present state exists. In the 2008 presidential election in the United States there was the highest voting turnout since 1968. Unfortunately this “highest voting turnout” was an appalling 56.8% of the eligible voters. Roughly half the people who voted chose the winning person, meaning the current president

knows what roughly a quarter of the country's voting-eligible population desired in legislation actions at the time of his election.

Ten of the top reasons why American's do not vote include:

1. People feel their one vote does not count.
2. They are too busy to take time off from work or school.
3. They lack interest in voting.
4. There is an inability to vote if one becomes sick or disabled after the deadline to file for an absentee ballot.
5. Illegal immigrants are not authorized to vote.
6. Dislike of the candidates.
7. Lack of transportation to get to the polls.
8. Rules of absentee voting are complicated.
9. Forgetting to vote.
10. And voting lines seem too long⁴.

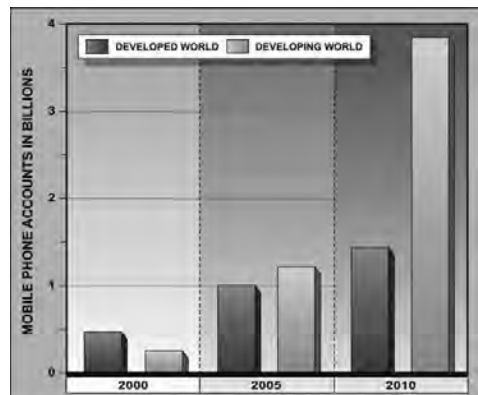
Because voting is not mandatory in the United States, these reasons and others help explain the general lack of civic participation and understanding of governmental processes.

How It Works

Technology now exists to change how voting occurs, and to eradicating many of these ten reasons. The *uVote* application would allow people to view choices and to vote on them. It would also allow the results of one vote to be compared with other results. By creating a mobile application that enables voting, the excuse of not having enough time is irrelevant as well as the inability through related absentee voting issues. There is no long line to wait through on voting day and more people would have the opportunity to vote.

With regards to forgetting to vote, a free SMS or text message would be sent to mobile phones with the application, reminding them to spend a few minutes during the day to vote. One of the goals of the *uVote* app is to make voting and responding to polls "cool."

By 2015, there will be as many cell phones as there are people on this planet. This increase in number of cell phones also correlates with an increased efficiency of phone networks, including locations in the third world—



as evidenced by this graph. As technology improves, the present state gets ever closer to reaching our desired and preferred state of using mobile phones to encourage civic participation, an understanding of legislative issues by the general public, a way for politicians to view public opinion, and an increase in voting participation.

The Plan

Our strategy is to create an interface that is customizable to each user that would include an introduction to the legislation at hand, a summary and the ability to vote in a binary yes or no manner. This interface would be the same across the world as well as for the various types of voting



that could occur—local, state, national and international. The summary for each item to vote over would come from the actual legislation document, to ensure as little bias can occur as possible while still making an informed decision. The results of the yes or no voting would go into a database that anyone can access, as well as links on various websites and media outlets. Social networking materials, such as Facebook, Twitter and Wikipedia will provide associated outlets for discussions, comments, concerns or questions for participants of the *uVote* application.

There is already a “proof of concept” application that does some of what the *uVote* app hopes to achieve. *Visible Vote* allows for public polling through mobile technology, with over 200,000 users. However, it is used primarily in the United States and for national issues. The *uVote* program is intended as a platform that



would have more opportunities for voting on a variety of levels such as local, state, national and international. *uVote* will allow participants to see their vote in comparison to others in a results database. *uVote* will also utilize social media and pre-existing networks that encourage civic participation. This will set *uVote* apart from *Visible Vote* and other voting apps. By showing the effect our program would have on such a variety of levels and all around the world, regardless of the type

of government, we hope to gain the backing of the United Nations and international democracy focused organizations.

The *uVote* strategy will accomplish many things. It will increase the ease of voting that many governments and voters desire. It will enable voting and polling options for a variety of issues and at different scales, from local to global. It will also enable the user of *uVote* to propose polling questions, thereby opening the debate up as to what is important and the phrasing of the questions that are to be asked.

Timeline

The timeline for the *uVote* program is as follows:

- 6 months: the application will be coded and on the market
- 5 years: the application will have gained popularity—every phone will have it
- 10 years: everyone with a phone will be participating in public option polls
- 20 years: the application will be used for voting in elections everywhere

In a few years, there will be as many phones in the world as there are people. As with all other forms of technology, the higher the numbers owning a technology, the lower the price. Our timeline takes into account this change in number of users, as well as the ever-growing technology that will be utilized. This timeline to some, may seem too ambitious—while to others, too conservative.

What Help is Needed?

Today's students are accustomed to using technology to get things done faster and more effective than ever before—including sharing information via social media applications. By encouraging teachers and college professors to use *uVote* and incorporate its usage in their lesson plans, the ideas of civic participation being fun, easy, interesting, and rewarding will become instilled in students.

The United Nations and other global organizations could benefit from international voting options. The following chart shows results from a poll from 126 countries in the world that took place over a three-year period⁵. Only 44% of the countries responded favorably over the actions made by the leadership of the United Nations. The majority of the countries that responded most favorably are in Africa, including Sierra Leone, Mozambique, Uganda, and Liberia. A few

of the countries that responded with the highest negative opinions of the United Nations include Tunisia, Algeria, Lebanon, and the United States. The United States, one of the most democratic countries in the world today, had a 48% disapproval of the performance of the United Nations. With such a dismal reality on how efforts are viewed by others, the need for education as to what the UN is actually doing becomes obvious. By using *uVote* as a platform for viewing opinions from around the world, organizations like the United Nations would be able to gain a clearer understanding of work that is desired to occur, in all parts of the world. And by using *uVote* to educate the people in the world about its work, the UN will gain an increase in understanding of its work. The United Nations would gain a stronger approval rating globally and within specific countries that are currently in the fifty and sixty percentages of disapproval.

The *uVote* program focuses on polling and voting on legislation issues. Similar programs seeking public opinions and voting

Do you approve or disapprove of the job performance of the leadership of the United Nations?

	Approve	Disapprove	Don't know/Refused
Global medians	44%	17%	33%

Based on aggregated data from multiple surveys in 126 countries between 2007 and 2010.

GALLUP

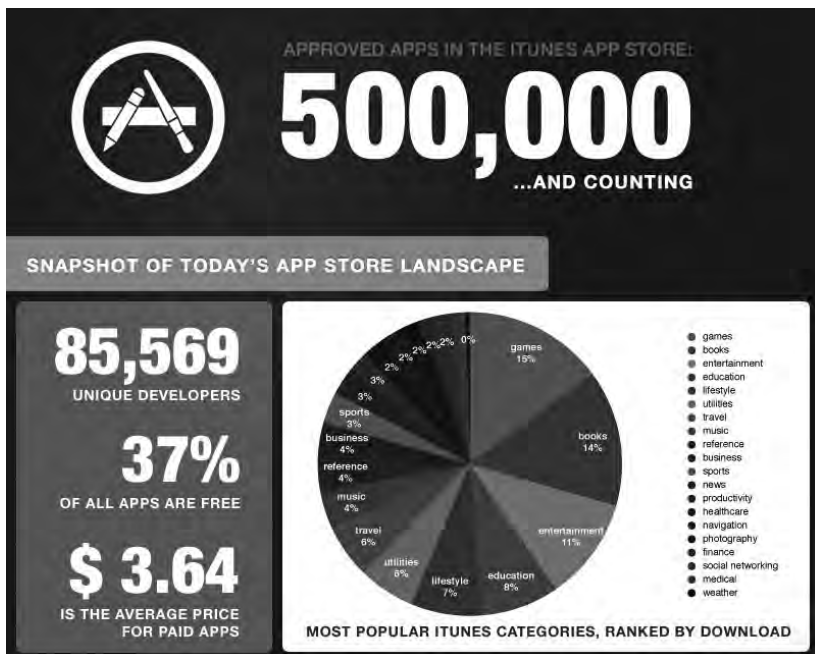
opportunities could exist on *uVote* or a similar platform. Businesses could create their own programs, with similar features, to seek their own improvements. Companies could ask their customers questions on the services they offer or McDonald's could survey people regarding the change of food options

The Cost

The strategy of being a mobile phone application that can be adapted to any platform, across all infrastructures globally will mean a higher cost to developers—but one that is not any different than current app development. The application itself needs to be developed, and people need to be employed to maintain the system and to regulate what information goes into the system. Those working on the project



need to be committed to remaining as unbiased as possible (this will be elaborated within the ‘who does what’ section of this chapter). The costs of maintaining a staff, as well as resources the staff will need (such as offices and networks in the various regions this application is



implemented), have been calculated.

Building similar applications have cost between \$600,000 (USD) and \$800,000 on average. By adding costs for the various factors mentioned above, such as human resources, technology, office space, marketing, etc.—it is clear that this is not a low-cost initiative. Foundation or government grant or funding or corporate investment could get the *uVote* app up and running, but to become sustainable it will need to develop alternative sources of revenue.

One of the next steps is to prototype *uVote* and test it in a regional and country level market. After this, scaling it to the rest of the world would be in order. A small team could get the ball rolling. Feedback on the system about possible improvements and added functions, such as the ability to contact one's local member of congress and collaboration with social networks, will help the program grow.

The long-term strategy of *uVote* is for it to morph from a polling app to a voting app, where people would be able to vote in local, state or federal elections.

Conclusion

uVote seeks to take the present state of the world and transform it into a preferred state. Voting through mobile technology is achievable today, as evidenced by Estonia. Civic participation as well as an understanding of legislation issues can increase. Citizens all over the world, regardless of their government type, will feel empowered through the making of their choices clear. The governments of the world will spend less money to have a reliable source of public opinion to draw upon. Stability within local, state and national levels will increase as governments become more transparent and responsive to the constituents.

Endnotes

- 1 Buckminster Fuller, "Ten Proposals for Improving the World", *Earth, Inc.* Anchor Press/Doubleday, New York, NY, 1973
- 2 <http://www.vvk.ee/index.php?id=11178>
- 3 <http://www.teliasonera.com/media/press-releases/2011/3/teliasonera-enables-the-worlds-first-mobile-voting-service/>
- 4 <http://san-antonio.movingtoanapartment.com/living/top-10-reasons-people-dont-vote.htm>
- 5 <http://www.gallup.com/poll/147854/Gets-Approval-Disapproval-Worldwide.aspx>

12. commUNITY

PROMOTING COMMUNITY REUNIFICATION THROUGH YOUTH PEACE EDUCATION, DIALOGUE AND DEVELOPMENT PROJECTS

By Lisa Nowinski, Leah Knappage, Tobias Gabel, Nhu Phan

Strategic Summary: *Ethnic conflicts and civil wars continue to plague various regions of the world and are a blight on the economic and cultural development of these regions. There is a need for an effective set of procedures for resolving these conflicts if the world is to move beyond them. . This strategic plan outlines a peace education initiative that offers short-term healing and long-term economic development for conflict ridden regions.*

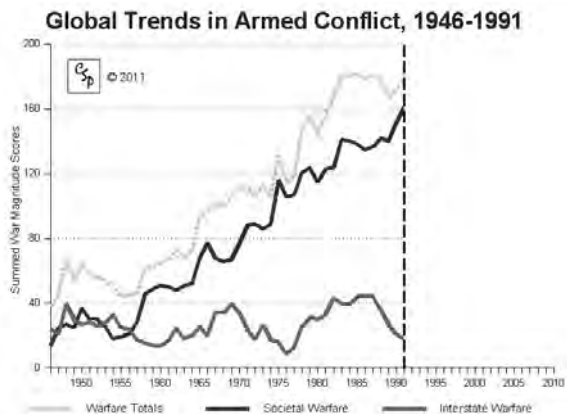
“Civilian fatalities in wartime have climbed from 5% at the turn of the century... to more than 90% in the wars of the 1990s.”¹

Introduction

Following World War II, global trends in armed conflict have shifted from predominantly between states to more civil conflict within states. (The blue line of the graph below visually explains this global trend.)

Civilians have been increasingly affected by internal conflicts and are at risk for displacement, sexual violence, violation of human rights, lack of access to basic services and family and community separation.

These internal conflicts often result in ethnic divides that are not only visible by physical barriers, but are fueled by ethnic fears and violence. After a conflict, the community may live



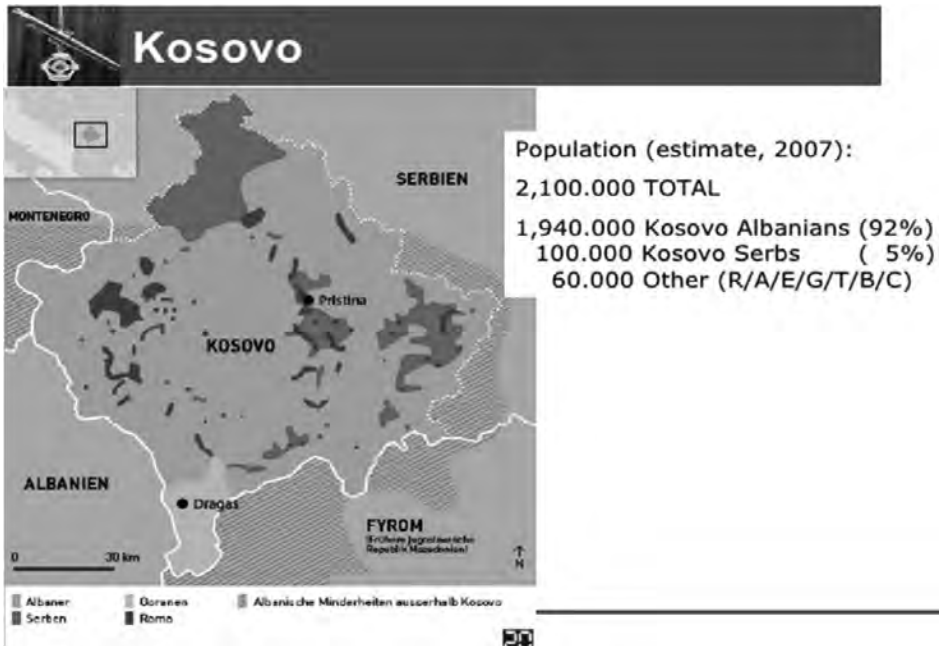


in a state of negative peace (enforced peace based on ceasefires and peace agreements). However, in most cases, ethnically and culturally divided communities continue to live separately, often in fear of violence and lacking many basic human services. This divide hinders the community's ability to heal and recover from past traumas caused by a conflict, as well as to work towards developing their state socially, economically and politically.

An example of physical barriers dividing communities: Belfast, Northern Ireland (Taken during a field study trip by one of authors in October, 2012)

Setting the Stage: Conflict in Kosovo and Ethnic Divisions

Mitrovica, in north Kosovo has an estimated population of 2,100,000 people, of which 92 percent are Albanian and 5 percent are Serbian. After the war in 1999, Kosovo's north became a great ethnic divide between Albanian and Serb Kosovars, displacing people from their homes and creating an area highly prone to ethnically based violence.² The two populations are divided along the Ibar River by a barricaded bridge that attempts to keep the communities separate and at "peace". Much of the Serbian population in Mitrovica is still receiving support



from Serbia, however, much of what has been considered normal in this region is about to change due to the recently signed April 19th agreement between Kosovo and Serbia. I

In order to ensure that peace is kept between the two communities, as well as the nations of Kosovo and Serbia, it is more important than ever to bridge the gaps and reintegrate the two communities to work together and rebuild Mitrovica. Bridging the gap between these two estranged communities will benefit the states and people of Kosovo and Serbia in many ways. On one hand, it will keep both states in the running for European Union (EU) membership. It will also help reintegration in Mitrovica and will increase the chances of a unified Kosovo.³ A community working together and focusing their efforts on development rather than destruction will develop a better economy, as well as better social services and quality of living.

Preferred State

The implementation of a community reunification program would work towards achieving an ideal state. This ideal state would be a society where all citizens, regardless ethnic, religious or cultural orientation, can move freely, receive a quality education and work and live without

fear of discrimination based on their identity. Education would act as the epicenter in creating a society free of prejudice based on historical events, with ethnic and cultural acceptance and equal opportunity for all.

We are ultimately working towards a community that values healing and reconciliation, peace, inclusion, opportunity, empowerment, social responsibility and sustainable development.

Peace Education and Community Centered Development Projects
In order to work towards not only peaceful co-existence but also an integrated society, it is necessary to implement a peace education curriculum in schools in conjunction with community development projects.

This *Peace Education Program* ⁴ prototype and “proof of concept” would be implemented in the city of Mitrovica, North Kosovo, a city divided by a barricaded bridge. The majority of Serbs live in the north and Albanians live in the south. The peace education process begins with a peace curriculum that starts with four primary schools in both the north and the south for students of all ages.

The in-school Peace Education process involves a number of approaches to building and strengthening peace, including personal healing. Weekly classroom activities get students to understand the conflict and trauma they, their family and other community members have faced before, during and after the conflict. Art and music are used to encourage students to express their thoughts, share their feelings and allow for personal growth and healing—as well as community bonding.

Personal blogs and video conferencing using language translation software allow will children from both communities to understand that conflict from the perspective of the “other.” The blogs will be monitored to ensure that no harsh, destructive words are used. The blogs will allow children from both the Albanian and Serbian communities to see the similarities they share, while also allowing them to understand that both sides suffered from the war and both sides are looking for empathy and reconciliation.

After students have become more accepting of the other side, compassionate listening circles and face-to-face discussions take place.⁵ Videoconferencing will also be used to connect the children of Mitrovica to children of other divided societies that are working through similar divides and towards reintegration and healing (i.e.

Northern Ireland, Israel and Palestine, Rwanda, etc.).

Along with peace education in primary schools, the curriculum will also be present in secondary schools in conjunction with a leadership-training program. Leadership training for older students will prepare them to eventually be administrators of the peace education courses in primary schools. The idea is to give older students volunteer opportunities as well as leadership skills, while giving younger students positive role models, and aiding the acceptance of peace studies.

In order to ensure participation each student will be given an account that commUNITY will place reserve funds in that can be used by the youth for continuing educations or vocational training. Each year that the student participates they will be allotted funds that they may receive for continuing education upon graduating.

Another important component of the commUNITY program are the community development projects. These projects will extend from community urban gardens to peace murals and music and art workshops. These projects will bring children from both communities together in agreed upon neutral areas to allow children to learn how to plant and care for a garden. At the end of the season the students will harvest their crops and help prepare them for a interethnic community feast.

A peace mural, music and other art projects will be fashioned in a similar way. These projects will bring students together to use their creativity, bond as one community and have fun. In order to make these workshops even more effective, it would be ideal for local artisans and musicians to come together to use their skills and facilitate these workshops. In the end the children and adults will be helping to develop and beautify their community while building meaningful and lasting relationships.

Endnotes

- 1 The Impact of Armed Conflict on Children, UNICEF: <http://www.unicef.org/graca/patterns.htm>
- 2 Background on Kosovo: <http://www.osce.org/kosovo/38678>
<http://www.crisisgroup.org/en/regions/europe/balkans/kosovo/165-bridging-kosovos-mitrovica-divide.aspx>
- 3 International Crisis Group
- 4 Peace Education Models: <http://www.peace-ed.org/> and <http://www.unicef.org/education/files/PeaceEducation.pdf>
- 5 Compassionate Listening Project <http://www.compassionatelisting.org/>

13. E-LAW

EARTH, LAND, AIR, WATER—GIVING VOICE TO THE EARTH

By Cleous G. Young, Aleksandre Turkiashvili, Shahd Albabtain

***Strategic Summary:** The Earth's living systems are being destroyed. Human beings are doing the destroying, and seem little inclined to curtail their destructive habits. The Earth is the one suffering the damage, yet it has no voice in procedures in which its fate is being determined. It has not voice, no standing, in national or international courts of law. The strategy presented here is designed to provide the Earth with a voice.*

Introduction

"Within the scientific community, there is no debate: An overwhelming majority of climate scientists agree that global warming is happening and that human activity is the primary cause."¹

What would happen if life on the Earth were destroyed because of how human beings treated it? Everything, all that lives on the Earth, would be gone.

What if the Earth was alive and functional, just as the human beings and animals of the Earth? What if the Earth could articulate its needs and wants, like human beings? What if the Earth had a voice to present its side of things? What if the Earth had standing in a court of law?

The perspective held here is that the Earth is alive, and it should be represented in courts of justice. At the moment, the Earth does not have the ability to voice its own opinion on what really matters to it, such as the value of its land, the purification of its air and the refreshing taste of its water.

The three most vital elements of the Earth (land, air and water) are being degraded, damaged, destroyed and used up by human beings without compensation, and are causing the steady disappearance of the Earth's natural environment. In addition to destroying the Earth's

living systems, the damage is also directly harming humans. “Pollution is one of the biggest global killers, affecting over 100 million people. That’s comparable to global diseases like malaria and HIV.”²

Human caused pollution of the Earth’s land, water and air is directly affecting the functionality and life of human beings. Whatever happens to the Earth is also happening to the living beings on the Earth.

Welcome to E-LAW: where the Earth is given a Voice in things that matters to it, just as human beings.



Present State

The current state of the Earth is one of steady depletion and destruction characterized by loss of biodiversity and species extinction, climate change and degradation of land, water and air quality.

The Earth’s temperature has increased over the last 37 years. The last 12 years have been the warmest of them all.³

40% of the world’s human deaths are attributed to the pollution of the Earth’ land.⁴ There are 7 million projected deaths of human beings

for the year 2014 that will be attributed to the pollution of the Earth's air.⁵ Adverse alteration of water quality presently produces large-scale illness and deaths, accounting for approximately 50 million deaths per year worldwide.⁶

The present state of the Earth's environment is polluted. Human beings are the cause. Human beings are also one of the victims of this pollution. Pollution impacts human beings in the form of cancer, kidney disease, leukemia, heart disease, stroke, asthma, allergies, malaria, hepatitis and diarrhea, to name a few.

There are many environmental laws that are geared toward the protection of the Earth's land, air and water. Unfortunately, they are not as effective as we—and the Earth—need them to be.

Strategy

**"You never change things by fighting the existing reality.
To change something, build a new model that makes the
existing model obsolete."**

—Buckminster Fuller

Since protecting the environment through laws are not as effective as we need them to be, our strategy looks to add a new component to that will help right the system.

Because environmental laws alone are not sufficient to help save the living systems on the Earth from their continuing and rapid depletion, we need something more. The Earth needs the power to defend itself, as humans are not doing an adequate job of it. The Earth needs representation in a court of law. If American corporations can gain the status of an individual, with all the rights pertaining to an individual in U.S. courts, then surely the Earth can gain the right of standing in an international court.

The Earth needs to be able to defend itself, just as individuals, countries and corporations have a right to bring suit against entities that have harmed them. Just as human beings are subjected to court hearings for slip and fall accidents, motor vehicle accidents, malpractice, etc. the Earth should have the right to be heard in courts of law against those who harm its well-being.

Individuals, corporations and countries have lawyers that become the voice of their lawsuits. The key to giving the Earth a voice in its defense in a court of law is determining who should “speak” for the Earth, as the Earth is silent in the timeframe that humans operate within. (There is a logic that says that the Earth “speaks” to human beings through climate change, natural disasters and resource depletion. This hypothesis has it that these phenomena are the Earth’s side of an ongoing dialogue. Although interesting, it does not matter if this is true or not as the threat to human life on the Earth is threatened by a timeframe that the Earth does not operate in.)

The strategy of E-LAW is that the Earth be given its own voice—its own representation, in courts of law, starting with an International Environmental Court. Those who speak for the Earth are described below.

Defenders and Speakers for the Earth

Our strategy calls for six dynamic elements designed to protect the Earth.

1. **Laws:** There needs to be *one set of environmental laws for the entire world* (similar to the Universal Declaration of Human Rights, only with the force of law behind them).
2. **Applying Laws:** These *laws will be applied to all countries and regions*, no matter what part of the world the violation takes place.
3. **Earth’s Interests:** The environmental *laws are enforced* and conflicts and violations resolved *based on the best interests of the Earth* and not individual, corporate or governmental interests.
4. **Earth Court:** A *Global Earth Court System* is created.
5. **Speakers for the Earth:** Those designated to speak for the Earth will be indigenous spiritual leaders, as well as noted religious leaders, and Nobel Peace Prize Winners. These people will be called Speakers for the Earth and will have a ten-year appointment to this position.
6. **Youth Enforcement and Citation System:** One aspect of citing violators of environmental laws will be an *Environmental Defender System* that is a youth led initiative. In this program, youths are trained to give environmental citations via smartphones for environmental law infractions.

The diagram below helps to depict the current state and the preferred state.

The gap between our new Home:



POLLUTION



**Crimes
Against
Nature**



Pollution is the bridge between the problem and preferred states of the Earth that currently exist.



Endnotes

- 1 Union of Concerned Scientists, 2014
- 2 www.dosomething.org.
- 3 Union of Concerned Scientists (we need the reference for this—the book or article or website) “Every one of the past 37 years has been warmer than the 20th century average. The 12 warmest years on record have all occurred since 1998. 2012 was the hottest year ever recorded for the contiguous United States.”
- 4 Susan S. Lang, 2007, www.news.cornell.edu
- 5 World Health Organization, 2014, www.who.int
- 6 C. Michael Hogan, 2013, www.eoearth.org

14. THE BRIDGE TO PROSPERITY: POVERTY SOLUTIONS

By: Nafisa Nujhat (Bangladesh), Anika Rahman (US), Stephan Bourget (Canada), Sebastian Fernandez (US), Imaad Uzun (US), Nd Esther (Nigeria)

***Strategic summary:** Poverty continues to be the world's biggest humanitarian crisis. It is an issue that is vast, and impacts all aspects of our society—ranging from health, education, and immigration to global warming to peace, economics, political conflict, and beyond. It is also a problem that can be eradicated if we act as one and are willing to take the needed actions to fix it. Widespread poverty is such a major and urgent issue that the United Nations lists poverty as the number one Sustainable Development Goal. Innovative solutions to poverty exist. Some presented in this chapter include a poverty mapping and alleviation smart phone and computer app aimed at connecting people around the world to the realities of poverty. Another is a global job corps aimed at eliminating poverty. The goals of these joint efforts are to not just eradicate poverty from our communities but to uplift citizens and allow them to prosper financially, physically, and psychologically—and to empower them to contribute to solving additional problems confronting our world.*

Introduction

Major problems in our current state of global affairs

Inequality in any form—be it from gender biases, racism, socio-economic class or religious discrimination, or domestic violence, directly and indirectly promote poverty and enhance its tragic impacts. Inequalities based on income, sex, age, disability, sexual orientation, race, class, ethnicity, and religion continue to persist around the world.¹ The massive wealth gap between various communities and segments of society in most parts of the globe leads to a lack of access to education, healthcare, sanitation, housing, employment, energy, food, water, income, and other resources. According to the World Bank, 9.2% of the world's population, or 689 million people, live in extreme poverty on \$1.90 or less a day.² The absence of access to basic human needs, rights and opportunities causes



End Poverty in All its Forms Everywhere

<https://www.un.org/en/global-issues/ending-poverty>

the presence of social inequalities and discrimination which ultimately robs and disables disadvantaged groups of people from attaining decision-making power regarding policies involving their livelihoods, as well as basic human rights and freedoms.³ In short, poverty is caused by inequality in its most pernicious and predatory form.

Preferred State—Vision for the future

The preferred state, in terms of eradicating poverty, is one where every citizen in the world has continuing access to sufficient quantities of nutritious food, clean water, sanitation, a secure shelter, continuous power, life-changing education, the best healthcare, and economic opportunities that maintain and advance their well-being.

The goals of the Bridge To Prosperity strategy are that, in ten years, the initiative will have cut global poverty in half, and in twenty years, there will be no one experiencing poverty as it is defined in today's terms. Global poverty will be at zero percent of the world's population instead of 9.2%, where it currently. The goal is to develop the present

<https://www.isglobal.org/en/-/sdg-1-end-poverty-in-all-its-forms-everywhere>



world in such a way that a future emerges where people have access to basic life amenities and can live up to their full human potential.

One of the many impacts of global poverty elimination will be more people with the education, skills, and vision needed to advance the world into a brighter, wealthier, more inclusive, opportunity-filled future. It will enable more and more citizens to get involved with more innovative designs, ideas, and creative business developments, thereby posing a welcome challenge to the status quo, where, instead of fighting to maintain a bare minimum of basic human needs, increasing numbers of people are contributing to reaching their and the world's full potential.

Strategy— How to do we measure poverty and prosperity?

To create a less poverty-stricken world we need to be able to first measure poverty. To do this, there needs to be a tool that can measure, display and globally communicate where elevated poverty rates are. One such tool

is the *Prosperity Touch App*, which is not just a measurement and display tool, but used creatively, it will be a strategy for reducing poverty.



The Prosperity Touch app for smart phones and computers has a map of the world with high-poverty rate regions highlighted in red, medium-poverty rates in yellow, and low-poverty rates in green. These regions of the world and associated colors are based on a Prosperity Census, daily expenses, and

the Happiness Index for the people in each region. The Prosperity Census is a new global indicator that is based on a multiple-choice census focused on eight indicators: access to food, clean water, sanitation, housing, education, healthcare, reliable electricity and income/employment. The census is taken biannually through the Prosperity Touch app and website. The Prosperity Census would be partnered with the UN and funded through grants and donations. Everyone in the world will have access to the app. It can be set to multiple languages, will be free, and there will be incentives for its

use— such as cash prizes analogous to a lottery. A function in the app will allow people in wealthier areas to make a donation to help fund the lottery. If people do not have access to a device, they can go to public places like schools, universities, and libraries to get access—or, in extreme cases, can fill out a mailed census and send it to the Prosperity Census to have their information recorded in the app.

The Prosperity App will allow the user to zoom-in to any region and see what would happen if various metrics, such as daily income, access to additional food, education, health care, etc. were increased or decreased. For example, for a region to be red, the average person would have a daily income of less than \$2.50 and answered “Yes” to having access to fewer than four of the Preferred State indicators (adequate food, shelter, healthcare, etc.). For a region to be yellow, the average person would have a daily income between \$2.50 and \$10.00— and have said “Yes” to having access to at least five of the seven Preferred State indicators, and for a region to be green, the average person in that region will have a daily income above \$10.00 and said “Yes” to all seven indicators.

The Prosperity Touch app is a measurement tool that can play an important role in eliminating poverty. One of its most important features will enable a user living in poverty conditions to zoom-in and tap on their specific location and search to find nearby food banks, shelters, medical centers, hiring centers, and more— thereby helping people find support and opportunities faster.

Also included in the app is access to Global Workers for Good, which utilizes the hiring center function of the app to provide jobs to those in need (see more below).

The Prosperity Touch will be a general-purpose bridge for reducing poverty. It will also facilitate people that want to help out to participate in poverty reduction. It does this by enabling a person to click a specific region and use the “Give Your Care” function. This function displays volunteer opportunities, donation opportunities for materials, expertise and funds, and more.

The costs for developing and launching the app will need about \$50,000 to \$250,000, (depending on the number of prototype sites and needed research). These funds will come from donations, grants, contracts and fundraising money.⁴

Additionally, there will be a game feature that will enable “players” to work on eliminating poverty by allocating resources, technology and policies to make all the regions green. They can do this in the game

by implementing different poverty-reduction/wealth-building actions. The game will also allow players to make donations to the Prosperity App to further its spread and impact—and to make a donation to the Global WorkForce for Good.

Strategy— Investing in Our Global Communities: Global WorkForce for Good (GWG)

This strategy is related to the above. It will be part of a global initiative that tackles both ecological and basic human need problems of the world. The *Global WorkForce for Good* is inspired by the Civilian Conservation Corps that was launched in the US in the 1930s in response to the then global economic depression. The GWG would involve a global coalition of countries, NGOs and corporations that provide a guaranteed job that pays more than enough to raise a person out of poverty. The work-specifications for each job will be determined by what poverty-reducing/wealth-building services a region needs. These opportunities will be determined by polling people that live in the area through the Prosperity Touch app. The work will be entry-level/lower-skill jobs that will be paired with a higher-skill worker. The reason for this arrangement is not just to provide a job, but to provide training for a career.

For example, the Amazon rainforest in Brazil is experiencing unprecedented and terrible deforestation. One job in this area will be to work with the forestry service to protect, maintain, and expand the existing forests. The projects that these workers will be assigned will be for the general public and global good. A portion of the work each week will be dedicated to job training and learning skills required to work more productively in the forestry preservation area, not just as a laborer.

The Global WorkForce for Good will benefit the entire planet. Ideally, every country will contribute to the funding for the initiative. One formula for funding is that each country contributes proportionally to its GDP. The economic activity that GWG spurs will have positive impacts on the local economies where it is implemented. It will increase general employment rates, educate the workforce, and provide opportunities for local businesses.

Pay scales for GWG jobs will be region-dependent. What poverty looks like in Detroit is very different from what poverty looks like in

rural Bangladesh. Compensation will be enough to lift the worker out of poverty, but not to be better than other jobs in the area (unless those jobs only pay enough to keep workers mired in the lowest form of poverty). If a private company wishes to use the GWG as a recruitment tool to fill its available job opportunities, they will need to pay wages at higher rates than the minimum wages in the area.

Other possible projects of the Global WorkForce for Good

Organization are dealing with hunger and water-shortage problems of the world. First the water problem: There is a huge employment opportunity given that about 2.2 billion people lack access to safe drinking water.⁵ This initiative, the *Global Water Solutions Project*, will focus on bringing clean water to these two billion plus people. To fund this project, the GWG will partner with Global Impact Clean Water Fund and other NGOs. The installation of clean water infrastructure will be built by GWG workers. One of the solutions will be to supply clean water by installing water filtering pumps in areas where water already exists but is located away from where it is needed. Solar-powered water pumps will be installed by the GWG Organization. Excess electric energy created by the panels will be sold to nearby homes, companies and shops. This will help families and the local economy flourish because the energy prices low. Any profits made from the excess energy sale will assist funding other projects of the GWG.

Another project deals with hunger and food distribution. Roughly 811 million people still go hungry in the world—about 9.9% of the global population. From 2019 to 2020, this number increased by as much as 161 million.⁶ This initiative, the *Cool for Food Project*, would utilize the Prosperity Touch app to locate the areas in the world that suffer from hunger and food shortages. Once a particular city/area is located and selected, workers from the GWG would work on solar-powered community food cold-storage facilities. These will help minimize waste by enabling surplus food to be collected and donated to poorer people in need. The cold-storage facility's function would be simple. People with surplus food drop off packaged leftovers which are then kept in the coolers for pick-up by people in need. These food stuffs would be kept for a set amount of time that depended on expiration rates. Once the food is no longer suitable for consumption it will be used for compost for local food production.

To help provide incentives for *Cool for Food* projects, institutions, restaurants, and people with food surpluses will be publicly acknowledged and thanked. If available, food-purchase discount incentives will also be used. These would allow donors to get discounts at food stores for locally produced food. Another monetary incentive option would be in the form of a lottery. Each donor would be entered in a lottery, the winner of which would receive a monetary prize. In addition, up to 25% of the local cold-storage facility will be rented out to local food producers wanting to preserve their food commodities for later sale. These fees will go towards funding the maintenance and expansion of the cold-storage facility. To launch Cool for Food Project, the GWG would partner with hunger-related local NGOs and local government agencies concerned with hunger. These partnerships would help raise the funds needed for construction of the food cold storage facility.

The Global WorkForce for Good Organization will also foster social entrepreneurship and apprenticeship. Entrepreneurship has been documented as having a large impact in every economy. One function of GWG after it gets off the ground will be as an investment hub for small-scale loans and investments for start-ups. These new ventures would also be eligible to staff their initiatives with workers from the GWG—as long as they provided training and apprenticeship opportunities.

Initial funds to begin this financial empowerment project would be generated from various donors, including corporations, philanthropists, and governments.

Strategy— Next Steps

Launching the above strategies will require different types of resources, equipment and skills. These include designing and developing the *Prosperity Touch* app and websites, along with all its features and functions; researching, collecting and adapting the content of the app; testing and evaluating a number of prototypes in different regions; improving the initial app based on the experiences with the prototypes; locating and forging regional partners where prototypes will be tested; and hiring a skilled management team—for starters.

Endnotes

- 1 “Overview.” World Bank, <https://www.worldbank.org/en/topic/isp/overview>. Accessed 29 Sept. 2021.
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- 6 Action Against Hunger, www.actionagainsthunger.org



PART IV

SUSTAINABLE CITIES FOR ALL

Hanging gardens of One Central Park, Sydney
by bobarc, CC BY 2.0

<<https://creativecommons.org/licenses/by/2.0>>
via Wikimedia Commons



Kaicycle Urban Farm Wellington

L Maule, CC BY 4.0

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STRATEGIES:

- 1. Where in the World Is Our Sustainable Capital?**
- 2. Urban Regeneration**
- 3. unSlumming**
- 4. Sustainable Food Systems for Sustainable Cities**



1. WHERE IN THE WORLD IS OUR SUSTAINABLE CAPITAL?

By Alfonso Rivas, Bich Tran Hoang Le, Ren Shiroma, and David Fand

Strategic Summary: *There are over 200 countries and many more states in the world. There are over 36,500 cities in the world, and over 500 with a population of over one million.³ Each country and state has a capital city. Which city is the most sustainable in the world? This city should be the “Sustainable Capital of the World” and be recognized as such throughout the world. This strategy calls for a global competition for sustainability between cities. One goal of this strategy will be to determine the world’s most sustainable city. The process of competing for this title will educate people around the world about sustainability, its value, and what each person, neighborhood and city can do to increase the sustainability of their region. Most importantly, the contest and the competition between cities will increase the sustainability of cities throughout the world.*

Sustainable urban development is “improving the quality of life in a city, including ecological, cultural, political, institutional, social and economic components without leaving a burden on the future generations.”¹

Sustainable community development is “the ability to make development choices which respect the relationship between the three “E’s”- economy, ecology, and equity.”²

A **sustainable city** is an integrative system that incorporates an economic, ecological, and equity dimension in its development choices.

Introduction—Problem State

More than half of the people in the world live in urban environments. These urban areas have numerous problems, including:

Energy

- Urban environments consume and waste huge amounts of energy. Just the developed country’s *buildings* consume approximately 43% of a nation’s energy.
- Most of the energy for all the cities of the world is imported to the city—that is, it is not locally sourced, generated or stored.

- The energy consumed by our urban environments is expensive and primarily from fossil fuels, thereby contributing to global climate change.

Water

Cities waste large quantities of fresh water in leakage, sewage removal, run-off, inefficient water using appliances and wasteful recreational and industry uses.

- Cities rarely collect and recycle their water.
- Water is seen as a commodity that has a monetary cost only. Environmental impacts are not taken into account.
- There is a pervasive ignorance about the origins, uses, impacts and destiny of water use in the urban environment.

Carbon Emissions

- Cities emit large amounts of carbon dioxide thereby increasing the severity of climate change. For example, US buildings generate 35% of US CO₂ emissions.

Waste

- Cities do not reduce, reuse, or recycle all the materials they can.
- In most cities, dedicated recycle bins are not provided in all commercial and residential spaces.
- Excessive amount of recyclables are ending up in landfills or polluting the environment.

Travel distance, time and cost

- Daily commuters travel farther, burn more fossil fuels, and emit more carbon emissions because basic amenities are built farther away.

Accessibility

- Many city's services and amenities are not accessible for people with disabilities, or the elderly or poor.

Access to information

- Most urban residents are not aware how their actions concerning energy, water and other resources have an impact on the environment.

Housing

- Many people live in substandard housing where basic sanitation, affordable and safe water and energy are lacking, and health care, education and transportation networks are not readily available.

Choice and Participation

Many cities have governments that exclude participation in decision-making, are controlled by an elite inner circle that maintains an inequitable distribution of resources and prerogatives and fosters continuing states of abject poverty.

In addition to the above, urban environments are often characterized by:

- A higher death rate among people living in urban slum areas.
- A large amount of trash on the streets and dumpster sites.
- A majority of the city's food, water, and energy imported.
- The placement of businesses and services far away from residential areas forcing people to commute longer distances.
- Roads and sidewalks that are not pedestrian friendly, public transportation that is not thoughtful of people with disabilities, and which is often expensive and in competition with subsidized motor vehicle transportation only the wealthy have access to.
- A priority given to vehicles rather than humans—demonstrated by roads that cover 25% or more of many city's total surface areas, parks that are no longer filled with grass but rather asphalt or have become parking lots.
- A high unemployment rate.
- A large gap between the rich and the poor.

The severity of the problem can be measured by:

- **Energy use:** The percent of the population using renewable energy sources and the percent of energy wasted.
- **Water use:** The percent of the population collecting rainwater and using water efficiently—the number of gallons used per person, the amount lost through leaks, the cost of water. (Rainwater harvesting has the potential to meet nearly all of some city's water needs. For example, "The Austin Texas area receives an average of 32 inches of rain per year. A 2,000 square foot area can capture 36,000 gallons of water annually, which would meet 100 gallons per day of a household's water needs."⁴)
- **Air pollution and carbon emissions:** The number of people hospitalized or made unwell due to air pollution. (Upward of

20,000 air-pollution-related deaths per year per degree Celsius may be due to this greenhouse gas.⁵⁾

- **Waste management:** The amount of waste generated per person. (About 127 million tons of waste refuse goes into landfills each year in the US.)
- **Travel distance, cost and time:** The average amount of time it takes the commuter to get to work. (“Commuter travel, and the pollution it causes, has been growing faster than the population as more people live farther from their jobs.”)⁶⁾
- **Accessibility:** Per-cent of curb-sides and entry ways that have handicap accessible curb-cuts. (“At least 20,000 polling places across the country are not fully accessible to voters with disabilities.”)⁷⁾

Preferred State

A preferred state to the above description of a non-sustainable city is a city that incorporates an economic, ecological and equity dimension in its development choices.

100% of the people living in cities have, on a sustainable basis:

- **Equitable** opportunity for full participation in all activities, benefits, and decision-making of society.
- **Economic** opportunities that serve the common good, are self-renewing, and build local assets and self-reliance.
- **Ecological** perspectives that see humans as part of nature, nature having limits, and communities responsible for protecting and building natural assets.⁸⁾

Core strategies that lead to these three preferred state foundations are:

- **Energy and water awareness and conservation:** A sustainable city provides a metered supply of clean water and energy to all of its residents that is locally generated and stored, thereby reducing—through increased transparency and knowledge—long-term environmental and monetary costs.
- **Carbon dioxide release:** A sustainable city has net CO₂ emissions at or approaching zero. CO₂ release is metered, made public and taxed. Resulting revenues are invested in carbon abatement actions.
- **Recyclable materials:** All materials used by a sustainable city for construction, consumer goods and other uses are metered and recyclable. Dedicated recycling bins are located in all commercial and residential spaces.

- **Reducing travel distance, time, and cost:** A sustainable city has its residential needs situated within a one-mile radius of each neighborhood. Commuting is through efficient and eco-friendly transportation systems.
- **Accessibility:** A sustainable city is fully accessible for people with disabilities, as well as by the elderly and poor.
- **Transparent sources of information:** A sustainable city makes all government data, decisions, budgets, expenditures, contracts and appointments fully accessible to everyone in the city.

The above will lead to more efficient resource management, cost savings, lower environmental impact, and increased civic engagement.



Equity	Economy	Ecology
Energy and water supply: Provides a supply of <i>affordable</i> clean water and energy that is locally generated and available to all citizens.	Energy and water supply: Provides a supply of clean water and energy that is locally generated thereby reducing <i>monetary</i> cost compared to imported resources.	Energy and water supply: Provides a supply of clean water and energy that is locally generated thereby reducing the <i>environmental</i> costs.
Zero carbon emission	Zero carbon emission	Zero carbon emission
Accessibility: City is fully accessible for people with disabilities, elders, and the poor	Accessibility: City is fully accessible for people with disabilities, elders, and the poor	Accessibility: City is fully accessible for people with disabilities, elders, and the poor
Transparent Sources of Information: Promotion of sustainable awareness	Transparent Sources of Information: Promotion of sustainable awareness	Transparent Sources of Information: Promotion of sustainable awareness
Waste Management: Increase the usage of recyclable materials and decrease usage of non-recyclable materials	Waste Management: Increase the usage of recyclable materials and decrease usage of non-recyclable materials	Waste Management: Increase the usage of recyclable materials and decrease usage of non-recyclable materials
Reducing travel distance, time, and cost: Daily residential needs situated within 1 mile radius of each neighborhood and city commuting via forms of efficient and eco-friendly transportation	Reducing travel distance, time, and cost: Daily residential needs situated within 1 mile radius of each neighborhood and city commuting via forms of efficient and eco-friendly transportation	Reducing travel distance, time, and cost: Daily residential needs situated within 1 mile radius of each neighborhood and city commuting via forms of efficient and eco-friendly transportation

Present State

Energy

Rank Country Electricity consumption (billion kWh)

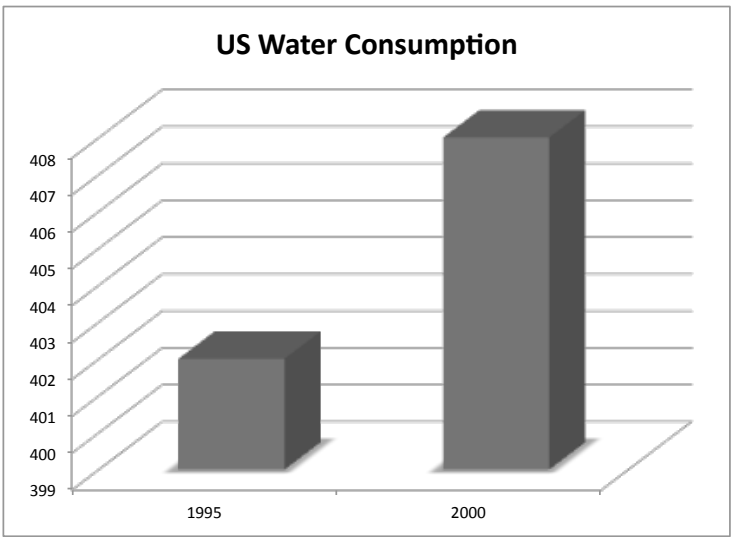
1. United States	3,816	<div></div>
2. China	2,859	<div></div>
3. Russia	985.2	<div></div>
4. Japan	974.2	<div></div>
5. Germany	545.5	<div></div>

Rank Country Electricity consumption (billion kWh)

1. United States	20,800,000	<div></div>
2. China	6,930,000	<div></div>
3. Japan	5,353,000	<div></div>
4. Russia	2,916,000	<div></div>
5. Germany	2,618,000	<div></div>

The average American household uses about 10,500 Kwhs of electricity per month.

Water



The average American household uses about 109,500 gal/household/year.

Transportation

Transportation sources accounted for approximately 29% of total US greenhouse gas emissions in 2006.

Strategy

In order to reach the preferred state—where cities around the world are sustainable or on the path to sustainability—our strategy calls for a worldwide competition to determine the *Sustainable Capital of the World*. The intention of this contest is to motivate cities around the world, and the people who live in them, to make changes toward more sustainable cities. It will provide the motivation for informing citizens and decision makers about sustainability issues and options. This competition, like the Olympics, is meant to bring citizens of the world together and join in an effort to become a more sustainable planet.

One of the goals of the competition is for cities to teach and learn from each other. Cities will compete to win the title of *Sustainable Capital of the World* through the *Where in the World is our Sustainable Capital?* contest. This contest is open to all cities throughout the world.

Given the differences between the so-called mega-cities that contain 10 million or more inhabitants and cities with populations of less than 1—2 million, it is proposed that there be two prizes for different size cities, and that these prizes alternate every 2 years as do the Summer and Winter Olympics. That is, every four years a winner of the mega-city *Sustainable Capital of the World* contest will be awarded, and every four years there will be a similar awards ceremony for the smaller cities, but that these events will each occur separated by two years.

The competition is global, but in later years it will scale to the level of the country. That is, each country will have a contest that will determine the *Sustainable Capital of* _____ (France or Germany, the United States, China, Nigeria, etc.). At a latter stage, we also anticipate having a village-level contest and a country-level contest wherein the *Most Sustainable Village* and the *Most Sustainable Country* are determined. We chose to begin at the city level because it is small enough that realistic changes can be made faster and more effective, but big enough to impact a large population.



World Sustainable City Program

Implementation of the *Sustainable Capital of the World* contest will begin with the development of the World Sustainable City Program website that will oversee and administer the contest.

To win the title of *Sustainable Capital of the World* cities will enter the contest and be evaluated according to objective, numerical and well-known criteria. The city that scores the highest will be declared the winner. Those that do not win will see what they need to do to raise their scores.

The criteria and numerical weighing for each criterion for determining the winner of the *Sustainable Capital of the World* contest are below:

Competition Scoring Criteria

Criteria	Score
Carbon footprint per capita (zero carbon footprint=60pts)	50
% Recyclable materials recycled	30
% Clean water from sustainable supply	30
% Sustainable clean energy from sustainable supply	30
Number of major educational campaigns run throughout the city to raise awareness on sustainability	20
Miles of walkways and bicycle paths per capita	20
% Of bicycles to gas powered cars	20
% Of people commuting by car to people commuting by bikes or mass transit	20
% Of clean/hybrid being used to power transit	20
% Of green buildings	20
% Neighborhood with available community such as hospitals and food markets located within a one-mile radius	20
% Of disabled access to public space and all public and private buildings	20
Total points	= 300 pts

The contest is based on 300 points. Entry would be submitted and recorded online. The top five cities will be independently evaluated to verify their scores. The entry cost would be a sliding scale determined by per-capita income of the city and the country of which it is a part.

The Sustainable City web site would be a repository of sustainable options that have already been or could be implemented in cities around the world. In addition to this it would contain a support network, links to sustainable options suppliers and consultants, and online discussion forums.

The Sustainable City Prize would include the “Sustainable Capital of the World” trophy, one million dollars and the right to be the host site of the next World Sustainable Capital Award Ceremony.

One implementation option is for the Sustainable City Contest to partner with an existing UN (or other) agency like the UN Habitat, or The Commission on Sustainable Development. Corporate sponsorship will also be important on a number of levels—including product donation (for example, a large wind generator from GE or other renewable energy device from other manufacturers).

The monetary resources needed to make this program sustainable can come from private donations, corporate sponsorship, and registration fees.

World Sustainable City Award Ceremony

- International state-of-the-art ceremony presenting the *Sustainable Capital of the World* Award and recognitions.
- Featuring lectures/speeches, workshops and product showrooms on sustainable technologies for cities
- Who attends: All city delegates, manufacturers, NGO’s, and citizens
- Where: Hosted by the previous winner of the *Sustainable Capital of the World*
- When: Hosted every 4 years by the current *Sustainable Capital of the World*

Timeline

Year One:

Private sector sponsorship secured

Development of website for World Sustainable City Program

Year Two-Four:

Inaugural *Where in the WORLD is our Sustainable Capital?* competition

Year 5:

Announcement of the first “Sustainable CAPITAL of the WORLD.”

Start of the search for the next “Sustainable Capital of the World” that will be declared in 4 years.

Success criteria after five years: At least 100 cities are competing.

Success criteria after twenty years: 80% of the cities of the world are competing.

Outcome:

Increased global awareness and actions upon the implementation of sustainable strategies.

Additional success criteria:

- Increase in amount of renewable energy and recycled water used in cities
- Decrease in carbon emissions and material wastes
- Increase in amount of recycled waste
- Increase in number of bicycles and mass transit used for daily commutes
- Increase in accessibility by elderly and handicapped
- Increase in government and corporate transparency

In order to generate maximum effectiveness of permanent city sustainability, civil society is expected to spread awareness and implement citywide legislative policies. It is the civil society’s role to bind the city under a common goal.

Endnotes

- 1 The Regional Environmental Center for Central and Eastern Europe www.rec.org/REC/Programs/SustainableCities/What.html
- 2 <http://www.subjectmatters.com/indicators/Sustainability/DefinitionsCommunity.html>
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2. URBAN REGENERATION

FROM SINK TO SOURCE—TRANSFORMING PROBLEMS TO SOLUTIONS

By Ben Blum, Beth Emming, Medard Gabel, Don Hastay, Keith Hermann, Dan Jacques, Dick LaRiviere, Tony Milch, Fred Rose

***Strategic Summary:** Over 3.4 billion people (51% of the world's population) live in urban environments. Cities are tremendous importers and users of energy, water, and food, as well as producers of large quantities of waste. The Urban ReGeneration strategy seeks to reverse this. Instead of cities being resource sinks and waste sources, it turns them into resource sources, as well as increasing their viability as employment centers and sources of economic wealth and social well-being. This strategy incorporates a new approach to our city's problems by reconceptualizing the basic unit of analysis from single building to neighborhood and then employing existing technology in novel ways so as to leverage the appropriate scale of these technologies for maximum impacts.*

**"The city is not the problem.
The city is the solution."**

—Jaime Lerner

Introduction—Present State

Over 80% of people in the US, and over 50% of all the people in the world, live in urban environments—and an even higher percentage will do so in the future. Many of the buildings, neighborhoods and infrastructures in all the world's cities are old, decaying, inefficient, unsafe, and in need of revitalization. The environmental support systems of nearly all our urban areas have been pushed to the extreme and our cities are a major source of greenhouse gas emissions and other pollution that is damaging the world's waters, air and land. These integrated problems present an enormous challenge and an even greater opportunity.

The revitalization of urban areas, if done in a visionary, comprehensive and integrated way that incorporates the latest findings

of science and green technology, can transform cities and their economies by providing opportunities for employment, increased well being, and decreased environmental and carbon footprints while enriching individual and social connections.

Since the installation of the infrastructure systems in the older cities of the world there has been numerous advances in energy production, use and conservation; food production and distribution business models; water use, conservation and collection; and waste collection, reuse and recycling. Bringing these new technologies into use in old and new urban environments in an integrated, whole systems design will have profound impacts on resource use and societal well-being.

Preferred State

The preferred state to where the world's urban environments are today is one that is characterized by:

- More energy is produced by cities than is consumed
- More water is conserved and collected than is needed by the city's residents
- At least 50% of the city's fresh food is produced within the city's borders
- Urban waste is reduced by 90%.

Strategy

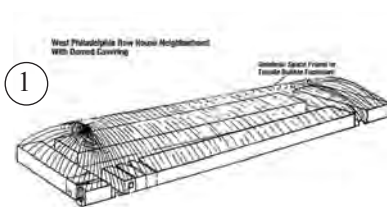
To reach the preferred state outlined above, it is necessary to view our urban environments in an entirely new way. We will need to reconceptualize the urban environment so that urban housing is not seen as single units (individual houses, row homes, apartments and the like), but as groups of approximately 60 houses (one city block rather than one single building). This changing of the unit of analysis can transform a city block of buildings into a single unit with scaled energy systems for heating, cooling, and electricity, water for drinking, waste disposal and food production.

The energy, water, and food needs of this city block (and surrounding neighborhoods) can be met with 10 or more small-scale heating and electricity cogeneration units, neighborhood-spanning water catchments and storage systems, and vegetable, fruit and protein production systems. All of these, and the neighborhood housing stock, are enclosed under an entire city block spanning domed covering that encloses the roof tops of each of the sixty buildings. This integrated

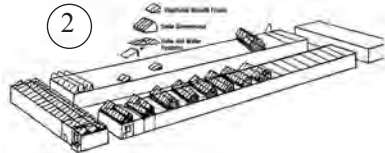
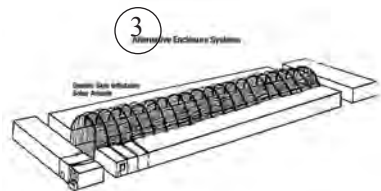
system expands available space for each family by close to 50%, reduces heating and cooling loads, collects water and provides other amenities, such as increased social interaction and play areas.

In addition, the *Urban ReGeneration* technology can provide additional revenue streams for neighborhood residents through the sale of electricity, heating, cooling, fresh and frozen vegetables, fruit, and fish and animal protein. Increasing neighborhood identity, interaction, connection, cohesiveness, safety, security, and well-being is also a benefit.

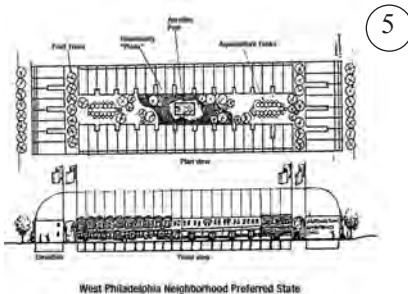
The *Urban ReGeneration* strategy represents a series of breakthroughs to the world's urban problems. It transforms former sinks for energy, water, and food into sources; it builds community and employment, cuts down on greenhouse gas emissions from centralized coal-fired electric power plants (and, when replicated in enough neighborhoods, can shut down *all* coal power plants). It dramatically cuts water use



A prototype neighborhood in Philadelphia, PA has been picked and the generic design adapted to the specifics of this city block of sixty multifamily two-story row homes with flat roofs.



Generic design of the project includes energy, water and food systems, domed enclosure and web social enhancement tools.



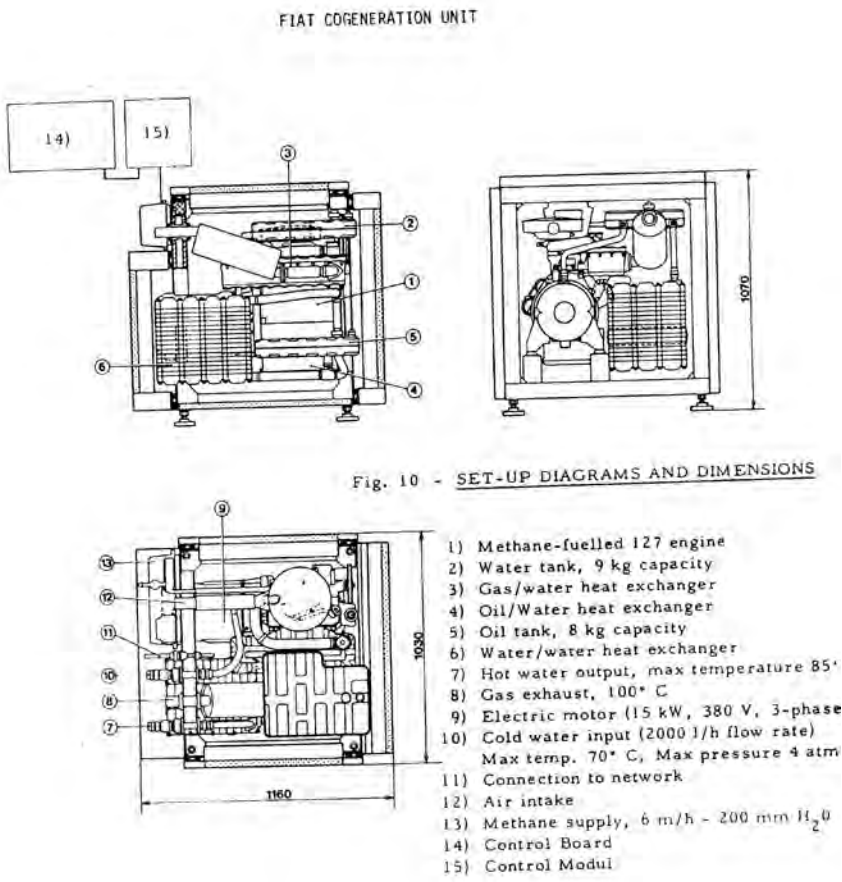


Illustration 5

and storm water runoff—and thereby saves the neighborhood enough money each year to pay back the investment needed to implement this strategy and/or to cover the costs of purchasing additional cogeneration units or investing in additional energy saving appliances or retrofits.

The *Urban ReGeneration* project is illustrated in the following renderings.

Implementation Plan

One of the strengths of the *Urban ReGeneration* project is that it is not an “all or nothing” proposition. The various production systems

are synergetic in totality, but provide enormous advantage even if implemented individually and sequentially. This has the added advantage of testing individual components on a pay-as-you-go basis and developing the compelling economic and social enhancement case for the replication of this design and its variants throughout the world.

The plan for turning this design into a real world prototype will move in five stages.

1. Energy systems

Part 1 of the implementation plan is to purchase a prototype cogeneration unit similar to that seen in Illustration 5. This unit will be installed and tested as the prototype heating system for two or more buildings in the chosen neighborhood. The electricity produced will be sold to PECO, the Philadelphia area electric utility. Revenue from this sale of electricity will be used to purchase the natural gas fuel for the cogeneration unit.

2. Water systems

Part 2 of the implementation plan is to purchase, install and test prototype water catchment and conservation devices for reducing the water use of two or more buildings in the chosen neighborhood. These will include cisterns, low-flow shower heads, and low-flow and composting toilets, and rooftop collection devices.

3. Food systems

Part 3 of the implementation plan is to purchase and set up and test small-scale aquaculture and other protein-production systems, as well as intensive fruit and vegetable production systems.

4. Roof-top systems

Part 4 of the implementation plan is to develop a prototype appropriate roof-top geodesic enclosure system that can be tested as part of the above demonstration project.

5. Social systems

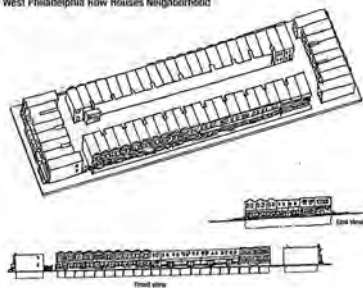
An integral part of the implementation plan is the recruitment of a neighborhood and the individuals and families that live there so that they are enthusiastic supporters of the strategy and its implementation.

6

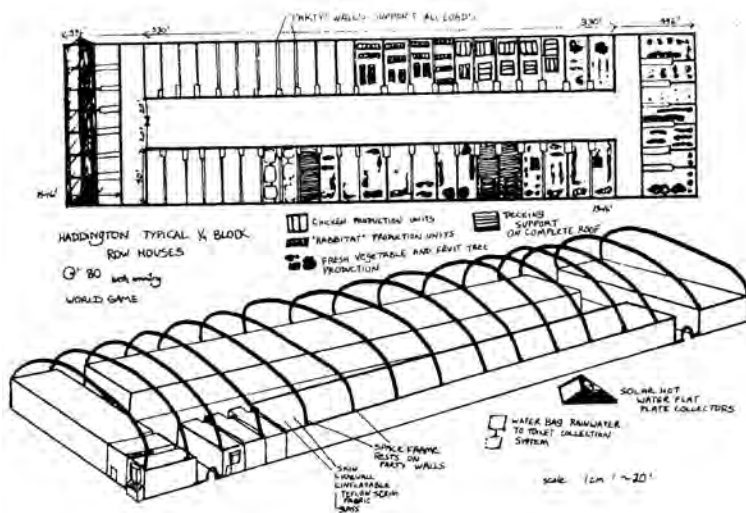


7

West Philadelphia Row Houses Neighborhood



30



3. UNSLUMMING: TRANSFORMING SLUMS INTO “YOUNG CITIES”

By Sean Powers, Will Wright, Alen Saju, Zarima Fayikova

Strategic Summary: *More than half of humanity live in urban environments. A billion of these people currently live in slums that are associated with these cities. Each year more than 70 million people are added to this number. Slums can be transformed into new, young cities through creative strategies that deal with core problems.*

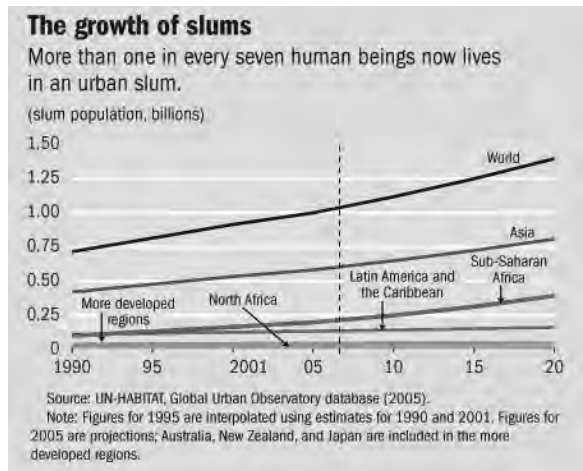
Introduction/Background

The world is urbanizing at an extremely rapid pace, with the most rampant urbanization occurring in the developing world. This rapid urbanization has led to the growth of informal settlements, otherwise known as squatter cities or slums. Currently, 1/7 of the world's population (approximately 1 billion people) lives in slum conditions. An additional 70 million people are added to these informal settlements every year.

Slums, and the people living in them:

- Lack access to clean water and effective sanitation
- Live in unsafe structures with extreme population densities
- Lack security of tenure.

Despite the increasing numbers of people being added to the slums of the world, the ratio of slum dwellers to the total city population is dropping in cities across the developing world. This seeming paradox can be explained by the existence of natural slum upgrading





processes. These processes lift people out of slum conditions, but not at a rate which prevents the growth of slums. Think of a sink with a small drain and a large faucet. Turn the faucet on full blast and the sink begins to fill up because the drain is too small for that much water. But turn the faucet down, and the drain can keep up, keeping the sink from overflowing.

Strategy

Our strategy is actually the opposite—we're going to install a bigger drain. The natural processes of slum upgrading suggest that, when given the opportunity, slum dwellers find ways of relieving most of the conditions which qualify their homes and neighborhoods as slums. The strategy presented here seeks to support that initiative, provide the opportunities and, in so doing, expedite the natural slum upgrading process. Through this expedited process, we will not only eradicate urban poverty, but also create vibrant neighborhoods full of engaged, self-reliant citizens.

A core initiative of the program is securing tenure rights for residents of informal settlements. This is accomplished by economic development through business incubators. By assisting the development of high-value businesses within informal settlements, incentives for land-owners to provide guarantees of security of tenure are created. These incentives come in the two forms—revenue from the business themselves (either through explicit security of tenure contracts or increased rents) and pressure from external entities benefiting from the increased economic activity within the informal settlements.

Some of the funds coming into the slum through this economic development are designated for use for grassroots slum upgrading projects. As both the business incubator and slum upgrading are driven by the residents themselves, this project encourages the natural slum upgrading processes and avoids the problems of many top-down approaches.

Business Incubator

The business incubator consists of three major components: Inspiration Stations, a Facilitator/Mentor, and an Advisory Board.

The *Inspiration Station* is modeled after the “Hole-in-the-Wall Computer” developed by Sigata Mutra, but incorporates a number of additional features to assist its usefulness and adoption by the community. The main feature is a slideshow-style screensaver which provides examples of potential business ideas and upgrading projects. This screensaver is supported by basic instructional videos which play when someone interrupts the screensaver (the video which plays is based on what was displayed when the screensaver was interrupted). After the video plays, the user will have access to a full suite of computer programs as well as Internet links that will enable them to explore the idea further.

Additional features include a cell phone and small electronics charging station, powered through locally renewable energy sources, and news radio playing while the screensaver is on.

The *Facilitator/Mentor* is the second component of the business incubator. This person works with and supports residents in developing their own businesses. This support includes everything from providing trainings in business basics to connecting the residents to external networks including suppliers and potential markets, and assisting with acquiring start-up capital. Additionally, the facilitator will train and mentor select residents to become facilitators themselves, thus creating the necessary resources for maintaining and expanding the program.

The third component is an *Advising Board* that acts as a final check for developed business plans, taking a big picture view and identifying potentially missed opportunities and upcoming challenges. This is component is key to developing quality business plans which will in turn become successful companies.

Successful companies will connect to external markets and suppliers, thereby developing a constituency of supporters outside of the informal settlements. Additionally, they will share revenue with the land-owners in exchange for guarantees of tenure rights, and through a



delayed fee plan, fund the continued operation of the business incubator and slum upgrading projects.

Budget

Inspiration Stations

- in—kind donations of computers
- labor for slide show and video development —\$5,000
- power source (renewable energy) —\$3,000
- labor for installation —\$7,000
- 2 years of internet access —\$1,400
- Micellaneous —\$1,000

Facilitator

- 2 year’s of salary —\$40,000 —\$80,000
- Office space 2 years —\$6,000
- Supplies and expenses —\$5,000
- Contingency —\$10,000

The estimations above are for one program of 5 inspiration stations and 2 years of external facilitation. After these two years, the facilitation training and mentoring will have created an internal resource pool which will mitigate the need for additional funds.

Resource	Preferred Alternative Local Facilitator	Alternative B PeaceCorps / Volunteer	Alternative C Developed Country Facilitator	Multiplier	Funding Source
Computer	\$200.00	\$200.00	\$200.00	10	IKD
Power Source	\$700.00	\$700.00	\$700.00	10	G; MP
Installation Labor	\$500.00	\$500.00	\$500.00	10	MP; IKD
Facilitator Salary	\$15,000.00	\$10,000.00	\$36,000.00	2	G; MP
Total Cost	\$44,000.00	\$34,000.00	\$86,000.00		
Funding Sources: IKD = In-Kind Donation; G = Grant; MP = Micro-Philanthropy					

Summary

Benefits of strategy

1. Increased success rates for local business start-ups in slums
2. Profits to both land owners and slum dwellers
3. Self-propagating/sustainable system
4. increase of economic opportunities both within and outside of informal settlements with greater access to external resources for slum upgrading projects
5. Program has growth mechanisms (facilitator training and deferred fee payment structure) built in
6. Program is designed around local empowerment and relationship-building, making the primary concepts easily transferrable
7. Program will partner with Slum Dwellers International, creating a communication pathway for any interested settlement to start their own similar program.

Potential challenges

1. Engagement of disenfranchised people can be difficult. The profit incentive for land-owners may be dwarfed by the saleable value of the land.
2. Culture clash between individuals accustomed to informal economy and those operating within the formal economy.
3. Scalability / transferability of program.



4. SUSTAINABLE FOOD SYSTEMS FOR SUSTAINABLE CITIES

by Alfonso Rivas (México), Carrington Mattis (US), William Meyerhoff (US), and Thu Bui (Vietnam)

Strategic summary: *Cities play a critical role in determining the future and well-being of global society. To ensure the sustainability of our cities, we need sustainable food systems. For that to happen we need to implement an urban ecosystem of sustainable biointensive crops and gardens that increase the production of food at lower costs based on a regenerative agricultural process that promotes a circular economy. At the same time, we need to increase the resilience of the city by stimulating an inclusive urban food system, empowering low-income families and neighborhoods to generate affordable ways of sustainable food production. Such a system reduces carbon dioxide emissions due to the lessening of the transport of food that comes from outside the city, thereby contributing to the mitigation of greenhouse gases, strengthening climate action and improving the urban environment.*

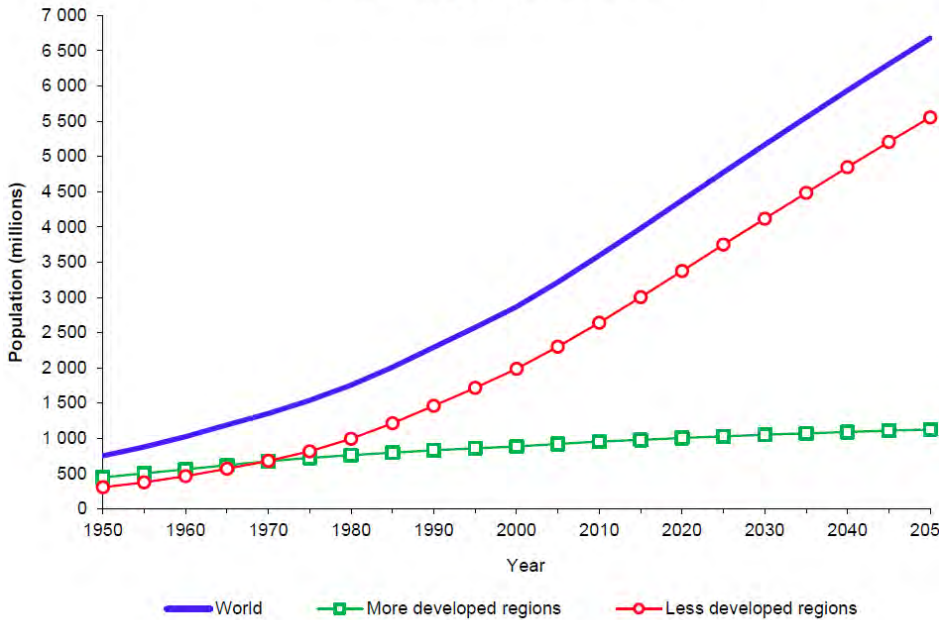
Introduction

The world is experiencing the most rapid urbanization in history. Since the beginning of the industrial revolution, the worldwide urban population has grown exponentially, with urban areas attracting vast numbers of workers and families seeking jobs, education, and a better quality of life. 55% of the global population are living in cities currently, and it is expected to increase to 60% in 2030. Most urban growth is taking place in the developing world. Mainly in Africa and Asia, resulting in massively social, economic, and environmental transformation.

Large waves of urbanization, however, have led to various other challenges in cities and metropolitan areas. Nearly one billion people around the world live in slums and unplanned settlements, causing cities to become increasingly segregated. Uncontrolled urban sprawl infringes on increased pollution, overcrowding, and inadequate infrastructure, worsening livelihoods.

Today, urban areas are at the forefront of dealing with the COVID-19

Figure I.1. Estimated and projected urban populations of the world, the more developed regions and the less developed regions, 1950-2050



Source: UN, Department of Economic and Urban Affairs, 2018. World Urbanization Prospects. The 2018 Revision

pandemic's health crisis and its after effects, facing threats to economic and societal well-being. The poor and highly and densely populated metropolitan areas around the world are the hardest hit. In addition, the number of people that have no regular access to nutritious and sufficient food worldwide is estimated at 2 billion¹.

World leaders are confronted with a “perfect storm” of coping with COVID-19 recovery strategic planning while also dealing with the existing challenges of climate change, rising pressure on food prices, hunger, health care, resource depletion, and persisting socioeconomic disparity in urban areas.

Present and Problem State

- 95% of urban expansion in the next decades will take place in the developing world²
- 828 million people live in slums today and most of them are found

in Eastern and South-Eastern Asia³

- The world's cities occupy just 3% of the Earth's land but account for 60-80% of energy consumption and 75% of carbon emissions⁴
- Rapid urbanization is exerting pressure on food, freshwater supplies, sewage, the living environment, and public health
- An estimated 2 billion people in the world did not have regular access to safe, nutritious, and sufficient food in 2019⁵
- Slum dwellers suffer from chronic hunger and die younger than other urban dwellers in the same city⁶
- Cities account for between 60 and 80% of energy consumption and generate as much as 70% of human-induced greenhouse gas emissions⁷
- 90% of urban growth is forecasted to happen in Asia and Africa in the next 30 years⁸
- The majority of the world's undernourished— 381 million— are found in Asia. More than 250 million live in Africa, where the number of undernourished is growing faster than anywhere in the world.⁹

Preferred State by 2030:

All cities in the world promote green economic growth while providing the basic human need requirements of its residents, ensure that everyone lives in an inclusive urban food system, and is surrounded by a healthy environment.

This includes

- Self-sufficient food production
- Recovery of vacant and abandoned lots for urban farming
- Ecological revitalization of the community and the city
- Better crop health and yield
- Strong and genuine community connections and actions

This preferred state contributes to the Sustainable Development Goals (SDG) in a variety of ways:

- The Preferred State empowers families and neighborhoods to generate affordable food self-production (SDG-2).
- It uses sustainable circular practices in food production in which urban organic waste is reincorporated into the growing cycle and in affordable ways of sustainable productions (SDG-12).
- It increases a city's resilience in food production by applying

circular agricultural practices that increase productivity and transform abandoned and underused spaces into green urban ecosystems (SDG-11).

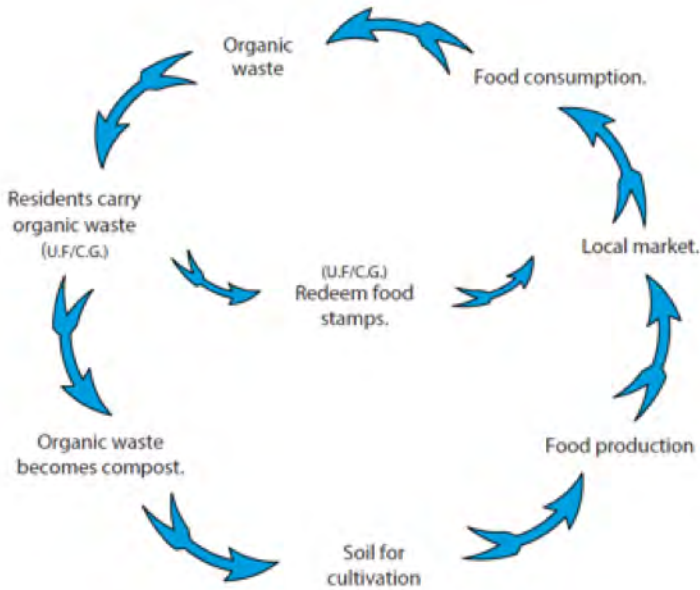
- It increases the number of human settlements that efficiently use abandoned spaces for food production (SDG-11).
- It eliminates organic waste pollution and reduces greenhouse gas emissions through a circular production cycle (SDG-13).

Strategy

What the strategy will do

With the purpose of increasing the availability of food at lower cost, thereby increasing food security, our strategy focuses on developing inclusive urban food systems based on a circular economy and regenerative agricultural processes. Our strategy is an agricultural closed-circuit system in which two main components—urban farms and community gardens—can be developed and used appropriately according to land availability.

Regenerative urban farms and community gardens in our strategy are where food is grown bio-intensively using organic waste. The latter is supplied by families and businesses in the area, in exchange for coupons redeemable in the local market. The strategy also calls for urban farms and community gardens that transform organic waste into compost.

Figure 2. Closed-loop. Regenerative Urban Farm/Community Garden

The strength and viability of our urban agricultural system rests on the regenerative cycle with which the soil substrate is enriched.

Bio-intensive cultivation with compost not only quickly rebuilds the organic matter in the soil, minimizes water consumption, and increases crop yield, but also allows the soil to capture more carbon, turning agricultural activity from a cause of climate change into a solution. Plus, there is the additional advantage of providing fresh, nutritious food to the city, while mitigating the carbon dioxide emissions caused by transportation if it were brought in from outside the city.

For farmland, the strategy reuses abandoned, underutilized land close to the town, or on the margins of the city. Urban farms can be vacant lots with an area equal or greater than one acre of public or private property for the cultivation and production of food. Community garden are focused on recovering underused and deteriorated smaller spaces, preferably with a minimum size of 15,000 square feet, and transforming them into green spaces for community productive gardens.

Both urban agricultural systems have many possibilities of being incorporated into the urban fabric. This is true due to the fact that each city has vacant lots somewhere in its domain— such as along freeways, in abandoned lots near low-income housing, or elsewhere.

Role of strategic actors

The implementation of the strategy requires regular and fluid communication and coordination of efforts between the civil society/ local/neighborhood community, government authorities and non-governmental organizations. It is also essential that the three actors share a genuine interest in promoting the creation of community gardens and urban farms.

Civil society

The creation of urban spaces for food production begins with the initiative of the people of the local community— groups with scarce resources and unsatisfied basic needs.

In our strategy local communities are encouraged by government and/or a community organization to organize with those who are interested in creating a community garden or an urban farm. This will involve identifying underutilized and available local properties, and the management of their temporary or permanent acquisition. This group is also in charge of determining what food and crops are desired by the community and then establishing contact with those who have some previous experience with growing these crops. This group will also be responsible for the organization of work in the garden.

The need to build a network of volunteers who support the garden work is essential, both for social interaction within the community, and for linking with nearby schools and community organizations. Volunteering will spread appreciation for the development and coexistence of natural food environments within the urban space. It also encourages the cultivation of food at home by training family members in vertical gardens in small spaces.

The strategy has the local community setting the production and economic cycle of the community garden. They do this by promoting with families and companies the exchange of organic waste for coupons exchangeable for healthy foods at a lower price within the farm or in the local market. Likewise, in order to strengthen the household economy, they promote local production through a food exchange

monitoring system, a surplus market, and commercial alliances with local businesses.

Civil society at large can be of much help, by:

- Identifying the needs for fresh and affordable food
- Having an active role in cultivating vertical gardens in their apartments or schools
- Becoming part of the local food producers

By improving public gardens and greenery, vertical gardens, and community kitchens in multifamily and low-income communities, nutritional feeding goals and policies stimulate urban agriculture near affordable housing. Community gardening, sales of surplus produce from urban farms, education, and outreach to communities will enhance the resident's benefits of healthy, fresh fruits and vegetables.

Local Government/local authorities

The collaboration and support of government authorities is needed as the strategy focuses on community groups with limited resources, and not on a private business initiative interested in investing in the cultivation of vegetables.

Our strategy calls for local government authorities to offer a legal and financial framework that favors the creation of urban farms and community gardens.

The intervention of local authorities to offer legal protection is essential. An important legal issue is the use of underused and abandoned properties by the community. It is necessary to develop legal structures and incentives that grant community groups access to property to grow food.

Financing the start-up of these growing spaces and the groups that will transform them into productive food production sites requires resources or small amounts of money. These resources will be used to fence the work area, buy seeds and acquire basic tools. Labor is provided by the community.

Most local communities will have some level of knowledge on how to sow, cultivate, harvest and process the food from their community garden, but additional support will help obtain expertise and materials for vertical gardens and bio-intensive agriculture.

For our strategy to have maximum impact, as the community and urban gardens flourish, the city's government will identify and legally establish green belts for future growth of urban food production, thereby further reducing transportation and environmental costs.

NGO/environmentalist/scientist.

The presence of a non-governmental organizations will help support education in the community in areas such as bio-intensive cultivation of vertical gardens and plots, the formation of work teams to strengthen community collaboration networks, organization of productive and economic activities derived from the garden, and in the development of socialization schemes that disseminate in the community the appreciation and creation of natural food environments within the urban space.





In addition to the strategic actors described above, the valuable participation of environmentalists and groups of scientists and academics will favor the strengthening and development of community and urban gardens.

What technology is needed?

Urban farms and community gardens can stimulate regenerative food production to improve the overall health of the local ecosystem—as well as increasing the supply of affordable food for low-income families.

The recommended technology for urban farms and community gardens are bio-intensive bed systems and vertical bio-intensive crops. Biointensive bed is a cropping method that allows sustainable mini-agriculture. It is a process that enriches the soil, provides high productivity with low water consumption and preserves land.

Vertical bio-intensive cropping systems improves the efficiency of

	VERTICAL FARMING ¹⁵	HYDROPONIC GARDEN ¹⁶	AQUAPONICS ¹⁷	ROOFTOP FARMING ¹⁸
				
PROS	<ul style="list-style-type: none"> + allows crops to grow year-round + uses significantly less water + lower the exposure to chemicals, disease. + produce more food in tighter space 	<ul style="list-style-type: none"> + no pesticides + less labor + reduces nutrient leaching into the environment + complete control over climate 	<ul style="list-style-type: none"> + organic fertilizer + affordable + easy to maintain + space-efficient 	<ul style="list-style-type: none"> + improve the drainage system + temperature regulation + support wildlife habitat
CONS	<ul style="list-style-type: none"> + pollination would be difficult and costly + vulnerable to power outage 	<ul style="list-style-type: none"> + water-borne diseases spread quickly + vulnerable to equipment failure 	<ul style="list-style-type: none"> + not many crops available + high consumption of electricity 	<ul style="list-style-type: none"> + high-cost installation + an increase in weight load + require extra maintenance



Xoxoctic B system (plastic membrane)

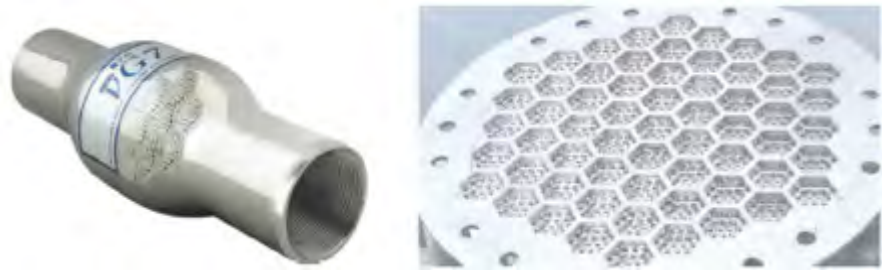
space and water even more. It is an ideal option for ecological revitalization in abandoned lots that have no agricultural possibilities, such as paved surfaces.

Compared to other urban farming alternatives, bio-intensive cultivation with compost quickly rebuilds the organic matter in the soil, minimizes water consumption and energy use, and offers higher crop yields, surpassing the efficiency and productivity of conventional agriculture. Table 1 compares it with other

food production methods.

Bio-intense food production allows the soil to capture more carbon, turning agricultural activity from a cause of climate change into a solution. Providing food to the city while mitigating the carbon dioxide emissions caused by transportation if it were brought in from abroad is another advantage.

Activator VG 7



Vertical bio-intensive crop: Xoxoctic B- Neu VG7 System¹⁰

This is system that provide the necessary conditions for the production of food in a space-conserving vertical mode. It can produce crops of vegetables, medicinal plants, ornamental flowers, and legumes.

One part of the vertical bio-intensive crop system is made with a plastic membrane that is composed of recycled materials that provide a thermal balance to plants and offers a high resistance to inclement weather. Its size makes it very flexible to install in small or large urban spaces. It is 45 cm in diameter, 115 cm high, and has 68 cavities for cultivation.

The second part of the unit is a stainless steel “activator” which is designed to clean and “revitalize” the water used to grow the crops.

It has a powerful bactericidal effect which is effective against E-Coli, Staphylococcus Aureus, Legionella Pneumophila, and Salmonella Enteritidis among other harmful bacteria.

The treated water helps in the proliferation of beneficial bacteria in the soil, which helps in the development of the radicle, root, and plant body. Its placement is flexible in any type of hydraulic installation,



High production of one single membrane



Single membrane crop and high yield crop for commerce

Images of implementation



since its dimension adjusts to the water supply pipe, does not consume energy, or require filters. The technology has been certified by the Water Quality Association (WQA).¹¹

Among its advantages, this vertical bio-intensive cropping system can:

- Operate in abandoned lots that have no agricultural option, such as paved surfaces.
- Be effective inside and outside of greenhouses
- Meet a good deal of a family's food needs, occupying just 3 square meters per vertical unit.
- Produce surplus crops that can be sold
- Be an efficient in its consumption of water, ranging on average from 2 to 5 liters per day.
- Improve food quality with crops that contain nutrients that are either out of purchase range or not available nearby.
- Ensure a continuity of the harvests in small and controlled spaces.
- Enrich the local community economy and initiate a barter culture.



Sowing seedlings



Conservation of humidity
due to foliage proximity



Harvesting a
bio-intensive bed

Biointensive Bed

This form of food production enriches soil with dry leaves, organic matter, and compost. It too occupies relatively little space and has high yields. It does not require machinery or specialized chemicals, just human effort.

It is in use in more than 140 countries. It provides a viable solution for family food consumption, but can also be used in small-scale food production for commercialization due to its high yields.

The experience of growing food can change a person's life, not only because of the food they will consume but also because of an appreciation for a harmonious relationship with nature.

Its advantages include:

- Improved soil structure
- Retention of moisture
- Limited erosion.
- Increased micro and macronutrients
- Stabilized soil pH
- Neutralized toxins in the soil

And, like the vertical system described above, it can:

- Meet a family's self-consumption as well as provide a surplus for sale
- Enrich the local economy and the barter culture
- Improve food quality with crops that contain nutrients that are either out of purchase range or not available nearby

Strategy Summary

Typical food production systems in cities might vary from individual's rooftops or backyards to for-profit marketplace gardening and urban farms. Many cities are promoting community gardens because of their grassroots nature and potential for community development.

The transformation of vacant or abandoned land to a variety of urban agriculture and the expansion of current urban agriculture can be aided by open-space goals and laws. Experiences in cities like Toronto, Canada, and Rosario, Argentina prove that significant progress in producing nutritious food at low cost while improving the local economy and having a social impact on low-income families is possible.¹² Local governments can do a lot. Tax incentives can stimulate urban agriculture production on vacant lots in low-income neighborhoods, as well as the start of a "food hub" where surplus production from the myriad urban agriculture plots can be consolidated and then sold to schools, restaurants, hospitals, and other bulk buyers of fresh food. In addition, economic development policies can lead to new funding mechanisms for urban agricultural production.

By improving public greenery, rooftop gardens, and community kitchens in multifamily and low-income communities, housing goals and policies can stimulate urban agriculture near affordable housing. Community gardening, sales of produce from urban farms, education, and outreach to communities can also enhance the resident's benefits of healthy, fresh fruits and vegetables.

Cost

The productive viability of bio-intensive beds is widely proven in the more than 140 countries where it has been used.¹³ Compared with the traditional cultivation system, the yield is twice the production per square yard. It is a high-performance production system that has the added advantage of low production costs because community members do not receive wages to work their cultivation sites. The financial success of urban food producers increases as community gardens and urban farms

Chart 1. Biointensive Community Garden strategy financial summary

Total investment (start-up + running)		\$27,500
Start up		\$23,500
Bio-intensive bed	Seeds: \$ 2 per bed x 64 beds	\$128
	Compost: \$ 15 per bed x 64 beds	\$640
	20,000 liter tanks \$ 2,750 x 3	\$8,250
	Tool storge shed 6m2	\$3,750
	Materials and tools	\$732
	Training program	\$2,500
Vertical bio-intensive orchard	Greenhouse -for vertical orchards (membranes) and seed-bed- 8m x 10m	\$1,170
	Membrane \$ 125 each x 36	\$4,500
	VG7 \$ 275 each x 6	\$1,650
	Growing substrate \$5 per membrane x 36	\$180
Running		\$4,000 annually
Administration and maintenance		\$4,000
Needed resources		
Materials	Seeds, crop tools, office supplies and other supplies	
Labor	Operators, educators, volunteers, dozens of family/local investors	
Production		
Measurable positive results	Supply of approximately 24,000 pounds of vegetables per year. Equivalent to 240 pounds / person. Business opportunities and entry to local markets.	

acquire the potential to offer surplus food in local markets at affordable prices. When this happens, it will be necessary to consider the basic administrative expenses, to manage the flow of goods, supplies and operations of the commercial network.

The information on the previous page describes the estimated cost of a community garden for a single community of 100 people. This can be on a larger scale for a town or small city, as the below can be replicated as many times as needed, depending on the amount of vacant land available.

A community garden with an estimated size of 15,000 square feet, (100 feet x 150 feet) made of 64 biointensive food production beds, a tool storage shed, three 20,000-liter water tanks and professional assessment would have an approximate start-up cost of \$16,000 US. An additional 860 square-foot greenhouse for 36 vertical bio-intensive orchards would have an approximate cost of \$7,500 US. As surplus food advances and is brought to market, operating costs hover around \$4,000. See chart 1 for details.

Where do the support, resources, and money come from?

Community gardens and urban farms development can be accelerated by support and funding from a variety of sources, including those within and from outside the community. Such seed-money funding and support can come from a number of sources:

1. **International sources.** The World Bank's Urbanization Reviews provide a framework for local governments to make difficult decisions about their cities' development by providing diagnostic tools for identifying policy distortions and analyzing investment priorities. Additionally, the World Bank and GFDRR (tell us what these initials stand for) have a collaboration on the City Resilience Program (CRO). Supported by the Swiss State Secretariat for Economic Affairs (SECO) and the Austrian Federal Ministry of Finance, the program was launched in June 2017 as a multi-donor initiative to expand financing for urban resilience. There are also foundations that support urban agriculture start-ups that could be approached.
2. **National sources.** Federal governments obviously have an interest in the well-being of their cities and citizens. Federal agriculture departments, urban affairs and community-building

concerns can be a source of funds to the enterprising city and its urban agriculture program.

3. **City sources.** As community gardening and urban farming benefits become more evident, many municipal governments around the world have implemented rules and legislation that authorize or promote community gardens and urban farming. City governments have a particular role in encouraging urban gardens and farms on both public and private land. Financing and land policies will make a shift in the startup of urban agriculture much quicker. Land-use policies can provide for certain public land to be used for gardens or farms and land disposition policies can allow surplus city and county properties to be purchased for urban agriculture.

Other than zoning, other local rules might be utilized to sanction or promote specific urban agriculture operations for example, a city's purchasing department can agree to buy any surplus produced by urban gardens and farms. The support of local government is key to a sustainable development of urban agriculture.

Funding can come from city administration funds as well as from federal funds, privately funded corporations, philanthropy, insurance companies, and community fundraisers.

Impacts

Urban agriculture increases food security by offering fresh and nutritious alternatives for purchased food, particularly in low-income communities. Households that engage in urban agriculture have access to a broad range of nutritious vegetables. Intensive gardening maximizes the number of calories/vegetables that can be produced, allowing people to get the most from even the smallest area. It is ideal for all city sizes, from metropolitan areas to small cities. It will improve nutritional and crop diversity, farm yield efficiency, and food security—and when there is a surplus, the economic well-being of the food producer.

The strategy has a positive impact on various Sustainable Development Goals. It empowers families and neighborhoods to generate affordable food, adding to the goal of zero hunger (SDG #2). When surplus food is sold, it improves economic conditions and reduces poverty (SDG #1). Abandoned and underused spaces are adapted for food production, transforming them into green urban ecosystems,

promoting more sustainable communities and cities (SDG #11). Urban organic waste is incorporated into the growing cycle, ensuring affordable forms of sustainable productions and consumption (SDG # 11, 12). Climate action is furthered by eliminating organic waste as a source of pollution by reincorporating it in the circular crop cycle, contributing to the reduction of greenhouse gas emissions (SDG #13).

Conclusion

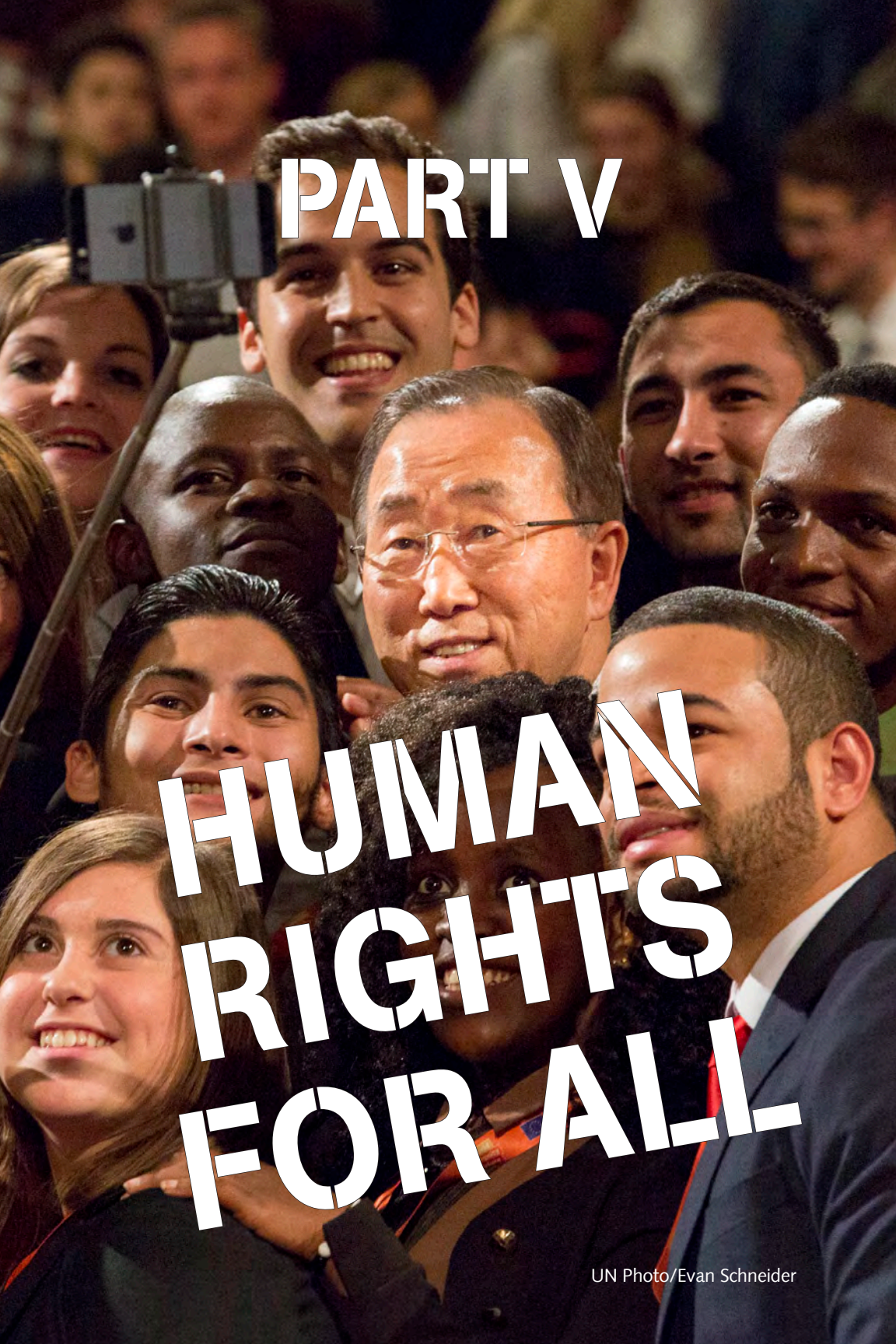
In emerging countries, urban agriculture plays a large part in food security. It is extensively practiced in developing nations like India, Vietnam, China, Cuba, Ghana, Uganda, and Kenya, and produces an impressive percentage of the urban food supply. In Cuba, for example, over 300,000 urban gardens and farms produce 50% of Cuba's *entire* fresh produce— as well as 39,000 tons of meat and over 200 million eggs.¹⁴ In both metropolitan and peri-urban locations, urban agriculture provides a wide range of agricultural options. It helps local economic growth, reduces poverty and hunger, builds community and social inclusion of the urban poor and women, as well as city greening and profitable organic waste reuse.

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PART V

HUMAN RIGHTS FOR ALL

UN Photo/Evan Schneider





STRATEGIES:

- 1. Human Trafficking**
- 2. I Am Human**
- 3. Combating Human Rights Violations:
E.A.R. Smartphone and Tablet
Application**
- 4. A Better Future for Women and
Children: Female Empowerment**

1. HUMAN TRAFFICKING: BREAKING THE CYCLE

By Katey Fardelmann and Sarah Ferst,

Strategic Summary: *Human trafficking is a moral outrage and an economic disaster. It could be eliminated if the supply and demand, “the market,” of men, women, and children for the purposes of sexual exploitation and forced labor could be eliminated. Human trafficking is a cycle that can be disrupted at multiple points. There are opportunities for trafficked persons to seek refuge, however a large portion of these individuals return to enslavement due to the lack of knowledge of other economic opportunities. Former slaves need a source of income. Many lack skills and education needed to enter other career paths. Current efforts to achieve the Millennium Development Goals neglect the issue of human trafficking despite its connection to seven out of the eight MDGs.*

Journey to Freedom (J2F) *is a strategy that addresses the need to free the human slaves caught in human trafficking. It works to provide education and training needed for recovering victims. In order to achieve this, stage one of the J2F calls for the building of eleven community centers throughout Southeast Asia where victims can go for refuge and training/education. J2F’s website will connect other organizations advocating for victims of human trafficking. This website will create a database of human trafficking offenders and a partnership among organizations with similar visions. J2F will bring international attention to the human trafficking situation. It will put pressure on local governments to follow international statutes and treaties.*

Introduction—the Present State¹

- 2.4 million people are lured into forced labor, including sexual exploitation
- Of this number, 56% are in Asia and the Pacific; this amounts to three people per 1,000 inhabitants unwillingly trapped
- Women and children account for 80% of *detected* victims, as many victims go unnoticed
- The total market value of illicit human trafficking is equivalent to \$32 billion. \$9.7 billion of this market is generated in Asia and the Pacific

- The majority of trafficked victims are between eighteen and twenty four years of age and have obtained at least a middle level education
- In 46% human trafficking cases the recruiter was known to the victim
- For every 800 people trafficked, only *one* person was convicted.

There are few concrete statistics on the causes of human trafficking. There are however a number of general trends:

- Where there is organized crime, human trafficking is more common
- Where the rule of law is not enforced, human trafficking is more common
- Where human trafficking and slavery is kept hidden from scrutiny, human trafficking is more common
- Where there is a lack of tolerance for gender, religious and economic difference, human trafficking is more common
- Where there are unmet demands for cheap labor and prostitutes, human trafficking is more common.

There are many organizations and nations fighting human trafficking. J2F has identified a gap in these efforts in regards to public awareness, united community and regional efforts and in the opportunities for victims who are rescued to reintegrate into society. If this gap is not filled, the horrors of human trafficking will continue.



The above chart outlines the “human trafficking cycle.” Beginning on the left with the main causes of human trafficking, these include extreme poverty, levels of education, lack of awareness and various cultural norms and moving to the right through trafficking channels and the consequences. Victims themselves are extracted from the conditions of extreme poverty by organized crime and sold in human trafficking markets resulting in either more vulnerable human beings or in a very few cases rescue and reintegration.

Victims need to be rescued and reintegrated back into society as productive and confident citizens. *J2F*’s projects address both the supply and demand sides of human trafficking.

Preferred State

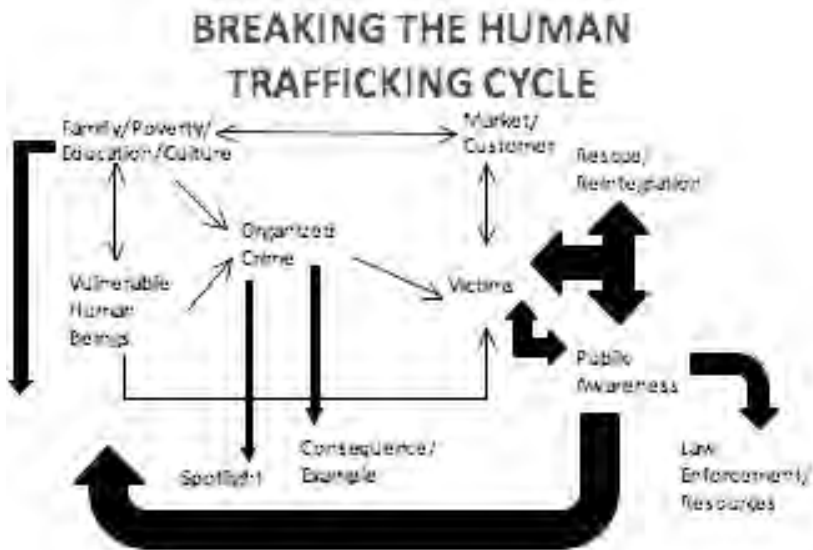
The preferred state to the one which exists today is one that is characterized by:

- No children, women and men trafficked, anywhere, for any purpose
- Human trafficking market reduced to \$0 annually
- The world socialized to see slavery as horrific, unacceptable and taboo
- Communities educated on the causes and consequences of human trafficking
- Communities provided with the tools to protect and prevent human trafficking
- All human beings fight aggressively and openly against the exploitation of fellow humans and cooperate to form a united front against all forms of human trafficking and human rights abuse.

Strategy: Breaking the Human Trafficking Cycle

J2F breaks the human trafficking cycle at four intervention points identified by the bolded arrows in the chart above. The *J2F* design includes four main components:

- Networking
- Establishing prototype centers in Southeast Asia sites
- Expanding these centers into community home bases
- Empowering local, national and international law enforcement.



Stage 1—Networking

J2F Website: The purpose of the *J2F* website is to unify the current global human trafficking eradication effort and create a link between cooperating international organizations to fight human trafficking. The website will be a communication tool as well as a news source and forum on the issue. The *J2F* website will promote awareness and help bring the underground activity of human trafficking to the surface.

Database for Human Trafficking Offenders: This database will provide the public information about human trafficking offenders, including their name, age, address, photo, gender, race, past convictions and current crime. (“Normal” privacy and identity concerns are waived and considered irrelevant for such serious crimes against humanity.)

The purpose of the database is to bring attention to offenders rather than innocent victims. *J2F* will provide a template for profiling offenders that will be put in the database. This database will be available to be viewed by the public and will be secured for authorized personnel to make updates.

Network of Organizations: *J2F* will create partnerships with local organizations with similar human trafficking eradication goals. While each organization will maintain their specialized efforts, they will work together

to establish a “universal dictionary”²² of human trafficking terminology. Such a “dictionary” will help human trafficking eradicators better present a united front against human traffickers locally and regionally.

The network of organizations will also have an increased ability to promote public awareness and put pressure on local law and government officials.

Stage 2—Establish J2F Centers

As the above-described network is being established, eleven centers will be built throughout the Southeast Asian region in human trafficking hot spots. These *J2F* Centers will provide shelter, refuge, education, awareness and training for those seeking employment.

The *J2F* training program will help victims regain security and self-worth and provide them with an opportunity to compete in the workforce. The training program will include courses such as literacy, teachers and counselor training programs, computers/new technology training, cosmetology and textile training. The staff at each *J2F* Center will be hired locally to account for cultural variations, local knowledge and economic opportunities.

The stars in the map on p. 275 show where the *J2F* Centers will be located. These areas were chosen based on statistics regarding human trafficking hot spots and red-light districts.

Stage 3—Community Action Center

Training will be provided for victims who come to the center as well as for the local community. Every effort will be made to engage the community in the fight against human trafficking and to help combat poverty. Training will be provided on a “loan” basis. Upon graduation and accepting a job position students are expected to repay the cost (or a portion of the actual cost) of their rescue and training. The amount of the cost will be on a scaled basis based on the salary of the new job. The funds obtained in this way will both help the dignity of those being helped and help the center remain sustainable.

Stage 4—Law Enforcement

Through the *J2F* Network and Centers, increased pressure will be put on the local community and local law enforcement authorities to uphold domestic laws and international statutes regarding human trafficking. *J2F* will work with the other organizations addressing the lack of legislation enforcement.



Costs and Goals

Goals for each *J2F Center* include:

- Each Center serving 1,000 human trafficking victims per year, and 500 local residents per year
- 90% of the students trained at the Center earn above average wage
- Each Center raises \$5,000 a year through the 5% graduated program participants reinvest in the Center's programs (return on the original investment which allows the Center to be a self-sustaining business)
- Each of the local *J2F* network of organizations consists of 80% of the human trafficking organizations in each region
- The *J2F* database grows by 25% per year
- Local government contributions to combating human trafficking increases 45% by 2040
- Prosecution and convictions for human trafficking increase by 75%.



Conclusions

The eradication of human slavery and the trafficking of human beings will advance the welfare of the millions of individuals caught up in this horrifying perversion of our basic humanity. Eradication will also have positive impacts on local and regional economies as the education, training and transformation of former victims into productive members of the economy will make everyone better off.

Human trafficking is connected to achieving at least seven of the eight MDGs. The chart below outlines these connections. Human trafficking is so interconnected with the achievement of the MDGs that it should be included as the ninth goal.

Endnotes

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http://www.unodc.org/documents/Global_Report_on_TIP.pdf
http://www.humantrafficking.neu.edu/responses/federal_human/
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<http://www.globalrights.org/site/DocServer?docID=643>
http://www.unodc.org/documents/treaties/organized_crime/Final_report_English_TIP.pdf
<http://www.ungift.org/ungift/en/initiatives/parliamentarians.html>
<http://www.visayanforum.org/portal/index.php?option=cms&mode=view&id=4>
<http://www.unesco.org/most/migration/ctsea.pdf>
http://www.unodc.org/documents/blueheart/Fact_sheet_english.pdf http://www.unglobalcompact.org/docs/issues_doc/labour/Forced_labour/HUMAN_TRAFFICKING_-_THE_FACTS_-_final.pdf

2. I AM HUMAN

HUMAN RIGHTS AND HUMAN NEEDS

By Thayvie Sinn & Tselane Hall

***Strategic Summary:** Human rights are essential to the cultural, economic, social and psychological well being of humans. Many citizens of many countries throughout the world have little to no awareness of their human rights and are exploited by leaders and others who use this ignorance to their own advantage. Making people aware of their **right** to human rights, and what these rights are, is an effective technique for moving the battle for human rights forward. A specific country, Cambodia, is used to illustrate the overall strategy.*

Introduction

Present day Cambodia has limited access to technologically advanced devices for promoting awareness of human rights and meeting all of its basic human needs. Much of the country does not have its basic human needs met and there are limited freedoms of expression and opinion.

Preferred State

The ideal Cambodia is one where there is universal access to basic human rights and where the country's basic human needs for food, water, shelter, energy, health care, and education are met.

Strategy

Our strategy features a creative mix of radio programming, music, collaborations with musicians to create songs that popularize human rights, wall murals, photography, mobile games, and comic books featuring a human rights super hero—will be blended together in a way that will reach Cambodian youth and the general public and transform their awareness of their basic human rights.

Radio

The weekly 30-minute radio program is focused on delivering unbiased information to its general audience. This information includes celebrations of the country's history, literature, culture, and tradition—as well as human rights awareness.

The production of the radio program begins with contacting various

U.S. and Cambodia based universities. Working with a university, we will develop a class in which students formulate episodes for the educational radio program. Episodes will contain segments on human rights plus Cambodian history culture and traditions.

Music

A part of our strategy is to sponsor a human rights song-writing contest. We would market this contest on YouTube to the music artists found there. The human rights songs would be distributed through iTunes and distributed throughout Cambodia via the above mentioned radio program.

Comic Books and Murals

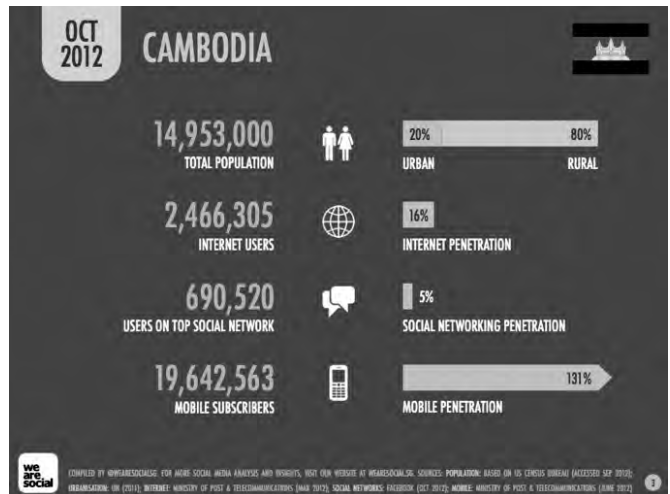
Another part of the strategy is to develop a visual presentation of a world in which human rights are attained. The way we see doing this is through comic books and murals.

To begin this facet of the overall strategy, we will contact comic book artists and get one or more of them to develop a “super hero” character for a human rights comic book series. Each human right will have a comic book.

Mobile Phone Game

Another part of our strategy is the development of a mobile phone game that would teach players about human rights. This effort would be in collaboration with phone companies in Cambodia.

The chart at right shows that most of Cambodia has access to mobile phones. Developing a human rights mobile game with incentives for high scoring individuals would be a quick way for Cambodians to learn about their rights. Presently Cambodia has three mobile phone companies and as the above chart suggests some Cambodians already have more than one phone. The three



telecommunications companies will be approached to sell them the mobile human rights game as a help to them in selling more phones.

Cost

One way to raise the funds needed to move our strategy forward is the production and sale of wrist bands, t-shirts, ad bags, and more which will state each human right, one at a time, depending on the most needed-



at-the-time human right. The first statement the merchandise will display will be the general message, I am human, I have rights. After the general merchandise, each wristband will be chosen by the human right considered to be most needed. Ex. Human Rights #26: The Right to Education.

Grants, sponsorships and partnerships will be sought to fund and help move the overall strategy and its various parts, forward.

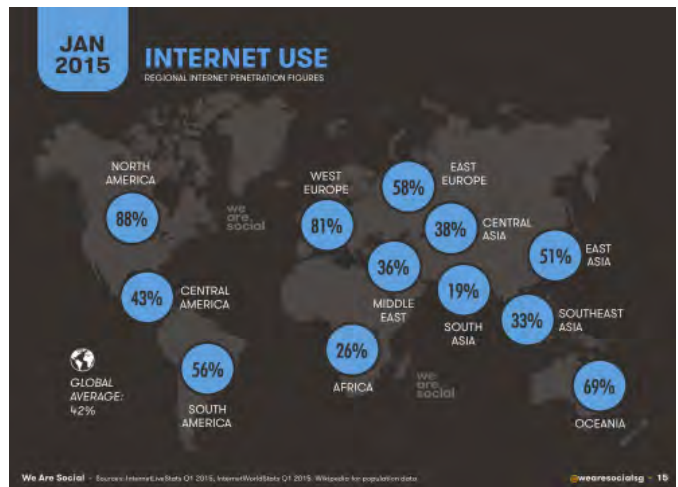
3. COMBATING HUMAN RIGHTS VIOLATIONS: E.A.R. SMARTPHONE AND TABLET APPLICATION

By Rahaf Alsaieri, Saudi Arabi, Cynthia Brain, USA, Milene Mpon A Mbassa, Lea Sanders, USA

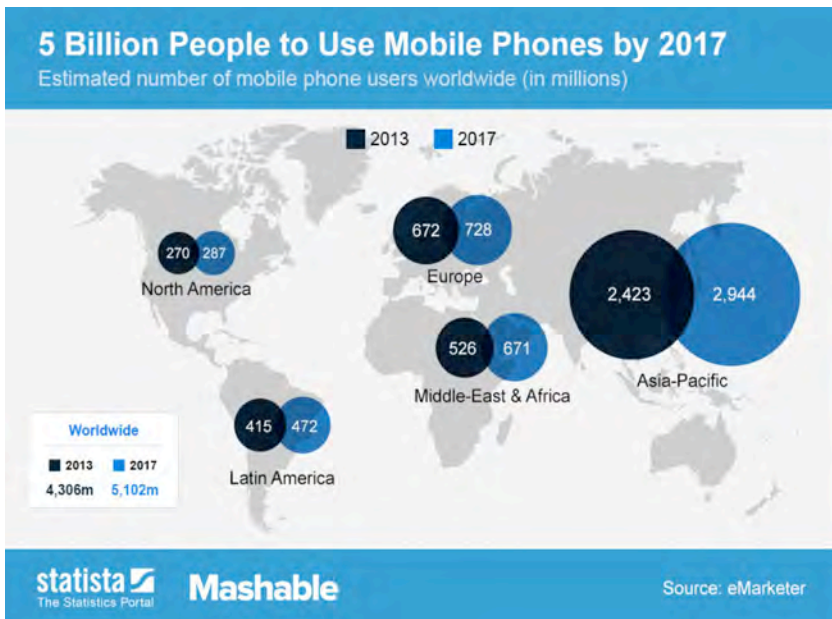
Strategic Summary: Every day, people around the world have their 30 (if we mention “30 fundamental human rights”—we need to say what they are somewhere) fundamental human rights, stated in the UN Declaration of Human Rights in 1948, violated and have no safe place where the victims can report these violations without placing themselves in harm’s way. The strategy presented here allows people to report human rights violations using a smartphone and tablet application that allows for the safe reporting of human rights violations. The application is called E. A. R. This app is designed to decrease the amount of human rights violations by educating populations about what the 30 human rights are, creating awareness by having interactive games, and a safe place to report any violations. By having this app accessible across the world using technology already and increasingly available to mass populations, awareness of human rights will be dramatically increased, and people will have a safe and secure place to report violations, thereby giving power back to the people who have their human right violated the most.

Current State/ Problem State

It is estimated that 35 percent of women worldwide have experienced either physical and/or sexual violence at some point in their lives. (Needs footnote) Every year 600,000 to 800,000 persons are trafficked across international borders. (Needs footnote) There are 12.3 million slaves



around the world. 0.4% of victims are identified. 8.5 to 100 is the ratio of convicted offenders to victims identified. (Needs footnote) More than 300,000 children under the age of 18 are being exploited as child soldiers in armed conflicts worldwide. (Needs footnote) Many children are abducted and beaten into submission, others join military groups to escape poverty, to defend their communities, out of a feeling of revenge or for other reasons.



Preferred State

A Preferred State for human rights in the world is:

- 100% of humanity are *aware* of their human rights as stated by the Universal Declaration of Human Rights by the United Nations.
- There is universal acceptance and agreement that human rights are essential.
- Everyone with human rights actively works to make sure that all of humanity has access to these human rights.

Preferred State

- Global **awareness** about human rights
- Universal **acceptance** of human rights
- Global **activism** for human rights
- Global **participation** with the E.A.R. app



Strategic Plan

for Eliminating Human Rights Abuses and Getting to the Preferred State

The E.A.R. Application—

Education leads to Awareness leads to Responsibility

*We seek to **EDUCATE** people about human rights, ensure that they are **AWARE** of their rights and empower human **RESPONSIBILITY**.*

The E.A.R. application is intended to enable people from around the world to learn of their human rights, monitor these same rights and to report violations of them to a variety of authorities that can do something to correct the situation.

The app will work on any smartphone. It will enable its user to learn what their rights are. It will enable them to also report human rights violations in a way that keeps the reporter safe.

Here Is How E.A.R. Works:

There are three components to the E.A.R. application:

- Education
- Awareness
- Reporting/Responsibility

Each of these components work as an integrated whole. The E.A.R. application components are designed to be accessible to everyone including people with disabilities or people who are illiterate. The E.A.R. application will be customizable to each country or location. A language option will also be available.

When a human right violation is witnessed, it will allow the user to send in a report of that violation. This report will go to a variety of authorities at different levels to ensure that the human rights violation gets out to the world at large—and to put local authorities on notice that the situation in their locality is now being observed by the larger world. The human rights violations will be automatically, and anonymously uploaded to the following sites:

- Local police
- State or regional police
- National police
- International police (INTERPOL)
- Amnesty International
- Human Rights Watch
- E.A.R. website and Facebook pages where the report will be logged and mapped
- YouTube, Instagram, Twitter will also have E.A.R. reportage.

Each week a press advisory and newsletter will go out reporting to the global press what has happened in the world of human rights violations in the previous week.

1. Education Component

The *Educational Component* of E.A.R. will list the Human Rights everyone in the world is entitled to. It will contain visuals, examples and interactive features that will help people of all ages understand each of their rights. There will be facts and figures about human rights

violations. There will also be auditory explanations for those who are unable to see or read.¹

2. Awareness Component

The *Awareness Component* will feature discussion boards where people can have conversations with people within their communities about what's happening all around them. There will also be a Further



Support/Help/Counseling Resources section for people who need human rights counseling or help in their communities. There will also be an *Invitation to Join* tool where people will have the capability to invite other people to download the E.A.R application via their existing contacts.²



3. Reporting/Responsibility Component

The *Reporting/Responsibility Component* of the E.A.R application is its most unique and important feature. This section gives people the power to report human rights violations. Once a user has reported a violation, they will receive a confirmation that their report has been submitted and being reviewed. It will also give the user contact information to their local, regional, and governmental police stations to give them access to those entities and possible prosecution of human rights violations if they wish. The app will also give the user a list of locations to receive help and counseling if they feel they need further assistance to ensure their safety and recovery. The app encourages and empowers human rights responsibility, and literally puts the power to combat human rights

violations in people's hands. It will be designed in such a way as to protect the user's anonymity and safety.

There will be a variety of ways that the users of E.A.R. can report. These include:

- Recording a video
- Taking a picture
- Recording their voice
- Writing a report.

Reports will be collected based on the reporters' location and the type of violation.³



Cost: E.A.R. Application's Budget

A smartphone and tablet app like the one we have briefly outlined, which has both an educational and reporting component, will cost an estimated of \$350,000 USD⁴ to develop. That cost includes the development of the application and having it downloadable onto any iPhone IOS and Android devices. In order to make this application most effective, we have created a campaign for people to become aware of the existence of the app and how to properly use it. The worldwide campaign will cost anywhere from \$250,000 to \$5,000,000 USD depending on the magnitude of the campaign and the different resources which could be used to gain the most amount of access to people. Roughly, the total least-cost budget for the development and a yearly campaign for E.A.R. will be between \$500,000 and \$600,000.

The United States alone spends an upward of \$124 million a year trying to combat human rights violations. The total costs of the E.A.R.

strategy over a ten-year timeframe would be between \$1.8 and \$3 million. This is significantly lower than the \$1.2 billion that will be spent over the next 10 years by just the U.S.^{5, 6}

E.A.R. Campaign

The E.A.R. Campaign will consist of making sure everyone around the world is aware of the existence of this app, its uses and benefits. One of the goals of the E.A.R. Campaign is to increase human rights activism by orders of magnitude through the empowerment of citizens around the world to work against the violation of human rights.

The design the E.A.R application is critical. Making sure that its functionality and safety are of the highest standards will be paramount. It will be tested throughout the world to make sure it is effective.

Implementing the E.A.R. strategy will feature collaboration with nonprofit organizations that are participating in the promotion of human rights, as well as businesses and technology companies. In addition, we will recruit volunteers in institutions such as schools and community centers.

Awareness workshops will be developed within specific localities around the world. These will have the purpose of providing more knowledge about the E.A.R. application, train populations on how to use the application, and explain the responsibilities about human right that we all have as citizen of the world.

The development of social; media outlets such as Facebook, YouTube, Instagram and Twitter are a key factor in reaching the public. For example, the social media aspect of the E.A.R. application will allow the public to access existing reports, visit the E.A.R. website, contact E.A.R. for additional information concerning the application in the app, make suggestions for its improvement, and becoming more active and effective agents of E.A.R.

E.A.R. Campaign



In addition, there will be incentives developed during the E.A.R. awareness workshops to increase the participation on reporting human rights violations via the E.A.R. application.

The data reported from around the world via the E.A.R app will be analyzed. This analysis will be regularly reported to institutions and the media throughout the world.

The Future for E.A.R

The Next Six Months:

- Develop detailed design specs for the E.A.R. app developers
- Develop proposal(s) for funding the development and implementation of the application
- Develop links and collaborations with existing organizations

The Next Three to Five Years

- Develop, distribute and install the app in existing smartphone and iPad platforms
- Organization of launch/ campaign on the purpose of the app as well as its mode of utilization
- Continue development of subsequent and advanced versions of E.A.R.

Impacts and possible results of E.A.R.

By having the E.A.R. app installed on smartphone and tablets, individuals will be encouraged and empowered to be more responsible for their own human rights and those of others. E.A.R. will help give people the knowledge of what their rights are, and the specific human rights violations in their area. The E.A.R. app will help governments and organizations like the UN, Amnesty International and Human Right Watch collect data on where certain violations are occurring in the world, what is being done pertaining to each right, and where they should put most of their aid and/or money into improving the status of human rights. E.A.R. will increase the pressure on and responsibility of countries to make changes that decrease the amount of human right violations in their region. The app will help countries and organizations justify the money spent on protecting human rights because violations will be well documented. E.A.R will help countries and regions to better focus on certain issues of human rights when they see the reports coming in. Not only will the app lead to the decrease in the amount of human rights

violations, but it will also bring a larger sense of community around the world. People with similar human rights violations experiences will be able to connect with each other and create a global support system.

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4. A BETTER FUTURE FOR WOMEN AND CHILDREN: FEMALE EMPOWERMENT

By Ashley Hock (United States), Duaa Khawjah (Saudi Arabia), LADE Z. Mouni Audrey (Côte d'Ivoire), Erin McLaughlin (United States), Iyia Mujalled (Saudi Arabia), Hajrah Najam (United States), Mariam Samashvili (Georgia)

"There is no tool for development more effective than the empowerment of women."

-Kofi Annan

***Strategic Summary:** In order to reduce human rights violations in the developing world, our strategic plan utilizes university students and faculty from developed countries working with women in developing countries to develop a business, such as a sewing company. Students and faculty help create a business plan, teach the women the skills they will need in order to sustain their business, and mentor the new business women. The program provides at-risk women in developing countries a sense of purpose, income, and increases their power, safety, security and economic productivity within the community.*

Introduction

Around the world women and children experience human rights violations. As a consequence, over half the population cannot fully and effectively contribute to society. Until people acknowledge women's and children's rights, and provide opportunities for these rights to be exercised, the world cannot reach its full potential.

Every woman and child has the right to protection, safety, respect and dignity. The Universal Declaration of Human Rights lays out standards that seek to improve the quality of life for everyone.⁷ When women and children have access to all their rights, the world will be safer, more secure, humane, and productive. We cannot reach such a

world until we combat child marriages, child labor, human trafficking, child and maternal mortality, extreme poverty, and the lack of economic opportunities for women.

Present State: Child Marriages

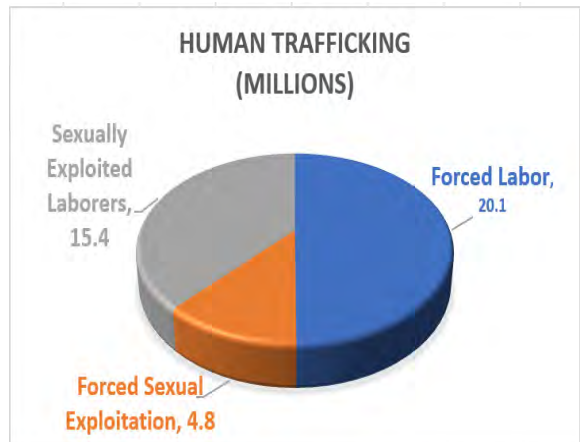
650 million girls and 150 million boys are forced to marry before they reach eighteen years of age.⁸ This is twice the population of the United States. Child marriages impact more than just the girls. The children born to child brides are sixty percent more likely to die in their first year of life.⁹

Child Labor

There are an estimated 152 million child laborers.¹⁰ Around 73 million of them work in hazardous conditions such as mines. The number of child laborers is about half the United States population (327 million).¹¹

Human Trafficking

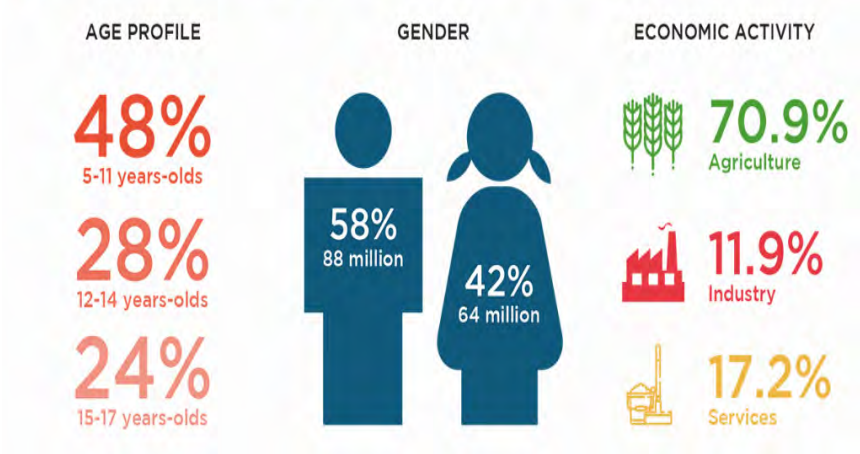
In total, there are an estimated 40.3 million victims of human trafficking.¹² However, the number is most likely much higher because many victims remain unidentified. Most victims of human trafficking are women and children. Globally, human trafficking is a \$150 billion industry. This makes it the second most profitable criminal industry behind drug trafficking.¹³



Child Mortality

5.4 million children under the age of 5 died in 2018. This is more children than the total population of Rhode Island, Delaware, Wyoming, Vermont, Washington, D.C., Alaska and North and South Dakota combined.¹⁴

OF THE 152 MILLION CHILDREN IN CHILD LABOUR



Extreme Poverty

767 million people in the world live on less than \$1.90 a day. Empowering women economically will help lift people out of poverty and reduce extreme poverty at an exponential rate.¹⁵

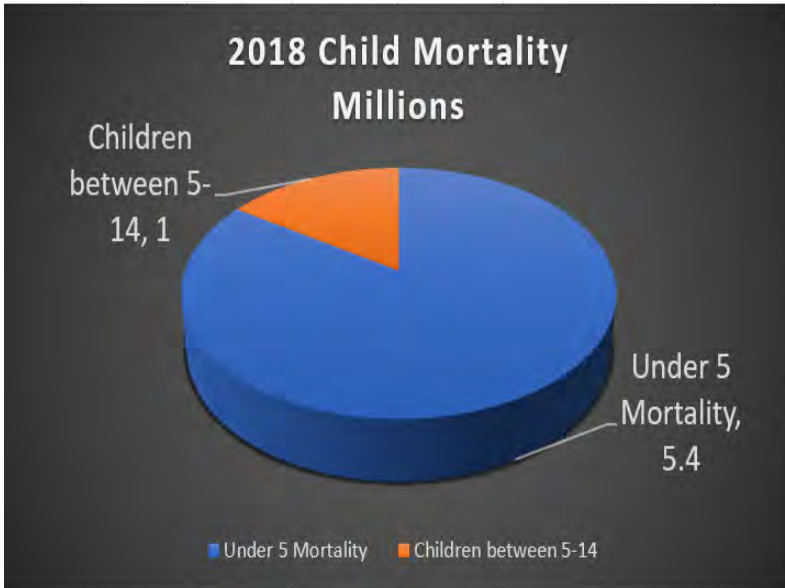
Preferred State

The Preferred State to the above tragic conditions is one where:

- Child mortality, for every child in the world, is at the same level as children in the developed world. (The lowest child mortality in the world is 2 per 1000 infants. The highest, in Sub-Saharan Africa, is 78 per 1000 infants.)
- Child labor is outlawed throughout the world and these laws are enforced.
- Child marriages are outlawed throughout the world and these laws are enforced.
- Human trafficking is outlawed throughout the world and these laws are enforced.
- Women have the opportunity to participate fully in their society, including opportunities for business development.

The Strategy

Our strategic plan empowers women in such a way that it reduces human trafficking, child marriages, child labor, extreme poverty, and the child



mortality rate while providing employment, income and power.

The strategy reduces human rights violations by providing trained developed country university faculty and students the opportunity to go to urban communities in developing countries to work with women on developing businesses that meet community needs. They do this by teaching and mentoring women who have been victimized by abuse, neglect, enslavement, and poverty. The faculty and students work with women on developing start-up businesses in their communities, teaching them business and life skills as they go.

The program is embedded within an NGO that works with the university, faculty and students.

Strategy Prototype: Zambia

The first phase of a strategy to accomplish the above involves a university reaching out to orphanages/rescue centers for girls and women within marginalized communities. If this effort is met with interest and a desire to move forward, then a needs assessment is performed. Such a start helps build a strong relationship that is essential for a successful, sustainable partnership.

This is, in fact, is what has already happened in Zambia. A partnership was formed with a rescue center for girls in Zambia. A

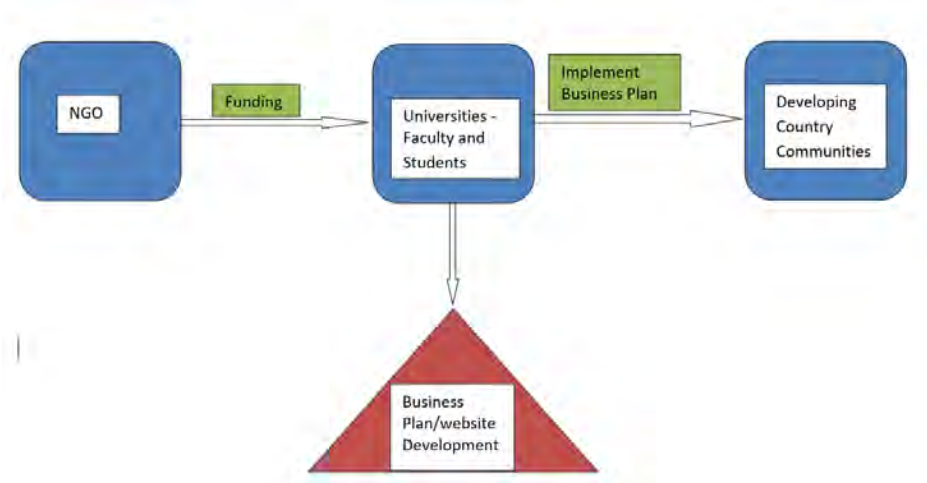
needs assessment was then conducted. It helped determine that a sewing business was both needed by the community and wanted by the women in the rescue center. Students and faculty from a university in the United States worked together with the center in Zambia to develop a business plan based on both the local Zambian market, a fair trade market, and an online market.

Students and faculty assisted in implementing the plan on the ground. This includes hiring local trainers, renting local space, and utilizing start-up funds to purchase sewing machines and materials.

After the students and faculty returned to the U.S., the faculty completed an assessment of the program and experience which was sent to the coordinating NGO with whom they are working.

Zambia was chosen as the test site for this program because of the alarming statistics associated with education, child labor, child mortality, and child marriage. The International Labor Organization reported that 28% of children work, only 65% of children attend school, and 6% of children die before the age of five. Additionally, 31% of girls marry by age eighteen while 6% of girls marry before age fifteen.¹⁶ Where extreme poverty is defined as living below \$1.90 a day, 58% of the population lives in extreme poverty.¹⁷

The test program occurred at *Vision of Hope*, the rescue center for girls. Victims at this rescue center had endured inhumane conditions. In the rescue center they have found themselves in a happy, supportive environment. However, they still suffer from inequities. *Vision of*



Hope has enrolled many of the girls in school. Still, others are unable to complete it and need a skill to take them to the next stage of their life. The strategy empowers these girls and women to develop the skills necessary to find employment in the traditional Zambian marketplace. By empowering these women to be productive members of society the number of human rights violations are reduced. By equipping them with skills necessary to start a sustainable business, these girls and women do not fall victim to the abuses they had previously endured. In addition, these girls and women are now actively contributing to the broader economy by supporting local vendors with the money they earn through the sale of their products.



From Prototype to Impact: Scaling Up

In order to expand the prototype program beyond Zambia, our strategy targets NGOs in developed countries that share an interest in empowering women. These organizations include CNN Freedom Project, Shared Hope International, and The Global Fund for Women. Additionally, we target multiple organizations in developing countries that share an interest in protecting and empowering women. These include Vision

of Hope, The Jonah Project, and Prajwala. Once the effectiveness of this program is demonstrated, organizations will partner with large companies to provide the supplies needed to build businesses in the developing country. For example, Singer could provide sewing machines for the business in Zambia.



This program will help end human rights violations against women and children because nations where women have more opportunities for economic success, with its accompanying power over their own livelihood, are more likely to be safe from abusers and be able to thrive and solve challenges peacefully. Women in the labor market play a crucial role in poverty reduction.¹⁸ This in turn contributes to local, regional and global peace, development, and stability.

Needed Resources

The most important resources needed to implement programs of this nature include collaborating universities, university departments and faculty, local developing world rescue organizations, and a parent or organizing/coordinating NGO that connects the various players in this initiative. It also needs funding that fuel the efforts of these essential parts.

One possible path is for the NGO to reach out to possible universities through an RFP or just a communicate seeking an expression of interest. Once one or more partnerships are established with universities, the linkages and partnerships with marginalized communities can be formed and solidified. As with the Zambia prototype, the needs assessment was conducted with the community and a sustainable business plan developed. To be successful, this partnership needs to



be a mutually beneficial relationship where the university, students, faculty, the local community, the participating women and girls, and NGOs all benefit.

Costs

The following are the actual costs for the sewing business being implemented in Zambia.

This program is teaching twenty-four women the skills necessary to build and sustain a sewing business. The costs for this prototype/proof of concept initiative come out to close to \$3,000 per participant. It is anticipated that these costs can and will be drastically reduced through reduced travel, accommodation and meal costs, equipment donations and corporate partnerships.

Budgets will also vary depending on the location, type of business being implemented, and the number of women who will be involved.

Incentives—for developed world universities, faculty, students and NGOs

This strategy is a powerful opportunity for university students to learn how to develop a business plan and successfully implement it. More importantly, in the model tested in Zambia, students develop cross-cultural competency by being fully immersed in a different culture and interacting with the women in a developing world community. Beyond the scope of culture, students also become more knowledgeable about human rights and associated violations. NGOs involved benefit from the fulfillment of their mission.

Impacts

The women and girls who participate in the program gain necessary skills, knowledge, and perspectives to thrive in their communities. Further, they learn financial literacy and life skills needed to ensure their work is financially sustainable. However, the women involved gain something even more valuable. As previous victims of sexual violence and human trafficking, this program restores dignity. They are no longer someone else's property or under someone's control. Not only does the program help them re-enter society, it also shows them that they can actively contribute to it.

Next Steps

The prototype in Zambia was piloted in July, 2019. The assessment of the Zambian program was begun in September, 2019.

Expansion of the program will begin by reaching out to mission-focused NGOs. The organizations who want to implement the program will then reach out to universities with a call for proposals. Interested universities will perform a needs assessment of the location they are interested in and submit their proposals to the NGO. Once the NGO reviews the proposals, the selected university programs will begin the planning process.

In order to ensure the program's success awareness about our program needs to spread. Partnerships between organizations, universities and developing country communities can begin. Expanding further, organizations can look to partner with large companies who can provide the supplies, and possible funding needed for the program and the resulting businesses.

	NGO Funds	Higher Institution Funds
Personnel		
Project Director		\$ 10,000
Assessment Evaluator		\$1,500
Contributing Staff		\$2,500
<i>Subtotal</i>	\$ -	\$ 14,000
Travel		
US Airport Transfer		\$ 700
Airfare and Transfers	\$ 35,000	
Accommodation	\$ 10,000	
Meals	\$ 10,000	
<i>Subtotal</i>	\$ 55,000	\$ 700
In-Country Personnel /Space		
Rental Space	\$ 1,500	
Speakers	\$ 1,500	
<i>Subtotal</i>	\$ 3,000	\$ -
Equipment		
Machinery and Other Equipment	\$ 12,000	
Material		\$ 2,000
<i>Subtotal</i>	\$ 12,000	\$ 2,000
Supplies		
Office Supplies		\$ 1,000
Books	\$ 1,000	
<i>Subtotal</i>		\$ 5,000
Total Per Site Visit	\$ 70,000	\$ 21,700

Endnotes

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PART VI

SUMMARY / SYNERGY

UN Photo/Fred Noy

SUMMARY/SYNERGY

The whole is more than the sum of its parts.

This book documents the explorations of many young people as they sought to understand our world and to figure out and design ways of making it work better for everyone. What is missing from the individual chapters or strategies are the interactions and resulting synergies of these parts as they combine into a whole that is exciting in its possibilities.

The preceding chapters describe a progression of technology, programs, policies and actions that, if implemented, transform the world as we know it to a world as we want it. Taken individually, each strategy can stand alone in making a significant contribution to improving some aspect of the human condition. Each strategy has links, interactions and impacts on the other strategies. Taken collectively, the strategies are more than the sum of their parts. They would, if implemented together, have a profound impact on our collective wealth, health, and potential. They would not only result in meeting the Sustainable Development Goals, but also go beyond them and transform the world in even more profound ways.

These strategies for transforming the world are suffused with a sense of values and vision that is bold, inclusive and caring—and which is for the entire world, not just a part of it. In some cases, the strategies are revolutionary and transformative, in others, “merely” dealing with critical problems. Taken together, all the strategies add up to a synergetic whole that is revolutionary, transformative and regenerative.

The whole, the parts and the interactions of the parts, creates a world where the most egregious forms of brutal poverty are eliminated, hunger and malnutrition eradicated, health, longevity and the quality of life are improved and the environment is allowed to regenerate. Where, in short, basic human needs are met, basic human rights fulfilled, and our environmental life-support systems are strengthened.

The global and local strategies described in this book help illustrate the creativity, values, vision, and commitment of the youth and concerned citizens of the world. They also represent what an

interdisciplinary, multigenerational group of non-experts can do when provided an opportunity and methodology for tackling the critical and complex problems facing the world.

Your feedback is most welcome—as is your ongoing participation in this evolving work. One way to do this is to send us your comments and suggestions by emailing us at info@designsciencelab.com. Those wishing to take part in upcoming Labs are urged to contact BigPictureSmallWorld at www.bigpicturestallworld.com, or check in at www.designsciencelab.com.



Participants of the 2016 Global Solutions Lab presenting to the United Nations at the conclusion of the Lab.

APPENDIX 1: THE UN MILLENNIUM DEVELOPMENT GOALS

By 2015:

Goal #1: Eradicate extreme poverty and hunger

- Reduce by half the proportion of people living on less than a dollar a day.
- Reduce by half the proportion of people who suffer from hunger.

Goal #2: Achieve universal primary education

- Ensure that all boys and girls complete a full course of primary schooling.

Goal #3: Promote gender equality and empower women

- Eliminate gender disparity in primary and secondary education preferably by 2005, and at all levels by 2015.

Goal #4: Reduce child mortality

- Reduce by two thirds the mortality rate among children under five.

Goal #5: Improve maternal health

- Reduce by three quarters the maternal mortality ratio.

Goal #6: Combat HIV/AIDS, malaria and other diseases

- Halt and begin to reverse the spread of HIV/AIDS.
- Halt and begin to reverse the incidence of malaria and other major diseases.

Goal #7: Ensure environmental sustainability

- Integrate the principles of sustainable development into country policies and programmes; reverse loss of environmental resources.
- Reduce by half the proportion of people without sustainable access to safe drinking water.
- Achieve significant improvement in lives of at least 100 million slum dwellers, by 2020.

Goal #8: Develop a global partnership for development

- Develop further an open trading and financial system that is rule-

based, predictable and non-discriminatory. Includes a commitment to good governance, development and poverty reduction—nationally and internationally.

- Address the least developed countries' special needs. This includes tariff- and quota-free access for their exports; enhanced debt relief for heavily indebted poor countries; cancellation of official bilateral debt; and more generous official development assistance for countries committed to poverty reduction.
- Address the special needs of landlocked and small island developing States.
- Deal comprehensively with developing countries' debt problems through national and international measures to make debt sustainable in the long term.
- In cooperation with the developing countries, develop decent and productive work for youth.
- In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries.
- In cooperation with the private sector, make available the benefits of new technologies—especially information and communications technologies.

SUSTAINABLE DEVELOPMENT GOALS



APPENDIX 2: THE UN SUSTAINABLE DEVELOPMENT GOALS

By 2030:

- Goal 1** End poverty in all its forms everywhere
- Goal 2** End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- Goal 3** Ensure healthy lives and promote well-being for all at all ages
- Goal 4** Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
- Goal 5** Achieve gender equality and empower all women and girls
- Goal 6** Ensure availability and sustainable management of water and sanitation for all
- Goal 7** Ensure access to affordable, reliable, sustainable and modern energy for all
- Goal 8** Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
- Goal 9** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- Goal 10** Reduce inequality within and among countries
- Goal 11** Make cities and human settlements inclusive, safe, resilient and sustainable
- Goal 12** Ensure sustainable consumption and production patterns
- Goal 13** Take urgent action to combat climate change and its impacts
- Goal 14** Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- Goal 15** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
- Goal 16** Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
- Goal 17** Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

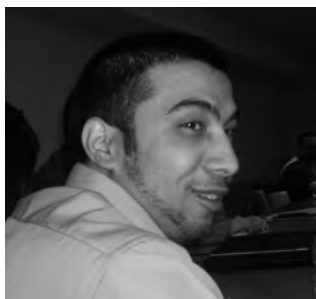
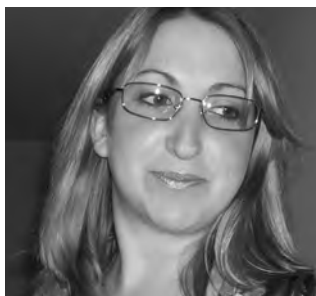
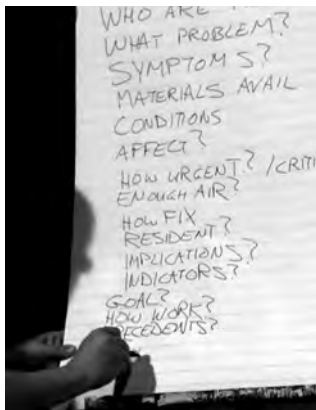
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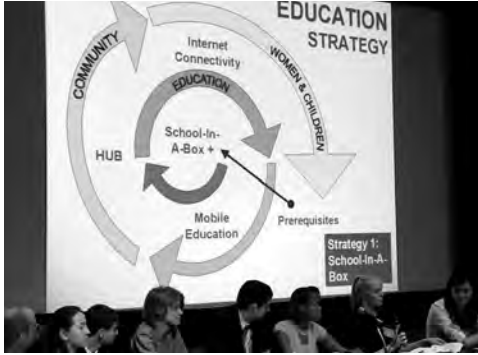
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2005—The first Design Science Lab



2006 Lab



2007 Lab



2008 Lab



2009 Lab



2010 Lab



2011 Lab



2011 High School Lab



2012 Lab



2014 Lab

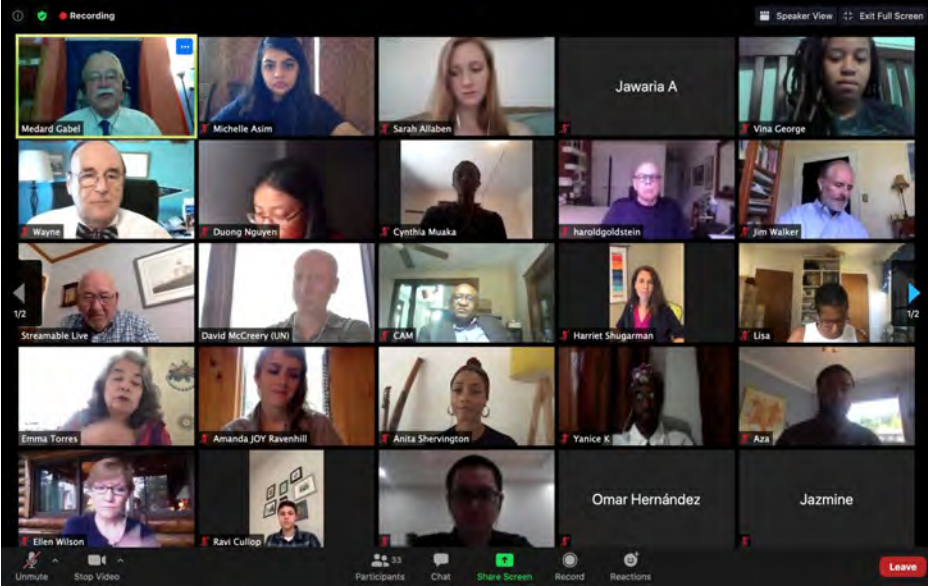


2014 Lab



2016 Lab





2020, with the COVID-19 pandemic, brought the first virtual lab. It had the added benefit of being more accessible to participants around the globe, without the impediment of physically crossing borders.



2020 Lab

ABOUT MEDARD GABEL

Medard Gabel is the executive director of EarthGame. He is the author or editor of six previous books on the global energy situation (*Energy, Earth and Everyone*, Anchor Press/Doubleday); the global food situation (*Ho-Ping: Food for Everyone*, Anchor Press/Doubleday); the U.S. food situation (*Empty Breadbasket*, Rodale Press), multi-national corporations (*Global Inc.: An Atlas of the Multinational Corporation*, The New Press), strategic planning (*Design Science Primer*), climate change, and (*Climate Change—Take Action Now*, UNICEF). He is currently working on *Ten Billion Billionaires* that deals with global predicaments and prospects.

He worked with Buckminster Fuller for over 12 years and has been a consultant to UNEP, UNITAR, the U.S. State Department, Department of Agriculture, USAID, and the Governor's Energy Council of Pennsylvania, as well as Motorola, IBM, General Motors, Novartis, Chase Manhattan Bank and numerous other multinational corporations. The Global Solutions Lab is the integration of all he has learned from all his teachers, especially those listed in this book.

ABOUT GEM & WAYNE JACOBY

Global Education Motivators (GEM) is dedicated to meeting the complex needs of bringing the world into the classroom. It has worked with students, teachers and administrators through on-site and distance learning workshops and classroom program support to promote a better understanding of the world and its people. Being convinced that international communication exchange is a key to future world peace, GEM delivers cross-cultural perspectives as an integral part of its unique global learning programs. An integral part of GEM's mission is to support the work and mission of the United Nations and the important role of civil society in today's world. It is convinced that global awareness is closely tied to global responsibility. GEM is located at Chestnut Hill College in Philadelphia, Pennsylvania, and was co-founded by Wayne Jacoby.

“How do we make the world work for 100% of humanity in the shortest possible time, through spontaneous cooperation, without ecological offense or the disadvantage of anyone?”

—Buckminster Fuller

This report, on the work of the 2005–2019 Global Solutions Labs held at the United Nations, UN International School, and Chestnut Hill College, reveals what happens when solid methodology meets creative minds. Over the past 15 years, hundreds of people, most aged 18 to 26 (but a few as young as 55), have come together to look at the issues of hunger, poverty, education, health care, energy, water, women’s rights, employment, the environment and other topics to find ways to make the world work for 100 % of humanity in the shortest possible time. We offer these creative solutions to you in this book.

—Medard Gabel